FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PHOENIX, ARIZONA

WATERMAN WASH AND TRIBUTARIES FLOODPLAIN DELINEATION STUDY FCD 2002C024

APPENDIX D.3 – D.6

Book 3 of 5

Prepared by:

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March 2006

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Registered Professional Engineer (Civil)
CERTIFICATE NO. 37890
LLOYD A. VICK
Date Signed 3/10/06
ARIZONA, U.S.A.

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Registered Professional Engineer (Civil) CERTIFICATE NO. 37890 LLOYD A. VICK Date Signed 3/10/06 ARIZONA, U.S.A.

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Project Summary Report

Project Description	
Worksheet	RCPA41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003200	ft/ft
Discharge	28,026.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,049.16	ft
Elevation Range	1,040.00 to 1,060.00	
Flow Area	8,996.8	ft²
Wetted Perimeter	3,732.62	ft
Top Width	3,732.37	ft
Actual Depth	9.16	ft
Critical Elevation	1,047.33	ft
Critical Slope	0.028212	ft/ft
Velocity	3.12	ft/s
Velocity Head	0.15	ft
Specific Energy	1,049.31	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	37+00	0.050
37+00	41+00	0.035
41+00	83+00	0.050

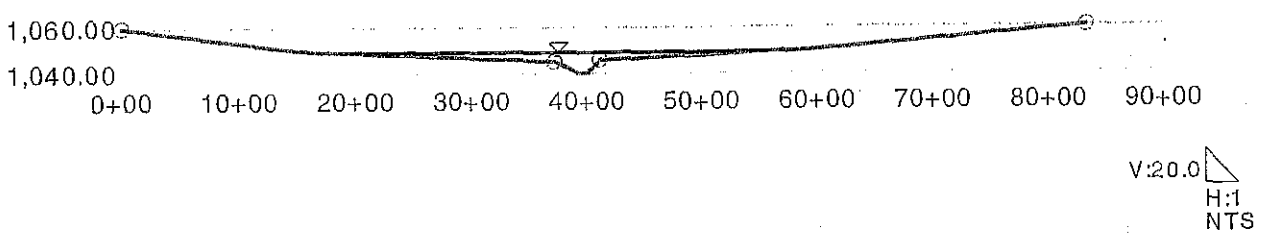
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,060.00
15+00	1,050.00
37+00	1,045.00
39+20	1,040.00
40+00	1,040.00
41+00	1,046.00
60+00	1,050.00
83+00	1,060.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003200	ft/ft
Water Surface Elevation	1,049.16	ft
Elevation Range	1,040.00 to 1,060.00	
Discharge	28,026.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002400	ft/ft
Discharge	28,076.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,029.74	ft
Elevation Range	1,020.00 to 1,040.00	
Flow Area	9,348.5	ft²
Wetted Perimeter	3,321.16	ft
Top Width	3,320.94	ft
Actual Depth	9.74	ft
Critical Elevation	1,027.42	ft
Critical Slope	0.026948	ft/ft
Velocity	3.00	ft/s
Velocity Head	0.14	ft
Specific Energy	1,029.88	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	33+00	0.050
33+00	37+00	0.035
37+00	72+00	0.050

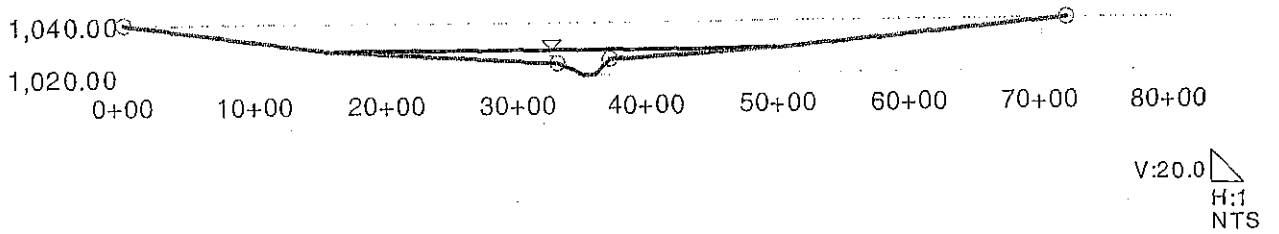
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,040.00
15+00	1,030.00
33+00	1,025.00
35+00	1,020.00
35+80	1,020.00
37+00	1,026.00
50+00	1,030.00
72+00	1,040.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.002400	ft/ft
Water Surface Elevation	1,029.74	ft
Elevation Range	1,020.00 to 1,040.00	
Discharge	28,076.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	27,983.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,018.23	ft
Elevation Range	1,010.00 to 1,030.00	
Flow Area	9,345.0	ft²
Wetted Perimeter	4,188.62	ft
Top Width	4,188.46	ft
Actual Depth	8.23	ft
Critical Elevation	1,016.57	ft
Critical Slope	0.029399	ft/ft
Velocity	2.99	ft/s
Velocity Head	0.14	ft
Specific Energy	1,018.37	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	35+00	0.050
35+00	39+00	0.035
39+00	102+00	0.050

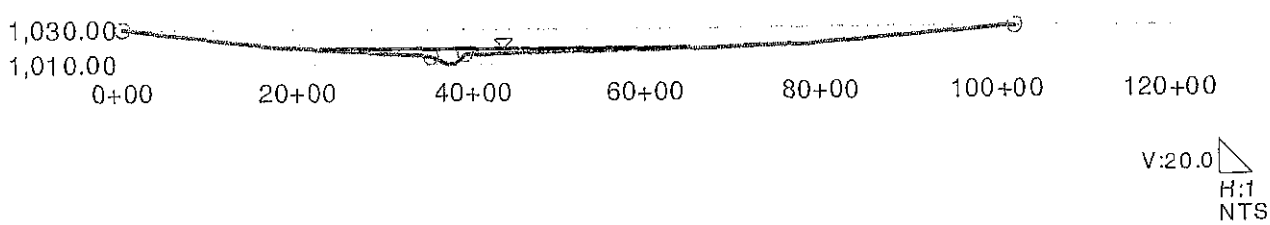
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,030.00
17+00	1,020.00
35+00	1,014.00
37+00	1,010.00
37+80	1,010.00
39+00	1,015.00
78+00	1,020.00
102+00	1,030.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003300	ft/ft
Water Surface Elevation	1,018.23	ft
Elevation Range	1,010.00 to 1,030.00	
Discharge	27,983.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002900	ft/ft
Discharge	27,863.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	982.71	ft
Elevation Range	975.00 to 990.00	
Flow Area	7,614.9	ft^2
Wetted Perimeter	2,555.46	ft
Top Width	2,555.36	ft
Actual Depth	7.71	ft
Critical Elevation	980.58	ft
Critical Slope	0.022919	ft/ft
Velocity	3.66	ft/s
Velocity Head	0.21	ft
Specific Energy	982.92	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	39+00	0.050
39+00	45+50	0.035
45+50	62+00	0.050

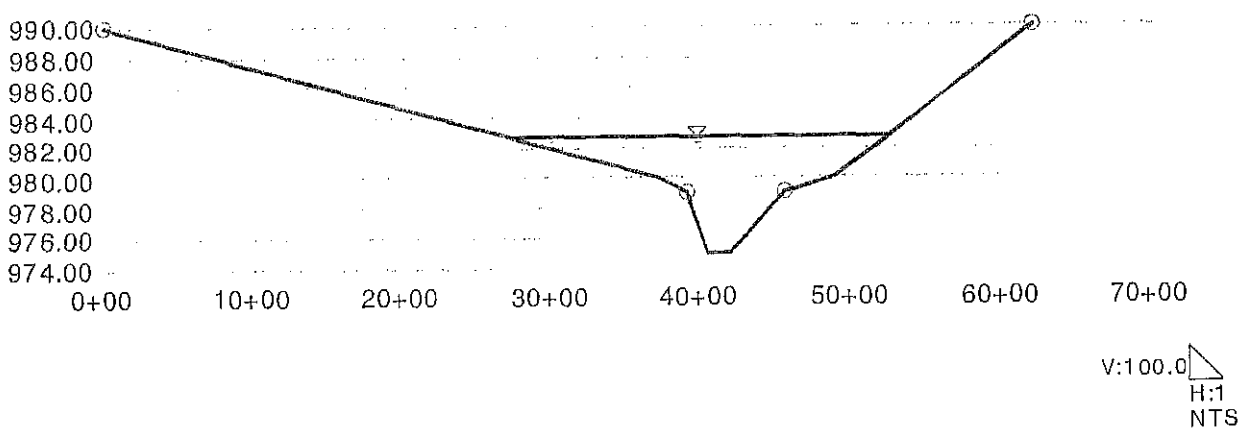
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	990.00
37+00	980.00
39+00	979.00
40+50	975.00
42+00	975.00
45+50	979.00
49+00	980.00
62+00	990.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.002900	ft/ft
Water Surface Elevation	982.71	ft
Elevation Range	975.00 to 990.00	
Discharge	27,863.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	27,998.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	953.99	ft
Elevation Range	945.00 to 970.00	
Flow Area	7,831.7	ft²
Wetted Perimeter	2,613.42	ft
Top Width	2,613.26	ft
Actual Depth	8.99	ft
Critical Elevation	951.70	ft
Critical Slope	0.024674	ft/ft
Velocity	3.57	ft/s
Velocity Head	0.20	ft
Specific Energy	954.19	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	28+00	0.050
28+00	33+00	0.035
33+00	85+00	0.050

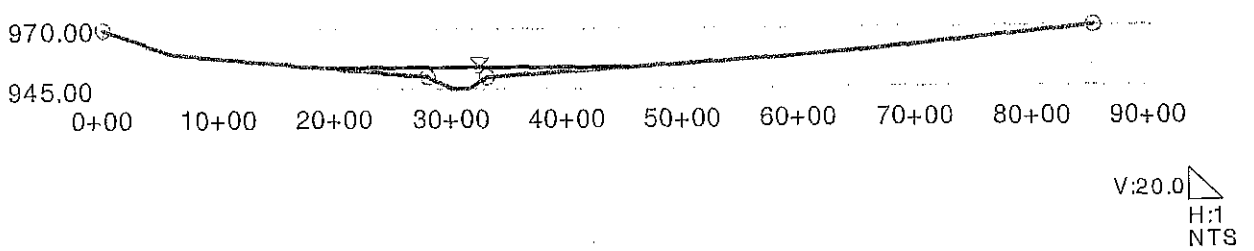
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	970.00
6+00	960.00
28+00	950.00
30+00	945.00
31+50	945.00
33+00	950.00
64+00	960.00
85+00	970.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003000	ft/ft
Water Surface Elevation	953.99	ft
Elevation Range	945.00 to 970.00	
Discharge	27,998.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005700	ft/ft
Discharge	28,510.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	947.10	ft
Elevation Range	940.00 to 952.00	
Flow Area	6,049.9	ft²
Wetted Perimeter	2,153.32	ft
Top Width	2,153.22	ft
Actual Depth	7.10	ft
Critical Elevation	945.66	ft
Critical Slope	0.025160	ft/ft
Velocity	4.71	ft/s
Velocity Head	0.35	ft
Specific Energy	947.45	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+00	0.050
15+00	19+00	0.035
19+00	34+10	0.050

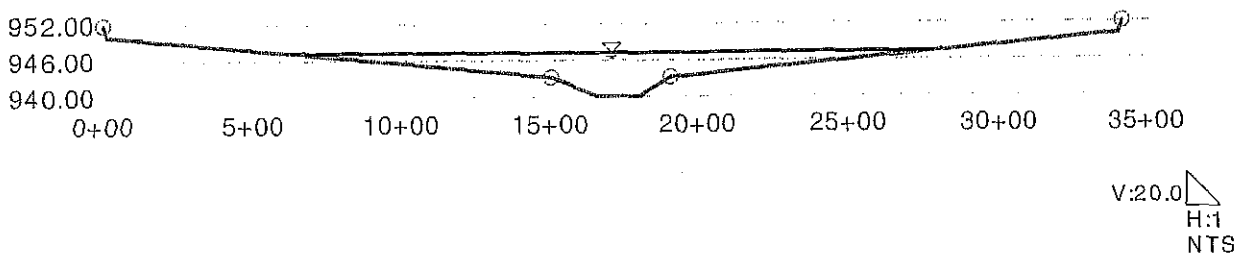
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	952.00
0+10	950.00
15+00	943.00
16+60	940.00
18+00	940.00
19+00	943.00
34+00	950.00
34+10	952.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005700	ft/ft
Water Surface Elevation	947.10	ft
Elevation Range	940.00 to 952.00	
Discharge	28,510.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA56
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004600	ft/ft
Discharge	28,538.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	936.86	ft
Elevation Range	930.00 to 942.00	
Flow Area	5,458.1	ft²
Wetted Perimeter	1,608.45	ft
Top Width	1,608.37	ft
Actual Depth	6.86	ft
Critical Elevation	935.18	ft
Critical Slope	0.022883	ft/ft
Velocity	5.23	ft/s
Velocity Head	0.42	ft
Specific Energy	937.28	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.050
10+00	14+00	0.035
14+00	24+10	0.050

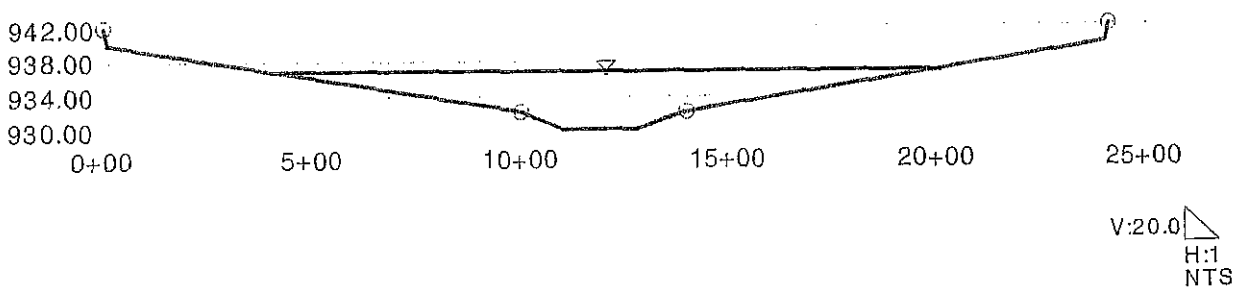
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	942.00
0+10	940.00
10+00	932.00
11+00	930.00
12+80	930.00
14+00	932.00
24+00	940.00
24+10	942.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA56
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004600	ft/ft
Water Surface Elevation	936.86	ft
Elevation Range	930.00 to 942.00	
Discharge	28,538.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA57
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.001900	ft/ft
Discharge	28,356.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	905.70	ft
Elevation Range	894.00 to 920.00	
Flow Area	6,519.4	ft²
Wetted Perimeter	1,255.84	ft
Top Width	1,255.32	ft
Actual Depth	11.70	ft
Critical Elevation	901.33	ft
Critical Slope	0.018147	ft/ft
Velocity	4.35	ft/s
Velocity Head	0.29	ft
Specific Energy	906.00	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	6+00	0.050
6+00	10+00	0.035
10+00	35+00	0.050

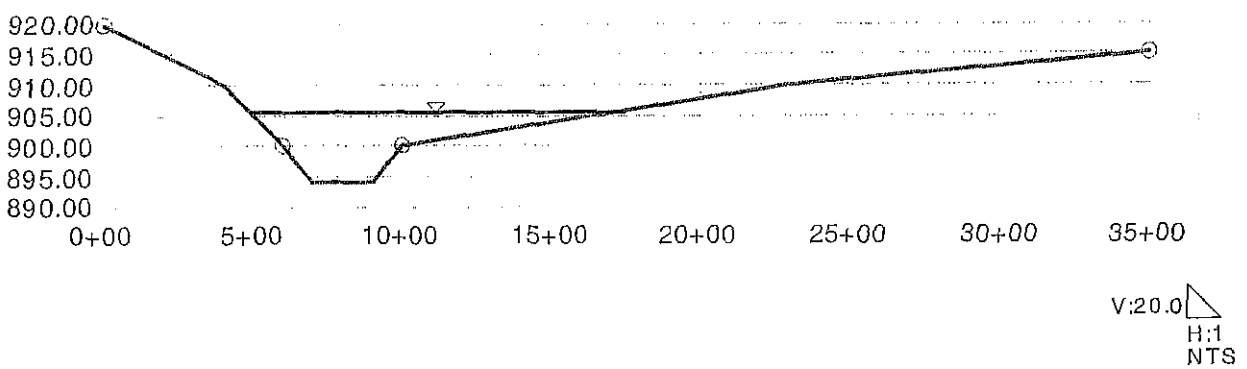
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	920.00
4+00	910.00
6+00	900.00
7+00	894.00
9+00	894.00
10+00	900.00
23+00	910.00
35+00	915.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA57
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.001900	ft/ft
Water Surface Elevation	905.70	ft
Elevation Range	894.00 to 920.00	
Discharge	28,356.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA60
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	28,280.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	884.00	ft
Elevation Range	878.00 to 895.00	
Flow Area	4,044.2	ft²
Wetted Perimeter	1,171.37	ft
Top Width	1,171.28	ft
Actual Depth	6.00	ft
Critical Elevation	883.05	ft
Critical Slope	0.013402	ft/ft
Velocity	6.99	ft/s
Velocity Head	0.76	ft
Specific Energy	884.76	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.050
10+00	21+00	0.035
21+00	43+00	0.050

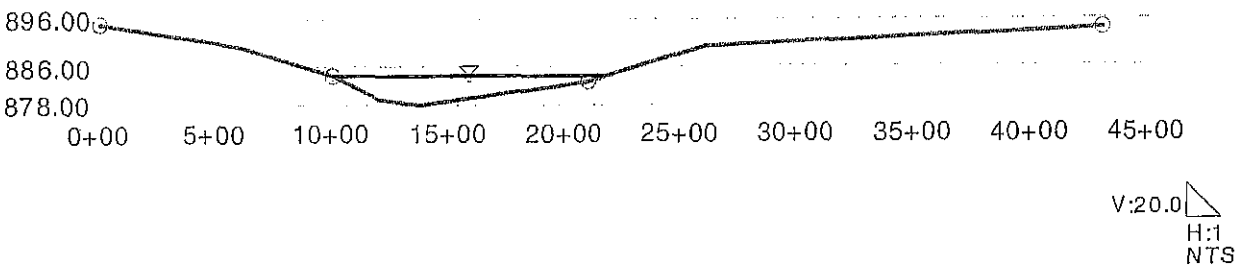
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	895.00
6+00	890.00
10+00	884.00
12+00	879.00
13+80	878.00
21+00	883.00
26+00	890.00
43+00	894.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA60
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.005500	ft/ft
Water Surface Elevation	884.00	ft
Elevation Range	878.00 to 895.00	
Discharge	28,280.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	15,226.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.039	
Water Surface Elevation	1,132.39	ft
Elevation Range	1,125.00 to 1,150.00	
Flow Area	2,405.2	ft²
Wetted Perimeter	671.53	ft
Top Width	671.32	ft
Actual Depth	7.39	ft
Critical Elevation	1,130.85	ft
Critical Slope	0.015037	ft/ft
Velocity	6.33	ft/s
Velocity Head	0.62	ft
Specific Energy	1,133.01	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	22+00	0.050
22+00	25+80	0.035
25+80	52+00	0.050

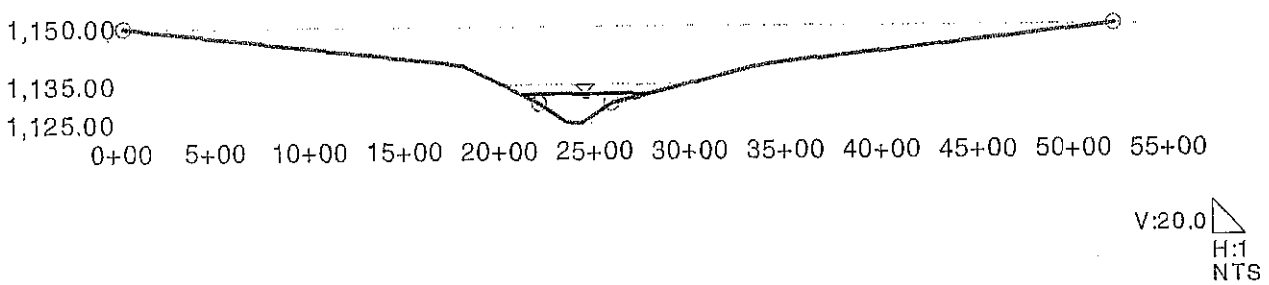
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,150.00
18+00	1,140.00
22+00	1,130.00
23+50	1,125.00
24+30	1,125.00
25+80	1,130.00
34+00	1,140.00
52+00	1,150.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.039	
Slope	0.005000	ft/ft
Water Surface Elevation	1,132.39	ft
Elevation Range	1,125.00 to 1,150.00	
Discharge	15,226.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB12
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.002600	ft/ft
Discharge	21,400.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,130.07	ft
Elevation Range	1,122.00 to 1,132.00	
Flow Area	7,114.6	ft^2
Wetted Perimeter	2,626.98	ft
Top Width	2,626.72	ft
Actual Depth	8.07	ft
Critical Elevation	1,128.25	ft
Critical Slope	*0.029973*	*ft/ft*
Velocity	3.01	ft/s
Velocity Head	0.14	ft
Specific Energy	1,130.21	ft
Froude Number	0.32	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	16+00	0.050
16+00	18+00	0.035
18+00	34+00	0.050

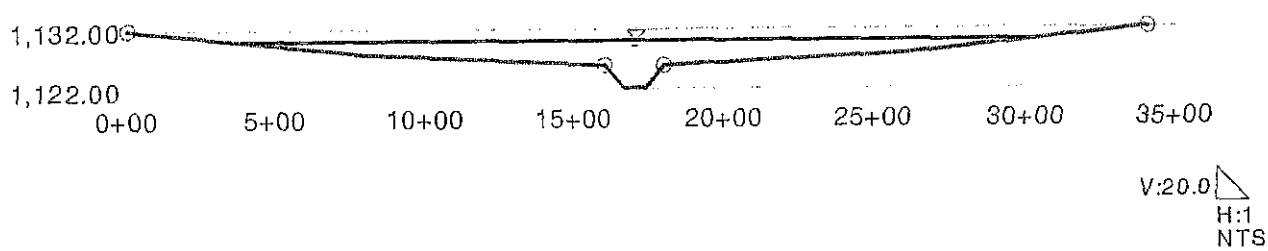
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,132.00
8+00	1,128.00
16+00	1,126.00
16+65	1,122.00
17+35	1,122.00
18+00	1,126.00
26+00	1,128.00
34+00	1,132.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.002600	ft/ft
Water Surface Elevation	1,130.07	ft
Elevation Range	1,122.00 to 1,132.00	
Discharge	21,400.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	22,106.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.043	
Water Surface Elevation	1,123.59	ft
Elevation Range	1,115.00 to 1,140.00	
Flow Area	4,325.2	ft²
Wetted Perimeter	1,391.31	ft
Top Width	1,391.12	ft
Actual Depth	8.59	ft
Critical Elevation	1,121.94	ft
Critical Slope	0.019900	ft/ft
Velocity	5.11	ft/s
Velocity Head	0.41	ft
Specific Energy	1,123.99	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	34+20	0.050
34+20	38+00	0.035
38+00	69+00	0.050

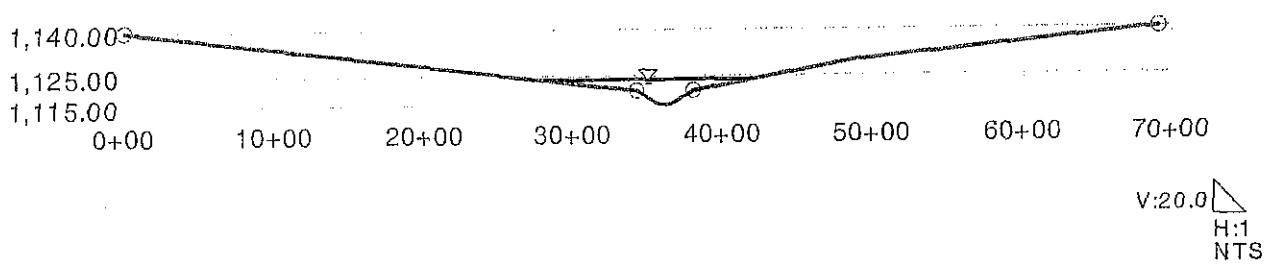
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,140.00
17+00	1,130.00
34+20	1,120.00
35+70	1,115.00
36+50	1,115.00
38+00	1,120.00
49+00	1,130.00
69+00	1,140.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.043	
Slope	0.004900	ft/ft
Water Surface Elevation	1,123.59	ft
Elevation Range	1,115.00 to 1,140.00	
Discharge	22,106.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	23,696.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,119.90	ft
Elevation Range	1,110.00 to 1,130.00	
Flow Area	5,983.6	ft²
Wetted Perimeter	1,965.65	ft
Top Width	1,965.24	ft
Actual Depth	9.90	ft
Critical Elevation	1,117.92	ft
Critical Slope	0.026323	ft/ft
Velocity	3.96	ft/s
Velocity Head	0.24	ft
Specific Energy	1,120.15	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	27+00	0.050
27+00	29+00	0.035
29+00	54+00	0.050

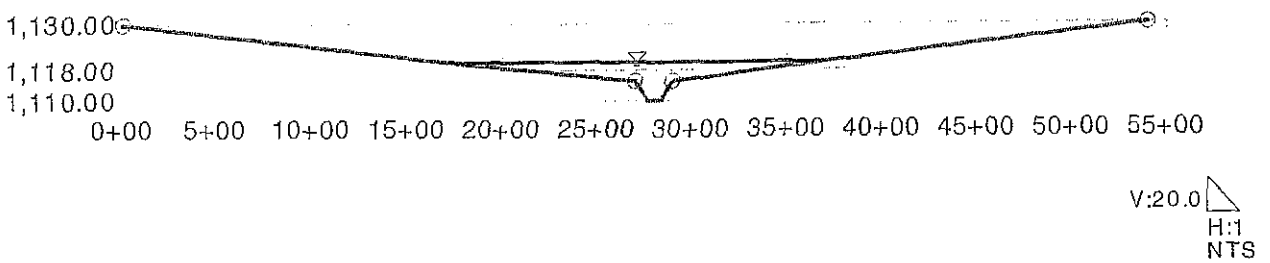
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,130.00
17+00	1,120.00
27+00	1,115.00
27+65	1,110.00
28+35	1,110.00
29+00	1,115.00
37+00	1,120.00
54+00	1,130.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003800	ft/ft
Water Surface Elevation	1,119.90	ft
Elevation Range	1,110.00 to 1,130.00	
Discharge	23,696.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	24,458.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,103.22	ft
Elevation Range	1,095.00 to 1,110.00	
Flow Area	5,602.8	ft²
Wetted Perimeter	2,078.53	ft
Top Width	2,078.40	ft
Actual Depth	8.22	ft
Critical Elevation	1,101.60	ft
Critical Slope	0.024203	ft/ft
Velocity	4.37	ft/s
Velocity Head	0.30	ft
Specific Energy	1,103.52	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	19+00	0.050
19+00	24+00	0.035
24+00	54+00	0.050

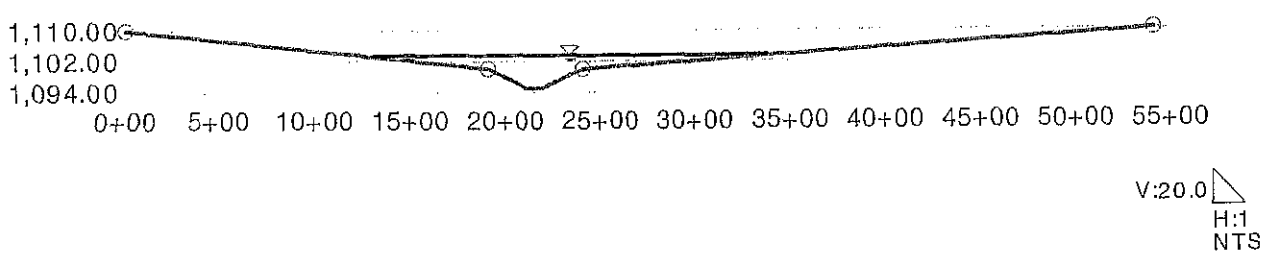
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,110.00
9+50	1,105.00
19+00	1,100.00
21+10	1,095.00
21+90	1,095.00
24+00	1,100.00
39+00	1,105.00
54+00	1,110.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005000	ft/ft
Water Surface Elevation	1,103.22	ft
Elevation Range	1,095.00 to 1,110.00	
Discharge	24,458.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB61
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	25,611.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,073.37	ft
Elevation Range	1,065.00 to 1,080.00	
Flow Area	5,642.9	ft²
Wetted Perimeter	1,985.02	ft
Top Width	1,984.88	ft
Actual Depth	8.37	ft
Critical Elevation	1,071.71	ft
Critical Slope	0.023647	ft/ft
Velocity	4.54	ft/s
Velocity Head	0.32	ft
Specific Energy	1,073.69	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	29+00	0.050
29+00	34+00	0.035
34+00	49+00	0.050

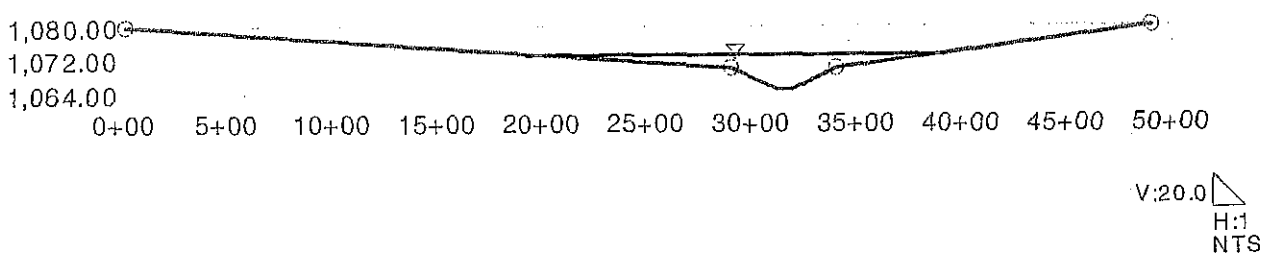
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,080.00
14+50	1,075.00
29+00	1,070.00
31+10	1,065.00
31+90	1,065.00
34+00	1,070.00
41+50	1,075.00
49+00	1,080.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB61
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005000	ft/ft
Water Surface Elevation	1,073.37	ft
Elevation Range	1,065.00 to 1,080.00	
Discharge	25,611.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	27,792.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,063.78	ft
Elevation Range	1,055.00 to 1,070.00	
Flow Area	7,476.3	ft²
Wetted Perimeter	2,690.96	ft
Top Width	2,690.83	ft
Actual Depth	8.78	ft
Critical Elevation	1,061.84	ft
Critical Slope	0.025413	ft/ft
Velocity	3.72	ft/s
Velocity Head	0.21	ft
Specific Energy	1,063.99	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	26+00	0.050
26+00	31+00	0.035
31+00	63+00	0.050

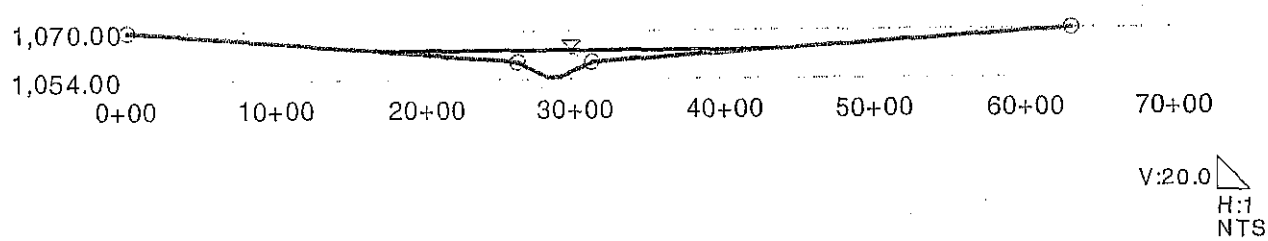
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,070.00
13+00	1,065.00
26+00	1,060.00
28+10	1,055.00
28+90	1,055.00
31+00	1,060.00
47+00	1,065.00
63+00	1,070.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003600	ft/ft
Water Surface Elevation	1,063.78	ft
Elevation Range	1,055.00 to 1,070.00	
Discharge	27,792.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	27,968.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,058.56	ft
Elevation Range	1,050.00 to 1,070.00	
Flow Area	7,531.4	ft²
Wetted Perimeter	2,919.15	ft
Top Width	2,919.02	ft
Actual Depth	8.56	ft
Critical Elevation	1,056.82	ft
Critical Slope	0.026188	ft/ft
Velocity	3.71	ft/s
Velocity Head	0.21	ft
Specific Energy	1,058.77	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	31+00	0.050
31+00	36+00	0.035
36+00	58+00	0.050

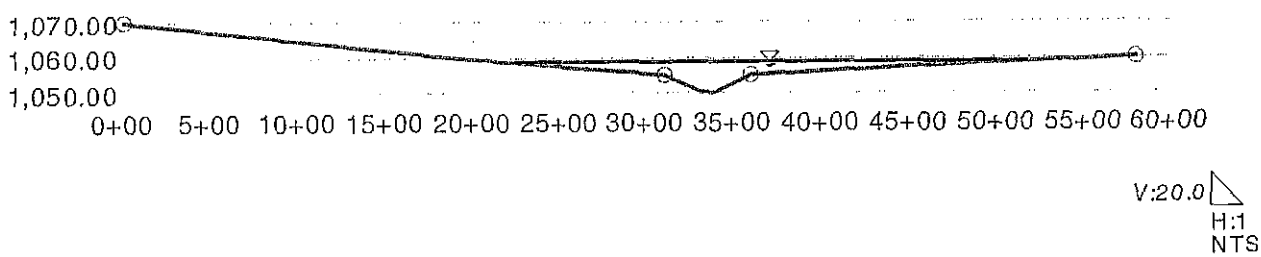
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,070.00
19+00	1,060.00
31+00	1,055.00
33+10	1,050.00
33+90	1,050.00
36+00	1,055.00
47+00	1,057.50
58+00	1,060.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004000	ft/ft
Water Surface Elevation	1,058.56	ft
Elevation Range	1,050.00 to 1,070.00	
Discharge	27,968.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB64
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	27,910.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,050.33	ft
Elevation Range	1,040.00 to 1,054.00	
Flow Area	5,389.0	ft²
Wetted Perimeter	1,570.26	ft
Top Width	1,569.83	ft
Actual Depth	10.33	ft
Critical Elevation	1,048.54	ft
Critical Slope	0.012830	ft/ft
Velocity	5.18	ft/s
Velocity Head	0.42	ft
Specific Energy	1,050.74	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
24+75	37+00	0.050
37+00	39+00	0.035
39+00	45+25	0.050

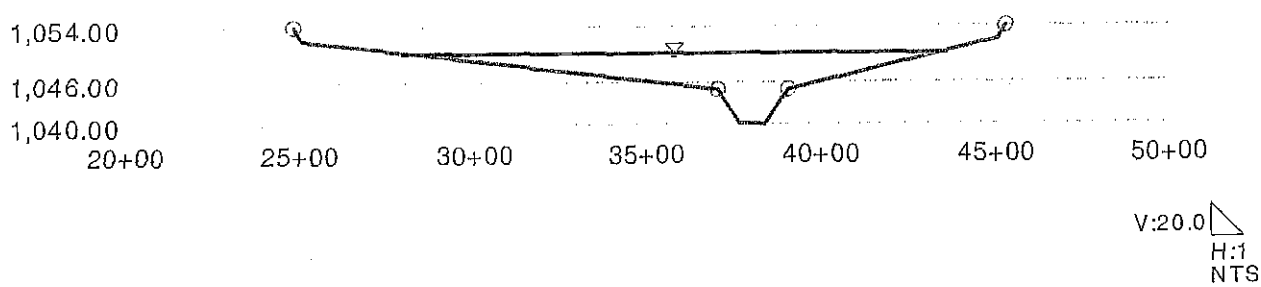
Natural Channel Points

Station (ft)	Elevation (ft)
24+75	1,054.00
25+00	1,052.00
37+00	1,045.00
37+65	1,040.00
38+35	1,040.00
39+00	1,045.00
45+00	1,052.00
45+25	1,054.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB64
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003300	ft/ft
Water Surface Elevation	1,050.33	ft
Elevation Range	1,040.00 to 1,054.00	
Discharge	27,910.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006600	ft/ft
Discharge	8,184.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,204.53	ft
Elevation Range	1,200.00 to 1,208.00	
Flow Area	2,244.9	ft²
Wetted Perimeter	1,417.03	ft
Top Width	1,416.99	ft
Actual Depth	4.53	ft
Critical Elevation	1,203.64	ft
Critical Slope	0.026482	ft/ft
Velocity	3.65	ft/s
Velocity Head	0.21	ft
Specific Energy	1,204.73	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.050
13+00	18+00	0.035
18+00	28+00	0.050

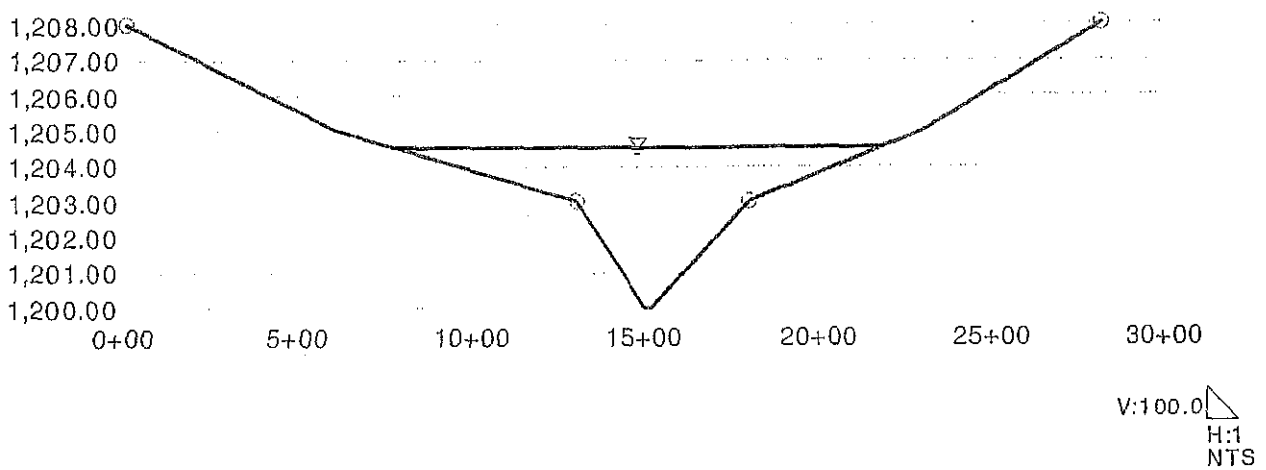
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,208.00
6+00	1,205.00
13+00	1,203.00
15+00	1,200.00
15+20	1,200.00
18+00	1,203.00
23+00	1,205.00
28+00	1,208.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006600	ft/ft
Water Surface Elevation	1,204.53	ft
Elevation Range	1,200.00 to 1,208.00	
Discharge	8,184.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004400	ft/ft
Discharge	8,632.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,200.13	ft
Elevation Range	1,195.00 to 1,205.00	
Flow Area	2,833.1	ft²
Wetted Perimeter	1,640.18	ft
Top Width	1,640.12	ft
Actual Depth	5.13	ft
Critical Elevation	1,198.99	ft
Critical Slope	0.028755	ft/ft
Velocity	3.05	ft/s
Velocity Head	0.14	ft
Specific Energy	1,200.27	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+00	0.050
15+00	19+00	0.035
19+00	32+00	0.050

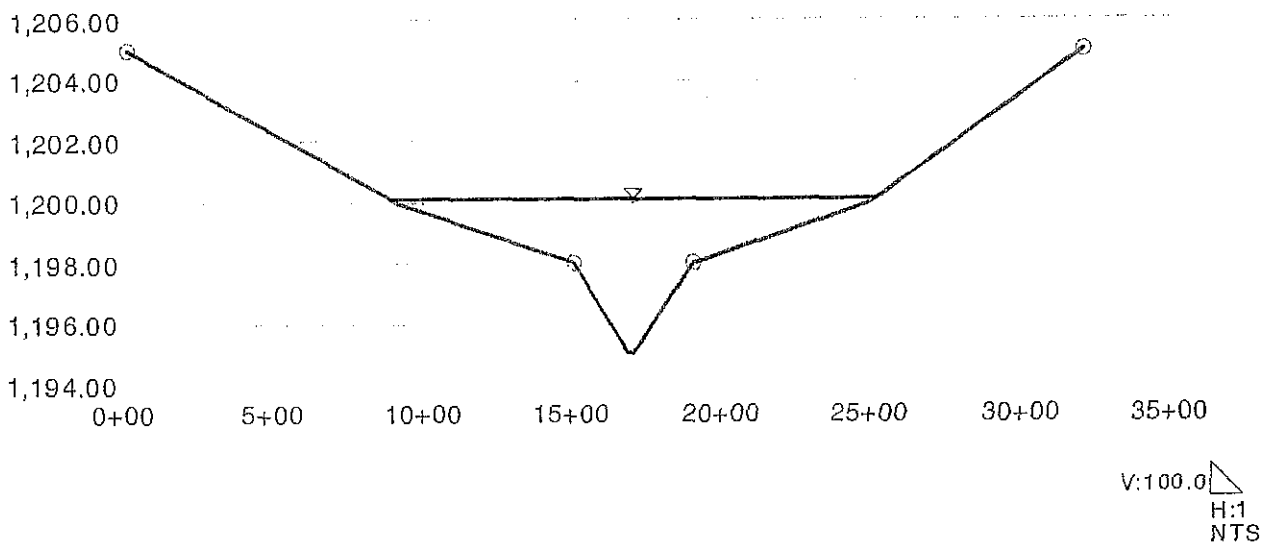
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,205.00
9+00	1,200.00
15+00	1,198.00
16+85	1,195.00
17+05	1,195.00
19+00	1,198.00
25+00	1,200.00
32+00	1,205.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004400	ft/ft
Water Surface Elevation	1,200.13	ft
Elevation Range	1,195.00 to 1,205.00	
Discharge	8,632.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002600	ft/ft
Discharge	9,393.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,196.12	ft
Elevation Range	1,190.00 to 1,200.00	
Flow Area	2,376.8	ft²
Wetted Perimeter	759.34	ft
Top Width	758.98	ft
Actual Depth	6.12	ft
Critical Elevation	1,194.54	ft
Critical Slope	0.020203	ft/ft
Velocity	3.95	ft/s
Velocity Head	0.24	ft
Specific Energy	1,196.37	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
7+30	10+00	0.050
10+00	13+00	0.035
13+00	15+20	0.050

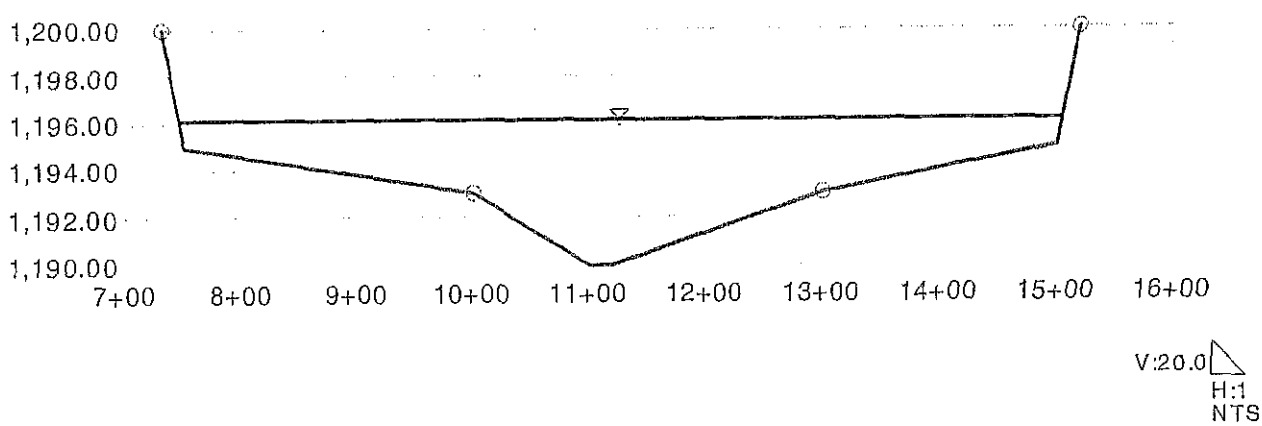
Natural Channel Points

Station (ft)	Elevation (ft)
7+30	1,200.00
7+50	1,195.00
10+00	1,193.00
11+00	1,190.00
11+20	1,190.00
13+00	1,193.00
15+00	1,195.00
15+20	1,200.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings *Coefficient*	0.041	
Slope	0.002600	ft/ft
Water Surface Elevation	1,196.12	ft
Elevation Range	1,190.00 to 1,200.00	
Discharge	9,393.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	9,470.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.043	
Water Surface Elevation	1,194.98	ft
Elevation Range	1,189.00 to 1,199.00	
Flow Area	2,464.9	ft²
Wetted Perimeter	858.15	ft
Top Width	857.82	ft
Actual Depth	5.98	ft
Critical Elevation	1,193.53	ft
Critical Slope	0.022136	ft/ft
Velocity	3.84	ft/s
Velocity Head	0.23	ft
Specific Energy	1,195.21	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
7+30	10+00	0.050
10+00	13+00	0.035
13+00	16+20	0.050

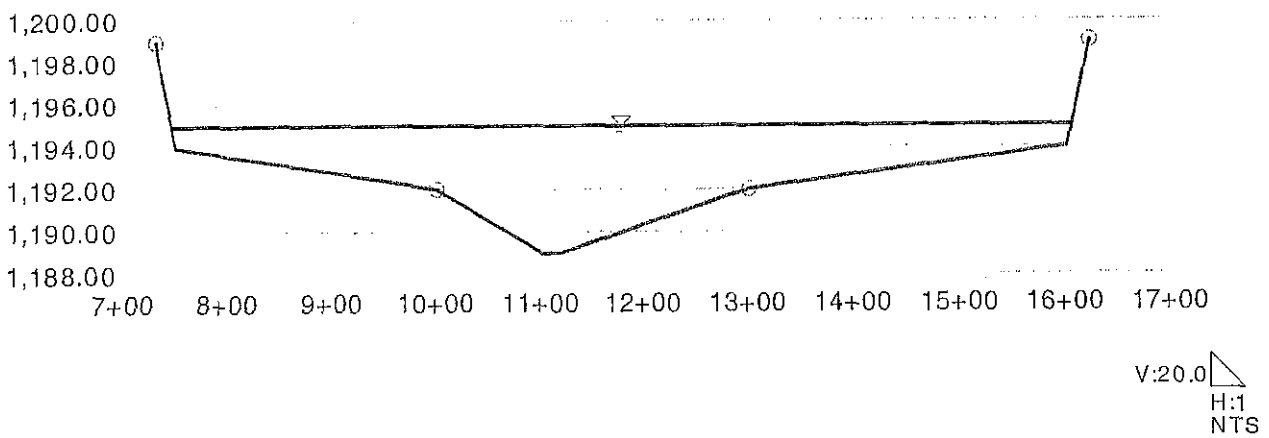
Natural Channel Points

Station (ft)	Elevation (ft)
7+30	1,199.00
7+50	1,194.00
10+00	1,192.00
11+00	1,189.00
11+20	1,189.00
13+00	1,192.00
16+00	1,194.00
16+20	1,199.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.043	
Slope	0.002700	ft/ft
Water Surface Elevation	1,194.98	ft
Elevation Range	1,189.00 to 1,199.00	
Discharge	9,470.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003400	ft/ft
Discharge	9,511.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	1,191.23	ft
Elevation Range	1,185.00 to 1,195.00	
Flow Area	1,852.3	ft²
Wetted Perimeter	600.27	ft
Top Width	599.85	ft
Actual Depth	6.23	ft
Critical Elevation	1,190.11	ft
Critical Slope	0.014789	ft/ft
Velocity	5.13	ft/s
Velocity Head	0.41	ft
Specific Energy	1,191.64	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
12+10	14+00	0.050
14+00	16+00	0.035
16+00	18+40	0.050

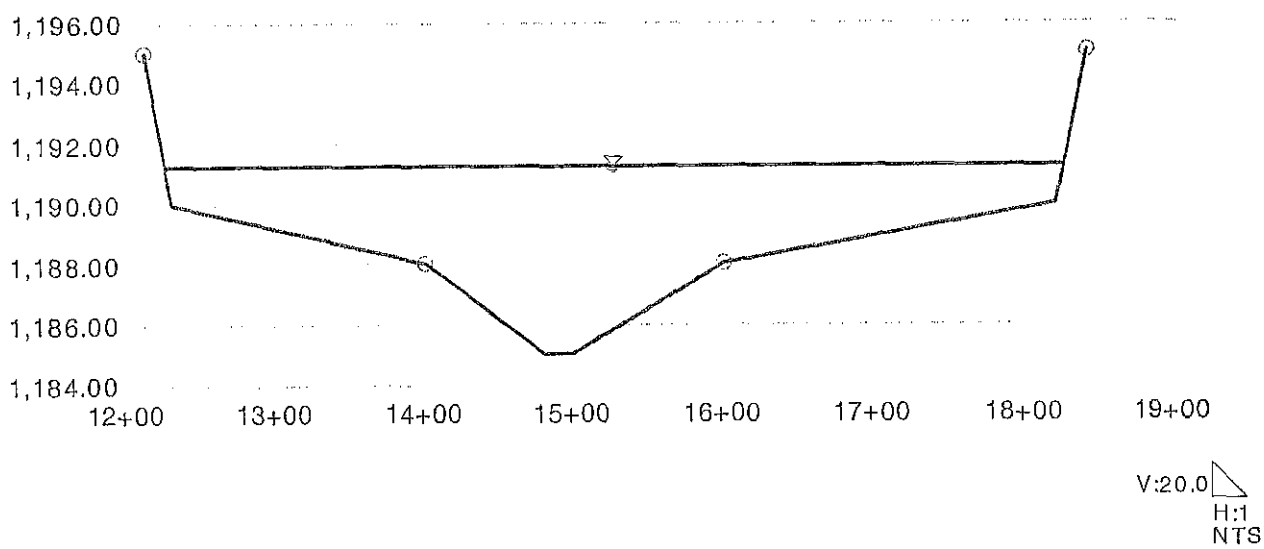
Natural Channel Points

Station (ft)	Elevation (ft)
12+10	1,195.00
12+30	1,190.00
14+00	1,188.00
14+80	1,185.00
15+00	1,185.00
16+00	1,188.00
18+20	1,190.00
18+40	1,195.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.003400	ft/ft
Water Surface Elevation	1,191.23	ft
Elevation Range	1,185.00 to 1,195.00	
Discharge	9,511.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	9,769.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results		
Mannings Coefficient	0.037	
Water Surface Elevation	1,184.12	ft
Elevation Range	1,178.00 to 1,188.00	
Flow Area	2,211.3	ft²
Wetted Perimeter	709.36	ft
Top Width	708.99	ft
Actual Depth	6.12	ft
Critical Elevation	1,182.74	ft
Critical Slope	0.016312	ft/ft
Velocity	4.42	ft/s
Velocity Head	0.30	ft
Specific Energy	1,184.43	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+80	14+00	0.050
14+00	16+00	0.035
16+00	18+20	0.050

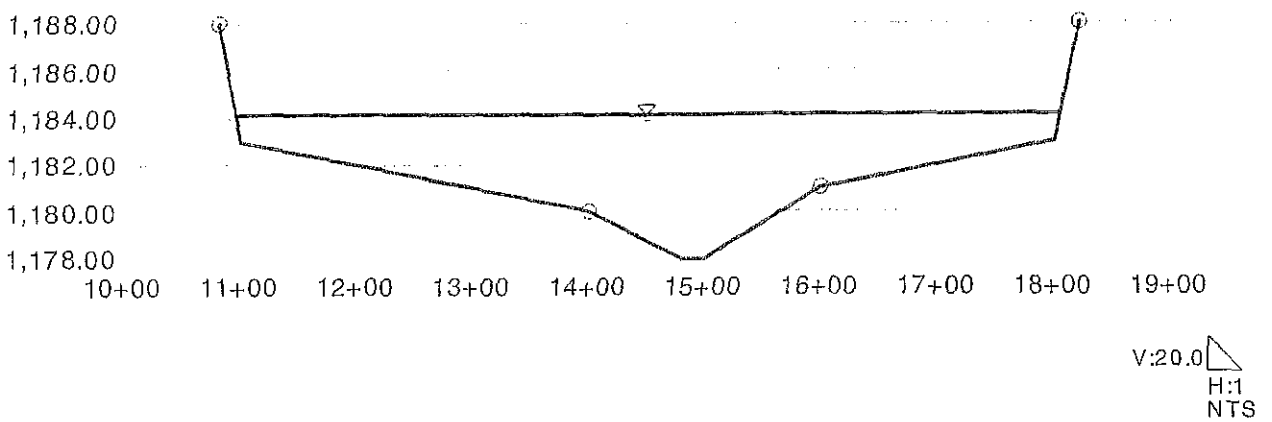
Natural Channel Points

Station (ft)	Elevation (ft)
10+80	1,188.00
11+00	1,183.00
14+00	1,180.00
14+80	1,178.00
15+00	1,178.00
16+00	1,181.00
18+00	1,183.00
18+20	1,188.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.037	
Slope	0.002700	ft/ft
Water Surface Elevation	1,184.12	ft
Elevation Range	1,178.00 to 1,188.00	
Discharge	9,769.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	11,475.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,182.10	ft
Elevation Range	1,175.00 to 1,185.00	
Flow Area	2,514.5	ft²
Wetted Perimeter	717.48	ft
Top Width	716.77	ft
Actual Depth	7.10	ft
Critical Elevation	1,180.56	ft
Critical Slope	0.019530	ft/ft
Velocity	4.56	ft/s
Velocity Head	0.32	ft
Specific Energy	1,182.42	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
6+80	10+00	0.050
10+00	11+20	0.035
11+20	14+20	0.050

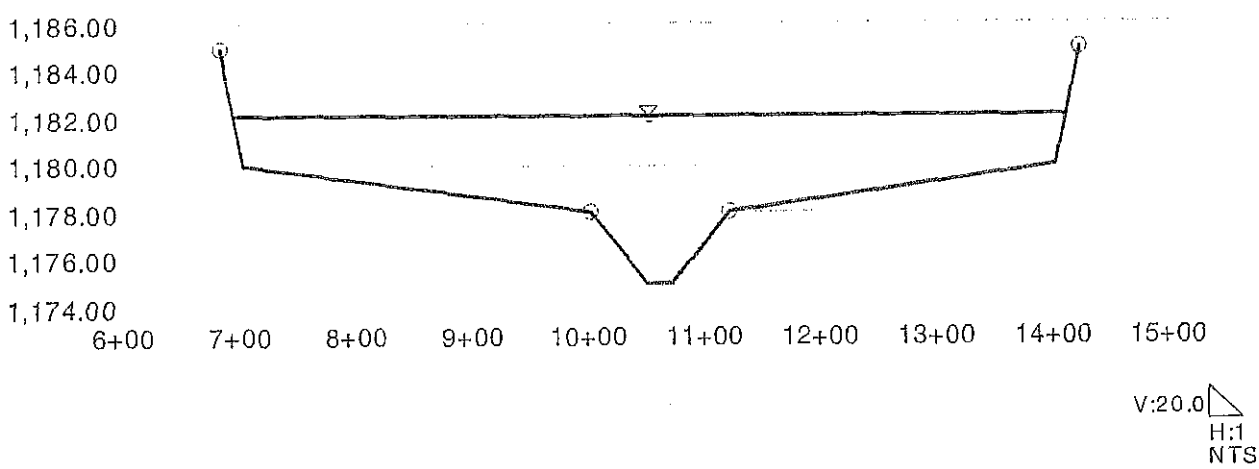
Natural Channel Points

Station (ft)	Elevation (ft)
6+80	1,185.00
7+00	1,180.00
10+00	1,178.00
10+50	1,175.00
10+70	1,175.00
11+20	1,178.00
14+00	1,180.00
14+20	1,185.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.041	
Slope	*0.003000*	*ft/ft*
Water Surface Elevation	1,182.10	ft
Elevation Range	1,175.00 to 1,185.00	
Discharge	11,475.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	13,276.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.040	
Water Surface Elevation	1,148.92	ft
Elevation Range	1,140.00 to 1,152.00	
Flow Area	3,445.7	ft²
Wetted Perimeter	1,235.39	ft
Top Width	1,233.81	ft
Actual Depth	8.92	ft
Critical Elevation	1,147.17	ft
Critical Slope	0.018245	ft/ft
Velocity	3.85	ft/s
Velocity Head	0.23	ft
Specific Energy	1,149.15	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+40	0.050
7+40	8+10	0.035
8+10	15+10	0.050

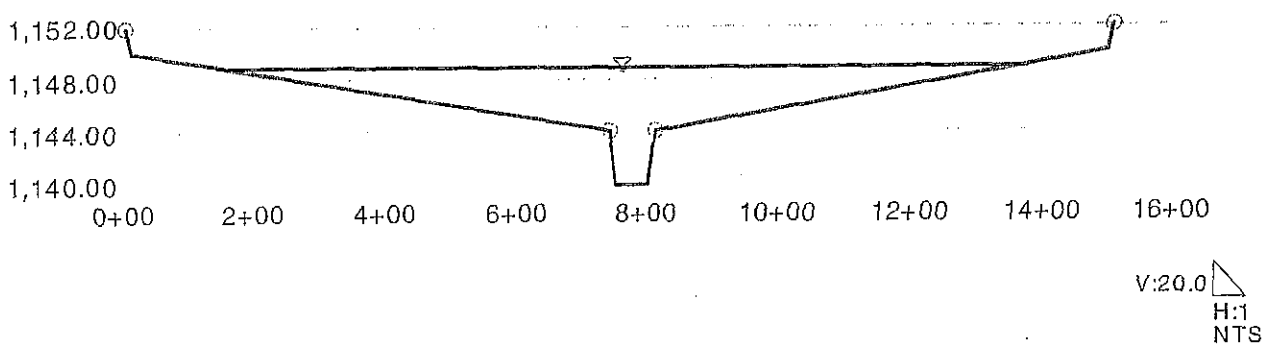
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,152.00
0+10	1,150.00
7+40	1,144.00
7+50	1,140.00
8+00	1,140.00
8+10	1,144.00
15+00	1,150.00
15+10	1,152.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.040	
Slope	0.002700	ft/ft
Water Surface Elevation	1,148.92	ft
Elevation Range	1,140.00 to 1,152.00	
Discharge	13,276.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003200	ft/ft
Discharge	13,079.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,148.47	ft
Elevation Range	1,142.00 to 1,150.00	
Flow Area	3,384.2	ft²
Wetted Perimeter	1,244.90	ft
Top Width	1,244.54	ft
Actual Depth	6.47	ft
Critical Elevation	1,147.24	ft
Critical Slope	0.022724	ft/ft
Velocity	3.86	ft/s
Velocity Head	0.23	ft
Specific Energy	1,148.70	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
14+55	21+50	0.050
21+50	22+75	0.035
22+75	27+25	0.050

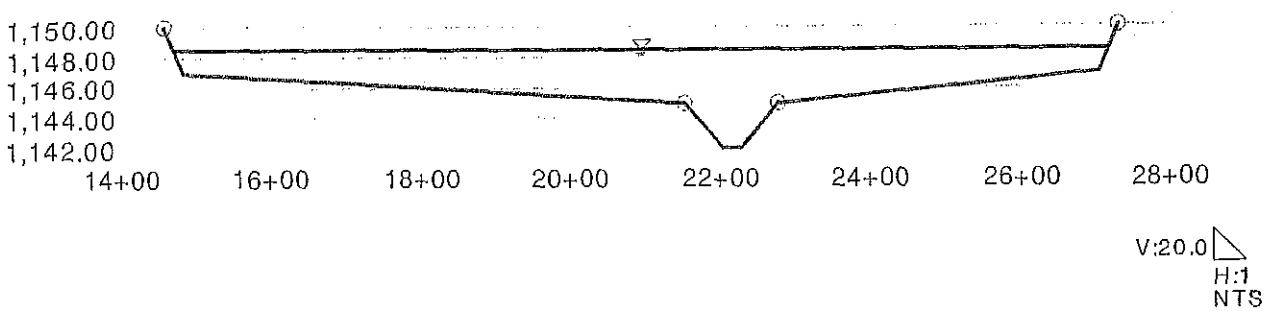
Natural Channel Points

Station (ft)	Elevation (ft)
14+55	1,150.00
14+80	1,147.00
21+50	1,145.00
22+00	1,142.00
22+25	1,142.00
22+75	1,145.00
27+00	1,147.00
27+25	1,150.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	0.003200	ft/ft
Water Surface Elevation	1,148.47	ft
Elevation Range	1,142.00 to 1,150.00	
Discharge	13,079.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	11,067.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,156.77	ft
Elevation Range	1,150.00 to 1,160.00	
Flow Area	3,353.8	ft²
Wetted Perimeter	1,094.78	ft
Top Width	1,094.16	ft
Actual Depth	6.77	ft
Critical Elevation	1,155.16	ft
Critical Slope	0.023066	ft/ft
Velocity	3.30	ft/s
Velocity Head	0.17	ft
Specific Energy	1,156.94	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
7+80	14+00	0.050
14+00	15+25	0.035
15+25	19+00	0.050

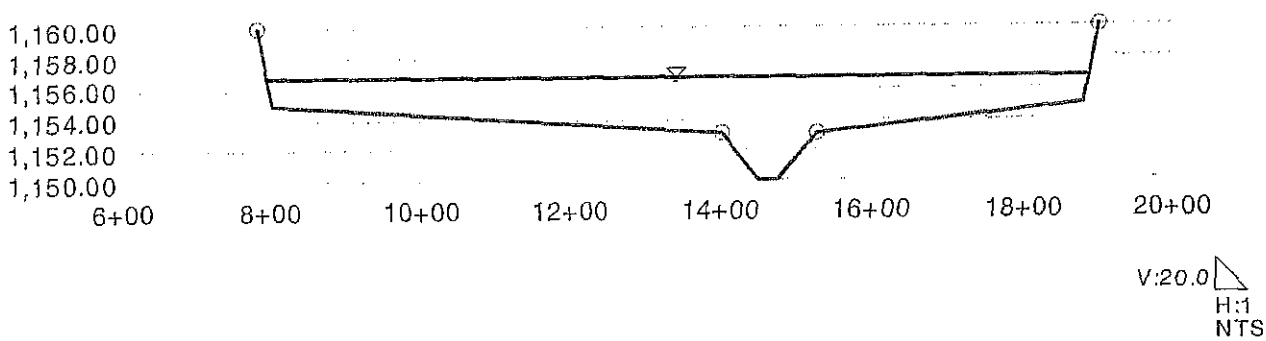
Natural Channel Points

Station (ft)	Elevation (ft)
7+80	1,160.00
8+00	1,155.00
14+00	1,153.00
14+50	1,150.00
14+75	1,150.00
15+25	1,153.00
18+80	1,155.00
19+00	1,160.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	0.002000	ft/ft
Water Surface Elevation	1,156.77	ft
Elevation Range	1,150.00 to 1,160.00	
Discharge	11,067.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004700	ft/ft
Discharge	11,068.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,158.85	ft
Elevation Range	1,150.00 to 1,165.00	
Flow Area	2,290.8	ft²
Wetted Perimeter	710.12	ft
Top Width	709.72	ft
Actual Depth	8.85	ft
Critical Elevation	1,157.10	ft
Critical Slope	0.022813	ft/ft
Velocity	4.83	ft/s
Velocity Head	0.36	ft
Specific Energy	1,159.21	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.050
13+00	14+20	0.035
14+20	17+70	0.050

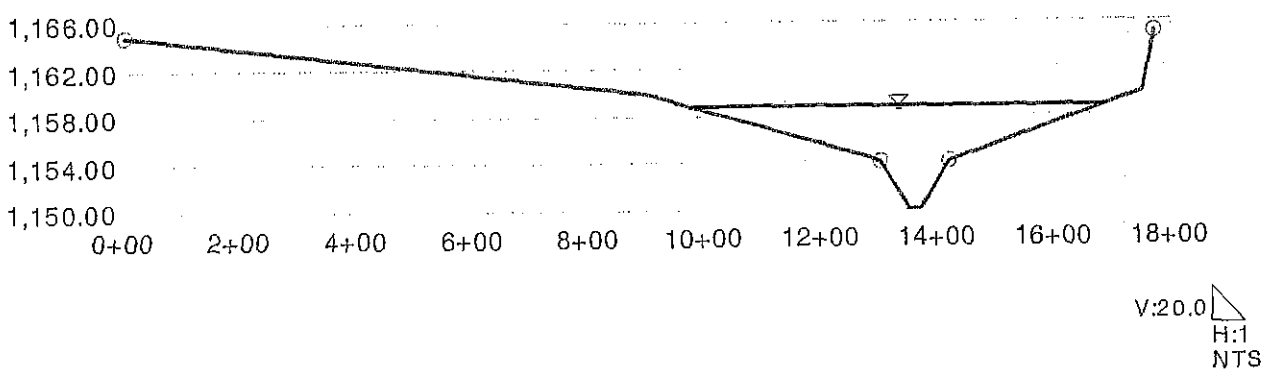
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,165.00
9+00	1,160.00
13+00	1,154.00
13+50	1,150.00
13+70	1,150.00
14+20	1,154.00
17+50	1,160.00
17+70	1,165.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.004700	ft/ft
Water Surface Elevation	1,158.85	ft
Elevation Range	1,150.00 to 1,165.00	
Discharge	11,068.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	6,042.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,213.43	ft
Elevation Range	1,207.00 to 1,216.00	
Flow Area	1,712.0	ft²
Wetted Perimeter	630.43	ft
Top Width	629.26	ft
Actual Depth	6.43	ft
Critical Elevation	1,212.10	ft
Critical Slope	0.021705	ft/ft
Velocity	3.53	ft/s
Velocity Head	0.19	ft
Specific Energy	1,213.62	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+80	0.050
2+80	3+40	0.035
3+40	6+55	0.050

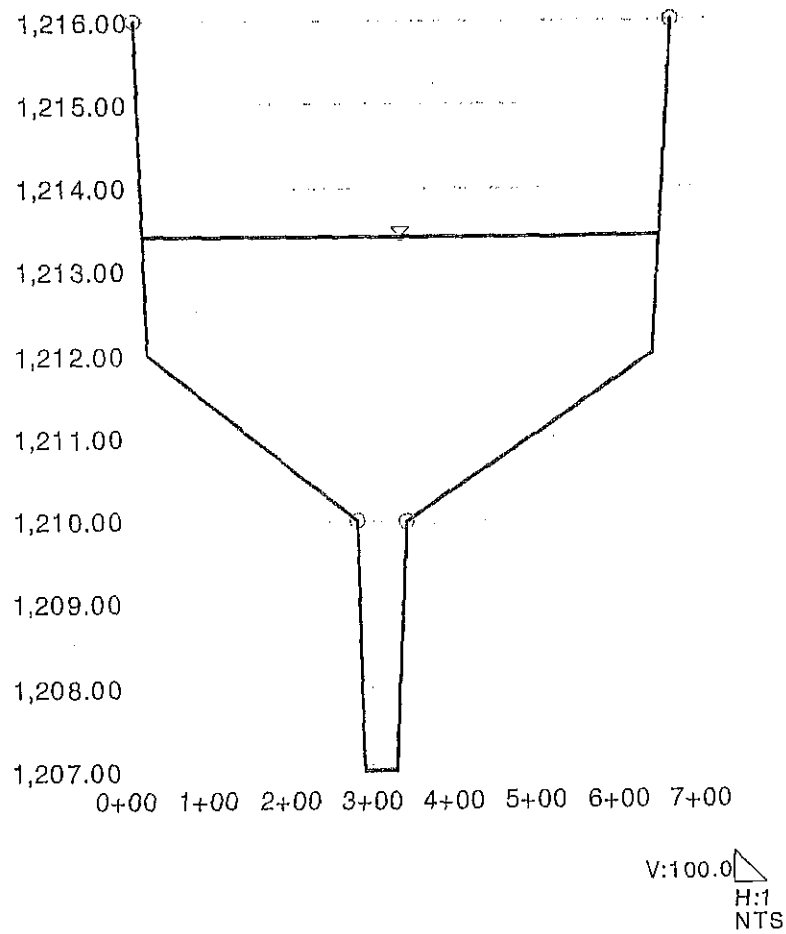
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,216.00
0+20	1,212.00
2+80	1,210.00
2+90	1,207.00
3+30	1,207.00
3+40	1,210.00
6+35	1,212.00
6+55	1,216.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.041
Slope	0.002500 ft/ft
Water Surface Elevation	1,213.43 ft
Elevation Range	1,207.00 to 1,216.00
Discharge	6,042.00 cfs



Project Summary Report

Project Description	
Worksheet	RCPE48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	4,124.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,253.19	ft
Elevation Range	1,250.00 to 1,254.50	
Flow Area	1,158.9	ft²
Wetted Perimeter	609.82	ft
Top Width	609.51	ft
Actual Depth	3.19	ft
Critical Elevation	1,252.40	ft
Critical Slope	0.017130	ft/ft
Velocity	3.56	ft/s
Velocity Head	0.20	ft
Specific Energy	1,253.39	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+10	0.050
1+10	5+10	0.035
5+10	6+20	0.050

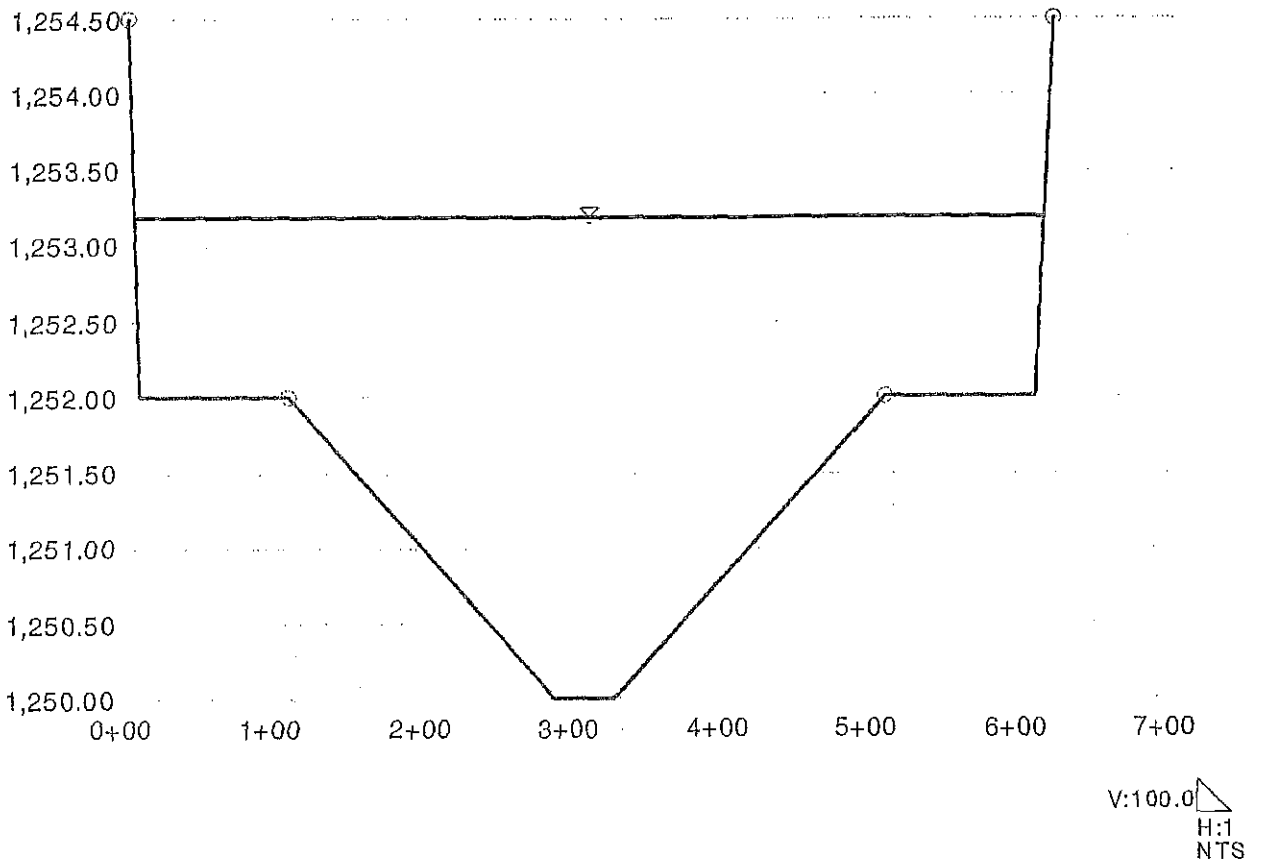
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,254.50
0+10	1,252.00
1+10	1,252.00
2+90	1,250.00
3+30	1,250.00
5+10	1,252.00
6+10	1,252.00
6+20	1,254.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003300	ft/ft
Water Surface Elevation	1,253.19	ft
Elevation Range	1,250.00 to 1,254.50	
Discharge	4,124.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	6,058.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.039	
Water Surface Elevation	1,244.37	ft
Elevation Range	1,240.00 to 1,246.00	
Flow Area	1,741.4	ft²
Wetted Perimeter	759.01	ft
Top Width	758.69	ft
Actual Depth	4.37	ft
Critical Elevation	1,243.32	ft
Critical Slope	0.020075	ft/ft
Velocity	3.48	ft/s
Velocity Head	0.19	ft
Specific Energy	1,244.56	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+10	0.050
3+10	5+10	0.035
5+10	7+75	0.050

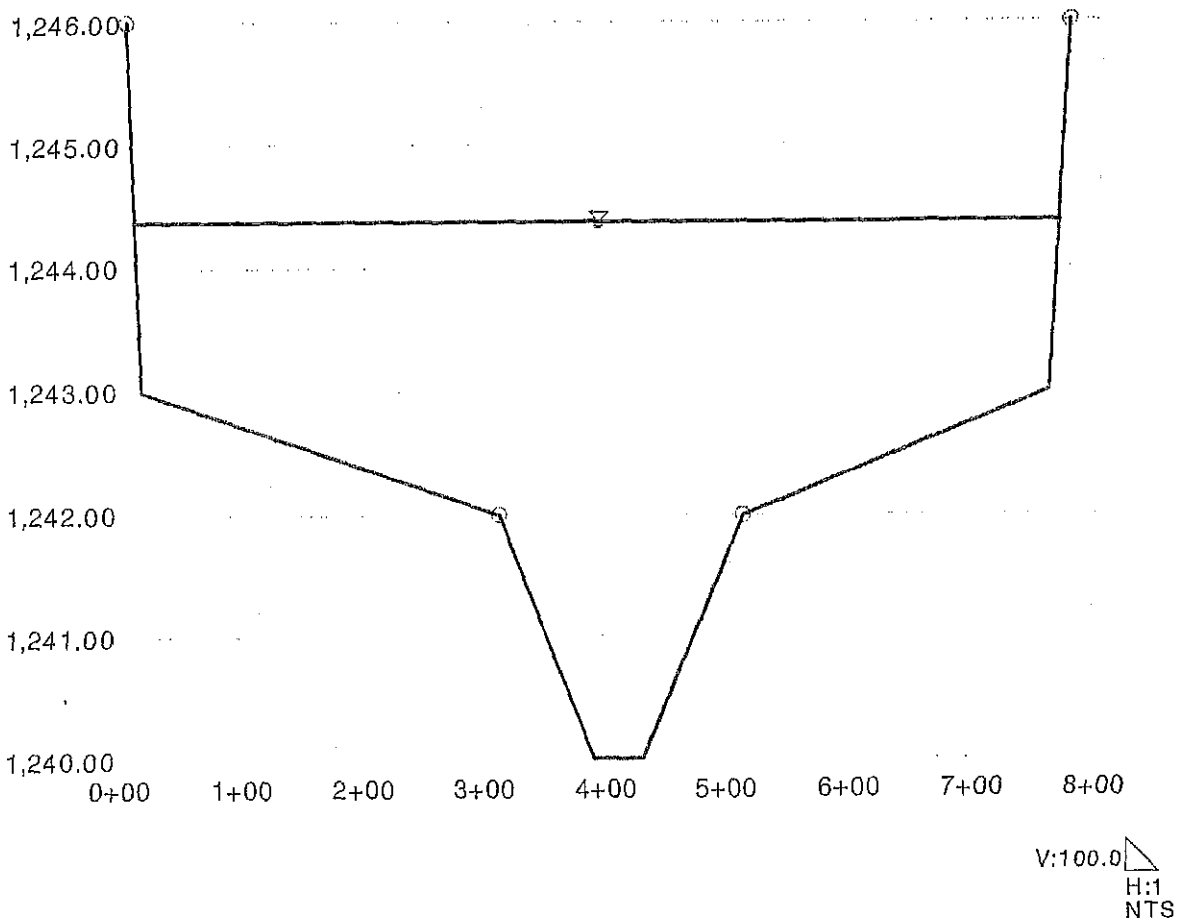
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,246.00
0+15	1,243.00
3+10	1,242.00
3+90	1,240.00
4+30	1,240.00
5+10	1,242.00
7+60	1,243.00
7+75	1,246.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.039	
Slope	0.002700	ft/ft
Water Surface Elevation	1,244.37	ft
Elevation Range	1,240.00 to 1,246.00	
Discharge	6,058.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	6,078.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,224.33	ft
Elevation Range	1,220.00 to 1,230.00	
Flow Area	2,523.1	ft²
Wetted Perimeter	1,756.24	ft
Top Width	1,756.19	ft
Actual Depth	4.33	ft
Critical Elevation	1,223.31	ft
Critical Slope	0.034160	ft/ft
Velocity	2.41	ft/s
Velocity Head	0.09	ft
Specific Energy	1,224.42	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	24+00	0.050
24+00	26+00	0.035
26+00	42+00	0.050

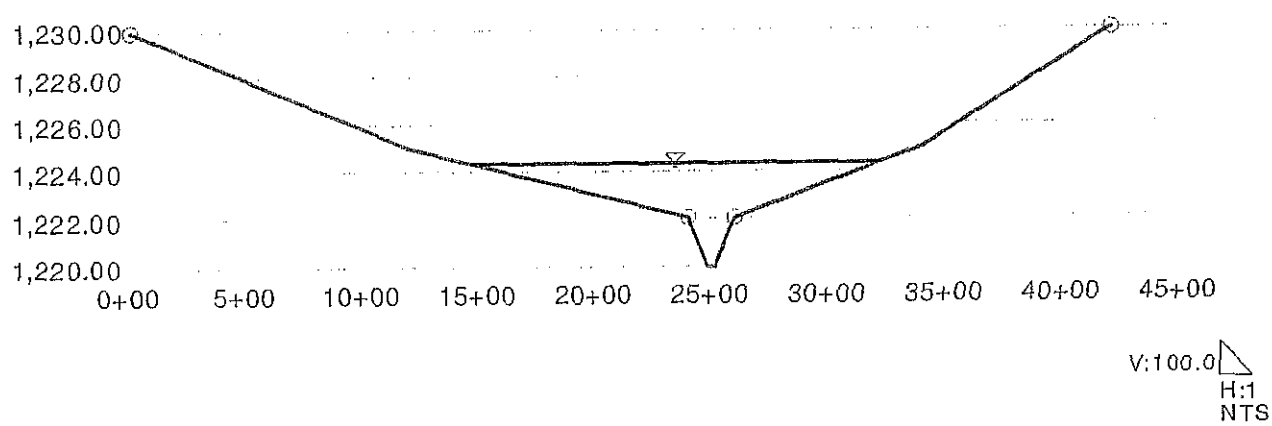
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
12+00	1,225.00
24+00	1,222.00
24+80	1,220.00
25+20	1,220.00
26+00	1,222.00
34+00	1,225.00
42+00	1,230.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.003800	ft/ft
Water Surface Elevation	1,224.33	ft
Elevation Range	1,220.00 to 1,230.00	
Discharge	6,078.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002900	ft/ft
Discharge	906.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,286.70	ft
Elevation Range	1,285.00 to 1,295.00	
Flow Area	410.5	ft²
Wetted Perimeter	432.69	ft
Top Width	432.68	ft
Actual Depth	1.70	ft
Critical Elevation	1,286.12	ft
Critical Slope	0.020571	ft/ft
Velocity	2.21	ft/s
Velocity Head	0.08	ft
Specific Energy	1,286.78	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	24+00	0.050
24+00	29+00	0.035
29+00	45+00	0.050

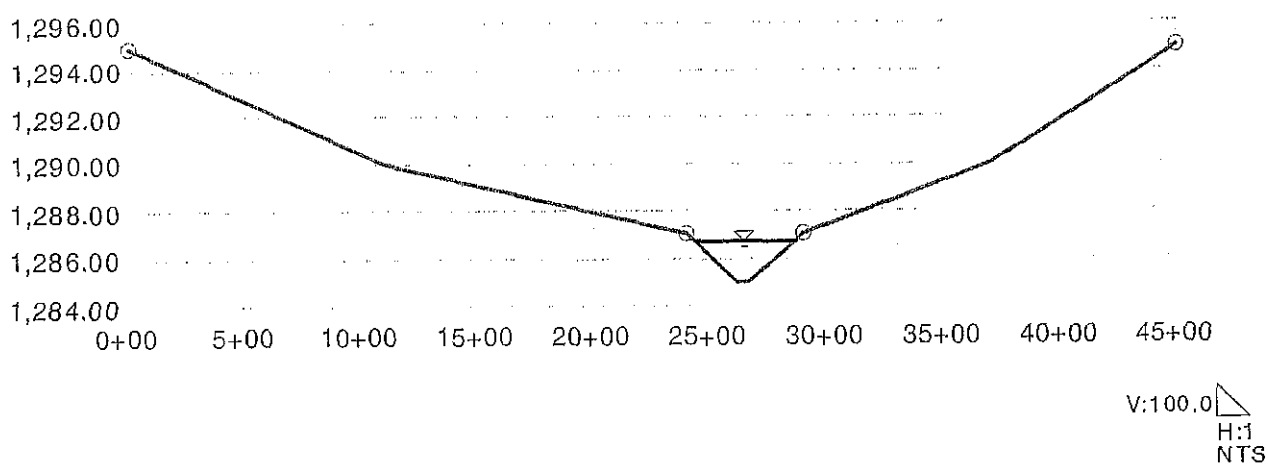
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
11+00	1,290.00
24+00	1,287.00
26+25	1,285.00
26+75	1,285.00
29+00	1,287.00
37+00	1,290.00
45+00	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	*0.002900*	*ft/ft*
Water Surface Elevation	1,286.70	ft
Elevation Range	1,285.00 to 1,295.00	
Discharge	906.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	2,025.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.043	
Water Surface Elevation	1,277.81	ft
Elevation Range	1,275.00 to 1,285.00	
Flow Area	925.4	ft²
Wetted Perimeter	803.37	ft
Top Width	803.35	ft
Actual Depth	2.81	ft
Critical Elevation	1,276.79	ft
Critical Slope	0.026846	ft/ft
Velocity	2.19	ft/s
Velocity Head	0.07	ft
Specific Energy	1,277.88	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	21+00	0.050
21+00	25+00	0.035
25+00	37+00	0.050

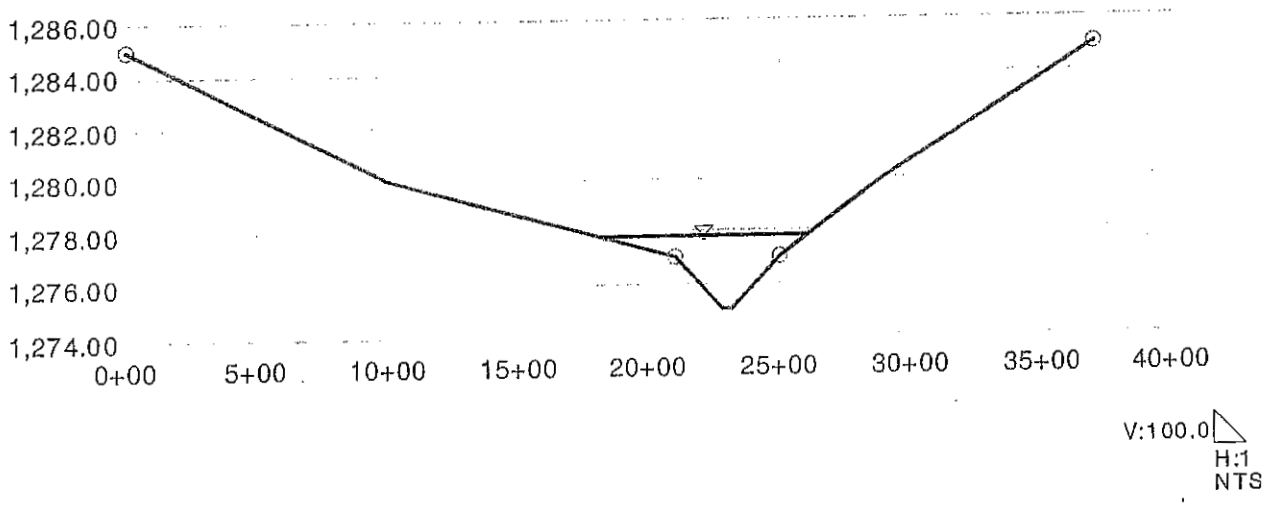
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,285.00
10+00	1,280.00
21+00	1,277.00
22+80	1,275.00
23+20	1,275.00
25+00	1,277.00
29+00	1,280.00
37+00	1,285.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.043	
Slope	0.003300	ft/ft
Water Surface Elevation	1,277.81	ft
Elevation Range	1,275.00 to 1,285.00	
Discharge	2,025.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002800	ft/ft
Discharge	2,074.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.037	
Water Surface Elevation	1,272.65	ft
Elevation Range	1,270.00 to 1,274.00	
Flow Area	804.8	ft²
Wetted Perimeter	605.19	ft
Top Width	605.09	ft
Actual Depth	2.65	ft
Critical Elevation	1,271.80	ft
Critical Slope	0.019829	ft/ft
Velocity	2.58	ft/s
Velocity Head	0.10	ft
Specific Energy	1,272.75	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+10	0.050
1+10	5+10	0.035
5+10	6+19	0.050

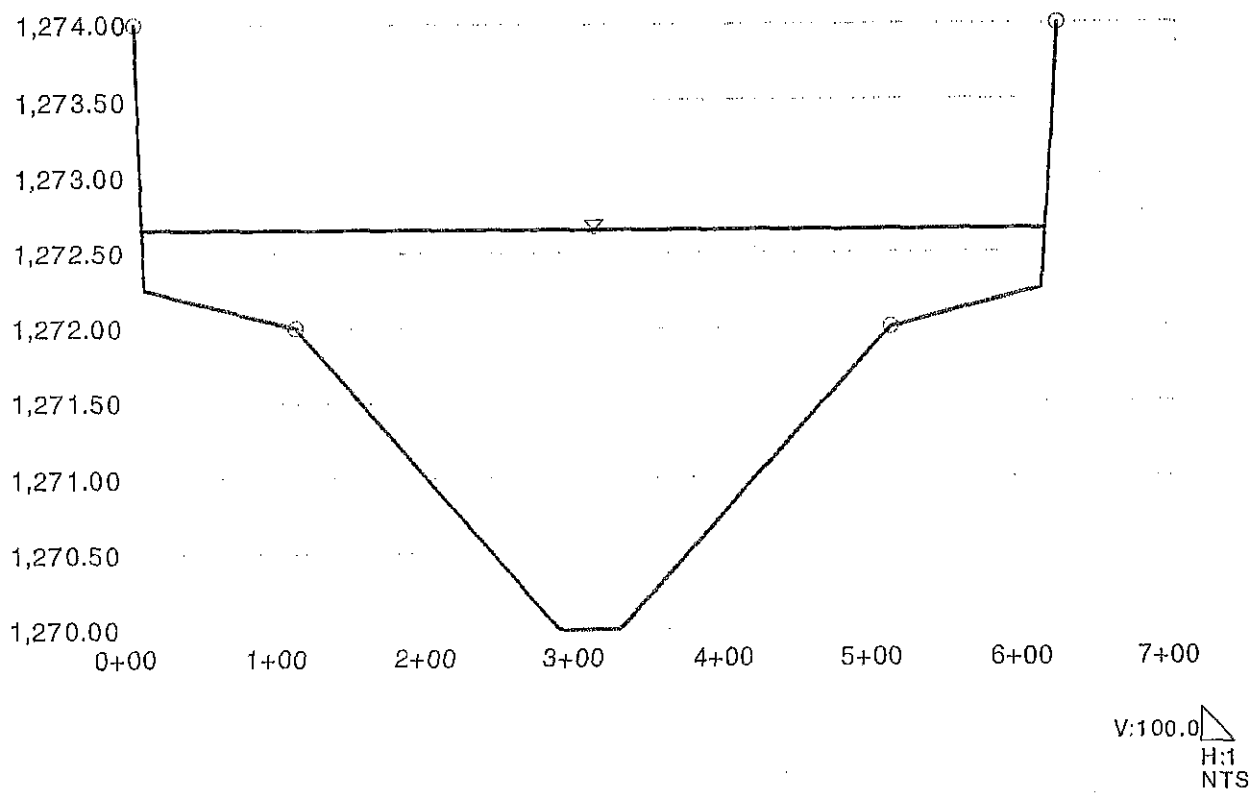
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,274.00
0+09	1,272.25
1+10	1,272.00
2+90	1,270.00
3+30	1,270.00
5+10	1,272.00
6+10	1,272.25
6+19	1,274.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.037	
Slope	0.002800	ft/ft
Water Surface Elevation	1,272.65	ft
Elevation Range	1,270.00 to 1,274.00	
Discharge	2,074.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	3,433.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,262.56	ft
Elevation Range	1,259.00 to 1,272.50	
Flow Area	1,585.5	ft²
Wetted Perimeter	1,067.06	ft
Top Width	1,067.03	ft
Actual Depth	3.56	ft
Critical Elevation	1,261.30	ft
Critical Slope	0.028210	ft/ft
Velocity	2.17	ft/s
Velocity Head	0.07	ft
Specific Energy	1,262.63	ft
Froude Number	0.31	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+10	0.050
15+10	19+10	0.035
19+10	34+30	0.050

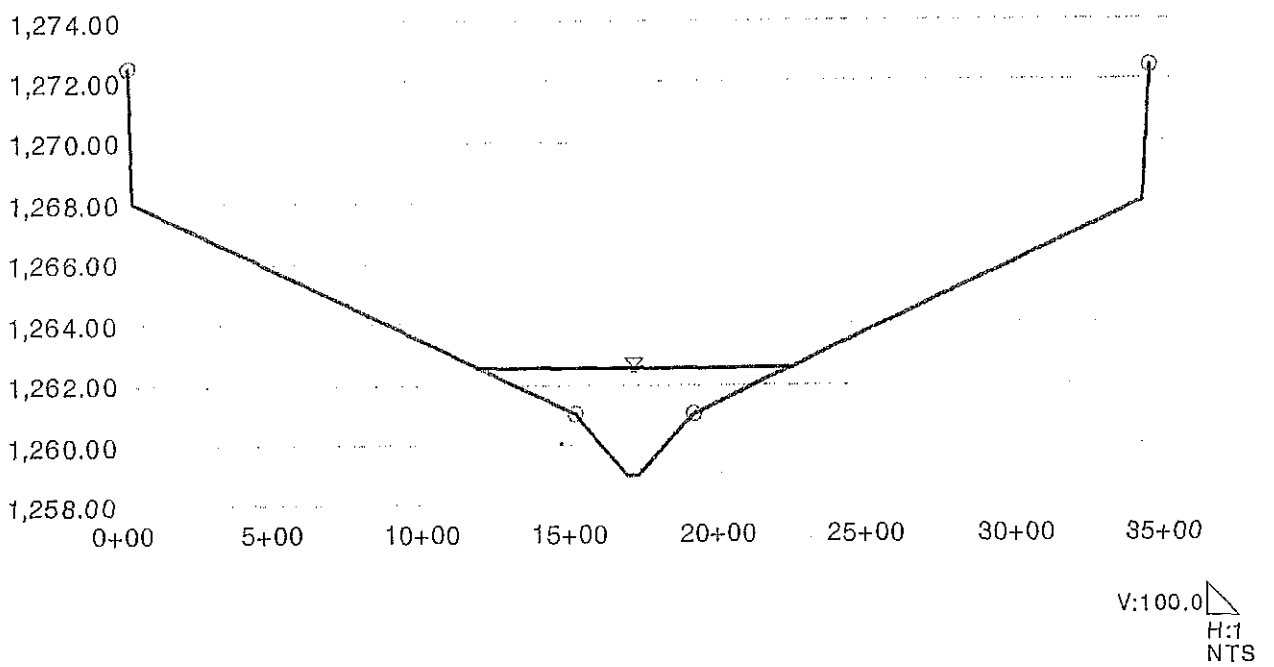
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,272.50
0+20	1,268.00
15+10	1,261.00
16+90	1,259.00
17+30	1,259.00
19+10	1,261.00
34+10	1,268.00
34+30	1,272.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.002500	ft/ft
Water Surface Elevation	1,262.56	ft
Elevation Range	1,259.00 to 1,272.50	
Discharge	3,433.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	3,651.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.040	
Water Surface Elevation	1,263.58	ft
Elevation Range	1,260.00 to 1,272.00	
Flow Area	1,290.6	ft²
Wetted Perimeter	675.02	ft
Top Width	674.96	ft
Actual Depth	3.58	ft
Critical Elevation	1,262.31	ft
Critical Slope	0.022072	ft/ft
Velocity	2.83	ft/s
Velocity Head	0.12	ft
Specific Energy	1,263.71	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	12+00	0.050
12+00	16+00	0.035
16+00	18+10	0.050

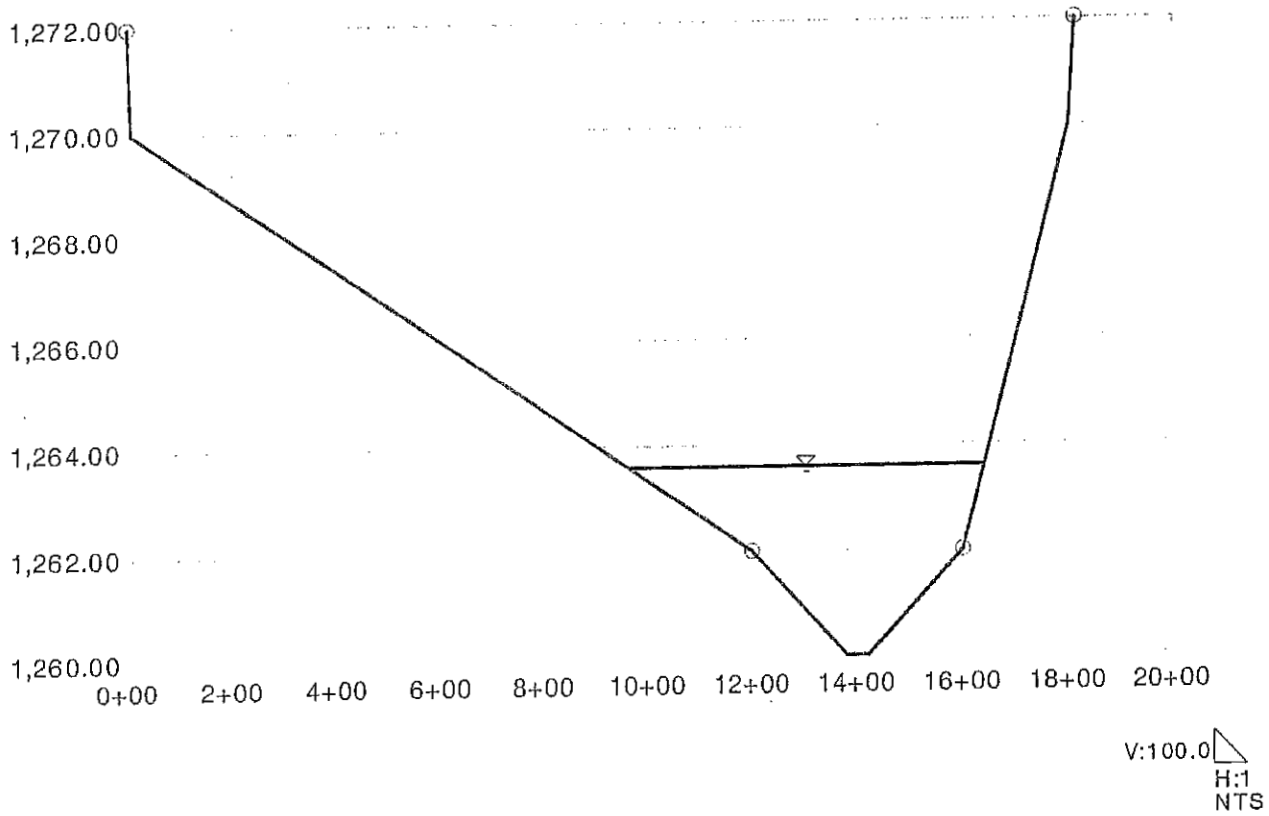
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,272.00
0+10	1,270.00
12+00	1,262.00
13+80	1,260.00
14+20	1,260.00
16+00	1,262.00
18+00	1,270.00
18+10	1,272.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.040	
Slope	0.002500	ft/ft
Water Surface Elevation	1,263.58	ft
Elevation Range	1,260.00 to 1,272.00	
Discharge	3,651.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	6,015.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,240.43	ft
Elevation Range	1,234.00 to 1,249.00	
Flow Area	2,328.0	ft²
Wetted Perimeter	1,069.26	ft
Top Width	1,068.98	ft
Actual Depth	6.43	ft
Critical Elevation	1,238.67	ft
Critical Slope	0.029841	ft/ft
Velocity	2.58	ft/s
Velocity Head	0.10	ft
Specific Energy	1,240.54	ft
Froude Number	0.31	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	25+00	0.050
25+00	26+30	0.035
26+30	30+18	0.050

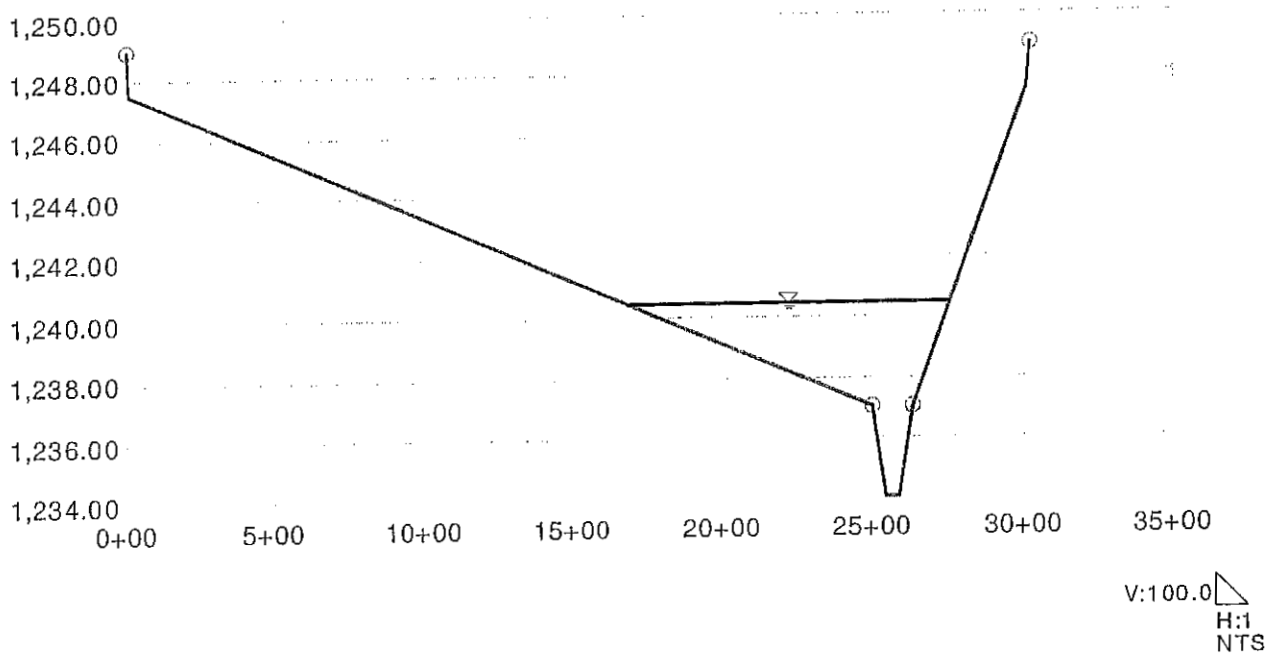
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,249.00
0+08	1,247.50
25+00	1,237.00
25+40	1,234.00
25+90	1,234.00
26+30	1,237.00
30+10	1,247.50
30+18	1,249.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.002500	ft/ft
Water Surface Elevation	1,240.43	ft
Elevation Range	1,234.00 to 1,249.00	
Discharge	6,015.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	5,989.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Methoı	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,234.59	ft
Elevation Range	1,230.00 to 1,245.50	
Flow Area	1,993.3	ft²
Wetted Perimeter	1,153.78	ft
Top Width	1,153.72	ft
Actual Depth	4.59	ft
Critical Elevation	1,233.48	ft
Critical Slope	0.016523	ft/ft
Velocity	3.00	ft/s
Velocity Head	0.14	ft
Specific Energy	1,234.73	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+10	0.050
20+10	22+10	0.035
22+10	42+70	0.050

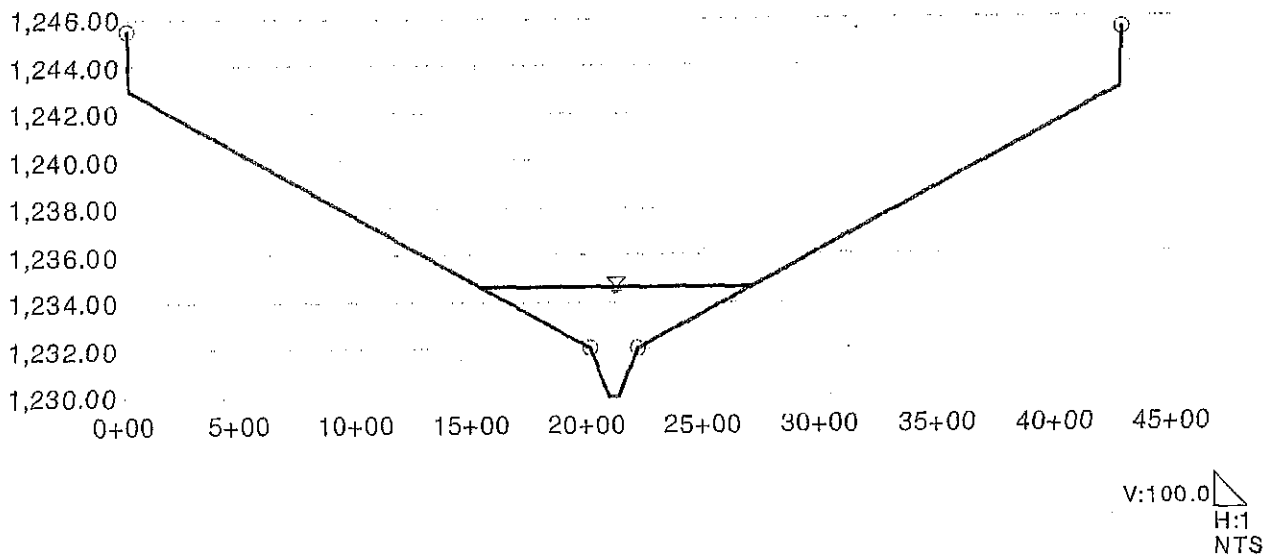
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,245.50
0+10	1,243.00
20+10	1,232.00
20+90	1,230.00
21+30	1,230.00
22+10	1,232.00
42+60	1,243.00
42+70	1,245.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.002700	ft/ft
Water Surface Elevation	1,234.59	ft
Elevation Range	1,230.00 to 1,245.50	
Discharge	5,989.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	6,860.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,208.98	ft
Elevation Range	1,204.00 to 1,210.00	
Flow Area	2,146.6	ft²
Wetted Perimeter	778.75	ft
Top Width	778.48	ft
Actual Depth	4.98	ft
Critical Elevation	1,207.26	ft
Critical Slope	0.020428	ft/ft
Velocity	3.20	ft/s
Velocity Head	0.16	ft
Specific Energy	1,209.14	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+40	0.050
0+40	5+30	0.035
5+30	7+89	0.050

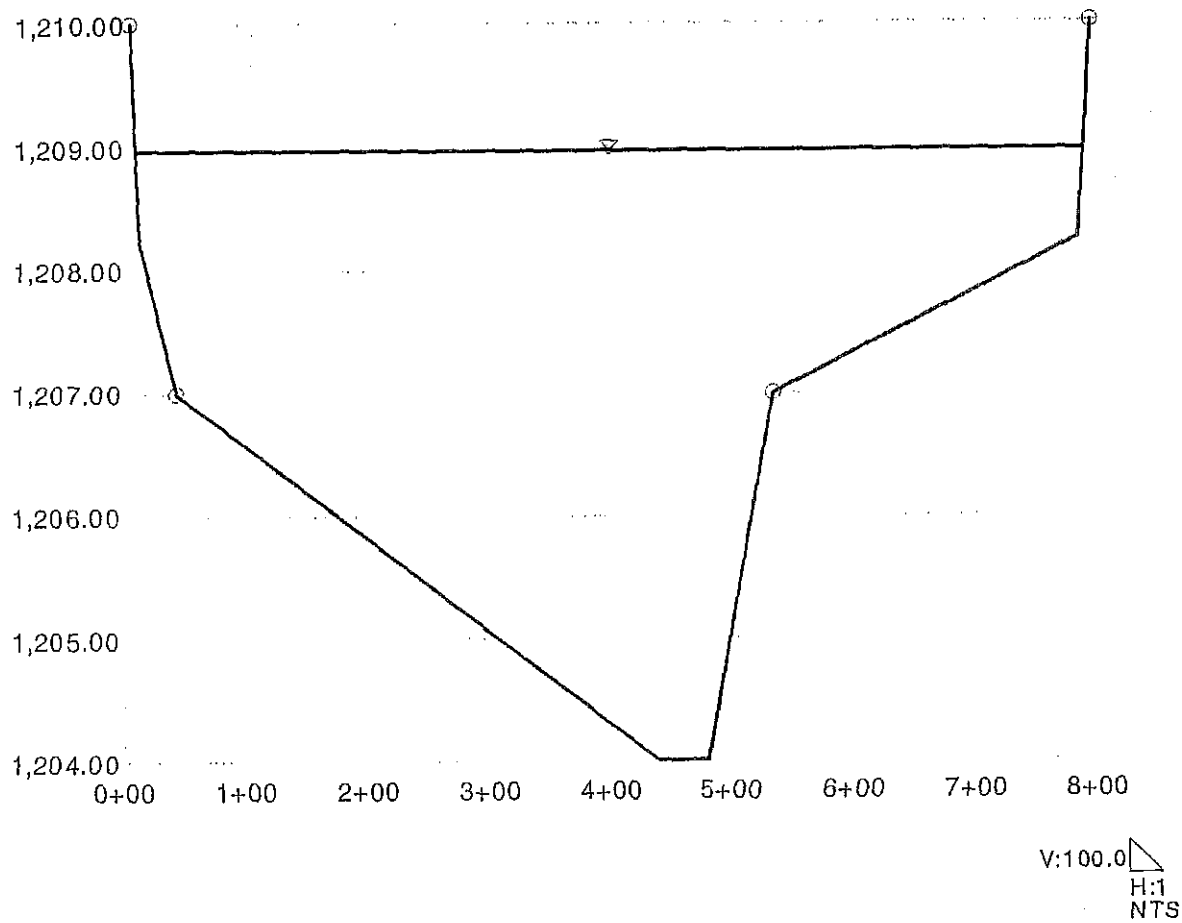
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,210.00
0+09	1,208.25
0+40	1,207.00
4+40	1,204.00
4+80	1,204.00
5+30	1,207.00
7+80	1,208.25
7+89	1,210.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.041	
Slope	0.002000	ft/ft
Water Surface Elevation	1,208.98	ft
Elevation Range	1,204.00 to 1,210.00	
Discharge	6,860.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	9,543.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.038	
Water Surface Elevation	1,187.59	ft
Elevation Range	1,180.00 to 1,198.00	
Flow Area	2,718.8	ft²
Wetted Perimeter	1,303.17	ft
Top Width	1,302.35	ft
Actual Depth	7.59	ft
Critical Elevation	1,186.33	ft
Critical Slope	0.018082	ft/ft
Velocity	3.51	ft/s
Velocity Head	0.19	ft
Specific Energy	1,187.78	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+20	0.050
20+20	21+00	0.035
21+00	41+90	0.050

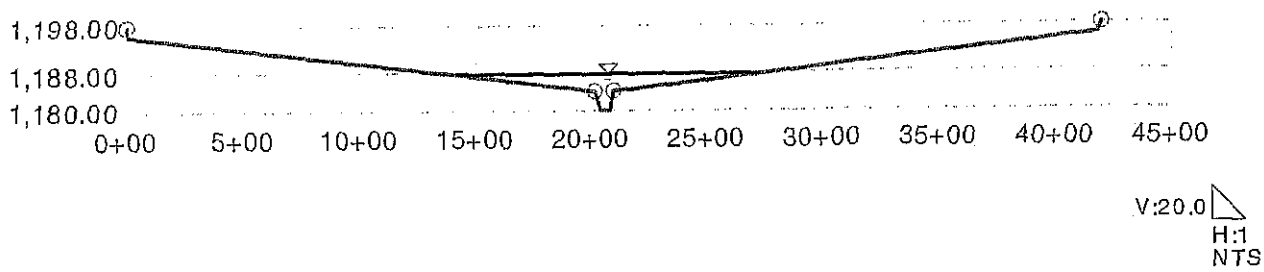
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,198.00
0+10	1,196.00
20+20	1,184.00
20+40	1,180.00
20+80	1,180.00
21+00	1,184.00
41+80	1,196.00
41+90	1,198.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG33
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.038	
Slope	0.003000	ft/ft
Water Surface Elevation	1,187.59	ft
Elevation Range	1,180.00 to 1,198.00	
Discharge	9,543.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	11,315.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.040	
Water Surface Elevation	1,182.76	ft
Elevation Range	1,175.00 to 1,192.50	
Flow Area	3,479.7	ft²
Wetted Perimeter	1,273.65	ft
Top Width	1,273.32	ft
Actual Depth	7.76	ft
Critical Elevation	1,180.81	ft
Critical Slope	0.018948	ft/ft
Velocity	3.25	ft/s
Velocity Head	0.16	ft
Specific Energy	1,182.93	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+40	0.050
15+40	16+40	0.035
16+40	32+00	0.050

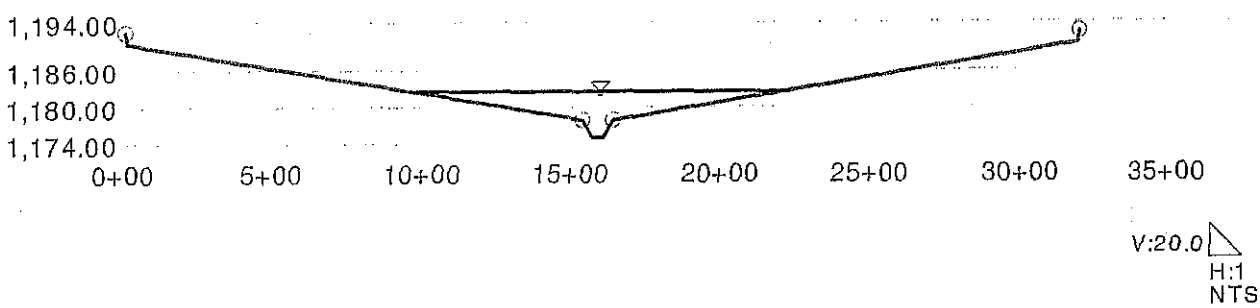
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,192.50
0+10	1,190.50
15+40	1,178.00
15+70	1,175.00
16+10	1,175.00
16+40	1,178.00
31+90	1,190.50
32+00	1,192.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.040	
Slope	0.002000	ft/ft
Water Surface Elevation	1,182.76	ft
Elevation Range	1,175.00 to 1,192.50	
Discharge	11,315.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	11,209.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	1,174.47	ft
Elevation Range	1,166.00 to 1,185.50	
Flow Area	3,142.6	ft²
Wetted Perimeter	1,149.75	ft
Top Width	1,149.13	ft
Actual Depth	8.47	ft
Critical Elevation	1,172.61	ft
Critical Slope	0.015449	ft/ft
Velocity	3.57	ft/s
Velocity Head	0.20	ft
Specific Energy	1,174.67	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+90	0.050
15+90	17+00	0.035
17+00	32+70	0.050

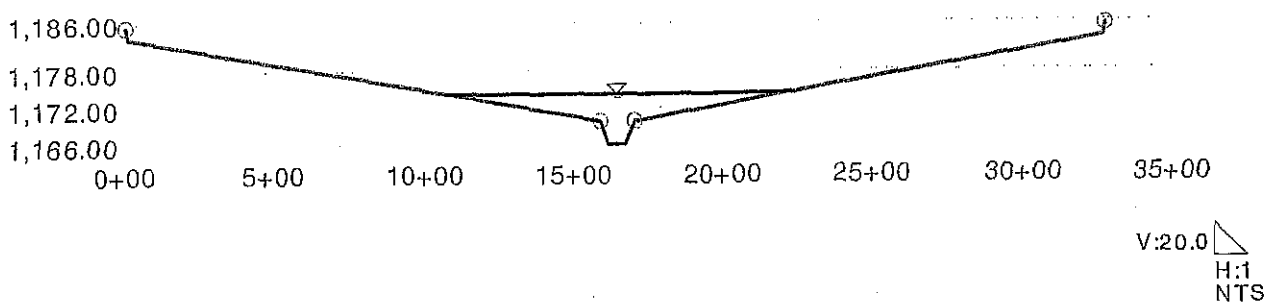
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,185.50
0+10	1,183.50
15+90	1,170.00
16+15	1,166.00
16+70	1,166.00
17+00	1,170.00
32+60	1,183.50
32+70	1,185.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.002000	ft/ft
Water Surface Elevation	1,174.47	ft
Elevation Range	1,166.00 to 1,185.50	
Discharge	11,209.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG38
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	11,084.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,164.49	ft
Elevation Range	1,156.00 to 1,172.00	
Flow Area	3,820.7	ft^2
Wetted Perimeter	1,555.60	ft
Top Width	1,554.03	ft
Actual Depth	8.49	ft
Critical Elevation	1,162.66	ft
Critical Slope	0.021604	ft/ft
Velocity	2.90	ft/s
Velocity Head	0.13	ft
Specific Energy	1,164.62	ft
Froude Number	0.33	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	17+10	0.050
17+10	17+70	0.035
17+70	34+10	0.050

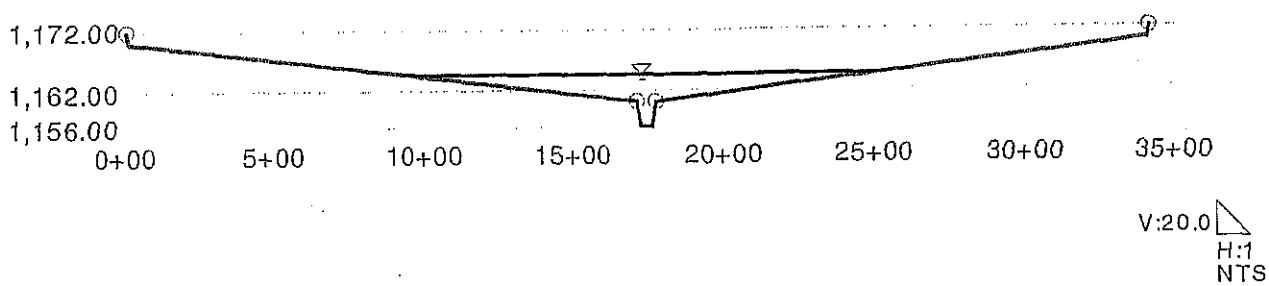
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,172.00
0+10	1,170.00
17+10	1,160.00
17+20	1,156.00
17+60	1,156.00
17+70	1,160.00
34+00	1,170.00
34+10	1,172.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	0.002000	ft/ft
Water Surface Elevation	1,164.49	ft
Elevation Range	1,156.00 to 1,172.00	
Discharge	11,084.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.001700	ft/ft
Discharge	13,162.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.037	
Water Surface Elevation	1,155.15	ft
Elevation Range	1,146.00 to 1,160.00	
Flow Area	3,775.3	ft²
Wetted Perimeter	1,214.86	ft
Top Width	1,214.26	ft
Actual Depth	9.15	ft
Critical Elevation	1,152.90	ft
Critical Slope	0.015831	ft/ft
Velocity	3.49	ft/s
Velocity Head	0.19	ft
Specific Energy	1,155.34	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+50	0.050
7+50	8+70	0.035
8+70	16+00	0.050

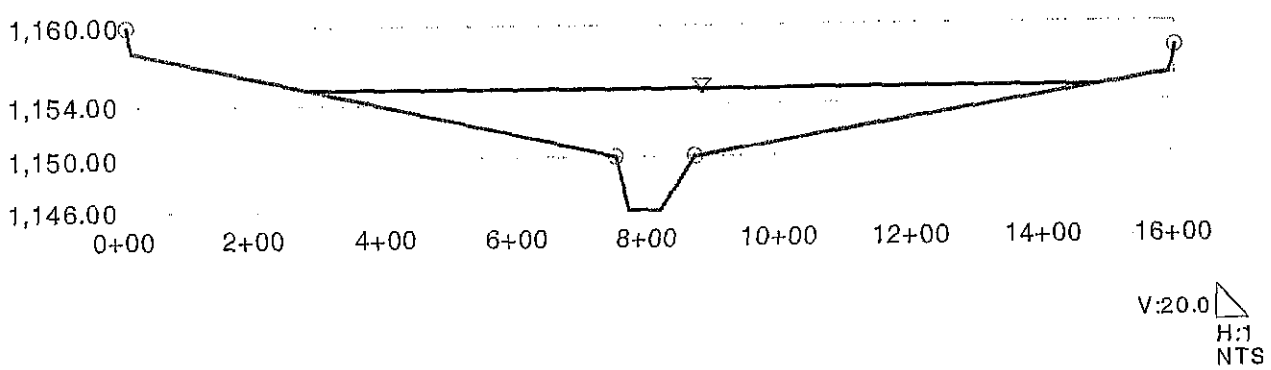
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,160.00
0+10	1,158.00
7+50	1,150.00
7+70	1,146.00
8+20	1,146.00
8+70	1,150.00
15+90	1,156.00
16+00	1,158.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.037	
Slope	0.001700	ft/ft
Water Surface Elevation	1,155.15	ft
Elevation Range	1,146.00 to 1,160.00	
Discharge	13,162.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	14,908.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.039	
Water Surface Elevation	1,137.32	ft
Elevation Range	1,130.00 to 1,155.00	
Flow Area	2,358.8	ft²
Wetted Perimeter	663.04	ft
Top Width	662.83	ft
Actual Depth	7.32	ft
Critical Elevation	1,135.79	ft
Critical Slope	0.014970	ft/ft
Velocity	6.32	ft/s
Velocity Head	0.62	ft
Specific Energy	1,137.94	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	22+00	0.050
22+00	25+80	0.035
25+80	52+00	0.050

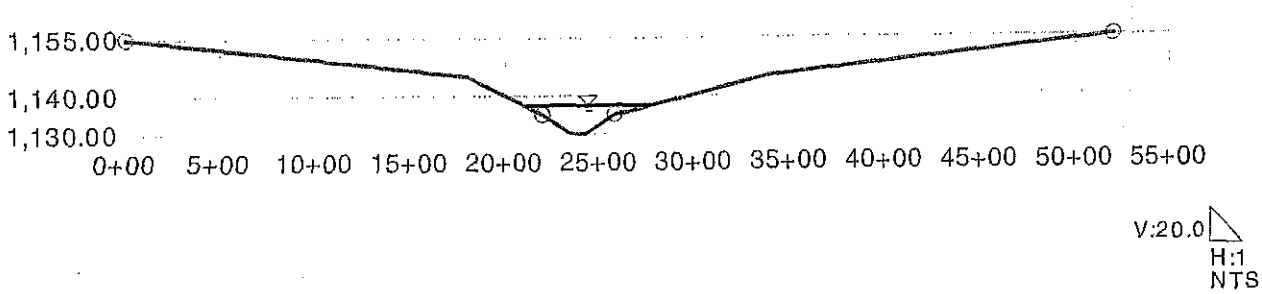
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,155.00
18+00	1,145.00
22+00	1,135.00
23+50	1,130.00
24+30	1,130.00
25+80	1,135.00
34+00	1,145.00
52+00	1,155.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.039	
Slope	0.005000	ft/ft
Water Surface Elevation	1,137.32	ft
Elevation Range	1,130.00 to 1,155.00	
Discharge	14,908.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH69
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	22,206.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,128.93	ft
Elevation Range	1,120.00 to 1,134.00	
Flow Area	4,367.1	ft²
Wetted Perimeter	1,351.58	ft
Top Width	1,351.30	ft
Actual Depth	8.93	ft
Critical Elevation	1,127.28	ft
Critical Slope	0.013086	ft/ft
Velocity	5.08	ft/s
Velocity Head	0.40	ft
Specific Energy	1,129.34	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
6+80	14+00	0.050
14+00	16+00	0.035
16+00	23+20	0.050

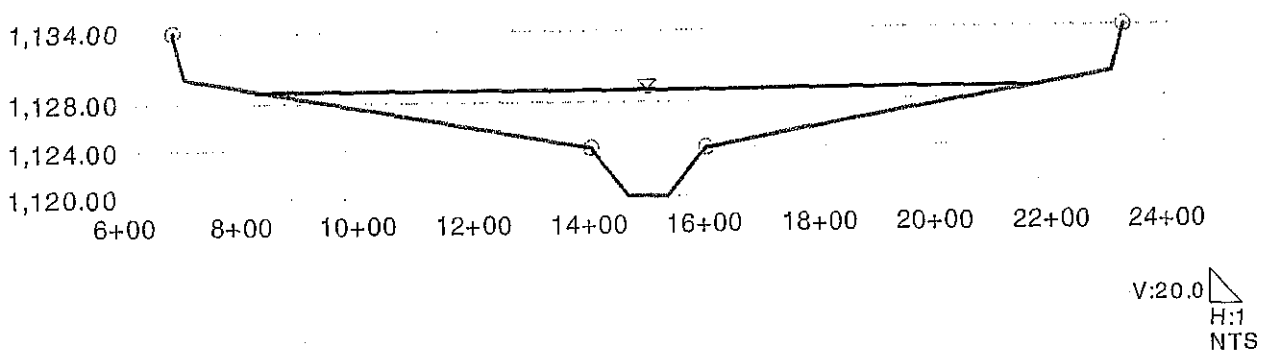
Natural Channel Points

Station (ft)	Elevation (ft)
6+80	1,134.00
7+00	1,130.00
14+00	1,124.00
14+65	1,120.00
15+35	1,120.00
16+00	1,124.00
23+00	1,130.00
23+20	1,134.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RCPH69*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003300	ft/ft
Water Surface Elevation	1,128.93	ft
Elevation Range	1,120.00 to 1,134.00	
Discharge	22,206.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH72
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	24,416.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,109.62	ft
Elevation Range	1,100.00 to 1,120.00	
Flow Area	7,035.1	ft²
Wetted Perimeter	2,419.65	ft
Top Width	2,419.30	ft
Actual Depth	9.62	ft
Critical Elevation	1,107.51	ft
Critical Slope	0.026903	ft/ft
Velocity	3.47	ft/s
Velocity Head	0.19	ft
Specific Energy	1,109.80	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	28+50	0.050
28+50	31+00	0.035
31+00	62+00	0.050

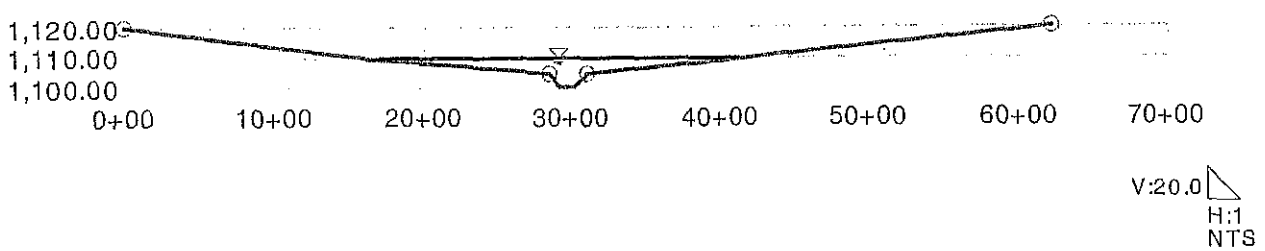
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,120.00
16+00	1,110.00
28+50	1,105.00
29+25	1,100.00
30+25	1,100.00
31+00	1,105.00
42+00	1,110.00
62+00	1,120.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH72
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003100	ft/ft
Water Surface Elevation	1,109.62	ft
Elevation Range	1,100.00 to 1,120.00	
Discharge	24,416.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH74
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	25,481.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,100.70	ft
Elevation Range	1,090.00 to 1,103.00	
Flow Area	4,699.1	ft²
Wetted Perimeter	1,123.69	ft
Top Width	1,123.21	ft
Actual Depth	10.70	ft
Critical Elevation	1,098.62	ft
Critical Slope	0.012346	ft/ft
Velocity	5.42	ft/s
Velocity Head	0.46	ft
Specific Energy	1,101.15	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
30+50	35+00	0.050
35+00	37+00	0.035
37+00	42+50	0.050

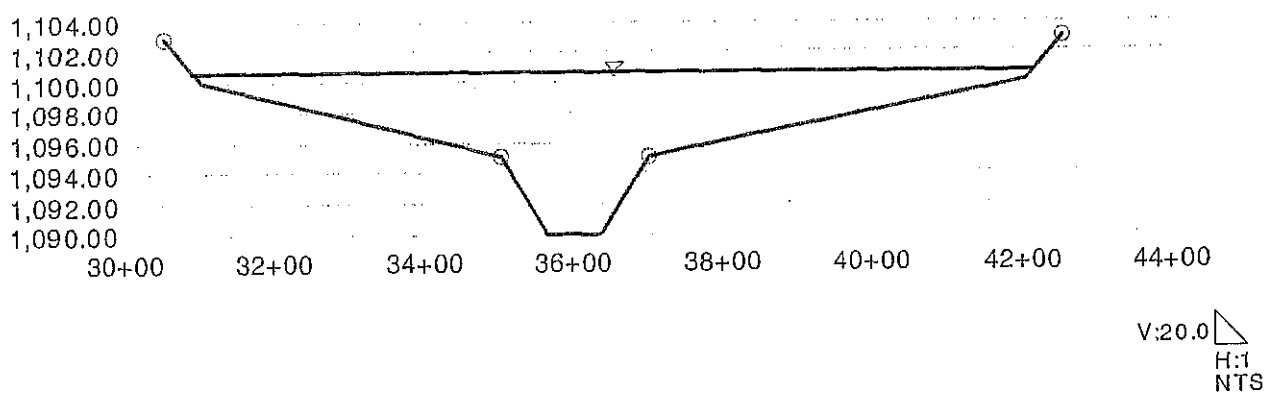
Natural Channel Points

Station (ft)	Elevation (ft)
30+50	1,103.00
31+00	1,100.00
35+00	1,095.00
35+65	1,090.00
36+35	1,090.00
37+00	1,095.00
42+00	1,100.00
42+50	1,103.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH74
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003100	ft/ft
Water Surface Elevation	1,100.70	ft
Elevation Range	1,090.00 to 1,103.00	
Discharge	25,481.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH77
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002800	ft/ft
Discharge	25,502.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,078.67	ft
Elevation Range	1,068.00 to 1,082.00	
Flow Area	6,078.6	ft²
Wetted Perimeter	1,586.46	ft
Top Width	1,586.07	ft
Actual Depth	10.67	ft
Critical Elevation	1,076.00	ft
Critical Slope	0.021769	ft/ft
Velocity	4.20	ft/s
Velocity Head	0.27	ft
Specific Energy	1,078.94	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
25+75	34+50	0.050
34+50	37+00	0.035
37+00	45+25	0.050

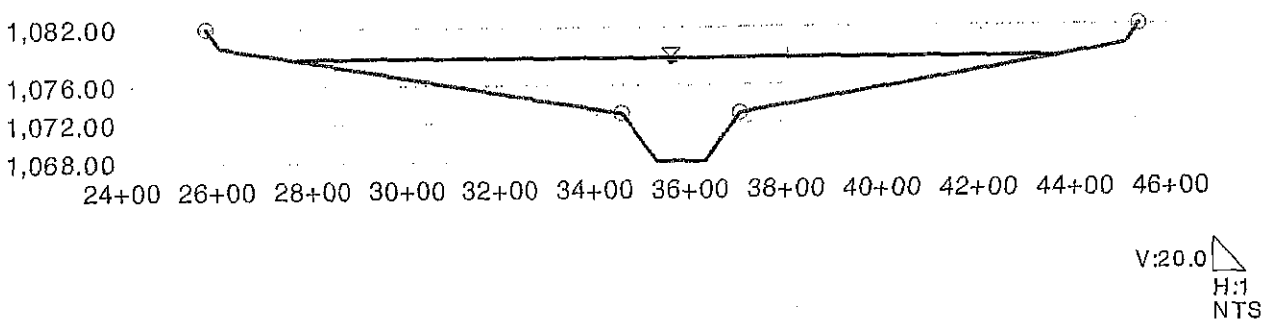
Natural Channel Points

Station (ft)	Elevation (ft)
25+75	1,082.00
26+00	1,080.00
34+50	1,073.00
35+25	1,068.00
36+25	1,068.00
37+00	1,073.00
45+00	1,080.00
45+25	1,082.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH77
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.046	
Slope	0.002800	ft/ft
Water Surface Elevation	1,078.67	ft
Elevation Range	1,068.00 to 1,082.00	
Discharge	25,502.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH80
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	27,864.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,073.58	ft
Elevation Range	1,065.00 to 1,080.00	
Flow Area	6,052.6	ft²
Wetted Perimeter	2,073.86	ft
Top Width	2,073.72	ft
Actual Depth	8.58	ft
Critical Elevation	1,071.89	ft
Critical Slope	0.023687	ft/ft
Velocity	4.60	ft/s
Velocity Head	0.33	ft
Specific Energy	1,073.91	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	29+00	0.050
29+00	34+00	0.035
34+00	49+00	0.050

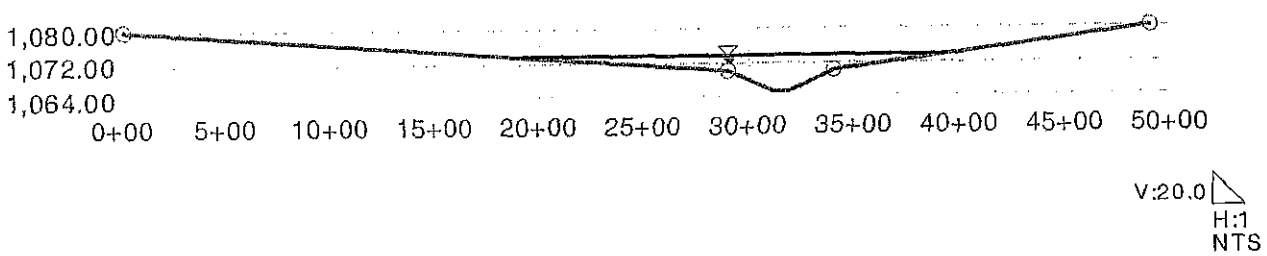
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,080.00
14+50	1,075.00
29+00	1,070.00
31+10	1,065.00
31+90	1,065.00
34+00	1,070.00
41+50	1,075.00
49+00	1,080.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH80
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005000	ft/ft
Water Surface Elevation	1,073.58	ft
Elevation Range	1,065.00 to 1,080.00	
Discharge	27,864.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH86
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	27,777.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,030.31	ft
Elevation Range	1,020.00 to 1,034.00	
Flow Area	7,777.1	ft²
Wetted Perimeter	2,475.80	ft
Top Width	2,475.39	ft
Actual Depth	10.31	ft
Critical Elevation	1,028.07	ft
Critical Slope	0.026839	ft/ft
Velocity	3.57	ft/s
Velocity Head	0.20	ft
Specific Energy	1,030.51	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
21+75	37+00	0.050
37+00	39+00	0.035
39+00	54+25	0.050

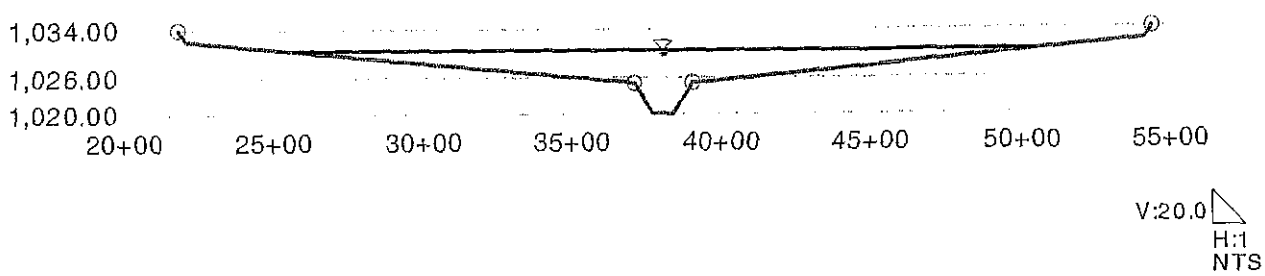
Natural Channel Points

Station (ft)	Elevation (ft)
21+75	1,034.00
22+00	1,032.00
37+00	1,025.00
37+65	1,020.00
38+35	1,020.00
39+00	1,025.00
54+00	1,032.00
54+25	1,034.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH86
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003000	ft/ft
Water Surface Elevation	1,030.31	ft
Elevation Range	1,020.00 to 1,034.00	
Discharge	27,777.00	cfs



Project Summary Report

Project Description	
Worksheet	*RCPI36*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	27,951.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,019.26	ft
Elevation Range	1,010.00 to 1,030.00	
Flow Area	8,688.6	ft²
Wetted Perimeter	3,218.52	ft
Top Width	3,218.23	ft
Actual Depth	9.26	ft
Critical Elevation	1,017.29	ft
Critical Slope	0.028497	ft/ft
Velocity	3.22	ft/s
Velocity Head	0.16	ft
Specific Energy	1,019.42	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	30+80	0.050
30+80	33+00	0.035
33+00	74+00	0.050

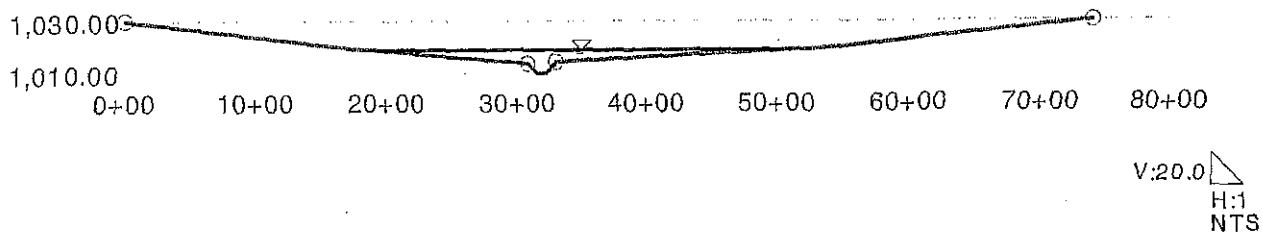
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,030.00
17+00	1,020.00
30+80	1,014.00
31+55	1,010.00
32+25	1,010.00
33+00	1,015.00
54+00	1,020.00
74+00	1,030.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003000	ft/ft
Water Surface Elevation	1,019.26	ft
Elevation Range	1,010.00 to 1,030.00	
Discharge	27,951.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	27,958.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	989.02	ft
Elevation Range	980.00 to 1,000.00	
Flow Area	9,466.7	ft²
Wetted Perimeter	4,069.59	ft
Top Width	4,069.27	ft
Actual Depth	9.02	ft
Critical Elevation	987.31	ft
Critical Slope	0.030156	ft/ft
Velocity	2.95	ft/s
Velocity Head	0.14	ft
Specific Energy	989.16	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	50+60	0.050
50+60	53+00	0.035
53+00	86+00	0.050

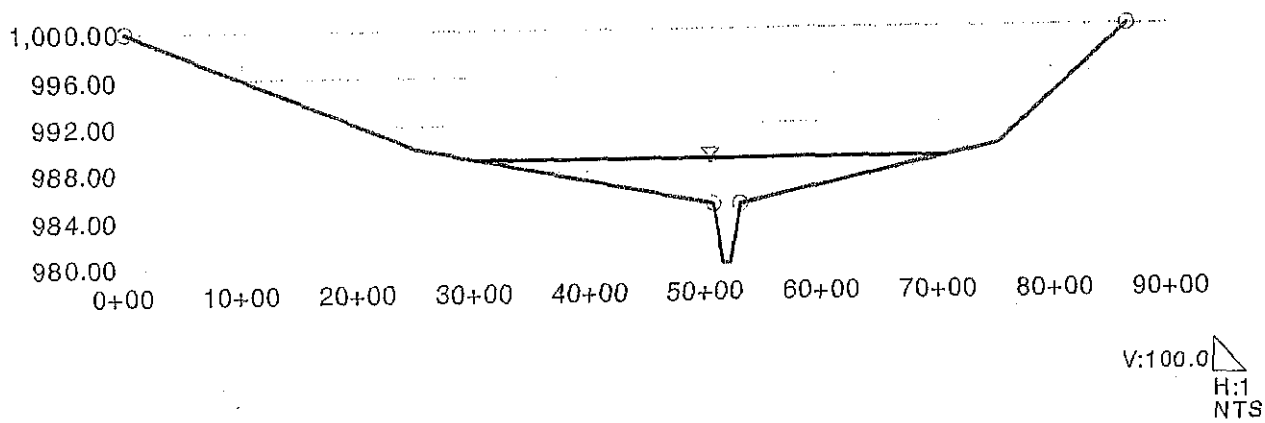
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,000.00
25+00	990.00
50+60	985.00
51+40	980.00
52+20	980.00
53+00	985.00
75+00	990.00
86+00	1,000.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003100	ft/ft
Water Surface Elevation	989.02	ft
Elevation Range	980.00 to 1,000.00	
Discharge	27,958.00	cfs



Project Summary Report

Project Description	
Worksheet	RCP150
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004700	ft/ft
Discharge	27,803.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	978.49	ft
Elevation Range	968.00 to 984.00	
Flow Area	5,431.6	ft²
Wetted Perimeter	1,496.03	ft
Top Width	1,495.65	ft
Actual Depth	10.49	ft
Critical Elevation	976.50	ft
Critical Slope	0.022797	ft/ft
Velocity	5.12	ft/s
Velocity Head	0.41	ft
Specific Energy	978.89	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.050
13+00	15+20	0.035
15+20	21+60	0.050

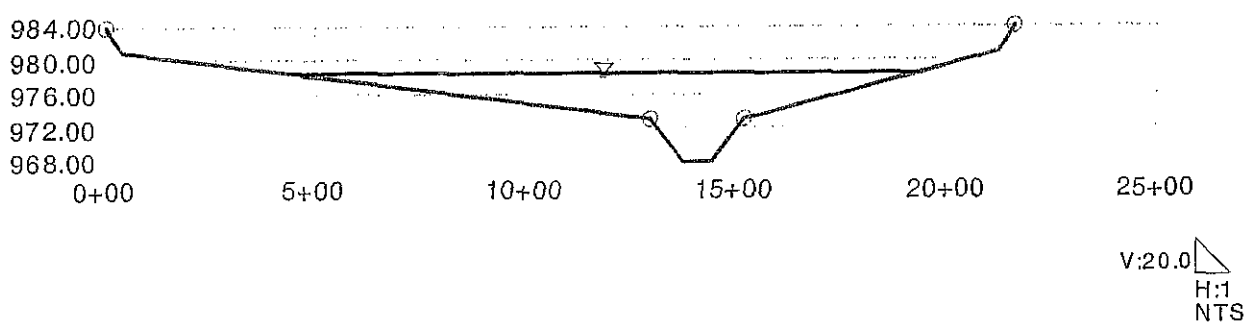
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	984.00
0+40	981.00
13+00	973.00
13+75	968.00
14+45	968.00
15+20	973.00
21+20	981.00
21+60	984.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI50
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004700	ft/ft
Water Surface Elevation	978.49	ft
Elevation Range	968.00 to 984.00	
Discharge	27,803.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003200	ft/ft
Discharge	27,666.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	950.67	ft
Elevation Range	940.00 to 955.00	
Flow Area	6,020.7	ft²
Wetted Perimeter	1,635.24	ft
Top Width	1,634.86	ft
Actual Depth	10.67	ft
Critical Elevation	948.39	ft
Critical Slope	0.024043	ft/ft
Velocity	4.60	ft/s
Velocity Head	0.33	ft
Specific Energy	951.00	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+10	0.050
10+10	12+35	0.035
12+35	22+55	0.050

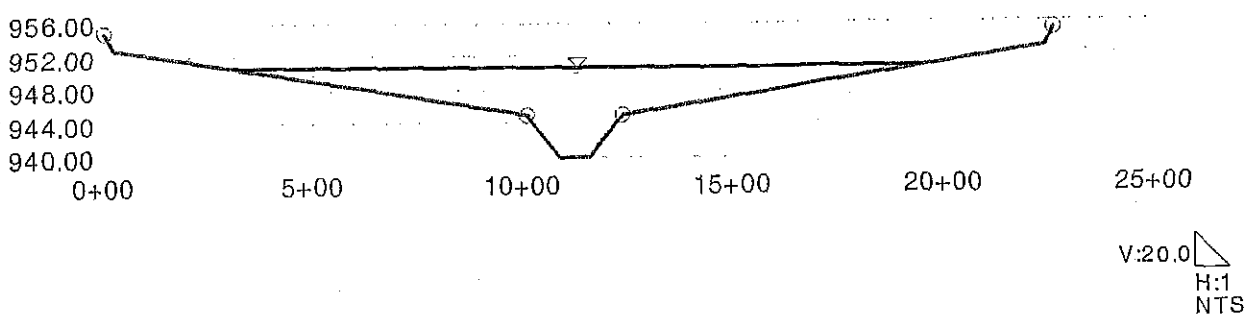
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	955.00
0+20	953.00
10+10	945.00
10+85	940.00
11+60	940.00
12+35	945.00
22+35	953.00
22+55	955.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.003200	ft/ft
Water Surface Elevation	950.67	ft
Elevation Range	940.00 to 955.00	
Discharge	27,666.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004600	ft/ft
Discharge	28,493.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	934.86	ft
Elevation Range	928.00 to 940.00	
Flow Area	5,458.1	ft²
Wetted Perimeter	1,608.45	ft
Top Width	1,608.37	ft
Actual Depth	6.86	ft
Critical Elevation	933.18	ft
Critical Slope	0.022887	ft/ft
Velocity	5.22	ft/s
Velocity Head	0.42	ft
Specific Energy	935.28	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.050
10+00	14+00	0.035
14+00	24+10	0.050

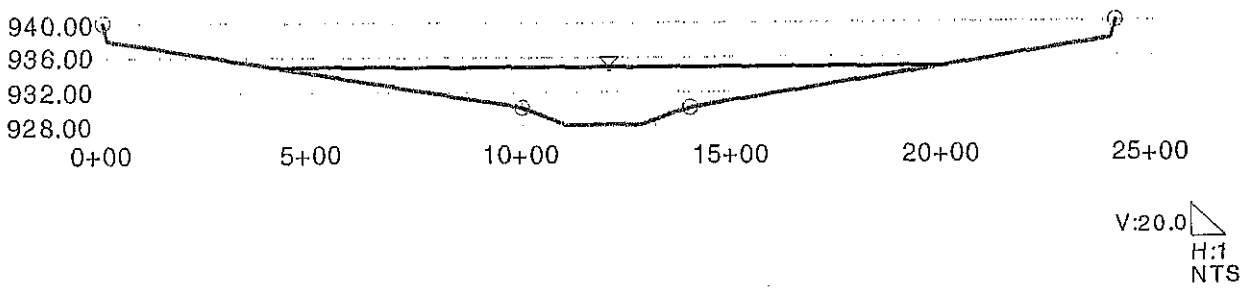
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	940.00
0+10	938.00
10+00	930.00
11+00	928.00
12+80	928.00
14+00	930.00
24+00	938.00
24+10	940.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004600	ft/ft
Water Surface Elevation	934.86	ft
Elevation Range	928.00 to 940.00	
Discharge	28,493.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003200	ft/ft
Discharge	27,960.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,049.16	ft
Elevation Range	1,040.00 to 1,060.00	
Flow Area	8,979.9	ft²
Wetted Perimeter	3,728.47	ft
Top Width	3,728.23	ft
Actual Depth	9.16	ft
Critical Elevation	1,047.32	ft
Critical Slope	0.028214	ft/ft
Velocity	3.11	ft/s
Velocity Head	0.15	ft
Specific Energy	1,049.31	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	37+00	0.050
37+00	41+00	0.035
41+00	83+00	0.050

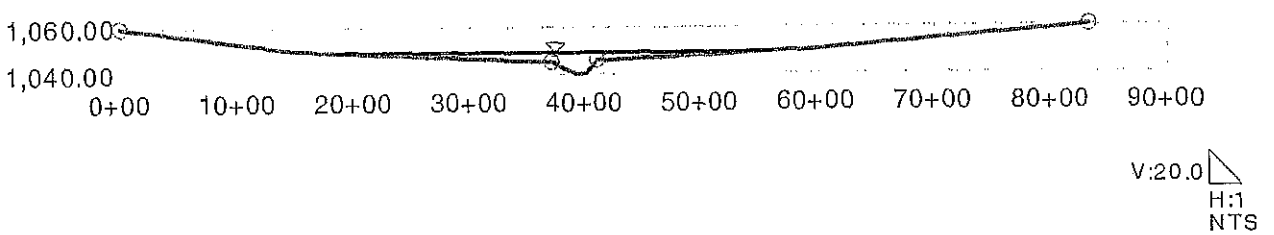
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,060.00
15+00	1,050.00
37+00	1,045.00
39+20	1,040.00
40+00	1,040.00
41+00	1,046.00
60+00	1,050.00
83+00	1,060.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003200	ft/ft
Water Surface Elevation	1,049.16	ft
Elevation Range	*1,040.00 to 1,060.00*	
Discharge	27,960.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002400	ft/ft
Discharge	28,001.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,029.73	ft
Elevation Range	1,020.00 to 1,040.00	
Flow Area	9,328.6	ft²
Wetted Perimeter	3,317.07	ft
Top Width	3,316.84	ft
Actual Depth	9.73	ft
Critical Elevation	1,027.41	ft
Critical Slope	0.026950	ft/ft
Velocity	3.00	ft/s
Velocity Head	0.14	ft
Specific Energy	1,029.87	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	33+00	0.050
33+00	37+00	0.035
37+00	72+00	0.050

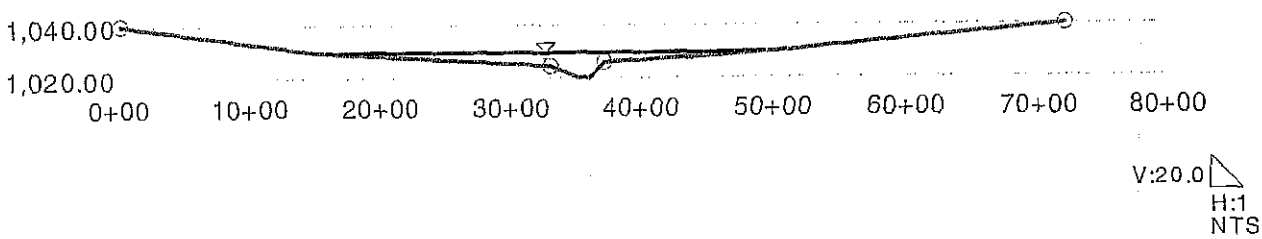
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,040.00
15+00	1,030.00
33+00	1,025.00
35+00	1,020.00
35+80	1,020.00
37+00	1,026.00
50+00	1,030.00
72+00	1,040.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.002400	ft/ft
Water Surface Elevation	1,029.73	ft
Elevation Range	1,020.00 to 1,040.00	
Discharge	28,001.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	27,938.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,018.23	ft
Elevation Range	1,010.00 to 1,030.00	
Flow Area	9,333.2	ft²
Wetted Perimeter	4,185.56	ft
Top Width	4,185.40	ft
Actual Depth	8.23	ft
Critical Elevation	1,016.57	ft
Critical Slope	0.029401	ft/ft
Velocity	2.99	ft/s
Velocity Head	0.14	ft
Specific Energy	1,018.37	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	35+00	0.050
35+00	39+00	0.035
39+00	102+00	0.050

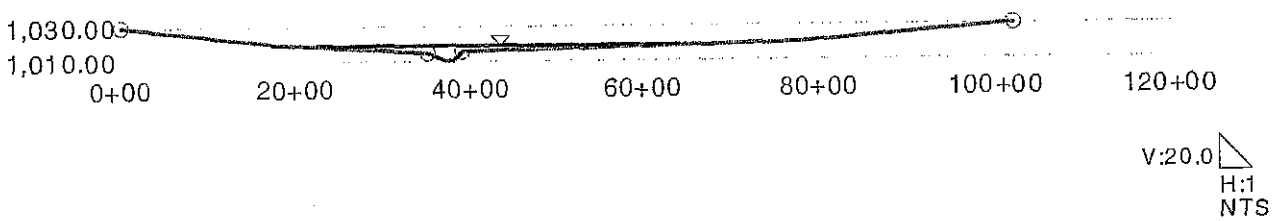
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,030.00
17+00	1,020.00
35+00	1,014.00
37+00	1,010.00
37+80	1,010.00
39+00	1,015.00
78+00	1,020.00
102+00	1,030.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003300	ft/ft
Water Surface Elevation	1,018.23	ft
Elevation Range	1,010.00 to 1,030.00	
Discharge	27,938.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002900	ft/ft
Discharge	27,780.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	982.70	ft
Elevation Range	975.00 to 990.00	
Flow Area	7,595.7	ft²
Wetted Perimeter	2,551.71	ft
Top Width	2,551.61	ft
Actual Depth	7.70	ft
Critical Elevation	980.57	ft
Critical Slope	0.022914	ft/ft
Velocity	3.66	ft/s
Velocity Head	0.21	ft
Specific Energy	982.91	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	39+00	0.050
39+00	45+50	0.035
45+50	62+00	0.050

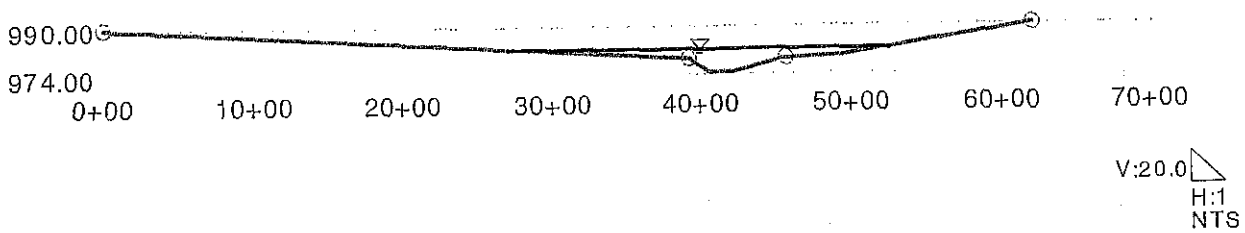
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	990.00
37+00	980.00
39+00	979.00
40+50	975.00
42+00	975.00
45+50	979.00
49+00	980.00
62+00	990.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.002900	ft/ft
Water Surface Elevation	982.70	ft
Elevation Range	975.00 to 990.00	
Discharge	27,780.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	27,905.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	953.98	ft
Elevation Range	945.00 to 970.00	
Flow Area	7,810.5	ft²
Wetted Perimeter	2,609.11	ft
Top Width	2,608.95	ft
Actual Depth	8.98	ft
Critical Elevation	951.70	ft
Critical Slope	0.024673	ft/ft
Velocity	3.57	ft/s
Velocity Head	0.20	ft
Specific Energy	954.18	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	28+00	0.050
28+00	33+00	0.035
33+00	85+00	0.050

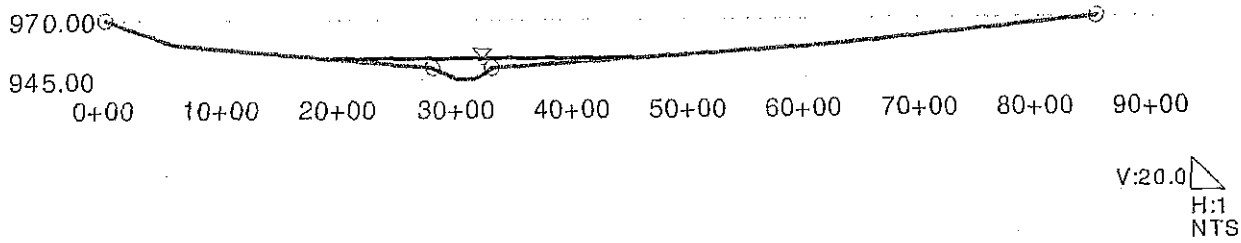
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	970.00
6+00	960.00
28+00	950.00
30+00	945.00
31+50	945.00
33+00	950.00
64+00	960.00
85+00	970.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003000	ft/ft
Water Surface Elevation	953.98	ft
Elevation Range	945.00 to 970.00	
Discharge	27,905.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005700	ft/ft
Discharge	28,424.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	947.10	ft
Elevation Range	940.00 to 952.00	
Flow Area	6,035.5	ft²
Wetted Perimeter	2,150.45	ft
Top Width	2,150.36	ft
Actual Depth	7.10	ft
Critical Elevation	945.65	ft
Critical Slope	0.025165	ft/ft
Velocity	4.71	ft/s
Velocity Head	0.34	ft
Specific Energy	947.44	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+00	0.050
15+00	19+00	0.035
19+00	34+10	0.050

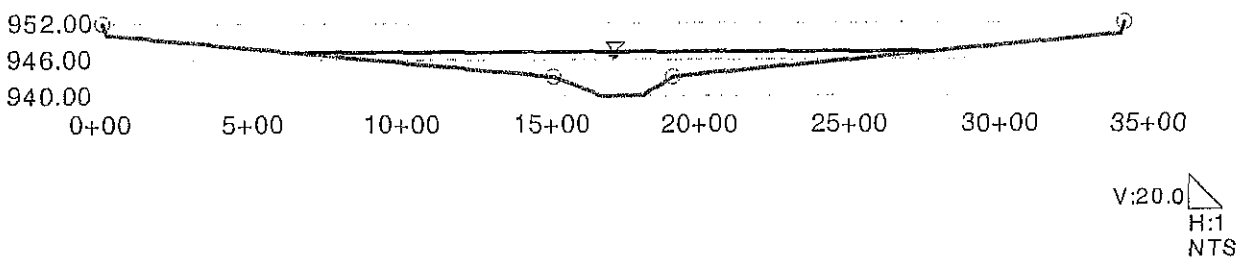
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	952.00
0+10	950.00
15+00	943.00
16+60	940.00
18+00	940.00
19+00	943.00
34+00	950.00
34+10	952.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005700	ft/ft
Water Surface Elevation	947.10	ft
Elevation Range	940.00 to 952.00	
Discharge	28,424.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA56
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004600	ft/ft
Discharge	28,480.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	936.86	ft
Elevation Range	930.00 to 942.00	
Flow Area	5,458.1	ft²
Wetted Perimeter	1,608.45	ft
Top Width	1,608.37	ft
Actual Depth	6.86	ft
Critical Elevation	935.18	ft
Critical Slope	0.022888	ft/ft
Velocity	5.22	ft/s
Velocity Head	0.42	ft
Specific Energy	937.28	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.050
10+00	14+00	0.035
14+00	24+10	0.050

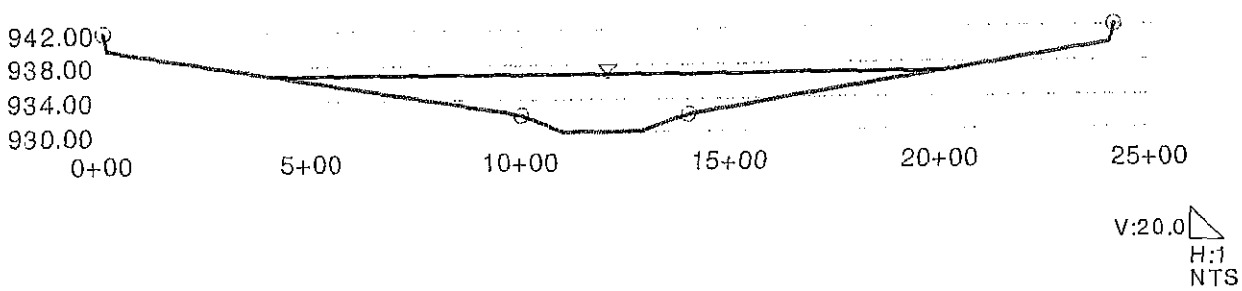
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	942.00
0+10	940.00
10+00	932.00
11+00	930.00
12+80	930.00
14+00	932.00
24+00	940.00
24+10	942.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA56
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004600	ft/ft
Water Surface Elevation	936.86	ft
Elevation Range	930.00 to 942.00	
Discharge	28,480.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA57
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.001900	ft/ft
Discharge	28,206.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	905.68	ft
Elevation Range	894.00 to 920.00	
Flow Area	6,490.0	ft²
Wetted Perimeter	1,252.32	ft
Top Width	1,251.80	ft
Actual Depth	11.68	ft
Critical Elevation	901.31	ft
Critical Slope	0.018133	ft/ft
Velocity	4.35	ft/s
Velocity Head	0.29	ft
Specific Energy	905.97	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	6+00	0.050
6+00	10+00	0.035
10+00	35+00	0.050

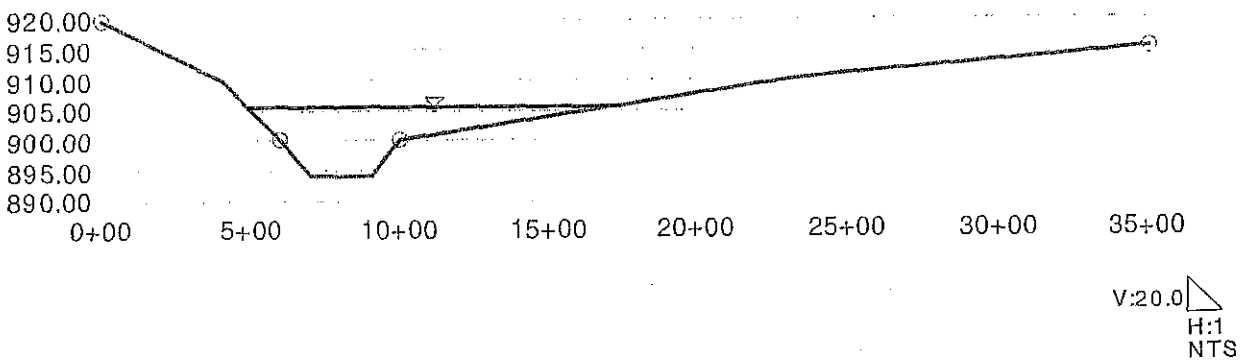
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	920.00
4+00	910.00
6+00	900.00
7+00	894.00
9+00	894.00
10+00	900.00
23+00	910.00
35+00	915.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA57
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.001900	ft/ft
Water Surface Elevation	905.68	ft
Elevation Range	894.00 to 920.00	
Discharge	28,206.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPA60
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	28,117.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	883.98	ft
Elevation Range	878.00 to 895.00	
Flow Area	4,027.0	ft²
Wetted Perimeter	1,169.74	ft
Top Width	1,169.65	ft
Actual Depth	5.98	ft
Critical Elevation	883.04	ft
Critical Slope	0.013406	ft/ft
Velocity	6.98	ft/s
Velocity Head	0.76	ft
Specific Energy	884.74	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.050
10+00	21+00	0.035
21+00	43+00	0.050

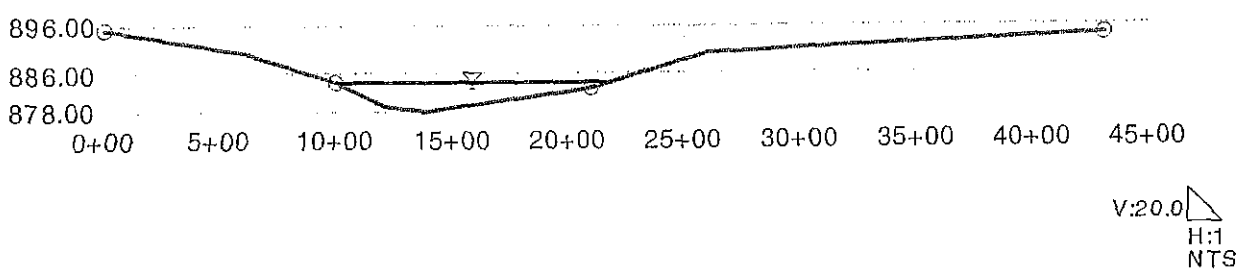
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	895.00
6+00	890.00
10+00	884.00
12+00	879.00
13+80	878.00
21+00	883.00
26+00	890.00
43+00	894.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPA60
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.005500	ft/ft
Water Surface Elevation	883.98	ft
Elevation Range	878.00 to 895.00	
Discharge	28,117.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	15,006.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.039	
Water Surface Elevation	1,132.34	ft
Elevation Range	1,125.00 to 1,150.00	
Flow Area	2,373.1	ft²
Wetted Perimeter	665.67	ft
Top Width	665.46	ft
Actual Depth	7.34	ft
Critical Elevation	1,130.81	ft
Critical Slope	0.014991	ft/ft
Velocity	6.32	ft/s
Velocity Head	0.62	ft
Specific Energy	1,132.96	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	22+00	0.050
22+00	25+80	0.035
25+80	52+00	0.050

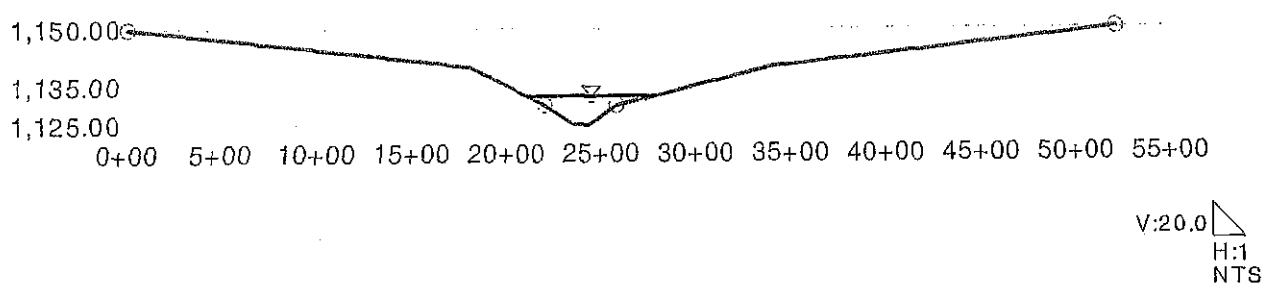
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,150.00
18+00	1,140.00
22+00	1,130.00
23+50	1,125.00
24+30	1,125.00
25+80	1,130.00
34+00	1,140.00
52+00	1,150.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.039	
Slope	0.005000	ft/ft
Water Surface Elevation	1,132.34	ft
Elevation Range	1,125.00 to 1,150.00	
Discharge	15,006.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002600	ft/ft
Discharge	21,005.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,130.03	ft
Elevation Range	1,122.00 to 1,132.00	
Flow Area	7,019.4	ft²
Wetted Perimeter	2,612.44	ft
Top Width	2,612.18	ft
Actual Depth	8.03	ft
Critical Elevation	1,128.23	ft
Critical Slope	0.030059	ft/ft
Velocity	2.99	ft/s
Velocity Head	0.14	ft
Specific Energy	1,130.17	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	16+00	0.050
16+00	18+00	0.035
18+00	34+00	0.050

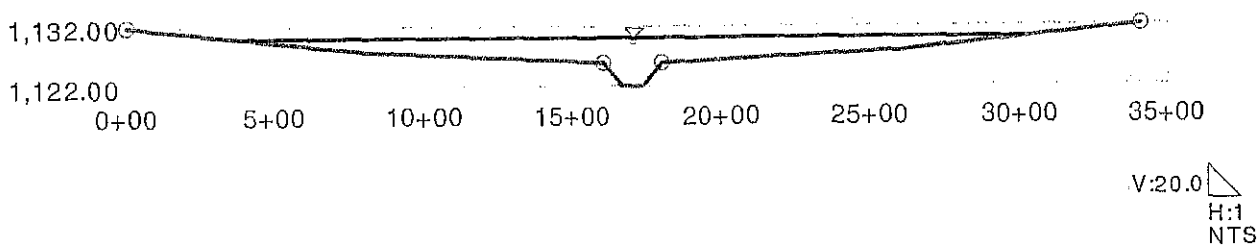
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,132.00
8+00	1,128.00
16+00	1,126.00
16+65	1,122.00
17+35	1,122.00
18+00	1,126.00
26+00	1,128.00
34+00	1,132.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.002600	ft/ft
Water Surface Elevation	1,130.03	ft
Elevation Range	1,122.00 to 1,132.00	
Discharge	21,005.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	21,743.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.043	
Water Surface Elevation	1,123.54	ft
Elevation Range	1,115.00 to 1,140.00	
Flow Area	4,262.3	ft²
Wetted Perimeter	1,378.49	ft
Top Width	1,378.30	ft
Actual Depth	8.54	ft
Critical Elevation	1,121.90	ft
Critical Slope	0.019853	ft/ft
Velocity	5.10	ft/s
Velocity Head	0.40	ft
Specific Energy	1,123.94	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	34+20	0.050
34+20	38+00	0.035
38+00	69+00	0.050

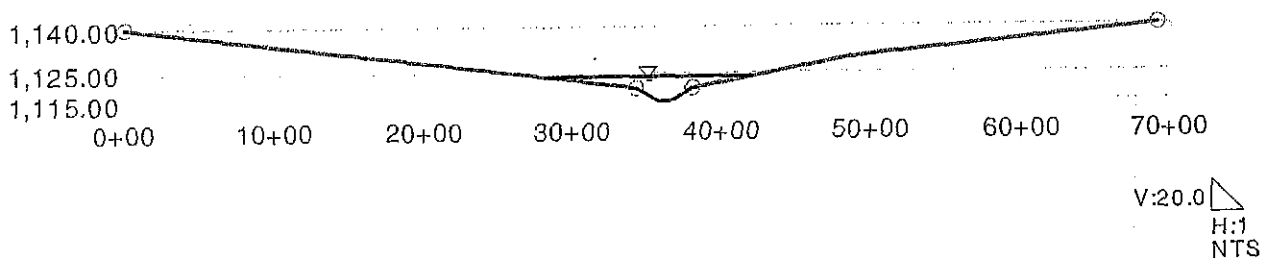
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,140.00
17+00	1,130.00
34+20	1,120.00
35+70	1,115.00
36+50	1,115.00
38+00	1,120.00
49+00	1,130.00
69+00	1,140.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.043	
Slope	0.004900	ft/ft
Water Surface Elevation	1,123.54	ft
Elevation Range	1,115.00 to 1,140.00	
Discharge	21,743.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	23,259.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,119.86	ft
Elevation Range	1,110.00 to 1,130.00	
Flow Area	5,897.1	ft²
Wetted Perimeter	1,949.74	ft
Top Width	1,949.33	ft
Actual Depth	9.86	ft
Critical Elevation	1,117.89	ft
Critical Slope	0.026360	ft/ft
Velocity	3.94	ft/s
Velocity Head	0.24	ft
Specific Energy	1,120.10	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	27+00	0.050
27+00	29+00	0.035
29+00	54+00	0.050

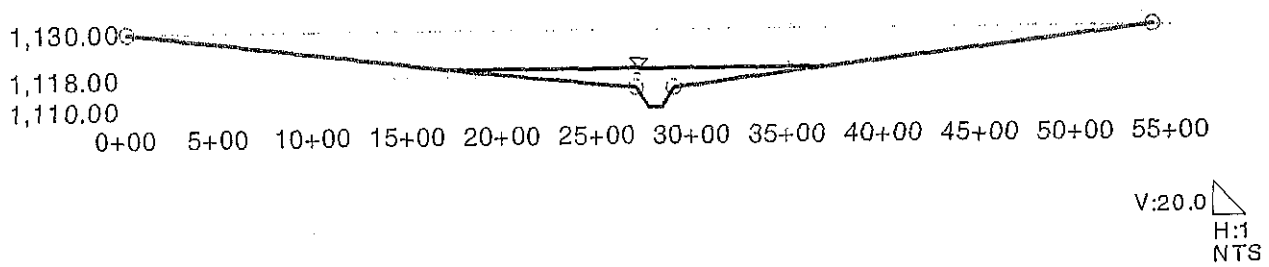
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,130.00
17+00	1,120.00
27+00	1,115.00
27+65	1,110.00
28+35	1,110.00
29+00	1,115.00
37+00	1,120.00
54+00	1,130.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003800	ft/ft
Water Surface Elevation	1,119.86	ft
Elevation Range	1,110.00 to 1,130.00	
Discharge	23,259.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	24,050.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,103.18	ft
Elevation Range	1,095.00 to 1,110.00	
Flow Area	5,524.5	ft²
Wetted Perimeter	2,059.98	ft
Top Width	2,059.85	ft
Actual Depth	8.18	ft
Critical Elevation	1,101.57	ft
Critical Slope	0.024189	ft/ft
Velocity	4.35	ft/s
Velocity Head	0.29	ft
Specific Energy	1,103.48	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	19+00	0.050
19+00	24+00	0.035
24+00	54+00	0.050

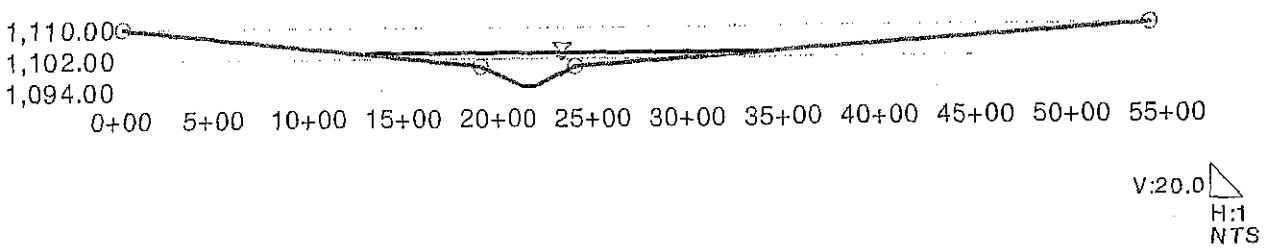
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,110.00
9+50	1,105.00
19+00	1,100.00
21+10	1,095.00
21+90	1,095.00
24+00	1,100.00
39+00	1,105.00
54+00	1,110.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005000	ft/ft
Water Surface Elevation	1,103.18	ft
Elevation Range	1,095.00 to 1,110.00	
Discharge	24,050.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB61
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	25,518.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,073.37	ft
Elevation Range	1,065.00 to 1,080.00	
Flow Area	5,625.8	ft²
Wetted Perimeter	1,981.22	ft
Top Width	1,981.08	ft
Actual Depth	8.37	ft
Critical Elevation	1,071.70	ft
Critical Slope	0.023644	ft/ft
Velocity	4.54	ft/s
Velocity Head	0.32	ft
Specific Energy	1,073.69	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	29+00	0.050
29+00	34+00	0.035
34+00	49+00	0.050

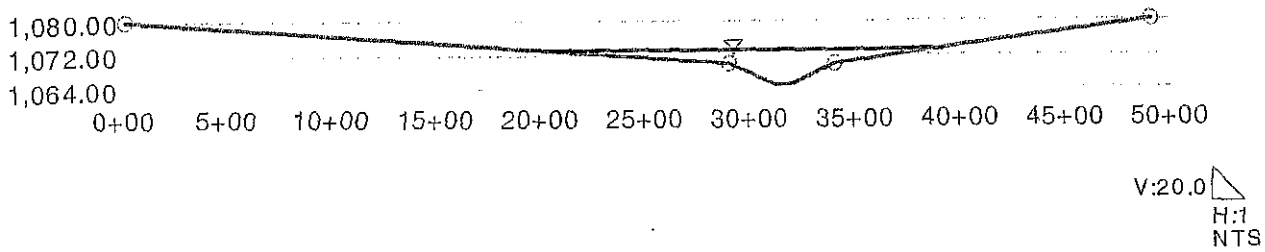
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,080.00
14+50	1,075.00
29+00	1,070.00
31+10	1,065.00
31+90	1,065.00
34+00	1,070.00
41+50	1,075.00
49+00	1,080.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB61
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005000	ft/ft
Water Surface Elevation	1,073.37	ft
Elevation Range	1,065.00 to 1,080.00	
Discharge	25,518.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	27,729.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,063.77	ft
Elevation Range	1,055.00 to 1,070.00	
Flow Area	7,462.6	ft²
Wetted Perimeter	2,688.00	ft
Top Width	2,687.86	ft
Actual Depth	8.77	ft
Critical Elevation	1,061.83	ft
Critical Slope	0.025414	ft/ft
Velocity	3.72	ft/s
Velocity Head	0.21	ft
Specific Energy	1,063.99	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	26+00	0.050
26+00	31+00	0.035
31+00	63+00	0.050

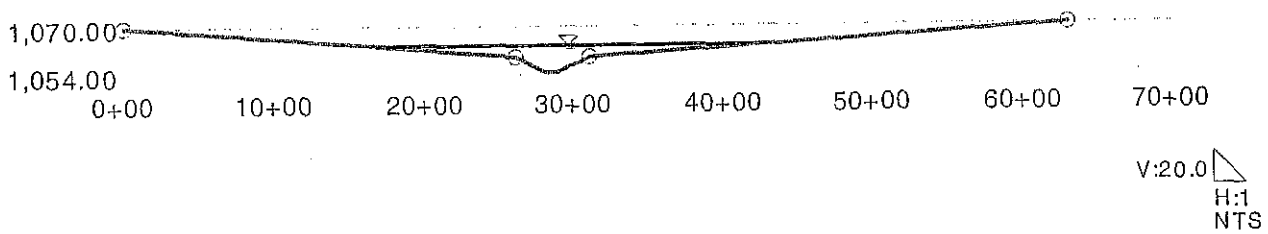
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,070.00
13+00	1,065.00
26+00	1,060.00
28+10	1,055.00
28+90	1,055.00
31+00	1,060.00
47+00	1,065.00
63+00	1,070.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003600	ft/ft
Water Surface Elevation	1,063.77	ft
Elevation Range	1,055.00 to 1,070.00	
Discharge	27,729.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	27,890.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,058.55	ft
Elevation Range	1,050.00 to 1,070.00	
Flow Area	7,514.4	ft²
Wetted Perimeter	2,915.19	ft
Top Width	2,915.06	ft
Actual Depth	8.55	ft
Critical Elevation	1,056.81	ft
Critical Slope	0.026189	ft/ft
Velocity	3.71	ft/s
Velocity Head	0.21	ft
Specific Energy	1,058.77	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	31+00	0.050
31+00	36+00	0.035
36+00	58+00	0.050

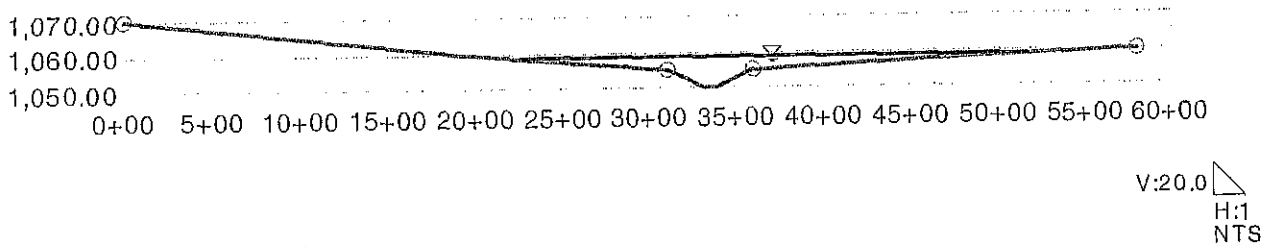
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,070.00
19+00	1,060.00
31+00	1,055.00
33+10	1,050.00
33+90	1,050.00
36+00	1,055.00
47+00	1,057.50
58+00	1,060.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004000	ft/ft
Water Surface Elevation	1,058.55	ft
Elevation Range	1,050.00 to 1,070.00	
Discharge	27,890.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPB64
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	27,848.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,050.33	ft
Elevation Range	1,040.00 to 1,054.00	
Flow Area	5,389.0	ft²
Wetted Perimeter	1,570.26	ft
Top Width	1,569.83	ft
Actual Depth	10.33	ft
Critical Elevation	1,048.54	ft
Critical Slope	0.012833	ft/ft
Velocity	5.17	ft/s
Velocity Head	0.41	ft
Specific Energy	1,050.74	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
24+75	37+00	0.050
37+00	39+00	0.035
39+00	45+25	0.050

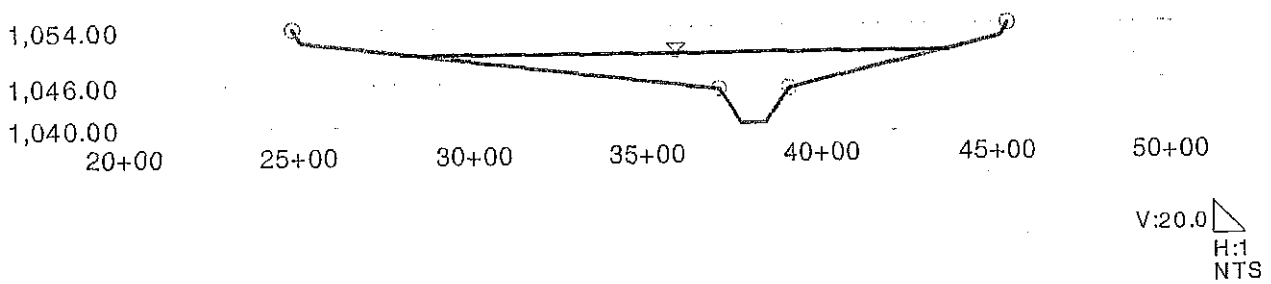
Natural Channel Points

Station (ft)	Elevation (ft)
24+75	1,054.00
25+00	1,052.00
37+00	1,045.00
37+65	1,040.00
38+35	1,040.00
39+00	1,045.00
45+00	1,052.00
45+25	1,054.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPB64
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003300	ft/ft
Water Surface Elevation	1,050.33	ft
Elevation Range	1,040.00 to 1,054.00	
Discharge	27,848.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006600	ft/ft
Discharge	8,092.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,204.51	ft
Elevation Range	1,200.00 to 1,208.00	
Flow Area	2,222.8	ft²
Wetted Perimeter	1,407.64	ft
Top Width	1,407.59	ft
Actual Depth	4.51	ft
Critical Elevation	1,203.63	ft
Critical Slope	0.026447	ft/ft
Velocity	3.64	ft/s
Velocity Head	0.21	ft
Specific Energy	1,204.72	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.050
13+00	18+00	0.035
18+00	28+00	0.050

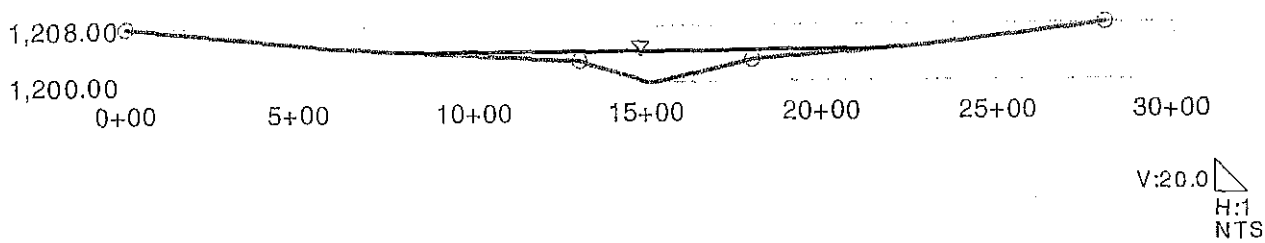
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,208.00
6+00	1,205.00
13+00	1,203.00
15+00	1,200.00
15+20	1,200.00
18+00	1,203.00
23+00	1,205.00
28+00	1,208.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006600	ft/ft
Water Surface Elevation	1,204.51	ft
Elevation Range	1,200.00 to 1,208.00	
Discharge	8,092.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004400	ft/ft
Discharge	8,536.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,200.11	ft
Elevation Range	1,195.00 to 1,205.00	
Flow Area	2,810.8	ft²
Wetted Perimeter	1,635.82	ft
Top Width	1,635.77	ft
Actual Depth	5.11	ft
Critical Elevation	1,198.98	ft
Critical Slope	0.028763	ft/ft
Velocity	3.04	ft/s
Velocity Head	0.14	ft
Specific Energy	1,200.26	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+00	0.050
15+00	19+00	0.035
19+00	32+00	0.050

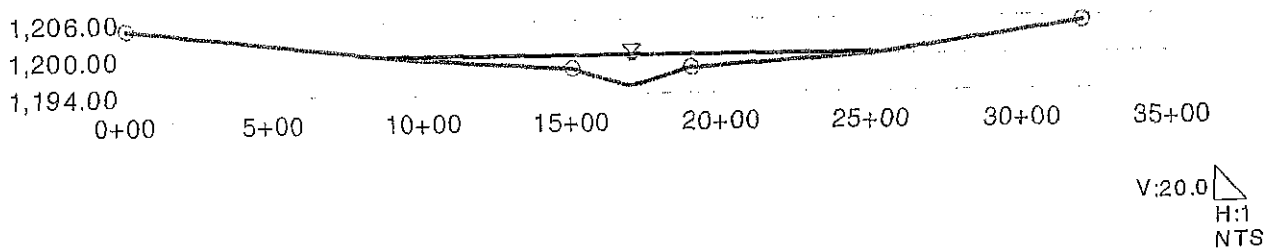
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,205.00
9+00	1,200.00
15+00	1,198.00
16+85	1,195.00
17+05	1,195.00
19+00	1,198.00
25+00	1,200.00
32+00	1,205.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004400	ft/ft
Water Surface Elevation	1,200.11	ft
Elevation Range.	1,195.00 to 1,205.00	
Discharge	8,536.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002600	ft/ft
Discharge	9,289.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,196.11	ft
Elevation Range	1,190.00 to 1,200.00	
Flow Area	2,371.1	ft²
Wetted Perimeter	759.28	ft
Top Width	758.92	ft
Actual Depth	6.11	ft
Critical Elevation	1,194.53	ft
Critical Slope	0.020217	ft/ft
Velocity	3.92	ft/s
Velocity Head	0.24	ft
Specific Energy	1,196.35	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
7+30	10+00	0.050
10+00	13+00	0.035
13+00	15+20	0.050

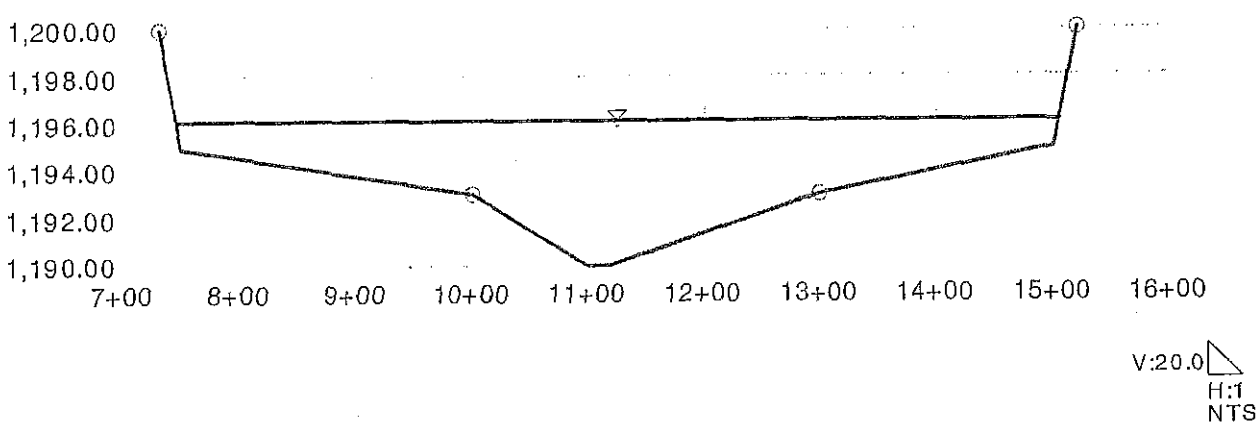
Natural Channel Points

Station (ft)	Elevation (ft)
7+30	1,200.00
7+50	1,195.00
10+00	1,193.00
11+00	1,190.00
11+20	1,190.00
13+00	1,193.00
15+00	1,195.00
15+20	1,200.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.041	
Slope	0.002600	ft/ft
Water Surface Elevation	1,196.11	ft
Elevation Range	1,190.00 to 1,200.00	
Discharge	9,289.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	9,358.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.043	
Water Surface Elevation	1,194.98	ft
Elevation Range	1,189.00 to 1,199.00	
Flow Area	2,464.9	ft²
Wetted Perimeter	858.15	ft
Top Width	857.82	ft
Actual Depth	5.98	ft
Critical Elevation	1,193.51	ft
Critical Slope	0.022161	ft/ft
Velocity	3.80	ft/s
Velocity Head	0.22	ft
Specific Energy	1,195.20	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
7+30	10+00	0.050
10+00	13+00	0.035
13+00	16+20	0.050

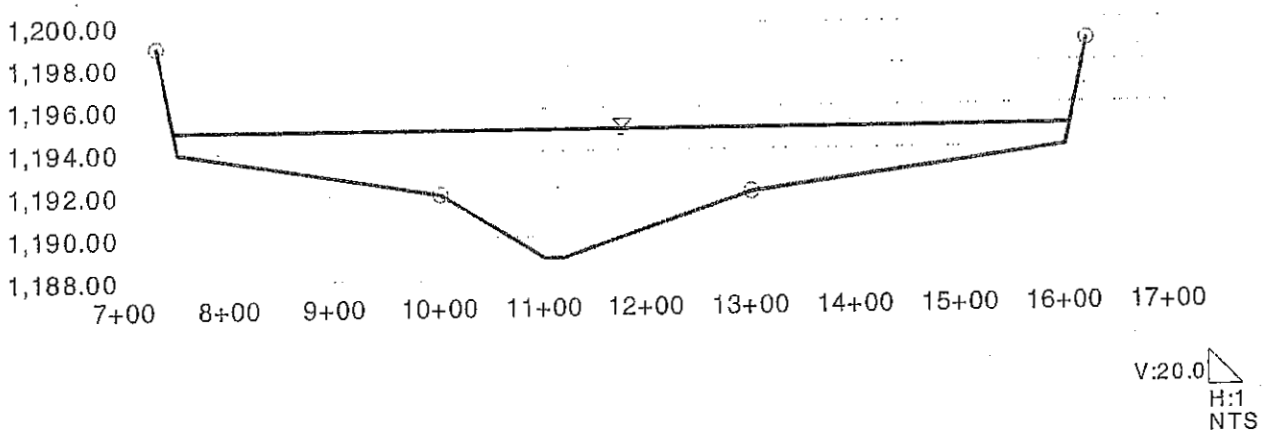
Natural Channel Points

Station (ft)	Elevation (ft)
7+30	1,199.00
7+50	1,194.00
10+00	1,192.00
11+00	1,189.00
11+20	1,189.00
13+00	1,192.00
16+00	1,194.00
16+20	1,199.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.043	
Slope	0.002700	ft/ft
Water Surface Elevation	1,194.98	ft
Elevation Range	1,189.00 to 1,199.00	
Discharge	9,358.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003400	ft/ft
Discharge	9,404.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	1,191.21	ft
Elevation Range	1,185.00 to 1,195.00	
Flow Area	1,837.3	ft²
Wetted Perimeter	600.07	ft
Top Width	599.65	ft
Actual Depth	6.21	ft
Critical Elevation	1,190.09	ft
Critical Slope	0.014766	ft/ft
Velocity	5.12	ft/s
Velocity Head	0.41	ft
Specific Energy	1,191.61	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
12+10	14+00	0.050
14+00	16+00	0.035
16+00	18+40	0.050

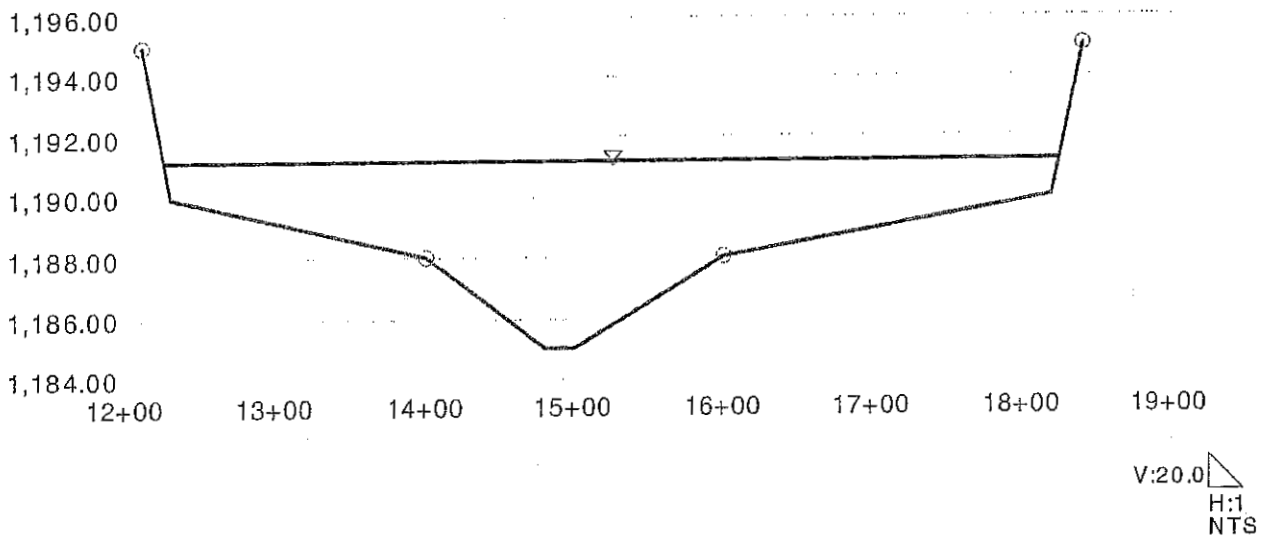
Natural Channel Points

Station (ft)	Elevation (ft)
12+10	1,195.00
12+30	1,190.00
14+00	1,188.00
14+80	1,185.00
15+00	1,185.00
16+00	1,188.00
18+20	1,190.00
18+40	1,195.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.003400	ft/ft
Water Surface Elevation	1,191.21	ft
Elevation Range	1,185.00 to 1,195.00	
Discharge	9,404.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	9,474.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.037	
Water Surface Elevation	1,184.06	ft
Elevation Range	1,178.00 to 1,188.00	
Flow Area	2,163.9	ft²
Wetted Perimeter	708.81	ft
Top Width	708.45	ft
Actual Depth	6.06	ft
Critical Elevation	1,182.69	ft
Critical Slope	0.016208	ft/ft
Velocity	4.38	ft/s
Velocity Head	0.30	ft
Specific Energy	1,184.35	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
10+80	14+00	0.050
14+00	16+00	0.035
16+00	18+20	0.050

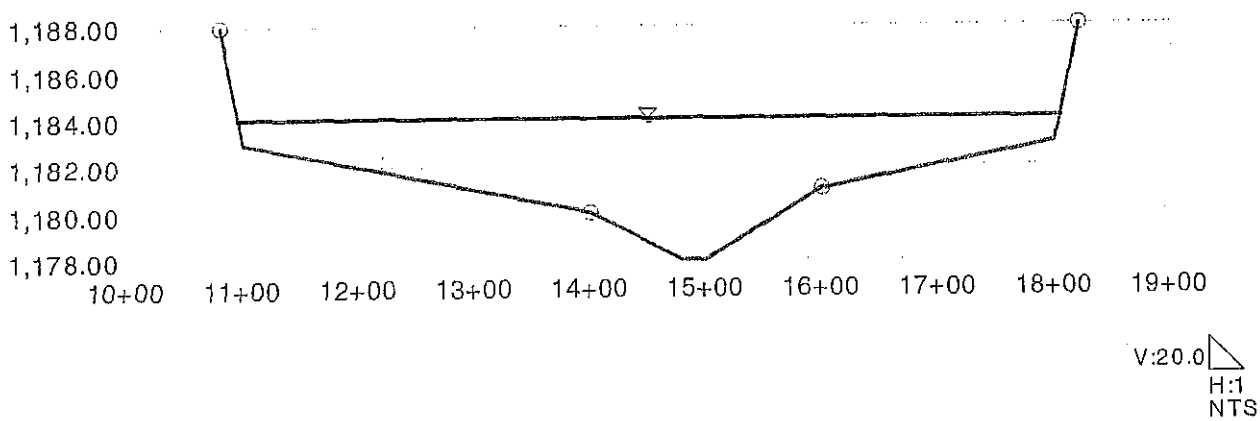
Natural Channel Points

Station (ft)	Elevation (ft)
10+80	1,188.00
11+00	1,183.00
14+00	1,180.00
14+80	1,178.00
15+00	1,178.00
16+00	1,181.00
18+00	1,183.00
18+20	1,188.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.037	
Slope	0.002700	ft/ft
Water Surface Elevation	1,184.06	ft
Elevation Range	1,178.00 to 1,188.00	
Discharge	9,474.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	11,266.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,182.05	ft
Elevation Range	1,175.00 to 1,185.00	
Flow Area	2,483.5	ft²
Wetted Perimeter	717.12	ft
Top Width	716.42	ft
Actual Depth	7.05	ft
Critical Elevation	1,180.54	ft
Critical Slope	0.019531	ft/ft
Velocity	4.54	ft/s
Velocity Head	0.32	ft
Specific Energy	1,182.37	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
6+80	10+00	0.050
10+00	11+20	0.035
11+20	14+20	0.050

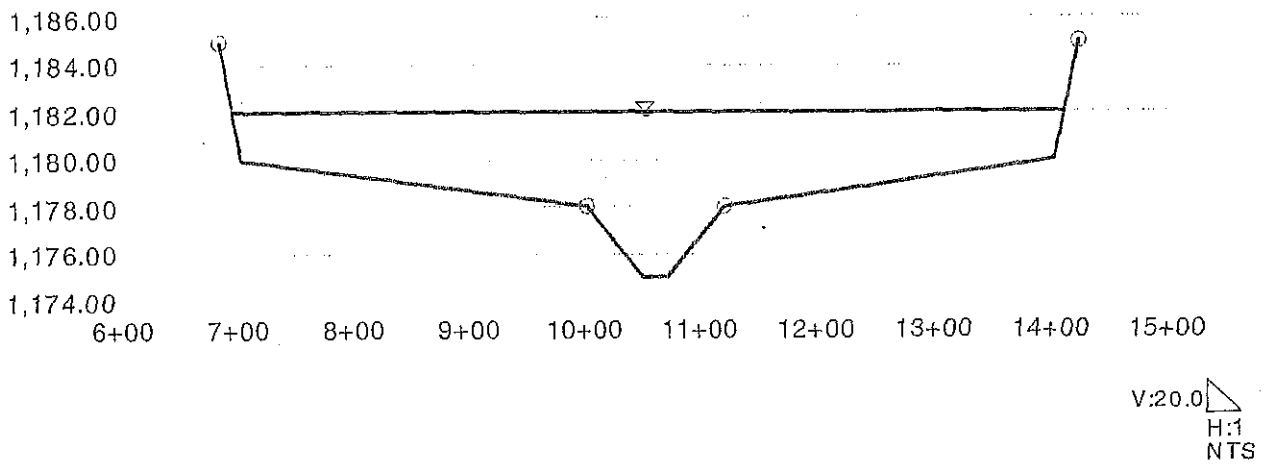
Natural Channel Points

Station (ft)	Elevation (ft)
6+80	1,185.00
7+00	1,180.00
10+00	1,178.00
10+50	1,175.00
10+70	1,175.00
11+20	1,178.00
14+00	1,180.00
14+20	1,185.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.041	
Slope	0.003000	ft/ft
Water Surface Elevation	1,182.05	ft
Elevation Range	1,175.00 to 1,185.00	
Discharge	11,266.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Input Data		
Slope	0.002700	ft/ft
Discharge	13,027.00	cfs

Options	
Current Roughness Method	*Improved Lotter's Method*
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	*0.040*	
Water Surface Elevation	1,148.87	ft
Elevation Range	1,140.00 to 1,152.00	
Flow Area	3,388.8	ft²
Wetted Perimeter	1,224.42	ft
Top Width	1,222.84	ft
Actual Depth	8.87	ft
Critical Elevation	1,147.14	ft
Critical Slope	0.018180	ft/ft
Velocity	3.84	ft/s
Velocity Head	0.23	ft
Specific Energy	1,149.10	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+40	0.050
7+40	8+10	0.035
8+10	15+10	0.050

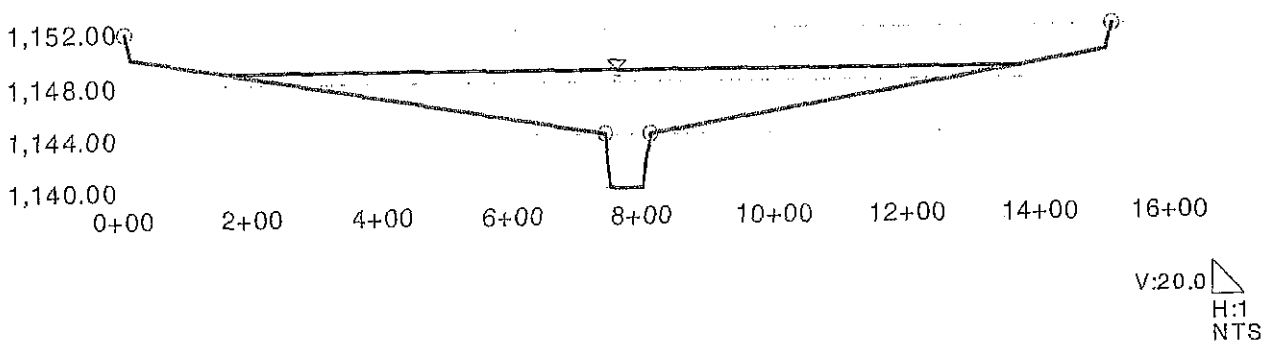
Natural Channel Points

Station (ft)	*Elevation (ft)*
0+00	1,152.00
0+10	1,150.00
7+40	1,144.00
7+50	1,140.00
8+00	1,140.00
8+10	1,144.00
15+00	1,150.00
15+10	1,152.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.040	
Slope	0.002700	ft/ft
Water Surface Elevation	1,148.87	ft
Elevation Range	1,140.00 to 1,152.00	
Discharge	13,027.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003200	ft/ft
Discharge	12,855.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,148.44	ft
Elevation Range	1,142.00 to 1,150.00	
Flow Area	3,344.8	ft²
Wetted Perimeter	1,244.37	ft
Top Width	1,244.01	ft
Actual Depth	6.44	ft
Critical Elevation	1,147.23	ft
Critical Slope	0.022722	ft/ft
Velocity	3.84	ft/s
Velocity Head	0.23	ft
Specific Energy	1,148.67	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
14+55	21+50	0.050
21+50	22+75	0.035
22+75	27+25	0.050

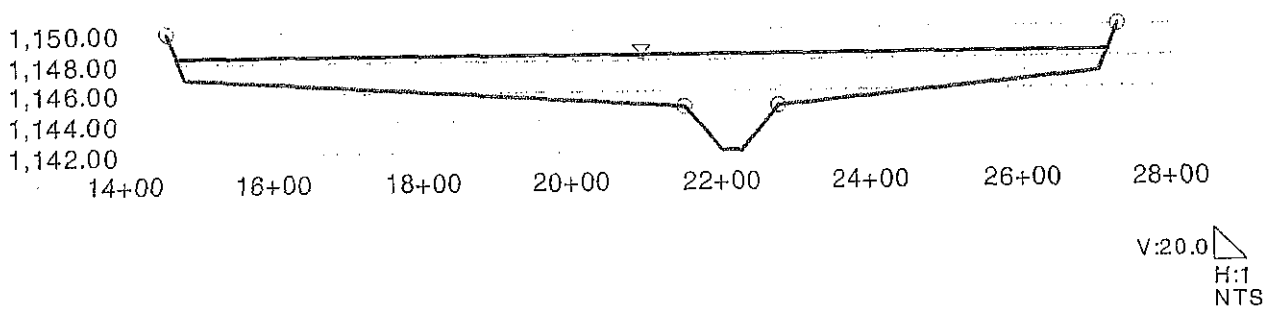
Natural Channel Points

Station (ft)	Elevation (ft)
14+55	1,150.00
14+80	1,147.00
21+50	1,145.00
22+00	1,142.00
22+25	1,142.00
22+75	1,145.00
27+00	1,147.00
27+25	1,150.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	0.003200	ft/ft
Water Surface Elevation	1,148.44	ft
Elevation Range	1,142.00 to 1,150.00	
Discharge	12,855.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	10,827.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,156.73	ft
Elevation Range	1,150.00 to 1,160.00	
Flow Area	3,305.0	ft²
Wetted Perimeter	1,094.41	ft
Top Width	1,093.80	ft
Actual Depth	6.73	ft
Critical Elevation	1,155.14	ft
Critical Slope	0.023073	ft/ft
Velocity	3.28	ft/s
Velocity Head	0.17	ft
Specific Energy	1,156.89	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
7+80	14+00	0.050
14+00	15+25	0.035
15+25	19+00	0.050

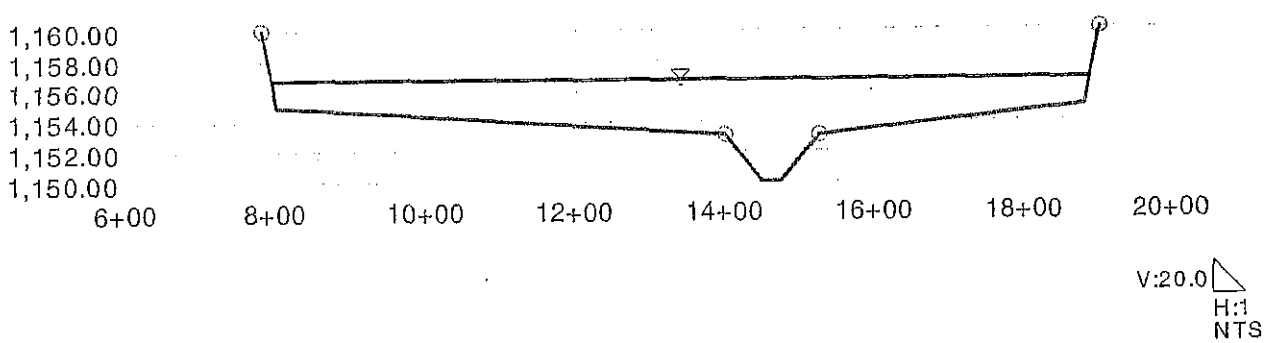
Natural Channel Points

Station (ft)	Elevation (ft)
7+80	1,160.00
8+00	1,155.00
14+00	1,153.00
14+50	1,150.00
14+75	1,150.00
15+25	1,153.00
18+80	1,155.00
19+00	1,160.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	*0.002000*	*ft/ft*
Water Surface Elevation	1,156.73	ft
Elevation Range	1,150.00 to 1,160.00	
Discharge	10,827.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004700	ft/ft
Discharge	10,825.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,158.79	ft
Elevation Range	1,150.00 to 1,165.00	
Flow Area	2,249.9	ft²
Wetted Perimeter	703.08	ft
Top Width	702.68	ft
Actual Depth	8.79	ft
Critical Elevation	1,157.06	ft
Critical Slope	0.022814	ft/ft
Velocity	4.81	ft/s
Velocity Head	0.36	ft
Specific Energy	1,159.15	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.050
13+00	14+20	0.035
14+20	17+70	0.050

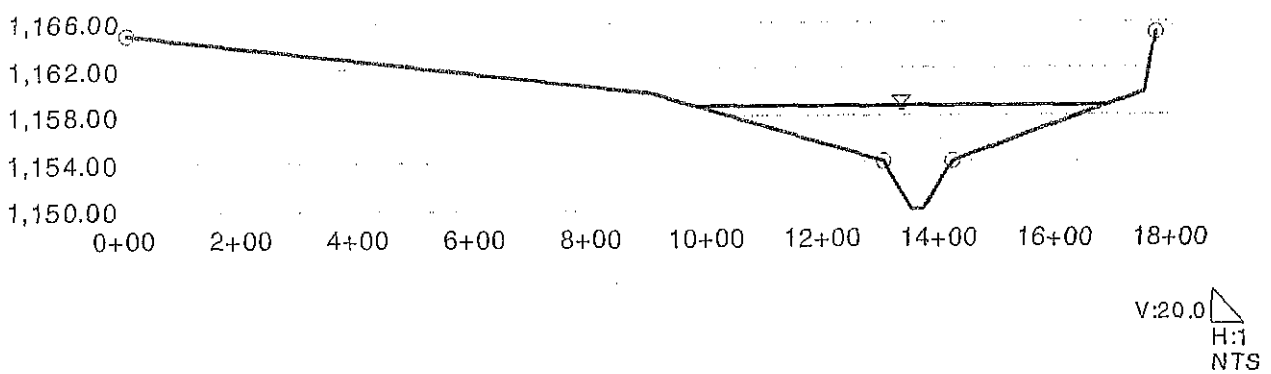
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,165.00
9+00	1,160.00
13+00	1,154.00
13+50	1,150.00
13+70	1,150.00
14+20	1,154.00
17+50	1,160.00
17+70	1,165.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.004700	ft/ft
Water Surface Elevation	1,158.79	ft
Elevation Range	1,150.00 to 1,165.00	
Discharge	10,825.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	5,746.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,213.12	ft
Elevation Range	1,207.00 to 1,215.00	
Flow Area	1,677.5	ft²
Wetted Perimeter	635.17	ft
Top Width	633.91	ft
Actual Depth	6.12	ft
Critical Elevation	1,211.82	ft
Critical Slope	0.022508	ft/ft
Velocity	3.43	ft/s
Velocity Head	0.18	ft
Specific Energy	1,213.31	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+80	0.050
2+80	3+40	0.035
3+40	6+50	0.050

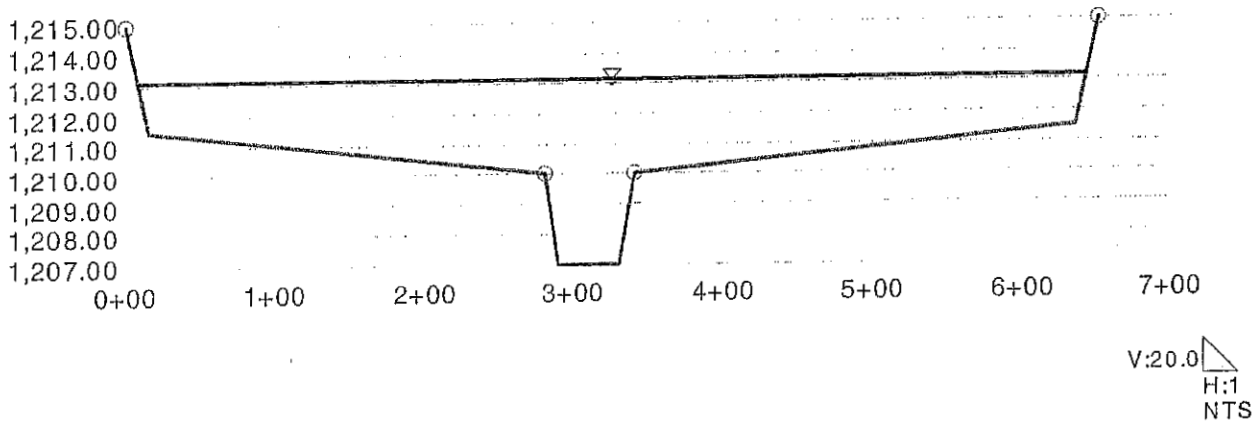
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,215.00
0+15	1,211.50
2+80	1,210.00
2+90	1,207.00
3+30	1,207.00
3+40	1,210.00
6+35	1,211.50
6+50	1,215.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.041	
Slope	0.002500	ft/ft
Water Surface Elevation	1,213.12	ft
Elevation Range	1,207.00 to 1,215.00	
Discharge	5,746.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	4,230.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,253.21	ft
Elevation Range	1,250.00 to 1,255.00	
Flow Area	1,165.6	ft²
Wetted Perimeter	607.33	ft
Top Width	607.07	ft
Actual Depth	3.21	ft
Critical Elevation	1,252.42	ft
Critical Slope	0.017008	ft/ft
Velocity	3.63	ft/s
Velocity Head	0.20	ft
Specific Energy	1,253.41	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+10	0.050
1+10	5+10	0.035
5+10	6+25	0.050

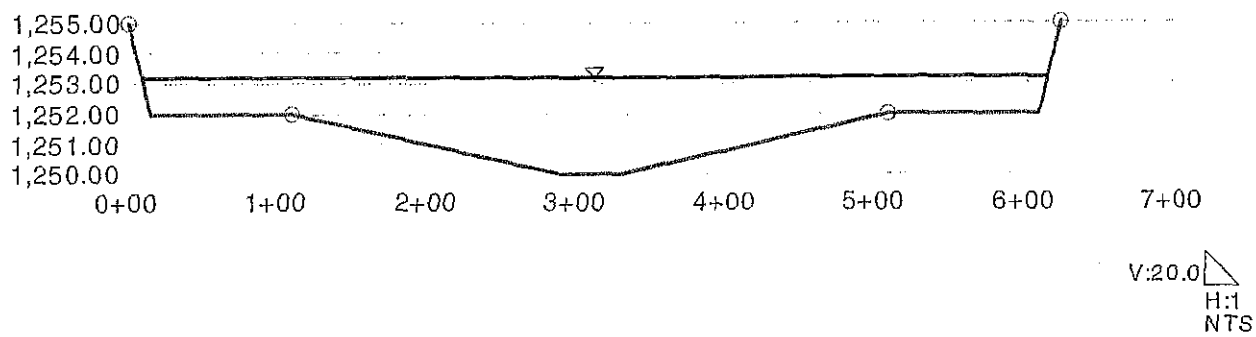
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,255.00
0+15	1,252.00
1+10	1,252.00
2+90	1,250.00
3+30	1,250.00
5+10	1,252.00
6+10	1,252.00
6+25	1,255.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003300	ft/ft
Water Surface Elevation	1,253.21	ft
Elevation Range	1,250.00 to 1,255.00	
Discharge	4,230.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE49
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	5,804.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.038	
Water Surface Elevation	1,244.30	ft
Elevation Range	1,240.00 to 1,246.00	
Flow Area	1,690.9	ft²
Wetted Perimeter	758.33	ft
Top Width	758.02	ft
Actual Depth	4.30	ft
Critical Elevation	1,243.28	ft
Critical Slope	0.020035	ft/ft
Velocity	3.43	ft/s
Velocity Head	0.18	ft
Specific Energy	1,244.48	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+10	0.050
3+10	5+10	0.035
5+10	7+75	0.050

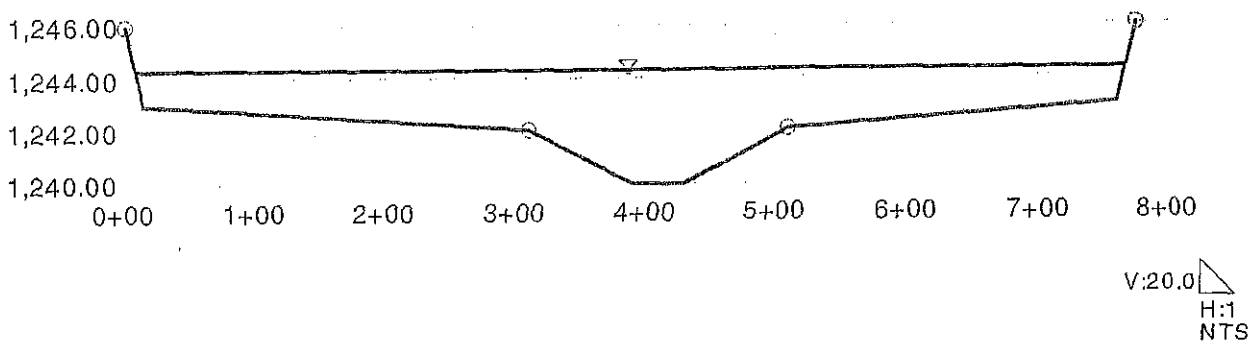
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,246.00
0+15	1,243.00
3+10	1,242.00
3+90	1,240.00
4+30	1,240.00
5+10	1,242.00
7+60	1,243.00
7+75	1,246.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.038	
Slope	0.002700	ft/ft
Water Surface Elevation	1,244.30	ft
Elevation Range	1,240.00 to 1,246.00	
Discharge	5,804.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	5,786.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,224.28	ft
Elevation Range	1,220.00 to 1,230.00	
Flow Area	2,428.2	ft²
Wetted Perimeter	1,719.84	ft
Top Width	1,719.78	ft
Actual Depth	4.28	ft
Critical Elevation	1,223.27	ft
Critical Slope	0.034290	ft/ft
Velocity	2.38	ft/s
Velocity Head	0.09	ft
Specific Energy	1,224.37	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	24+00	0.050
24+00	26+00	0.035
26+00	42+00	0.050

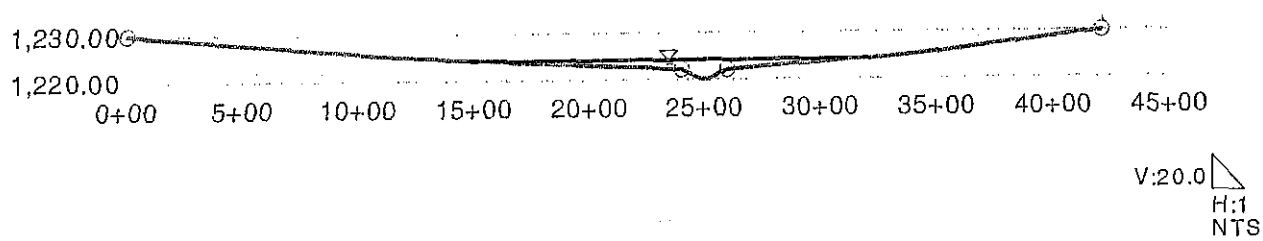
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
12+00	1,225.00
24+00	1,222.00
24+80	1,220.00
25+20	1,220.00
26+00	1,222.00
34+00	1,225.00
42+00	1,230.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.003800	ft/ft
Water Surface Elevation	1,224.28	ft
Elevation Range	1,220.00 to 1,230.00	
Discharge	5,786.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	1,731.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,277.64	ft
Elevation Range	1,275.00 to 1,285.00	
Flow Area	795.0	ft²
Wetted Perimeter	717.64	ft
Top Width	717.62	ft
Actual Depth	2.64	ft
Critical Elevation	1,276.67	ft
Critical Slope	0.026290	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	1,277.71	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	21+00	0.050
21+00	25+00	0.035
25+00	37+00	0.050

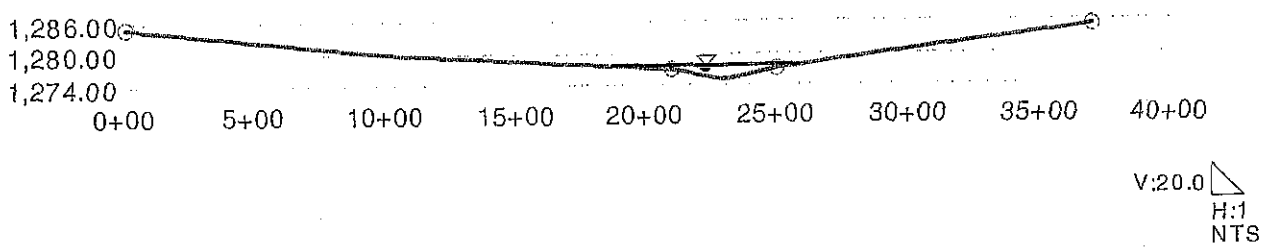
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,285.00
10+00	1,280.00
21+00	1,277.00
22+80	1,275.00
23+20	1,275.00
25+00	1,277.00
29+00	1,280.00
37+00	1,285.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	0.003300	ft/ft
Water Surface Elevation	1,277.64	ft
Elevation Range	1,275.00 to 1,285.00	
Discharge	1,731.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF33
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.002800	ft/ft
Discharge	1,770.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	1,272.52	ft
Elevation Range	1,270.00 to 1,274.00	
Flow Area	725.6	ft²
Wetted Perimeter	603.81	ft
Top Width	603.74	ft
Actual Depth	2.52	ft
Critical Elevation	1,271.68	ft
Critical Slope	0.019752	ft/ft
Velocity	2.44	ft/s
Velocity Head	0.09	ft
Specific Energy	1,272.61	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+10	0.050
1+10	5+10	0.035
5+10	6+19	0.050

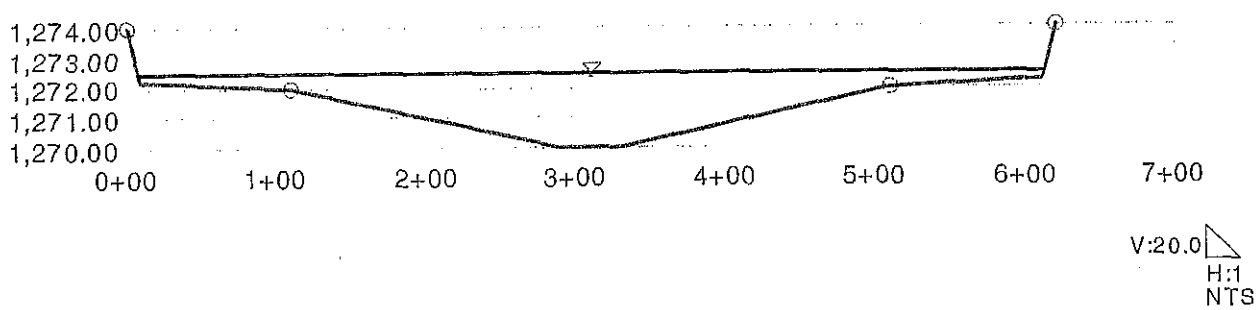
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,274.00
0+09	1,272.25
1+10	1,272.00
2+90	1,270.00
3+30	1,270.00
5+10	1,272.00
6+10	1,272.25
6+19	1,274.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.002800	ft/ft
Water Surface Elevation	1,272.52	ft
Elevation Range	1,270.00 to 1,274.00	
Discharge	1,770.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	2,737.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.044	
Water Surface Elevation	1,262.29	ft
Elevation Range	1,259.00 to 1,272.50	
Flow Area	1,309.0	ft²
Wetted Perimeter	949.97	ft
Top Width	949.94	ft
Actual Depth	3.29	ft
Critical Elevation	1,261.05	ft
Critical Slope	0.027392	ft/ft
Velocity	2.09	ft/s
Velocity Head	0.07	ft
Specific Energy	1,262.36	ft
Froude Number	0.31	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+10	0.050
15+10	19+10	0.035
19+10	34+30	0.050

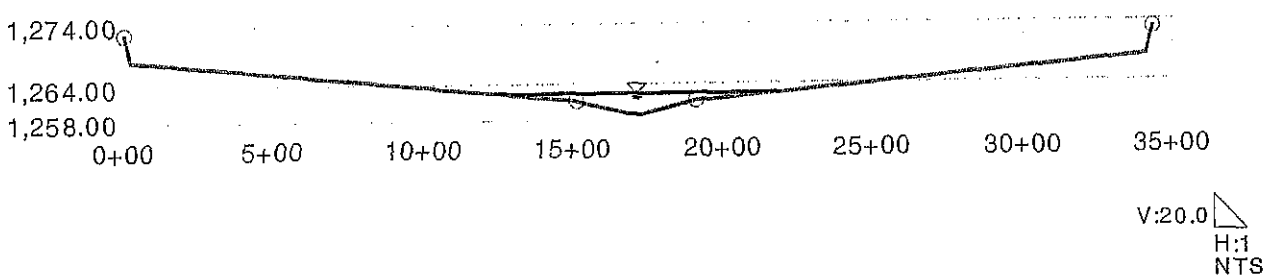
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,272.50
0+20	1,268.00
15+10	1,261.00
16+90	1,259.00
17+30	1,259.00
19+10	1,261.00
34+10	1,268.00
34+30	1,272.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.044	
Slope	0.002500	ft/ft
Water Surface Elevation	1,262.29	ft
Elevation Range	1,259.00 to 1,272.50	
Discharge	2,737.00	cfs



Project Summary Report

Project Description	
Worksheet	*RCPF35*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	2,848.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.040	
Water Surface Elevation	1,263.21	ft
Elevation Range	1,260.00 to 1,272.00	
Flow Area	1,053.2	ft²
Wetted Perimeter	610.85	ft
Top Width	610.80	ft
Actual Depth	3.21	ft
Critical Elevation	1,262.07	ft
Critical Slope	0.021775	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	1,263.33	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	12+00	0.050
12+00	16+00	0.035
16+00	18+10	0.050

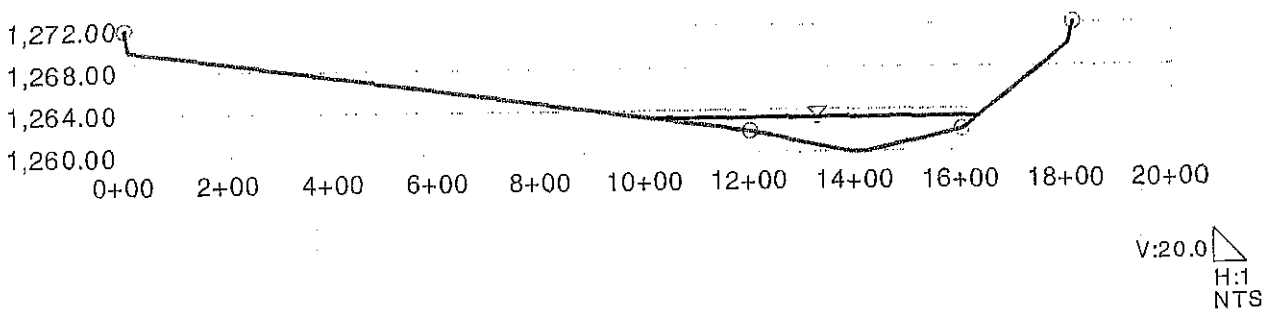
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,272.00
0+10	1,270.00
12+00	1,262.00
13+80	1,260.00
14+20	1,260.00
16+00	1,262.00
18+00	1,270.00
18+10	1,272.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.040	
Slope	0.002500	ft/ft
Water Surface Elevation	1,263.21	ft
Elevation Range	1,260.00 to 1,272.00	
Discharge	2,848.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002500	ft/ft
Discharge	5,750.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,240.36	ft
Elevation Range	1,234.00 to 1,249.00	
Flow Area	2,247.1	ft²
Wetted Perimeter	1,048.37	ft
Top Width	1,048.09	ft
Actual Depth	6.36	ft
Critical Elevation	1,238.62	ft
Critical Slope	0.029918	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1,240.46	ft
Froude Number	0.31	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	25+00	0.050
25+00	26+30	0.035
26+30	30+18	0.050

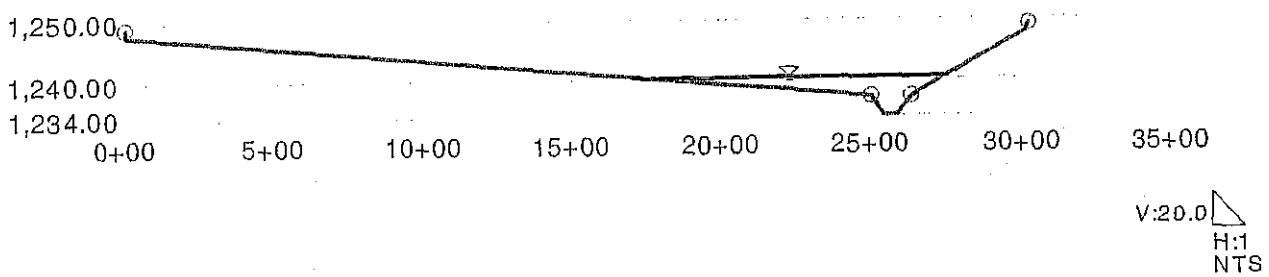
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,249.00
0+08	1,247.50
25+00	1,237.00
25+40	1,234.00
25+90	1,234.00
26+30	1,237.00
30+10	1,247.50
30+18	1,249.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.002500	ft/ft
Water Surface Elevation	1,240.36	ft
Elevation Range	1,234.00 to 1,249.00	
Discharge	5,750.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002700	ft/ft
Discharge	5,718.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Methoı	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,234.59	ft
Elevation Range	1,230.00 to 1,245.50	
Flow Area	1,993.3	ft²
Wetted Perimeter	1,153.79	ft
Top Width	1,153.72	ft
Actual Depth	4.59	ft
Critical Elevation	1,233.43	ft
Critical Slope	0.016604	ft/ft
Velocity	2.87	ft/s
Velocity Head	0.13	ft
Specific Energy	1,234.72	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+10	0.050
20+10	22+10	0.035
22+10	42+70	0.050

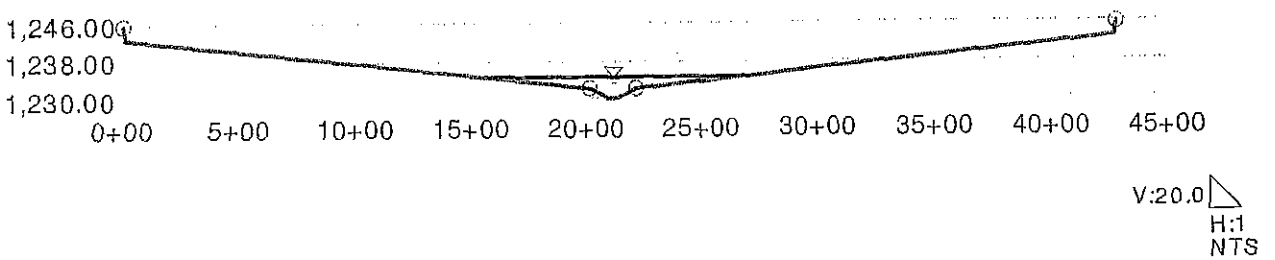
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,245.50
0+10	1,243.00
20+10	1,232.00
20+90	1,230.00
21+30	1,230.00
22+10	1,232.00
42+60	1,243.00
42+70	1,245.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.002700	ft/ft
Water Surface Elevation	1,234.59	ft
Elevation Range	1,230.00 to 1,245.50	
Discharge	5,718.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	6,753.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.041	
Water Surface Elevation	1,208.95	ft
Elevation Range	1,204.00 to 1,210.00	
Flow Area	2,126.0	ft²
Wetted Perimeter	778.47	ft
Top Width	778.21	ft
Actual Depth	4.95	ft
Critical Elevation	1,207.23	ft
Critical Slope	0.020452	ft/ft
Velocity	3.18	ft/s
Velocity Head	0.16	ft
Specific Energy	1,209.11	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+40	0.050
0+40	5+30	0.035
5+30	7+89	0.050

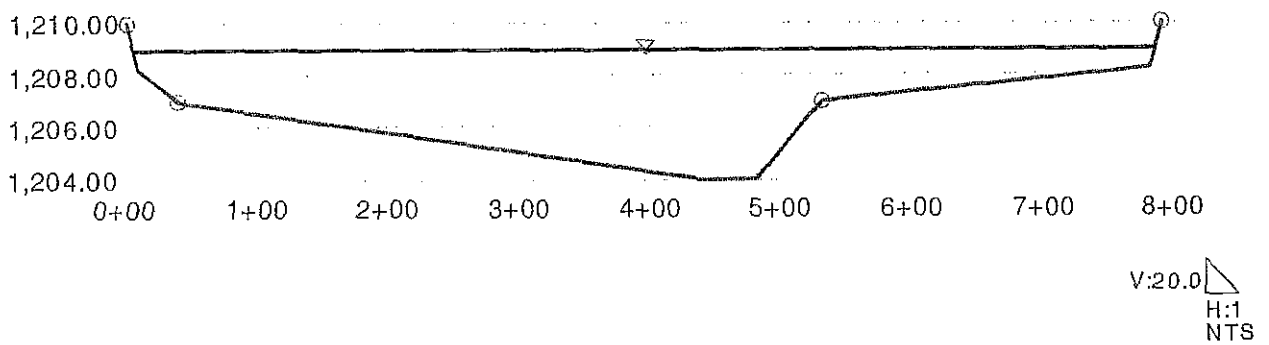
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,210.00
0+09	1,208.25
0+40	1,207.00
4+40	1,204.00
4+80	1,204.00
5+30	1,207.00
7+80	1,208.25
7+89	1,210.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.041	
Slope	0.002000	ft/ft
Water Surface Elevation	1,208.95	ft
Elevation Range	1,204.00 to 1,210.00	
Discharge	6,753.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	9,435.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.038	
Water Surface Elevation	1,187.56	ft
Elevation Range	1,180.00 to 1,198.00	
Flow Area	2,690.6	ft²
Wetted Perimeter	1,295.77	ft
Top Width	1,294.96	ft
Actual Depth	7.56	ft
Critical Elevation	1,186.32	ft
Critical Slope	0.018026	ft/ft
Velocity	3.51	ft/s
Velocity Head	0.19	ft
Specific Energy	1,187.76	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+20	0.050
20+20	21+00	0.035
21+00	41+90	0.050

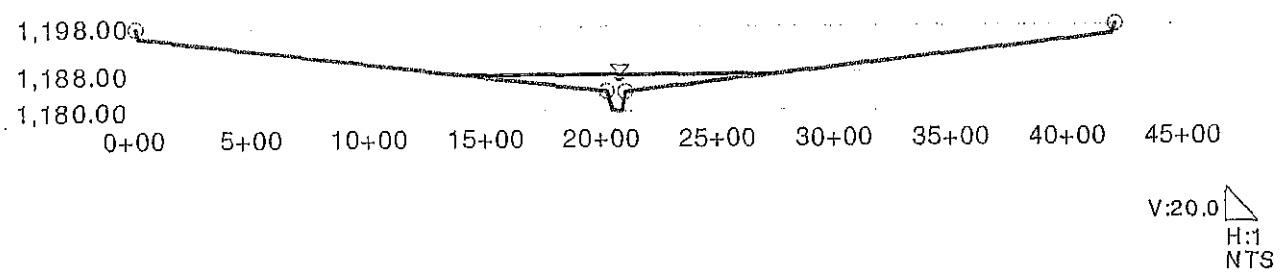
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,198.00
0+10	1,196.00
20+20	1,184.00
20+40	1,180.00
20+80	1,180.00
21+00	1,184.00
41+80	1,196.00
41+90	1,198.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.038	
Slope	0.003000	ft/ft
Water Surface Elevation	1,187.56	ft
Elevation Range	1,180.00 to 1,198.00	
Discharge	9,435.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	11,054.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.040	
Water Surface Elevation	1,182.71	ft
Elevation Range	1,175.00 to 1,192.50	
Flow Area	3,411.0	ft²
Wetted Perimeter	1,260.28	ft
Top Width	1,259.94	ft
Actual Depth	7.71	ft
Critical Elevation	1,180.78	ft
Critical Slope	0.018891	ft/ft
Velocity	3.24	ft/s
Velocity Head	0.16	ft
Specific Energy	1,182.87	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+40	0.050
15+40	16+40	0.035
16+40	32+00	0.050

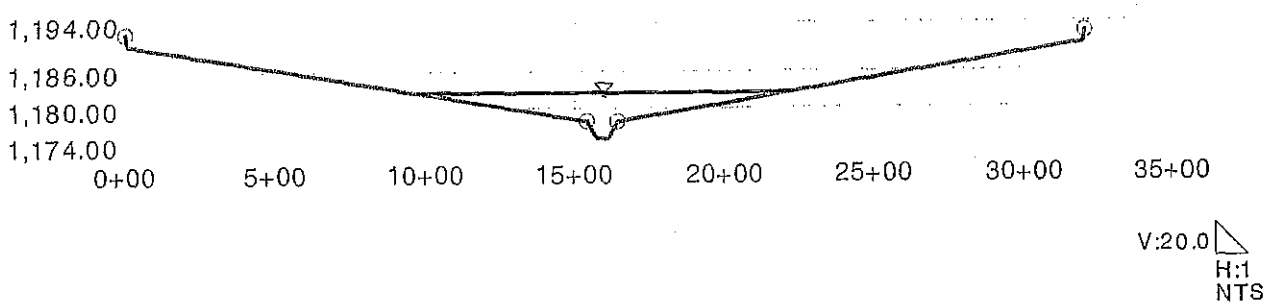
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,192.50
0+10	1,190.50
15+40	1,178.00
15+70	1,175.00
16+10	1,175.00
16+40	1,178.00
31+90	1,190.50
32+00	1,192.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.040	
Slope	0.002000	ft/ft
Water Surface Elevation	1,182.71	ft
Elevation Range	1,175.00 to 1,192.50	
Discharge	11,054.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	10,983.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.036	
Water Surface Elevation	1,174.42	ft
Elevation Range	1,166.00 to 1,185.50	
Flow Area	3,084.4	ft²
Wetted Perimeter	1,137.90	ft
Top Width	1,137.28	ft
Actual Depth	8.42	ft
Critical Elevation	1,172.58	ft
Critical Slope	0.015361	ft/ft
Velocity	3.56	ft/s
Velocity Head	0.20	ft
Specific Energy	1,174.61	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	15+90	0.050
15+90	17+00	0.035
17+00	32+70	0.050

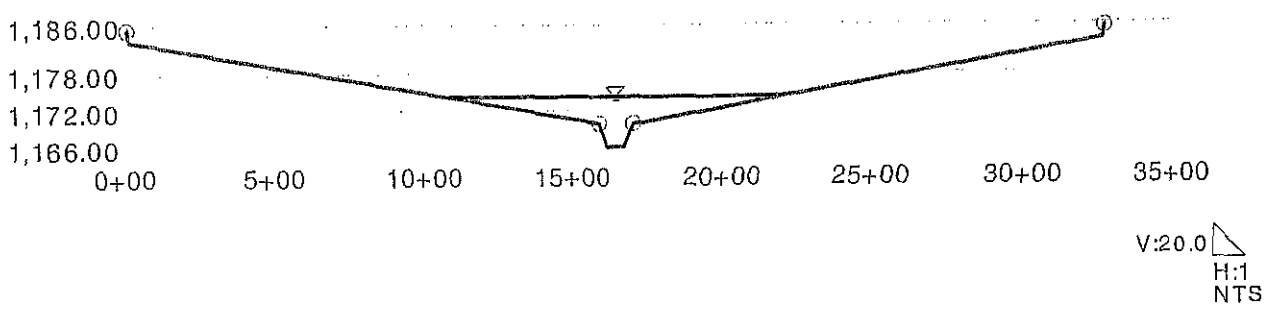
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,185.50
0+10	1,183.50
15+90	1,170.00
16+15	1,166.00
16+70	1,166.00
17+00	1,170.00
32+60	1,183.50
32+70	1,185.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.036	
Slope	0.002000	ft/ft
Water Surface Elevation	1,174.42	ft
Elevation Range	1,166.00 to 1,185.50	
Discharge	10,983.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002000	ft/ft
Discharge	10,846.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.042	
Water Surface Elevation	1,164.44	ft
Elevation Range	1,156.00 to 1,172.00	
Flow Area	3,750.4	ft²
Wetted Perimeter	1,540.46	ft
Top Width	1,538.89	ft
Actual Depth	8.44	ft
Critical Elevation	1,162.63	ft
Critical Slope	0.021541	ft/ft
Velocity	2.89	ft/s
Velocity Head	0.13	ft
Specific Energy	1,164.57	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	17+10	0.050
17+10	17+70	0.035
17+70	34+10	0.050

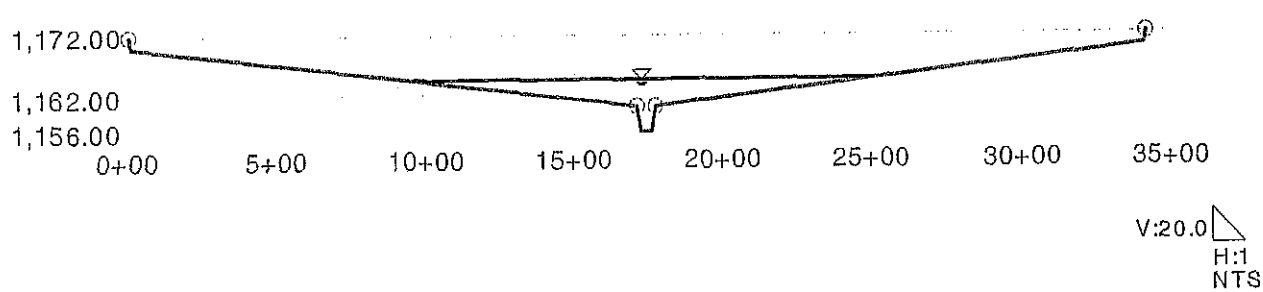
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,172.00
0+10	1,170.00
17+10	1,160.00
17+20	1,156.00
17+60	1,156.00
17+70	1,160.00
34+00	1,170.00
34+10	1,172.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG38
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.042	
Slope	0.002000	ft/ft
Water Surface Elevation	1,164.44	ft
Elevation Range	1,156.00 to 1,172.00	
Discharge	10,846.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.001700	ft/ft
Discharge	12,929.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.037	
Water Surface Elevation	1,155.10	ft
Elevation Range	1,146.00 to 1,160.00	
Flow Area	3,715.7	ft²
Wetted Perimeter	1,204.38	ft
Top Width	1,203.77	ft
Actual Depth	9.10	ft
Critical Elevation	1,152.87	ft
Critical Slope	0.015770	ft/ft
Velocity	3.48	ft/s
Velocity Head	0.19	ft
Specific Energy	1,155.29	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+50	0.050
7+50	8+70	0.035
8+70	16+00	0.050

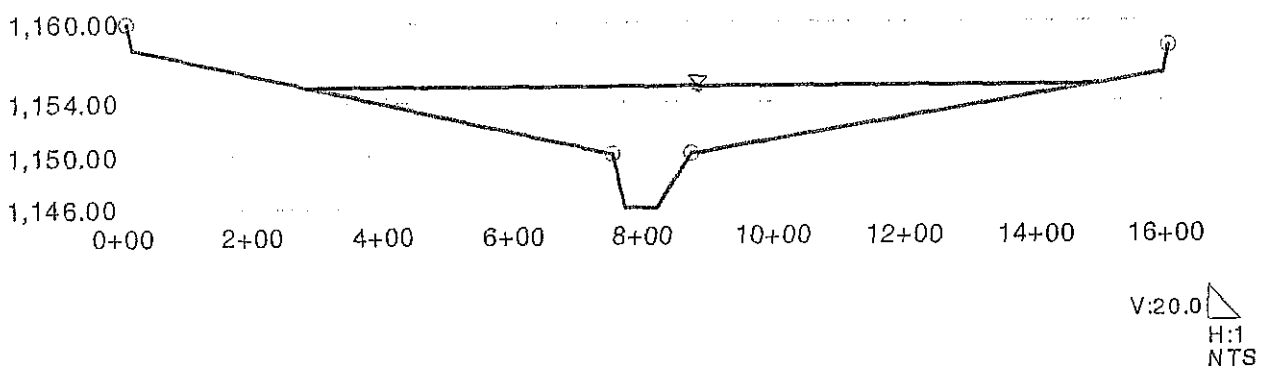
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,160.00
0+10	1,158.00
7+50	1,150.00
7+70	1,146.00
8+20	1,146.00
8+70	1,150.00
15+90	1,156.00
16+00	1,158.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG40
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.037	
Slope	0.001700	ft/ft
Water Surface Elevation	1,155.10	ft
Elevation Range	1,146.00 to 1,160.00	
Discharge	12,929.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPG42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	14,685.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.039	
Water Surface Elevation	1,137.27	ft
Elevation Range	1,130.00 to 1,155.00	
Flow Area	2,326.1	ft²
Wetted Perimeter	657.00	ft
Top Width	656.79	ft
Actual Depth	7.27	ft
Critical Elevation	1,135.74	ft
Critical Slope	0.014921	ft/ft
Velocity	6.31	ft/s
Velocity Head	0.62	ft
Specific Energy	1,137.89	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	22+00	0.050
22+00	25+80	0.035
25+80	52+00	0.050

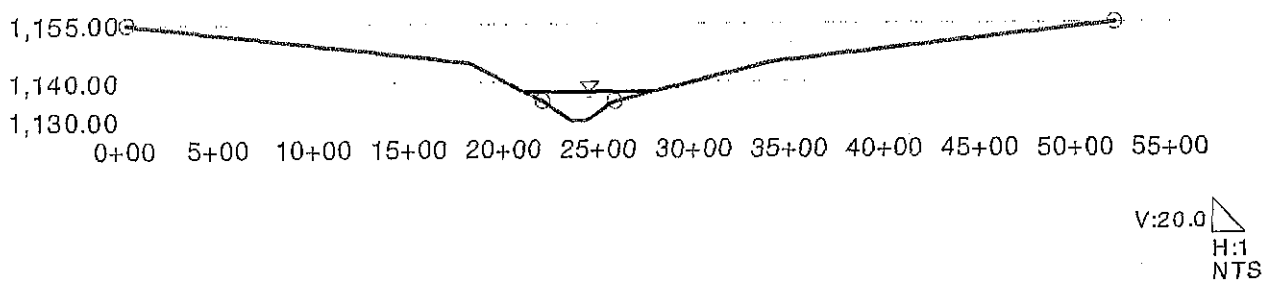
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,155.00
18+00	1,145.00
22+00	1,135.00
23+50	1,130.00
24+30	1,130.00
25+80	1,135.00
34+00	1,145.00
52+00	1,155.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPG42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.039	
Slope	0.005000	ft/ft
Water Surface Elevation	1,137.27	ft
Elevation Range	1,130.00 to 1,155.00	
Discharge	14,685.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH69
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	21,842.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Water Surface Elevation	1,128.93	ft
Elevation Range	1,120.00 to 1,134.00	
Flow Area	4,367.2	ft²
Wetted Perimeter	1,351.59	ft
Top Width	1,351.30	ft
Actual Depth	8.93	ft
Critical Elevation	1,127.25	ft
Critical Slope	0.013109	ft/ft
Velocity	5.00	ft/s
Velocity Head	0.39	ft
Specific Energy	1,129.32	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
6+80	14+00	0.050
14+00	16+00	0.035
16+00	23+20	0.050

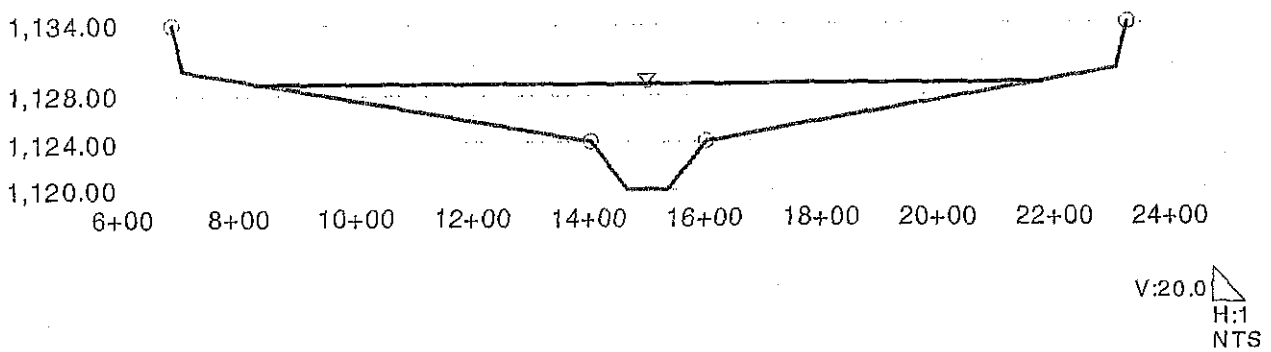
Natural Channel Points

Station (ft)	Elevation (ft)
6+80	1,134.00
7+00	1,130.00
14+00	1,124.00
14+65	1,120.00
15+35	1,120.00
16+00	1,124.00
23+00	1,130.00
23+20	1,134.00

Cross Section
Cross Section for Irregular Channel

Project Description	.
Worksheet	RCPH69
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.035	
Slope	0.003300	ft/ft
Water Surface Elevation	1,128.93	ft
Elevation Range	1,120.00 to 1,134.00	
Discharge	21,842.00	cfs



Project Summary Report

Project Description	
Worksheet	*RCPH72*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	24,028.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,109.58	ft
Elevation Range	1,100.00 to 1,120.00	
Flow Area	6,947.1	ft²
Wetted Perimeter	2,402.50	ft
Top Width	2,402.15	ft
Actual Depth	9.58	ft
Critical Elevation	1,107.48	ft
Critical Slope	0.026930	ft/ft
Velocity	3.46	ft/s
Velocity Head	0.19	ft
Specific Energy	1,109.76	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	28+50	0.050
28+50	31+00	0.035
31+00	62+00	0.050

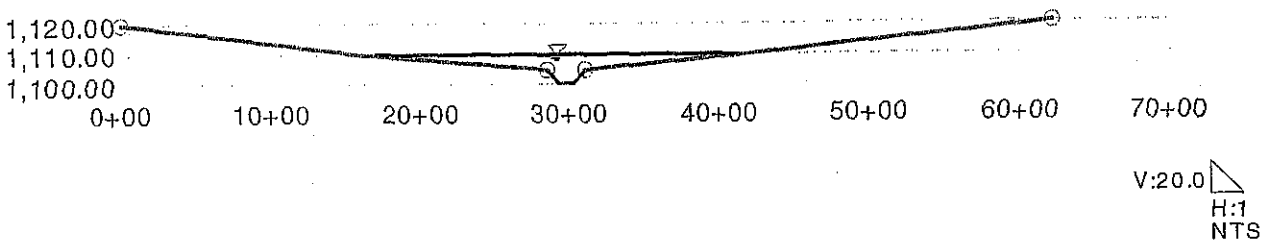
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,120.00
16+00	1,110.00
28+50	1,105.00
29+25	1,100.00
30+25	1,100.00
31+00	1,105.00
42+00	1,110.00
62+00	1,120.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH72
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003100	ft/ft
Water Surface Elevation	1,109.58	ft
Elevation Range	1,100.00 to 1,120.00	
Discharge	24,028.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH74
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	25,405.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,100.70	ft
Elevation Range	1,090.00 to 1,103.00	
Flow Area	4,699.1	ft²
Wetted Perimeter	1,123.69	ft
Top Width	1,123.21	ft
Actual Depth	10.70	ft
Critical Elevation	1,098.62	ft
Critical Slope	0.021219	ft/ft
Velocity	5.41	ft/s
Velocity Head	0.45	ft
Specific Energy	1,101.15	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
30+50	35+00	0.050
35+00	37+00	0.035
37+00	42+50	0.050

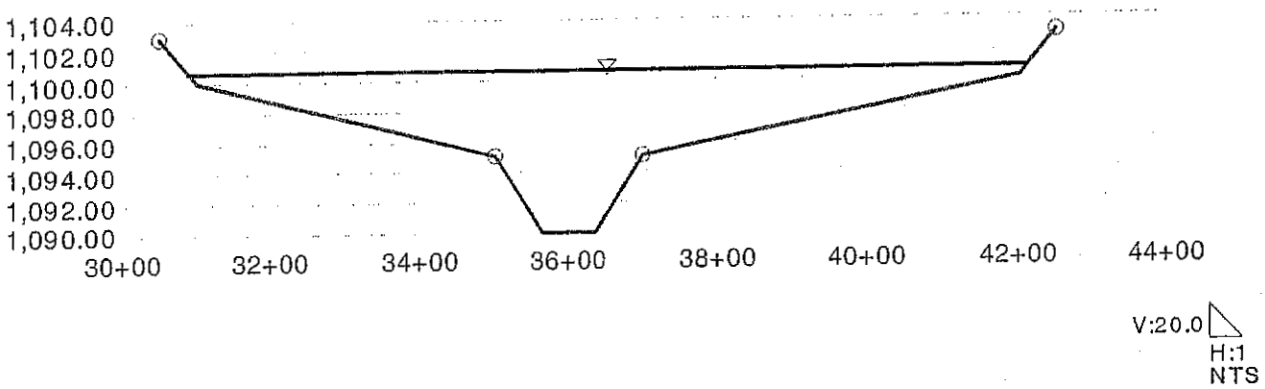
Natural Channel Points

Station (ft)	Elevation (ft)
30+50	1,103.00
31+00	1,100.00
35+00	1,095.00
35+65	1,090.00
36+35	1,090.00
37+00	1,095.00
42+00	1,100.00
42+50	1,103.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH74
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.003100	ft/ft
Water Surface Elevation	1,100.70	ft
Elevation Range	1,090.00 to 1,103.00	
Discharge	25,405.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH77
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002800	ft/ft
Discharge	25,388.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,078.65	ft
Elevation Range	1,068.00 to 1,082.00	
Flow Area	6,056.2	ft²
Wetted Perimeter	1,583.12	ft
Top Width	1,582.74	ft
Actual Depth	10.65	ft
Critical Elevation	1,075.99	ft
Critical Slope	0.021766	ft/ft
Velocity	4.19	ft/s
Velocity Head	0.27	ft
Specific Energy	1,078.93	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
25+75	34+50	0.050
34+50	37+00	0.035
37+00	45+25	0.050

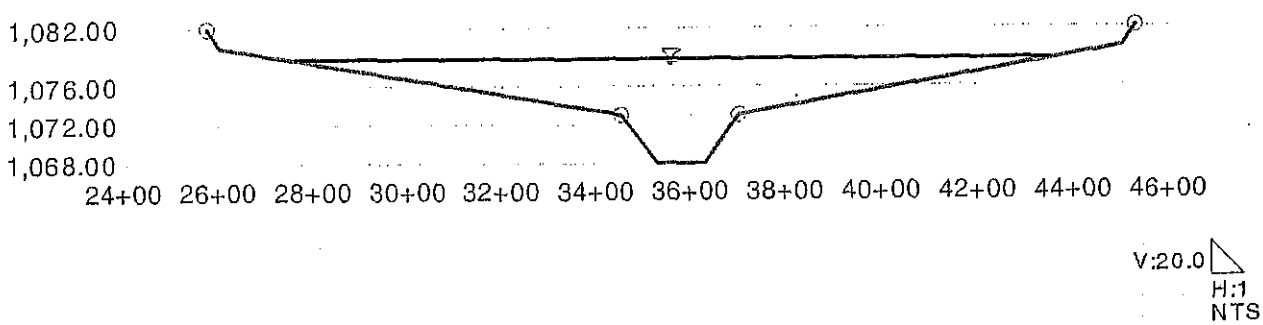
Natural Channel Points

Station (ft)	Elevation (ft)
25+75	1,082.00
26+00	1,080.00
34+50	1,073.00
35+25	1,068.00
36+25	1,068.00
37+00	1,073.00
45+00	1,080.00
45+25	1,082.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH77
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.002800	ft/ft
Water Surface Elevation	1,078.65	ft
Elevation Range	1,068.00 to 1,082.00	
Discharge	25,388.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH80
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	27,771.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.037	
Water Surface Elevation	1,063.89	ft
Elevation Range	1,055.00 to 1,070.00	
Flow Area	4,003.2	ft²
Wetted Perimeter	811.70	ft
Top Width	811.48	ft
Actual Depth	8.89	ft
Critical Elevation	1,061.82	ft
Critical Slope	0.012884	ft/ft
Velocity	6.94	ft/s
Velocity Head	0.75	ft
Specific Energy	1,064.64	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
22+80	25+00	0.050
25+00	30+00	0.035
30+00	32+20	0.050

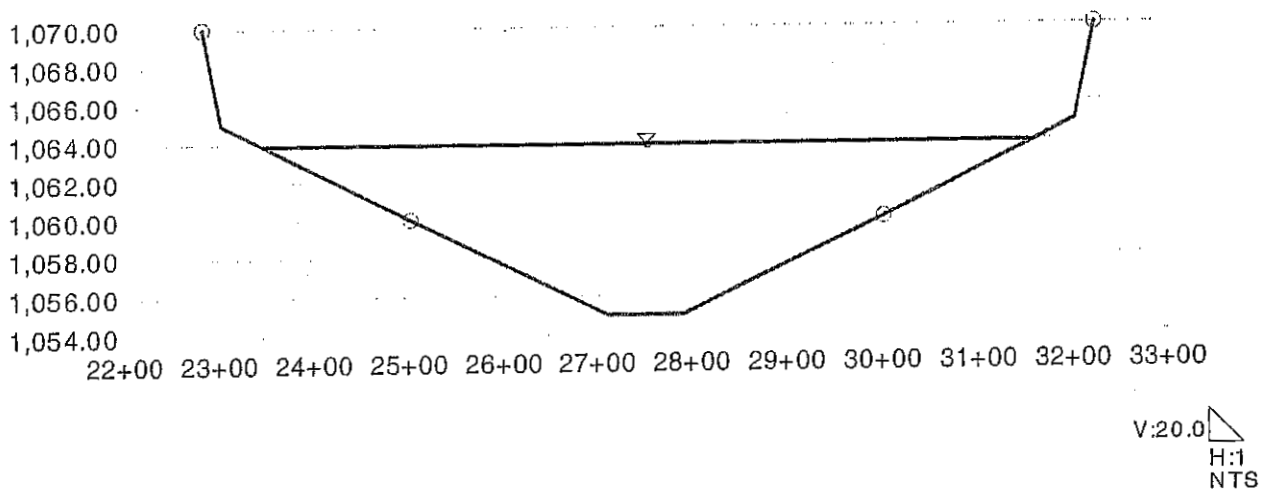
Natural Channel Points

Station (ft)	Elevation (ft)
22+80	1,070.00
23+00	1,065.00
25+00	1,060.00
27+10	1,055.00
27+90	1,055.00
30+00	1,060.00
32+00	1,065.00
32+20	1,070.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH80
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.037	
Slope	0.003600	ft/ft
Water Surface Elevation	1,063.89	ft
Elevation Range	1,055.00 to 1,070.00	
Discharge	27,771.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPH86
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	27,706.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,030.30	ft
Elevation Range	1,020.00 to 1,034.00	
Flow Area	7,761.7	ft²
Wetted Perimeter	2,473.13	ft
Top Width	2,472.72	ft
Actual Depth	10.30	ft
Critical Elevation	1,028.07	ft
Critical Slope	0.026845	ft/ft
Velocity	3.57	ft/s
Velocity Head	0.20	ft
Specific Energy	1,030.50	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
21+75	37+00	0.050
37+00	39+00	0.035
39+00	54+25	0.050

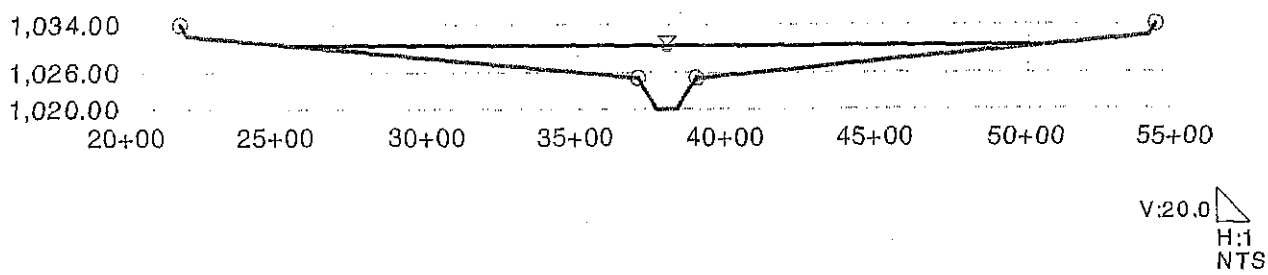
Natural Channel Points

Station (ft)	Elevation (ft)
21+75	1,034.00
22+00	1,032.00
37+00	1,025.00
37+65	1,020.00
38+35	1,020.00
39+00	1,025.00
54+00	1,032.00
54+25	1,034.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPH86
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003000	ft/ft
Water Surface Elevation	1,030.30	ft
Elevation Range	1,020.00 to 1,034.00	
Discharge	27,706.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003000	ft/ft
Discharge	27,892.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,019.25	ft
Elevation Range	1,010.00 to 1,030.00	
Flow Area	8,674.5	ft²
Wetted Perimeter	3,215.65	ft
Top Width	3,215.36	ft
Actual Depth	9.25	ft
Critical Elevation	1,017.29	ft
Critical Slope	0.028503	ft/ft
Velocity	3.22	ft/s
Velocity Head	0.16	ft
Specific Energy	1,019.42	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	30+80	0.050
30+80	33+00	0.035
33+00	74+00	0.050

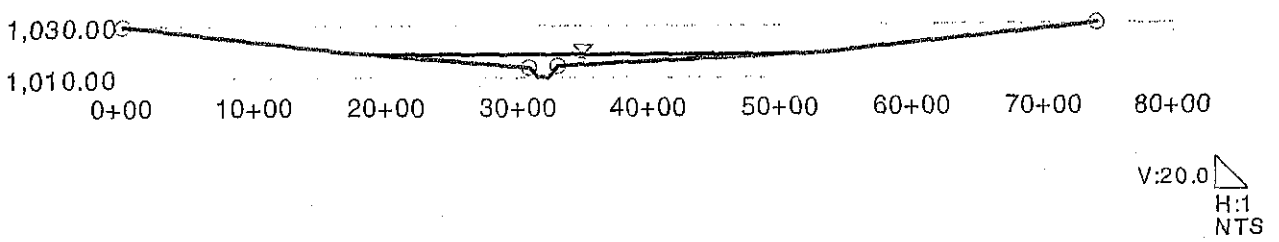
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,030.00
17+00	1,020.00
30+80	1,014.00
31+55	1,010.00
32+25	1,010.00
33+00	1,015.00
54+00	1,020.00
74+00	1,030.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003000	ft/ft
Water Surface Elevation	1,019.25	ft
Elevation Range	1,010.00 to 1,030.00	
Discharge	27,892.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	27,885.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	989.02	ft
Elevation Range	980.00 to 1,000.00	
Flow Area	9,447.6	ft²
Wetted Perimeter	4,065.12	ft
Top Width	4,064.80	ft
Actual Depth	9.02	ft
Critical Elevation	987.31	ft
Critical Slope	0.030163	ft/ft
Velocity	2.95	ft/s
Velocity Head	0.14	ft
Specific Energy	989.15	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	50+60	0.050
50+60	53+00	0.035
53+00	86+00	0.050

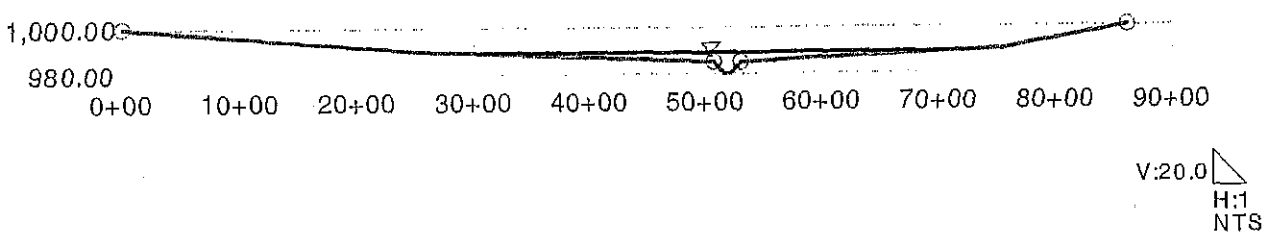
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,000.00
25+00	990.00
50+60	985.00
51+40	980.00
52+20	980.00
53+00	985.00
75+00	990.00
86+00	1,000.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003100	ft/ft
Water Surface Elevation	989.02	ft
Elevation Range	980.00 to 1,000.00	
Discharge	27,885.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI50
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004700	ft/ft
Discharge	27,753.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	978.48	ft
Elevation Range	968.00 to 984.00	
Flow Area	5,423.7	ft²
Wetted Perimeter	1,494.81	ft
Top Width	1,494.42	ft
Actual Depth	10.48	ft
Critical Elevation	976.49	ft
Critical Slope	0.022798	ft/ft
Velocity	5.12	ft/s
Velocity Head	0.41	ft
Specific Energy	978.89	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.050
13+00	15+20	0.035
15+20	21+60	0.050

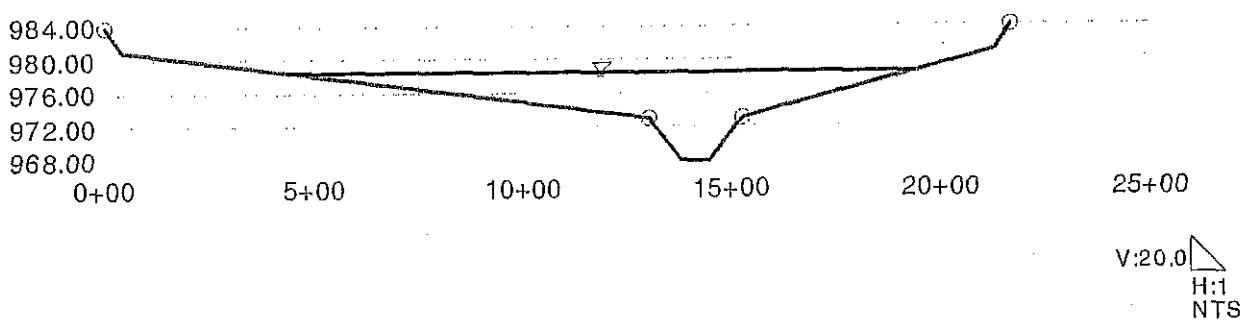
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	984.00
0+40	981.00
13+00	973.00
13+75	968.00
14+45	968.00
15+20	973.00
21+20	981.00
21+60	984.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI50
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004700	ft/ft
Water Surface Elevation	978.48	ft
Elevation Range	968.00 to 984.00	
Discharge	27,753.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003200	ft/ft
Discharge	27,569.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	950.67	ft
Elevation Range	940.00 to 955.00	
Flow Area	6,020.6	ft²
Wetted Perimeter	1,635.24	ft
Top Width	1,634.86	ft
Actual Depth	10.67	ft
Critical Elevation	948.38	ft
Critical Slope	0.024052	ft/ft
Velocity	4.58	ft/s
Velocity Head	0.33	ft
Specific Energy	950.99	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+10	0.050
10+10	12+35	0.035
12+35	22+55	0.050

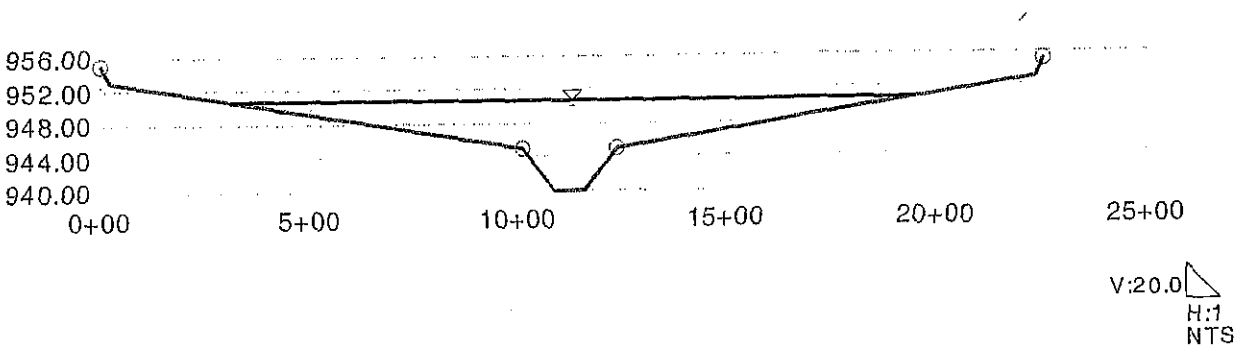
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	955.00
0+20	953.00
10+10	945.00
10+85	940.00
11+60	940.00
12+35	945.00
22+35	953.00
22+55	955.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI62
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.003200	ft/ft
Water Surface Elevation	950.67	ft
Elevation Range	940.00 to 955.00	
Discharge	27,569.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPI63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004600	ft/ft
Discharge	28,355.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	934.86	ft
Elevation Range	928.00 to 940.00	
Flow Area	5,458.1	ft²
Wetted Perimeter	1,608.45	ft
Top Width	1,608.37	ft
Actual Depth	6.86	ft
Critical Elevation	933.17	ft
Critical Slope	0.022901	ft/ft
Velocity	5.20	ft/s
Velocity Head	0.42	ft
Specific Energy	935.28	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.050
10+00	14+00	0.035
14+00	24+10	0.050

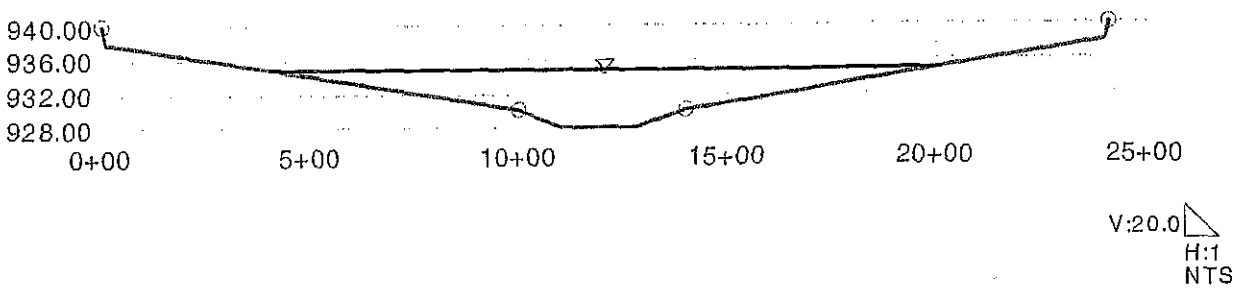
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	940.00
0+10	938.00
10+00	930.00
11+00	928.00
12+80	928.00
14+00	930.00
24+00	938.00
24+10	940.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPI63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004600	ft/ft
Water Surface Elevation	934.86	ft
Elevation Range	928.00 to 940.00	
Discharge	28,355.00	cfs



Project Summary Report

Project Description	
Worksheet	RC33A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005900	ft/ft
Discharge	676.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,374.96	ft
Elevation Range	1,372.00 to 1,378.00	
Flow Area	158.3	ft^2
Wetted Perimeter	72.46	ft
Top Width	71.99	ft
Actual Depth	2.96	ft
Critical Elevation	1,374.00	ft
Critical Slope	0.025509	ft/ft
Velocity	4.27	ft/s
Velocity Head	0.28	ft
Specific Energy	1,375.24	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+50	0.050
0+50	1+35	0.045
1+35	1+88	0.050

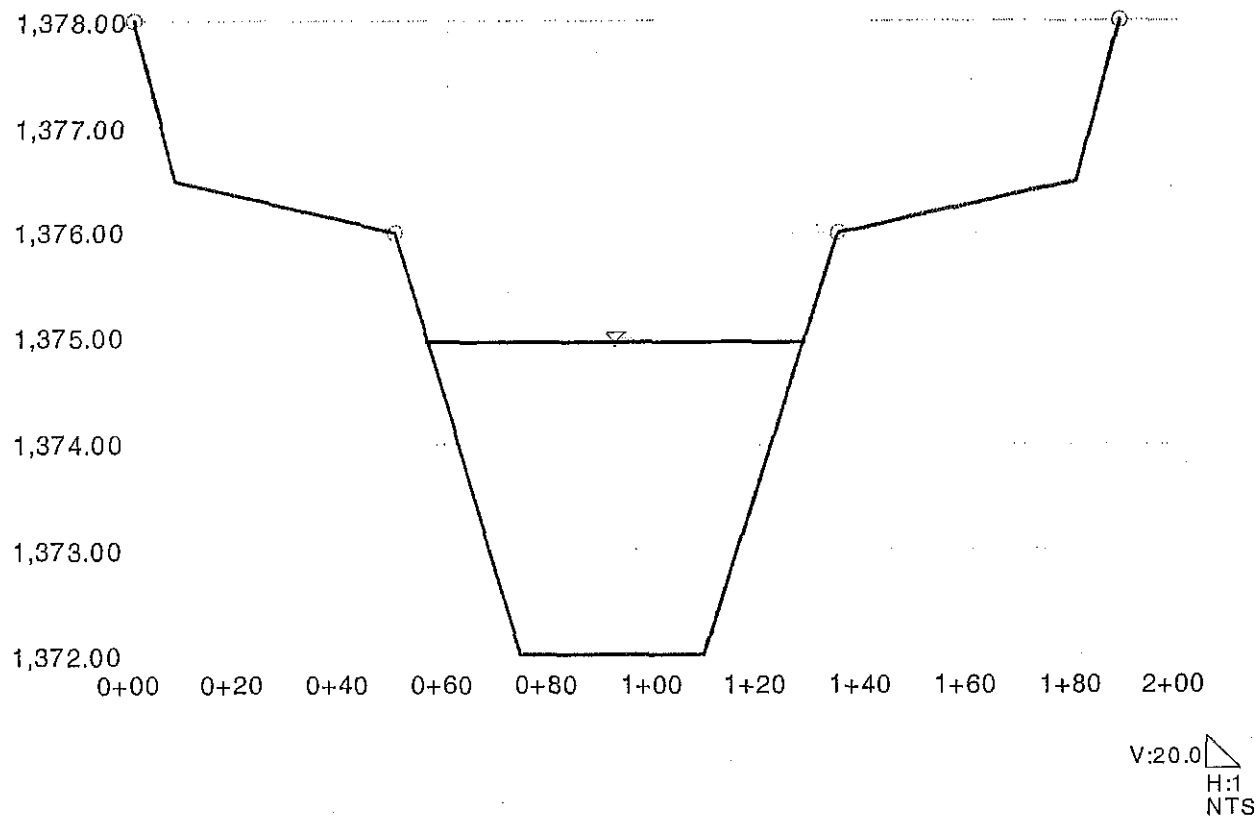
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,378.00
0+08	1,376.50
0+50	1,376.00
0+75	1,372.00
1+10	1,372.00
1+35	1,376.00
1+80	1,376.50
1+88	1,378.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RC33A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005900	ft/ft
Water Surface Elevation	1,374.96	ft
Elevation Range	1,372.00 to 1,378.00	
Discharge	676.00	cfs



Project Summary Report

Project Description	
Worksheet	RC33B
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	792.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,342.44	ft
Elevation Range	1,340.00 to 1,360.00	
Flow Area	230.3	ft²
Wetted Perimeter	119.04	ft
Top Width	118.79	ft
Actual Depth	2.44	ft
Critical Elevation	1,341.47	ft
Critical Slope	0.027418	ft/ft
Velocity	3.44	ft/s
Velocity Head	0.18	ft
Specific Energy	1,342.62	ft
Froude Number	0.44	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+00	0.050
20+00	21+70	0.045
21+70	41+70	0.050

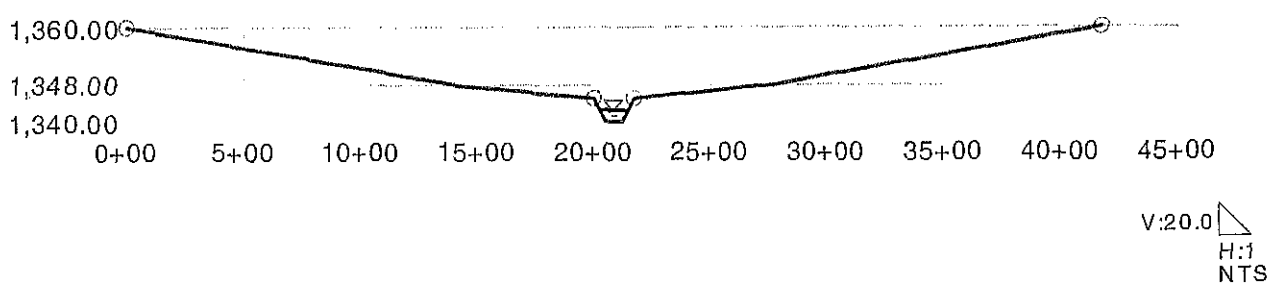
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,360.00
14+00	1,348.00
20+00	1,345.00
20+50	1,340.00
21+20	1,340.00
21+70	1,345.00
27+70	1,348.00
41+70	1,360.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RC33B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	*0.045*	
Slope	0.004500	ft/ft
Water Surface Elevation	1,342.44	ft
Elevation Range	1,340.00 to 1,360.00	
Discharge	792.00	cfs



Project Summary Report

Project Description	
Worksheet	RC33C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	1,479.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,376.40	ft
Elevation Range	1,372.00 to 1,380.00	
Flow Area	464.5	ft²
Wetted Perimeter	263.74	ft
Top Width	263.42	ft
Actual Depth	4.40	ft
Critical Elevation	1,374.76	ft
Critical Slope	0.027084	ft/ft
Velocity	3.18	ft/s
Velocity Head	0.16	ft
Specific Energy	1,376.56	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+00	0.050
3+00	4+00	0.045
4+00	6+50	0.050

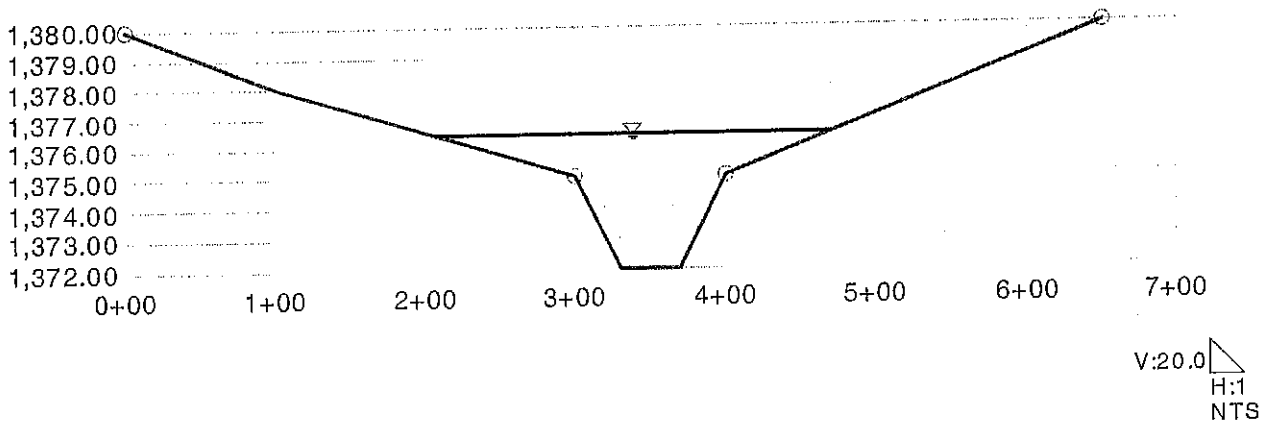
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,380.00
1+00	1,378.00
3+00	1,375.00
3+30	1,372.00
3+70	1,372.00
4+00	1,375.00
5+50	1,378.00
6+50	1,380.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RC33C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.005000	ft/ft
Water Surface Elevation	1,376.40	ft
Elevation Range	1,372.00 to 1,380.00	
Discharge	1,479.00	cfs



Project Summary Report

Project Description	
Worksheet	RC33D
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	1,746.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,345.72	ft
Elevation Range	1,342.00 to 1,350.00	
Flow Area	467.1	ft²
Wetted Perimeter	220.32	ft
Top Width	220.12	ft
Actual Depth	3.72	ft
Critical Elevation	1,344.37	ft
Critical Slope	0.026322	ft/ft
Velocity	3.74	ft/s
Velocity Head	0.22	ft
Specific Energy	1,345.94	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+80	0.050
1+80	3+40	0.045
3+40	4+50	0.050

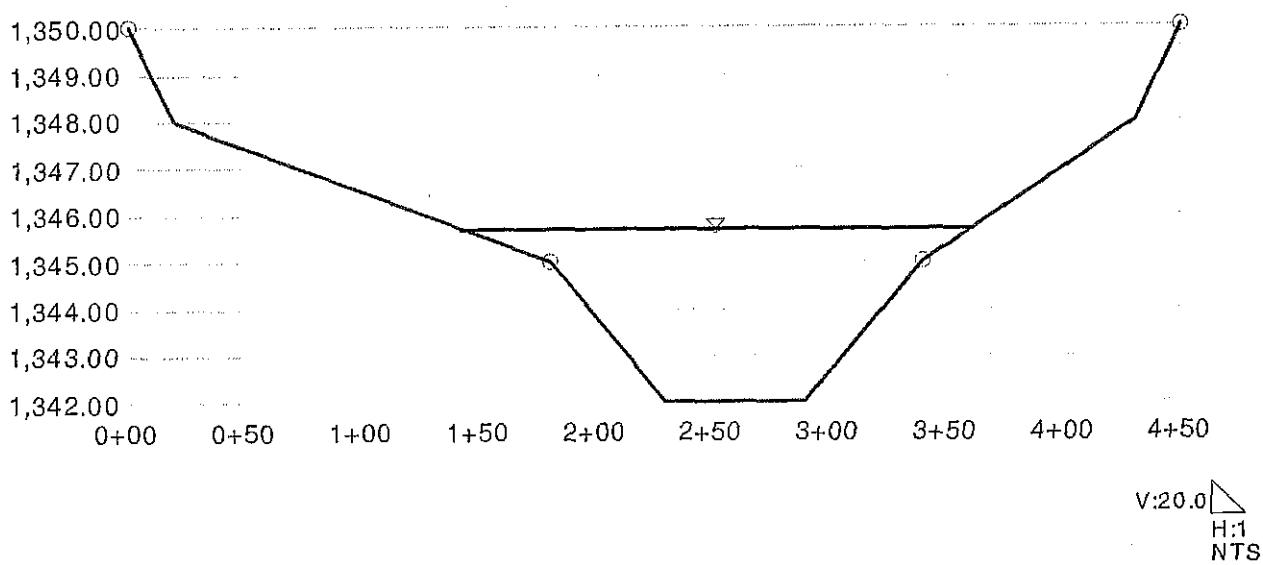
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,350.00
0+20	1,348.00
1+80	1,345.00
2+30	1,342.00
2+90	1,342.00
3+40	1,345.00
4+30	1,348.00
4+50	1,350.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RC33D
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005000	ft/ft
Water Surface Elevation	1,345.72	ft
Elevation Range	1,342.00 to 1,350.00	
Discharge	1,746.00	cfs



Project Summary Report

Project Description	
Worksheet	RC33E
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	2,325.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,324.16	ft
Elevation Range	1,320.00 to 1,340.00	
Flow Area	488.8	ft²
Wetted Perimeter	155.38	ft
Top Width	154.91	ft
Actual Depth	4.16	ft
Critical Elevation	1,322.67	ft
Critical Slope	0.022858	ft/ft
Velocity	4.76	ft/s
Velocity Head	0.35	ft
Specific Energy	1,324.51	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+00	0.050
20+00	21+70	0.045
21+70	41+70	0.050

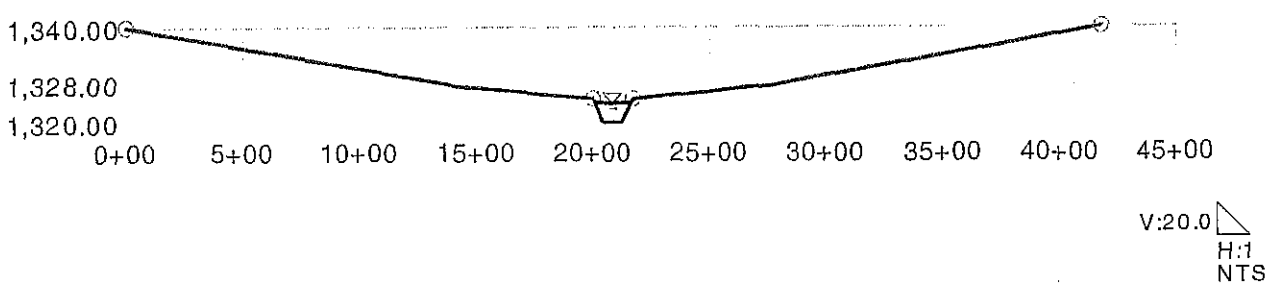
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
14+00	1,328.00
20+00	1,325.00
20+45	1,320.00
21+25	1,320.00
21+70	1,325.00
27+70	1,328.00
41+70	1,340.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RC33E
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,324.16	ft
Elevation Range	1,320.00 to 1,340.00	
Discharge	2,325.00	cfs



Project Summary Report

Project Description	
Worksheet	RC33F
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	2,358.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,304.19	ft
Elevation Range	1,300.00 to 1,320.00	
Flow Area	493.7	ft²
Wetted Perimeter	155.94	ft
Top Width	155.48	ft
Actual Depth	4.19	ft
Critical Elevation	1,302.70	ft
Critical Slope	0.022803	ft/ft
Velocity	4.78	ft/s
Velocity Head	0.35	ft
Specific Energy	1,304.55	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	20+00	0.050
20+00	21+70	0.045
21+70	41+70	0.050

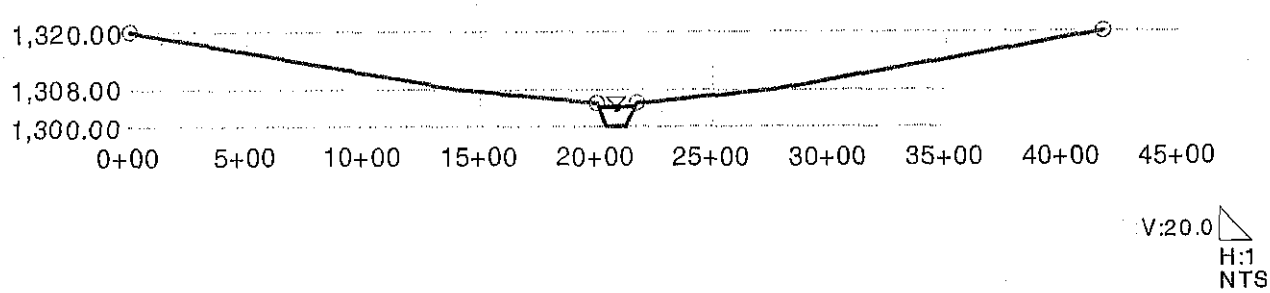
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,320.00
14+00	1,308.00
20+00	1,305.00
20+45	1,300.00
21+25	1,300.00
21+70	1,305.00
27+70	1,308.00
41+70	1,320.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RC33F
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,304.19	ft
Elevation Range	1,300.00 to 1,320.00	
Discharge	2,358.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.021000	ft/ft
Discharge	146.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,616.20	ft
Elevation Range	1,615.00 to 1,619.00	
Flow Area	31.2	ft²
Wetted Perimeter	32.23	ft
Top Width	32.00	ft
Actual Depth	1.20	ft
Critical Elevation	1,616.08	ft
Critical Slope	0.030984	ft/ft
Velocity	4.68	ft/s
Velocity Head	0.34	ft
Specific Energy	1,616.54	ft
Froude Number	0.84	
Flow Type	Subcritical	

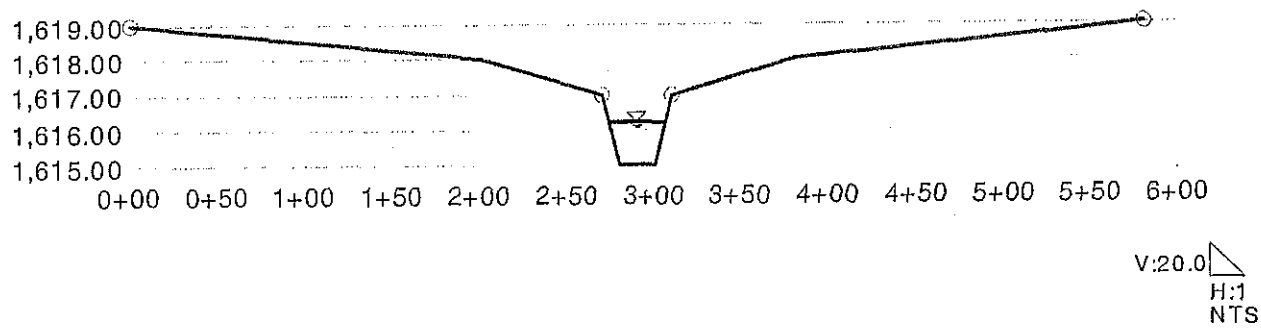
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	2+70	0.050
2+70	3+10	0.045
3+10	5+80	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,619.00
2+00	1,618.00
2+70	1,617.00
2+80	1,615.00
3+00	1,615.00
3+10	1,617.00
3+80	1,618.00
5+80	1,619.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.021000	ft/ft
Water Surface Elevation	1,616.20	ft
Elevation Range	1,615.00 to 1,619.00	
Discharge	146.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.022000	ft/ft
Discharge	82.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,624.83	ft
Elevation Range	1,624.00 to 1,628.00	
Flow Area	21.9	ft²
Wetted Perimeter	32.60	ft
Top Width	32.49	ft
Actual Depth	0.83	ft
Critical Elevation	1,624.73	ft
Critical Slope	0.035098	ft/ft
Velocity	3.75	ft/s
Velocity Head	0.22	ft
Specific Energy	1,625.05	ft
Froude Number	0.81	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+00	0.045
3+00	5+50	0.050

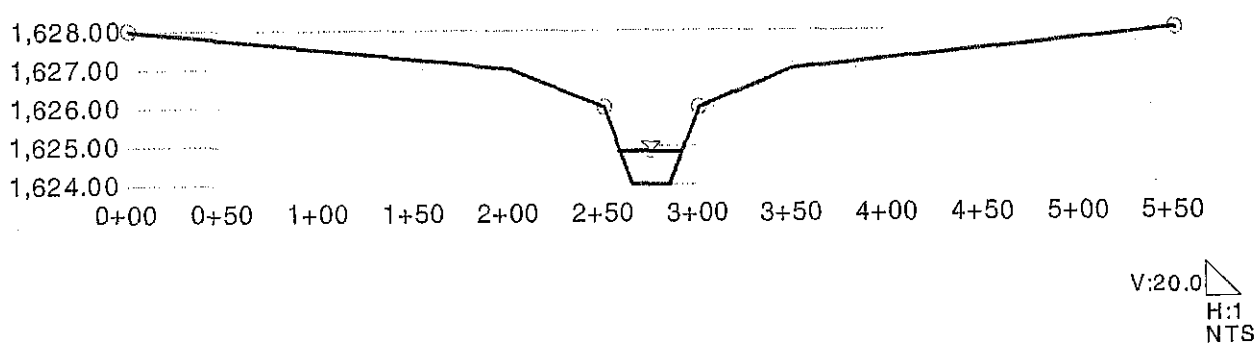
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,628.00
2+00	1,627.00
2+50	1,626.00
2+65	1,624.00
2+85	1,624.00
3+00	1,626.00
3+50	1,627.00
5+50	1,628.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.022000	ft/ft
Water Surface Elevation	1,624.83	ft
Elevation Range	1,624.00 to 1,628.00	
Discharge	82.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.016700	ft/ft
Discharge	99.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,613.39	ft
Elevation Range	1,612.00 to 1,615.00	
Flow Area	23.6	ft²
Wetted Perimeter	24.19	ft
Top Width	23.91	ft
Actual Depth	1.39	ft
Critical Elevation	1,613.18	ft
Critical Slope	0.031453	ft/ft
Velocity	4.20	ft/s
Velocity Head	0.27	ft
Specific Energy	1,613.66	ft
Froude Number	0.74	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+10	0.050
2+10	2+40	0.045
2+40	4+50	0.050

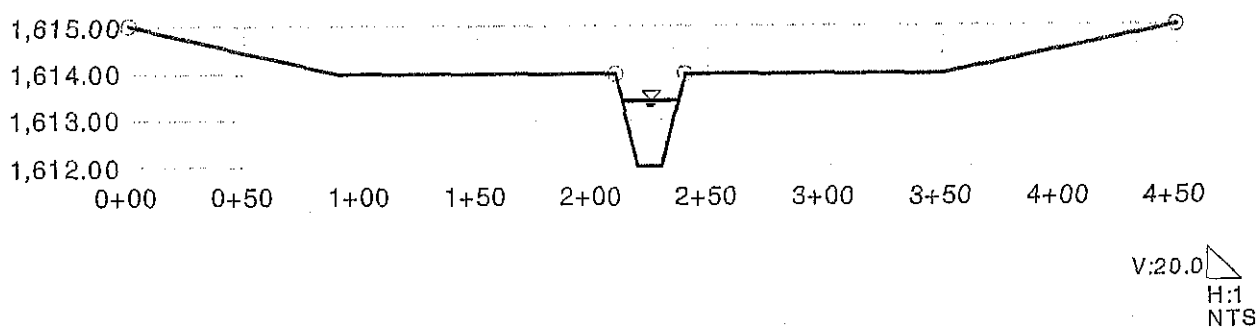
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,615.00
0+90	1,614.00
2+10	1,614.00
2+20	1,612.00
2+30	1,612.00
2+40	1,614.00
3+50	1,614.00
4+50	1,615.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.016700	ft/ft
Water Surface Elevation	1,613.39	ft
Elevation Range	1,612.00 to 1,615.00	
Discharge	99.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.023200	ft/ft
Discharge	182.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,665.53	ft
Elevation Range	1,663.00 to 1,667.00	
Flow Area	60.2	ft²
Wetted Perimeter	113.41	ft
Top Width	112.82	ft
Actual Depth	2.53	ft
Critical Elevation	1,665.37	ft
Critical Slope	0.044008	ft/ft
Velocity	3.02	ft/s
Velocity Head	0.14	ft
Specific Energy	1,665.67	ft
Froude Number	0.73	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+70	0.050
1+70	1+90	0.045
1+90	3+75	0.050

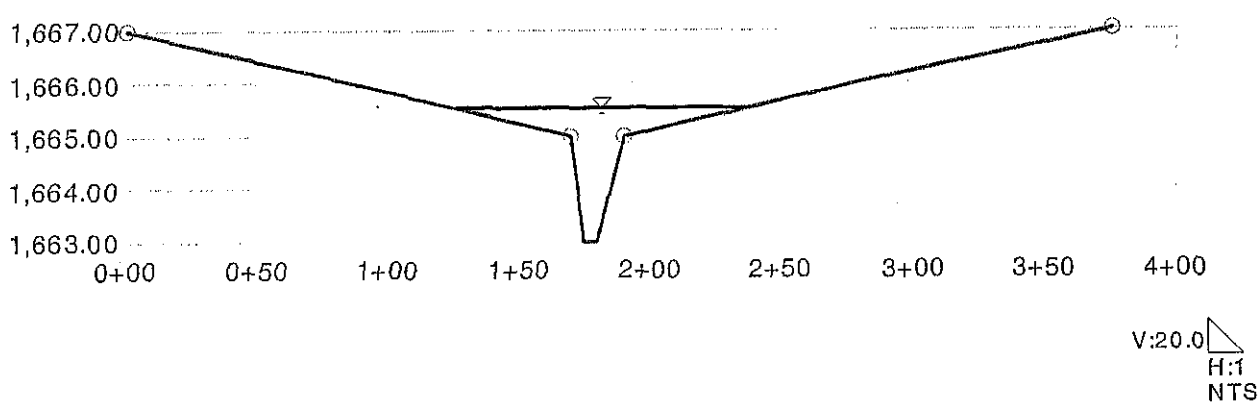
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,667.00
0+85	1,666.00
1+70	1,665.00
1+75	1,663.00
1+80	1,663.00
1+90	1,665.00
2+80	1,666.00
3+75	1,667.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC04
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.023200	ft/ft
Water Surface Elevation	1,665.53	ft
Elevation Range	1,663.00 to 1,667.00	
Discharge	182.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.015300	ft/ft
Discharge	135.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,614.35	ft
Elevation Range	1,613.00 to 1,616.00	
Flow Area	34.0	ft²
Wetted Perimeter	35.46	ft
Top Width	35.28	ft
Actual Depth	1.35	ft
Critical Elevation	1,614.12	ft
Critical Slope	0.031668	ft/ft
Velocity	3.97	ft/s
Velocity Head	0.25	ft
Specific Energy	1,614.60	ft
Froude Number	0.71	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+65	0.045
1+65	3+20	0.050

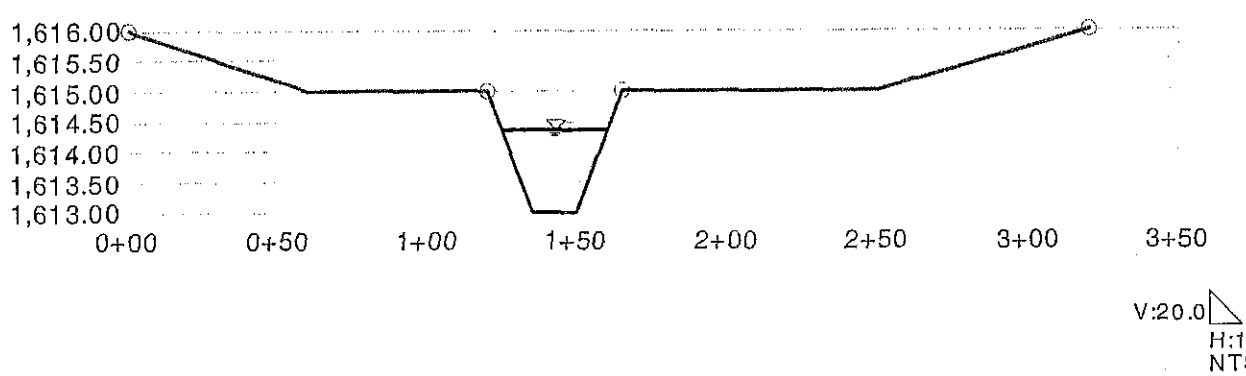
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,616.00
0+60	1,615.00
1+20	1,615.00
1+35	1,613.00
1+50	1,613.00
1+65	1,615.00
2+50	1,615.00
3+20	1,616.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.015300	ft/ft
Water Surface Elevation	1,614.35	ft
Elevation Range	1,613.00 to 1,616.00	
Discharge	135.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.012700	ft/ft
Discharge	212.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,565.75	ft
Elevation Range	1,564.00 to 1,568.00	
Flow Area	45.4	ft²
Wetted Perimeter	32.21	ft
Top Width	31.70	ft
Actual Depth	1.75	ft
Critical Elevation	1,565.40	ft
Critical Slope	0.028481	ft/ft
Velocity	4.67	ft/s
Velocity Head	0.34	ft
Specific Energy	1,566.09	ft
Froude Number	0.69	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+40	0.050
2+40	2+80	0.045
2+80	5+00	0.050

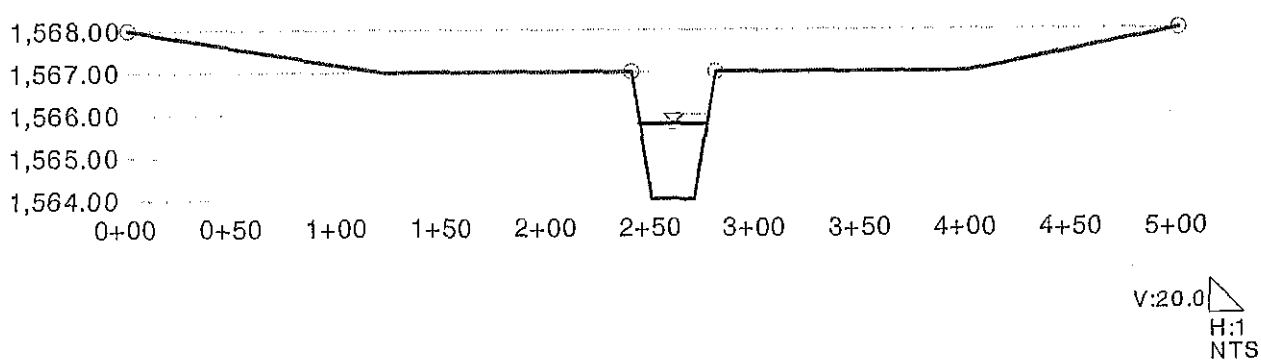
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,568.00
1+20	1,567.00
2+40	1,567.00
2+50	1,564.00
2+70	1,564.00
2+80	1,567.00
4+00	1,567.00
5+00	1,568.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.012700	ft/ft
Water Surface Elevation	1,565.75	ft
Elevation Range	1,564.00 to 1,568.00	
Discharge	212.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010600	ft/ft
Discharge	1,003.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,556.84	ft
Elevation Range	1,553.00 to 1,558.00	
Flow Area	215.8	ft²
Wetted Perimeter	131.18	ft
Top Width	130.67	ft
Actual Depth	3.84	ft
Critical Elevation	1,556.36	ft
Critical Slope	0.028211	ft/ft
Velocity	4.65	ft/s
Velocity Head	0.34	ft
Specific Energy	1,557.18	ft
Froude Number	0.64	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	0+95	0.045
0+95	1+43	0.050

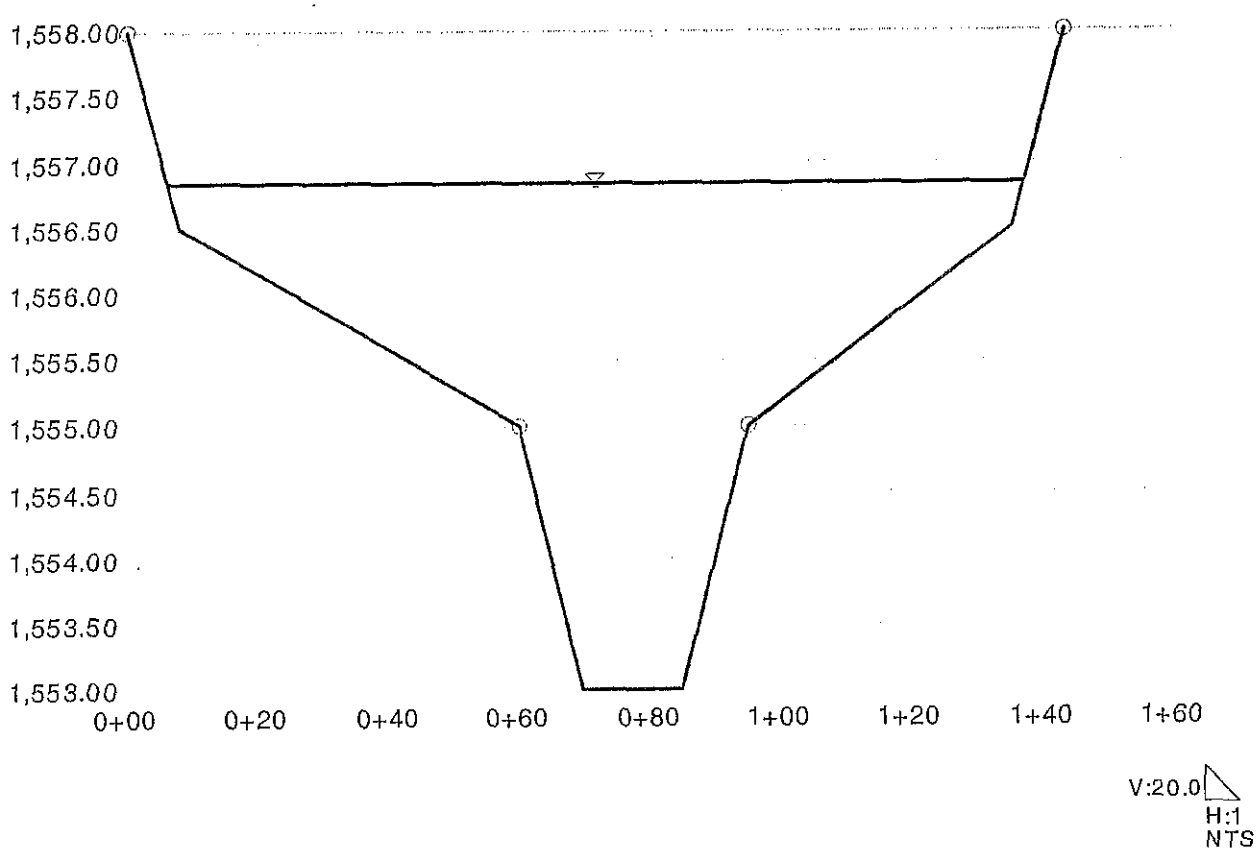
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,558.00
0+08	1,556.50
0+60	1,555.00
0+70	1,553.00
0+85	1,553.00
0+95	1,555.00
1+35	1,556.50
1+43	1,558.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.046
Slope	0.010600 ft/ft
Water Surface Elevation	1,556.84 ft
Elevation Range	1,553.00 to 1,558.00
Discharge	1,003.00 cfs



Project Summary Report

Project Description	
Worksheet	RCPC08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009900	ft/ft
Discharge	739.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,568.56	ft
Elevation Range	1,566.00 to 1,580.00	
Flow Area	142.0	ft²
Wetted Perimeter	71.19	ft
Top Width	70.76	ft
Actual Depth	2.56	ft
Critical Elevation	1,567.98	ft
Critical Slope	0.025349	ft/ft
Velocity	5.21	ft/s
Velocity Head	0.42	ft
Specific Energy	1,568.98	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+14	0.050
5+14	5+90	0.045
5+90	8+06	0.050

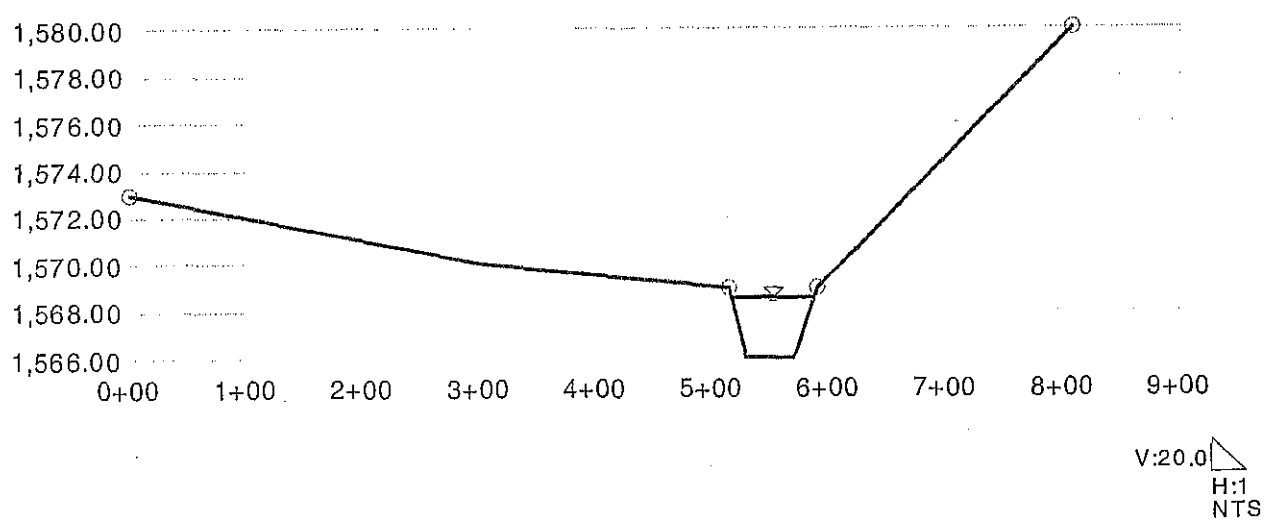
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,573.00
3+00	1,570.00
5+14	1,569.00
5+30	1,566.00
5+70	1,566.00
5+90	1,569.00
6+12	1,570.00
8+06	1,580.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009900	ft/ft
Water Surface Elevation	1,568.56	ft
Elevation Range	1,566.00 to 1,580.00	
Discharge	739.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.013900	ft/ft
Discharge	97.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,550.96	ft
Elevation Range	1,550.00 to 1,553.00	
Flow Area	28.5	ft²
Wetted Perimeter	34.75	ft
Top Width	34.56	ft
Actual Depth	0.96	ft
Critical Elevation	1,550.74	ft
Critical Slope	0.034209	ft/ft
Velocity	3.41	ft/s
Velocity Head	0.18	ft
Specific Energy	1,551.14	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+65	0.045
1+65	3+00	0.050

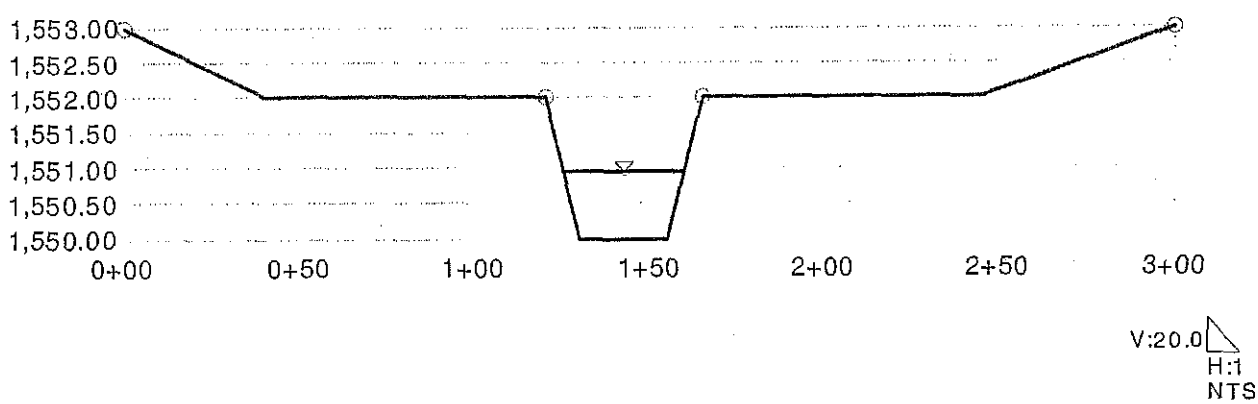
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,553.00
0+40	1,552.00
1+20	1,552.00
1+30	1,550.00
1+55	1,550.00
1+65	1,552.00
2+45	1,552.00
3+00	1,553.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC09
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	*0.013900*	*ft/ft*
Water Surface Elevation	1,550.96	ft
Elevation Range	1,550.00 to 1,553.00	
Discharge	97.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003900	ft/ft
Discharge	409.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,495.36	ft
Elevation Range	1,493.00 to 1,505.00	
Flow Area	178.2	ft²
Wetted Perimeter	151.69	ft
Top Width	150.93	ft
Actual Depth	2.36	ft
Critical Elevation	1,494.59	ft
Critical Slope	0.032065	ft/ft
Velocity	2.30	ft/s
Velocity Head	0.08	ft
Specific Energy	1,495.44	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+80	0.045
1+80	7+80	0.050

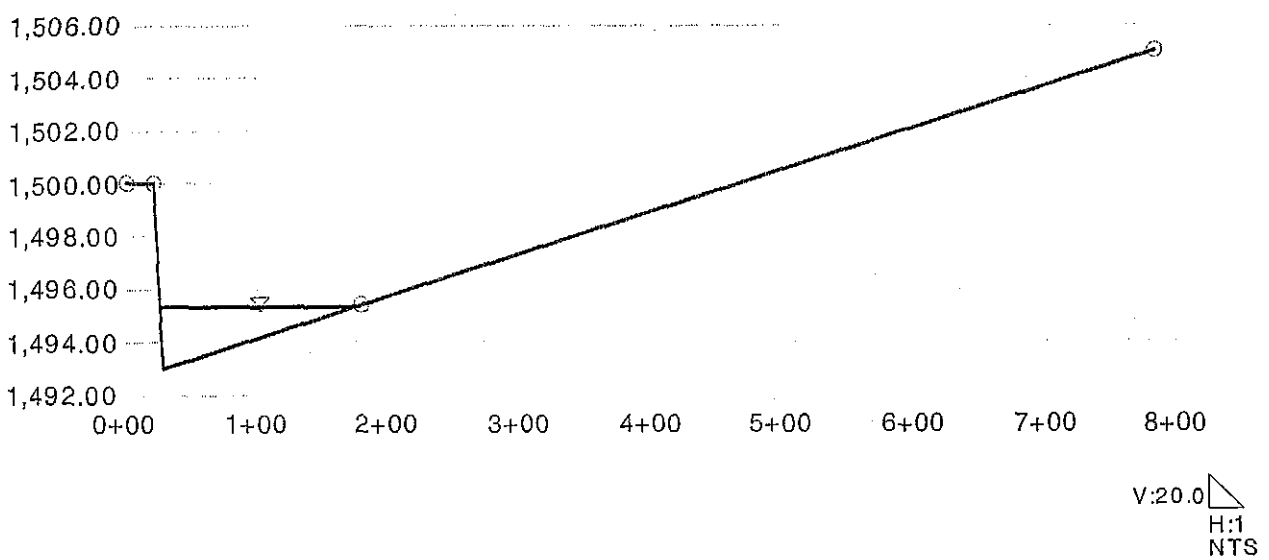
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,500.00
0+20	1,500.00
0+30	1,493.00
1+80	1,495.40
3+30	1,497.80
4+80	1,500.20
6+30	1,502.60
7+80	1,505.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003900	ft/ft
Water Surface Elevation	1,495.36	ft
Elevation Range	1,493.00 to 1,505.00	
Discharge	409.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011600	ft/ft
Discharge	110.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,535.58	ft
Elevation Range	1,534.00 to 1,537.00	
Flow Area	57.0	ft²
Wetted Perimeter	124.81	ft
Top Width	124.61	ft
Actual Depth	1.58	ft
Critical Elevation	1,535.32	ft
Critical Slope	0.048263	ft/ft
Velocity	1.93	ft/s
Velocity Head	0.06	ft
Specific Energy	1,535.64	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+90	0.050
1+90	2+10	0.045
2+10	4+20	0.050

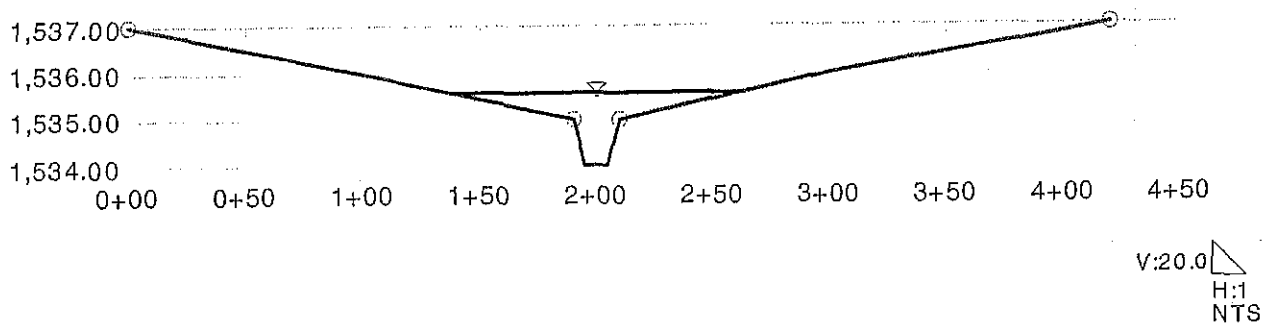
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,537.00
1+00	1,536.00
1+90	1,535.00
1+95	1,534.00
2+05	1,534.00
2+10	1,535.00
3+00	1,536.00
4+20	1,537.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.011600	ft/ft
Water Surface Elevation	1,535.58	ft
Elevation Range	1,534.00 to 1,537.00	
Discharge	110.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011900	ft/ft
Discharge	134.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,526.40	ft
Elevation Range	1,525.00 to 1,529.00	
Flow Area	33.0	ft²
Wetted Perimeter	27.56	ft
Top Width	27.02	ft
Actual Depth	1.40	ft
Critical Elevation	1,526.07	ft
Critical Slope	0.030620	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	1,526.66	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+30	0.050
1+30	1+60	0.045
1+60	2+80	0.050

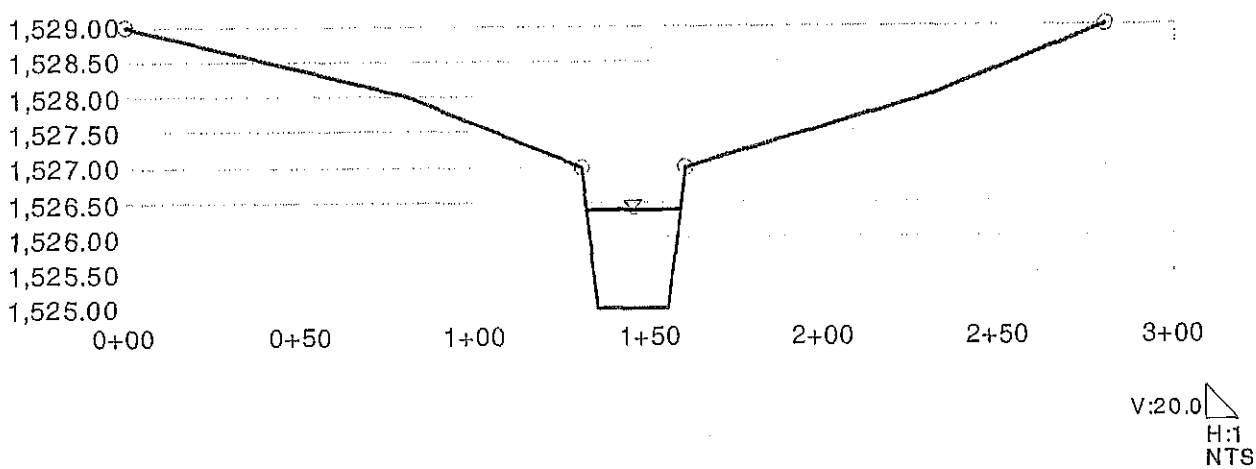
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,529.00
0+80	1,528.00
1+30	1,527.00
1+35	1,525.00
1+55	1,525.00
1+60	1,527.00
2+30	1,528.00
2+80	1,529.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.011900	ft/ft
Water Surface Elevation	1,526.40	ft
Elevation Range	1,525.00 to 1,529.00	
Discharge	134.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	138.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,507.46	ft
Elevation Range	1,506.00 to 1,520.00	
Flow Area	77.2	ft²
Wetted Perimeter	106.54	ft
Top Width	106.07	ft
Actual Depth	1.46	ft
Critical Elevation	1,506.98	ft
Critical Slope	0.037683	ft/ft
Velocity	1.79	ft/s
Velocity Head	0.05	ft
Specific Energy	1,507.51	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

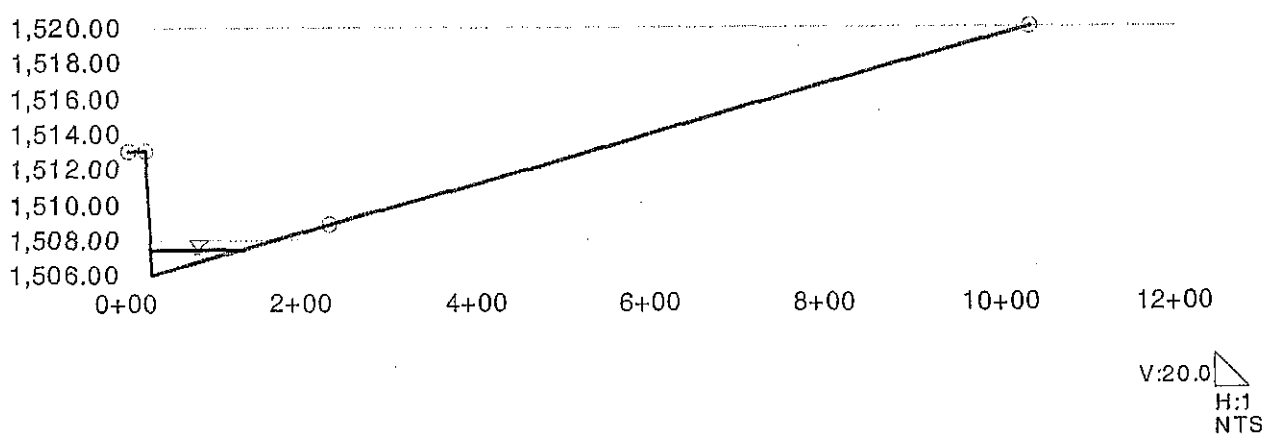
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,513.00
0+20	1,513.00
0+30	1,506.00
2+30	1,508.80
4+30	1,511.60
6+30	1,514.40
8+30	1,517.20
10+30	1,520.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,507.46	ft
Elevation Range	1,506.00 to 1,520.00	
Discharge	138.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003900	ft/ft
Discharge	122.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,501.44	ft
Elevation Range	1,500.00 to 1,513.00	
Flow Area	73.8	ft²
Wetted Perimeter	102.68	ft
Top Width	102.27	ft
Actual Depth	1.44	ft
Critical Elevation	1,500.94	ft
Critical Slope	0.038147	ft/ft
Velocity	1.65	ft/s
Velocity Head	0.04	ft
Specific Energy	1,501.48	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+10	0.045
2+10	9+30	0.050

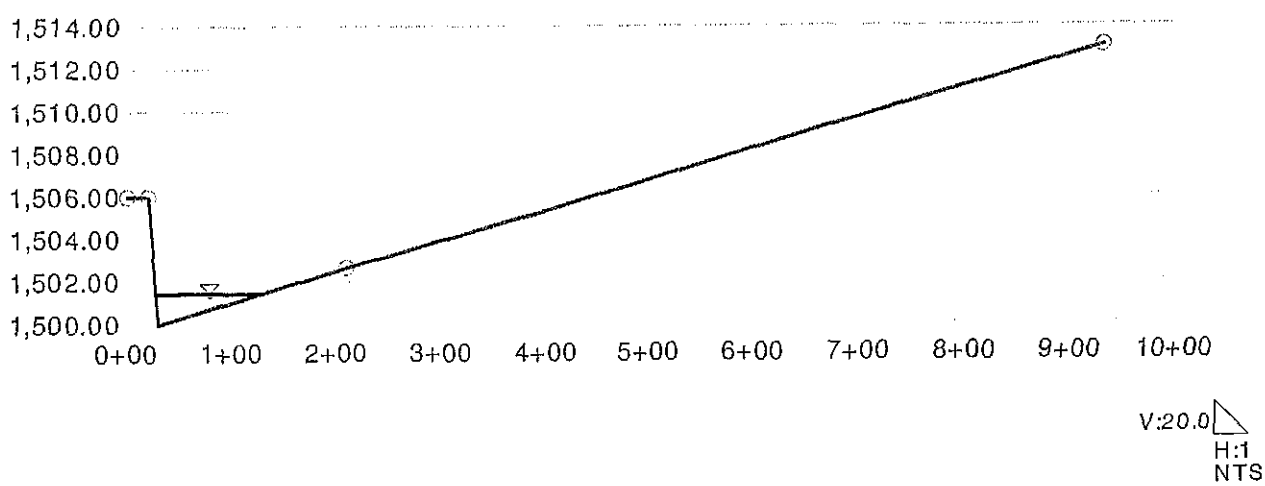
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,506.00
0+20	1,506.00
0+30	1,500.00
2+10	1,502.60
3+90	1,505.20
5+70	1,507.80
7+50	1,510.40
9+30	1,513.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003900	ft/ft
Water Surface Elevation	1,501.44	ft
Elevation Range	1,500.00 to 1,513.00	
Discharge	122.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC15
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009500	ft/ft
Discharge	4.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,614.28	ft
Elevation Range	1,614.00 to 1,617.00	
Flow Area	3.2	ft²
Wetted Perimeter	12.83	ft
Top Width	12.78	ft
Actual Depth	0.28	ft
Critical Elevation	1,614.17	ft
Critical Slope	0.055248	ft/ft
Velocity	1.27	ft/s
Velocity Head	0.02	ft
Specific Energy	1,614.30	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+80	0.045
1+80	3+50	0.050

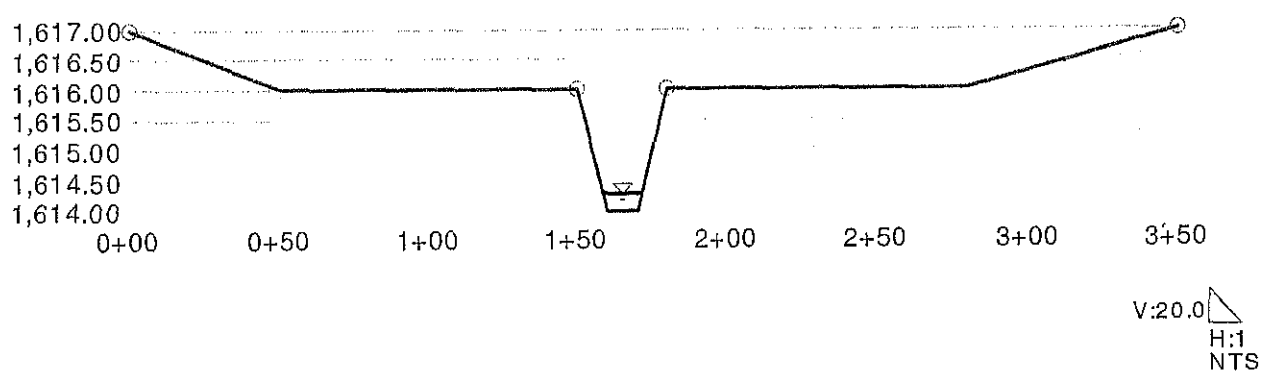
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,617.00
0+50	1,616.00
1+50	1,616.00
1+60	1,614.00
1+70	1,614.00
1+80	1,616.00
2+80	1,616.00
3+50	1,617.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009500	ft/ft
Water Surface Elevation	1,614.28	ft
Elevation Range	1,614.00 to 1,617.00	
Discharge	4.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010600	ft/ft
Discharge	264.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,516.31	ft
Elevation Range	1,514.00 to 1,517.00	
Flow Area	148.5	ft²
Wetted Perimeter	340.43	ft
Top Width	340.03	ft
Actual Depth	2.31	ft
Critical Elevation	1,515.74	ft
Critical Slope	0.033402	ft/ft
Velocity	1.78	ft/s
Velocity Head	0.05	ft
Specific Energy	1,516.36	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+35	0.045
2+35	4+50	0.050

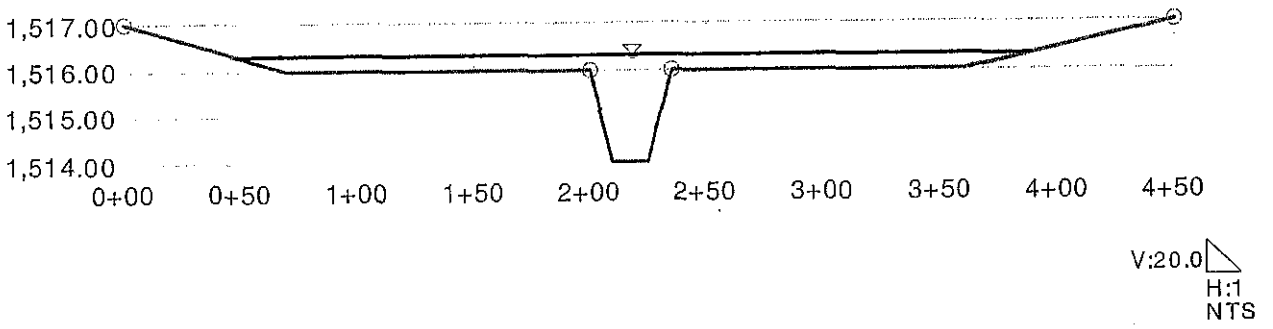
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,517.00
0+70	1,516.00
2+00	1,516.00
2+10	1,514.00
2+25	1,514.00
2+35	1,516.00
3+60	1,516.00
4+50	1,517.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.010600	ft/ft
Water Surface Elevation	1,516.31	ft
Elevation Range	1,514.00 to 1,517.00	
Discharge	264.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010600	ft/ft
Discharge	15.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,506.56	ft
Elevation Range	1,506.00 to 1,510.00	
Flow Area	7.7	ft²
Wetted Perimeter	17.56	ft
Top Width	17.45	ft
Actual Depth	0.56	ft
Critical Elevation	1,506.38	ft
Critical Slope	0.043699	ft/ft
Velocity	1.96	ft/s
Velocity Head	0.06	ft
Specific Energy	1,506.62	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+70	0.045
1+70	3+00	0.050

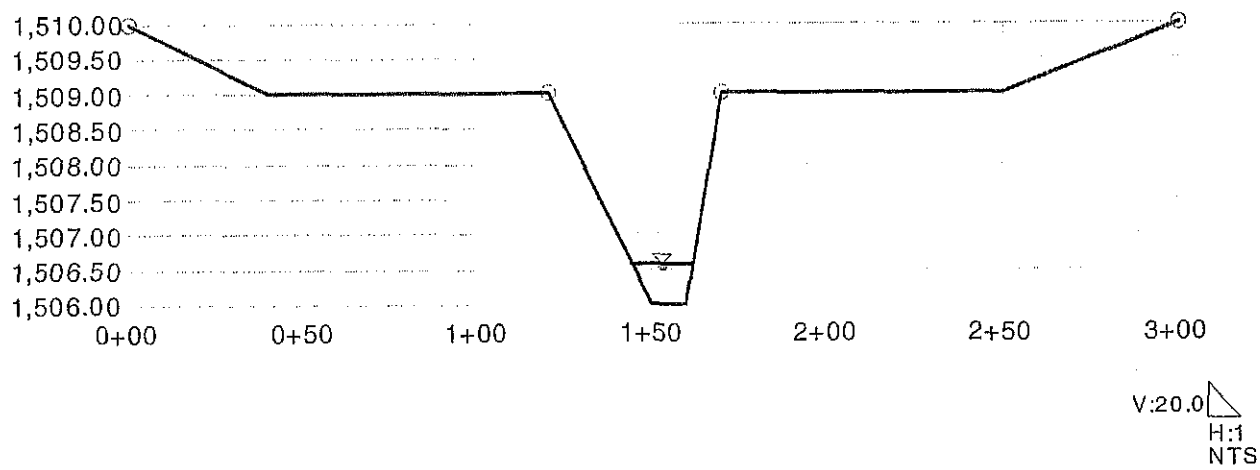
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,510.00
0+40	1,509.00
1+20	1,509.00
1+50	1,506.00
1+60	1,506.00
1+70	1,509.00
2+50	1,509.00
3+00	1,510.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.010600	ft/ft
Water Surface Elevation	1,506.56	ft
Elevation Range	1,506.00 to 1,510.00	
Discharge	15.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010300	ft/ft
Discharge	166.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,525.57	ft
Elevation Range	1,524.00 to 1,527.00	
Flow Area	43.6	ft²
Wetted Perimeter	35.97	ft
Top Width	35.66	ft
Actual Depth	1.57	ft
Critical Elevation	1,525.16	ft
Critical Slope	0.030314	ft/ft
Velocity	3.81	ft/s
Velocity Head	0.23	ft
Specific Energy	1,525.79	ft
Froude Number	0.61	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+70	0.050
1+70	2+10	0.045
2+10	3+50	0.050

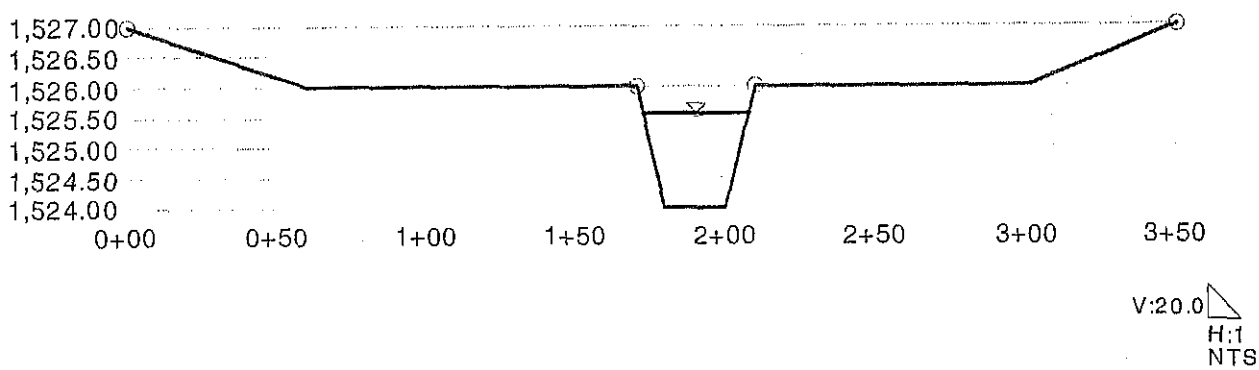
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,527.00
0+60	1,526.00
1+70	1,526.00
1+80	1,524.00
2+00	1,524.00
2+10	1,526.00
3+00	1,526.00
3+50	1,527.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.010300	ft/ft
Water Surface Elevation	1,525.57	ft
Elevation Range	1,524.00 to 1,527.00	
Discharge	166.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009100	ft/ft
Discharge	408.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,496.44	ft
Elevation Range	1,494.00 to 1,497.00	
Flow Area	214.3	ft²
Wetted Perimeter	394.56	ft
Top Width	394.16	ft
Actual Depth	2.44	ft
Critical Elevation	1,496.21	ft
Critical Slope	0.051601	ft/ft
Velocity	1.90	ft/s
Velocity Head	0.06	ft
Specific Energy	1,496.50	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+85	0.045
2+85	4+50	0.050

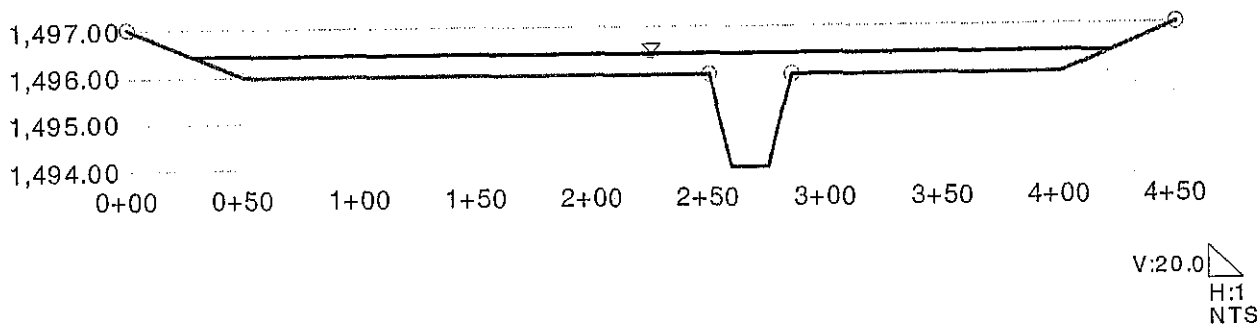
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,497.00
0+50	1,496.00
2+50	1,496.00
2+60	1,494.00
2+75	1,494.00
2+85	1,496.00
4+00	1,496.00
4+50	1,497.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.009100	ft/ft
Water Surface Elevation	1,496.44	ft
Elevation Range	1,494.00 to 1,497.00	
Discharge	408.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC20
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.006600	ft/ft
Discharge	909.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,450.71	ft
Elevation Range	1,448.00 to 1,460.00	
Flow Area	*280.9*	*ft²*
Wetted Perimeter	208.10	ft
Top Width	207.23	ft
Actual Depth	2.71	ft
Critical Elevation	1,450.04	ft
Critical Slope	*0.030245*	*ft/ft*
Velocity	3.24	ft/s
Velocity Head	0.16	ft
Specific Energy	1,450.87	ft
Froude Number	0.49	
Flow Type	*Subcritical*	

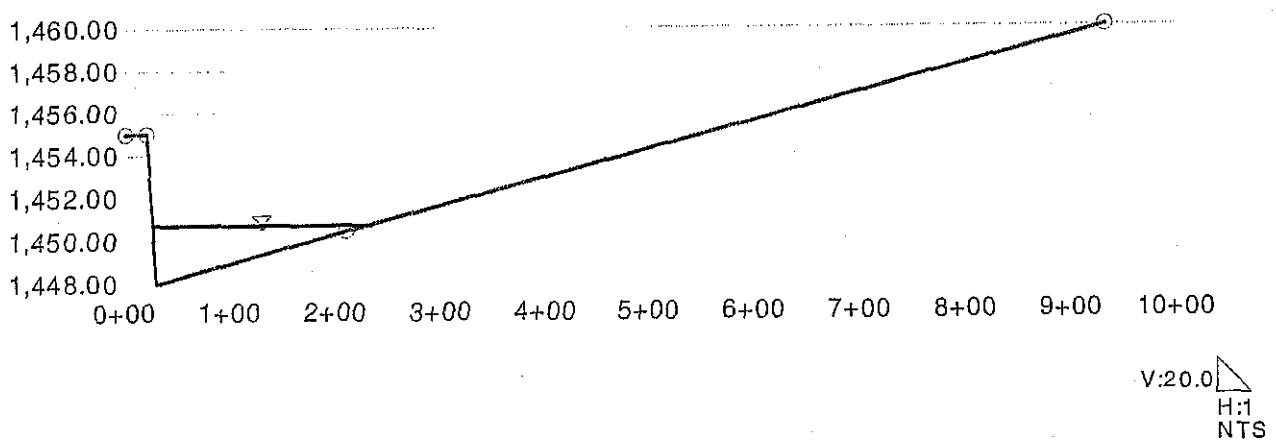
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+10	0.045
2+10	9+30	*0.050*

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,455.00
0+20	1,455.00
0+30	1,448.00
2+10	1,450.40
3+90	1,452.80
5+70	1,455.20
7+50	1,457.60
9+30	1,460.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.006600	ft/ft
Water Surface Elevation	1,450.71	ft
Elevation Range	1,448.00 to 1,460.00	
Discharge	909.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009300	ft/ft
Discharge	146.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,491.21	ft
Elevation Range	1,490.00 to 1,494.00	
Flow Area	46.0	ft²
Wetted Perimeter	46.31	ft
Top Width	46.12	ft
Actual Depth	1.21	ft
Critical Elevation	1,490.85	ft
Critical Slope	0.032906	ft/ft
Velocity	3.17	ft/s
Velocity Head	0.16	ft
Specific Energy	1,491.37	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+70	0.045
2+70	4+50	0.050

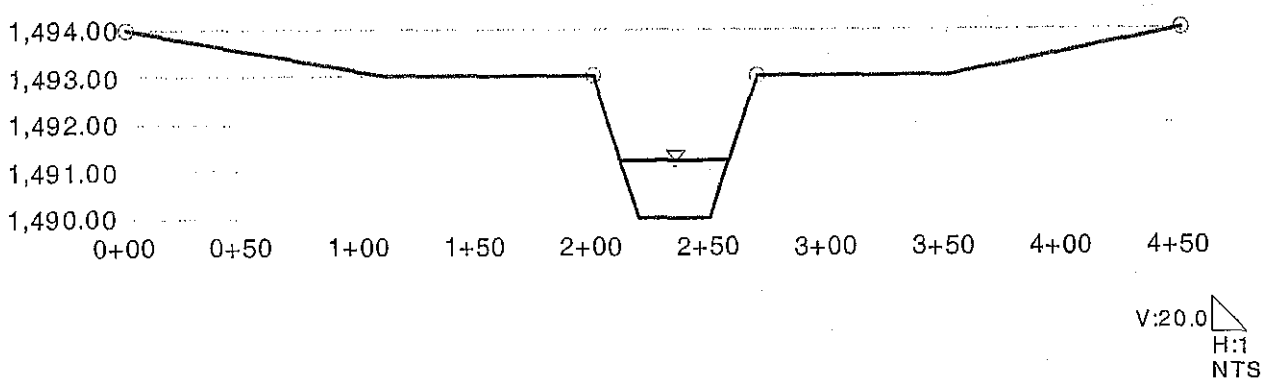
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,494.00
1+10	1,493.00
2+00	1,493.00
2+20	1,490.00
2+50	1,490.00
2+70	1,493.00
3+50	1,493.00
4+50	1,494.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RCPC21*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009300	ft/ft
Water Surface Elevation	1,491.21	ft
Elevation Range	1,490.00 to 1,494.00	
Discharge	146.00	*cfs*



Project Summary Report

Project Description	
Worksheet	RCPC23
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.004400	ft/ft
Discharge	588.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,428.96	ft
Elevation Range	1,425.00 to 1,431.00	
Flow Area	137.8	ft²
Wetted Perimeter	50.71	ft
Top Width	49.67	ft
Actual Depth	3.96	ft
Critical Elevation	1,427.54	ft
Critical Slope	0.024290	ft/ft
Velocity	4.27	ft/s
Velocity Head	0.28	ft
Specific Energy	1,429.24	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	0+85	0.045
0+85	1+18	0.050

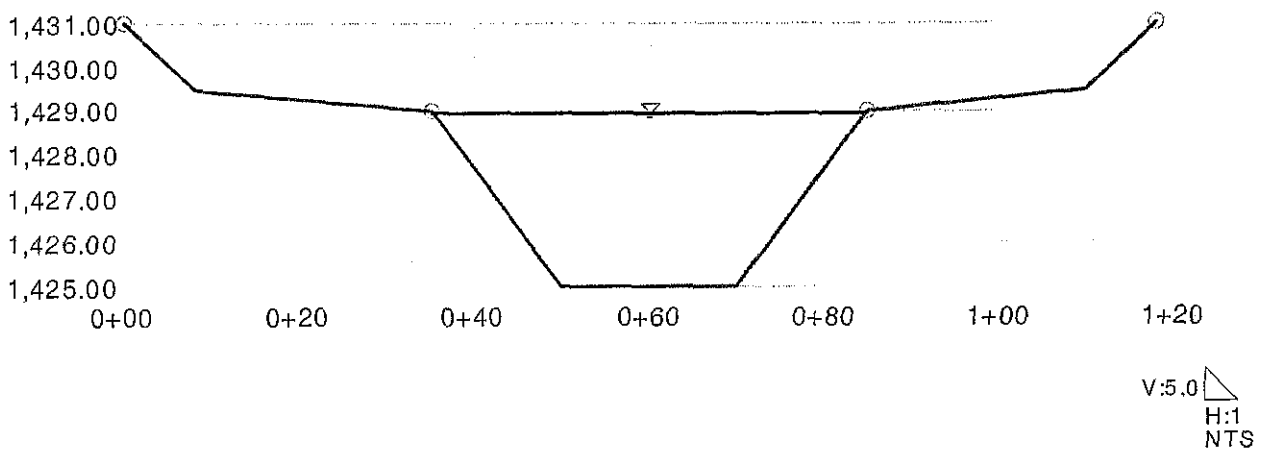
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,431.00
0+08	1,429.50
0+35	1,429.00
0+50	1,425.00
0+70	1,425.00
0+85	1,429.00
1+10	1,429.50
1+18	1,431.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004400	ft/ft
Water Surface Elevation	1,428.96	ft
Elevation Range	1,425.00 to 1,431.00	
Discharge	588.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	0.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,400.00	ft
Elevation Range	1,400.00 to 1,405.00	
Flow Area	0.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Actual Depth	0.00	ft
Critical Elevation	0.00	ft
Critical Slope	0.000000	ft/ft
Velocity	0.00	ft/s
Velocity Head	0.00	ft
Specific Energy	1,400.00	ft
Froude Number	0.00	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+90	0.050
4+90	6+20	0.045
6+20	11+10	0.050

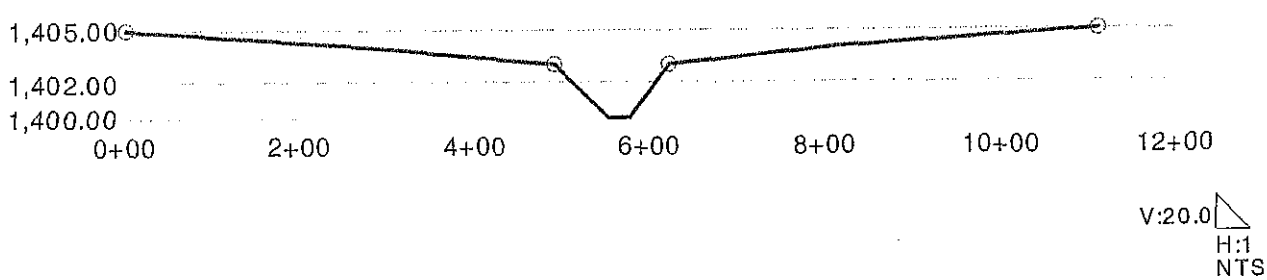
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
2+75	1,404.00
4+90	1,403.00
5+50	1,400.00
5+75	1,400.00
6+20	1,403.00
8+10	1,404.00
11+10	1,405.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,400.00	ft
Elevation Range	1,400.00 to 1,405.00	
Discharge	0.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	0.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,400.00	ft
Elevation Range	1,400.00 to 1,405.00	
Flow Area	0.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Actual Depth	0.00	ft
Critical Elevation	0.00	ft
Critical Slope	0.000000	ft/ft
Velocity	0.00	ft/s
Velocity Head	0.00	ft
Specific Energy	1,400.00	ft
Froude Number	0.00	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+90	0.050
4+90	6+20	0.045
6+20	11+10	0.050

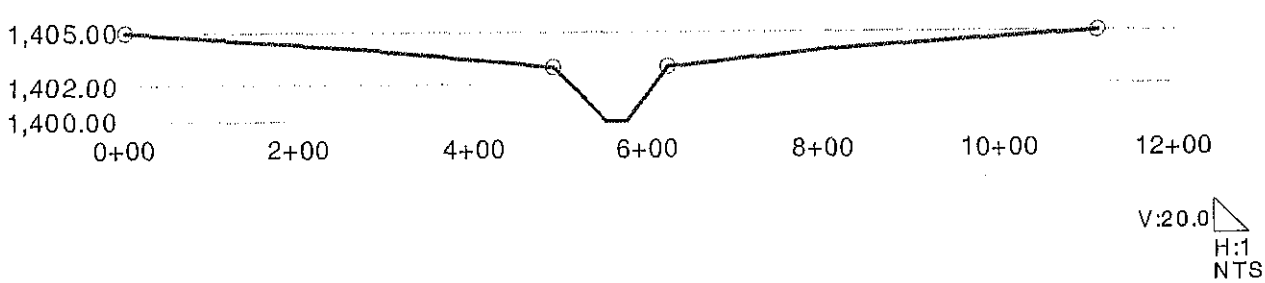
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
2+75	1,404.00
4+90	1,403.00
5+50	1,400.00
5+75	1,400.00
6+20	1,403.00
8+10	1,404.00
11+10	1,405.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,400.00	ft
Elevation Range	1,400.00 to 1,405.00	
Discharge	0.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006600	ft/ft
Discharge	321.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,430.94	ft
Elevation Range	1,429.00 to 1,440.00	
Flow Area	122.4	ft²
Wetted Perimeter	126.75	ft
Top Width	126.06	ft
Actual Depth	1.94	ft
Critical Elevation	1,430.44	ft
Critical Slope	0.033204	ft/ft
Velocity	2.62	ft/s
Velocity Head	0.11	ft
Specific Energy	1,431.05	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+70	0.045
1+70	7+30	0.050

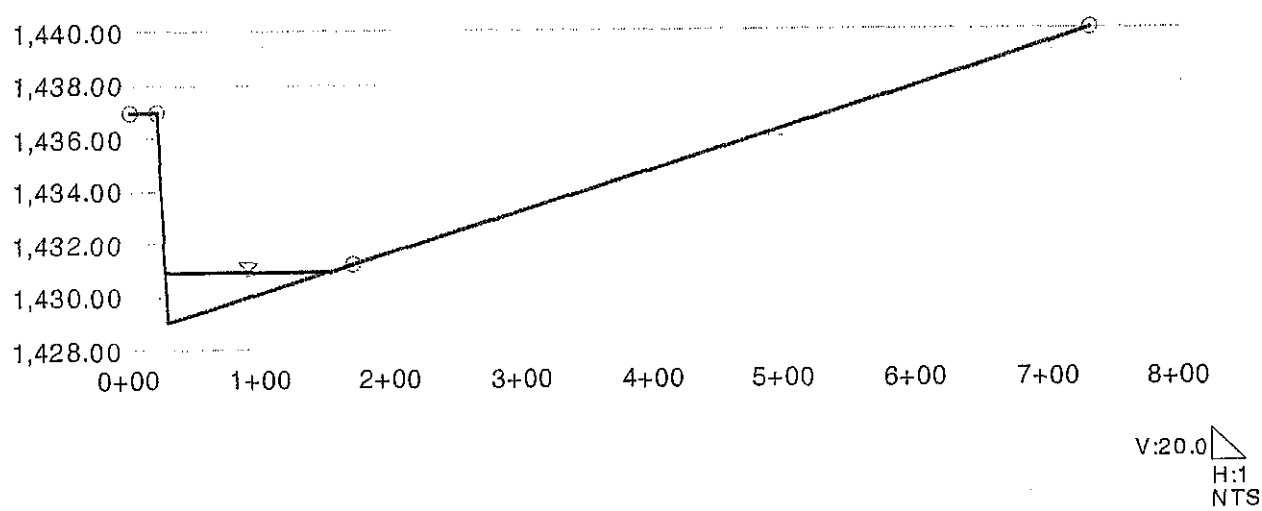
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,437.00
0+20	1,437.00
0+30	1,429.00
1+70	1,431.20
3+10	1,433.40
4+50	1,435.60
5+90	1,437.80
7+30	1,440.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC26
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006600	ft/ft
Water Surface Elevation	1,430.94	ft
Elevation Range	1,429.00 to 1,440.00	
Discharge	321.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	666.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,460.61	ft
Elevation Range	1,458.00 to 1,468.00	
Flow Area	243.3	ft²
Wetted Perimeter	187.29	ft
Top Width	186.45	ft
Actual Depth	2.61	ft
Critical Elevation	1,459.85	ft
Critical Slope	0.032069	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	1,460.73	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+70	0.045
1+70	7+30	0.050

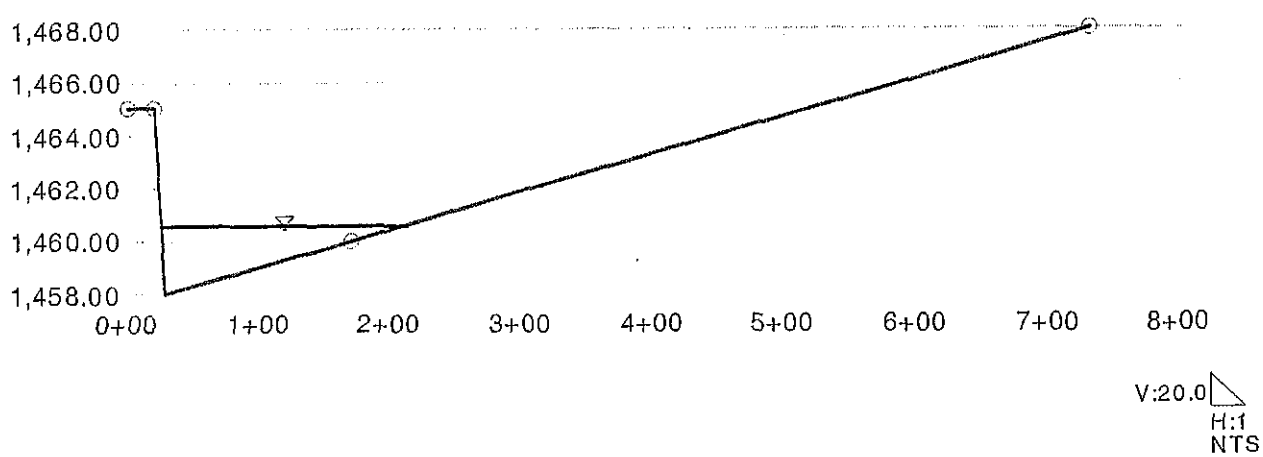
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,465.00
0+20	1,465.00
0+30	1,458.00
1+70	1,460.00
3+10	1,462.00
4+50	1,464.00
5+90	1,466.00
7+30	1,468.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005100	ft/ft
Water Surface Elevation	1,460.61	ft
Elevation Range	1,458.00 to 1,468.00	
Discharge	666.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	381.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,469.41	ft
Elevation Range	1,467.00 to 1,475.00	
Flow Area	149.9	ft²
Wetted Perimeter	124.94	ft
Top Width	124.16	ft
Actual Depth	2.41	ft
Critical Elevation	1,468.69	ft
Critical Slope	0.033861	ft/ft
Velocity	2.54	ft/s
Velocity Head	0.10	ft
Specific Energy	1,469.51	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+10	0.045
1+10	4+30	0.050

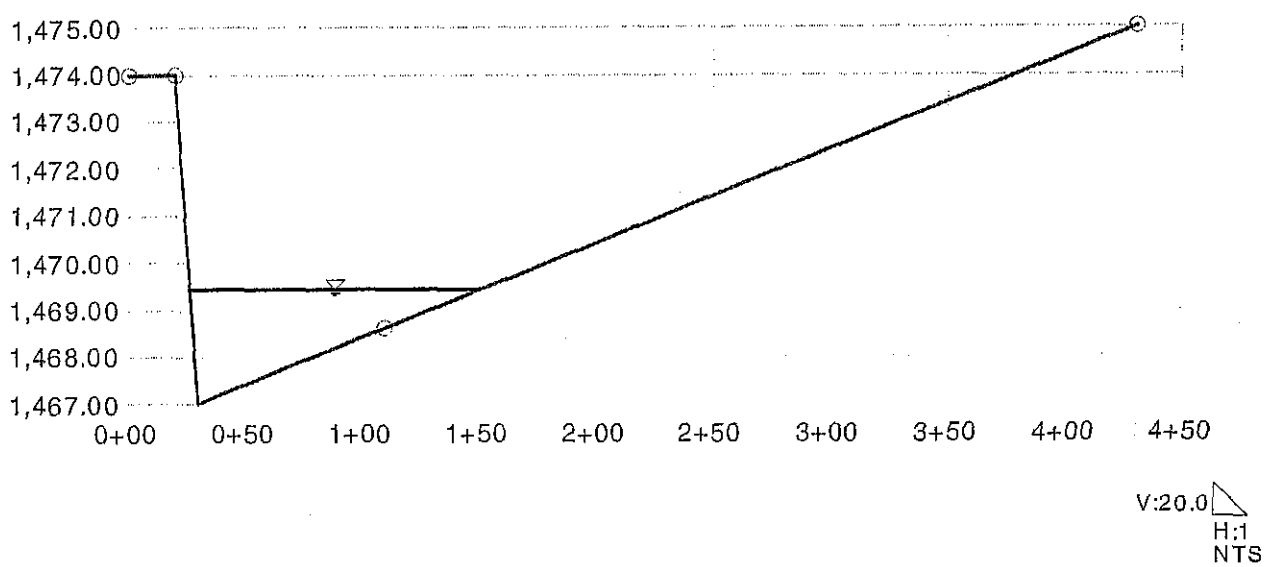
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,474.00
0+20	1,474.00
0+30	1,467.00
1+10	1,468.60
1+90	1,470.20
2+70	1,471.80
3+50	1,473.40
4+30	1,475.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005000	ft/ft
Water Surface Elevation	1,469.41	ft
Elevation Range	1,467.00 to 1,475.00	
Discharge	381.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005200	ft/ft
Discharge	921.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,478.33	ft
Elevation Range	1,475.00 to 1,485.00	
Flow Area	288.2	ft²
Wetted Perimeter	173.94	ft
Top Width	173.12	ft
Actual Depth	3.33	ft
Critical Elevation	1,477.39	ft
Critical Slope	0.030449	ft/ft
Velocity	3.20	ft/s
Velocity Head	0.16	ft
Specific Energy	1,478.49	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+30	0.045
1+30	5+30	0.050

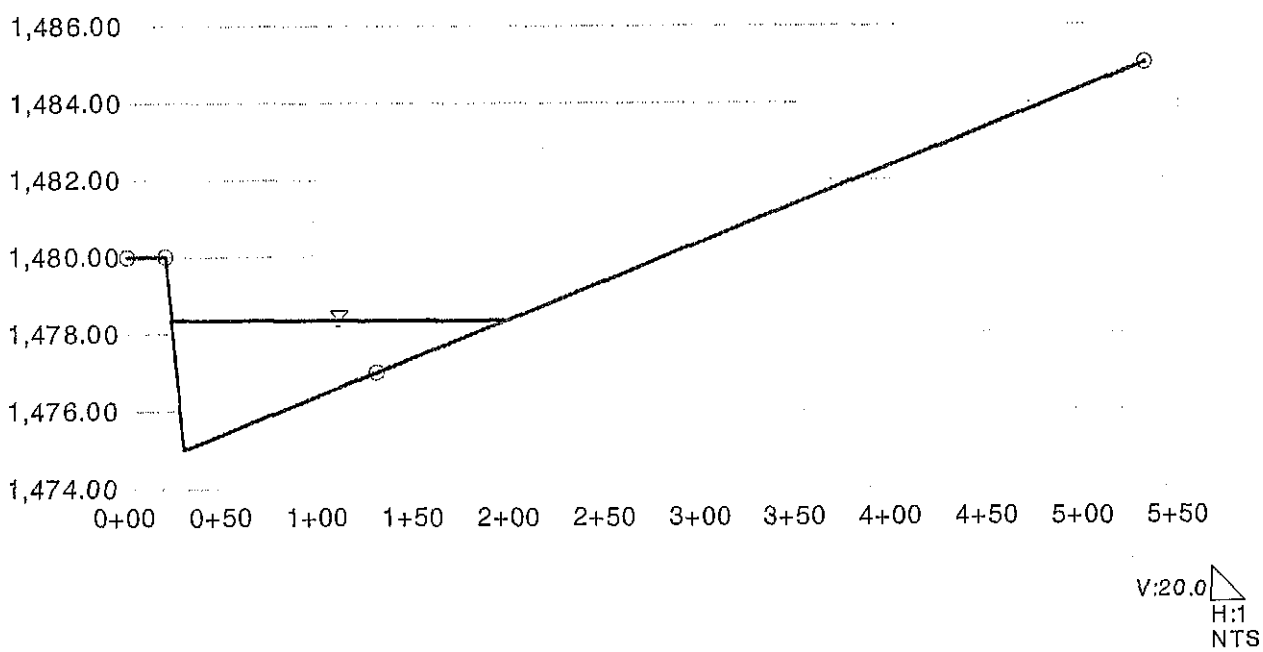
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,480.00
0+20	1,480.00
0+30	1,475.00
1+30	1,477.00
2+30	1,479.00
3+30	1,481.00
4+30	1,483.00
5+30	1,485.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.047	
Slope	0.005200	ft/ft
Water Surface Elevation	1,478.33	ft
Elevation Range	1,475.00 to 1,485.00	
Discharge	921.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	478.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,485.44	ft
Elevation Range	1,483.00 to 1,495.00	
Flow Area	180.0	ft²
Wetted Perimeter	147.97	ft
Top Width	147.38	ft
Actual Depth	2.44	ft
Critical Elevation	1,484.73	ft
Critical Slope	0.031242	ft/ft
Velocity	2.66	ft/s
Velocity Head	0.11	ft
Specific Energy	1,485.55	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+70	0.045
1+70	7+30	0.050

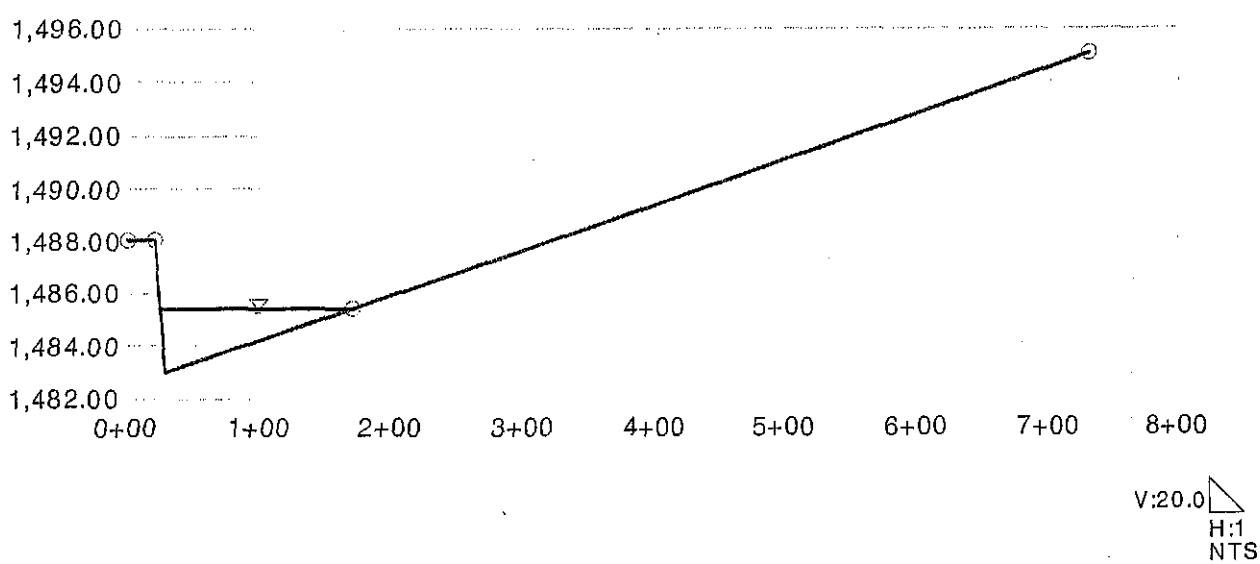
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,488.00
0+20	1,488.00
0+30	1,483.00
1+70	1,485.40
3+10	1,487.80
4+50	1,490.20
5+90	1,492.60
7+30	1,495.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005000	ft/ft
Water Surface Elevation	1,485.44	ft
Elevation Range	1,483.00 to 1,495.00	
Discharge	478.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	229.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,505.76	ft
Elevation Range	1,504.00 to 1,518.00	
Flow Area	113.0	ft²
Wetted Perimeter	129.00	ft
Top Width	128.50	ft
Actual Depth	1.76	ft
Critical Elevation	1,505.20	ft
Critical Slope	0.035212	ft/ft
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energy	1,505.82	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

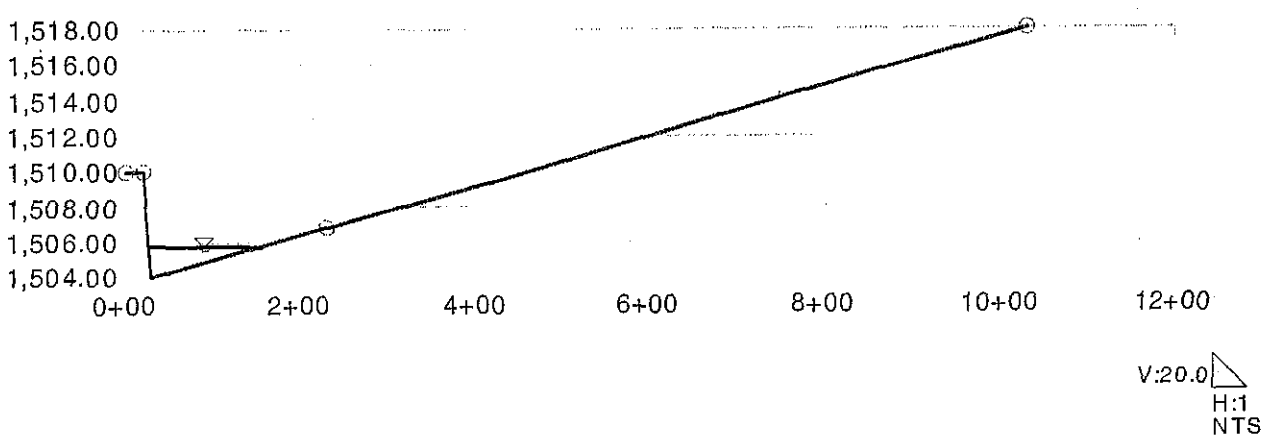
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,510.00
0+20	1,510.00
0+30	1,504.00
2+30	1,506.80
4+30	1,509.60
6+30	1,512.40
8+30	1,515.20
10+30	1,518.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,505.76	ft
Elevation Range	1,504.00 to 1,518.00	
Discharge	229.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005700	ft/ft
Discharge	10,409.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,260.62	ft
Elevation Range	1,255.00 to 1,261.50	
Flow Area	2,509.8	ft²
Wetted Perimeter	1,061.56	ft
Top Width	1,061.20	ft
Actual Depth	5.62	ft
Critical Elevation	1,259.69	ft
Critical Slope	0.029681	ft/ft
Velocity	4.15	ft/s
Velocity Head	0.27	ft
Specific Energy	1,260.89	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+30	0.050
4+30	6+30	0.045
6+30	10+70	0.050

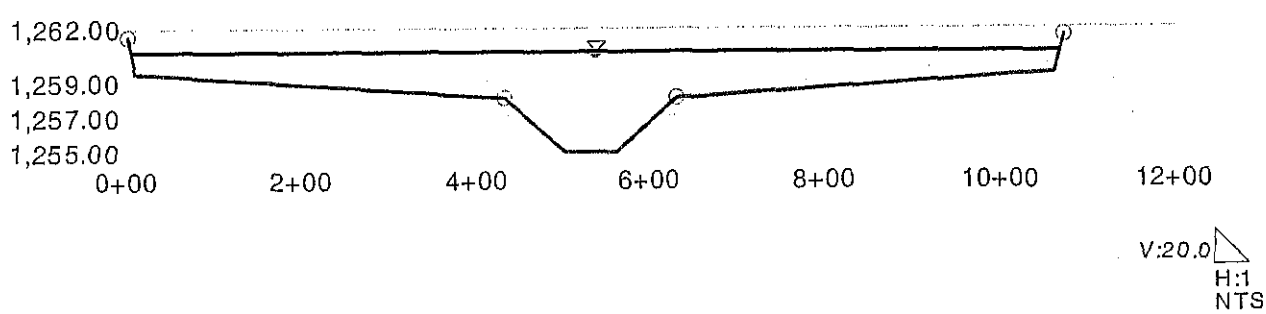
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,261.50
0+10	1,259.50
4+30	1,258.00
5+00	1,255.00
5+60	1,255.00
6+30	1,258.00
10+60	1,259.50
10+70	1,261.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.048	
Slope	0.005700	ft/ft
Water Surface Elevation	1,260.62	ft
Elevation Range	1,255.00 to 1,261.50	
Discharge	10,409.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	9,823.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,219.80	ft
Elevation Range	1,214.00 to 1,221.00	
Flow Area	2,683.6	ft²
Wetted Perimeter	1,208.26	ft
Top Width	1,208.00	ft
Actual Depth	5.80	ft
Critical Elevation	1,218.75	ft
Critical Slope	0.030159	ft/ft
Velocity	3.66	ft/s
Velocity Head	0.21	ft
Specific Energy	1,220.01	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+10	0.050
4+10	8+10	0.045
8+10	12+20	0.050

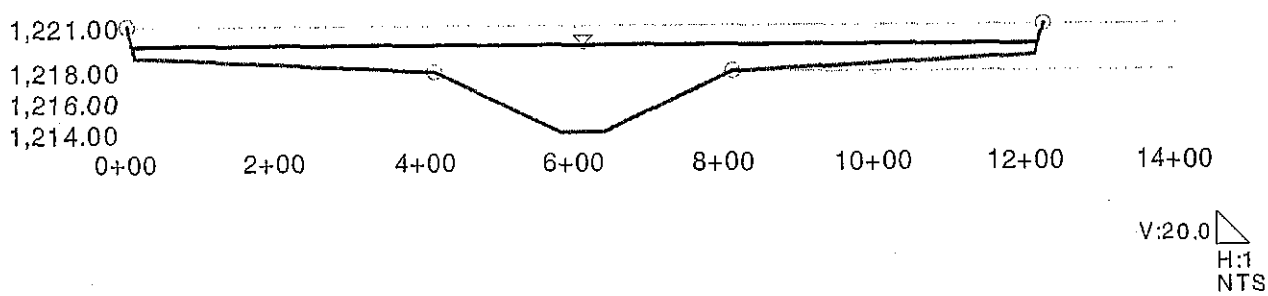
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,221.00
0+10	1,219.00
4+10	1,218.00
5+80	1,214.00
6+40	1,214.00
8+10	1,218.00
12+10	1,219.00
12+20	1,221.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004900	ft/ft
Water Surface Elevation	1,219.80	ft
Elevation Range	1,214.00 to 1,221.00	
Discharge	9,823.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	4,778.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,218.55	ft
Elevation Range	1,214.00 to 1,219.50	
Flow Area	1,177.8	ft²
Wetted Perimeter	490.99	ft
Top Width	490.85	ft
Actual Depth	4.55	ft
Critical Elevation	1,217.17	ft
Critical Slope	0.024970	ft/ft
Velocity	4.06	ft/s
Velocity Head	0.26	ft
Specific Energy	1,218.81	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+50	0.050
0+50	4+50	0.045
4+50	5+03	0.050

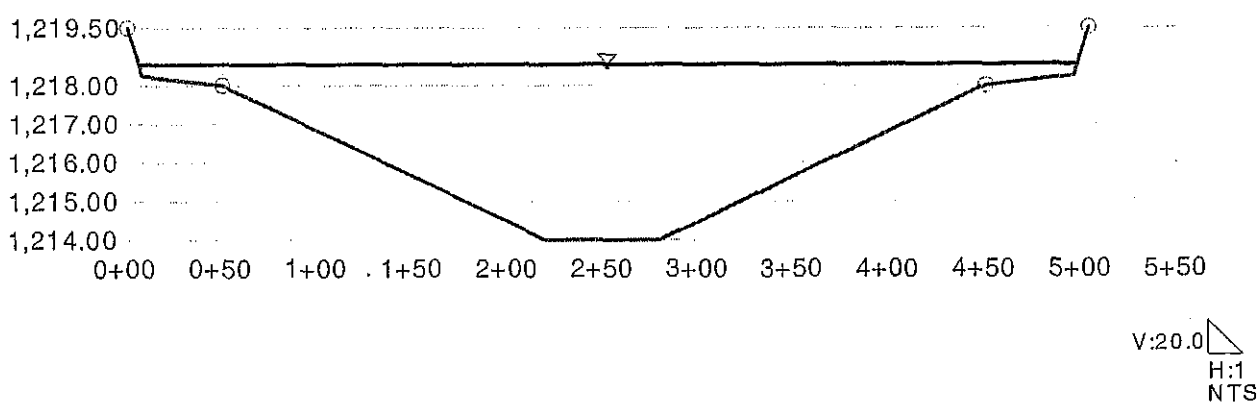
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,219.50
0+08	1,218.25
0+50	1,218.00
2+20	1,214.00
2+80	1,214.00
4+50	1,218.00
4+95	1,218.25
5+03	1,219.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	*0.046*	
Slope	0.004900	ft/ft
Water Surface Elevation	1,218.55	ft
Elevation Range	1,214.00 to 1,219.50	
Discharge	4,778.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004300	ft/ft
Discharge	9,463.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,197.39	ft
Elevation Range	1,190.00 to 1,198.00	
Flow Area	2,567.6	ft²
Wetted Perimeter	1,082.07	ft
Top Width	1,081.55	ft
Actual Depth	7.39	ft
Critical Elevation	1,196.28	ft
Critical Slope	0.028405	ft/ft
Velocity	3.69	ft/s
Velocity Head	0.21	ft
Specific Energy	1,197.61	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+40	0.050
4+40	6+40	0.045
6+40	10+88	0.050

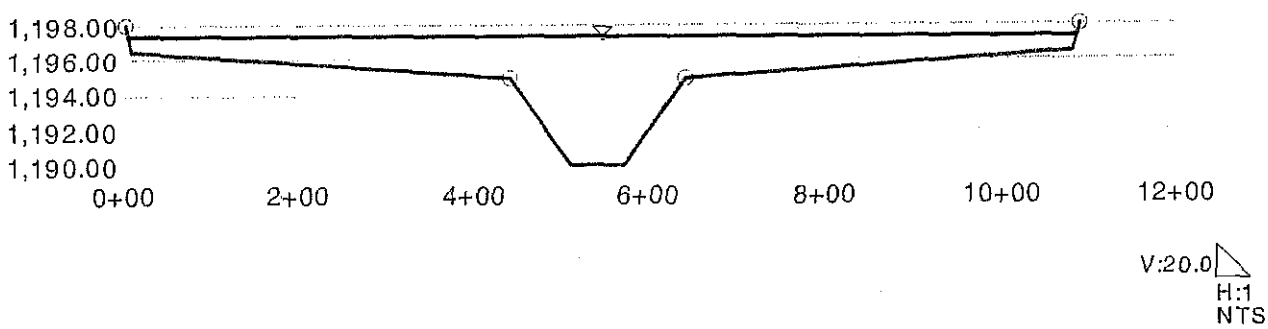
Natural Channel Points

Station (ft)	*Elevation* (ft)
0+00	1,198.00
0+08	1,196.50
4+40	1,195.00
5+10	1,190.00
5+70	1,190.00
6+40	1,195.00
10+80	1,196.50
10+88	1,198.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004300	ft/ft
Water Surface Elevation	1,197.39	ft
Elevation Range	1,190.00 to 1,198.00	
Discharge	9,463.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006100	ft/ft
Discharge	1,265.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,190.42	ft
Elevation Range	1,187.00 to 1,191.00	
Flow Area	412.3	ft²
Wetted Perimeter	287.10	ft
Top Width	286.77	ft
Actual Depth	3.42	ft
Critical Elevation	1,189.81	ft
Critical Slope	0.035584	ft/ft
Velocity	3.07	ft/s
Velocity Head	0.15	ft
Specific Energy	1,190.56	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+60	0.045
1+60	2+93	0.050

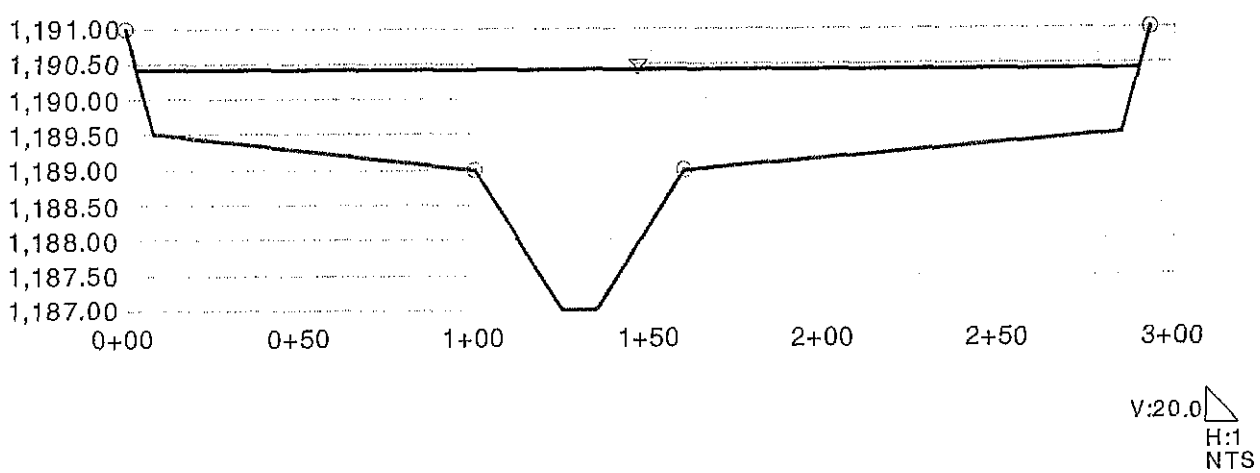
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,191.00
0+08	1,189.50
1+00	1,189.00
1+25	1,187.00
1+35	1,187.00
1+60	1,189.00
2+85	1,189.50
2+93	1,191.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.006100	ft/ft
Water Surface Elevation	1,190.42	ft
Elevation Range	1,187.00 to 1,191.00	
Discharge	1,265.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007400	ft/ft
Discharge	489.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,219.55	ft
Elevation Range	1,216.00 to 1,220.00	
Flow Area	204.3	ft^2
Wetted Perimeter	235.89	ft
Top Width	235.59	ft
Actual Depth	3.55	ft
Critical Elevation	1,218.27	ft
Critical Slope	0.031295	ft/ft
Velocity	2.39	ft/s
Velocity Head	0.09	ft
Specific Energy	1,219.64	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+20	0.045
2+20	3+70	0.050

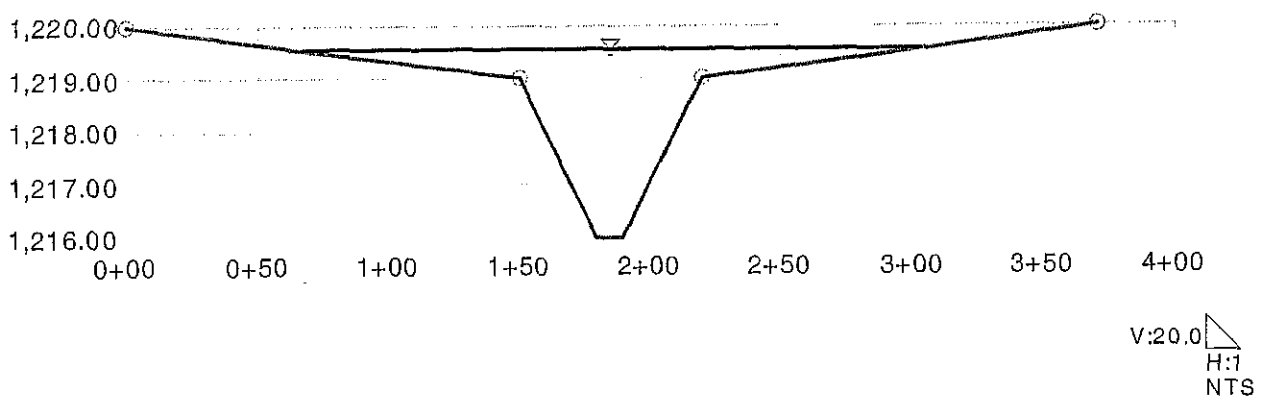
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,220.00
0+75	1,219.50
1+50	1,219.00
1+80	1,216.00
1+90	1,216.00
2+20	1,219.00
2+95	1,219.50
3+70	1,220.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RCPC38*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.007400	ft/ft
Water Surface Elevation	1,219.55	ft
Elevation Range	1,216.00 to 1,220.00	
Discharge	489.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.012400	ft/ft
Discharge	44.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,353.73	ft
Elevation Range	1,353.00 to 1,356.00	
Flow Area	20.6	ft²
Wetted Perimeter	46.50	ft
Top Width	46.47	ft
Actual Depth	0.73	ft
Critical Elevation	1,353.55	ft
Critical Slope	0.041934	ft/ft
Velocity	2.14	ft/s
Velocity Head	0.07	ft
Specific Energy	1,353.80	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+95	0.050
0+95	1+55	0.045
1+55	3+00	0.050

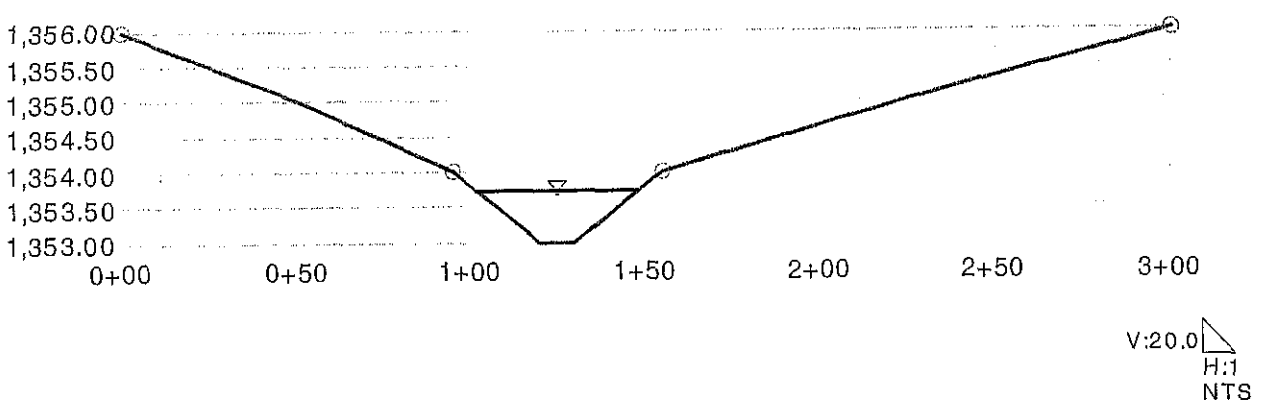
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,356.00
0+50	1,355.00
0+95	1,354.00
1+20	1,353.00
1+30	1,353.00
1+55	1,354.00
2+25	1,355.00
3+00	1,356.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.012400	ft/ft
Water Surface Elevation	1,353.73	ft
Elevation Range	1,353.00 to 1,356.00	
Discharge	44.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.012500	ft/ft
Discharge	143.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,306.55	ft
Elevation Range	1,305.00 to 1,310.00	
Flow Area	39.7	ft²
Wetted Perimeter	41.25	ft
Top Width	41.10	ft
Actual Depth	1.55	ft
Critical Elevation	1,306.25	ft
Critical Slope	0.031890	ft/ft
Velocity	3.60	ft/s
Velocity Head	0.20	ft
Specific Energy	1,306.76	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+90	0.050
1+90	2+60	0.045
2+60	4+00	0.050

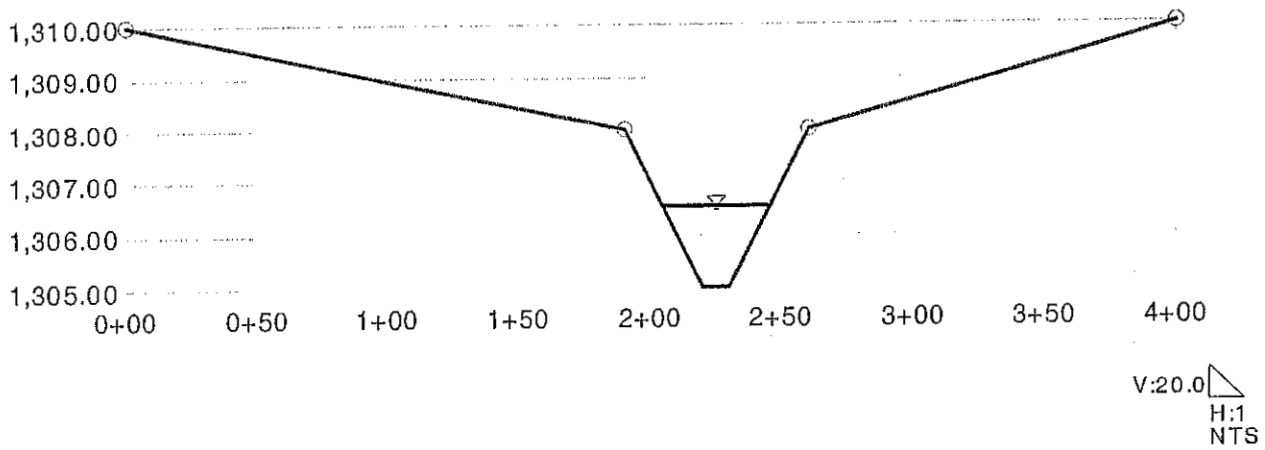
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,310.00
0+95	1,309.00
1+90	1,308.00
2+20	1,305.00
2+30	1,305.00
2+60	1,308.00
3+30	1,309.00
4+00	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.012500	ft/ft
Water Surface Elevation	1,306.55	ft
Elevation Range	1,305.00 to 1,310.00	
Discharge	143.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011100	ft/ft
Discharge	45.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,316.88	ft
Elevation Range	1,316.00 to 1,320.00	
Flow Area	18.6	ft²
Wetted Perimeter	32.18	ft
Top Width	32.11	ft
Actual Depth	0.88	ft
Critical Elevation	1,316.65	ft
Critical Slope	0.038613	ft/ft
Velocity	2.42	ft/s
Velocity Head	0.09	ft
Specific Energy	1,316.98	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+60	0.045
2+60	3+70	0.050

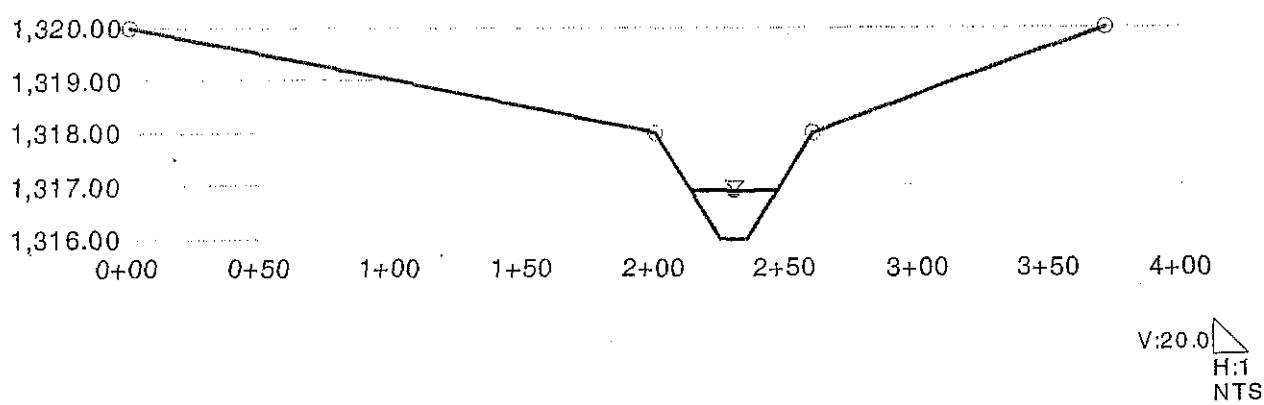
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,320.00
1+00	1,319.00
2+00	1,318.00
2+25	1,316.00
2+35	1,316.00
2+60	1,318.00
3+15	1,319.00
3+70	1,320.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.011100	ft/ft
Water Surface Elevation	1,316.88	ft
Elevation Range	1,316.00 to 1,320.00	
Discharge	45.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008700	ft/ft
Discharge	50.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,281.03	ft
Elevation Range	1,280.00 to 1,285.00	
Flow Area	21.0	ft²
Wetted Perimeter	30.73	ft
Top Width	30.63	ft
Actual Depth	1.03	ft
Critical Elevation	1,280.72	ft
Critical Slope	0.037143	ft/ft
Velocity	2.39	ft/s
Velocity Head	0.09	ft
Specific Energy	1,281.12	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+75	0.050
1+75	2+25	0.045
2+25	4+00	0.050

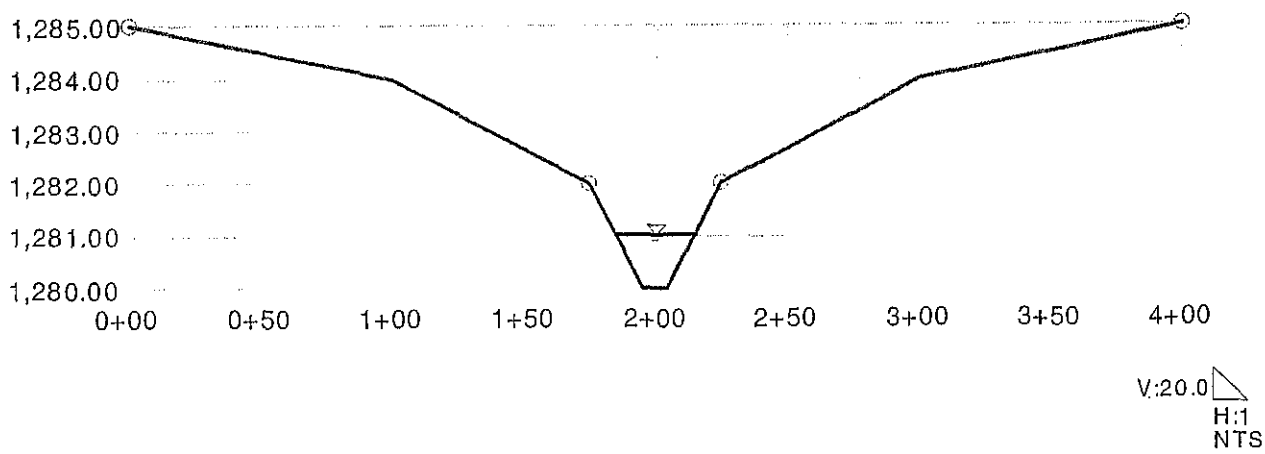
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,285.00
1+00	1,284.00
1+75	1,282.00
1+95	1,280.00
2+05	1,280.00
2+25	1,282.00
3+00	1,284.00
4+00	1,285.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.008700	ft/ft
Water Surface Elevation	1,281.03	ft
Elevation Range	1,280.00 to 1,285.00	
Discharge	50.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010000	ft/ft
Discharge	98.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,265.01	ft
Elevation Range	1,264.00 to 1,268.00	
Flow Area	38.1	ft²
Wetted Perimeter	55.44	ft
Top Width	55.38	ft
Actual Depth	1.01	ft
Critical Elevation	1,264.73	ft
Critical Slope	0.036637	ft/ft
Velocity	2.57	ft/s
Velocity Head	0.10	ft
Specific Energy	1,265.11	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+55	0.050
1+55	2+45	0.045
2+45	4+00	0.050

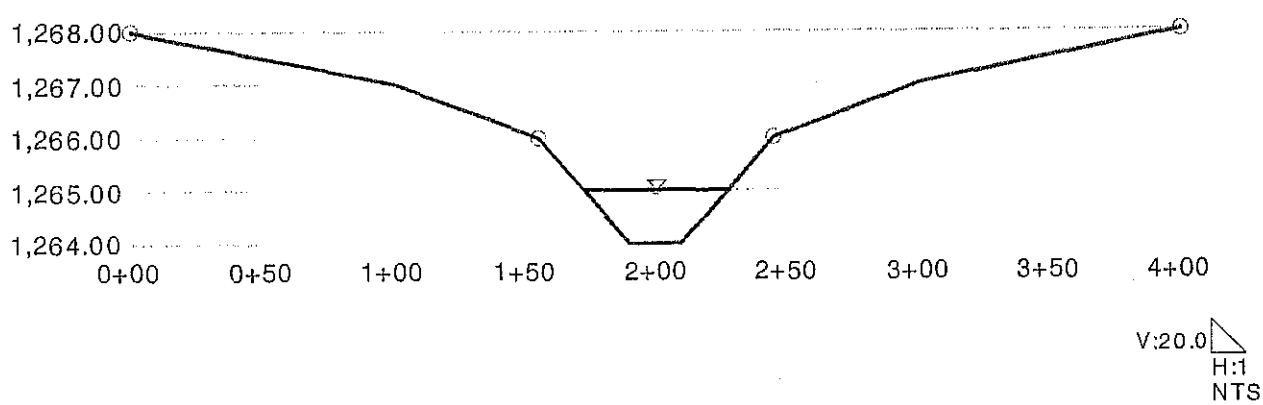
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,268.00
1+00	1,267.00
1+55	1,266.00
1+90	1,264.00
2+10	1,264.00
2+45	1,266.00
3+00	1,267.00
4+00	1,268.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.010000	ft/ft
Water Surface Elevation	1,265.01	ft
Elevation Range	1,264.00 to 1,268.00	
Discharge	98.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007000	ft/ft
Discharge	236.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,218.22	ft
Elevation Range	1,216.00 to 1,220.00	
Flow Area	71.4	ft²
Wetted Perimeter	54.60	ft
Top Width	54.38	ft
Actual Depth	2.22	ft
Critical Elevation	1,217.60	ft
Critical Slope	0.029732	ft/ft
Velocity	3.30	ft/s
Velocity Head	0.17	ft
Specific Energy	1,218.39	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	*End* Station	*Mannings* Coefficient
0+00	1+50	0.050
1+50	2+20	0.045
2+20	3+70	0.050

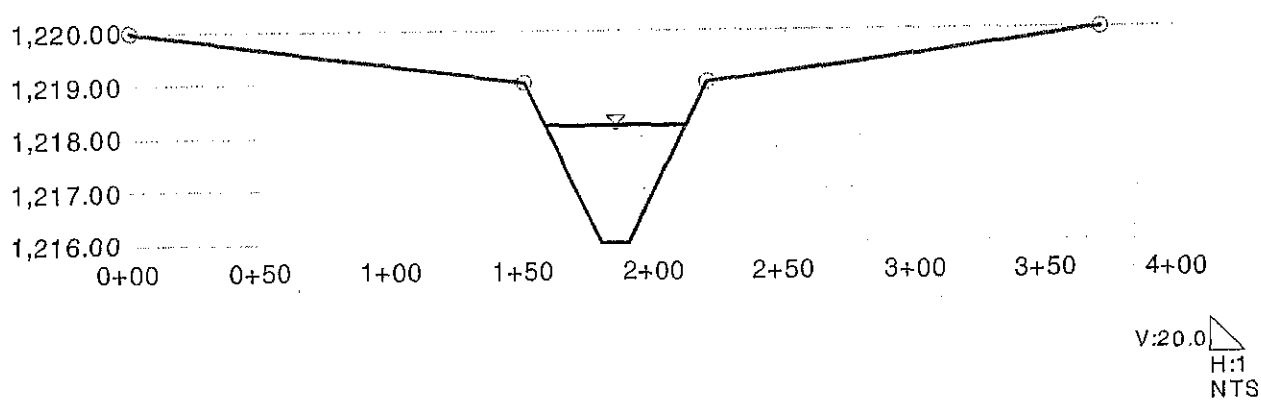
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,220.00
0+75	1,219.50
1+50	1,219.00
1+80	1,216.00
1+90	1,216.00
2+20	1,219.00
2+95	1,219.50
3+70	1,220.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007000	ft/ft
Water Surface Elevation	1,218.22	ft
Elevation Range	1,216.00 to 1,220.00	
Discharge	236.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009700	ft/ft
Discharge	96.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,251.47	ft
Elevation Range	1,250.00 to 1,253.00	
Flow Area	51.3	ft²
Wetted Perimeter	104.51	ft
Top Width	104.41	ft
Actual Depth	1.47	ft
Critical Elevation	1,251.09	ft
Critical Slope	0.042738	ft/ft
Velocity	1.87	ft/s
Velocity Head	0.05	ft
Specific Energy	1,251.52	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+60	0.050
1+60	1+90	0.045
1+90	3+50	0.050

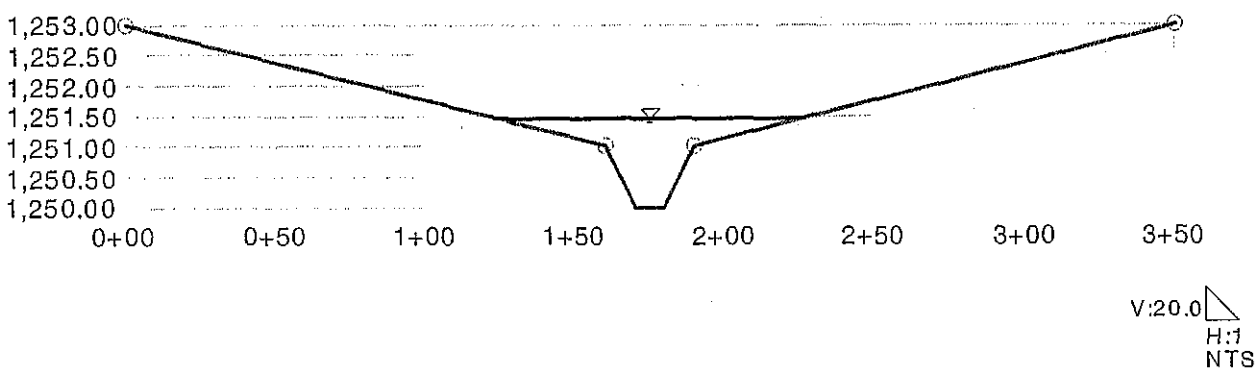
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,253.00
0+80	1,252.00
1+60	1,251.00
1+70	1,250.00
1+80	1,250.00
1+90	1,251.00
2+70	1,252.00
3+50	1,253.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	*0.009700*	*ft/ft*
Water Surface Elevation	1,251.47	ft
Elevation Range	1,250.00 to 1,253.00	
Discharge	96.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007000	ft/ft
Discharge	163.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,228.69	ft
Elevation Range	1,227.00 to 1,230.00	
Flow Area	59.7	ft²
Wetted Perimeter	60.80	ft
Top Width	60.69	ft
Actual Depth	1.69	ft
Critical Elevation	1,228.20	ft
Critical Slope	0.032938	ft/ft
Velocity	2.73	ft/s
Velocity Head	0.12	ft
Specific Energy	1,228.81	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+65	0.050
1+65	2+35	0.045
2+35	4+00	0.050

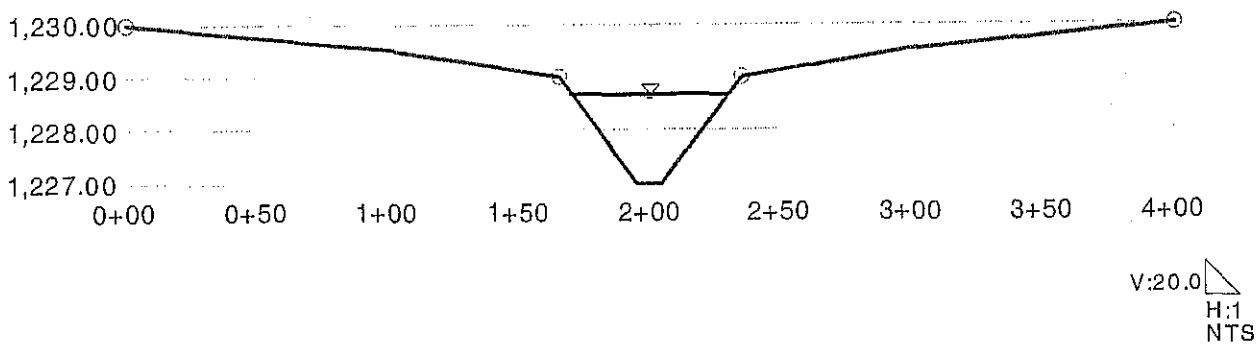
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
1+00	1,229.50
1+65	1,229.00
1+95	1,227.00
2+05	1,227.00
2+35	1,229.00
3+00	1,229.50
4+00	1,230.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007000	ft/ft
Water Surface Elevation	1,228.69	ft
Elevation Range	1,227.00 to 1,230.00	
Discharge	163.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	8,651.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,152.35	ft
Elevation Range	1,147.00 to 1,160.00	
Flow Area	3,091.5	ft²
Wetted Perimeter	1,688.80	ft
Top Width	1,688.70	ft
Actual Depth	5.35	ft
Critical Elevation	1,150.93	ft
Critical Slope	0.030950	ft/ft
Velocity	2.80	ft/s
Velocity Head	0.12	ft
Specific Energy	1,152.47	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	22+50	0.050
22+50	26+00	0.045
26+00	53+00	0.050

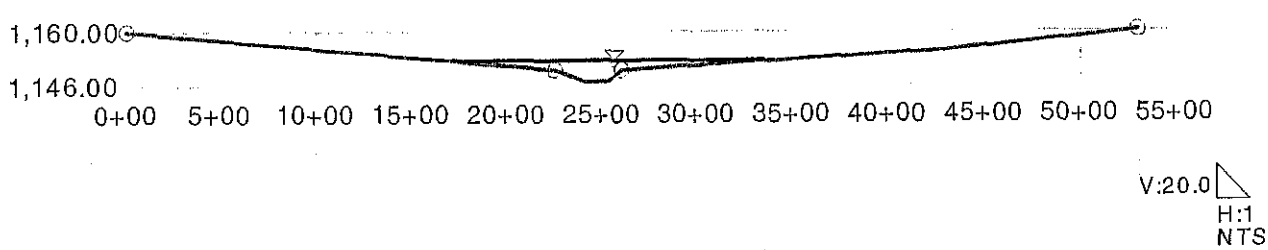
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,160.00
11+00	1,155.00
22+50	1,150.00
24+10	1,147.00
25+25	1,147.00
26+00	1,150.00
43+00	1,155.00
53+00	1,160.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003800	ft/ft
Water Surface Elevation	1,152.35	ft
Elevation Range	1,147.00 to 1,160.00	
Discharge	8,651.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007200	ft/ft
Discharge	9,182.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,177.15	ft
Elevation Range	1,170.00 to 1,178.00	
Flow Area	1,771.6	ft²
Wetted Perimeter	699.43	ft
Top Width	698.94	ft
Actual Depth	7.15	ft
Critical Elevation	1,176.28	ft
Critical Slope	0.024081	ft/ft
Velocity	5.18	ft/s
Velocity Head	0.42	ft
Specific Energy	1,177.57	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	4+50	0.045
4+50	7+08	0.050

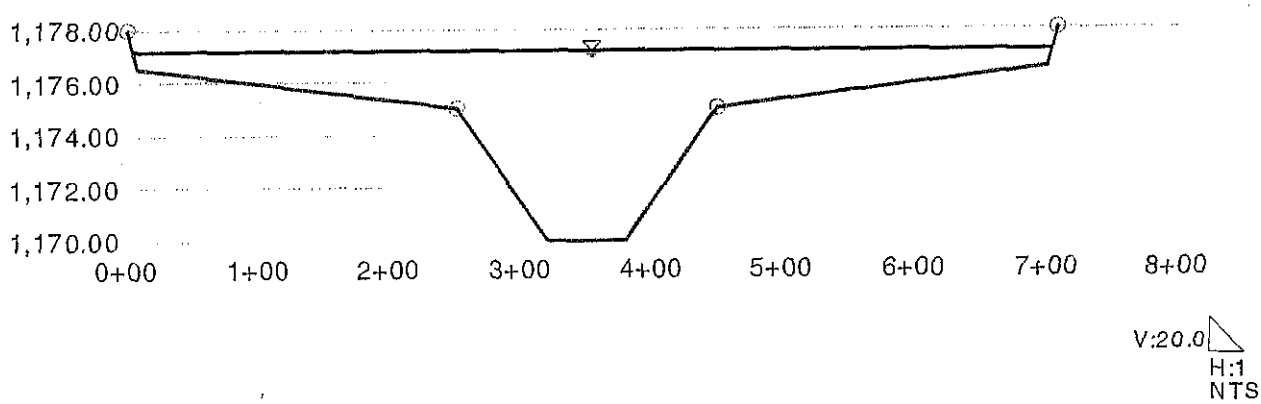
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,178.00
0+08	1,176.50
2+50	1,175.00
3+20	1,170.00
3+80	1,170.00
4+50	1,175.00
7+00	1,176.50
7+08	1,178.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007200	ft/ft
Water Surface Elevation	1,177.15	ft
Elevation Range	1,170.00 to 1,178.00	
Discharge	9,182.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	9,198.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,187.33	ft
Elevation Range	1,180.00 to 1,188.00	
Flow Area	2,465.8	ft²
Wetted Perimeter	1,061.37	ft
Top Width	1,060.85	ft
Actual Depth	7.33	ft
Critical Elevation	1,186.24	ft
Critical Slope	0.028136	ft/ft
Velocity	3.73	ft/s
Velocity Head	0.22	ft
Specific Energy	1,187.55	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+30	0.050
4+30	6+30	0.045
6+30	10+68	0.050

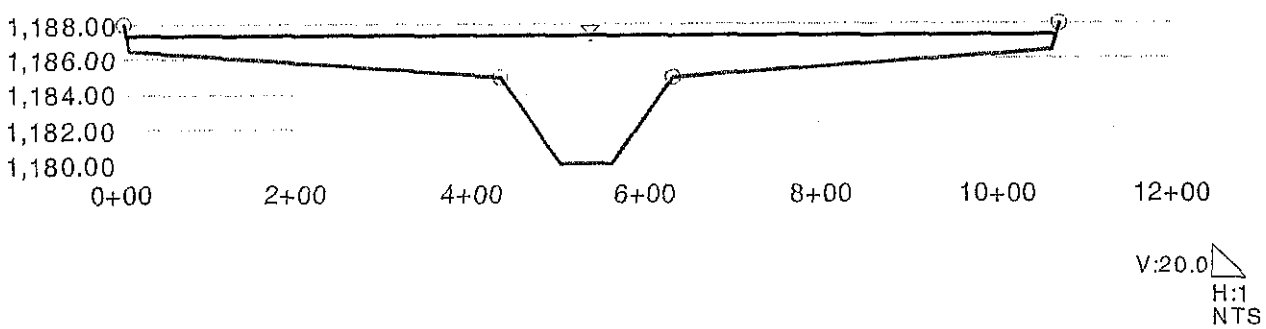
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,188.00
0+08	1,186.50
4+30	1,185.00
5+00	1,180.00
5+60	1,180.00
6+30	1,185.00
10+60	1,186.50
10+68	1,188.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC49
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004500	ft/ft
Water Surface Elevation	1,187.33	ft
Elevation Range	1,180.00 to 1,188.00	
Discharge	9,198.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC50
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	147.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,187.78	ft
Elevation Range	1,187.00 to 1,190.00	
Flow Area	114.1	ft²
Wetted Perimeter	274.35	ft
Top Width	274.35	ft
Actual Depth	0.78	ft
Critical Elevation	1,187.49	ft
Critical Slope	0.045475	ft/ft
Velocity	1.29	ft/s
Velocity Head	0.03	ft
Specific Energy	1,187.80	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+26	0.050
3+26	6+74	0.045
6+74	10+00	0.050

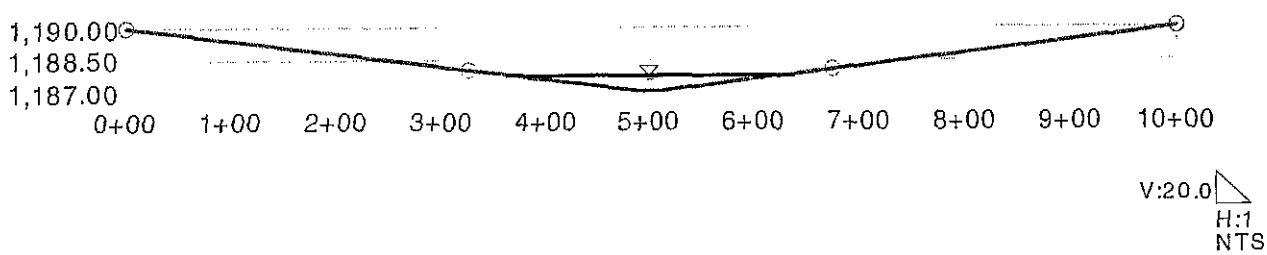
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,190.00
1+63	1,189.00
3+26	1,188.00
4+90	1,187.00
5+10	1,187.00
6+74	1,188.00
8+37	1,189.00
10+00	1,190.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC50
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004900	ft/ft
Water Surface Elevation	1,187.78	ft
Elevation Range	1,187.00 to 1,190.00	
Discharge	147.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	204.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,167.90	ft
Elevation Range	1,167.00 to 1,170.00	
Flow Area	150.6	ft²
Wetted Perimeter	314.97	ft
Top Width	314.96	ft
Actual Depth	0.90	ft
Critical Elevation	1,167.57	ft
Critical Slope	0.043514	ft/ft
Velocity	1.35	ft/s
Velocity Head	0.03	ft
Specific Energy	1,167.93	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+26	0.050
3+26	6+74	0.045
6+74	10+00	0.050

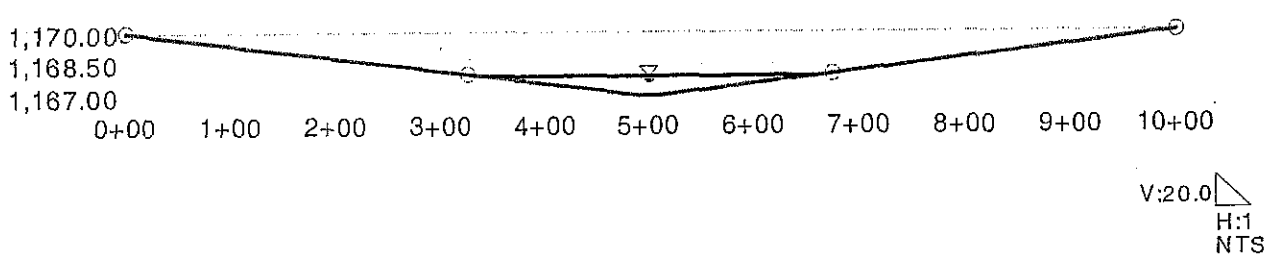
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,170.00
1+63	1,169.00
3+26	1,168.00
4+90	1,167.00
5+10	1,167.00
6+74	1,168.00
8+37	1,169.00
10+00	1,170.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC51
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,167.90	ft
Elevation Range	1,167.00 to 1,170.00	
Discharge	204.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC52
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	129.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,167.75	ft
Elevation Range	1,167.00 to 1,170.00	
Flow Area	106.8	ft²
Wetted Perimeter	265.50	ft
Top Width	265.50	ft
Actual Depth	0.75	ft
Critical Elevation	1,167.46	ft
Critical Slope	0.046282	ft/ft
Velocity	1.21	ft/s
Velocity Head	0.02	ft
Specific Energy	1,167.77	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+26	0.050
3+26	6+74	0.045
6+74	10+00	0.050

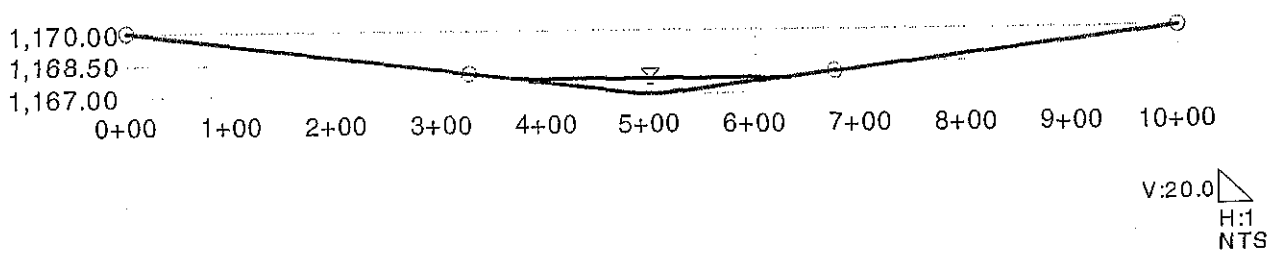
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,170.00
1+63	1,169.00
3+26	1,168.00
4+90	1,167.00
5+10	1,167.00
6+74	1,168.00
8+37	1,169.00
10+00	1,170.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC52
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,167.75	ft
Elevation Range	1,167.00 to 1,170.00	
Discharge	129.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPC53
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	127.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,167.74	ft
Elevation Range	1,167.00 to 1,170.00	
Flow Area	105.6	ft²
Wetted Perimeter	263.96	ft
Top Width	263.96	ft
Actual Depth	0.74	ft
Critical Elevation	1,167.46	ft
Critical Slope	0.046379	ft/ft
Velocity	1.20	ft/s
Velocity Head	0.02	ft
Specific Energy	1,167.77	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+26	0.050
3+26	6+74	0.045
6+74	10+00	0.050

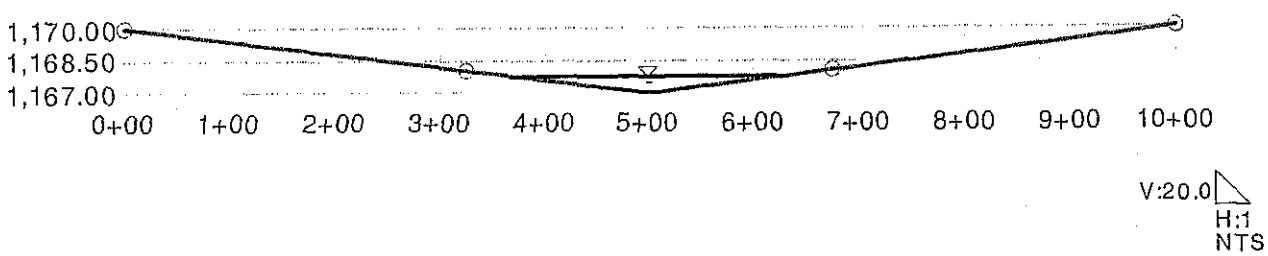
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,170.00
1+63	1,169.00
3+26	1,168.00
4+90	1,167.00
5+10	1,167.00
6+74	1,168.00
8+37	1,169.00
10+00	1,170.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPC53
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,167.74	ft
Elevation Range	1,167.00 to 1,170.00	
Discharge	127.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.016100	ft/ft
Discharge	127.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,627.20	ft
Elevation Range	1,626.00 to 1,629.00	
Flow Area	31.0	ft²
Wetted Perimeter	32.19	ft
Top Width	31.95	ft
Actual Depth	1.20	ft
Critical Elevation	1,626.99	ft
Critical Slope	0.031738	ft/ft
Velocity	4.09	ft/s
Velocity Head	0.26	ft
Specific Energy	1,627.46	ft
Froude Number	0.73	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+90	0.045
1+90	3+50	0.050

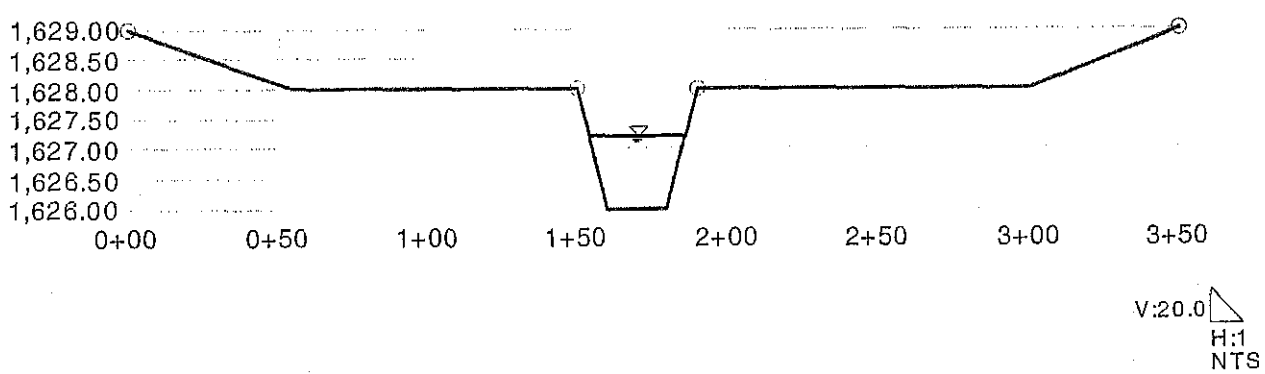
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,629.00
0+55	1,628.00
1+50	1,628.00
1+60	1,626.00
1+80	1,626.00
1+90	1,628.00
3+00	1,628.00
3+50	1,629.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	*0.045*	
Slope	0.016100	ft/ft
Water Surface Elevation	1,627.20	ft
Elevation Range	1,626.00 to 1,629.00	
Discharge	127.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011700	ft/ft
Discharge	193.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,594.51	ft
Elevation Range	1,593.00 to 1,597.00	
Flow Area	46.3	ft²
Wetted Perimeter	36.72	ft
Top Width	36.32	ft
Actual Depth	1.51	ft
Critical Elevation	1,594.16	ft
Critical Slope	0.029794	ft/ft
Velocity	4.17	ft/s
Velocity Head	0.27	ft
Specific Energy	1,594.78	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+40	0.050
2+40	2+80	0.045
2+80	4+50	0.050

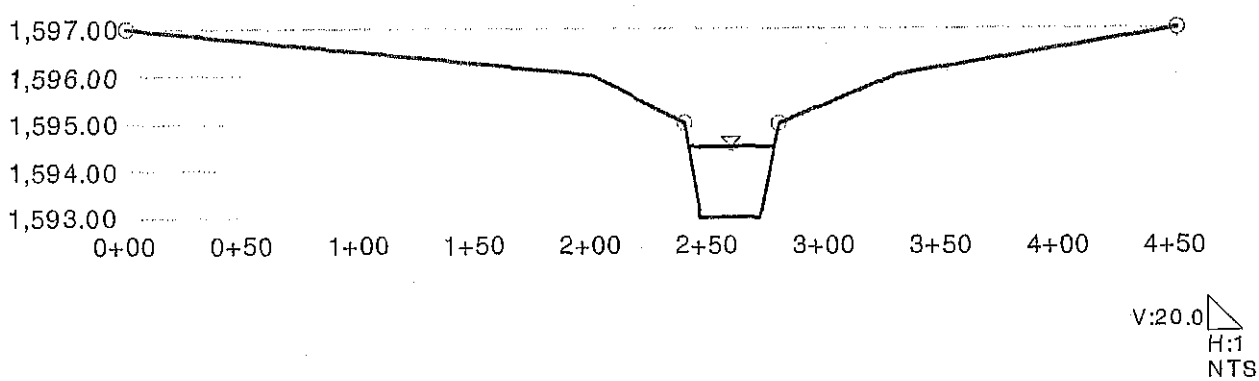
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,597.00
2+00	1,596.00
2+40	1,595.00
2+47	1,593.00
2+72	1,593.00
2+80	1,595.00
3+30	1,596.00
4+50	1,597.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.011700	ft/ft
Water Surface Elevation	1,594.51	ft
Elevation Range	1,593.00 to 1,597.00	
Discharge	193.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009600	ft/ft
Discharge	411.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,492.11	ft
Elevation Range	1,490.00 to 1,494.00	
Flow Area	93.1	ft²
Wetted Perimeter	58.49	ft
Top Width	58.17	ft
Actual Depth	2.11	ft
Critical Elevation	1,491.59	ft
Critical Slope	0.027485	ft/ft
Velocity	4.41	ft/s
Velocity Head	0.30	ft
Specific Energy	1,492.42	ft
Froude Number	0.61	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+70	0.045
2+70	4+50	0.050

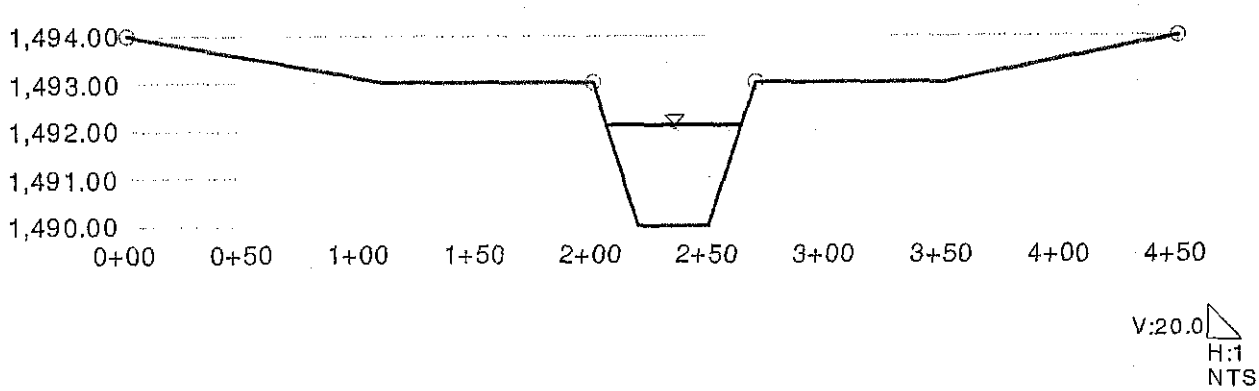
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,494.00
1+10	1,493.00
2+00	1,493.00
2+20	1,490.00
2+50	1,490.00
2+70	1,493.00
3+50	1,493.00
4+50	1,494.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009600	ft/ft
Water Surface Elevation	1,492.11	ft
Elevation Range	1,490.00 to 1,494.00	
Discharge	411.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.013200	ft/ft
Discharge	88.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,565.05	ft
Elevation Range	1,564.00 to 1,568.00	
Flow Area	24.8	ft²
Wetted Perimeter	27.33	ft
Top Width	27.02	ft
Actual Depth	1.05	ft
Critical Elevation	1,564.81	ft
Critical Slope	0.033326	ft/ft
Velocity	3.55	ft/s
Velocity Head	0.20	ft
Specific Energy	1,565.25	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+40	0.050
2+40	2+80	0.045
2+80	5+00	0.050

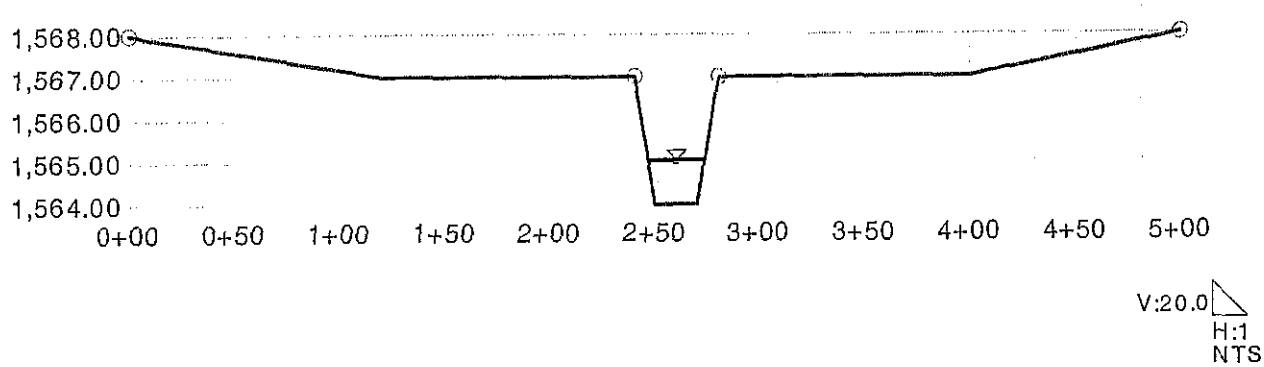
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,568.00
1+20	1,567.00
2+40	1,567.00
2+50	1,564.00
2+70	1,564.00
2+80	1,567.00
4+00	1,567.00
5+00	1,568.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.013200	ft/ft
Water Surface Elevation	1,565.05	ft
Elevation Range	1,564.00 to 1,568.00	
Discharge	88.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC10
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	113.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,481.16	ft
Elevation Range	1,480.00 to 1,485.00	
Flow Area	44.9	ft²
Wetted Perimeter	43.04	ft
Top Width	42.70	ft
Actual Depth	1.16	ft
Critical Elevation	1,480.67	ft
Critical Slope	0.034581	ft/ft
Velocity	2.52	ft/s
Velocity Head	0.10	ft
Specific Energy	1,481.25	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	*End* Station	Mannings Coefficient
0+00	3+60	0.050
3+60	4+15	0.045
4+15	7+80	0.050

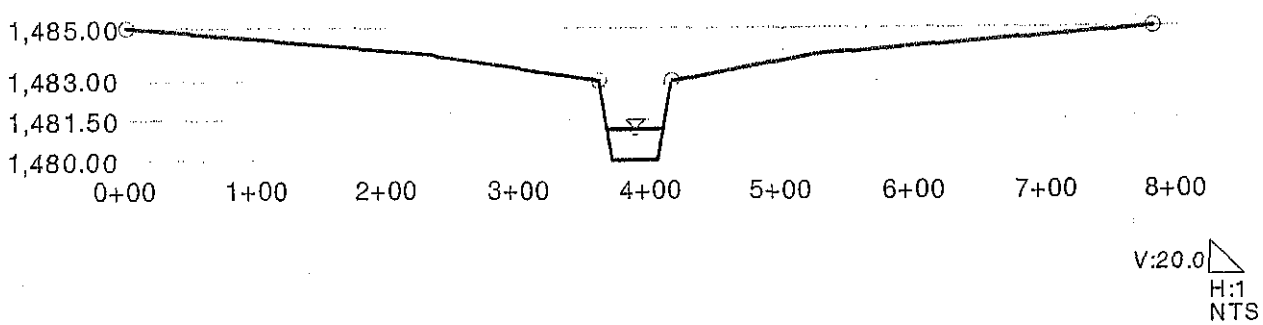
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,485.00
2+30	1,484.00
3+60	1,483.00
3+70	1,480.00
4+05	1,480.00
4+15	1,483.00
5+25	1,484.00
7+80	1,485.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005500	ft/ft
Water Surface Elevation	1,481.16	ft
Elevation Range	1,480.00 to 1,485.00	
Discharge	113.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010300	ft/ft
Discharge	74.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,536.17	ft
Elevation Range	1,535.00 to 1,537.00	
Flow Area	65.4	ft²
Wetted Perimeter	288.36	ft
Top Width	288.16	ft
Actual Depth	1.17	ft
Critical Elevation	1,535.83	ft
Critical Slope	0.041107	ft/ft
Velocity	1.13	ft/s
Velocity Head	0.02	ft
Specific Energy	1,536.19	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+10	0.050
2+10	2+35	0.045
2+35	4+30	0.050

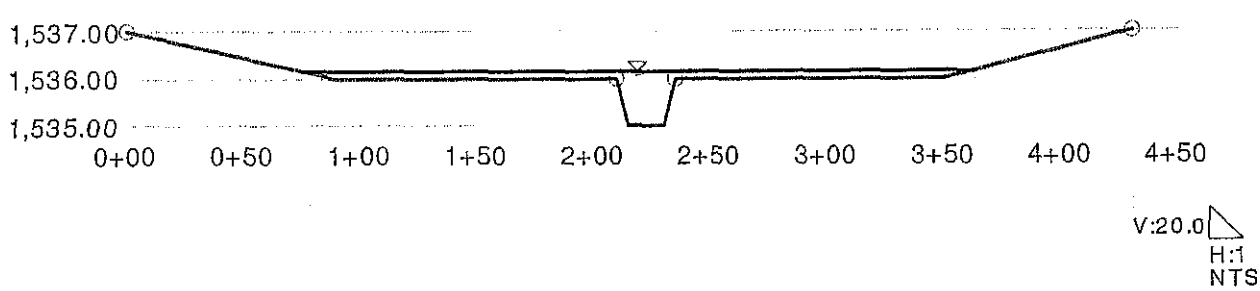
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,537.00
0+90	1,536.00
2+10	1,536.00
2+15	1,535.00
2+30	1,535.00
2+35	1,536.00
3+50	1,536.00
4+30	1,537.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC11
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.010300	ft/ft
Water Surface Elevation	1,536.17	ft
Elevation Range	1,535.00 to 1,537.00	
Discharge	74.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011800	ft/ft
Discharge	119.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,535.61	ft
Elevation Range	1,534.00 to 1,537.00	
Flow Area	60.4	ft²
Wetted Perimeter	129.59	ft
Top Width	129.39	ft
Actual Depth	1.61	ft
Critical Elevation	1,535.35	ft
Critical Slope	0.048171	ft/ft
Velocity	1.97	ft/s
Velocity Head	0.06	ft
Specific Energy	1,535.67	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+90	0.050
1+90	2+10	0.045
2+10	4+20	0.050

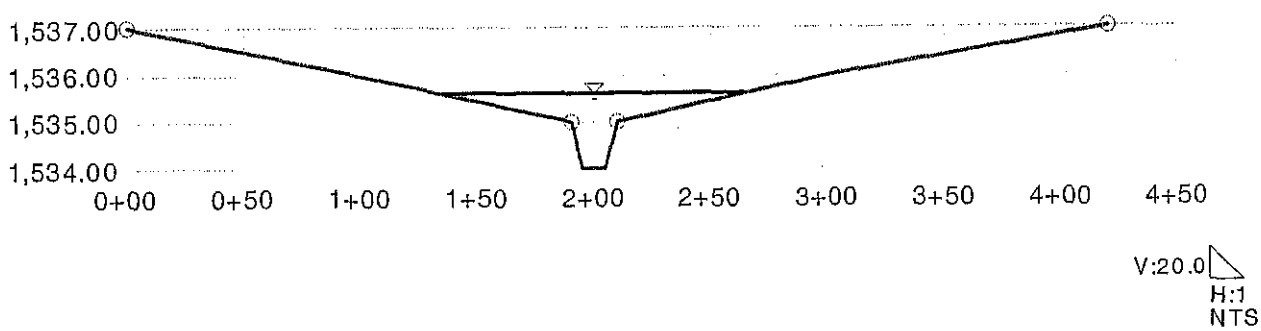
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,537.00
1+00	1,536.00
1+90	1,535.00
1+95	1,534.00
2+05	1,534.00
2+10	1,535.00
3+00	1,536.00
4+20	1,537.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.011800	ft/ft
Water Surface Elevation	1,535.61	ft
Elevation Range	1,534.00 to 1,537.00	
Discharge	119.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005400	ft/ft
Discharge	313.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,482.10	ft
Elevation Range	1,480.00 to 1,485.00	
Flow Area	88.0	ft²
Wetted Perimeter	49.59	ft
Top Width	48.97	ft
Actual Depth	2.10	ft
Critical Elevation	1,481.30	ft
Critical Slope	0.028337	ft/ft
Velocity	3.56	ft/s
Velocity Head	0.20	ft
Specific Energy	1,482.29	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+60	0.050
3+60	4+15	0.045
4+15	7+80	0.050

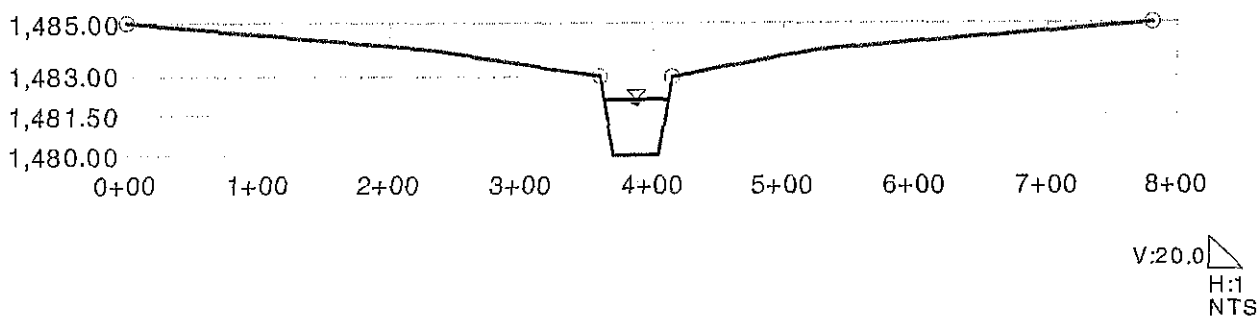
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,485.00
2+30	1,484.00
3+60	1,483.00
3+70	1,480.00
4+05	1,480.00
4+15	1,483.00
5+25	1,484.00
7+80	1,485.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005400	ft/ft
Water Surface Elevation	1,482.10	ft
Elevation Range	1,480.00 to 1,485.00	
Discharge	313.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	204.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,481.62	ft
Elevation Range	1,480.00 to 1,485.00	
Flow Area	65.5	ft²
Wetted Perimeter	46.28	ft
Top Width	45.81	ft
Actual Depth	1.62	ft
Critical Elevation	1,480.99	ft
Critical Slope	0.030757	ft/ft
Velocity	3.11	ft/s
Velocity Head	0.15	ft
Specific Energy	1,481.77	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+60	0.050
3+60	4+15	0.045
4+15	7+80	0.050

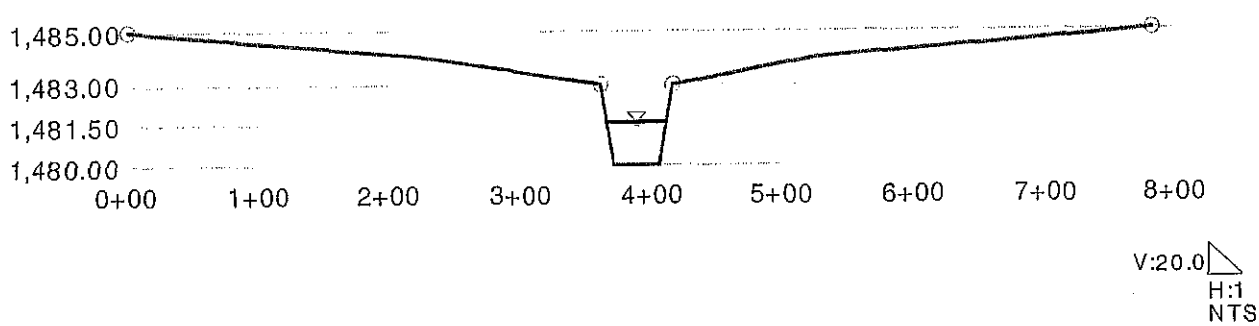
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,485.00
2+30	1,484.00
3+60	1,483.00
3+70	1,480.00
4+05	1,480.00
4+15	1,483.00
5+25	1,484.00
7+80	1,485.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005600	ft/ft
Water Surface Elevation	1,481.62	ft
Elevation Range	1,480.00 to 1,485.00	
Discharge	204.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009200	ft/ft
Discharge	131.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,515.61	ft
Elevation Range	1,514.00 to 1,517.00	
Flow Area	37.0	ft^2
Wetted Perimeter	31.40	ft
Top Width	31.08	ft
Actual Depth	1.61	ft
Critical Elevation	1,515.16	ft
Critical Slope	0.030810	ft/ft
Velocity	3.54	ft/s
Velocity Head	0.19	ft
Specific Energy	1,515.80	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+35	0.045
2+35	4+50	0.050

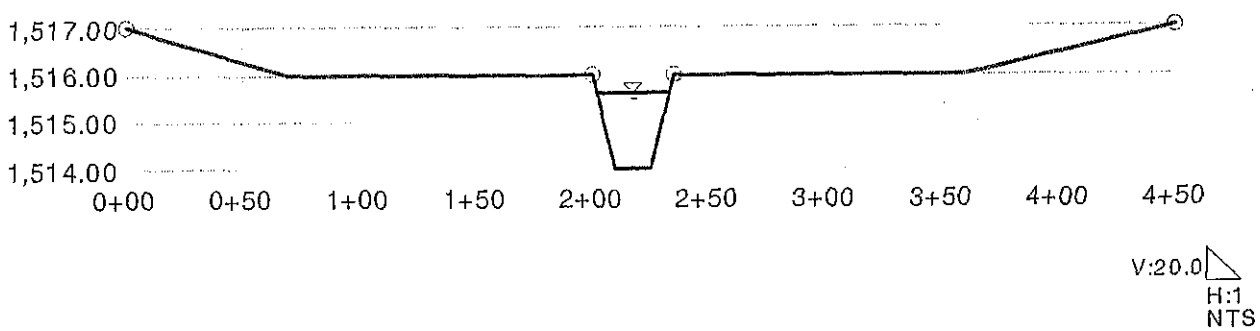
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,517.00
0+70	1,516.00
2+00	1,516.00
2+10	1,514.00
2+25	1,514.00
2+35	1,516.00
3+60	1,516.00
4+50	1,517.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009200	ft/ft
Water Surface Elevation	1,515.61	ft
Elevation Range	1,514.00 to 1,517.00	
Discharge	131.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008300	ft/ft
Discharge	210.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,510.83	ft
Elevation Range	1,508.00 to 1,512.00	
Flow Area	94.2	ft²
Wetted Perimeter	136.29	ft
Top Width	135.51	ft
Actual Depth	2.83	ft
Critical Elevation	1,510.35	ft
Critical Slope	0.038204	ft/ft
Velocity	2.23	ft/s
Velocity Head	0.08	ft
Specific Energy	1,510.90	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+95	0.050
1+95	2+15	0.045
2+15	3+35	0.050

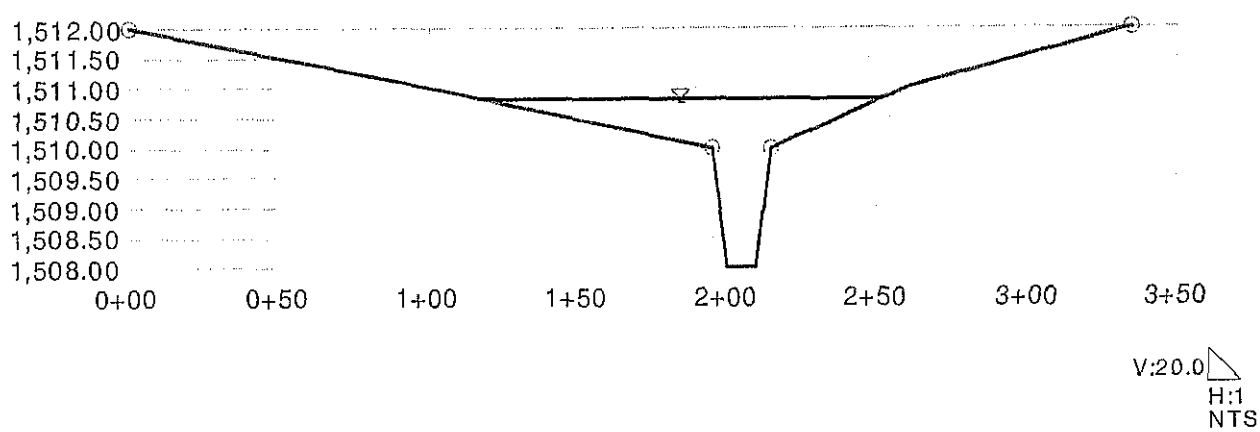
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,512.00
1+00	1,511.00
1+95	1,510.00
2+00	1,508.00
2+10	1,508.00
2+15	1,510.00
2+60	1,511.00
3+35	1,512.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC17
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.008300	ft/ft
Water Surface Elevation	1,510.83	ft
Elevation Range	1,508.00 to 1,512.00	
Discharge	210.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.013000	ft/ft
Discharge	22.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,523.41	ft
Elevation Range	1,523.00 to 1,528.00	
Flow Area	10.9	ft²
Wetted Perimeter	27.88	ft
Top Width	27.76	ft
Actual Depth	0.41	ft
Critical Elevation	1,523.29	ft
Critical Slope	0.045568	ft/ft
Velocity	2.02	ft/s
Velocity Head	0.06	ft
Specific Energy	1,523.48	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+10	0.050
2+10	2+55	0.045
2+55	4+50	0.050

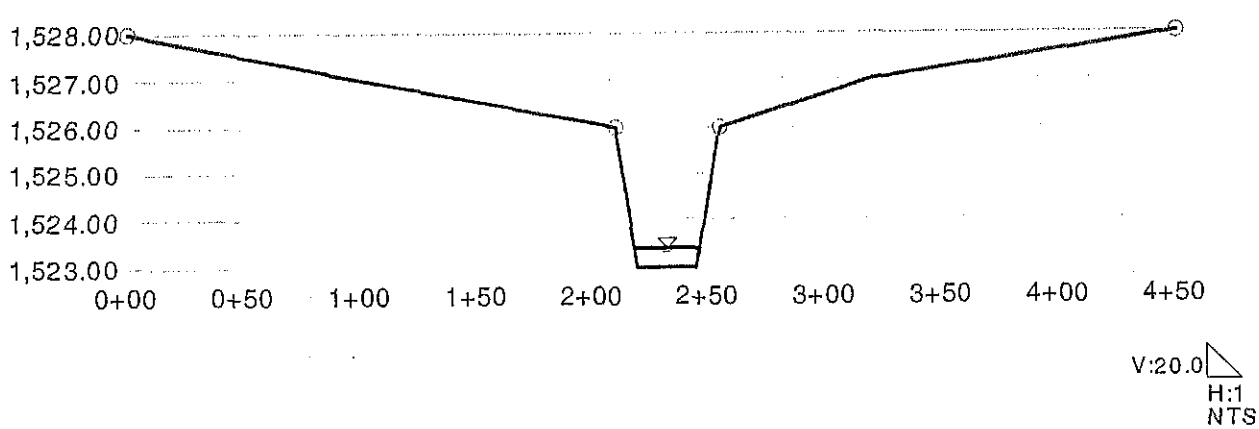
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,528.00
1+00	1,527.00
2+10	1,526.00
2+20	1,523.00
2+45	1,523.00
2+55	1,526.00
3+20	1,527.00
4+50	1,528.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.013000	ft/ft
Water Surface Elevation	1,523.41	ft
Elevation Range	1,523.00 to 1,528.00	
Discharge	22.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008100	ft/ft
Discharge	513.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,496.48	ft
Elevation Range	1,494.00 to 1,499.00	
Flow Area	115.7	ft²
Wetted Perimeter	63.50	ft
Top Width	63.13	ft
Actual Depth	2.48	ft
Critical Elevation	1,495.81	ft
Critical Slope	0.026505	ft/ft
Velocity	4.43	ft/s
Velocity Head	0.31	ft
Specific Energy	1,496.79	ft
Froude Number	0.58	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+20	0.050
2+20	2+90	0.045
2+90	4+80	0.050

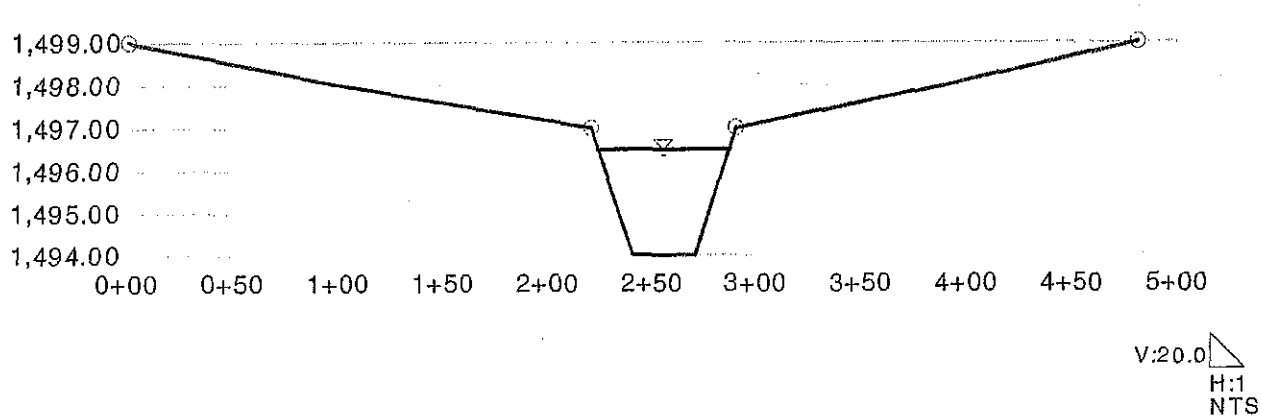
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,499.00
1+00	1,498.00
2+20	1,497.00
2+40	1,494.00
2+70	1,494.00
2+90	1,497.00
3+90	1,498.00
4+80	1,499.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.008100	ft/ft
Water Surface Elevation	1,496.48	ft
Elevation Range	1,494.00 to 1,499.00	
Discharge	513.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	213.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,417.71	ft
Elevation Range	1,415.00 to 1,420.00	
Flow Area	53.0	ft²
Wetted Perimeter	25.55	ft
Top Width	24.05	ft
Actual Depth	2.71	ft
Critical Elevation	1,416.72	ft
Critical Slope	0.027462	ft/ft
Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	1,417.97	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	0+60	0.045
0+60	0+94	0.050

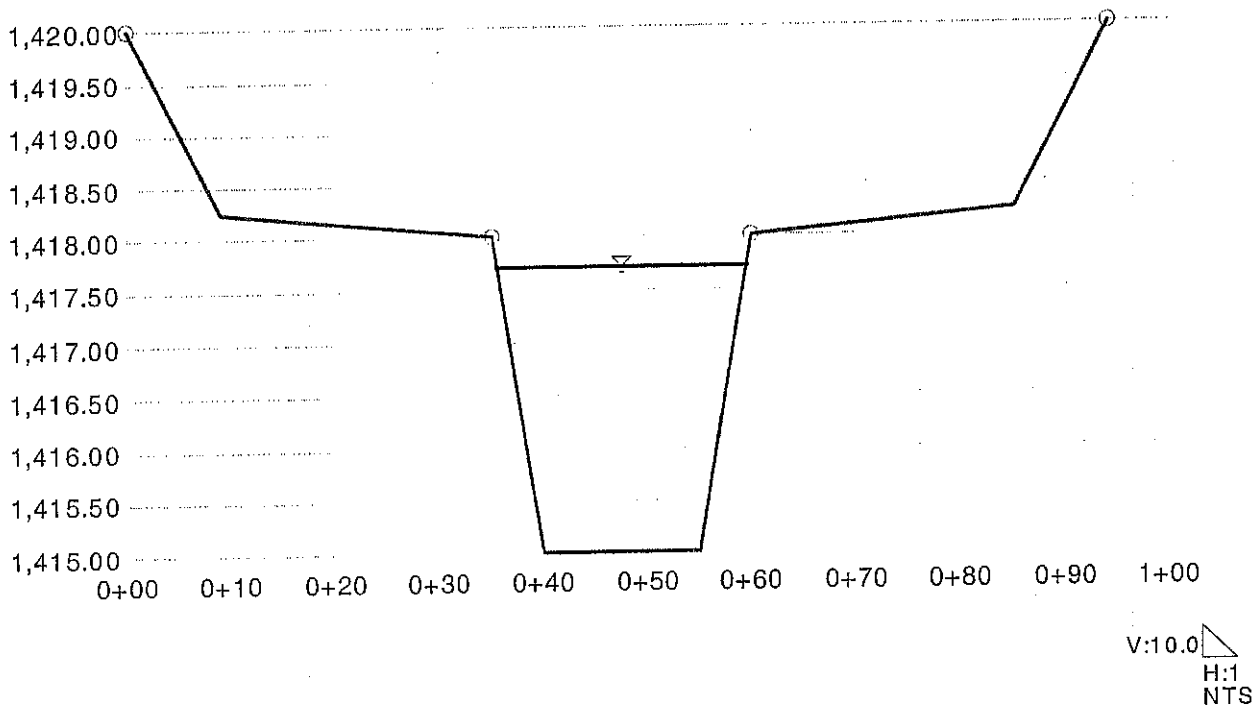
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,420.00
0+09	1,418.25
0+35	1,418.00
0+40	1,415.00
0+55	1,415.00
0+60	1,418.00
0+85	1,418.25
0+94	1,420.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005600	ft/ft
Water Surface Elevation	1,417.71	ft
Elevation Range	1,415.00 to 1,420.00	
Discharge	213.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009200	ft/ft
Discharge	259.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,442.05	ft
Elevation Range	1,440.00 to 1,445.00	
Flow Area	62.0	ft²
Wetted Perimeter	40.90	ft
Top Width	40.49	ft
Actual Depth	2.05	ft
Critical Elevation	1,441.52	ft
Critical Slope	0.028163	ft/ft
Velocity	4.18	ft/s
Velocity Head	0.27	ft
Specific Energy	1,442.32	ft
Froude Number	0.60	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+70	0.050
1+70	2+30	0.045
2+30	3+20	0.050

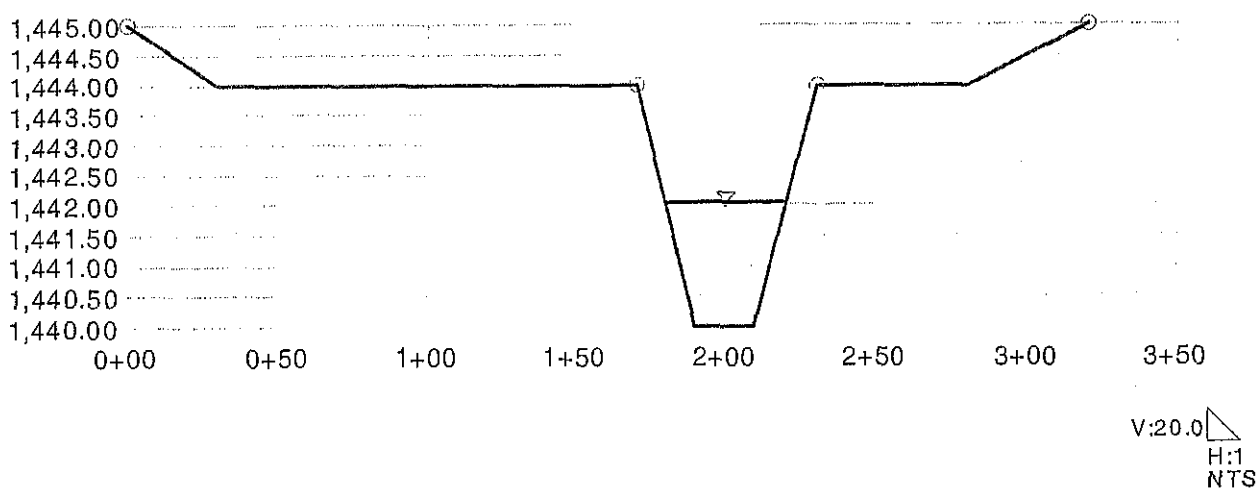
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,445.00
0+30	1,444.00
1+70	1,444.00
1+90	1,440.00
2+10	1,440.00
2+30	1,444.00
2+80	1,444.00
3+20	1,445.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC21
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009200	ft/ft
Water Surface Elevation	1,442.05	ft
Elevation Range	*1,440.00 to 1,445.00*	
Discharge	259.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	1,101.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,403.89	ft
Elevation Range	1,400.00 to 1,405.00	
Flow Area	508.5	ft^2
Wetted Perimeter	490.54	ft
Top Width	490.36	ft
Actual Depth	3.89	ft
Critical Elevation	1,402.39	ft
Critical Slope	0.030435	ft/ft
Velocity	2.17	ft/s
Velocity Head	0.07	ft
Specific Energy	1,403.96	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+90	0.050
4+90	6+20	0.045
6+20	11+10	0.050

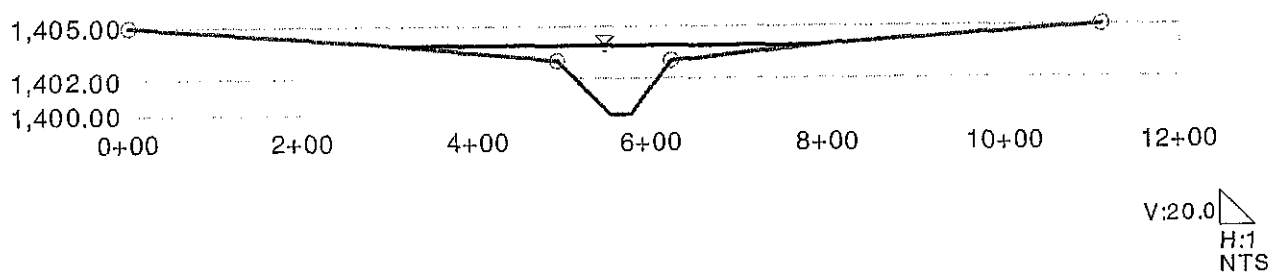
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
2+75	1,404.00
4+90	1,403.00
5+50	1,400.00
5+75	1,400.00
6+20	1,403.00
8+10	1,404.00
11+10	1,405.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.004800	ft/ft
Water Surface Elevation	1,403.89	ft
Elevation Range	1,400.00 to 1,405.00	
Discharge	1,101.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	46.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,400.76	ft
Elevation Range	1,400.00 to 1,405.00	
Flow Area	29.4	ft²
Wetted Perimeter	51.82	ft
Top Width	51.77	ft
Actual Depth	0.76	ft
Critical Elevation	1,400.43	ft
Critical Slope	0.042075	ft/ft
Velocity	1.57	ft/s
Velocity Head	0.04	ft
Specific Energy	1,400.80	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+90	0.050
4+90	6+20	0.045
6+20	11+10	0.050

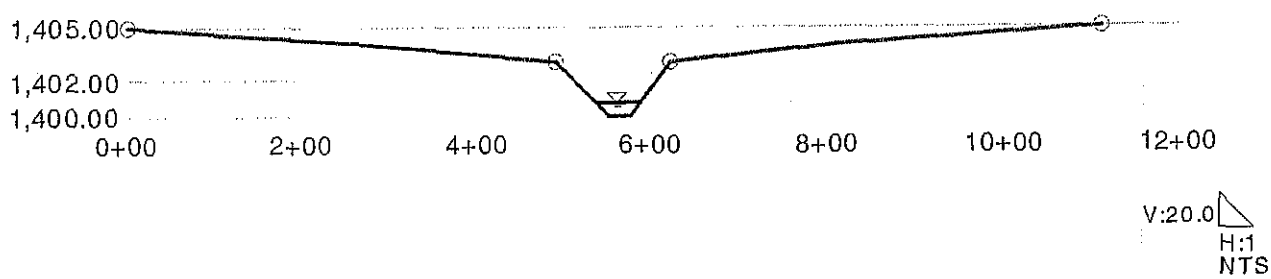
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
2+75	1,404.00
4+90	1,403.00
5+50	1,400.00
5+75	1,400.00
6+20	1,403.00
8+10	1,404.00
11+10	1,405.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,400.76	ft
Elevation Range	1,400.00 to 1,405.00	
Discharge	46.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	472.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,413.07	ft
Elevation Range	1,410.00 to 1,414.00	
Flow Area	272.8	ft²
Wetted Perimeter	415.43	ft
Top Width	415.02	ft
Actual Depth	3.07	ft
Critical Elevation	1,412.59	ft
Critical Slope	0.043390	ft/ft
Velocity	1.73	ft/s
Velocity Head	0.05	ft
Specific Energy	1,413.12	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+20	0.050
4+20	4+50	0.045
4+50	8+80	0.050

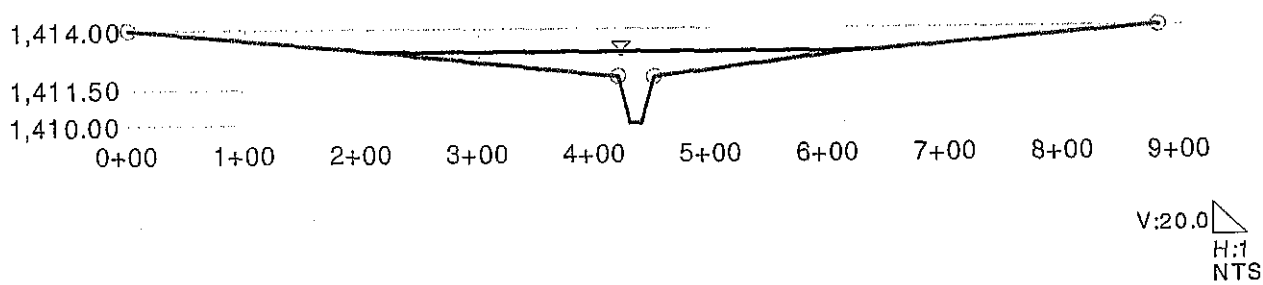
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,414.00
2+30	1,413.00
4+20	1,412.00
4+30	1,410.00
4+40	1,410.00
4+50	1,412.00
6+10	1,413.00
8+80	1,414.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005600	ft/ft
Water Surface Elevation	1,413.07	ft
Elevation Range	1,410.00 to 1,414.00	
Discharge	472.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005900	ft/ft
Discharge	165.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,417.31	ft
Elevation Range	1,415.00 to 1,420.00	
Flow Area	43.7	ft²
Wetted Perimeter	24.00	ft
Top Width	22.72	ft
Actual Depth	2.31	ft
Critical Elevation	1,416.47	ft
Critical Slope	0.028608	ft/ft
Velocity	3.78	ft/s
Velocity Head	0.22	ft
Specific Energy	1,417.54	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+65	0.050
4+65	4+90	0.045
4+90	9+65	0.050

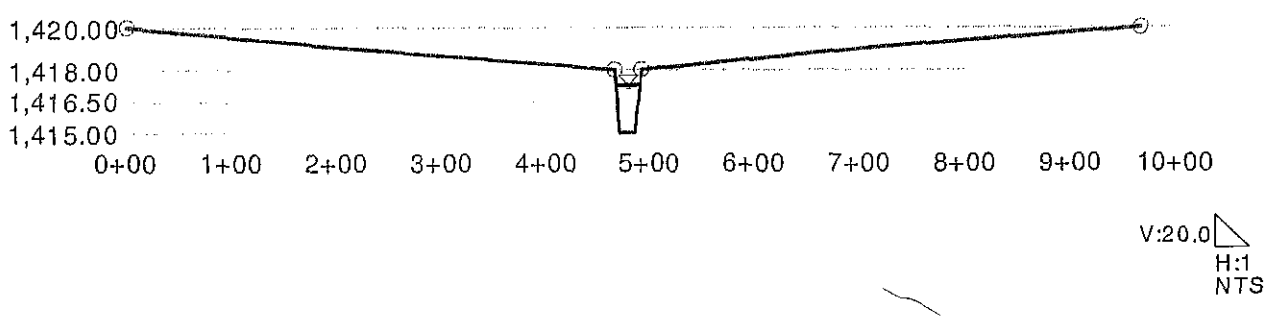
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,420.00
2+15	1,419.00
4+65	1,418.00
4+70	1,415.00
4+85	1,415.00
4+90	1,418.00
7+00	1,419.00
9+65	1,420.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005900	ft/ft
Water Surface Elevation	1,417.31	ft
Elevation Range	1,415.00 to 1,420.00	
Discharge	165.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005900	ft/ft
Discharge	445.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,445.04	ft
Elevation Range	1,443.00 to 1,446.00	
Flow Area	248.3	ft²
Wetted Perimeter	374.14	ft
Top Width	374.08	ft
Actual Depth	2.04	ft
Critical Elevation	1,444.59	ft
Critical Slope	0.043506	ft/ft
Velocity	1.79	ft/s
Velocity Head	0.05	ft
Specific Energy	1,445.09	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+20	0.050
4+20	4+70	0.045
4+70	7+50	0.050

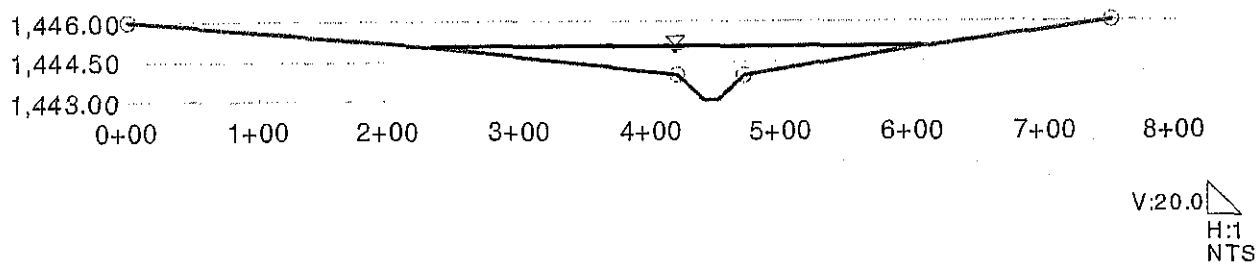
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,446.00
2+40	1,445.00
4+20	1,444.00
4+40	1,443.00
4+50	1,443.00
4+70	1,444.00
6+00	1,445.00
7+50	1,446.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.005900	ft/ft
Water Surface Elevation	1,445.04	ft
Elevation Range	1,443.00 to 1,446.00	
Discharge	445.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005700	ft/ft
Discharge	95.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.043	
Water Surface Elevation	1,444.31	ft
Elevation Range	1,443.00 to 1,446.00	
Flow Area	54.9	ft²
Wetted Perimeter	101.67	ft
Top Width	101.61	ft
Actual Depth	1.31	ft
Critical Elevation	1,443.85	ft
Critical Slope	0.033362	ft/ft
Velocity	1.73	ft/s
Velocity Head	0.05	ft
Specific Energy	1,444.36	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	0+85	0.045
0+85	1+19	0.050

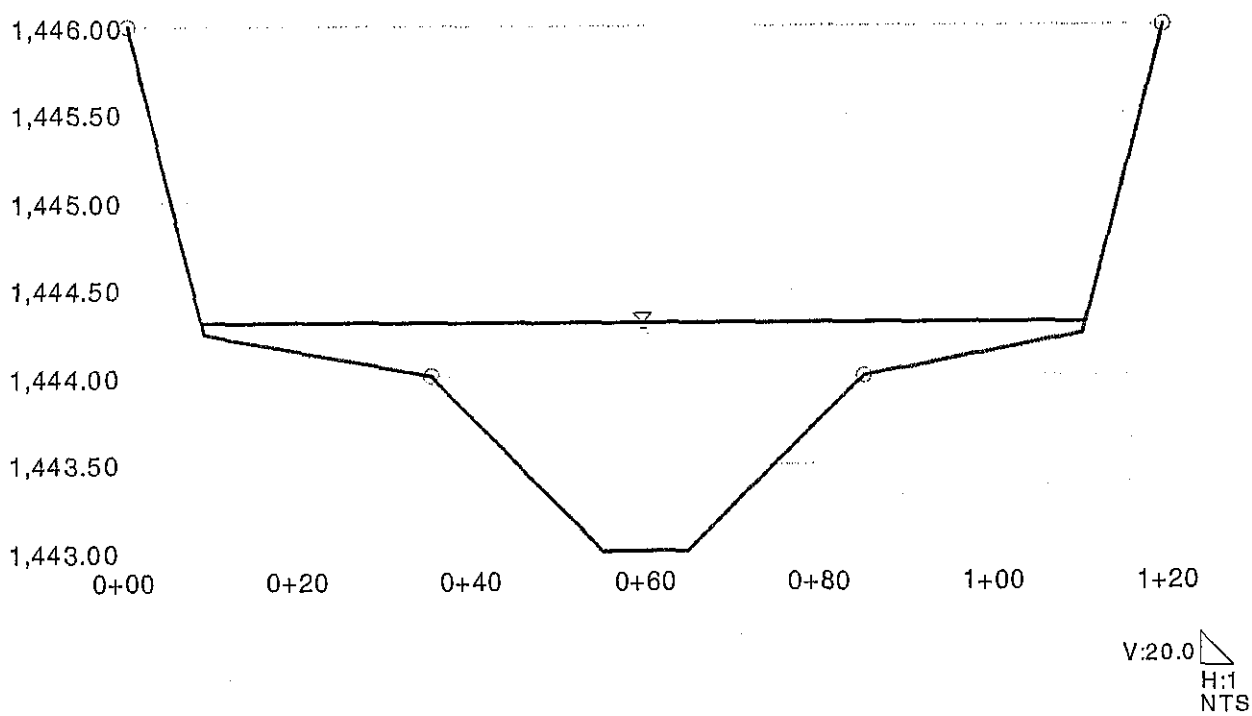
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,446.00
0+09	1,444.25
0+35	1,444.00
0+55	1,443.00
0+65	1,443.00
0+85	1,444.00
1+10	1,444.25
1+19	1,446.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.043	
Slope	0.005700	ft/ft
Water Surface Elevation	1,444.31	ft
Elevation Range	1,443.00 to 1,446.00	
Discharge	95.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	242.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,481.80	ft
Elevation Range	1,480.00 to 1,485.00	
Flow Area	73.7	ft²
Wetted Perimeter	47.52	ft
Top Width	46.99	ft
Actual Depth	1.80	ft
Critical Elevation	1,481.10	ft
Critical Slope	0.029758	ft/ft
Velocity	3.28	ft/s
Velocity Head	0.17	ft
Specific Energy	1,481.97	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+60	0.050
3+60	4+15	0.045
4+15	7+80	0.050

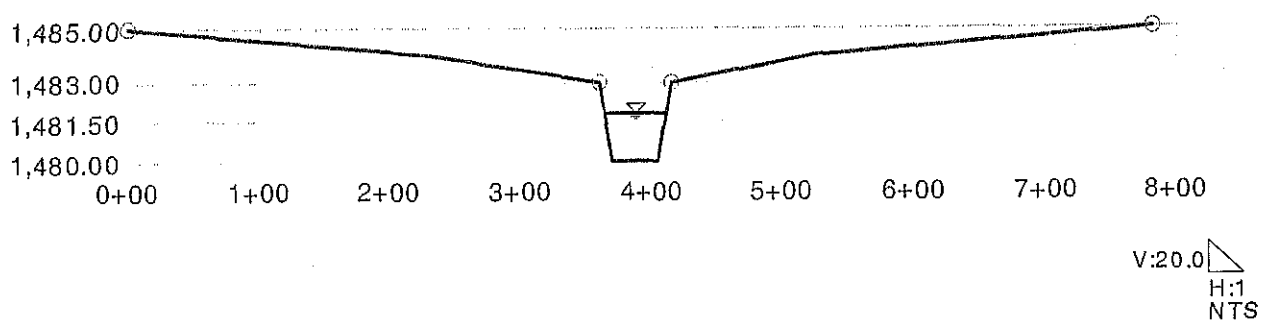
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,485.00
2+30	1,484.00
3+60	1,483.00
3+70	1,480.00
4+05	1,480.00
4+15	1,483.00
5+25	1,484.00
7+80	1,485.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005500	ft/ft
Water Surface Elevation	1,481.80	ft
Elevation Range	1,480.00 to 1,485.00	
Discharge	242.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	64.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,480.83	ft
Elevation Range	1,480.00 to 1,485.00	
Flow Area	31.2	ft²
Wetted Perimeter	40.75	ft
Top Width	40.51	ft
Actual Depth	0.83	ft
Critical Elevation	1,480.46	ft
Critical Slope	0.038852	ft/ft
Velocity	2.05	ft/s
Velocity Head	0.07	ft
Specific Energy	1,480.89	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+60	0.050
3+60	4+15	0.045
4+15	7+80	0.050

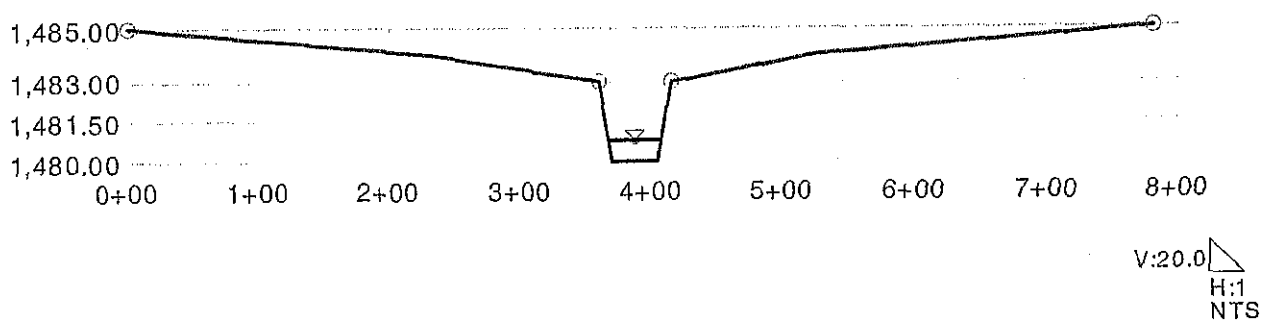
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,485.00
2+30	1,484.00
3+60	1,483.00
3+70	1,480.00
4+05	1,480.00
4+15	1,483.00
5+25	1,484.00
7+80	1,485.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005500	ft/ft
Water Surface Elevation	1,480.83	ft
Elevation Range	1,480.00 to 1,485.00	
Discharge	64.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.010700	ft/ft
Discharge	25.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,346.69	ft
Elevation Range	1,346.00 to 1,350.00	
Flow Area	11.8	ft²
Wetted Perimeter	23.95	ft
Top Width	23.88	ft
Actual Depth	0.69	ft
Critical Elevation	1,346.49	ft
Critical Slope	0.041324	ft/ft
Velocity	2.13	ft/s
Velocity Head	0.07	ft
Specific Energy	1,346.76	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+05	0.050
1+05	1+55	0.045
1+55	2+60	0.050

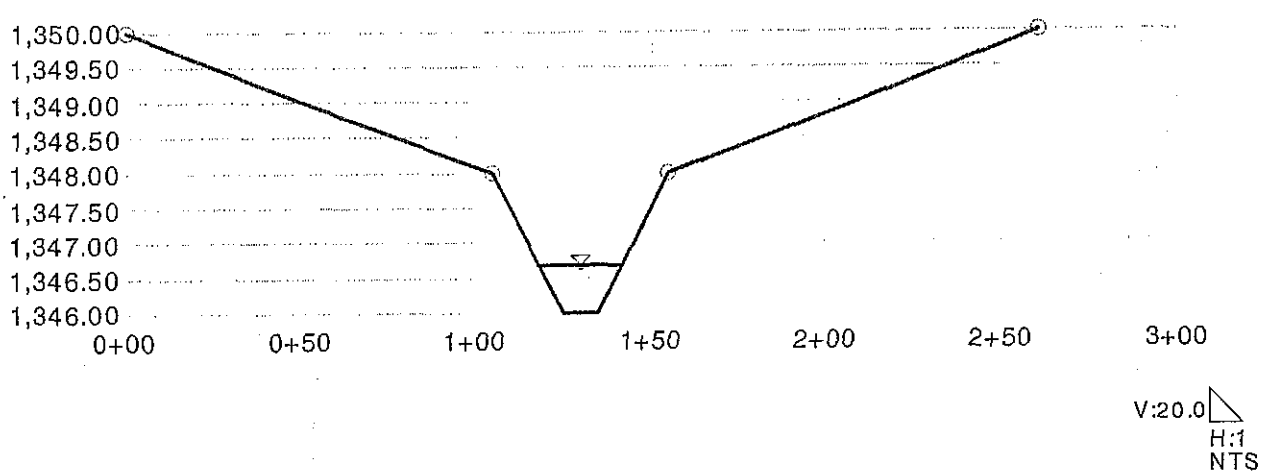
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,350.00
0+50	1,349.00
1+05	1,348.00
1+25	1,346.00
1+35	1,346.00
1+55	1,348.00
2+10	1,349.00
2+60	1,350.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.010700	ft/ft
Water Surface Elevation	1,346.69	ft
Elevation Range	1,346.00 to 1,350.00	
Discharge	25.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011100	ft/ft
Discharge	17.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,324.56	ft
Elevation Range	1,324.00 to 1,328.00	
Flow Area	8.8	ft^2
Wetted Perimeter	21.33	ft
Top Width	21.27	ft
Actual Depth	0.56	ft
Critical Elevation	1,324.39	ft
Critical Slope	0.043974	ft/ft
Velocity	1.93	ft/s
Velocity Head	0.06	ft
Specific Energy	1,324.62	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+75	0.050
1+75	2+25	0.045
2+25	4+00	0.050

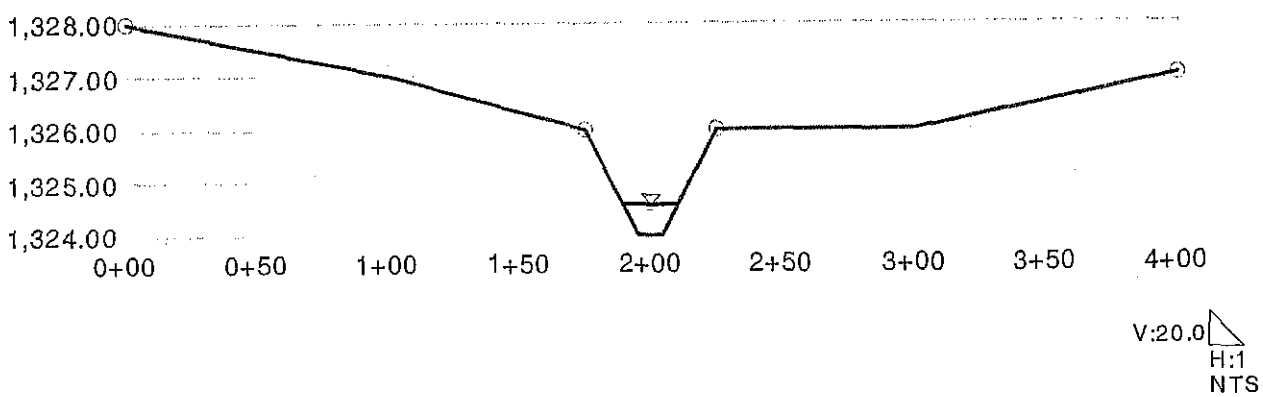
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,328.00
1+00	1,327.00
1+75	1,326.00
1+95	1,324.00
2+05	1,324.00
2+25	1,326.00
3+00	1,326.00
4+00	1,327.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC40
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.011100	ft/ft
Water Surface Elevation	1,324.56	ft
Elevation Range	1,324.00 to 1,328.00	
Discharge	17.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009700	ft/ft
Discharge	12.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,290.49	ft
Elevation Range	1,290.00 to 1,295.00	
Flow Area	7.2	ft²
Wetted Perimeter	19.79	ft
Top Width	19.72	ft
Actual Depth	0.49	ft
Critical Elevation	1,290.32	ft
Critical Slope	0.046641	ft/ft
Velocity	1.66	ft/s
Velocity Head	0.04	ft
Specific Energy	1,290.53	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+50	0.045
2+50	4+50	0.050

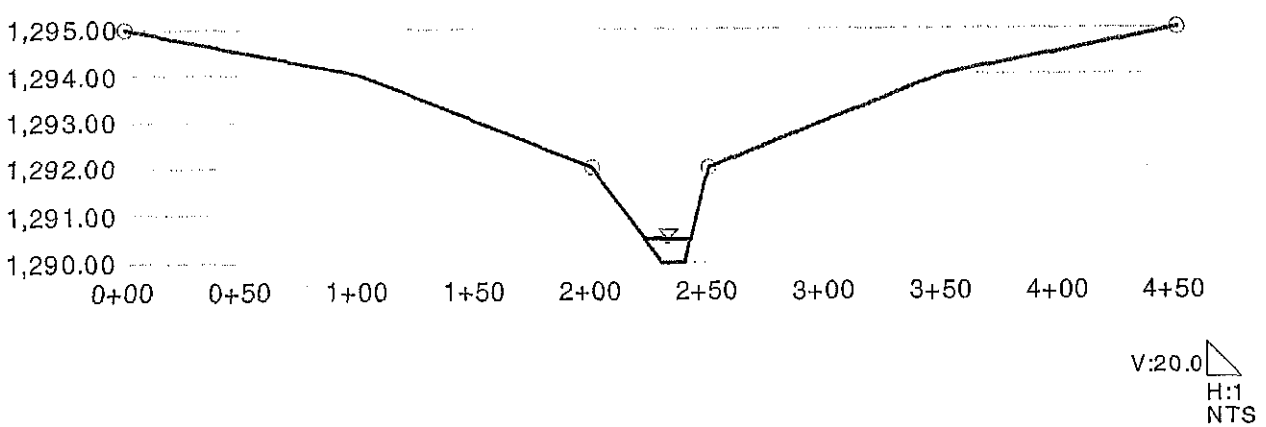
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
1+00	1,294.00
2+00	1,292.00
2+30	1,290.00
2+40	1,290.00
2+50	1,292.00
3+50	1,294.00
4+50	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RDC41*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009700	ft/ft
Water Surface Elevation	1,290.49	ft
Elevation Range	1,290.00 to 1,295.00	
Discharge	12.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC42A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008700	ft/ft
Discharge	79.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,271.14	ft
Elevation Range	1,270.00 to 1,275.00	
Flow Area	30.0	ft²
Wetted Perimeter	37.85	ft
Top Width	37.73	ft
Actual Depth	1.14	ft
Critical Elevation	1,270.79	ft
Critical Slope	0.035330	ft/ft
Velocity	2.64	ft/s
Velocity Head	0.11	ft
Specific Energy	1,271.24	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+75	0.045
2+75	4+50	0.050

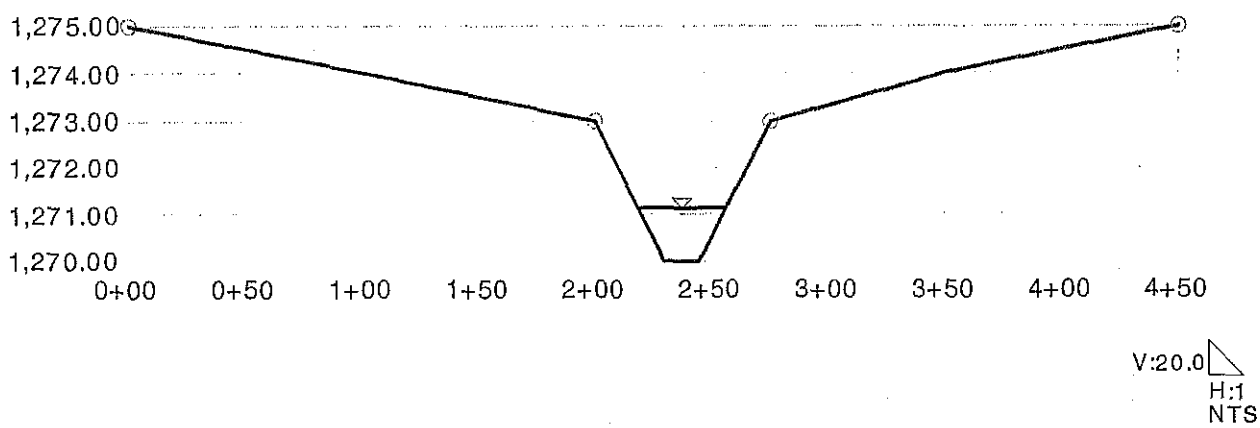
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,275.00
1+00	1,274.00
2+00	1,273.00
2+30	1,270.00
2+45	1,270.00
2+75	1,273.00
3+50	1,274.00
4+50	1,275.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC42A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.045
Slope	0.008700 ft/ft
Water Surface Elevation	1,271.14 ft
Elevation Range	1,270.00 to 1,275.00
Discharge	79.00 cfs



Project Summary Report

Project Description	
Worksheet	RDC42B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007800	ft/ft
Discharge	33.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,201.80	ft
Elevation Range	1,201.00 to 1,205.00	
Flow Area	17.6	ft²
Wetted Perimeter	34.03	ft
Top Width	33.98	ft
Actual Depth	0.80	ft
Critical Elevation	1,201.53	ft
Critical Slope	0.041223	ft/ft
Velocity	1.88	ft/s
Velocity Head	0.05	ft
Specific Energy	1,201.85	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	2+25	0.045
2+25	3+50	0.050

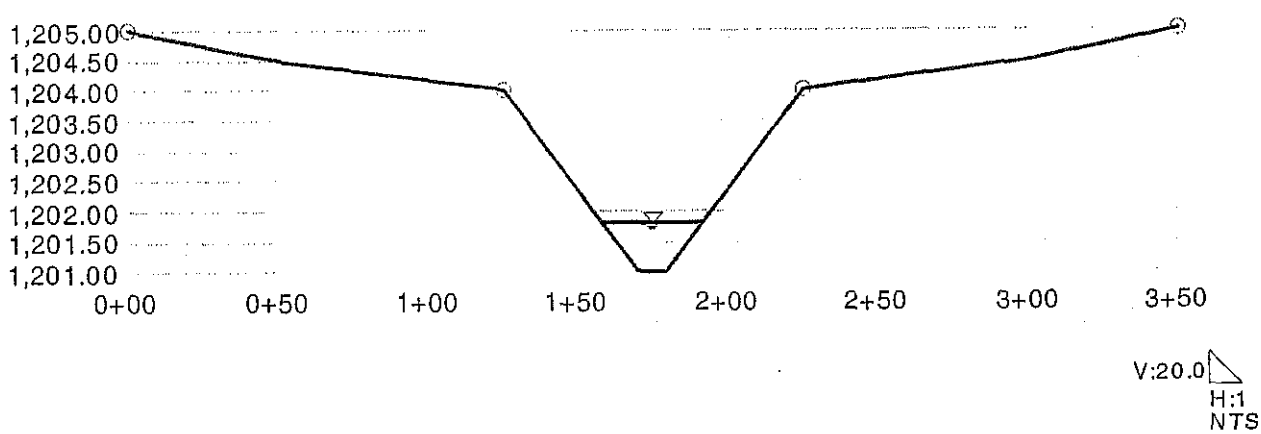
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,205.00
0+50	1,204.50
1+25	1,204.00
1+70	1,201.00
1+80	1,201.00
2+25	1,204.00
3+00	1,204.50
3+50	1,205.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC42B
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007800	ft/ft
Water Surface Elevation	1,201.80	ft
Elevation Range	1,201.00 to 1,205.00	
Discharge	33.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009200	ft/ft
Discharge	62.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,276.96	ft
Elevation Range	1,276.00 to 1,280.00	
Flow Area	28.2	ft²
Wetted Perimeter	48.55	ft
Top Width	48.50	ft
Actual Depth	0.96	ft
Critical Elevation	1,276.69	ft
Critical Slope	0.038901	ft/ft
Velocity	2.20	ft/s
Velocity Head	0.08	ft
Specific Energy	1,277.04	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+90	0.050
1+90	2+80	0.045
2+80	3+80	0.050

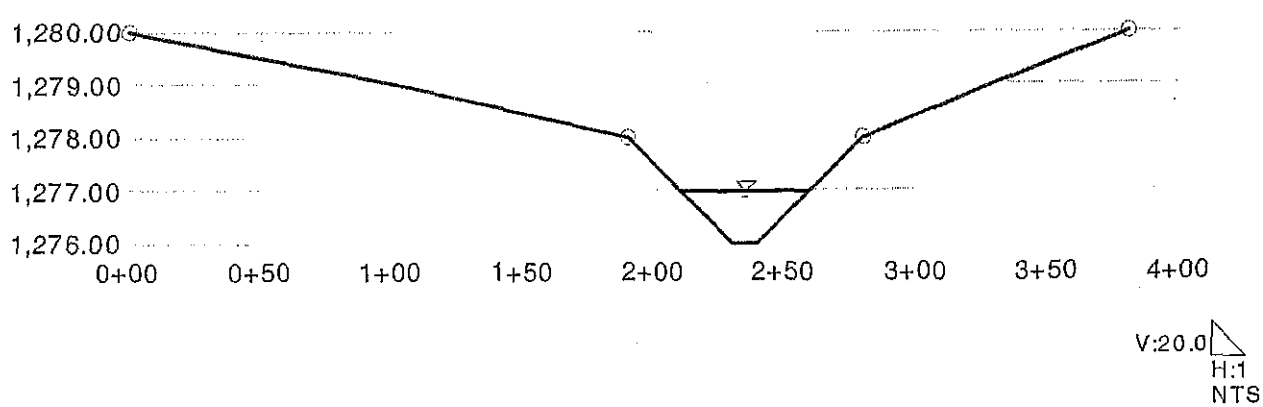
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,280.00
1+00	1,279.00
1+90	1,278.00
2+30	1,276.00
2+40	1,276.00
2+80	1,278.00
3+30	1,279.00
3+80	1,280.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC43
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.009200	ft/ft
Water Surface Elevation	1,276.96	ft
Elevation Range	1,276.00 to 1,280.00	
Discharge	*62.00*	*cfs*



Project Summary Report

Project Description	
Worksheet	RDC45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007300	ft/ft
Discharge	61.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,202.08	ft
Elevation Range	1,201.00 to 1,205.00	
Flow Area	28.3	ft²
Wetted Perimeter	42.50	ft
Top Width	42.43	ft
Actual Depth	1.08	ft
Critical Elevation	1,201.74	ft
Critical Slope	0.037695	ft/ft
Velocity	2.15	ft/s
Velocity Head	0.07	ft
Specific Energy	1,202.15	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	2+25	0.045
2+25	3+50	0.050

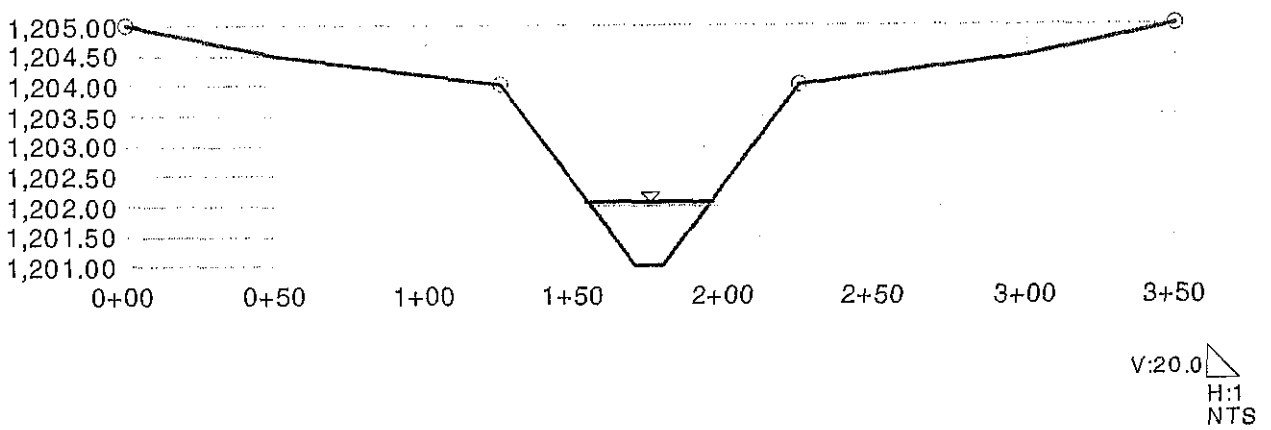
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,205.00
0+50	1,204.50
1+25	1,204.00
1+70	1,201.00
1+80	1,201.00
2+25	1,204.00
3+00	1,204.50
3+50	1,205.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007300	ft/ft
Water Surface Elevation	1,202.08	ft
Elevation Range	1,201.00 to 1,205.00	
Discharge	61.00	cfs



Project Summary Report

Project Description	
Worksheet	RDC46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006700	ft/ft
Discharge	26.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,201.74	ft
Elevation Range	1,201.00 to 1,205.00	
Flow Area	15.6	ft²
Wetted Perimeter	32.24	ft
Top Width	32.19	ft
Actual Depth	0.74	ft
Critical Elevation	1,201.47	ft
Critical Slope	0.042719	ft/ft
Velocity	1.67	ft/s
Velocity Head	0.04	ft
Specific Energy	1,201.78	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	2+25	0.045
2+25	3+50	0.050

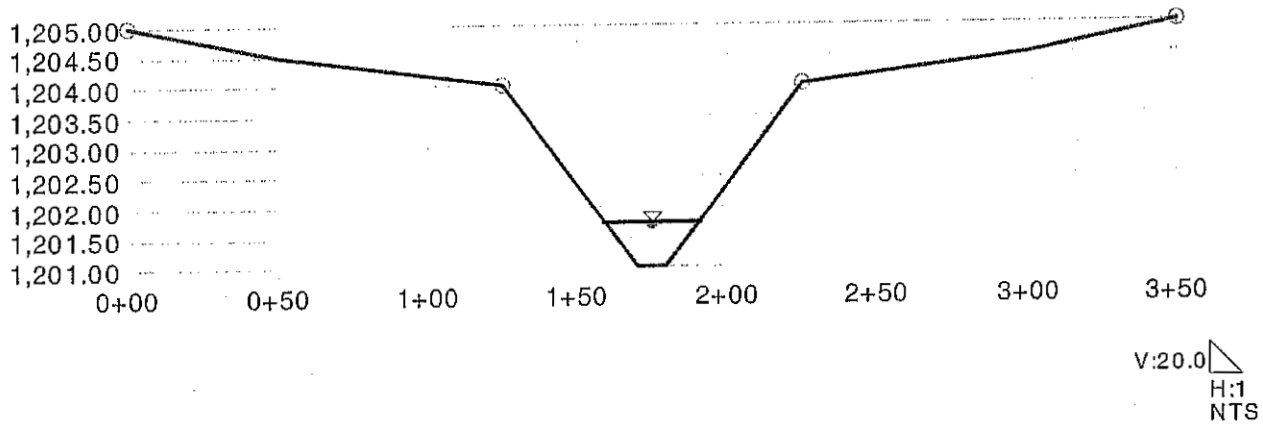
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,205.00
0+50	1,204.50
1+25	1,204.00
1+70	1,201.00
1+80	1,201.00
2+25	1,204.00
3+00	1,204.50
3+50	1,205.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDC46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006700	ft/ft
Water Surface Elevation	1,201.74	ft
Elevation Range	1,201.00 to 1,205.00	
Discharge	26.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008800	ft/ft
Discharge	608.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,484.48	ft
Elevation Range	1,482.00 to 1,487.00	
Flow Area	119.9	ft²
Wetted Perimeter	57.29	ft
Top Width	56.56	ft
Actual Depth	2.48	ft
Critical Elevation	1,483.83	ft
Critical Slope	0.025493	ft/ft
Velocity	5.07	ft/s
Velocity Head	0.40	ft
Specific Energy	1,484.88	ft
Froude Number	0.61	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+80	0.050
2+80	3+40	0.045
3+40	6+50	0.050

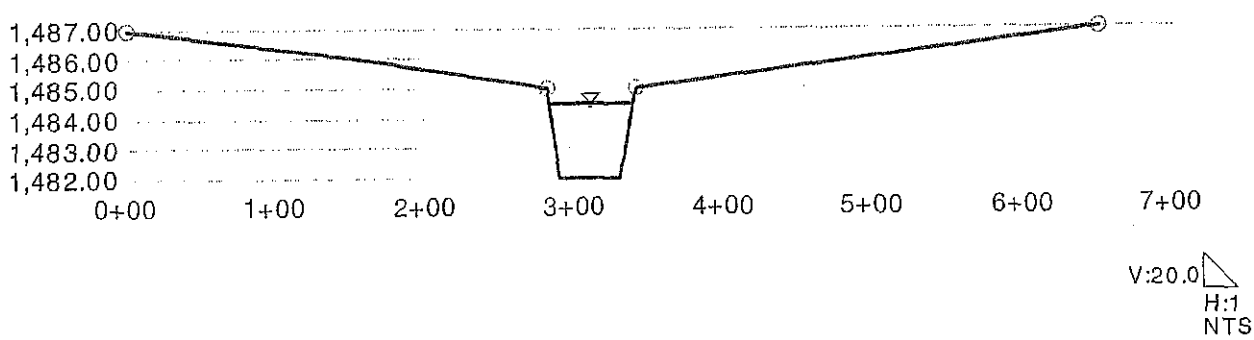
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,487.00
1+50	1,486.00
2+80	1,485.00
2+90	1,482.00
3+30	1,482.00
3+40	1,485.00
5+00	1,486.00
6+50	1,487.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD01
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.008800	ft/ft
Water Surface Elevation	1,484.48	ft
Elevation Range	1,482.00 to 1,487.00	
Discharge	608.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.019000	ft/ft
Discharge	453.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,684.48	ft
Elevation Range	1,682.00 to 1,685.00	
Flow Area	95.6	ft²
Wetted Perimeter	79.81	ft
Top Width	79.53	ft
Actual Depth	2.48	ft
Critical Elevation	1,684.25	ft
Critical Slope	0.034326	ft/ft
Velocity	4.74	ft/s
Velocity Head	0.35	ft
Specific Energy	1,684.83	ft
Froude Number	0.76	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
1+75	2+10	0.050
2+10	2+30	0.045
2+30	2+65	0.050

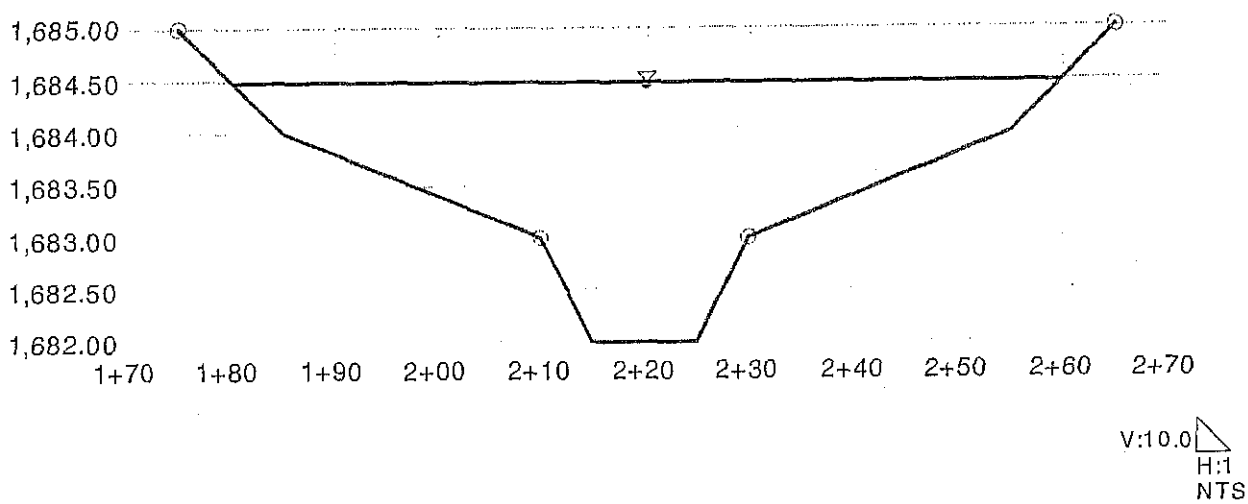
Natural Channel Points

Station (ft)	Elevation (ft)
1+75	1,685.00
1+85	1,684.00
2+10	1,683.00
2+15	1,682.00
2+25	1,682.00
2+30	1,683.00
2+55	1,684.00
2+65	1,685.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.019000	ft/ft
Water Surface Elevation	1,684.48	ft
Elevation Range	1,682.00 to 1,685.00	
Discharge	453.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.013300	ft/ft
Discharge	251.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,639.89	ft
Elevation Range	1,638.00 to 1,643.00	
Flow Area	50.8	ft²
Wetted Perimeter	34.34	ft
Top Width	33.84	ft
Actual Depth	1.89	ft
Critical Elevation	1,639.54	ft
Critical Slope	0.027802	ft/ft
Velocity	4.94	ft/s
Velocity Head	0.38	ft
Specific Energy	1,640.27	ft
Froude Number	0.71	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+53	0.050
1+53	1+95	0.045
1+95	3+40	0.050

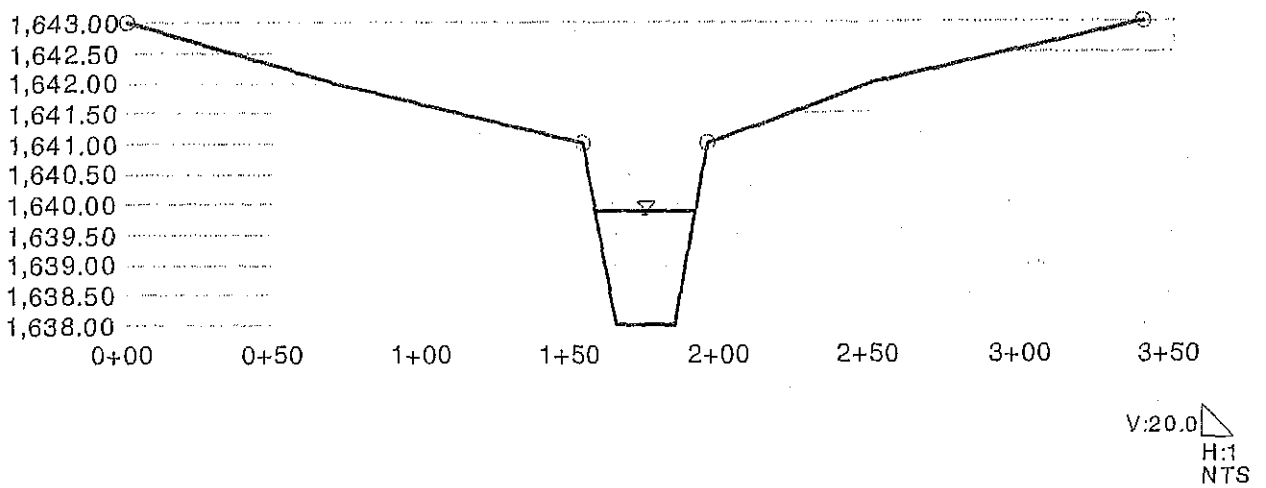
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,643.00
0+70	1,642.00
1+53	1,641.00
1+65	1,638.00
1+85	1,638.00
1+95	1,641.00
2+50	1,642.00
3+40	1,643.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.045	
Slope	0.013300	ft/ft
Water Surface Elevation	1,639.89	ft
Elevation Range	1,638.00 to 1,643.00	
Discharge	251.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.012000	ft/ft
Discharge	119.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,574.42	ft
Elevation Range	1,573.00 to 1,577.00	
Flow Area	31.5	ft²
Wetted Perimeter	29.52	ft
Top Width	29.24	ft
Actual Depth	1.42	ft
Critical Elevation	1,574.10	ft
Critical Slope	0.031293	ft/ft
Velocity	3.78	ft/s
Velocity Head	0.22	ft
Specific Energy	1,574.65	ft
Froude Number	0.64	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+60	0.050
3+60	3+95	0.045
3+95	7+10	0.050

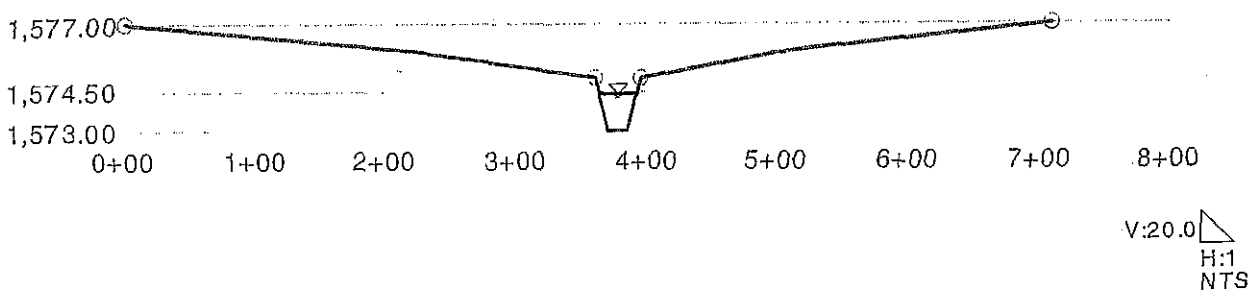
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,577.00
2+20	1,576.00
3+60	1,575.00
3+70	1,573.00
3+85	1,573.00
3+95	1,575.00
5+10	1,576.00
7+10	1,577.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.012000	ft/ft
Water Surface Elevation	1,574.42	ft
Elevation Range	1,573.00 to 1,577.00	
Discharge	119.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008000	ft/ft
Discharge	1,611.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,456.70	ft
Elevation Range	1,453.00 to 1,457.50	
Flow Area	437.1	ft²
Wetted Perimeter	284.79	ft
Top Width	284.28	ft
Actual Depth	3.70	ft
Critical Elevation	1,456.14	ft
Critical Slope	0.033427	ft/ft
Velocity	3.69	ft/s
Velocity Head	0.21	ft
Specific Energy	1,456.91	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+90	2+00	0.050
2+00	2+50	0.045
2+50	3+85	0.050

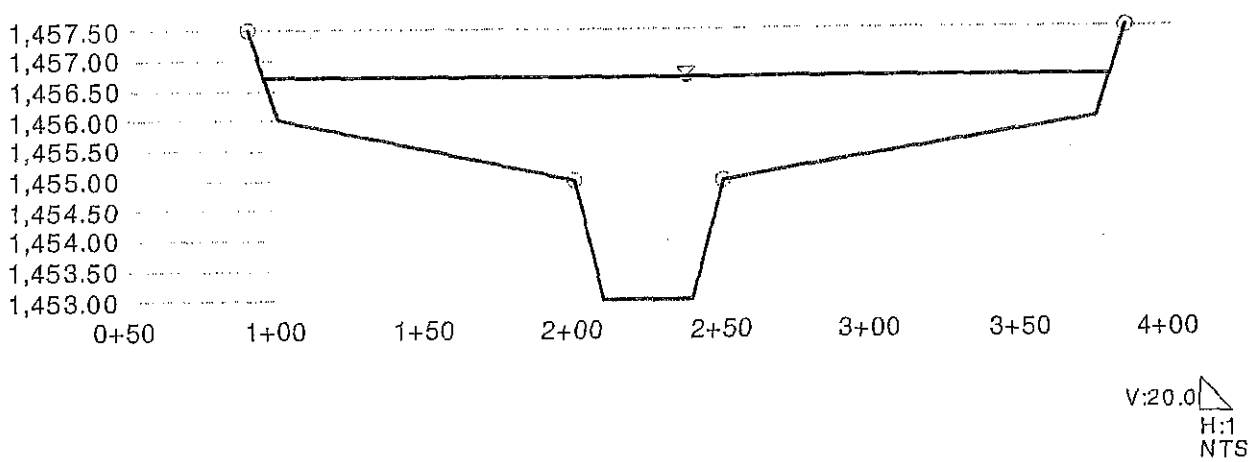
Natural Channel Points

Station (ft)	Elevation (ft)
0+90	1,457.50
1+00	1,456.00
2+00	1,455.00
2+10	1,453.00
2+40	1,453.00
2+50	1,455.00
3+75	1,456.00
3+85	1,457.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.008000	ft/ft
Water Surface Elevation	1,456.70	ft
Elevation Range	1,453.00 to 1,457.50	
Discharge	1,611.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007800	ft/ft
Discharge	162.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,456.67	ft
Elevation Range	1,455.00 to 1,459.00	
Flow Area	47.2	ft²
Wetted Perimeter	36.99	ft
Top Width	36.66	ft
Actual Depth	1.67	ft
Critical Elevation	1,456.15	ft
Critical Slope	0.030440	ft/ft
Velocity	3.43	ft/s
Velocity Head	0.18	ft
Specific Energy	1,456.85	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+10	0.050
3+10	3+50	0.045
3+50	8+35	0.050

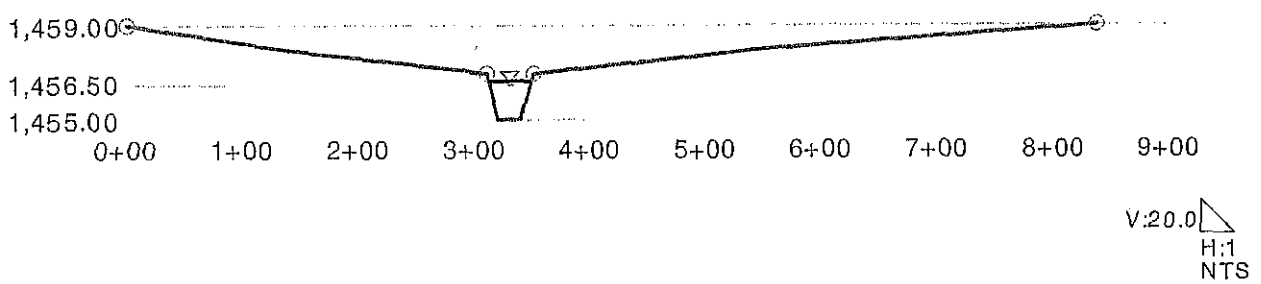
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,459.00
1+40	1,458.00
3+10	1,457.00
3+20	1,455.00
3+40	1,455.00
3+50	1,457.00
5+40	1,458.00
8+35	1,459.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007800	ft/ft
Water Surface Elevation	1,456.67	ft
Elevation Range	1,455.00 to 1,459.00	
Discharge	162.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007100	ft/ft
Discharge	153.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,423.49	ft
Elevation Range	1,422.00 to 1,425.00	
Flow Area	65.8	ft²
Wetted Perimeter	81.22	ft
Top Width	81.14	ft
Actual Depth	1.49	ft
Critical Elevation	1,423.00	ft
Critical Slope	0.037050	ft/ft
Velocity	2.32	ft/s
Velocity Head	0.08	ft
Specific Energy	1,423.57	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
4+40	4+85	0.050
4+85	5+37	0.045
5+37	5+82	0.050

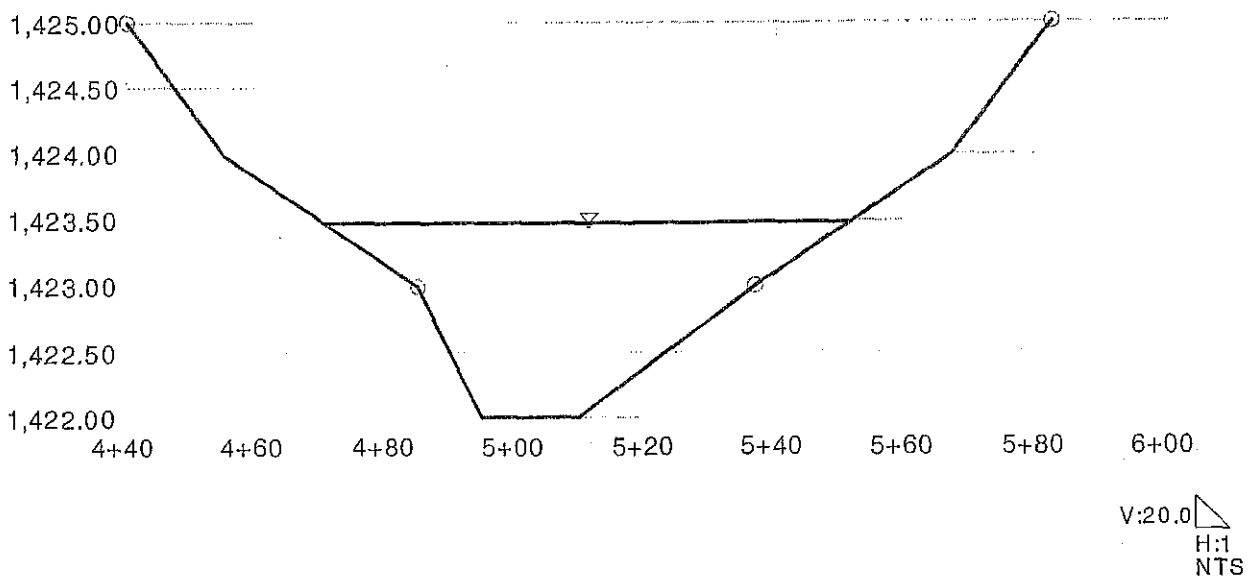
Natural Channel Points

Station (ft)	Elevation (ft)
4+40	1,425.00
4+55	1,424.00
4+85	1,423.00
4+95	1,422.00
5+10	1,422.00
5+37	1,423.00
5+67	1,424.00
5+82	1,425.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.007100	ft/ft
Water Surface Elevation	1,423.49	ft
Elevation Range	1,422.00 to 1,425.00	
Discharge	153.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007800	ft/ft
Discharge	406.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,457.92	ft
Elevation Range	1,455.00 to 1,459.00	
Flow Area	113.4	ft²
Wetted Perimeter	77.06	ft
Top Width	76.62	ft
Actual Depth	2.92	ft
Critical Elevation	1,456.97	ft
Critical Slope	0.029112	ft/ft
Velocity	3.58	ft/s
Velocity Head	0.20	ft
Specific Energy	1,458.11	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+80	3+10	0.050
3+10	3+50	0.045
3+50	3+80	0.050

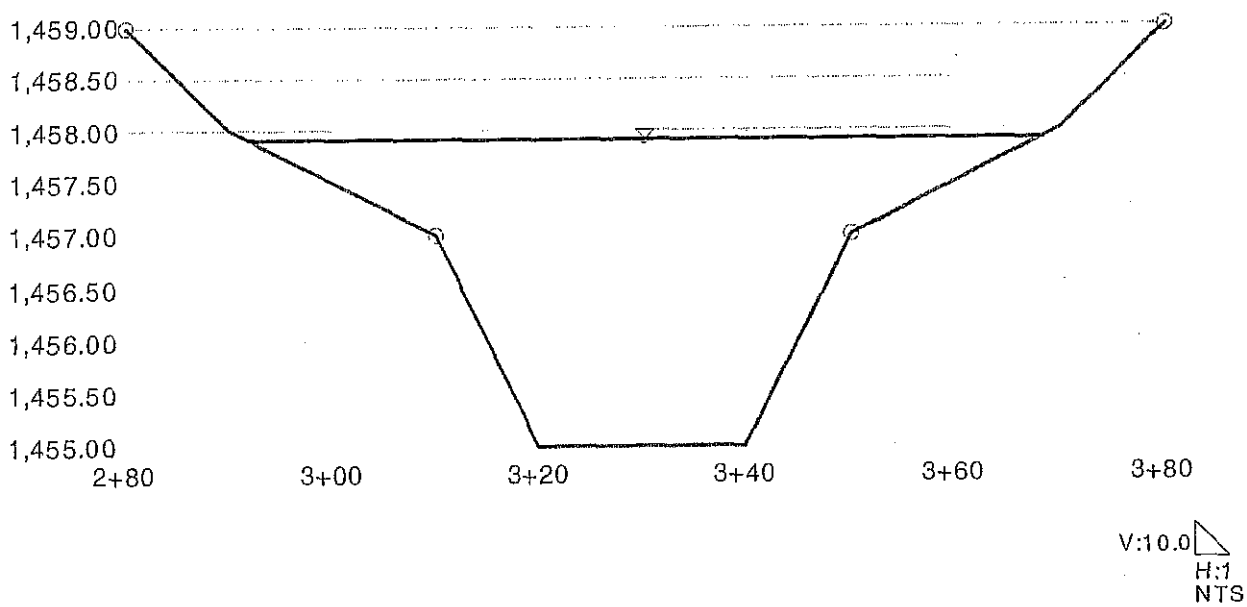
Natural Channel Points

Station (ft)	Elevation (ft)
2+80	1,459.00
2+90	1,458.00
3+10	1,457.00
3+20	1,455.00
3+40	1,455.00
3+50	1,457.00
3+70	1,458.00
3+80	1,459.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD08
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	*0.007800*	*ft/ft*
Water Surface Elevation	1,457.92	ft
Elevation Range	1,455.00 to 1,459.00	
Discharge	406.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	186.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,420.68	ft
Elevation Range	1,419.00 to 1,430.00	
Flow Area	91.7	ft²
Wetted Perimeter	109.77	ft
Top Width	109.22	ft
Actual Depth	1.68	ft
Critical Elevation	1,420.15	ft
Critical Slope	0.035696	ft/ft
Velocity	2.03	ft/s
Velocity Head	0.06	ft
Specific Energy	1,420.74	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+70	0.045
1+70	7+30	0.050

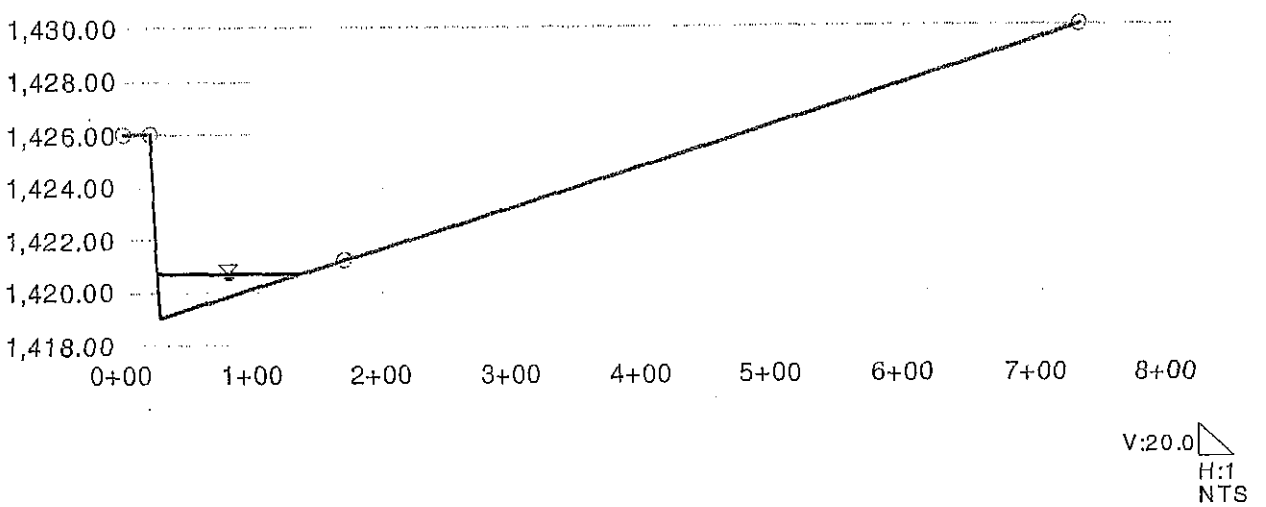
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,426.00
0+20	1,426.00
0+30	1,419.00
1+70	1,421.20
3+10	1,423.40
4+50	1,425.60
5+90	1,427.80
7+30	1,430.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,420.68	ft
Elevation Range	1,419.00 to 1,430.00	
Discharge	186.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003300	ft/ft
Discharge	534.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,399.85	ft
Elevation Range	1,397.00 to 1,410.00	
Flow Area	225.3	ft²
Wetted Perimeter	158.96	ft
Top Width	158.15	ft
Actual Depth	2.85	ft
Critical Elevation	1,398.87	ft
Critical Slope	0.030958	ft/ft
Velocity	2.37	ft/s
Velocity Head	0.09	ft
Specific Energy	1,399.94	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+70	0.045
1+70	7+30	0.050

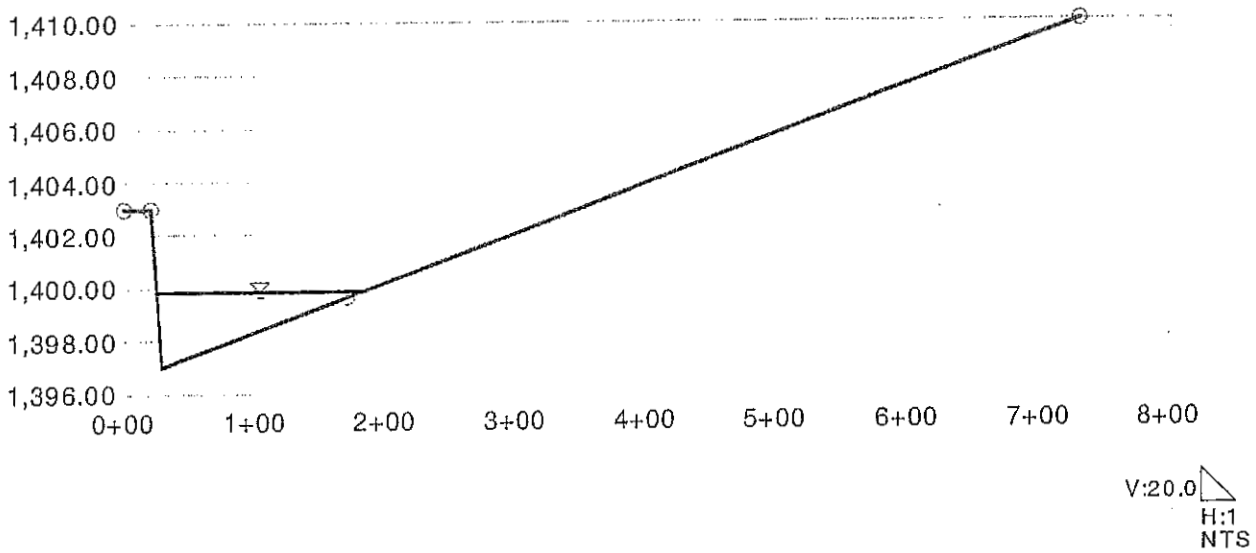
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,403.00
0+20	1,403.00
0+30	1,397.00
1+70	1,399.60
3+10	1,402.20
4+50	1,404.80
5+90	1,407.40
7+30	1,410.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003300	ft/ft
Water Surface Elevation	1,399.85	ft
Elevation Range	1,397.00 to 1,410.00	
Discharge	534.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007300	ft/ft
Discharge	319.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,415.24	ft
Elevation Range	1,414.00 to 1,416.00	
Flow Area	160.8	ft²
Wetted Perimeter	254.86	ft
Top Width	254.82	ft
Actual Depth	1.24	ft
Critical Elevation	1,414.82	ft
Critical Slope	0.039070	ft/ft
Velocity	1.98	ft/s
Velocity Head	0.06	ft
Specific Energy	1,415.30	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
1+40	2+00	0.050
2+00	3+50	0.045
3+50	4+10	0.050

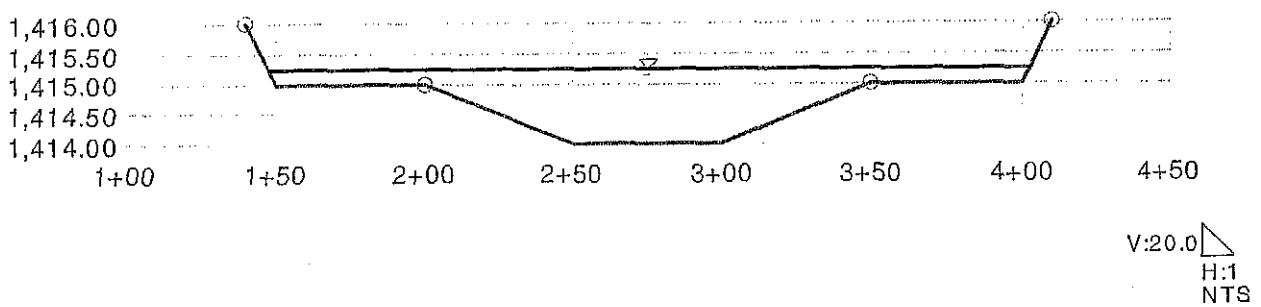
Natural Channel Points

Station (ft)	Elevation (ft)
1+40	1,416.00
1+50	1,415.00
2+00	1,415.00
2+50	1,414.00
3+00	1,414.00
3+50	1,415.00
4+00	1,415.00
4+10	1,416.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.047
Slope	0.007300 ft/ft
Water Surface Elevation	1,415.24 ft
Elevation Range	1,414.00 to 1,416.00
Discharge	319.00 cfs



Project Summary Report

Project Description	
Worksheet	RCPD12
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002400	ft/ft
Discharge	76.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,418.46	ft
Elevation Range	1,417.00 to 1,430.00	
Flow Area	58.3	ft^2
Wetted Perimeter	80.70	ft
Top Width	80.17	ft
Actual Depth	1.46	ft
Critical Elevation	1,417.86	ft
Critical Slope	0.039421	ft/ft
Velocity	1.30	ft/s
Velocity Head	0.03	ft
Specific Energy	1,418.48	ft
Froude Number	0.27	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+70	0.045
1+70	7+30	0.050

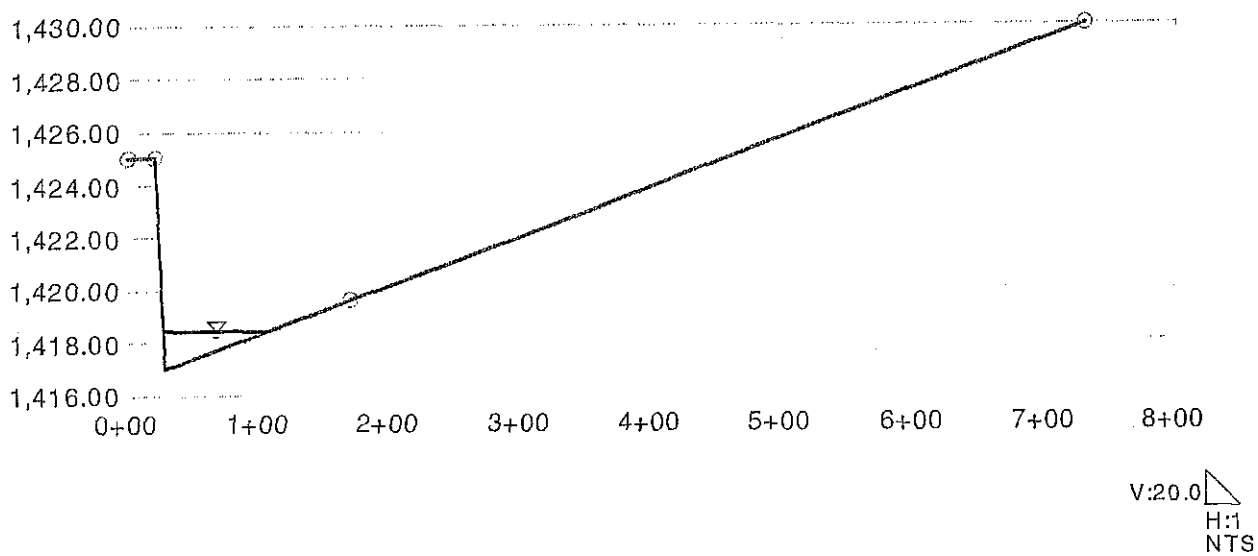
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,425.00
0+20	1,425.00
0+30	1,417.00
1+70	1,419.60
3+10	1,422.20
4+50	1,424.80
5+90	1,427.40
7+30	1,430.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.002400	ft/ft
Water Surface Elevation	1,418.46	ft
Elevation Range	1,417.00 to 1,430.00	
Discharge	76.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD13
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	297.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,407.03	ft
Elevation Range	1,405.00 to 1,420.00	
Flow Area	141.1	ft^2
Wetted Perimeter	139.44	ft
Top Width	138.87	ft
Actual Depth	2.03	ft
Critical Elevation	1,406.36	ft
Critical Slope	0.033721	ft/ft
Velocity	2.10	ft/s
Velocity Head	0.07	ft
Specific Energy	1,407.10	ft
Froude Number	0.37	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

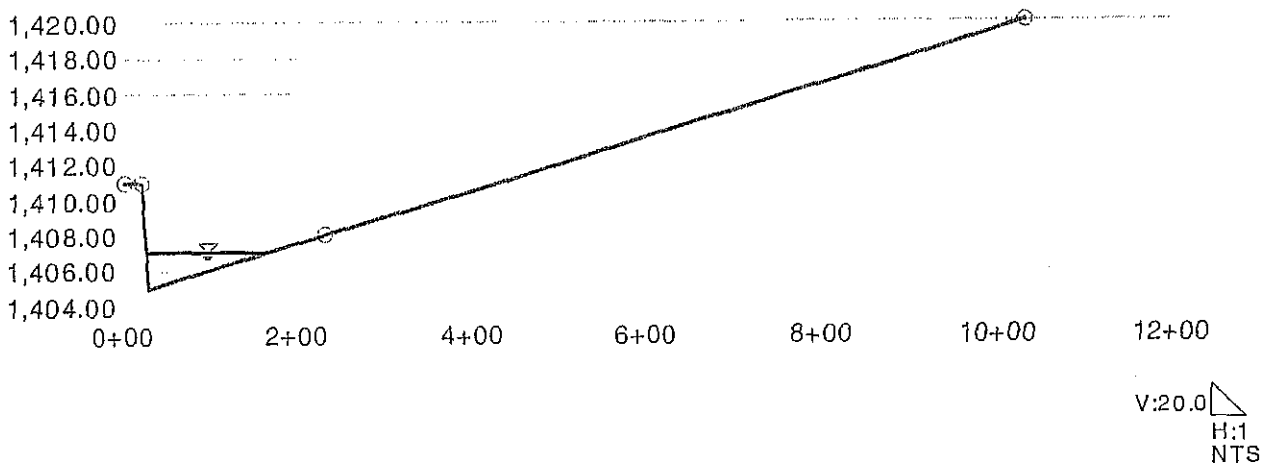
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,411.00
0+20	1,411.00
0+30	1,405.00
2+30	1,408.00
4+30	1,411.00
6+30	1,414.00
8+30	1,417.00
10+30	1,420.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004000	ft/ft
Water Surface Elevation	1,407.03	ft
Elevation Range	1,405.00 to 1,420.00	
Discharge	297.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002900	ft/ft
Discharge	70.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,387.28	ft
Elevation Range	1,386.00 to 1,400.00	
Flow Area	53.3	ft²
Wetted Perimeter	84.06	ft
Top Width	83.60	ft
Actual Depth	1.28	ft
Critical Elevation	1,386.78	ft
Critical Slope	0.040731	ft/ft
Velocity	1.31	ft/s
Velocity Head	0.03	ft
Specific Energy	1,387.30	ft
Froude Number	0.29	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+10	0.045
2+10	9+30	0.050

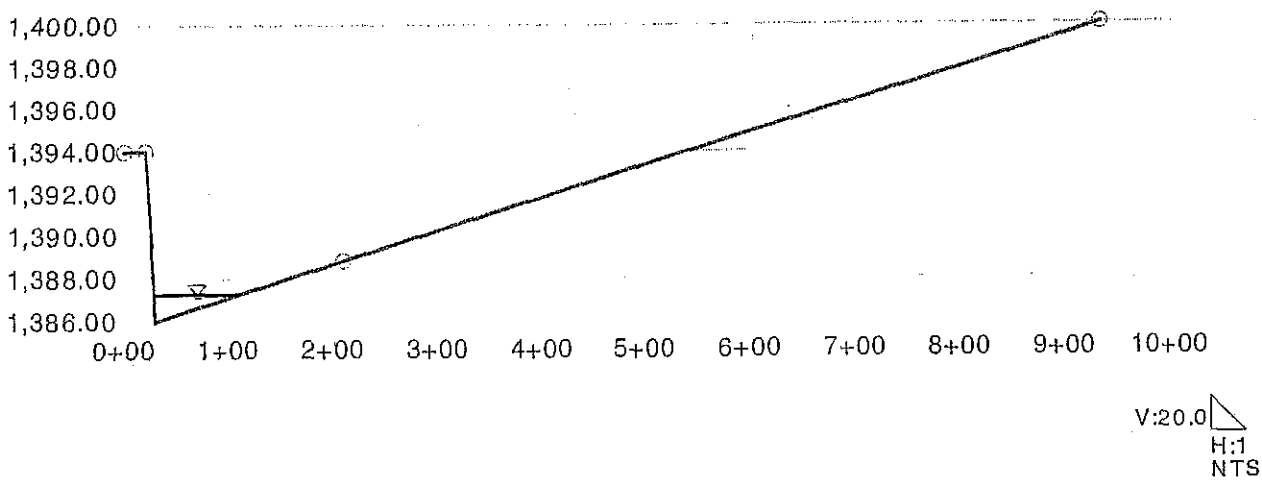
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,394.00
0+20	1,394.00
0+30	1,386.00
2+10	1,388.80
3+90	1,391.60
5+70	1,394.40
7+50	1,397.20
9+30	1,400.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.002900	ft/ft
Water Surface Elevation	1,387.28	ft
Elevation Range	1,386.00 to 1,400.00	
Discharge	70.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	88.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,381.22	ft
Elevation Range	1,380.00 to 1,395.00	
Flow Area	60.3	ft²
Wetted Perimeter	99.45	ft
Top Width	99.01	ft
Actual Depth	1.22	ft
Critical Elevation	1,380.78	ft
Critical Slope	0.040597	ft/ft
Velocity	1.46	ft/s
Velocity Head	0.03	ft
Specific Energy	1,381.25	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+70	0.045
2+70	12+30	0.050

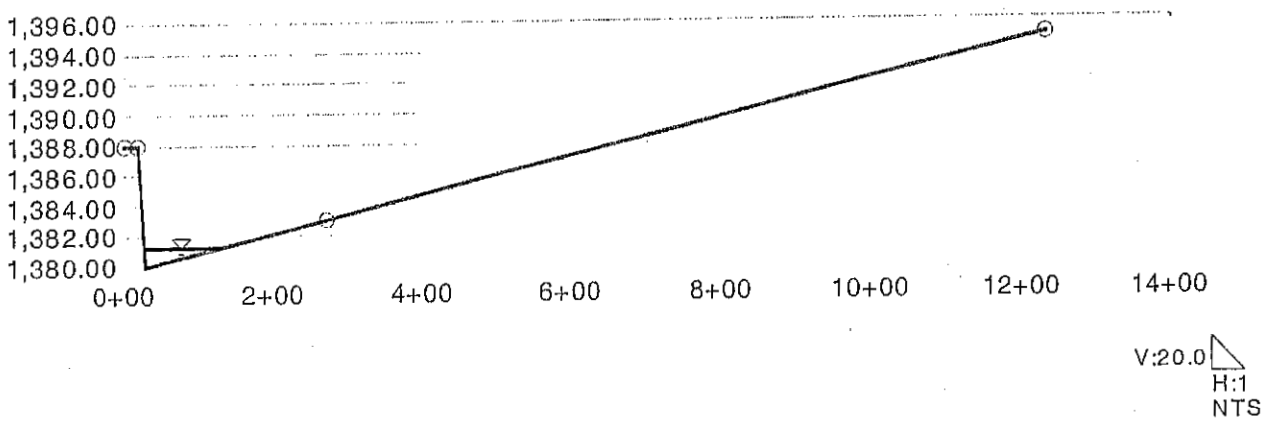
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,388.00
0+20	1,388.00
0+30	1,380.00
2+70	1,383.00
5+10	1,386.00
7+50	1,389.00
9+90	1,392.00
12+30	1,395.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003800	ft/ft
Water Surface Elevation	1,381.22	ft
Elevation Range	1,380.00 to 1,395.00	
Discharge	88.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	74.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,376.06	ft
Elevation Range	1,375.00 to 1,385.00	
Flow Area	51.2	ft²
Wetted Perimeter	97.19	ft
Top Width	96.89	ft
Actual Depth	1.06	ft
Critical Elevation	1,375.69	ft
Critical Slope	0.042146	ft/ft
Velocity	1.45	ft/s
Velocity Head	0.03	ft
Specific Energy	1,376.09	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+10	0.045
2+10	9+30	0.050

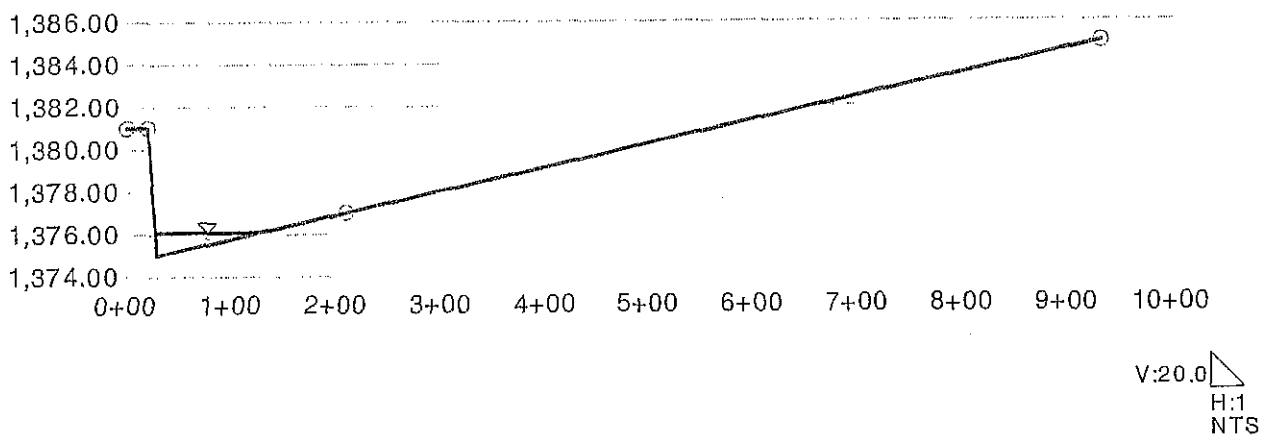
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,381.00
0+20	1,381.00
0+30	1,375.00
2+10	1,377.00
3+90	1,379.00
5+70	1,381.00
7+50	1,383.00
9+30	1,385.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RCPD18*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004500	ft/ft
Water Surface Elevation	1,376.06	ft
Elevation Range	1,375.00 to 1,385.00	
Discharge	74.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	125.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,369.45	ft
Elevation Range	1,368.00 to 1,380.00	
Flow Area	76.2	ft²
Wetted Perimeter	105.43	ft
Top Width	104.96	ft
Actual Depth	1.45	ft
Critical Elevation	1,368.94	ft
Critical Slope	0.038144	ft/ft
Velocity	1.64	ft/s
Velocity Head	0.04	ft
Specific Energy	1,369.49	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+00	0.045
2+00	8+80	0.050

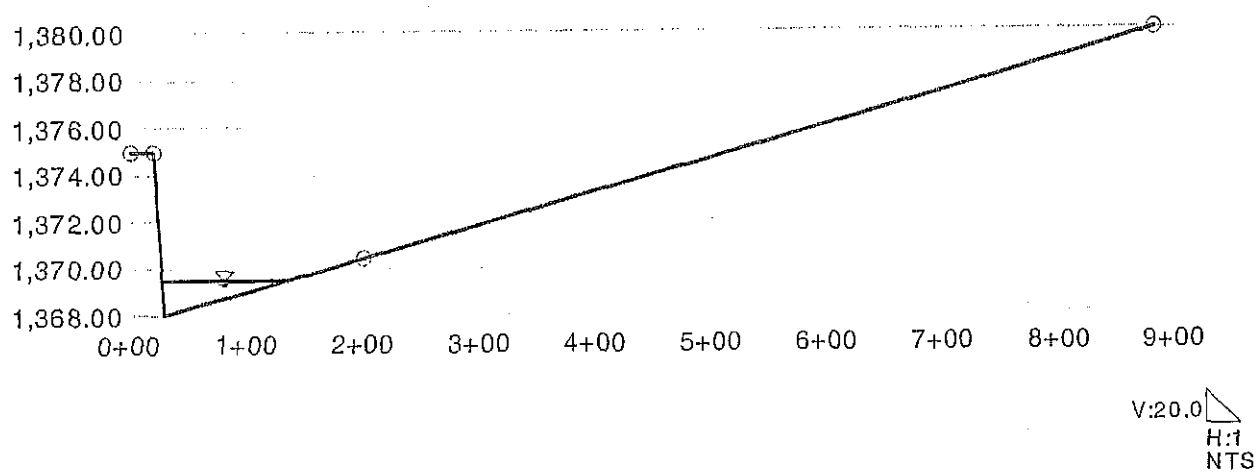
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,375.00
0+20	1,375.00
0+30	1,368.00
2+00	1,370.40
3+70	1,372.80
5+40	1,375.20
7+10	1,377.60
8+80	1,380.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD19
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003800	ft/ft
Water Surface Elevation	1,369.45	ft
Elevation Range	1,368.00 to 1,380.00	
Discharge	125.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003900	ft/ft
Discharge	0.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,364.00	ft
Elevation Range	1,364.00 to 1,375.00	
Flow Area	0.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Actual Depth	0.00	ft
Critical Elevation	0.00	ft
Critical Slope	0.000000	ft/ft
Velocity	0.00	ft/s
Velocity Head	0.00	ft
Specific Energy	1,364.00	ft
Froude Number	0.00	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	1+80	0.045
1+80	7+80	0.050

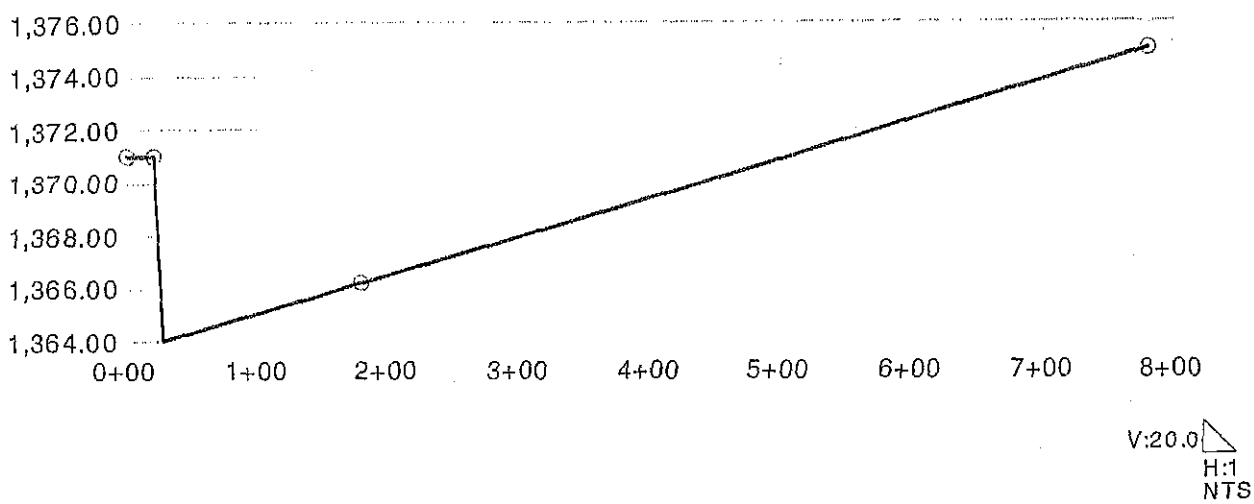
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,371.00
0+20	1,371.00
0+30	1,364.00
1+80	1,366.20
3+30	1,368.40
4+80	1,370.60
6+30	1,372.80
7+80	1,375.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003900	ft/ft
Water Surface Elevation	1,364.00	ft
Elevation Range	1,364.00 to 1,375.00	
Discharge	0.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006300	ft/ft
Discharge	15.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,340.60	ft
Elevation Range	1,340.00 to 1,344.00	
Flow Area	10.1	ft²
Wetted Perimeter	23.59	ft
Top Width	23.53	ft
Actual Depth	0.60	ft
Critical Elevation	1,340.36	ft
Critical Slope	0.045324	ft/ft
Velocity	1.49	ft/s
Velocity Head	0.03	ft
Specific Energy	1,340.64	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+35	0.050
3+35	3+90	0.045
3+90	7+10	0.050

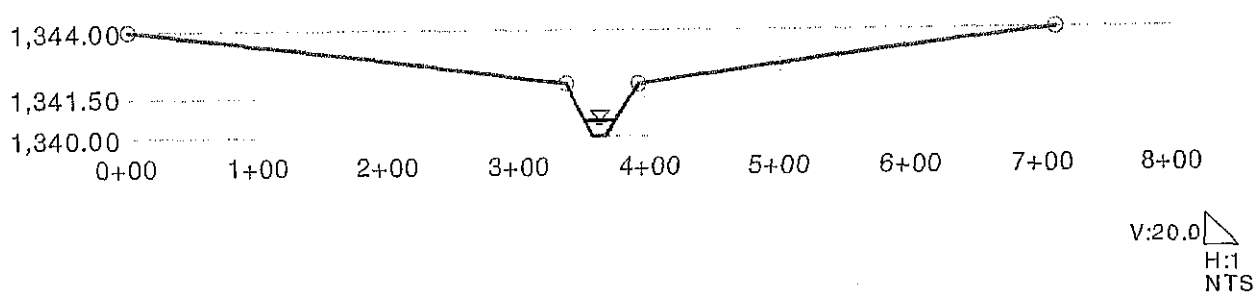
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,344.00
1+75	1,343.00
3+35	1,342.00
3+55	1,340.00
3+65	1,340.00
3+90	1,342.00
5+40	1,343.00
7+10	1,344.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006300	ft/ft
Water Surface Elevation	1,340.60	ft
Elevation Range	1,340.00 to 1,344.00	
Discharge	15.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	3,164.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,212.94	ft
Elevation Range	1,208.00 to 1,214.00	
Flow Area	792.7	ft²
Wetted Perimeter	359.16	ft
Top Width	358.76	ft
Actual Depth	4.94	ft
Critical Elevation	1,212.02	ft
Critical Slope	0.028633	ft/ft
Velocity	3.99	ft/s
Velocity Head	0.25	ft
Specific Energy	1,213.19	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+30	3+30	0.050
3+30	4+40	0.045
4+40	6+10	0.050

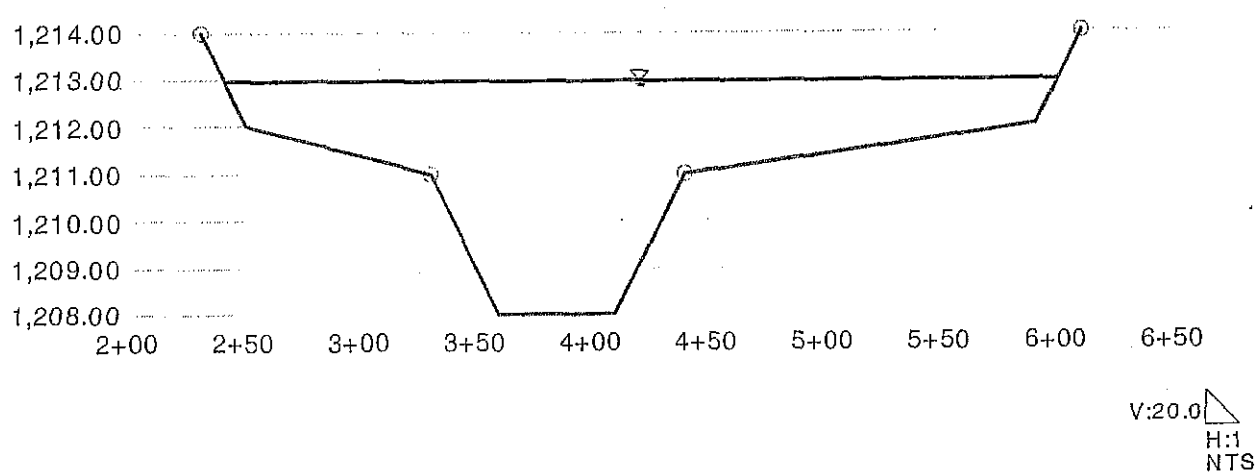
Natural Channel Points

Station (ft)	Elevation (ft)
2+30	1,214.00
2+50	1,212.00
3+30	1,211.00
3+60	1,208.00
4+10	1,208.00
4+40	1,211.00
5+90	1,212.00
6+10	1,214.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005500	ft/ft
Water Surface Elevation	1,212.94	ft
Elevation Range	1,208.00 to 1,214.00	
Discharge	3,164.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	950.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,304.08	ft
Elevation Range	1,300.00 to 1,304.50	
Flow Area	264.1	ft²
Wetted Perimeter	144.18	ft
Top Width	143.68	ft
Actual Depth	4.08	ft
Critical Elevation	1,303.21	ft
Critical Slope	0.030195	ft/ft
Velocity	3.60	ft/s
Velocity Head	0.20	ft
Specific Energy	1,304.28	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+80	3+40	0.050
3+40	3+75	0.045
3+75	4+35	0.050

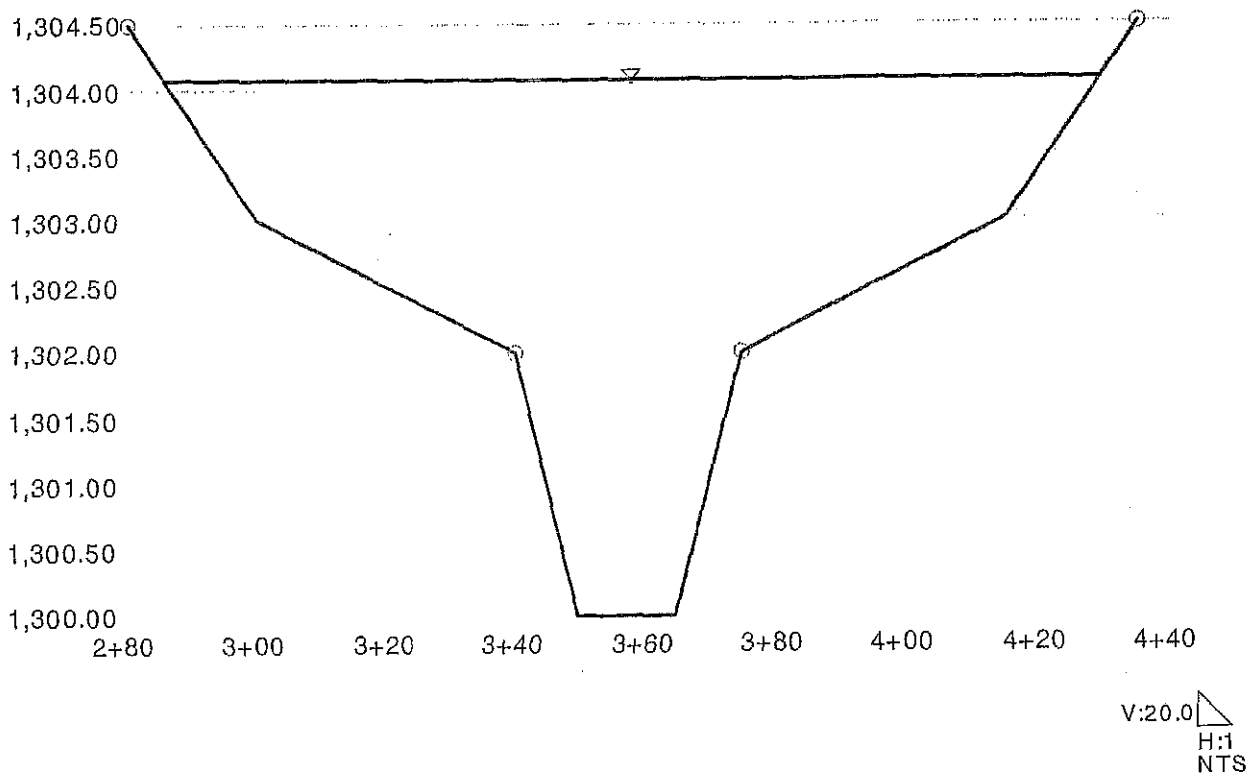
Natural Channel Points

Station (ft)	Elevation (ft)
2+80	1,304.50
3+00	1,303.00
3+40	1,302.00
3+50	1,300.00
3+65	1,300.00
3+75	1,302.00
4+15	1,303.00
4+35	1,304.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.047
Slope	0.005800 ft/ft
Water Surface Elevation	1,304.08 ft
Elevation Range	1,300.00 to 1,304.50
Discharge	950.00 cfs



Project Summary Report

Project Description	
Worksheet	RCPD25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	1,047.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,251.90	ft
Elevation Range	1,250.00 to 1,252.50	
Flow Area	386.7	ft²
Wetted Perimeter	303.99	ft
Top Width	303.90	ft
Actual Depth	1.90	ft
Critical Elevation	1,251.31	ft
Critical Slope	0.033410	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	1,252.01	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
3+40	4+00	0.050
4+00	6+00	0.045
6+00	6+60	0.050

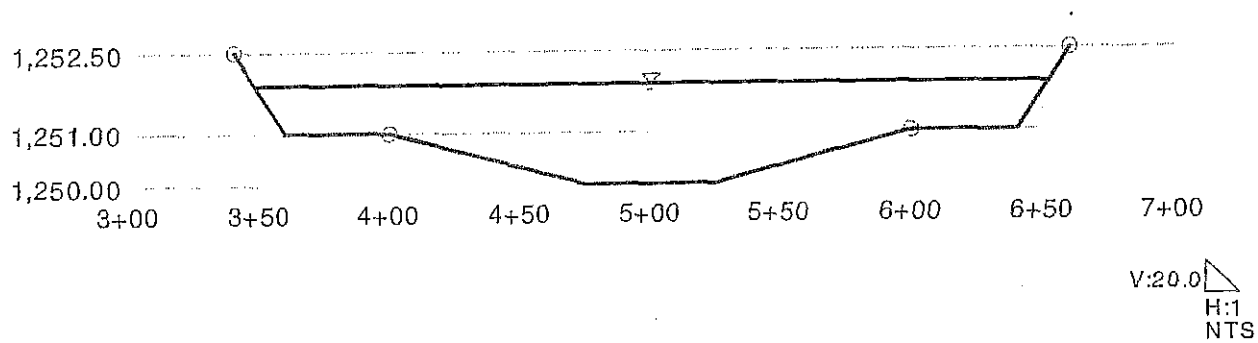
Natural Channel Points

Station (ft)	Elevation (ft)
3+40	1,252.50
3+60	1,251.00
4+00	1,251.00
4+75	1,250.00
5+25	1,250.00
6+00	1,251.00
6+40	1,251.00
6+60	1,252.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005000	ft/ft
Water Surface Elevation	1,251.90	ft
Elevation Range	1,250.00 to 1,252.50	
Discharge	1,047.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	997.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,214.18	ft
Elevation Range	1,212.00 to 1,215.00	
Flow Area	443.5	ft²
Wetted Perimeter	363.73	ft
Top Width	363.51	ft
Actual Depth	2.18	ft
Critical Elevation	1,213.55	ft
Critical Slope	0.038718	ft/ft
Velocity	2.25	ft/s
Velocity Head	0.08	ft
Specific Energy	1,214.25	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
1+30	3+00	0.050
3+00	3+40	0.045
3+40	5+10	0.050

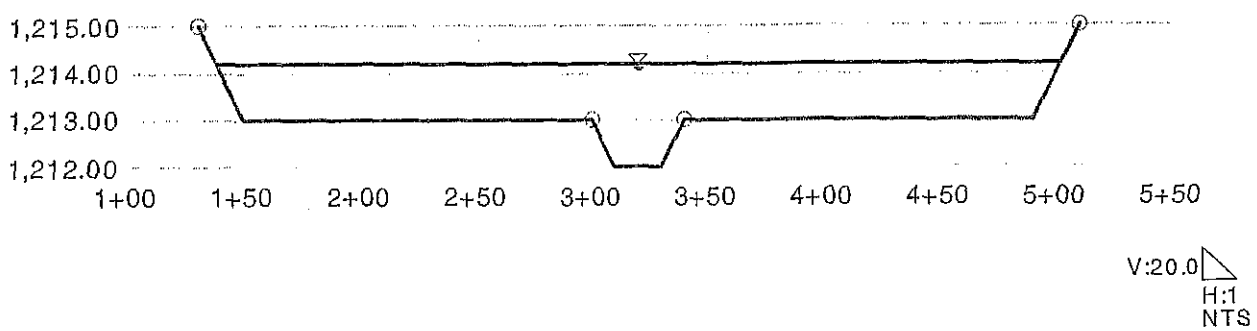
Natural Channel Points

Station (ft)	Elevation (ft)
1+30	1,215.00
1+50	1,213.00
3+00	1,213.00
3+10	1,212.00
3+30	1,212.00
3+40	1,213.00
4+90	1,213.00
5+10	1,215.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004000	ft/ft
Water Surface Elevation	1,214.18	ft
Elevation Range	1,212.00 to 1,215.00	
Discharge	997.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	1,080.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,172.56	ft
Elevation Range	1,168.00 to 1,173.00	
Flow Area	368.2	ft²
Wetted Perimeter	252.20	ft
Top Width	251.25	ft
Actual Depth	4.56	ft
Critical Elevation	1,171.85	ft
Critical Slope	0.032489	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1,172.70	ft
Froude Number	0.43	
Flow Type	Subcritical	

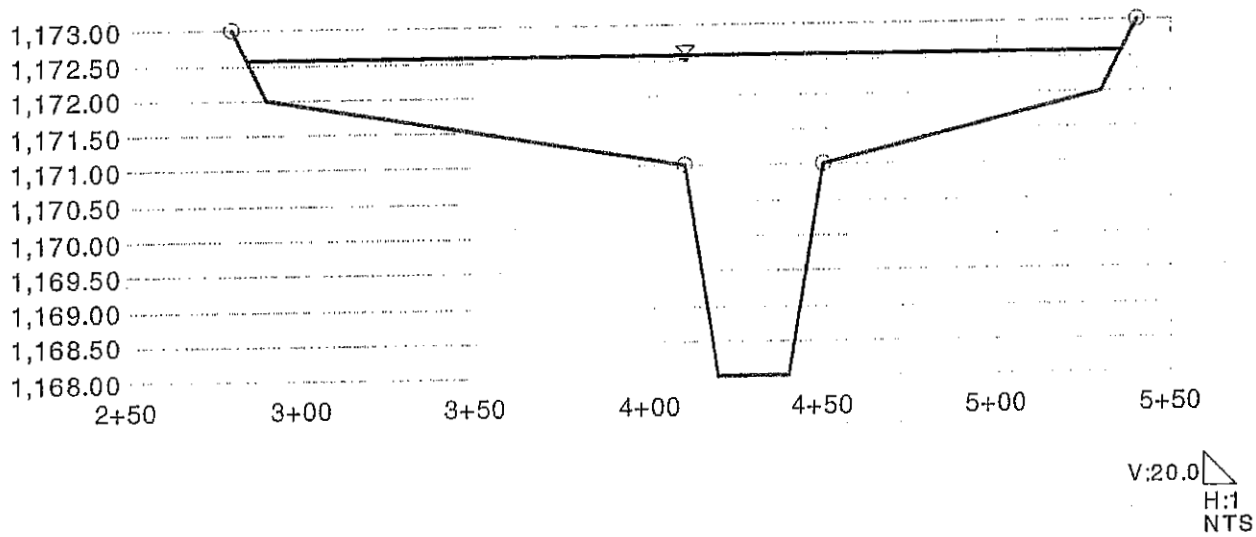
Roughness Segments		
Start Station	End Station	Mannings Coefficient
2+80	4+10	0.050
4+10	4+50	0.045
4+50	5+40	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
2+80	1,173.00
2+90	1,172.00
4+10	1,171.00
4+20	1,168.00
4+40	1,168.00
4+50	1,171.00
5+30	1,172.00
5+40	1,173.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005100	ft/ft
Water Surface Elevation	1,172.56	ft
Elevation Range	1,168.00 to 1,173.00	
Discharge	1,080.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	890.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,202.27	ft
Elevation Range	1,200.00 to 1,203.00	
Flow Area	388.7	ft²
Wetted Perimeter	398.90	ft
Top Width	398.74	ft
Actual Depth	2.27	ft
Critical Elevation	1,201.67	ft
Critical Slope	0.037951	ft/ft
Velocity	2.29	ft/s
Velocity Head	0.08	ft
Specific Energy	1,202.35	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
1+80	4+00	0.050
4+00	4+30	0.045
4+30	8+00	0.050

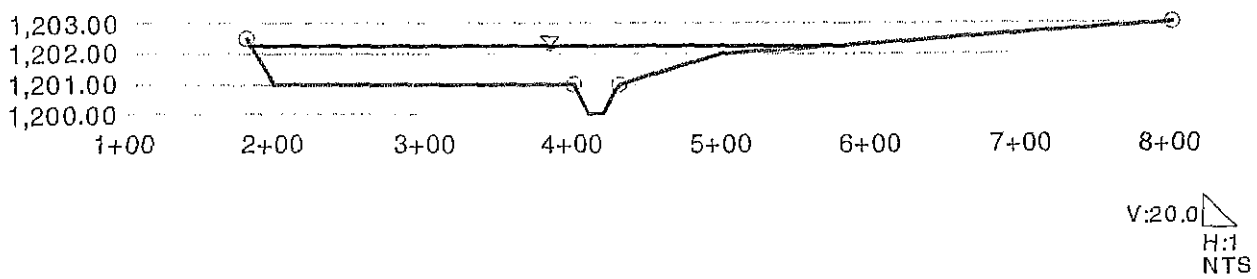
Natural Channel Points

Station (ft)	Elevation (ft)
1+80	1,202.50
2+00	1,201.00
4+00	1,201.00
4+10	1,200.00
4+20	1,200.00
4+30	1,201.00
5+00	1,202.00
8+00	1,203.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.005600	ft/ft
Water Surface Elevation	1,202.27	ft
Elevation Range	1,200.00 to 1,203.00	
Discharge	890.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	834.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,166.46	ft
Elevation Range	1,163.00 to 1,166.50	
Flow Area	274.3	ft²
Wetted Perimeter	139.15	ft
Top Width	138.90	ft
Actual Depth	3.46	ft
Critical Elevation	1,165.32	ft
Critical Slope	0.032207	ft/ft
Velocity	3.04	ft/s
Velocity Head	0.14	ft
Specific Energy	1,166.60	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+30	2+80	0.050
2+80	3+20	0.045
3+20	3+70	0.050

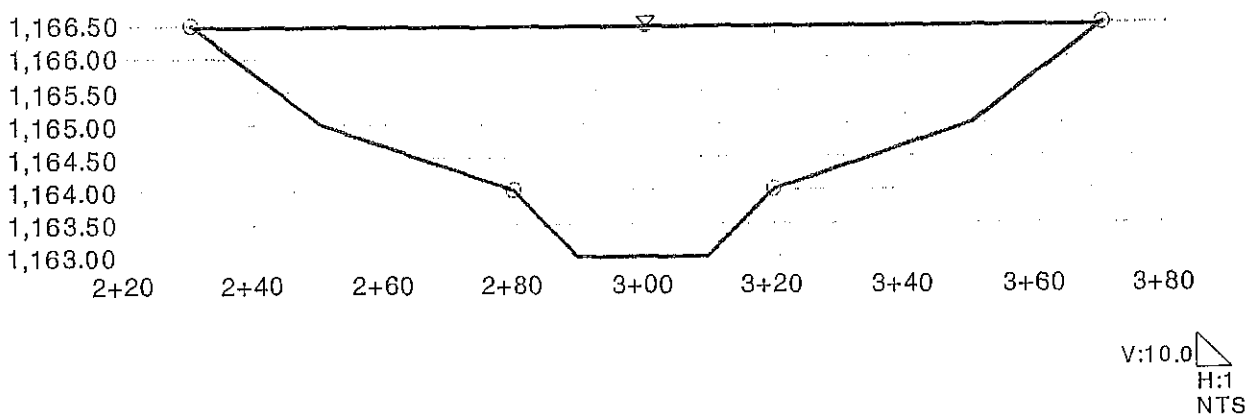
Natural Channel Points

Station (ft)	Elevation (ft)
2+30	1,166.50
2+50	1,165.00
2+80	1,164.00
2+90	1,163.00
3+10	1,163.00
3+20	1,164.00
3+50	1,165.00
3+70	1,166.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.004000	ft/ft
Water Surface Elevation	1,166.46	ft
Elevation Range	1,163.00 to 1,166.50	
Discharge	834.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	26.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,403.82	ft
Elevation Range	1,403.00 to 1,418.00	
Flow Area	22.7	ft²
Wetted Perimeter	55.94	ft
Top Width	55.71	ft
Actual Depth	0.82	ft
Critical Elevation	1,403.51	ft
Critical Slope	0.046659	ft/ft
Velocity	1.14	ft/s
Velocity Head	0.02	ft
Specific Energy	1,403.84	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

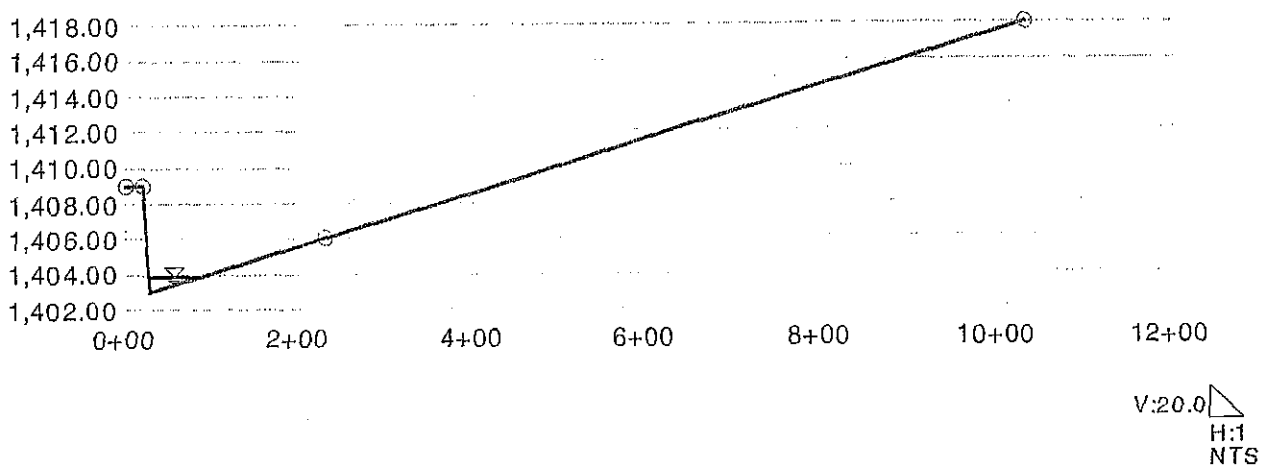
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,409.00
0+20	1,409.00
0+30	1,403.00
2+30	1,406.00
4+30	1,409.00
6+30	1,412.00
8+30	1,415.00
10+30	1,418.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD46
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004000	ft/ft
Water Surface Elevation	1,403.82	ft
Elevation Range	1,403.00 to 1,418.00	
Discharge	26.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPD47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	253.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,394.91	ft
Elevation Range	1,393.00 to 1,408.00	
Flow Area	125.1	ft²
Wetted Perimeter	131.31	ft
Top Width	130.76	ft
Actual Depth	1.91	ft
Critical Elevation	1,394.28	ft
Critical Slope	0.034450	ft/ft
Velocity	2.02	ft/s
Velocity Head	0.06	ft
Specific Energy	1,394.98	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

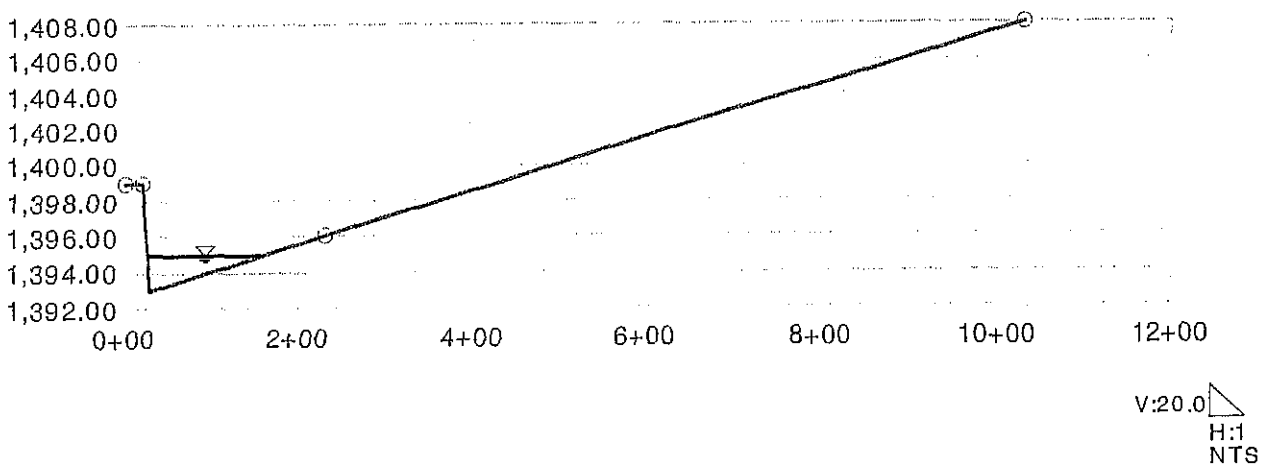
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,399.00
0+20	1,399.00
0+30	1,393.00
2+30	1,396.00
4+30	1,399.00
6+30	1,402.00
8+30	1,405.00
10+30	1,408.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPD47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004000	ft/ft
Water Surface Elevation	1,394.91	ft
Elevation Range	1,393.00 to 1,408.00	
Discharge	253.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009200	ft/ft
Discharge	1,008.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,488.63	ft
Elevation Range	1,486.00 to 1,489.50	
Flow Area	292.4	ft²
Wetted Perimeter	243.65	ft
Top Width	243.35	ft
Actual Depth	2.63	ft
Critical Elevation	1,488.23	ft
Critical Slope	0.033922	ft/ft
Velocity	3.45	ft/s
Velocity Head	0.18	ft
Specific Energy	1,488.81	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+80	1+92	0.050
1+92	2+12	0.045
2+12	3+35	0.050

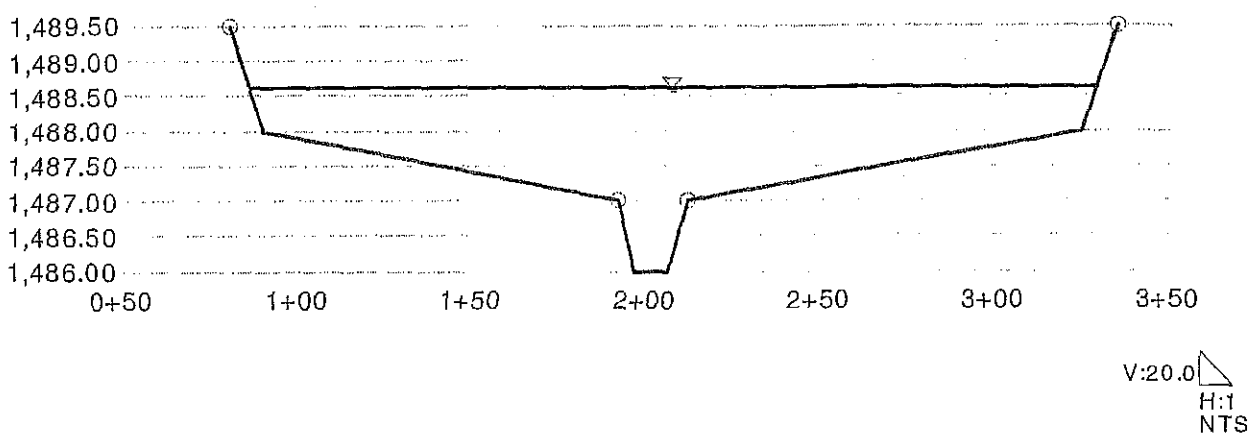
Natural Channel Points

Station (ft)	Elevation (ft)
0+80	1,489.50
0+90	1,488.00
1+92	1,487.00
1+97	1,486.00
2+07	1,486.00
2+12	1,487.00
3+25	1,488.00
3+35	1,489.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RDD01*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	*0.047*	
Slope	0.009200	ft/ft
Water Surface Elevation	1,488.63	ft
Elevation Range	1,486.00 to 1,489.50	
Discharge	*1,008.00*	*cfs*



Project Summary Report

Project Description	
Worksheet	RDD02
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.012000	ft/ft
Discharge	38.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,584.76	ft
Elevation Range	1,584.00 to 1,588.00	
Flow Area	14.3	ft²
Wetted Perimeter	22.76	ft
Top Width	22.61	ft
Actual Depth	0.76	ft
Critical Elevation	1,584.55	ft
Critical Slope	0.038093	ft/ft
Velocity	2.65	ft/s
Velocity Head	0.11	ft
Specific Energy	1,584.87	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+95	0.050
2+95	3+30	0.045
3+30	5+75	0.050

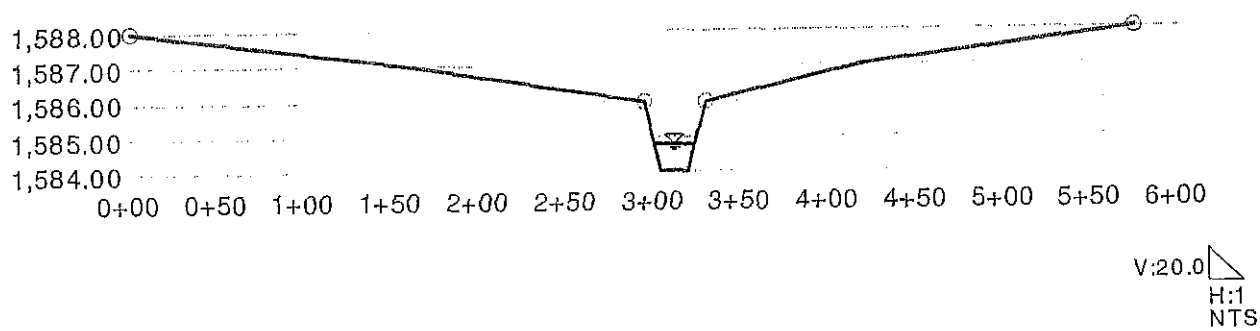
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,588.00
1+60	1,587.00
2+95	1,586.00
3+05	1,584.00
3+20	1,584.00
3+30	1,586.00
4+20	1,587.00
5+75	1,588.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.012000	ft/ft
Water Surface Elevation	1,584.76	ft
Elevation Range	1,584.00 to 1,588.00	
Discharge	38.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.012000	ft/ft
Discharge	283.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,575.50	ft
Elevation Range	1,573.00 to 1,577.00	
Flow Area	75.1	ft²
Wetted Perimeter	65.53	ft
Top Width	65.12	ft
Actual Depth	2.50	ft
Critical Elevation	1,574.81	ft
Critical Slope	0.030230	ft/ft
Velocity	3.77	ft/s
Velocity Head	0.22	ft
Specific Energy	1,575.72	ft
Froude Number	0.62	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
3+10	3+60	0.050
3+60	3+95	0.045
3+95	4+45	0.050

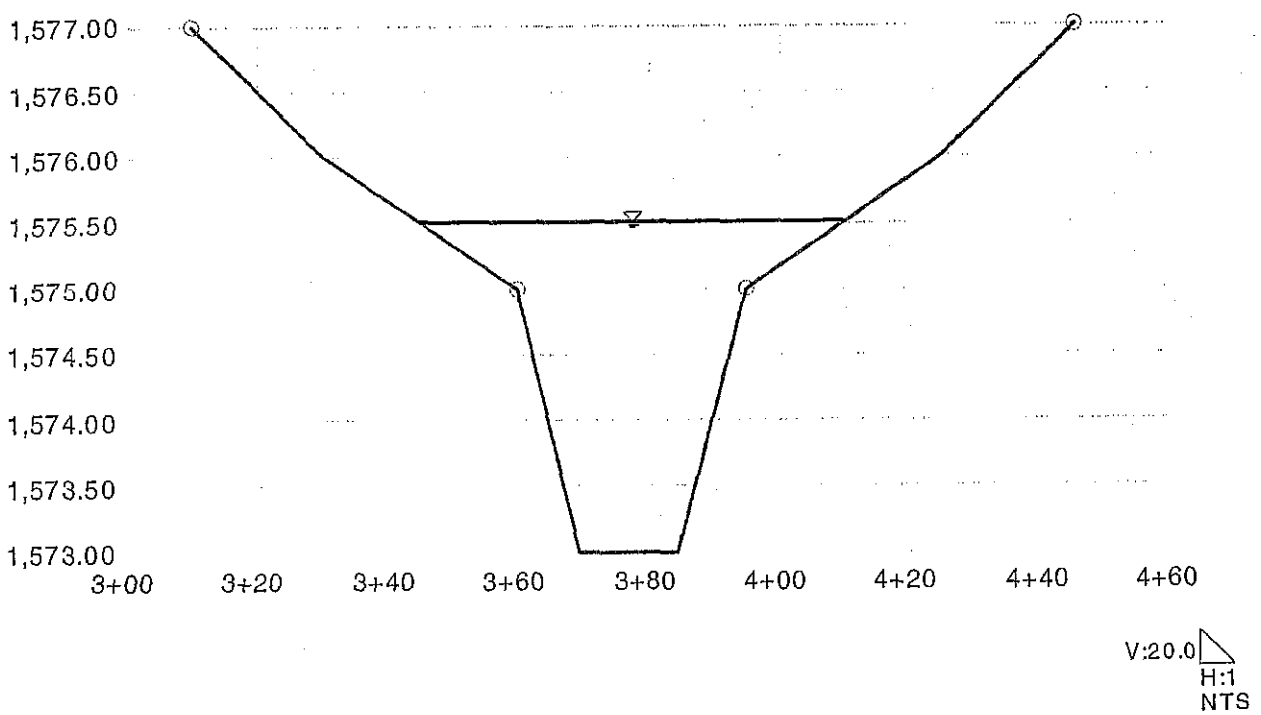
Natural Channel Points

Station (ft)	Elevation (ft)
3+10	1,577.00
3+30	1,576.00
3+60	1,575.00
3+70	1,573.00
3+85	1,573.00
3+95	1,575.00
4+25	1,576.00
4+45	1,577.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.012000	ft/ft
Water Surface Elevation	1,575.50	ft
Elevation Range	1,573.00 to 1,577.00	
Discharge	283.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009200	ft/ft
Discharge	102.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,487.56	ft
Elevation Range	1,486.00 to 1,489.00	
Flow Area	59.4	ft²
Wetted Perimeter	139.77	ft
Top Width	139.56	ft
Actual Depth	1.56	ft
Critical Elevation	1,487.29	ft
Critical Slope	0.045056	ft/ft
Velocity	1.72	ft/s
Velocity Head	0.05	ft
Specific Energy	1,487.60	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+92	0.050
1+92	2+12	0.045
2+12	5+90	0.050

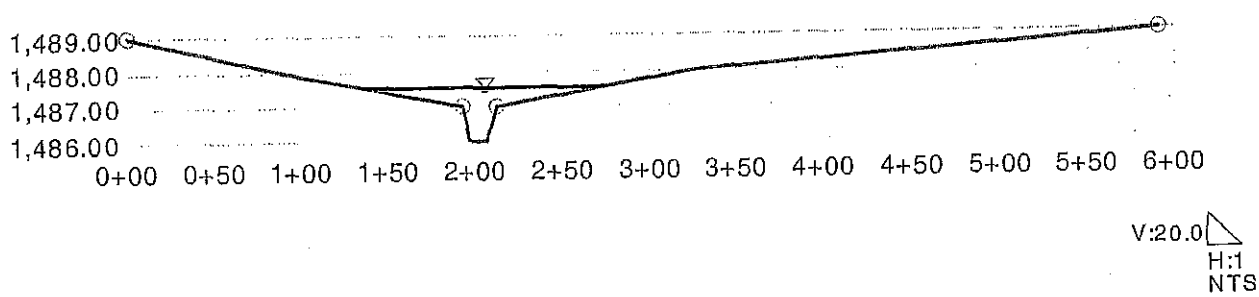
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,489.00
0+90	1,488.00
1+92	1,487.00
1+97	1,486.00
2+07	1,486.00
2+12	1,487.00
3+25	1,488.00
5+90	1,489.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.009200	ft/ft
Water Surface Elevation	1,487.56	ft
Elevation Range	1,486.00 to 1,489.00	
Discharge	102.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008400	ft/ft
Discharge	76.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,462.95	ft
Elevation Range	1,460.50 to 1,465.00	
Flow Area	19.5	ft²
Wetted Perimeter	13.26	ft
Top Width	11.85	ft
Actual Depth	2.45	ft
Critical Elevation	1,462.26	ft
Critical Slope	0.031321	ft/ft
Velocity	3.91	ft/s
Velocity Head	0.24	ft
Specific Energy	1,463.19	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+52	0.050
0+52	0+64	0.045
0+64	1+15	0.050

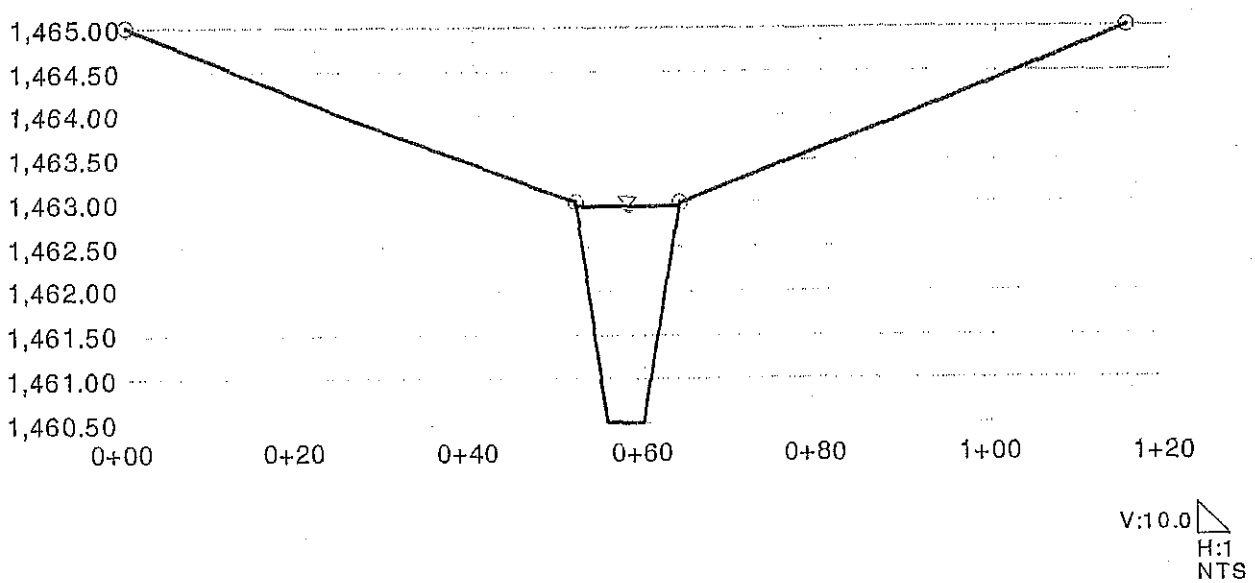
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,465.00
0+25	1,464.00
0+52	1,463.00
0+56	1,460.50
0+60	1,460.50
0+64	1,463.00
0+90	1,464.00
1+15	1,465.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.008400	ft/ft
Water Surface Elevation	1,462.95	ft
Elevation Range	1,460.50 to 1,465.00	
Discharge	76.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008100	ft/ft
Discharge	455.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,522.64	ft
Elevation Range	1,520.00 to 1,523.00	
Flow Area	134.9	ft²
Wetted Perimeter	105.97	ft
Top Width	105.80	ft
Actual Depth	2.64	ft
Critical Elevation	1,522.08	ft
Critical Slope	0.031936	ft/ft
Velocity	3.37	ft/s
Velocity Head	0.18	ft
Specific Energy	1,522.82	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+90	3+40	0.050
3+40	3+70	0.045
3+70	4+10	0.050

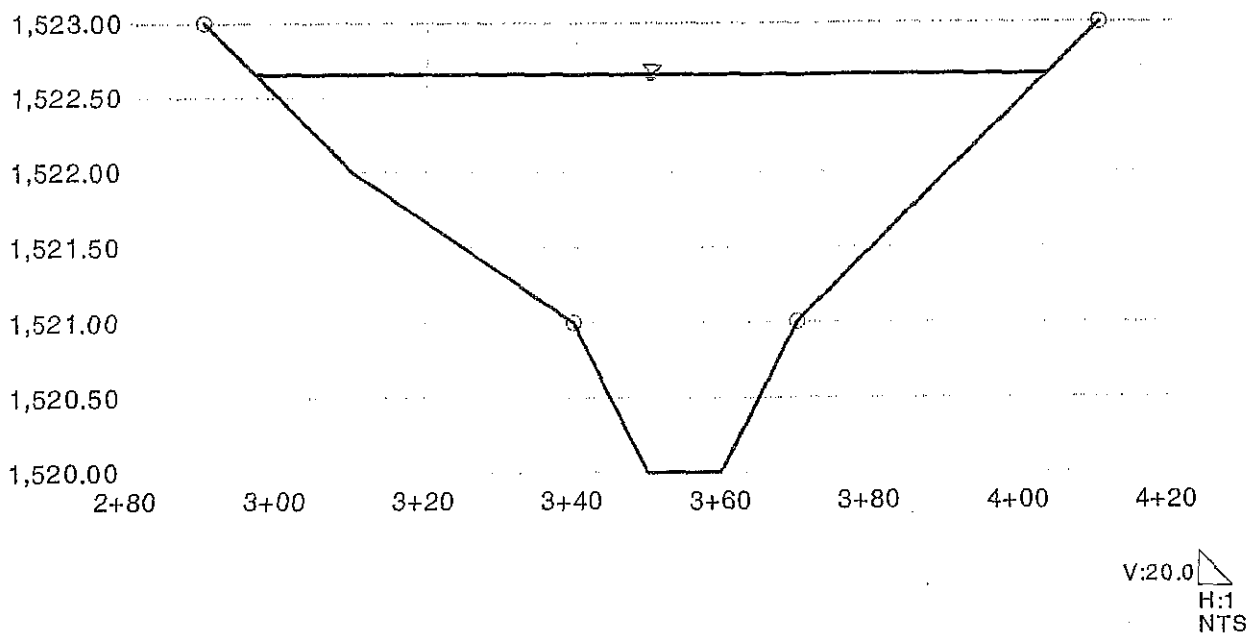
Natural Channel Points

Station (ft)	Elevation (ft)
2+90	1,523.00
3+10	1,522.00
3+40	1,521.00
3+50	1,520.00
3+60	1,520.00
3+70	1,521.00
3+90	1,522.00
4+10	1,523.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.008100	ft/ft
Water Surface Elevation	1,522.64	ft
Elevation Range	1,520.00 to 1,523.00	
Discharge	455.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006600	ft/ft
Discharge	383.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,423.57	ft
Elevation Range	1,422.00 to 1,425.00	
Flow Area	144.3	ft²
Wetted Perimeter	142.67	ft
Top Width	142.62	ft
Actual Depth	1.57	ft
Critical Elevation	1,423.10	ft
Critical Slope	0.035025	ft/ft
Velocity	2.65	ft/s
Velocity Head	0.11	ft
Specific Energy	1,423.68	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
3+30	3+60	0.050
3+60	4+80	0.045
4+80	5+10	0.050

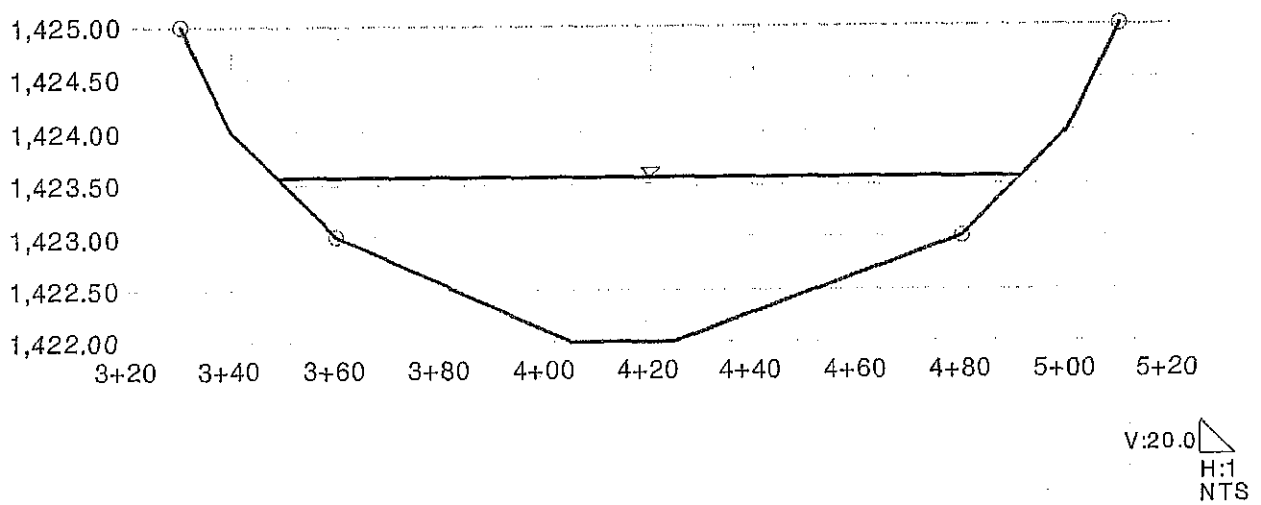
Natural Channel Points

Station (ft)	Elevation (ft)
3+30	1,425.00
3+40	1,424.00
3+60	1,423.00
4+05	1,422.00
4+25	1,422.00
4+80	1,423.00
5+00	1,424.00
5+10	1,425.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.006600	ft/ft
Water Surface Elevation	1,423.57	ft
Elevation Range	1,422.00 to 1,425.00	
Discharge	383.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	378.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,402.16	ft
Elevation Range	1,400.00 to 1,405.00	
Flow Area	135.5	ft²
Wetted Perimeter	100.69	ft
Top Width	100.56	ft
Actual Depth	2.16	ft
Critical Elevation	1,401.40	ft
Critical Slope	0.030232	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	1,402.28	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+90	0.050
4+90	6+20	0.045
6+20	11+10	0.050

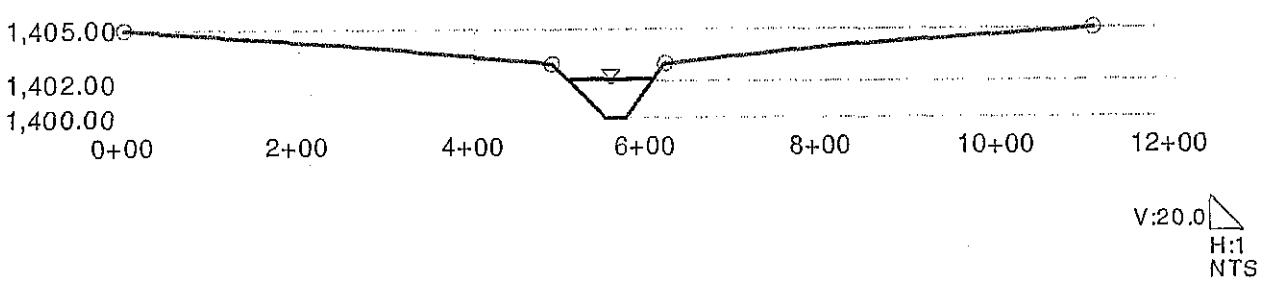
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
2+75	1,404.00
4+90	1,403.00
5+50	1,400.00
5+75	1,400.00
6+20	1,403.00
8+10	1,404.00
11+10	1,405.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,402.16	ft
Elevation Range	1,400.00 to 1,405.00	
Discharge	378.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	402.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,291.97	ft
Elevation Range	1,290.00 to 1,295.00	
Flow Area	124.5	ft²
Wetted Perimeter	76.59	ft
Top Width	76.29	ft
Actual Depth	1.97	ft
Critical Elevation	1,291.19	ft
Critical Slope	0.029141	ft/ft
Velocity	3.23	ft/s
Velocity Head	0.16	ft
Specific Energy	1,292.13	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	5+90	0.045
5+90	9+40	0.050

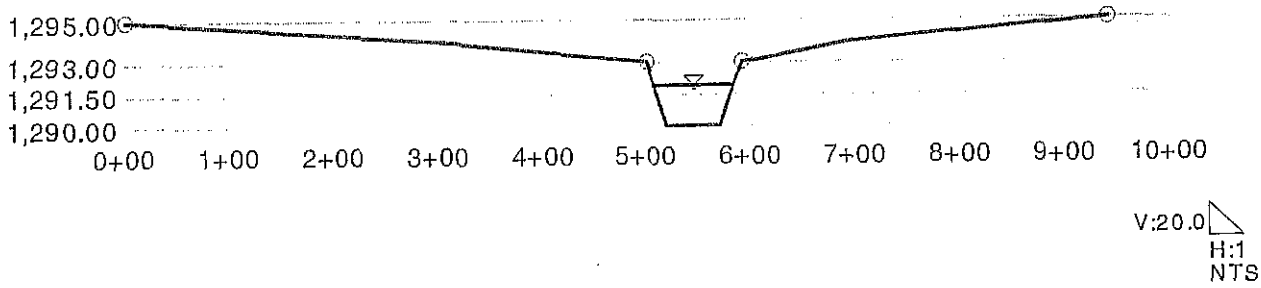
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
3+00	1,294.00
5+00	1,293.00
5+20	1,290.00
5+70	1,290.00
5+90	1,293.00
7+00	1,294.00
9+40	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005000	ft/ft
Water Surface Elevation	1,291.97	ft
Elevation Range	1,290.00 to 1,295.00	
Discharge	402.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	91.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,401.09	ft
Elevation Range	1,400.00 to 1,405.00	
Flow Area	47.8	ft²
Wetted Perimeter	63.10	ft
Top Width	63.04	ft
Actual Depth	1.09	ft
Critical Elevation	1,400.64	ft
Critical Slope	0.037557	ft/ft
Velocity	1.90	ft/s
Velocity Head	0.06	ft
Specific Energy	1,401.14	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+90	0.050
4+90	6+20	0.045
6+20	11+10	0.050

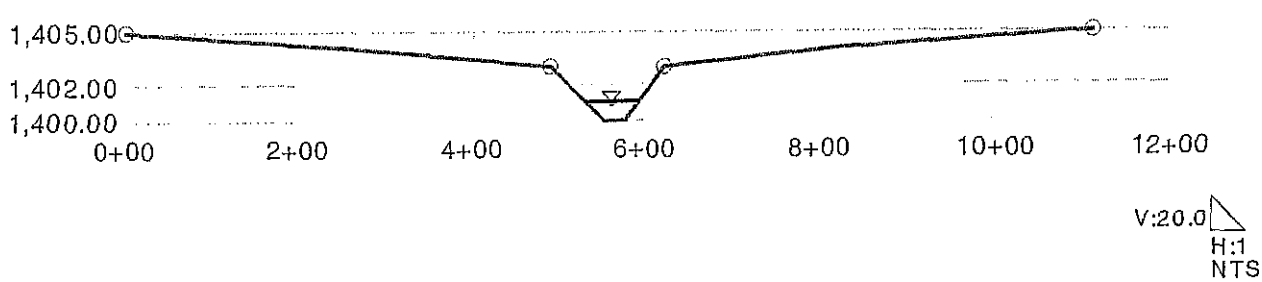
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
2+75	1,404.00
4+90	1,403.00
5+50	1,400.00
5+75	1,400.00
6+20	1,403.00
8+10	1,404.00
11+10	1,405.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,401.09	ft
Elevation Range	1,400.00 to 1,405.00	
Discharge	91.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	1,001.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,293.61	ft
Elevation Range	1,290.00 to 1,295.00	
Flow Area	280.0	ft²
Wetted Perimeter	139.37	ft
Top Width	138.90	ft
Actual Depth	3.61	ft
Critical Elevation	1,292.10	ft
Critical Slope	0.026746	ft/ft
Velocity	3.58	ft/s
Velocity Head	0.20	ft
Specific Energy	1,293.81	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
4+30	5+00	0.050
5+00	5+90	0.045
5+90	6+40	0.050

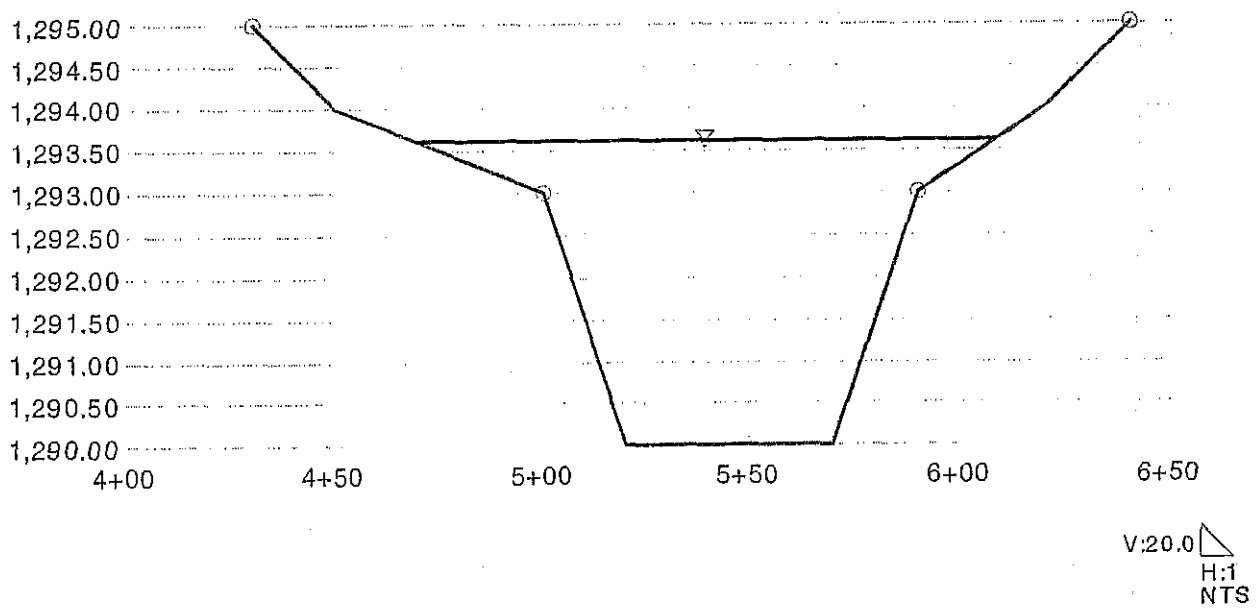
Natural Channel Points

Station (ft)	Elevation (ft)
4+30	1,295.00
4+50	1,294.00
5+00	1,293.00
5+20	1,290.00
5+70	1,290.00
5+90	1,293.00
6+20	1,294.00
6+40	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RDD13*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005000	ft/ft
Water Surface Elevation	1,293.61	ft
Elevation Range	1,290.00 to 1,295.00	
Discharge	1,001.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	340.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,291.79	ft
Elevation Range	1,290.00 to 1,295.00	
Flow Area	111.2	ft²
Wetted Perimeter	74.19	ft
Top Width	73.93	ft
Actual Depth	1.79	ft
Critical Elevation	1,291.07	ft
Critical Slope	0.030073	ft/ft
Velocity	3.06	ft/s
Velocity Head	0.15	ft
Specific Energy	1,291.94	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	5+90	0.045
5+90	9+40	0.050

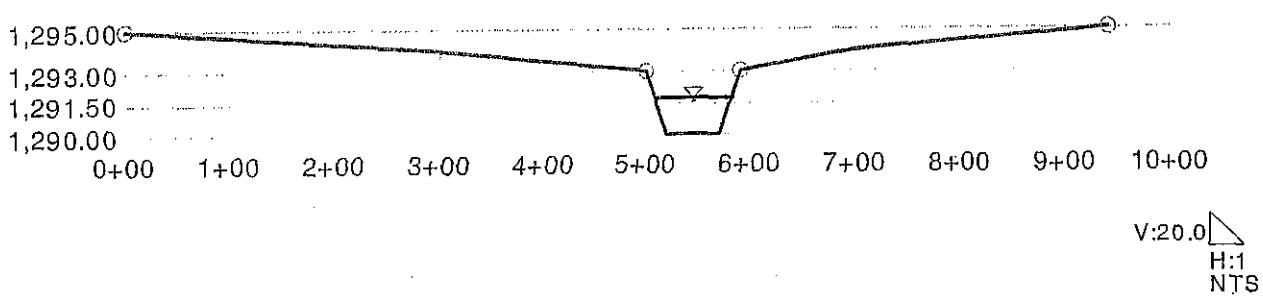
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
3+00	1,294.00
5+00	1,293.00
5+20	1,290.00
5+70	1,290.00
5+90	1,293.00
7+00	1,294.00
9+40	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005000	ft/ft
Water Surface Elevation	1,291.79	ft
Elevation Range	1,290.00 to 1,295.00	
Discharge	340.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006100	ft/ft
Discharge	435.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,342.83	ft
Elevation Range	1,340.00 to 1,344.00	
Flow Area	134.9	ft²
Wetted Perimeter	86.82	ft
Top Width	86.58	ft
Actual Depth	2.83	ft
Critical Elevation	1,342.07	ft
Critical Slope	0.033549	ft/ft
Velocity	3.22	ft/s
Velocity Head	0.16	ft
Specific Energy	1,342.99	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+80	3+20	0.050
3+20	3+50	0.045
3+50	3+90	0.050

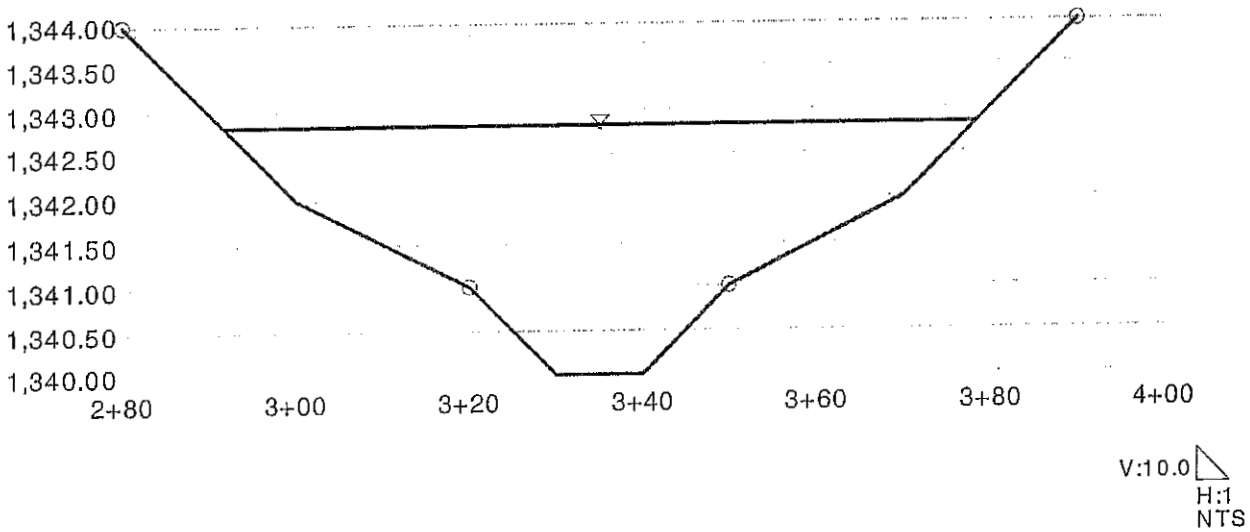
Natural Channel Points

Station (ft)	Elevation (ft)
2+80	1,344.00
3+00	1,342.00
3+20	1,341.00
3+30	1,340.00
3+40	1,340.00
3+50	1,341.00
3+70	1,342.00
3+90	1,344.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.006100	ft/ft
Water Surface Elevation	1,342.83	ft
Elevation Range	1,340.00 to 1,344.00	
Discharge	435.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006100	ft/ft
Discharge	121.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,341.74	ft
Elevation Range	1,340.00 to 1,343.00	
Flow Area	58.7	ft²
Wetted Perimeter	74.60	ft
Top Width	74.47	ft
Actual Depth	1.74	ft
Critical Elevation	1,341.18	ft
Critical Slope	0.038983	ft/ft
Velocity	2.06	ft/s
Velocity Head	0.07	ft
Specific Energy	1,341.81	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
2+70	3+20	0.050
3+20	3+50	0.045
3+50	4+00	0.050

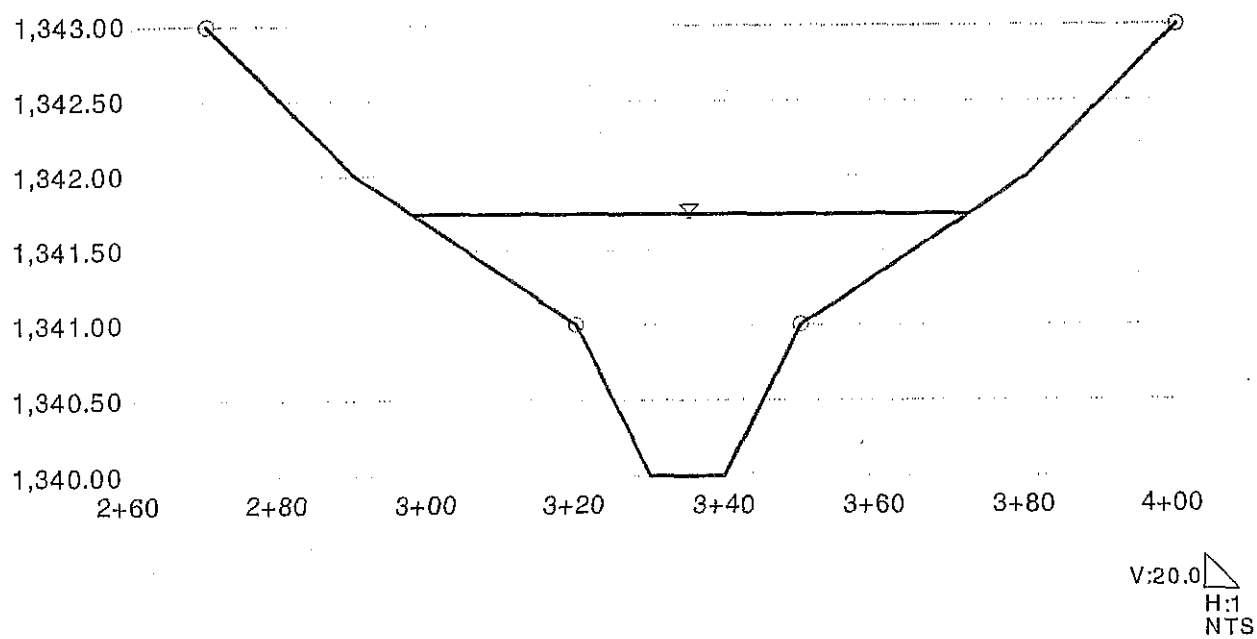
Natural Channel Points

Station (ft)	Elevation (ft)
2+70	1,343.00
2+90	1,342.00
3+20	1,341.00
3+30	1,340.00
3+40	1,340.00
3+50	1,341.00
3+80	1,342.00
4+00	1,343.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.006100	ft/ft
Water Surface Elevation	1,341.74	ft
Elevation Range	1,340.00 to 1,343.00	
Discharge	121.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007300	ft/ft
Discharge	73.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,341.37	ft
Elevation Range	1,340.00 to 1,343.00	
Flow Area	27.7	ft²
Wetted Perimeter	30.70	ft
Top Width	30.51	ft
Actual Depth	1.37	ft
Critical Elevation	1,340.93	ft
Critical Slope	0.034118	ft/ft
Velocity	2.63	ft/s
Velocity Head	0.11	ft
Specific Energy	1,341.48	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+30	0.050
4+30	4+70	0.045
4+70	9+75	0.050

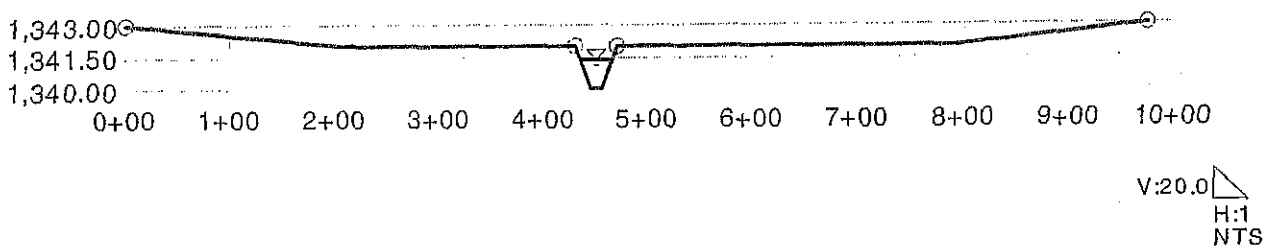
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,343.00
2+10	1,342.00
4+30	1,342.00
4+45	1,340.00
4+55	1,340.00
4+70	1,342.00
7+90	1,342.00
9+75	1,343.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007300	ft/ft
Water Surface Elevation	1,341.37	ft
Elevation Range	1,340.00 to 1,343.00	
Discharge	73.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006300	ft/ft
Discharge	93.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,341.45	ft
Elevation Range	1,340.00 to 1,344.00	
Flow Area	38.2	ft²
Wetted Perimeter	42.81	ft
Top Width	42.68	ft
Actual Depth	1.45	ft
Critical Elevation	1,340.98	ft
Critical Slope	0.034352	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	1,341.54	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+35	0.050
3+35	3+90	0.045
3+90	7+10	0.050

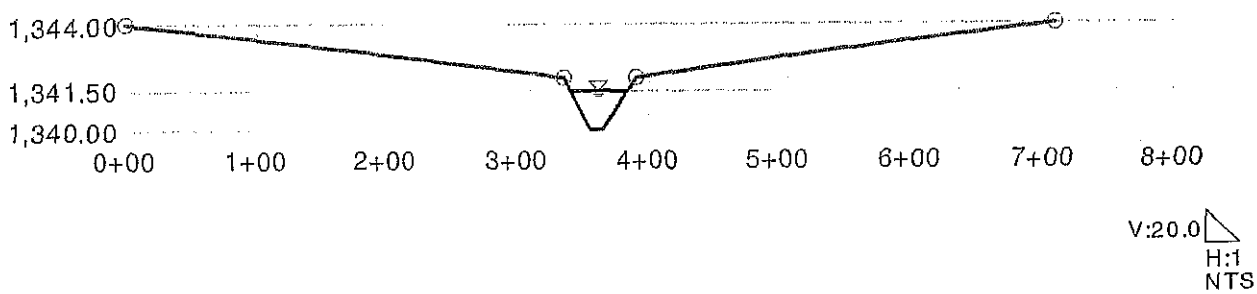
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,344.00
1+75	1,343.00
3+35	1,342.00
3+55	1,340.00
3+65	1,340.00
3+90	1,342.00
5+40	1,343.00
7+10	1,344.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006300	ft/ft
Water Surface Elevation	1,341.45	ft
Elevation Range	1,340.00 to 1,344.00	
Discharge	93.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006300	ft/ft
Discharge	21.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,340.71	ft
Elevation Range	1,340.00 to 1,344.00	
Flow Area	12.9	ft²
Wetted Perimeter	26.11	ft
Top Width	26.05	ft
Actual Depth	0.71	ft
Critical Elevation	1,340.43	ft
Critical Slope	0.042934	ft/ft
Velocity	1.63	ft/s
Velocity Head	0.04	ft
Specific Energy	1,340.75	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+35	0.050
3+35	3+90	0.045
3+90	7+10	0.050

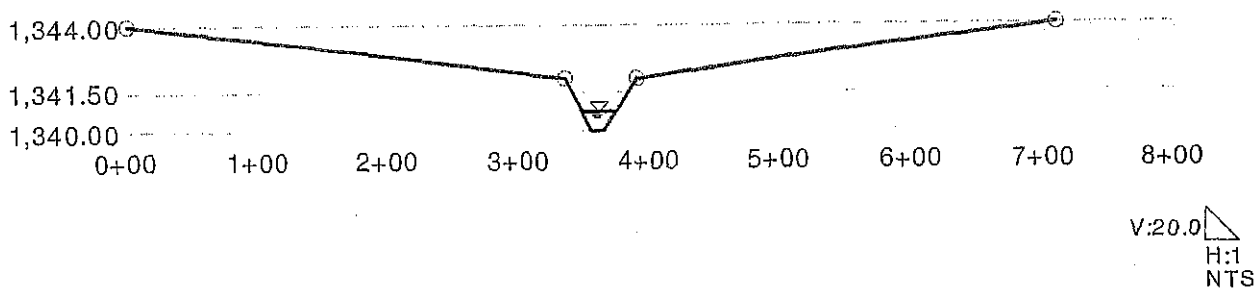
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,344.00
1+75	1,343.00
3+35	1,342.00
3+55	1,340.00
3+65	1,340.00
3+90	1,342.00
5+40	1,343.00
7+10	1,344.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006300	ft/ft
Water Surface Elevation	1,340.71	ft
Elevation Range	1,340.00 to 1,344.00	
Discharge	21.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	120.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,290.99	ft
Elevation Range	1,290.00 to 1,295.00	
Flow Area	55.9	ft²
Wetted Perimeter	63.31	ft
Top Width	63.16	ft
Actual Depth	0.99	ft
Critical Elevation	1,290.55	ft
Critical Slope	0.036896	ft/ft
Velocity	2.15	ft/s
Velocity Head	0.07	ft
Specific Energy	1,291.06	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	5+90	0.045
5+90	9+40	0.050

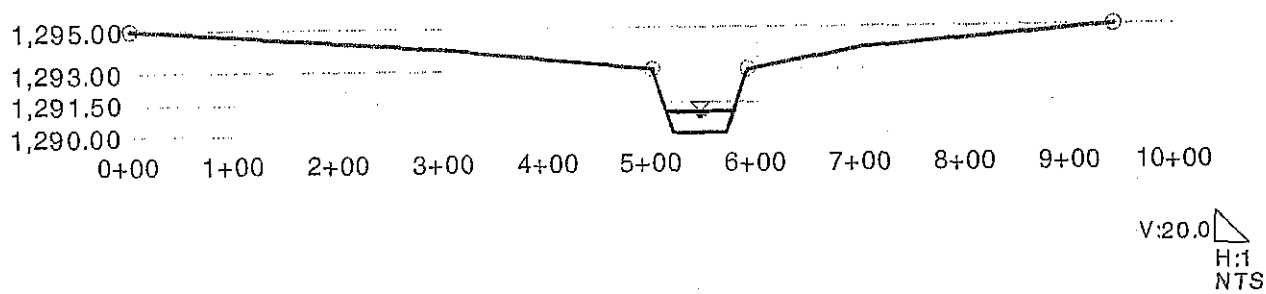
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
3+00	1,294.00
5+00	1,293.00
5+20	1,290.00
5+70	1,290.00
5+90	1,293.00
7+00	1,294.00
9+40	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD46
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005000	ft/ft
Water Surface Elevation	1,290.99	ft
Elevation Range	1,290.00 to 1,295.00	
Discharge	120.00	cfs



Project Summary Report

Project Description	
Worksheet	RDD47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	125.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,291.01	ft
Elevation Range	1,290.00 to 1,295.00	
Flow Area	57.4	ft²
Wetted Perimeter	63.63	ft
Top Width	63.46	ft
Actual Depth	1.01	ft
Critical Elevation	1,290.56	ft
Critical Slope	0.036592	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	1,291.08	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	5+90	0.045
5+90	9+40	0.050

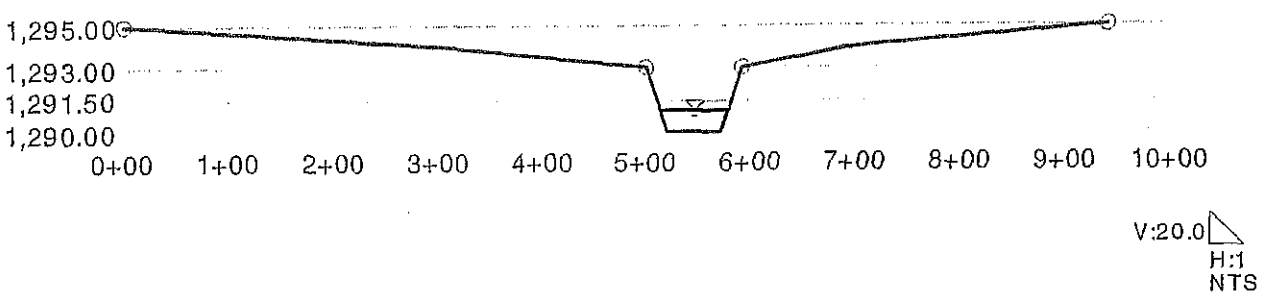
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
3+00	1,294.00
5+00	1,293.00
5+20	1,290.00
5+70	1,290.00
5+90	1,293.00
7+00	1,294.00
9+40	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDD47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005000	ft/ft
Water Surface Elevation	1,291.01	ft
Elevation Range	1,290.00 to 1,295.00	
Discharge	125.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011800	ft/ft
Discharge	2,010.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,629.33	ft
Elevation Range	1,626.00 to 1,630.50	
Flow Area	397.2	ft²
Wetted Perimeter	228.95	ft
Top Width	228.63	ft
Actual Depth	3.33	ft
Critical Elevation	1,628.92	ft
Critical Slope	0.027978	ft/ft
Velocity	5.06	ft/s
Velocity Head	0.40	ft
Specific Energy	1,629.73	ft
Froude Number	0.68	
Flow Type	Subcritical	

Roughness Segments

Start Station	*End* Station	*Mannings* Coefficient
0+00	0+60	0.050
0+60	1+60	0.045
1+60	2+38	0.050

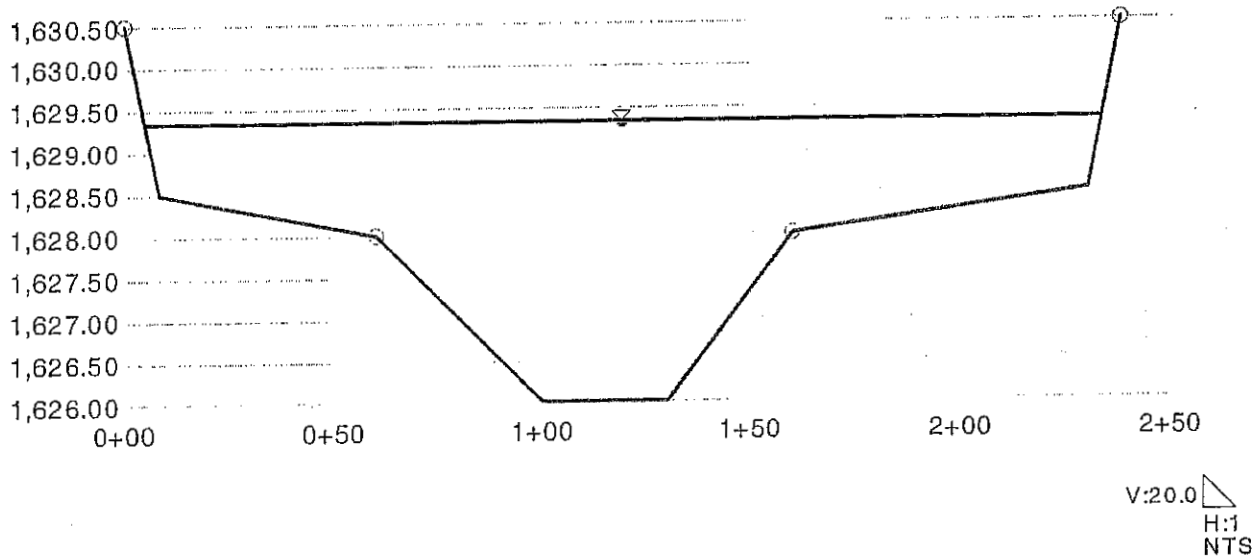
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,630.50
0+08	1,628.50
0+60	1,628.00
1+00	1,626.00
1+30	1,626.00
1+60	1,628.00
2+30	1,628.50
2+38	1,630.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.011800	ft/ft
Water Surface Elevation	1,629.33	ft
Elevation Range	1,626.00 to 1,630.50	
Discharge	2,010.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008300	ft/ft
Discharge	3,998.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,550.23	ft
Elevation Range	1,545.00 to 1,551.00	
Flow Area	934.3	ft²
Wetted Perimeter	500.40	ft
Top Width	499.80	ft
Actual Depth	5.23	ft
Critical Elevation	1,549.61	ft
Critical Slope	0.031009	ft/ft
Velocity	4.28	ft/s
Velocity Head	0.28	ft
Specific Energy	1,550.52	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+40	0.050
2+40	3+10	0.045
3+10	5+08	0.050

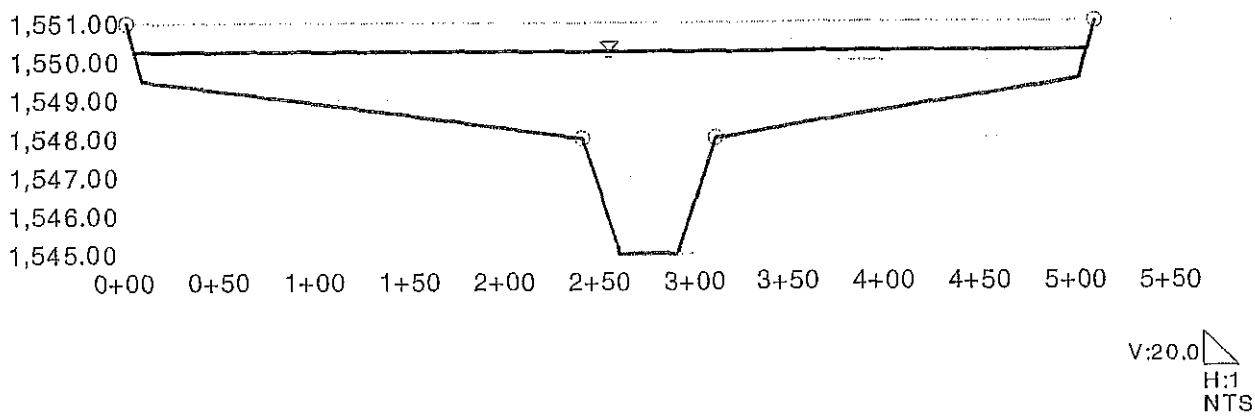
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,551.00
0+08	1,549.50
2+40	1,548.00
2+60	1,545.00
2+90	1,545.00
3+10	1,548.00
5+00	1,549.50
5+08	1,551.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.008300	ft/ft
Water Surface Elevation	1,550.23	ft
Elevation Range	1,545.00 to 1,551.00	
Discharge	3,998.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008400	ft/ft
Discharge	3,611.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,509.54	ft
Elevation Range	1,505.00 to 1,510.50	
Flow Area	772.1	ft²
Wetted Perimeter	368.05	ft
Top Width	367.81	ft
Actual Depth	4.54	ft
Critical Elevation	1,508.81	ft
Critical Slope	0.028621	ft/ft
Velocity	4.68	ft/s
Velocity Head	0.34	ft
Specific Energy	1,509.88	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	2+70	0.045
2+70	3+78	0.050

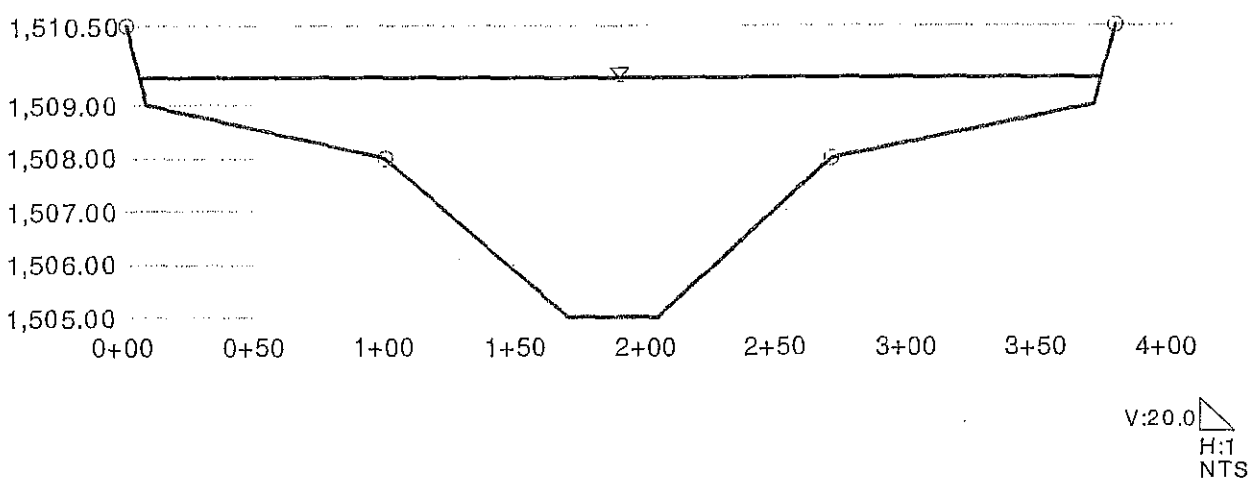
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,510.50
0+08	1,509.00
1+00	1,508.00
1+70	1,505.00
2+05	1,505.00
2+70	1,508.00
3+70	1,509.00
3+78	1,510.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel *Depth*

Section Data		
Mannings Coefficient	0.048	
Slope	0.008400	ft/ft
Water Surface Elevation	1,509.54	ft
Elevation Range	1,505.00 to 1,510.50	
Discharge	3,611.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.009000	ft/ft
Discharge	467.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,469.51	ft
Elevation Range	1,468.00 to 1,470.00	
Flow Area	238.0	ft²
Wetted Perimeter	422.88	ft
Top Width	422.85	ft
Actual Depth	1.51	ft
Critical Elevation	1,469.25	ft
Critical Slope	0.048648	ft/ft
Velocity	1.96	ft/s
Velocity Head	0.06	ft
Specific Energy	1,469.57	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+90	0.045
2+90	5+30	0.050

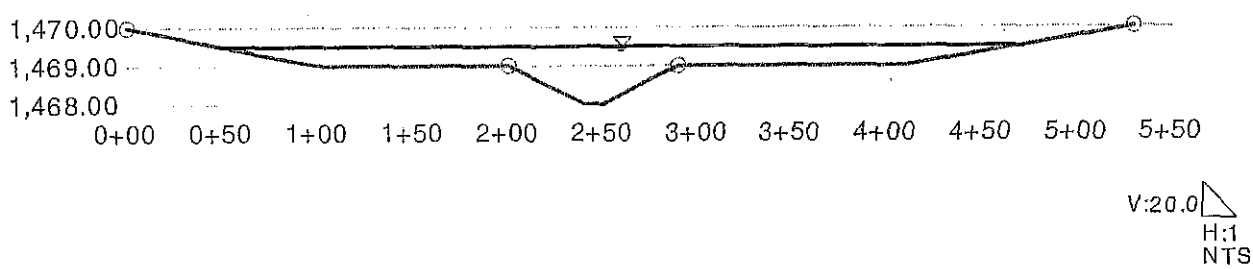
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,470.00
1+00	1,469.00
2+00	1,469.00
2+40	1,468.00
2+50	1,468.00
2+90	1,469.00
4+10	1,469.00
5+30	1,470.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE04
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.049
Slope	0.009000 ft/ft
Water Surface Elevation	1,469.51 ft
Elevation Range	1,468.00 to 1,470.00
Discharge	467.00 cfs



Project Summary Report

Project Description	
Worksheet	RCPE05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	785.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,414.92	ft
Elevation Range	1,412.00 to 1,416.00	
Flow Area	363.8	ft²
Wetted Perimeter	401.82	ft
Top Width	401.54	ft
Actual Depth	2.92	ft
Critical Elevation	1,414.46	ft
Critical Slope	0.043187	ft/ft
Velocity	2.16	ft/s
Velocity Head	0.07	ft
Specific Energy	1,415.00	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+55	0.050
2+55	2+90	0.045
2+90	5+20	0.050

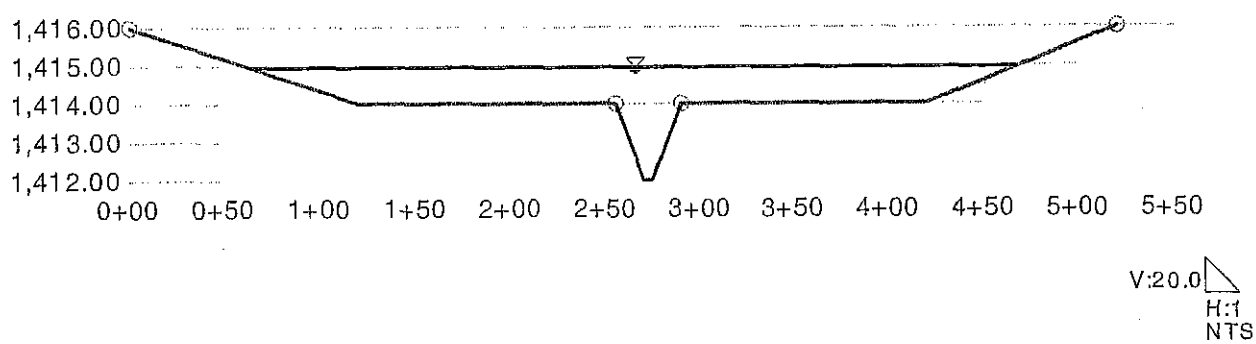
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,416.00
1+20	1,414.00
2+55	1,414.00
2+70	1,412.00
2+75	1,412.00
2+90	1,414.00
4+20	1,414.00
5+20	1,416.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE05
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005800	ft/ft
Water Surface Elevation	1,414.92	ft
Elevation Range	1,412.00 to 1,416.00	
Discharge	785.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008000	ft/ft
Discharge	331.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,469.41	ft
Elevation Range	1,468.00 to 1,470.00	
Flow Area	196.1	ft²
Wetted Perimeter	400.49	ft
Top Width	400.46	ft
Actual Depth	1.41	ft
Critical Elevation	1,469.17	ft
Critical Slope	0.051796	ft/ft
Velocity	1.69	ft/s
Velocity Head	0.04	ft
Specific Energy	1,469.46	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+90	0.045
2+90	5+30	0.050

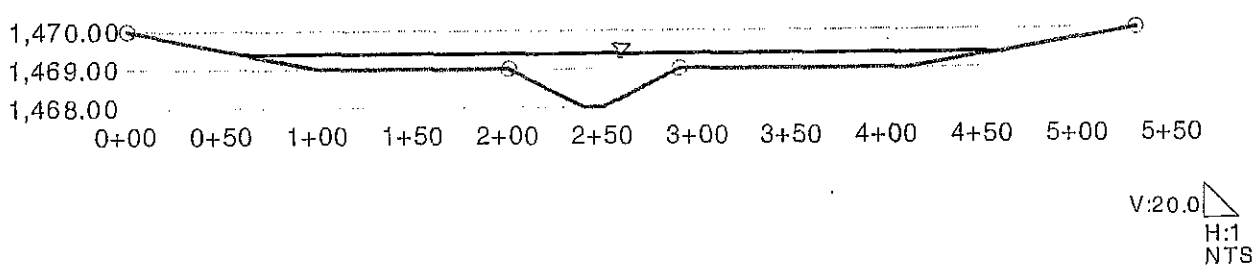
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,470.00
1+00	1,469.00
2+00	1,469.00
2+40	1,468.00
2+50	1,468.00
2+90	1,469.00
4+10	1,469.00
5+30	1,470.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.008000	ft/ft
Water Surface Elevation	1,469.41	ft
Elevation Range	1,468.00 to 1,470.00	
Discharge	331.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007400	ft/ft
Discharge	586.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,489.26	ft
Elevation Range	1,486.00 to 1,490.50	
Flow Area	150.8	ft²
Wetted Perimeter	89.61	ft
Top Width	89.06	ft
Actual Depth	3.26	ft
Critical Elevation	1,488.63	ft
Critical Slope	0.029246	ft/ft
Velocity	3.89	ft/s
Velocity Head	0.23	ft
Specific Energy	1,489.49	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+30	0.050
0+30	0+70	0.045
0+70	0+99	0.050

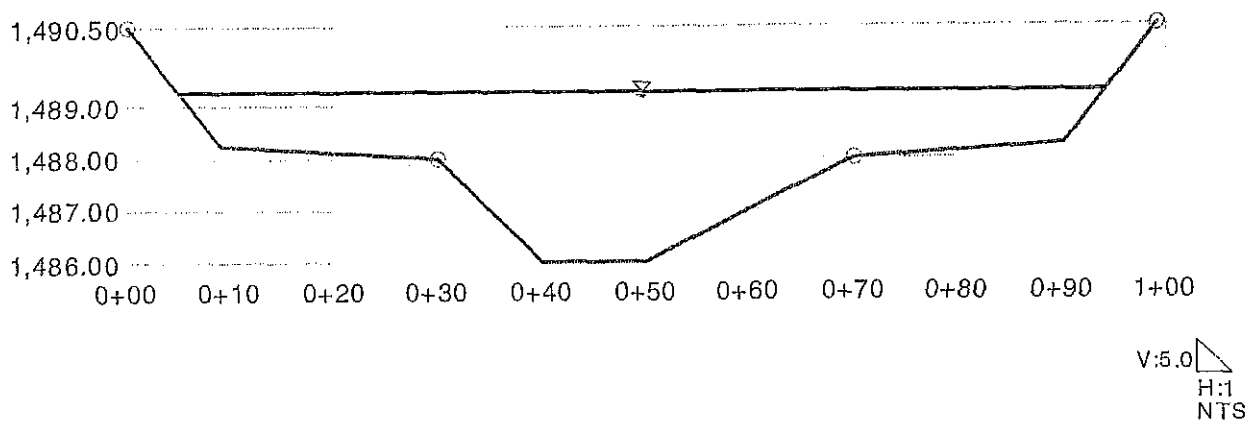
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,490.50
0+09	1,488.25
0+30	1,488.00
0+40	1,486.00
0+50	1,486.00
0+70	1,488.00
0+90	1,488.25
0+99	1,490.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.007400	ft/ft
Water Surface Elevation	1,489.26	ft
Elevation Range	1,486.00 to 1,490.50	
Discharge	586.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	502.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,400.34	ft
Elevation Range	1,397.00 to 1,401.50	
Flow Area	149.4	ft²
Wetted Perimeter	90.46	ft
Top Width	89.80	ft
Actual Depth	3.34	ft
Critical Elevation	1,399.64	ft
Critical Slope	0.031475	ft/ft
Velocity	3.36	ft/s
Velocity Head	0.18	ft
Specific Energy	1,400.51	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+30	0.050
0+30	0+65	0.045
0+65	0+96	0.050

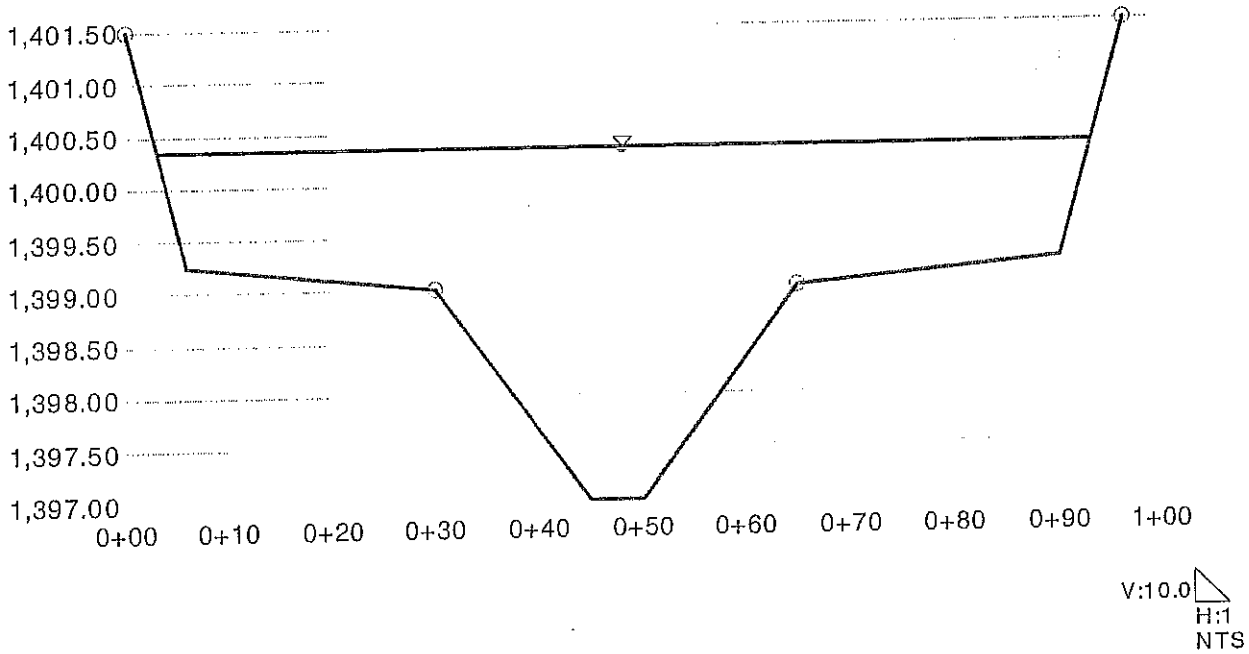
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,401.50
0+06	1,399.25
0+30	1,399.00
0+45	1,397.00
0+50	1,397.00
0+65	1,399.00
0+90	1,399.25
0+96	1,401.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005800	ft/ft
Water Surface Elevation	1,400.34	ft
Elevation Range	1,397.00 to 1,401.50	
Discharge	502.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.011000	ft/ft
Discharge	125.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,529.30	ft
Elevation Range	1,528.00 to 1,530.00	
Flow Area	84.3	ft²
Wetted Perimeter	260.31	ft
Top Width	260.20	ft
Actual Depth	1.30	ft
Critical Elevation	1,529.15	ft
Critical Slope	0.060282	ft/ft
Velocity	1.48	ft/s
Velocity Head	0.03	ft
Specific Energy	1,529.34	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+85	0.050
1+85	2+10	0.045
2+10	4+00	0.050

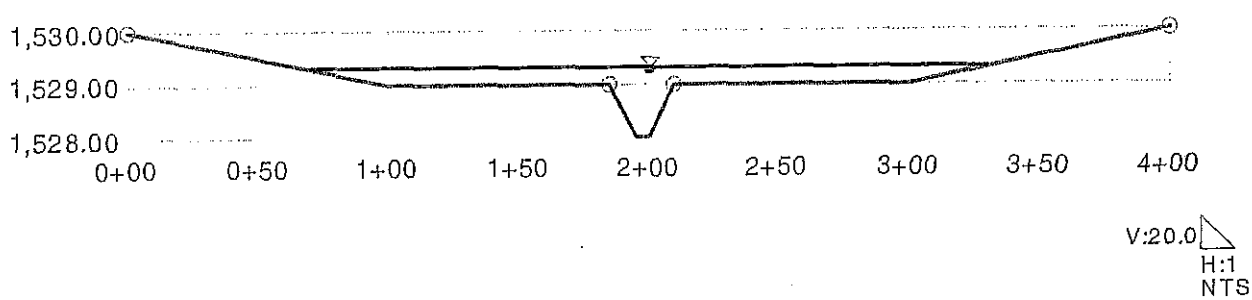
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,530.00
1+00	1,529.00
1+85	1,529.00
1+95	1,528.00
2+00	1,528.00
2+10	1,529.00
3+00	1,529.00
4+00	1,530.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.011000	ft/ft
Water Surface Elevation	1,529.30	ft
Elevation Range	1,528.00 to 1,530.00	
Discharge	125.00	cfs.



Project Summary Report

Project Description	
Worksheet	RCPE10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007100	ft/ft
Discharge	24.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,468.56	ft
Elevation Range	1,468.00 to 1,470.00	
Flow Area	18.1	ft²
Wetted Perimeter	54.69	ft
Top Width	54.67	ft
Actual Depth	0.56	ft
Critical Elevation	1,468.36	ft
Critical Slope	0.048347	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	1,468.59	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+90	0.045
2+90	5+30	0.050

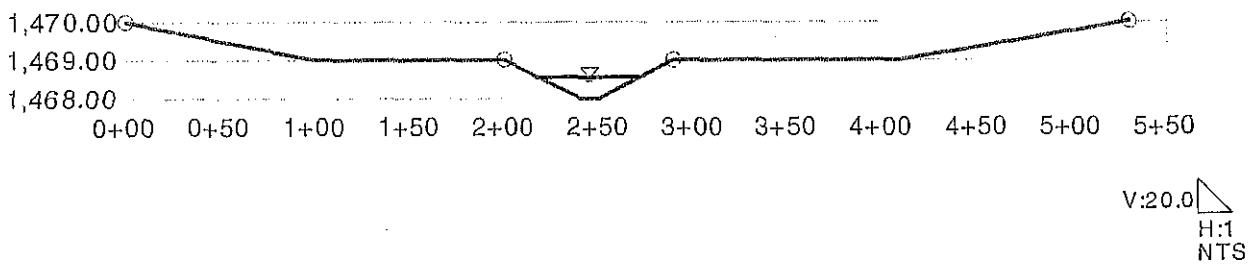
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,470.00
1+00	1,469.00
2+00	1,469.00
2+40	1,468.00
2+50	1,468.00
2+90	1,469.00
4+10	1,469.00
5+30	1,470.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.007100	ft/ft
Water Surface Elevation	1,468.56	ft
Elevation Range	1,468.00 to 1,470.00	
Discharge	24.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	622.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,469.74	ft
Elevation Range	1,468.00 to 1,470.00	
Flow Area	337.3	ft²
Wetted Perimeter	471.74	ft
Top Width	471.70	ft
Actual Depth	1.74	ft
Critical Elevation	1,469.34	ft
Critical Slope	0.046349	ft/ft
Velocity	1.84	ft/s
Velocity Head	0.05	ft
Specific Energy	1,469.79	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+90	0.045
2+90	5+30	0.050

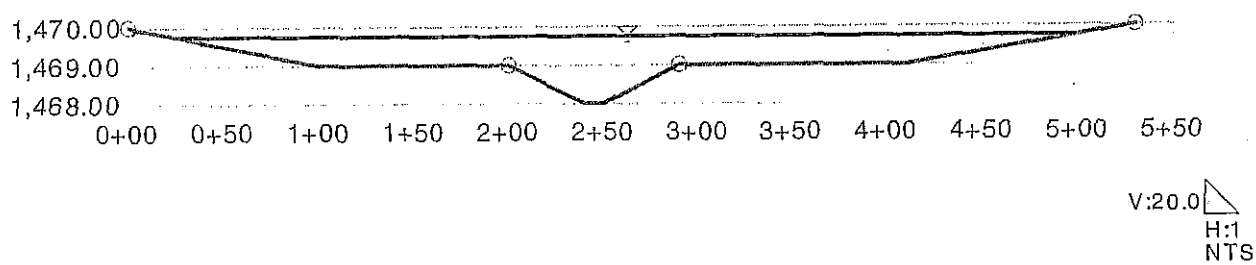
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,470.00
1+00	1,469.00
2+00	1,469.00
2+40	1,468.00
2+50	1,468.00
2+90	1,469.00
4+10	1,469.00
5+30	1,470.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE11
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	*0.005800*	*ft/ft*
Water Surface Elevation	1,469.74	ft
Elevation Range	1,468.00 to 1,470.00	
Discharge	622.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006000	ft/ft
Discharge	591.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,354.34	ft
Elevation Range	1,352.00 to 1,355.50	
Flow Area	175.3	ft²
Wetted Perimeter	110.06	ft
Top Width	109.74	ft
Actual Depth	2.34	ft
Critical Elevation	1,353.68	ft
Critical Slope	0.031060	ft/ft
Velocity	3.37	ft/s
Velocity Head	0.18	ft
Specific Energy	1,354.52	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+30	0.050
0+30	0+90	0.045
0+90	1+19	0.050

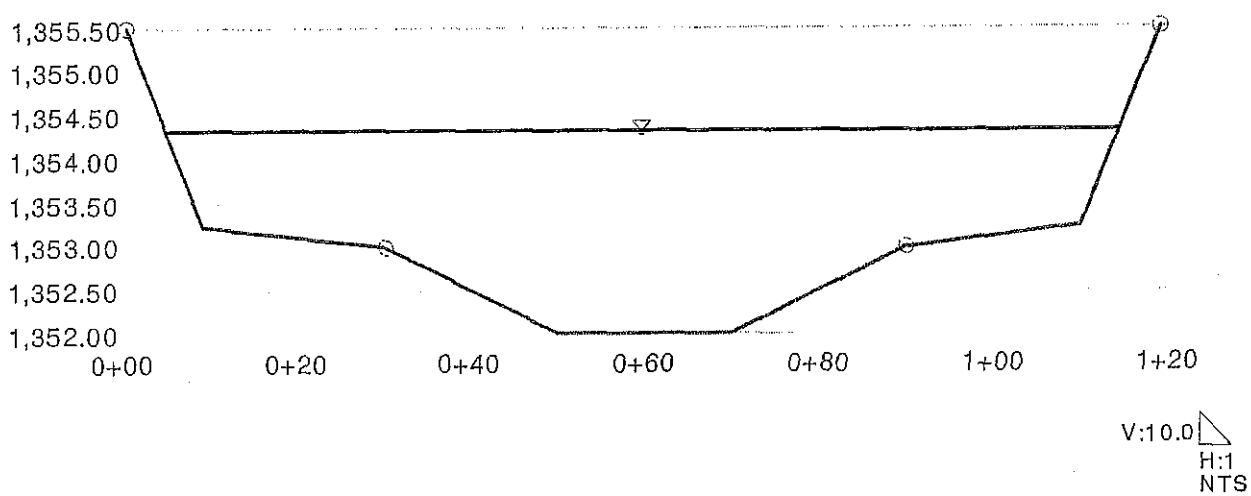
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,355.50
0+09	1,353.25
0+30	1,353.00
0+50	1,352.00
0+70	1,352.00
0+90	1,353.00
1+10	1,353.25
1+19	1,355.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.006000	ft/ft
Water Surface Elevation	1,354.34	ft
Elevation Range	1,352.00 to 1,355.50	
Discharge	591.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	498.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,414.67	ft
Elevation Range	1,412.00 to 1,415.00	
Flow Area	291.1	ft²
Wetted Perimeter	448.01	ft
Top Width	447.74	ft
Actual Depth	2.67	ft
Critical Elevation	1,414.30	ft
Critical Slope	0.049339	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	1,414.72	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+55	0.050
2+55	2+90	0.045
2+90	5+20	0.050

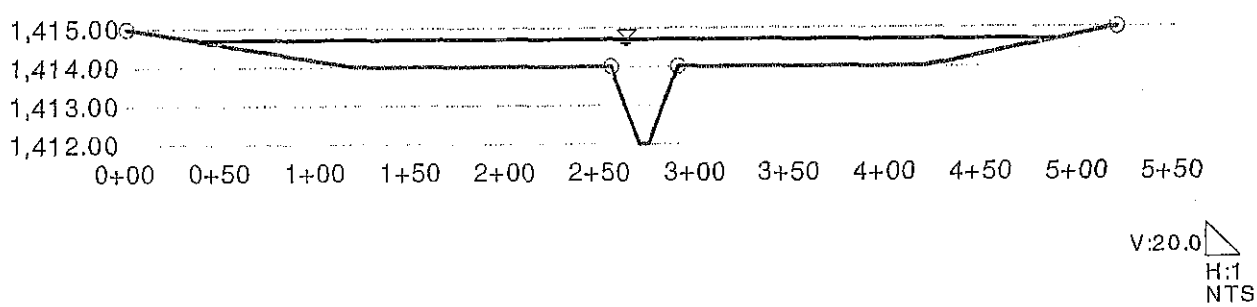
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,415.00
1+20	1,414.00
2+55	1,414.00
2+70	1,412.00
2+75	1,412.00
2+90	1,414.00
4+20	1,414.00
5+20	1,415.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.005800	ft/ft
Water Surface Elevation	1,414.67	ft
Elevation Range	1,412.00 to 1,415.00	
Discharge	498.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	625.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,489.42	ft
Elevation Range	1,486.00 to 1,490.50	
Flow Area	191.0	ft²
Wetted Perimeter	110.93	ft
Top Width	110.34	ft
Actual Depth	3.42	ft
Critical Elevation	1,488.64	ft
Critical Slope	0.031415	ft/ft
Velocity	3.27	ft/s
Velocity Head	0.17	ft
Specific Energy	1,489.58	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+40	0.050
0+40	0+80	0.045
0+80	1+19	0.050

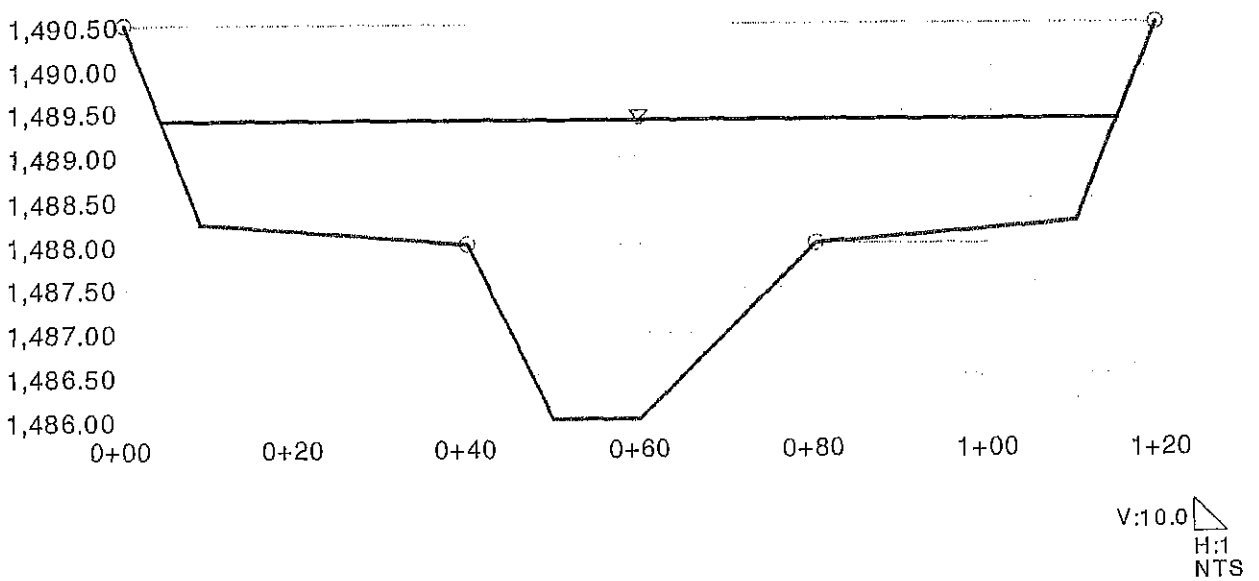
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,490.50
0+09	1,488.25
0+40	1,488.00
0+50	1,486.00
0+60	1,486.00
0+80	1,488.00
1+10	1,488.25
1+19	1,490.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005100	ft/ft
Water Surface Elevation	1,489.42	ft
Elevation Range	1,486.00 to 1,490.50	
Discharge	625.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	848.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,387.98	ft
Elevation Range	1,386.00 to 1,389.00	
Flow Area	340.1	ft²
Wetted Perimeter	335.20	ft
Top Width	334.86	ft
Actual Depth	1.98	ft
Critical Elevation	1,387.55	ft
Critical Slope	0.040986	ft/ft
Velocity	2.49	ft/s
Velocity Head	0.10	ft
Specific Energy	1,388.08	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+60	0.050
1+60	1+85	0.045
1+85	3+43	0.050

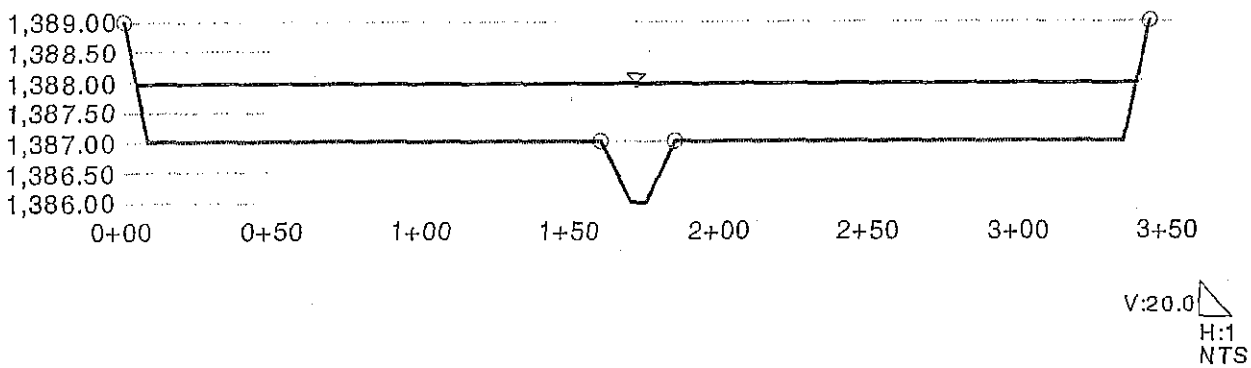
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,389.00
0+08	1,387.00
1+60	1,387.00
1+70	1,386.00
1+75	1,386.00
1+85	1,387.00
3+35	1,387.00
3+43	1,389.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.049	
Slope	0.006500	ft/ft
Water Surface Elevation	1,387.98	ft
Elevation Range	1,386.00 to 1,389.00	
Discharge	848.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006100	ft/ft
Discharge	2,147.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,443.76	ft
Elevation Range	1,440.00 to 1,445.00	
Flow Area	653.5	ft²
Wetted Perimeter	454.30	ft
Top Width	453.80	ft
Actual Depth	3.76	ft
Critical Elevation	1,443.20	ft
Critical Slope	0.030724	ft/ft
Velocity	3.29	ft/s
Velocity Head	0.17	ft
Specific Energy	1,443.93	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+05	0.050
2+05	2+55	0.045
2+55	4+60	0.050

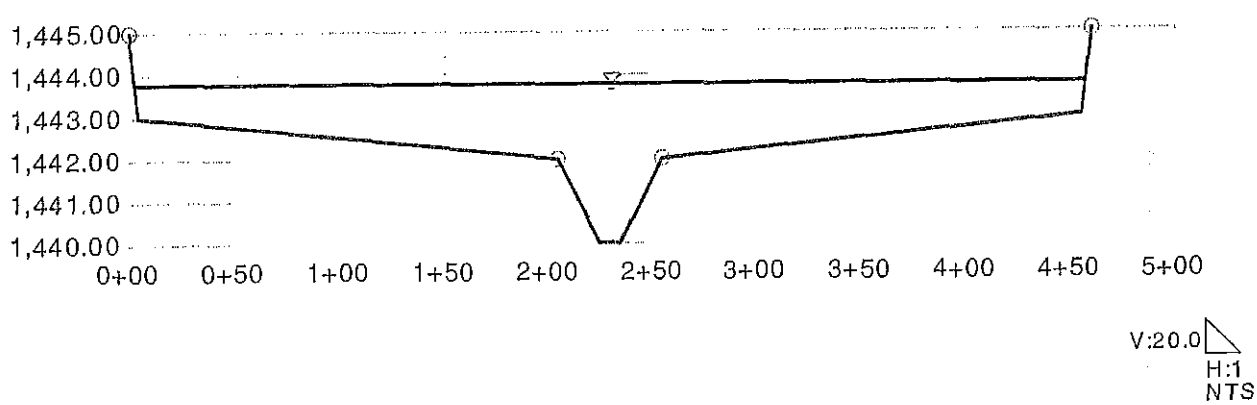
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,445.00
0+05	1,443.00
2+05	1,442.00
2+25	1,440.00
2+35	1,440.00
2+55	1,442.00
4+55	1,443.00
4+60	1,445.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006100	ft/ft
Water Surface Elevation	1,443.76	ft
Elevation Range	1,440.00 to 1,445.00	
Discharge	2,147.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006800	ft/ft
Discharge	733.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,382.82	ft
Elevation Range	1,381.00 to 1,383.00	
Flow Area	370.1	ft²
Wetted Perimeter	522.50	ft
Top Width	522.44	ft
Actual Depth	1.82	ft
Critical Elevation	1,382.44	ft
Critical Slope	0.045881	ft/ft
Velocity	1.98	ft/s
Velocity Head	0.06	ft
Specific Energy	1,382.88	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+80	0.050
2+80	3+30	0.045
3+30	5+70	0.050

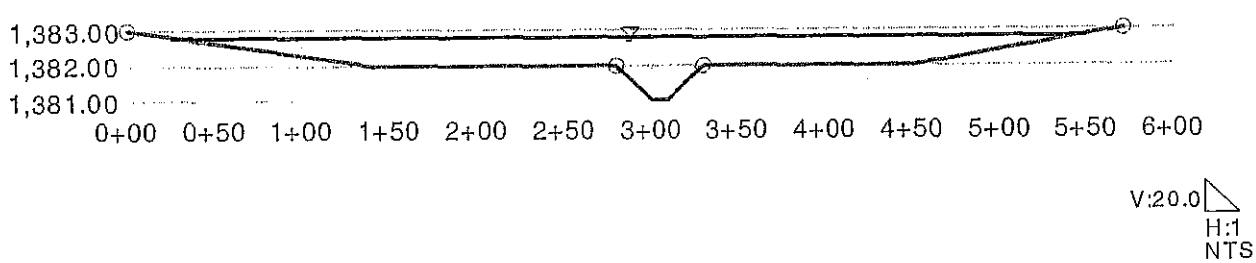
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,383.00
1+40	1,382.00
2+80	1,382.00
3+00	1,381.00
3+10	1,381.00
3+30	1,382.00
4+50	1,382.00
5+70	1,383.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006800	ft/ft
Water Surface Elevation	1,382.82	ft
Elevation Range	1,381.00 to 1,383.00	
Discharge	733.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	431.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,389.17	ft
Elevation Range	1,387.00 to 1,390.00	
Flow Area	136.2	ft²
Wetted Perimeter	100.74	ft
Top Width	100.51	ft
Actual Depth	2.17	ft
Critical Elevation	1,388.62	ft
Critical Slope	0.032816	ft/ft
Velocity	3.17	ft/s
Velocity Head	0.16	ft
Specific Energy	1,389.33	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+30	0.050
0+30	0+80	0.045
0+80	1+09	0.050

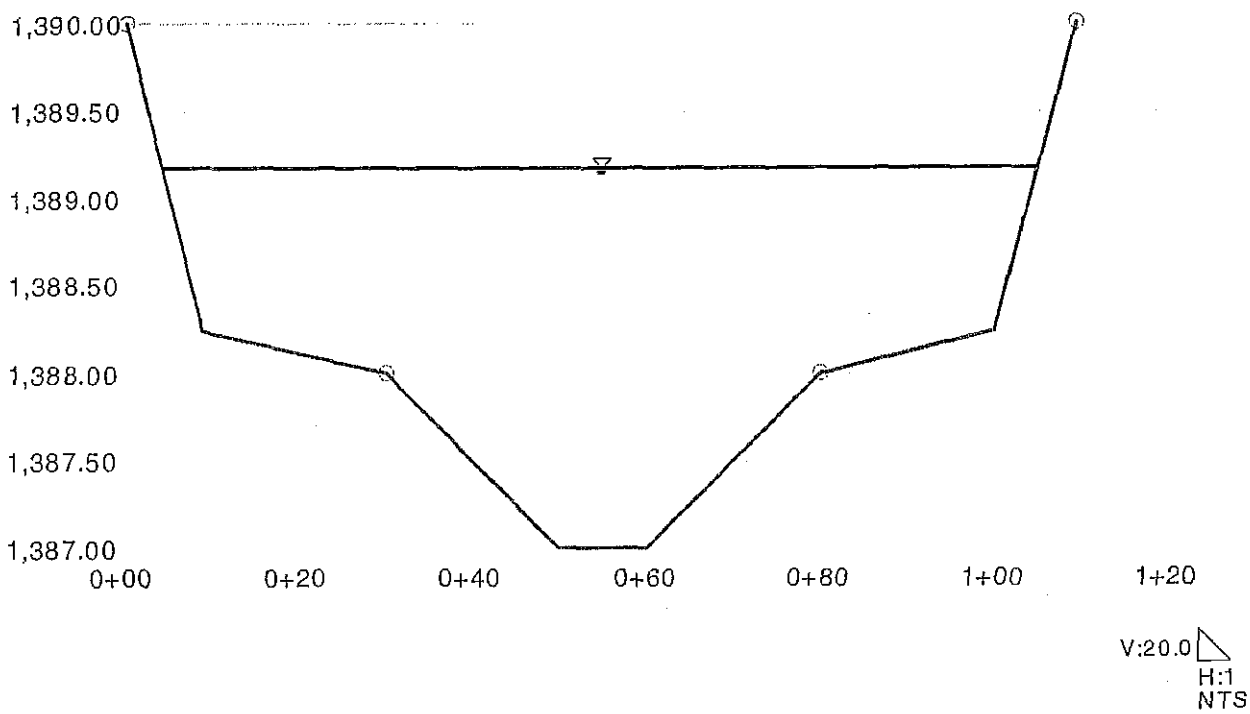
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,390.00
0+09	1,388.25
0+30	1,388.00
0+50	1,387.00
0+60	1,387.00
0+80	1,388.00
1+00	1,388.25
1+09	1,390.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.006500	ft/ft
Water Surface Elevation	1,389.17	ft
Elevation Range	1,387.00 to 1,390.00	
Discharge	431.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	1,335.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,390.41	ft
Elevation Range	1,387.00 to 1,391.50	
Flow Area	280.3	ft²
Wetted Perimeter	113.79	ft
Top Width	112.98	ft
Actual Depth	3.41	ft
Critical Elevation	1,389.52	ft
Critical Slope	0.025964	ft/ft
Velocity	4.76	ft/s
Velocity Head	0.35	ft
Specific Energy	1,390.77	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	0+85	0.045
0+85	1+19	0.050

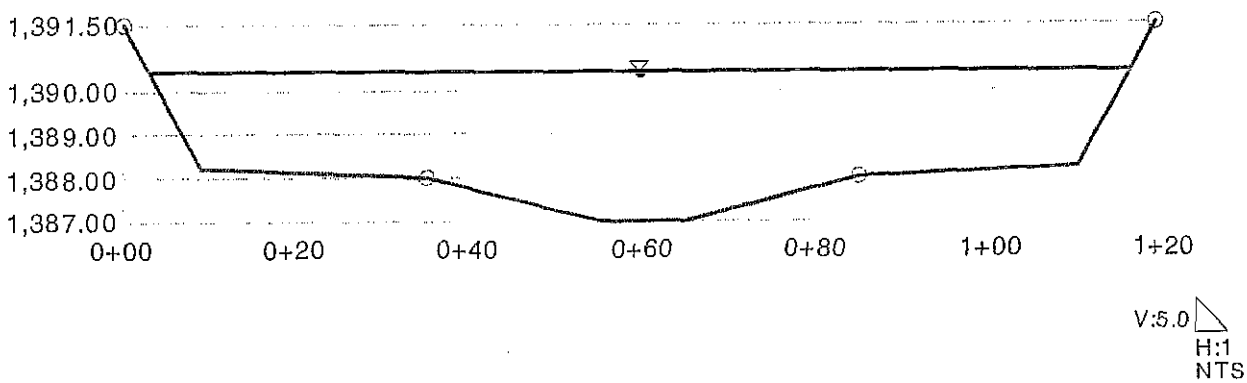
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,391.50
0+09	1,388.25
0+35	1,388.00
0+55	1,387.00
0+65	1,387.00
0+85	1,388.00
1+10	1,388.25
1+19	1,391.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.006500	ft/ft
Water Surface Elevation	1,390.41	ft
Elevation Range	1,387.00 to 1,391.50	
Discharge	1,335.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	93.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,394.25	ft
Elevation Range	1,393.00 to 1,395.00	
Flow Area	98.4	ft²
Wetted Perimeter	368.74	ft
Top Width	368.64	ft
Actual Depth	1.25	ft
Critical Elevation	1,394.09	ft
Critical Slope	0.069879	ft/ft
Velocity	0.94	ft/s
Velocity Head	0.01	ft
Specific Energy	1,394.26	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+75	0.045
2+75	5+75	0.050

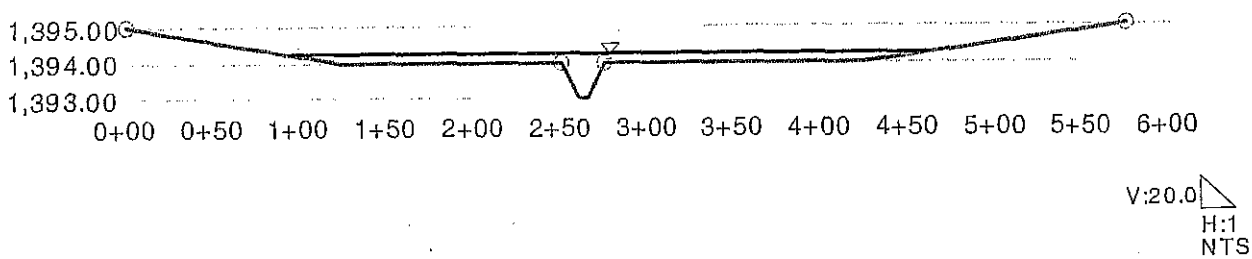
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,395.00
1+25	1,394.00
2+50	1,394.00
2+60	1,393.00
2+65	1,393.00
2+75	1,394.00
4+25	1,394.00
5+75	1,395.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.005800	ft/ft
Water Surface Elevation	1,394.25	ft
Elevation Range	1,393.00 to 1,395.00	
Discharge	93.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006000	ft/ft
Discharge	826.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,369.35	ft
Elevation Range	1,368.00 to 1,370.00	
Flow Area	421.2	ft²
Wetted Perimeter	586.78	ft
Top Width	586.76	ft
Actual Depth	1.35	ft
Critical Elevation	1,368.90	ft
Critical Slope	0.038536	ft/ft
Velocity	1.96	ft/s
Velocity Head	0.06	ft
Specific Energy	1,369.41	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	6+00	0.045
6+00	7+00	0.050

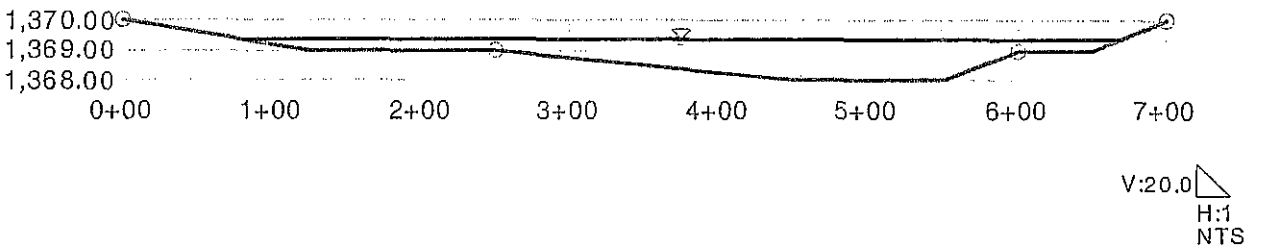
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,370.00
1+25	1,369.00
2+50	1,369.00
4+50	1,368.00
5+50	1,368.00
6+00	1,369.00
6+50	1,369.00
7+00	1,370.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.047	
Slope	0.006000	ft/ft
Water Surface Elevation	1,369.35	ft
Elevation Range	1,368.00 to 1,370.00	
Discharge	826.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	830.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,359.73	ft
Elevation Range	1,358.00 to 1,360.00	
Flow Area	432.0	ft²
Wetted Perimeter	555.57	ft
Top Width	555.47	ft
Actual Depth	1.73	ft
Critical Elevation	1,359.26	ft
Critical Slope	0.043914	ft/ft
Velocity	1.92	ft/s
Velocity Head	0.06	ft
Specific Energy	1,359.78	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	3+20	0.045
3+20	6+40	0.050

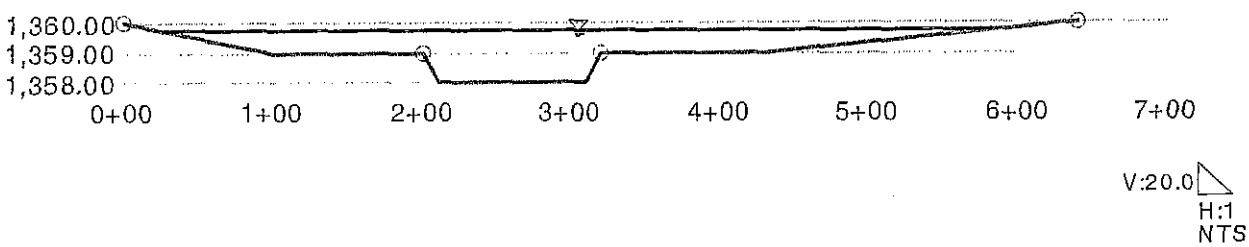
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,360.00
1+00	1,359.00
2+00	1,359.00
2+10	1,358.00
3+10	1,358.00
3+20	1,359.00
4+30	1,359.00
6+40	1,360.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE23
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005600	ft/ft
Water Surface Elevation	1,359.73	ft
Elevation Range	1,358.00 to 1,360.00	
Discharge	830.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006200	ft/ft
Discharge	860.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,359.72	ft
Elevation Range	1,358.00 to 1,360.00	
Flow Area	427.2	ft²
Wetted Perimeter	552.87	ft
Top Width	552.77	ft
Actual Depth	1.72	ft
Critical Elevation	1,359.27	ft
Critical Slope	0.043659	ft/ft
Velocity	2.01	ft/s
Velocity Head	0.06	ft
Specific Energy	1,359.78	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	3+20	0.045
3+20	6+40	0.050

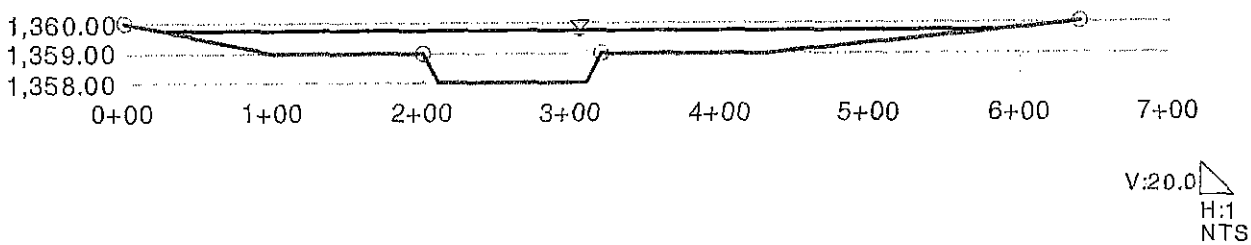
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,360.00
1+00	1,359.00
2+00	1,359.00
2+10	1,358.00
3+10	1,358.00
3+20	1,359.00
4+30	1,359.00
6+40	1,360.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.049
Slope	0.006200 ft/ft
Water Surface Elevation	1,359.72 ft
Elevation Range	1,358.00 to 1,360.00
Discharge	860.00 cfs



Project Summary Report

Project Description	
Worksheet	RCPE25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003900	ft/ft
Discharge	1,032.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,314.49	ft
Elevation Range	1,312.00 to 1,325.00	
Flow Area	433.2	ft²
Wetted Perimeter	348.78	ft
Top Width	347.90	ft
Actual Depth	2.49	ft
Critical Elevation	1,313.68	ft
Critical Slope	0.031351	ft/ft
Velocity	2.38	ft/s
Velocity Head	0.09	ft
Specific Energy	1,314.58	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	3+90	0.045
3+90	18+30	0.050

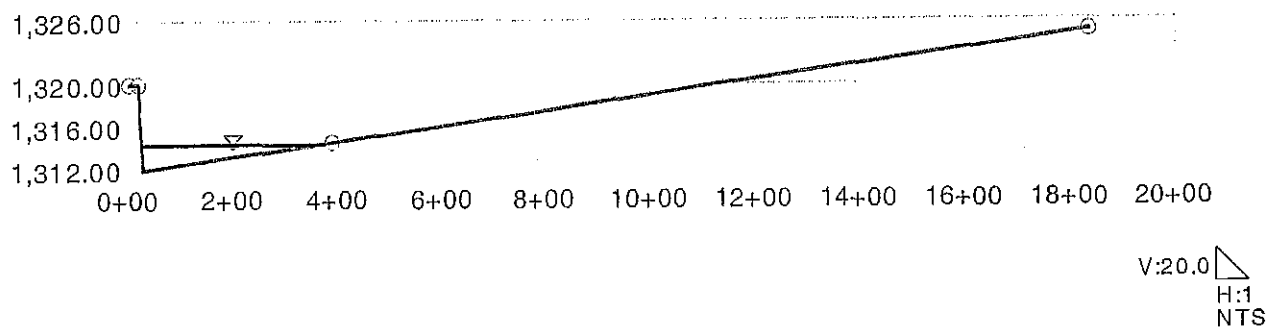
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,320.00
0+20	1,320.00
0+30	1,312.00
3+90	1,314.60
7+50	1,317.20
11+10	1,319.80
14+70	1,322.40
18+30	1,325.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003900	ft/ft
Water Surface Elevation	1,314.49	ft
Elevation Range	1,312.00 to 1,325.00	
Discharge	1,032.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE26
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	224.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,357.92	ft
Elevation Range	1,357.00 to 1,360.00	
Flow Area	156.3	ft²
Wetted Perimeter	320.40	ft
Top Width	320.39	ft
Actual Depth	0.92	ft
Critical Elevation	1,357.59	ft
Critical Slope	0.042953	ft/ft
Velocity	1.43	ft/s
Velocity Head	0.03	ft
Specific Energy	1,357.95	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

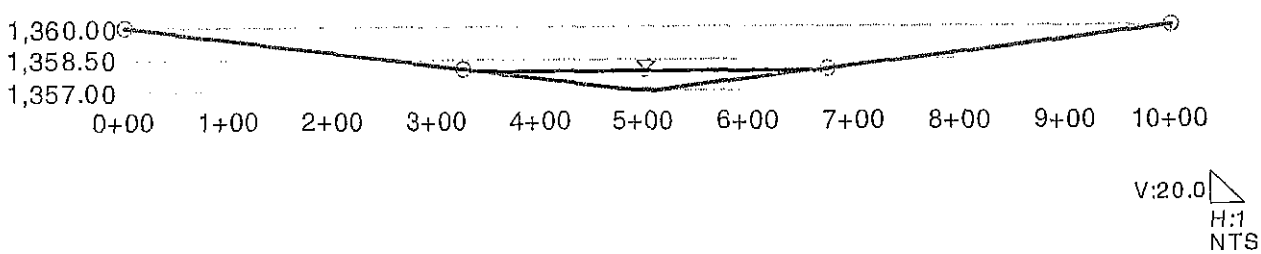
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,360.00
1+63	1,359.00
3+27	1,358.00
4+90	1,357.00
5+10	1,357.00
6+74	1,358.00
8+37	1,359.00
10+00	1,360.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	*0.004900*	*ft/ft*
Water Surface Elevation	1,357.92	ft
Elevation Range	1,357.00 to 1,360.00	
Discharge	224.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	119.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,387.27	ft
Elevation Range	1,386.00 to 1,388.00	
Flow Area	114.8	ft²
Wetted Perimeter	406.91	ft
Top Width	406.81	ft
Actual Depth	1.27	ft
Critical Elevation	1,387.11	ft
Critical Slope	0.067689	ft/ft
Velocity	1.04	ft/s
Velocity Head	0.02	ft
Specific Energy	1,387.29	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+00	0.050
3+00	3+25	0.045
3+25	6+25	0.050

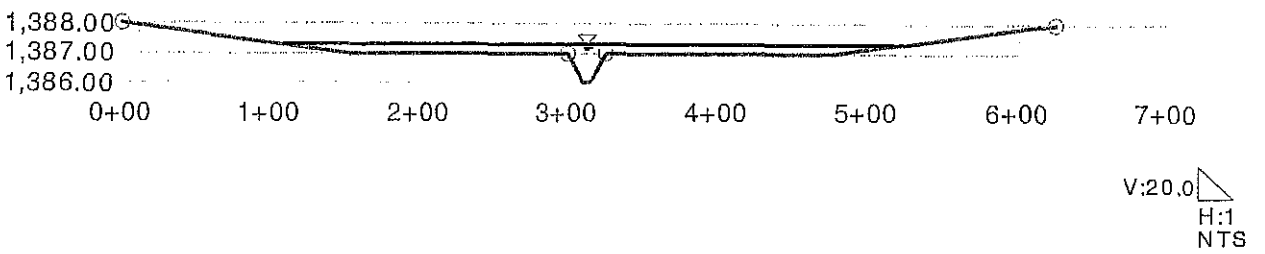
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,388.00
1+50	1,387.00
3+00	1,387.00
3+10	1,386.00
3+15	1,386.00
3+25	1,387.00
4+75	1,387.00
6+25	1,388.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.006500	ft/ft
Water Surface Elevation	1,387.27	ft
Elevation Range	1,386.00 to 1,388.00	
Discharge	*119.00*	*cfs*



Project Summary Report

Project Description	
Worksheet	RCPE28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005700	ft/ft
Discharge	43.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,394.14	ft
Elevation Range	1,393.00 to 1,395.00	
Flow Area	60.2	ft²
Wetted Perimeter	339.02	ft
Top Width	338.92	ft
Actual Depth	1.14	ft
Critical Elevation	1,393.81	ft
Critical Slope	0.045390	ft/ft
Velocity	0.71	ft/s
Velocity Head	0.01	ft
Specific Energy	1,394.15	ft
Froude Number	0.30	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+75	0.045
2+75	5+75	0.050

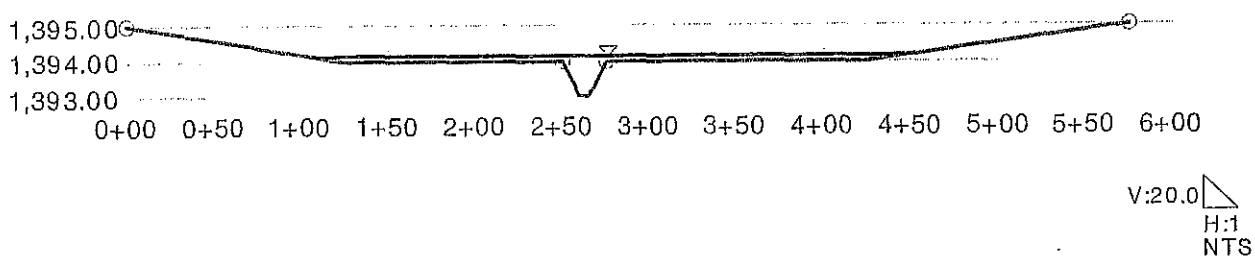
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,395.00
1+25	1,394.00
2+50	1,394.00
2+60	1,393.00
2+65	1,393.00
2+75	1,394.00
4+25	1,394.00
5+75	1,395.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.005700	ft/ft
Water Surface Elevation	1,394.14	ft
Elevation Range	1,393.00 to 1,395.00	
Discharge	43.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006400	ft/ft
Discharge	1,562.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,347.96	ft
Elevation Range	1,346.00 to 1,349.00	
Flow Area	632.5	ft²
Wetted Perimeter	618.03	ft
Top Width	617.97	ft
Actual Depth	1.96	ft
Critical Elevation	1,347.45	ft
Critical Slope	0.040281	ft/ft
Velocity	2.47	ft/s
Velocity Head	0.09	ft
Specific Energy	1,348.05	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+70	0.050
3+70	5+10	0.045
5+10	8+00	0.050

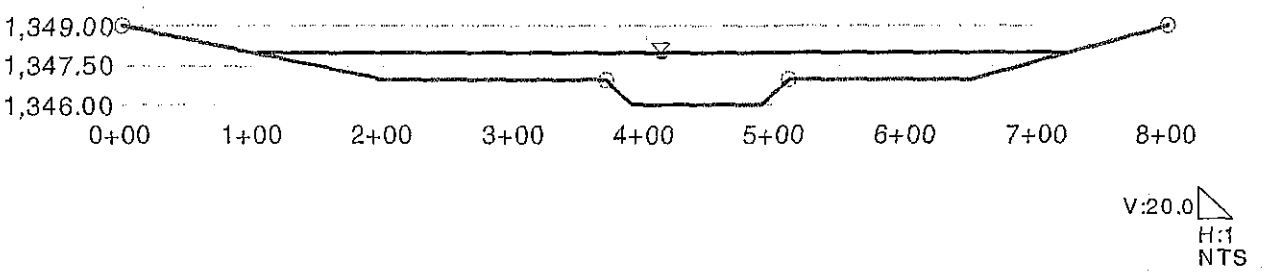
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,349.00
2+00	1,347.00
3+70	1,347.00
3+90	1,346.00
4+90	1,346.00
5+10	1,347.00
6+50	1,347.00
8+00	1,349.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006400	ft/ft
Water Surface Elevation	1,347.96	ft
Elevation Range	1,346.00 to 1,349.00	
Discharge	1,562.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003500	ft/ft
Discharge	210.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,330.55	ft
Elevation Range	1,329.00 to 1,340.00	
Flow Area	127.6	ft²
Wetted Perimeter	164.93	ft
Top Width	164.44	ft
Actual Depth	1.55	ft
Critical Elevation	1,330.00	ft
Critical Slope	0.037387	ft/ft
Velocity	1.65	ft/s
Velocity Head	0.04	ft
Specific Energy	1,330.59	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+60	0.045
2+60	11+80	0.050

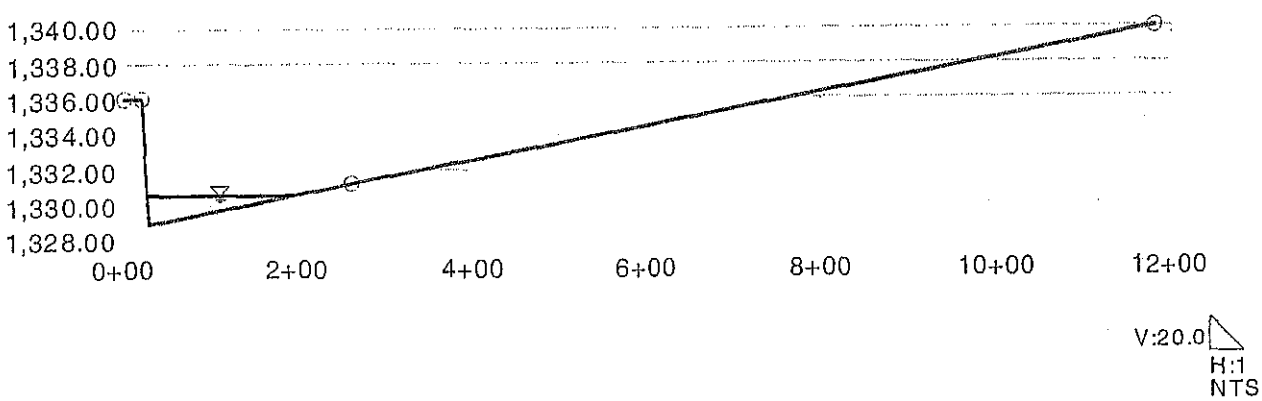
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,336.00
0+20	1,336.00
0+30	1,329.00
2+60	1,331.20
4+90	1,333.40
7+20	1,335.60
9+50	1,337.80
11+80	1,340.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE30
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003500	ft/ft
Water Surface Elevation	1,330.55	ft
Elevation Range	1,329.00 to 1,340.00	
Discharge	210.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004300	ft/ft
Discharge	211.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,337.47	ft
Elevation Range	1,336.00 to 1,347.00	
Flow Area	119.8	ft²
Wetted Perimeter	163.17	ft
Top Width	162.70	ft
Actual Depth	1.47	ft
Critical Elevation	1,336.98	ft
Critical Slope	0.037567	ft/ft
Velocity	1.76	ft/s
Velocity Head	0.05	ft
Specific Energy	1,337.52	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+70	0.045
2+70	12+30	0.050

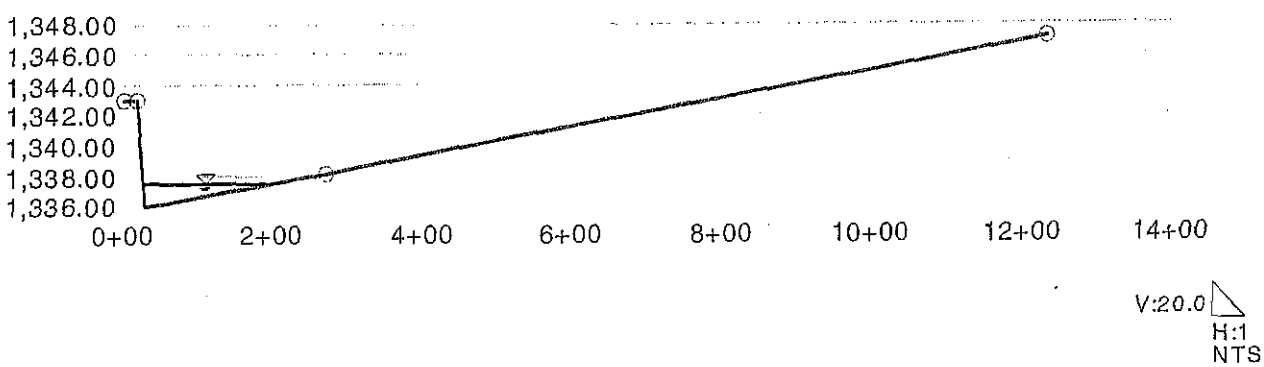
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,343.00
0+20	1,343.00
0+30	1,336.00
2+70	1,338.20
5+10	1,340.40
7+50	1,342.60
9+90	1,344.80
12+30	1,347.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE31
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004300	ft/ft
Water Surface Elevation	1,337.47	ft
Elevation Range	1,336.00 to 1,347.00	
Discharge	211.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	432.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,346.95	ft
Elevation Range	1,345.00 to 1,355.00	
Flow Area	192.5	ft²
Wetted Perimeter	198.13	ft
Top Width	197.44	ft
Actual Depth	1.95	ft
Critical Elevation	1,346.35	ft
Critical Slope	0.033775	ft/ft
Velocity	2.24	ft/s
Velocity Head	0.08	ft
Specific Energy	1,347.03	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

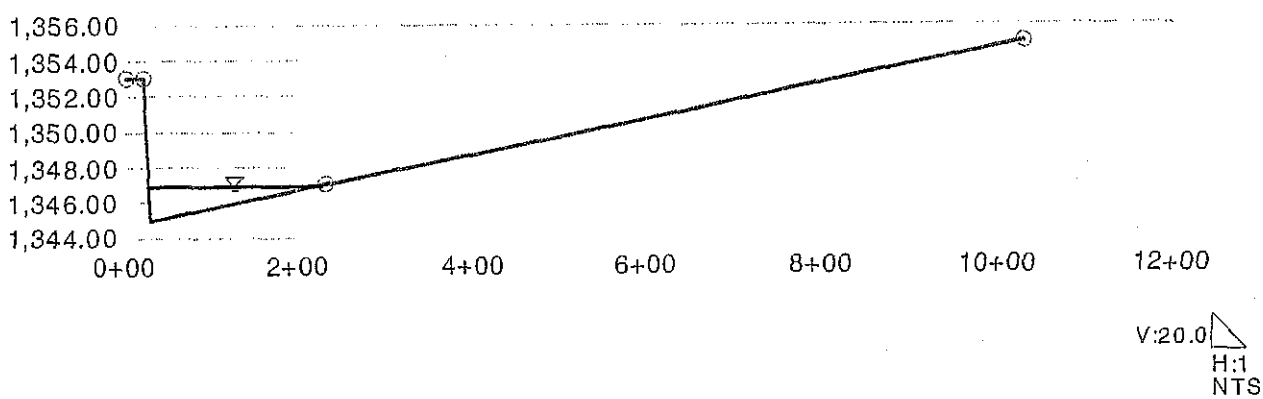
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,353.00
0+20	1,353.00
0+30	1,345.00
2+30	1,347.00
4+30	1,349.00
6+30	1,351.00
8+30	1,353.00
10+30	1,355.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,346.95	ft
Elevation Range	1,345.00 to 1,355.00	
Discharge	432.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	0.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,355.00	ft
Elevation Range	1,355.00 to 1,368.00	
Flow Area	0.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Actual Depth	0.00	ft
Critical Elevation	0.00	ft
Critical Slope	0.000000	ft/ft
Velocity	0.00	ft/s
Velocity Head	0.00	ft
Specific Energy	1,355.00	ft
Froude Number	0.00	
Flow Type	N/A	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+70	0.045
2+70	12+30	0.050

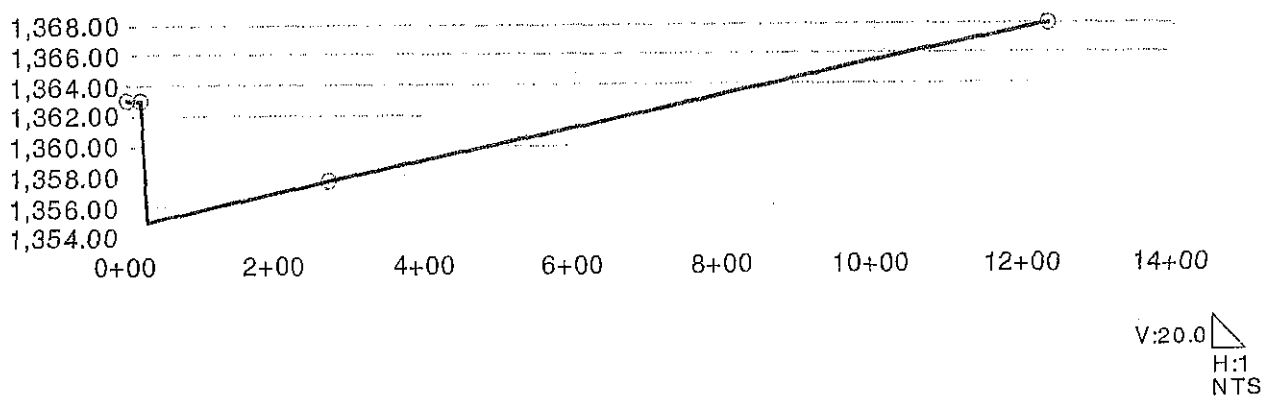
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,363.00
0+20	1,363.00
0+30	1,355.00
2+70	1,357.60
5+10	1,360.20
7+50	1,362.80
9+90	1,365.40
12+30	1,368.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003800	ft/ft
Water Surface Elevation	1,355.00	ft
Elevation Range	1,355.00 to 1,368.00	
Discharge	0.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005300	ft/ft
Discharge	1,391.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,340.06	ft
Elevation Range	1,338.00 to 1,341.00	
Flow Area	479.9	ft^2
Wetted Perimeter	349.56	ft
Top Width	349.30	ft
Actual Depth	2.06	ft
Critical Elevation	1,339.46	ft
Critical Slope	0.033392	ft/ft
Velocity	2.90	ft/s
Velocity Head	0.13	ft
Specific Energy	1,340.19	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+10	0.050
1+10	2+60	0.045
2+60	3+59	0.050

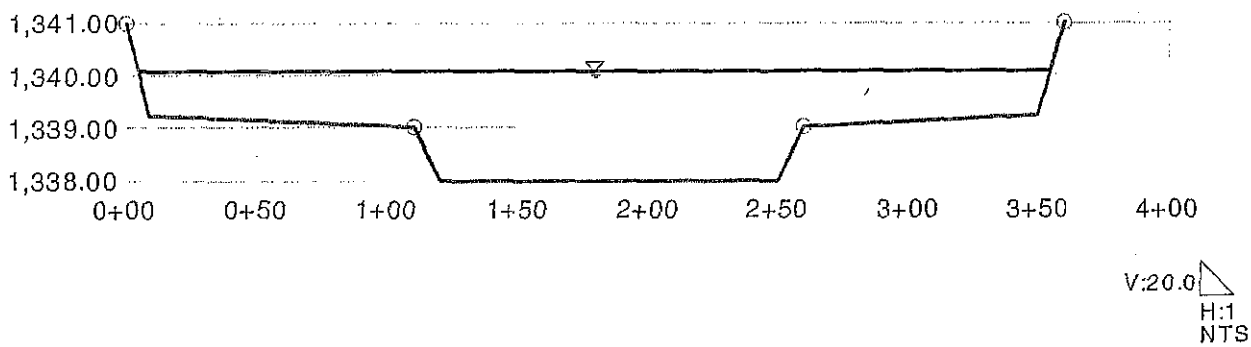
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,341.00
0+09	1,339.25
1+10	1,339.00
1+20	1,338.00
2+50	1,338.00
2+60	1,339.00
3+50	1,339.25
3+59	1,341.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005300	ft/ft
Water Surface Elevation	1,340.06	ft
Elevation Range	1,338.00 to 1,341.00	
Discharge	1,391.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	137.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,327.73	ft
Elevation Range	1,327.00 to 1,330.00	
Flow Area	102.9	ft²
Wetted Perimeter	260.19	ft
Top Width	260.19	ft
Actual Depth	0.73	ft
Critical Elevation	1,327.48	ft
Critical Slope	0.045890	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	1,327.76	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

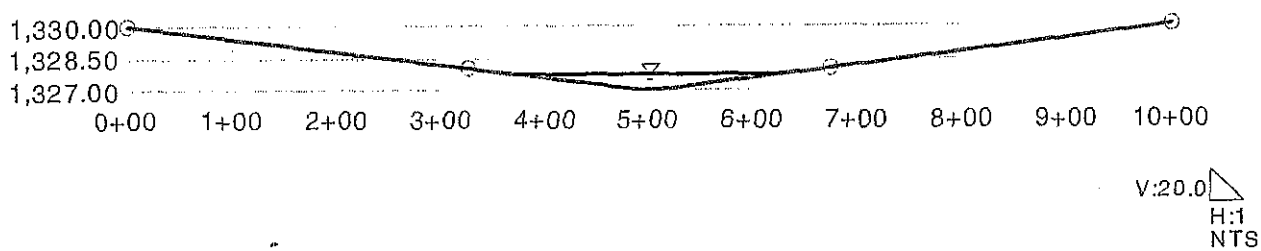
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,330.00
1+63	1,329.00
3+27	1,328.00
4+90	1,327.00
5+10	1,327.00
6+74	1,328.00
8+37	1,329.00
10+00	1,330.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE35
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.045	
Slope	0.005600	ft/ft
Water Surface Elevation	1,327.73	ft
Elevation Range	1,327.00 to 1,330.00	
Discharge	137.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003900	ft/ft
Discharge	959.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,314.42	ft
Elevation Range	1,312.00 to 1,325.00	
Flow Area	410.0	ft²
Wetted Perimeter	339.32	ft
Top Width	338.46	ft
Actual Depth	2.42	ft
Critical Elevation	1,313.64	ft
Critical Slope	0.031659	ft/ft
Velocity	2.34	ft/s
Velocity Head	0.09	ft
Specific Energy	1,314.51	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	3+90	0.045
3+90	18+30	0.050

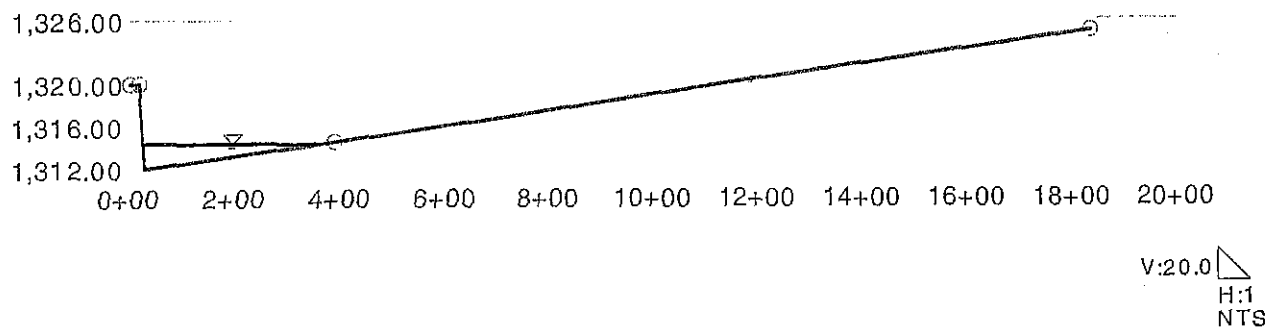
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,320.00
0+20	1,320.00
0+30	1,312.00
3+90	1,314.60
7+50	1,317.20
11+10	1,319.80
14+70	1,322.40
18+30	1,325.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003900	ft/ft
Water Surface Elevation	1,314.42	ft
Elevation Range	1,312.00 to 1,325.00	
Discharge	959.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005300	ft/ft
Discharge	718.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,339.72	ft
Elevation Range	1,338.00 to 1,340.00	
Flow Area	430.9	ft²
Wetted Perimeter	659.61	ft
Top Width	659.51	ft
Actual Depth	1.72	ft
Critical Elevation	1,338.96	ft
Critical Slope	0.036147	ft/ft
Velocity	1.67	ft/s
Velocity Head	0.04	ft
Specific Energy	1,339.76	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	5+50	0.045
5+50	8+60	0.050

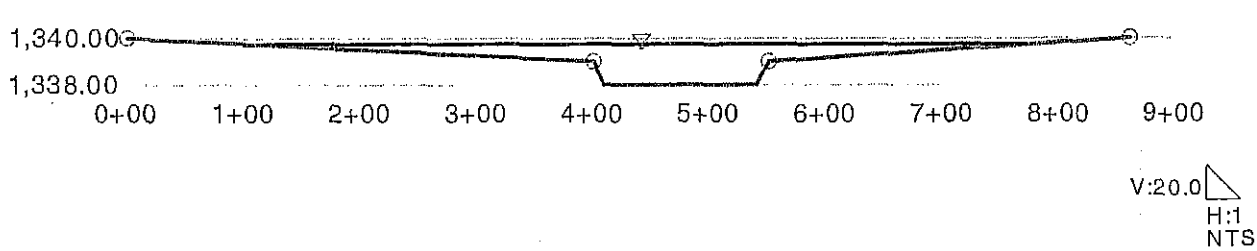
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
2+00	1,339.50
4+00	1,339.00
4+10	1,338.00
5+40	1,338.00
5+50	1,339.00
7+00	1,339.50
8+60	1,340.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE37
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005300	ft/ft
Water Surface Elevation	1,339.72	ft
Elevation Range	1,338.00 to 1,340.00	
Discharge	718.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002800	ft/ft
Discharge	1,772.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,323.73	ft
Elevation Range	1,320.00 to 1,330.00	
Flow Area	705.2	ft²
Wetted Perimeter	379.21	ft
Top Width	377.89	ft
Actual Depth	3.73	ft
Critical Elevation	1,322.38	ft
Critical Slope	0.030937	ft/ft
Velocity	2.51	ft/s
Velocity Head	0.10	ft
Specific Energy	1,323.83	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

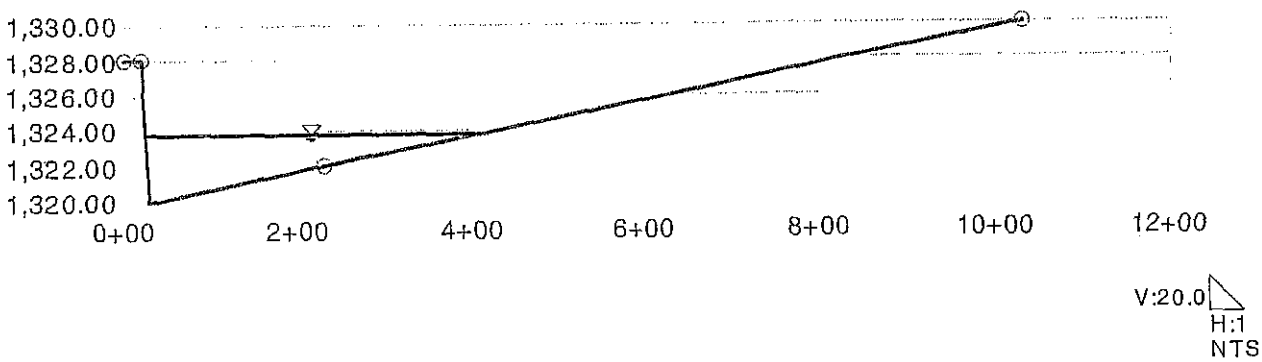
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,328.00
0+20	1,328.00
0+30	1,320.00
2+30	1,322.00
4+30	1,324.00
6+30	1,326.00
8+30	1,328.00
10+30	1,330.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.002800	ft/ft
Water Surface Elevation	1,323.73	ft
Elevation Range	1,320.00 to 1,330.00	
Discharge	1,772.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006100	ft/ft
Discharge	222.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,318.73	ft
Elevation Range	1,317.00 to 1,320.00	
Flow Area	128.1	ft²
Wetted Perimeter	218.32	ft
Top Width	218.26	ft
Actual Depth	1.73	ft
Critical Elevation	1,318.32	ft
Critical Slope	0.041428	ft/ft
Velocity	1.73	ft/s
Velocity Head	0.05	ft
Specific Energy	1,318.78	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+80	0.050
1+80	2+30	0.045
2+30	6+20	0.050

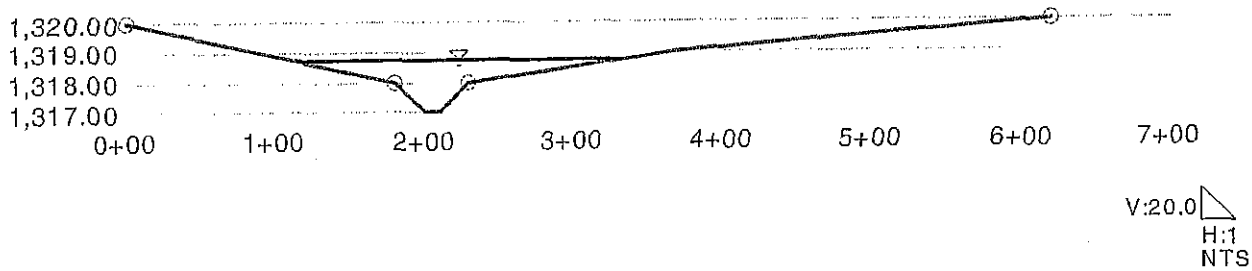
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,320.00
0+90	1,319.00
1+80	1,318.00
2+00	1,317.00
2+10	1,317.00
2+30	1,318.00
3+70	1,319.00
6+20	1,320.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.006100	ft/ft
Water Surface Elevation	1,318.73	ft
Elevation Range	1,317.00 to 1,320.00	
Discharge	222.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	348.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,257.95	ft
Elevation Range	1,257.00 to 1,260.00	
Flow Area	165.9	ft²
Wetted Perimeter	197.75	ft
Top Width	197.71	ft
Actual Depth	0.95	ft
Critical Elevation	1,257.53	ft
Critical Slope	0.037335	ft/ft
Velocity	2.10	ft/s
Velocity Head	0.07	ft
Specific Energy	1,258.02	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	7+00	0.045
7+00	11+00	0.050

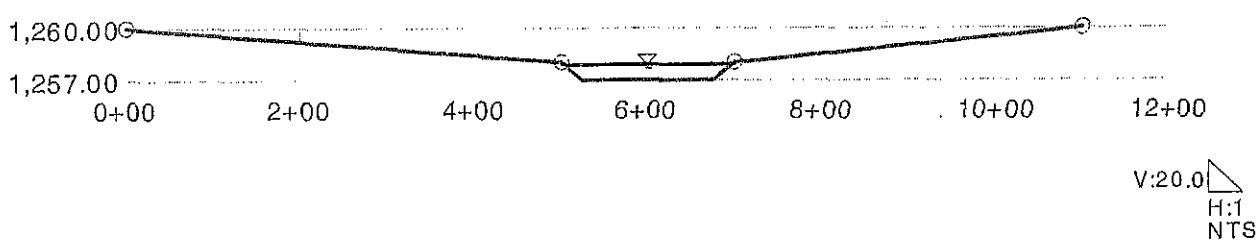
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,260.00
2+50	1,259.00
5+00	1,258.00
5+25	1,257.00
6+75	1,257.00
7+00	1,258.00
9+00	1,259.00
11+00	1,260.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005100	ft/ft
Water Surface Elevation	1,257.95	ft
Elevation Range	1,257.00 to 1,260.00	
Discharge	348.00	cfs



Project Summary Report

oject Description	
Worksheet	RCPE43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004300	ft/ft
Discharge	263.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,273.00	ft
Elevation Range	1,272.00 to 1,275.00	
Flow Area	185.4	ft²
Wetted Perimeter	349.29	ft
Top Width	349.28	ft
Actual Depth	1.00	ft
Critical Elevation	1,272.64	ft
Critical Slope	0.042091	ft/ft
Velocity	1.42	ft/s
Velocity Head	0.03	ft
Specific Energy	1,273.04	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+26	0.050
3+26	6+74	0.045
6+74	10+00	0.050

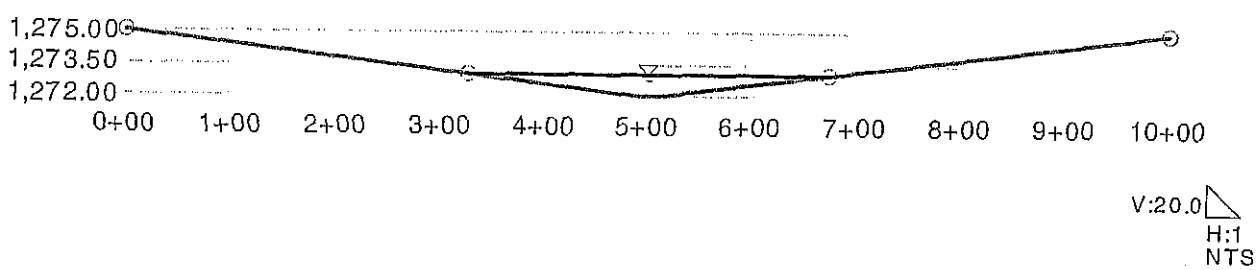
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,275.00
1+63	1,274.00
3+26	1,273.00
4+90	1,272.00
5+10	1,272.00
6+74	1,273.00
8+37	1,274.00
10+00	1,275.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004300	ft/ft
Water Surface Elevation	1,273.00	ft
Elevation Range	1,272.00 to 1,275.00	
Discharge	263.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	1,691.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,274.00	ft
Elevation Range	1,272.00 to 1,275.00	
Flow Area	590.3	ft²
Wetted Perimeter	418.88	ft
Top Width	418.72	ft
Actual Depth	2.00	ft
Critical Elevation	1,273.38	ft
Critical Slope	0.031968	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	1,274.13	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+40	0.050
0+40	3+88	0.045
3+88	4+29	0.050

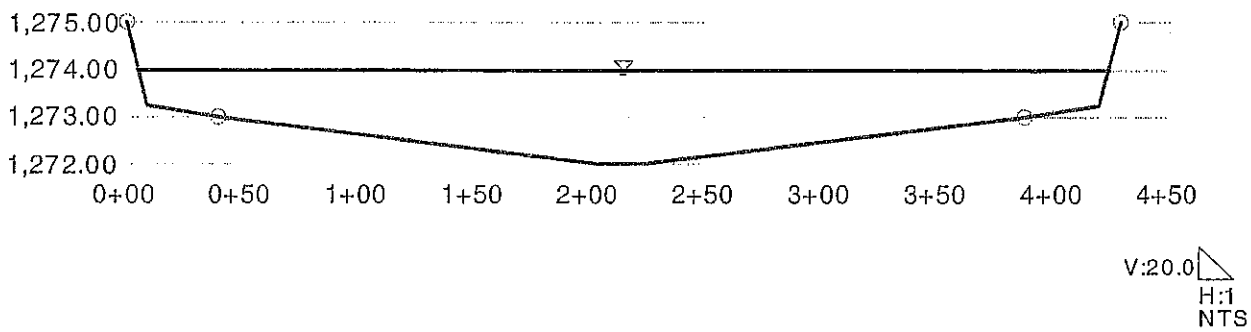
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,275.00
0+09	1,273.25
0+40	1,273.00
2+04	1,272.00
2+24	1,272.00
3+88	1,273.00
4+20	1,273.25
4+29	1,275.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,274.00	ft
Elevation Range	1,272.00 to 1,275.00	
Discharge	1,691.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	1,435.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,293.80	ft
Elevation Range	1,292.00 to 1,295.00	
Flow Area	498.4	ft²
Wetted Perimeter	406.74	ft
Top Width	406.62	ft
Actual Depth	1.80	ft
Critical Elevation	1,293.29	ft
Critical Slope	0.032703	ft/ft
Velocity	2.88	ft/s
Velocity Head	0.13	ft
Specific Energy	1,293.93	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	3+83	0.045
3+83	4+19	0.050

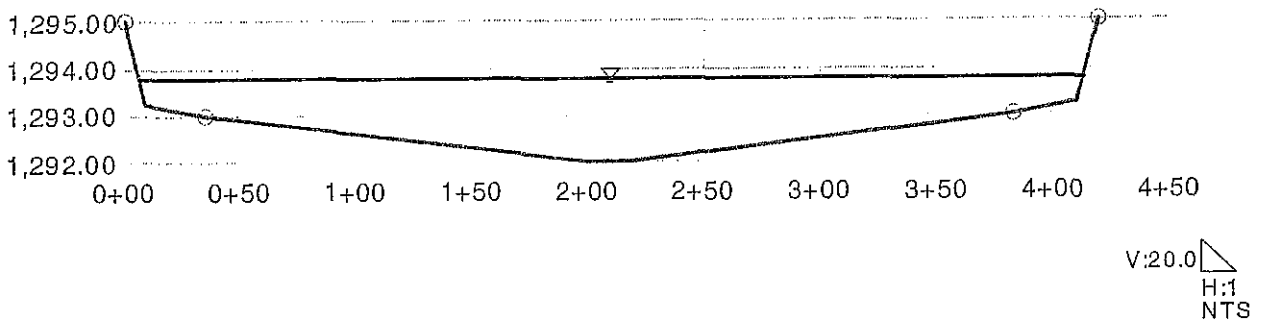
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
0+09	1,293.25
0+35	1,293.00
1+99	1,292.00
2+19	1,292.00
3+83	1,293.00
4+10	1,293.25
4+19	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005800	ft/ft
Water Surface Elevation	1,293.80	ft
Elevation Range	1,292.00 to 1,295.00	
Discharge	1,435.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	248.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,292.93	ft
Elevation Range	1,292.00 to 1,295.00	
Flow Area	158.4	ft²
Wetted Perimeter	322.50	ft
Top Width	322.49	ft
Actual Depth	0.93	ft
Critical Elevation	1,292.62	ft
Critical Slope	0.042371	ft/ft
Velocity	1.57	ft/s
Velocity Head	0.04	ft
Specific Energy	1,292.96	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

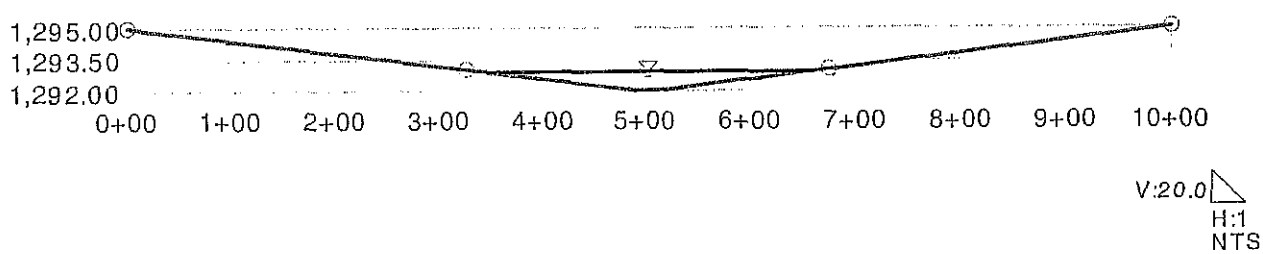
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
1+63	1,294.00
3+27	1,293.00
4+90	1,292.00
5+10	1,292.00
6+74	1,293.00
8+37	1,294.00
10+00	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005800	ft/ft
Water Surface Elevation	1,292.93	ft
Elevation Range	1,292.00 to 1,295.00	
Discharge	248.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003900	ft/ft
Discharge	1,669.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,280.41	ft
Elevation Range	1,278.00 to 1,281.00	
Flow Area	734.8	ft²
Wetted Perimeter	586.95	ft
Top Width	586.75	ft
Actual Depth	2.41	ft
Critical Elevation	1,279.79	ft
Critical Slope	0.038168	ft/ft
Velocity	2.27	ft/s
Velocity Head	0.08	ft
Specific Energy	1,280.49	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+60	0.050
2+60	3+35	0.045
3+35	5+93	0.050

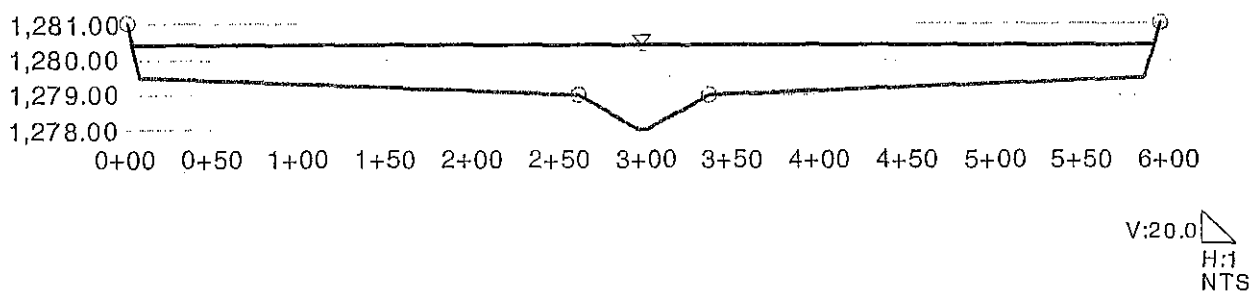
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,281.00
0+08	1,279.50
2+60	1,279.00
2+95	1,278.00
3+00	1,278.00
3+35	1,279.00
5+85	1,279.50
5+93	1,281.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003900	ft/ft
Water Surface Elevation	1,280.41	ft
Elevation Range	1,278.00 to 1,281.00	
Discharge	1,669.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE50
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	1,811.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,263.46	ft
Elevation Range	1,260.00 to 1,265.00	
Flow Area	669.1	ft²
Wetted Perimeter	362.28	ft
Top Width	362.01	ft
Actual Depth	3.46	ft
Critical Elevation	1,262.51	ft
Critical Slope	0.031543	ft/ft
Velocity	2.71	ft/s
Velocity Head	0.11	ft
Specific Energy	1,263.58	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+15	0.050
1+15	2+65	0.045
2+65	3+78	0.050

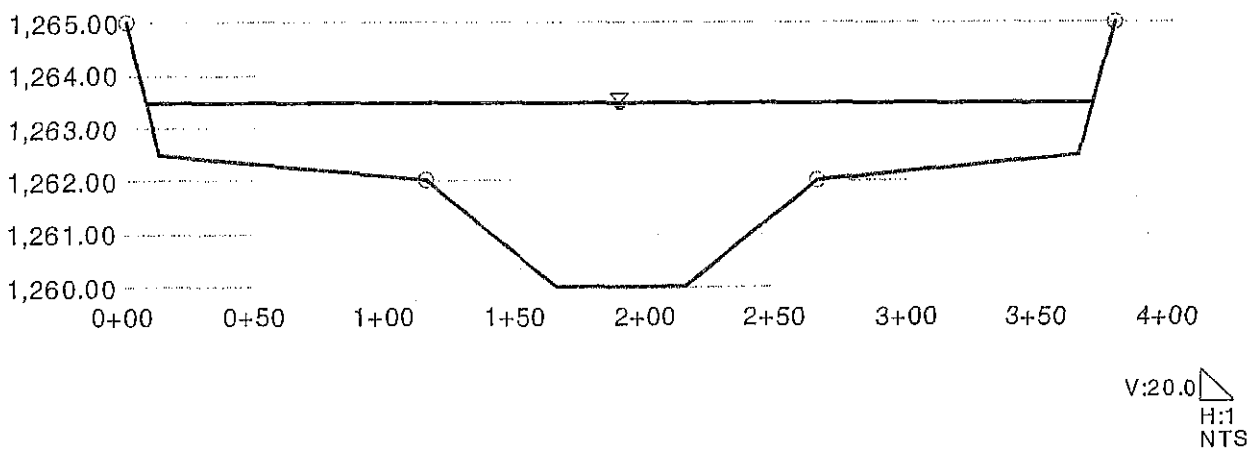
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,265.00
0+13	1,262.50
1+15	1,262.00
1+65	1,260.00
2+15	1,260.00
2+65	1,262.00
3+65	1,262.50
3+78	1,265.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RCPE50*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.003100	ft/ft
Water Surface Elevation	1,263.46	ft
Elevation Range	1,260.00 to 1,265.00	
Discharge	1,811.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE52
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003100	ft/ft
Discharge	221.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,261.32	ft
Elevation Range	1,260.00 to 1,264.00	
Flow Area	130.9	ft²
Wetted Perimeter	148.83	ft
Top Width	148.79	ft
Actual Depth	1.32	ft
Critical Elevation	1,260.70	ft
Critical Slope	0.036621	ft/ft
Velocity	1.69	ft/s
Velocity Head	0.04	ft
Specific Energy	1,261.36	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	4+00	0.045
4+00	6+00	0.050

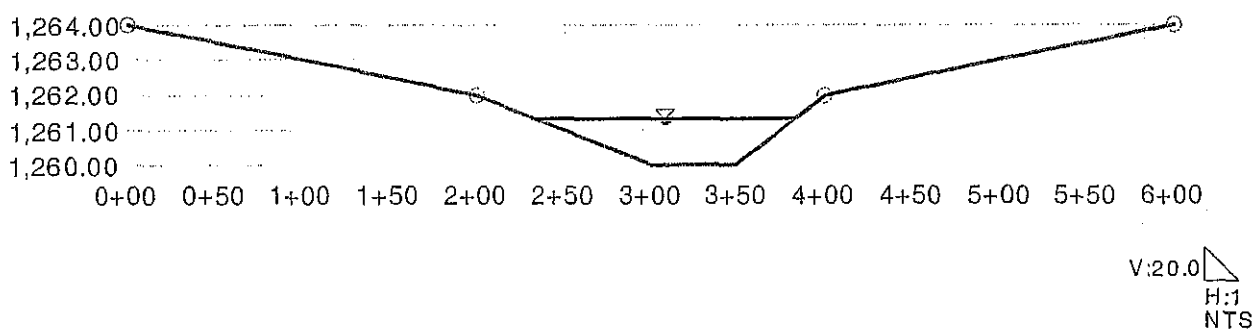
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,264.00
1+00	1,263.00
2+00	1,262.00
3+00	1,260.00
3+50	1,260.00
4+00	1,262.00
5+00	1,263.00
6+00	1,264.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE52
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003100	ft/ft
Water Surface Elevation	1,261.32	ft
Elevation Range	1,260.00 to 1,264.00	
Discharge	221.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE53
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	185.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,344.42	ft
Elevation Range	1,343.00 to 1,353.00	
Flow Area	101.9	ft²
Wetted Perimeter	144.16	ft
Top Width	143.65	ft
Actual Depth	1.42	ft
Critical Elevation	1,343.96	ft
Critical Slope	0.037819	ft/ft
Velocity	1.82	ft/s
Velocity Head	0.05	ft
Specific Energy	1,344.47	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	2+30	0.045
2+30	10+30	0.050

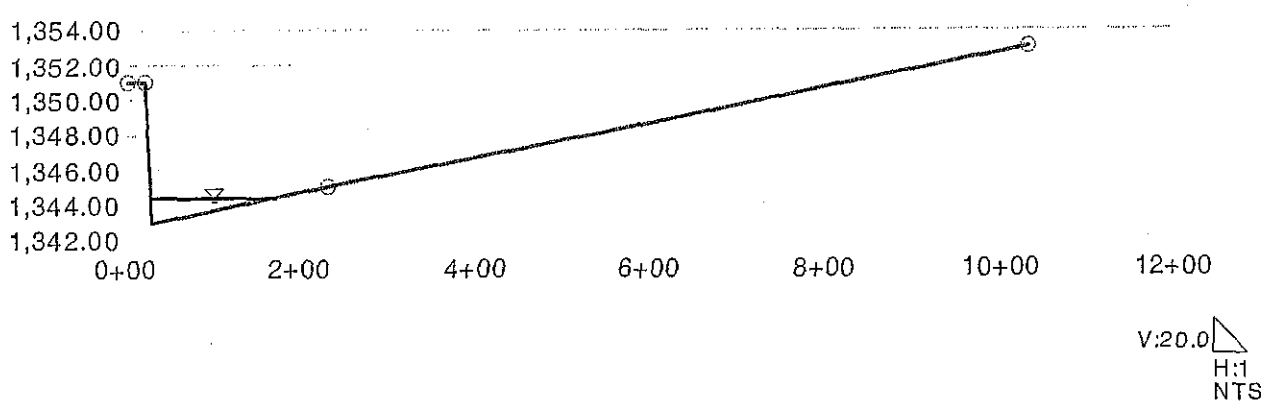
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,351.00
0+20	1,351.00
0+30	1,343.00
2+30	1,345.00
4+30	1,347.00
6+30	1,349.00
8+30	1,351.00
10+30	1,353.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE53
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,344.42	ft
Elevation Range	1,343.00 to 1,353.00	
Discharge	185.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPE54
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	723.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,310.47	ft
Elevation Range	1,308.00 to 1,314.00	
Flow Area	261.9	ft²
Wetted Perimeter	212.37	ft
Top Width	212.05	ft
Actual Depth	2.47	ft
Critical Elevation	1,309.77	ft
Critical Slope	0.032042	ft/ft
Velocity	2.76	ft/s
Velocity Head	0.12	ft
Specific Energy	1,310.59	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

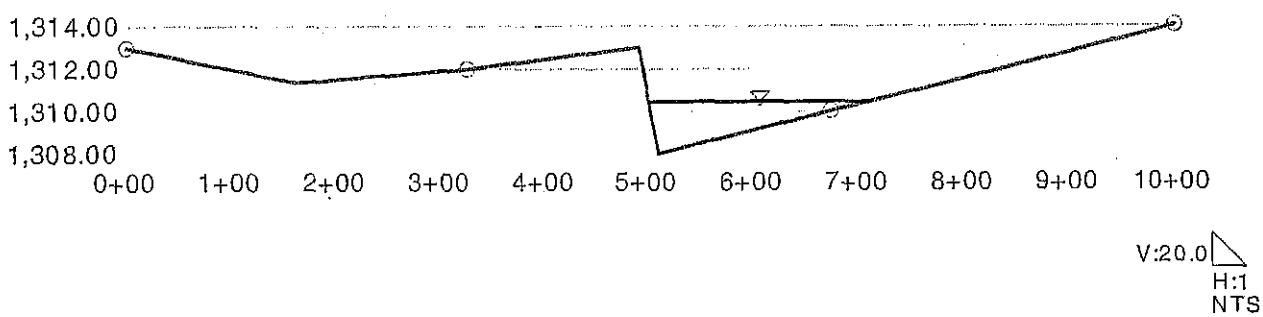
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,313.00
1+63	1,311.30
3+27	1,312.00
4+90	1,313.00
5+10	1,308.00
6+74	1,310.00
8+37	1,312.00
10+00	1,314.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPE54
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005500	ft/ft
Water Surface Elevation	1,310.47	ft
Elevation Range	1,308.00 to 1,314.00	
Discharge	723.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006300	ft/ft
Discharge	981.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,354.62	ft
Elevation Range	1,352.00 to 1,355.50	
Flow Area	282.4	ft²
Wetted Perimeter	171.31	ft
Top Width	170.98	ft
Actual Depth	2.62	ft
Critical Elevation	1,353.96	ft
Critical Slope	0.032460	ft/ft
Velocity	3.47	ft/s
Velocity Head	0.19	ft
Specific Energy	1,354.81	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	1+20	0.045
1+20	1+78	0.050

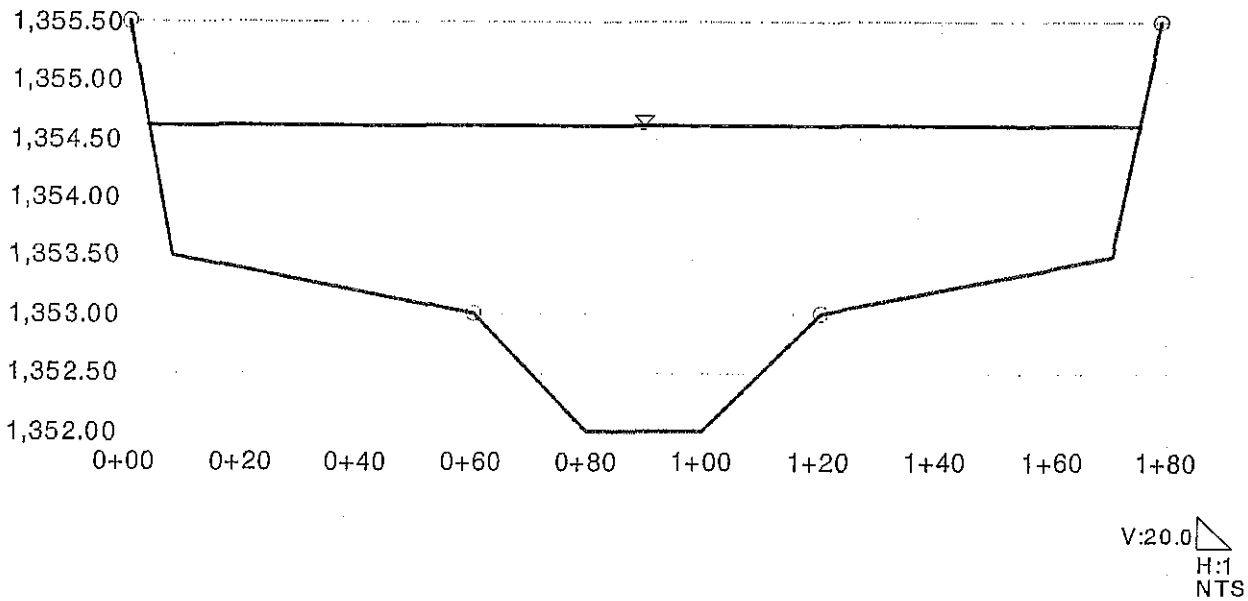
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,355.50
0+08	1,353.50
0+60	1,353.00
0+80	1,352.00
1+00	1,352.00
1+20	1,353.00
1+70	1,353.50
1+78	1,355.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.006300	ft/ft
Water Surface Elevation	1,354.62	ft
Elevation Range	1,352.00 to 1,355.50	
Discharge	981.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007600	ft/ft
Discharge	39.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,478.91	ft
Elevation Range	1,478.00 to 1,480.00	
Flow Area	21.2	ft²
Wetted Perimeter	41.54	ft
Top Width	41.49	ft
Actual Depth	0.91	ft
Critical Elevation	1,478.64	ft
Critical Slope	0.041137	ft/ft
Velocity	1.84	ft/s
Velocity Head	0.05	ft
Specific Energy	1,478.96	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+45	0.045
2+45	4+45	0.050

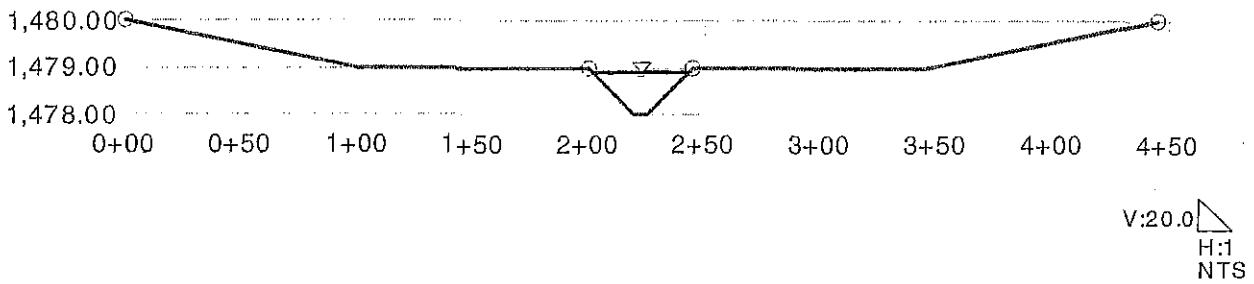
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,480.00
1+00	1,479.00
2+00	1,479.00
2+20	1,478.00
2+25	1,478.00
2+45	1,479.00
3+45	1,479.00
4+45	1,480.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.045
Slope	0.007600 ft/ft
Water Surface Elevation	1,478.91 ft
Elevation Range	1,478.00 to 1,480.00
Discharge	39.00 cfs



Project Summary Report

Project Description	
Worksheet	RDE10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006900	ft/ft
Discharge	60.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,479.15	ft
Elevation Range	1,478.00 to 1,480.00	
Flow Area	63.5	ft²
Wetted Perimeter	274.68	ft
Top Width	274.63	ft
Actual Depth	1.15	ft
Critical Elevation	1,478.78	ft
Critical Slope	0.046378	ft/ft
Velocity	0.94	ft/s
Velocity Head	0.01	ft
Specific Energy	1,479.16	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+45	0.045
2+45	4+45	0.050

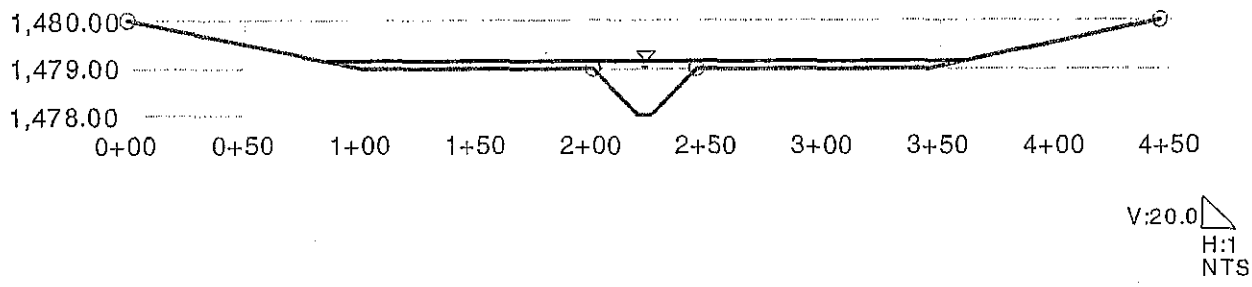
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,480.00
1+00	1,479.00
2+00	1,479.00
2+20	1,478.00
2+25	1,478.00
2+45	1,479.00
3+45	1,479.00
4+45	1,480.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006900	ft/ft
Water Surface Elevation	1,479.15	ft
Elevation Range	1,478.00 to 1,480.00	
Discharge	60.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	353.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,488.66	ft
Elevation Range	1,487.00 to 1,490.00	
Flow Area	178.7	ft²
Wetted Perimeter	270.96	ft
Top Width	270.92	ft
Actual Depth	1.66	ft
Critical Elevation	1,488.19	ft
Critical Slope	0.035456	ft/ft
Velocity	1.98	ft/s
Velocity Head	0.06	ft
Specific Energy	1,488.72	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+40	0.045
3+40	6+40	0.050

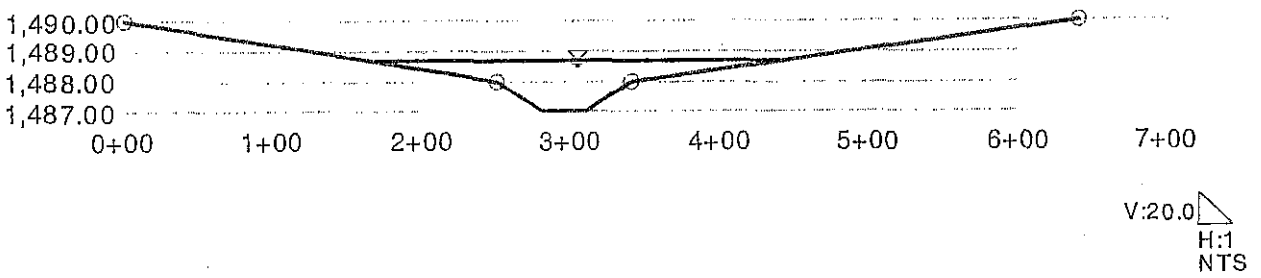
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,490.00
1+25	1,489.00
2+50	1,488.00
2+80	1,487.00
3+10	1,487.00
3+40	1,488.00
4+90	1,489.00
6+40	1,490.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006500	ft/ft
Water Surface Elevation	1,488.66	ft
Elevation Range	1,487.00 to 1,490.00	
Discharge	353.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	513.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,400.37	ft
Elevation Range	1,397.00 to 1,401.00	
Flow Area	157.9	ft²
Wetted Perimeter	98.00	ft
Top Width	97.52	ft
Actual Depth	3.37	ft
Critical Elevation	1,399.65	ft
Critical Slope	0.031781	ft/ft
Velocity	3.25	ft/s
Velocity Head	0.16	ft
Specific Energy	1,400.53	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	0+70	0.045
0+70	1+04	0.050

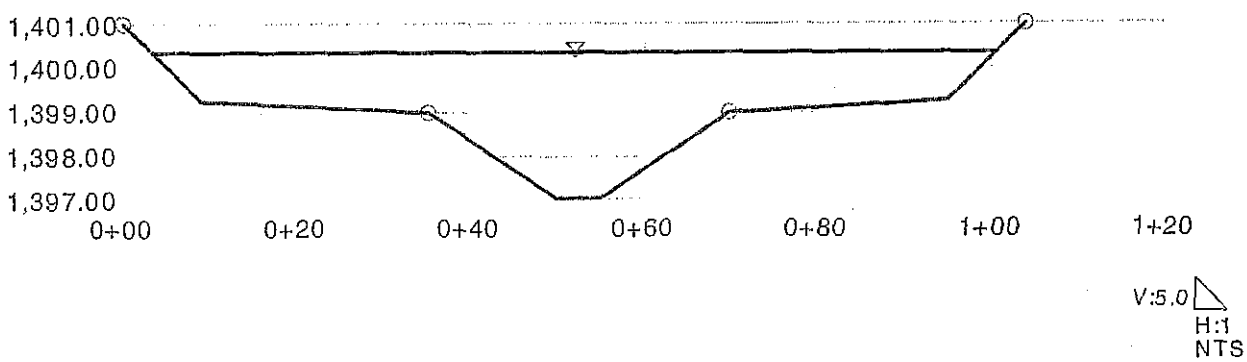
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,401.00
0+09	1,399.25
0+35	1,399.00
0+50	1,397.00
0+55	1,397.00
0+70	1,399.00
0+95	1,399.25
1+04	1,401.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005500	ft/ft
Water Surface Elevation	1,400.37	ft
Elevation Range	1,397.00 to 1,401.00	
Discharge	513.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006300	ft/ft
Discharge	1,029.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,395.35	ft
Elevation Range	1,393.00 to 1,396.50	
Flow Area	410.7	ft²
Wetted Perimeter	402.35	ft
Top Width	402.13	ft
Actual Depth	2.35	ft
Critical Elevation	1,394.91	ft
Critical Slope	0.039516	ft/ft
Velocity	2.51	ft/s
Velocity Head	0.10	ft
Specific Energy	1,395.44	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+80	0.050
1+80	2+05	0.045
2+05	4+14	0.050

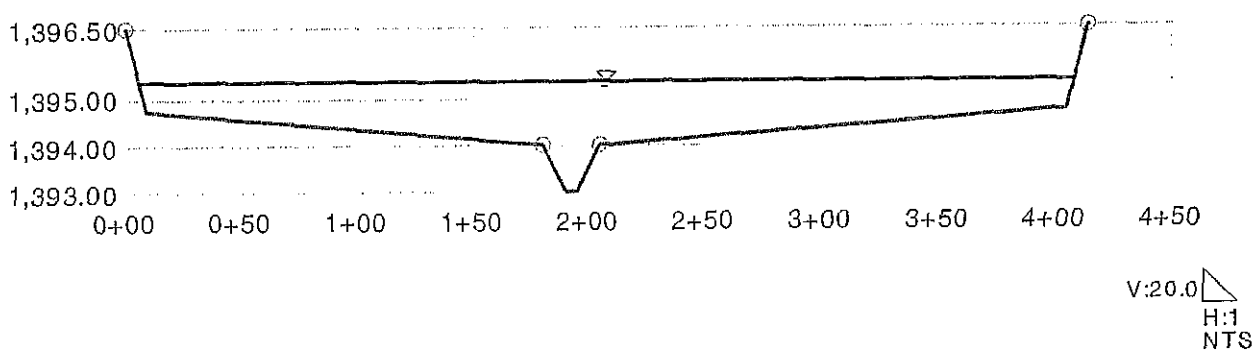
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,396.50
0+09	1,394.75
1+80	1,394.00
1+90	1,393.00
1+95	1,393.00
2+05	1,394.00
4+05	1,394.75
4+14	1,396.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.006300	ft/ft
Water Surface Elevation	1,395.35	ft
Elevation Range	1,393.00 to 1,396.50	
Discharge	1,029.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	652.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,389.35	ft
Elevation Range	1,387.00 to 1,390.50	
Flow Area	268.8	ft²
Wetted Perimeter	275.85	ft
Top Width	275.71	ft
Actual Depth	2.35	ft
Critical Elevation	1,388.91	ft
Critical Slope	0.040799	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	1,389.44	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+60	0.050
1+60	1+95	0.045
1+95	2+88	0.050

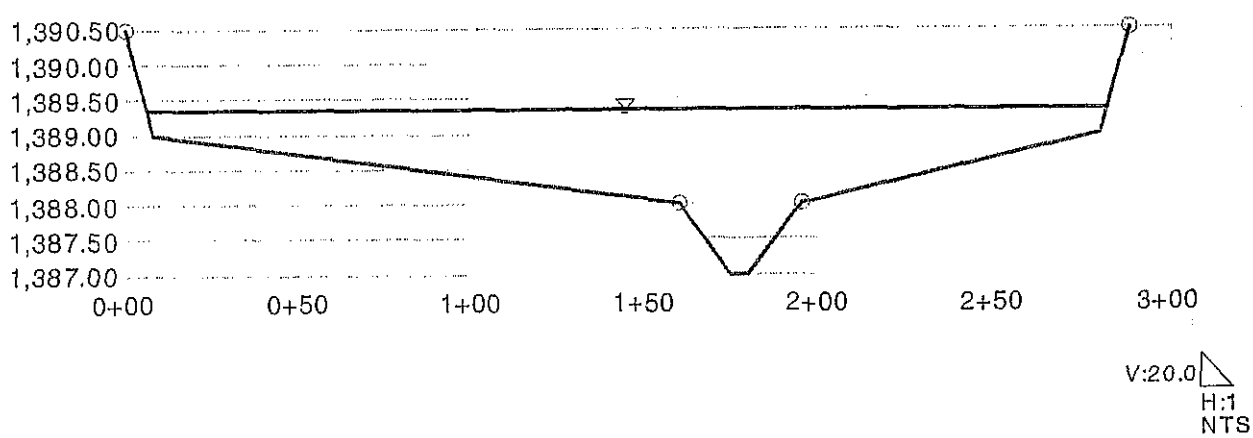
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,390.50
0+08	1,389.00
1+60	1,388.00
1+75	1,387.00
1+80	1,387.00
1+95	1,388.00
2+80	1,389.00
2+88	1,390.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006500	ft/ft
Water Surface Elevation	1,389.35	ft
Elevation Range	1,387.00 to 1,390.50	
Discharge	652.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006500	ft/ft
Discharge	24.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,386.93	ft
Elevation Range	1,386.00 to 1,388.00	
Flow Area	13.3	ft²
Wetted Perimeter	23.66	ft
Top Width	23.57	ft
Actual Depth	0.93	ft
Critical Elevation	1,386.61	ft
Critical Slope	0.040475	ft/ft
Velocity	1.81	ft/s
Velocity Head	0.05	ft
Specific Energy	1,386.98	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+00	0.050
3+00	3+25	0.045
3+25	6+25	0.050

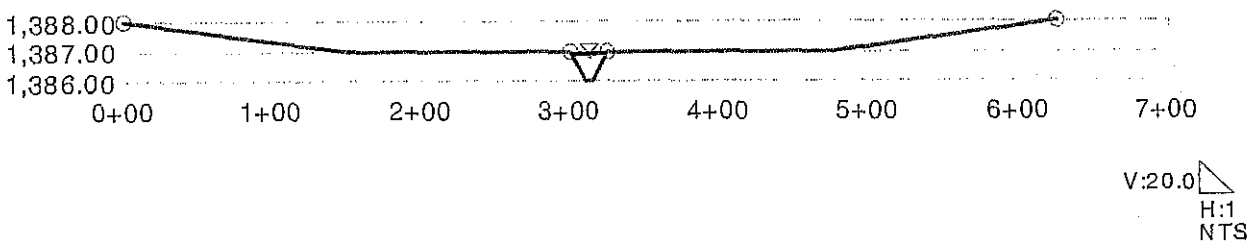
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,388.00
1+50	1,387.00
3+00	1,387.00
3+10	1,386.00
3+15	1,386.00
3+25	1,387.00
4+75	1,387.00
6+25	1,388.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.006500	ft/ft
Water Surface Elevation	1,386.93	ft
Elevation Range	1,386.00 to 1,388.00	
Discharge	24.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006000	ft/ft
Discharge	1,357.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,308.82	ft
Elevation Range	1,307.00 to 1,310.00	
Flow Area	579.5	ft²
Wetted Perimeter	615.59	ft
Top Width	615.58	ft
Actual Depth	1.82	ft
Critical Elevation	1,308.28	ft
Critical Slope	0.037146	ft/ft
Velocity	2.34	ft/s
Velocity Head	0.09	ft
Specific Energy	1,308.91	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+26	0.050
3+26	6+74	0.045
6+74	10+00	0.050

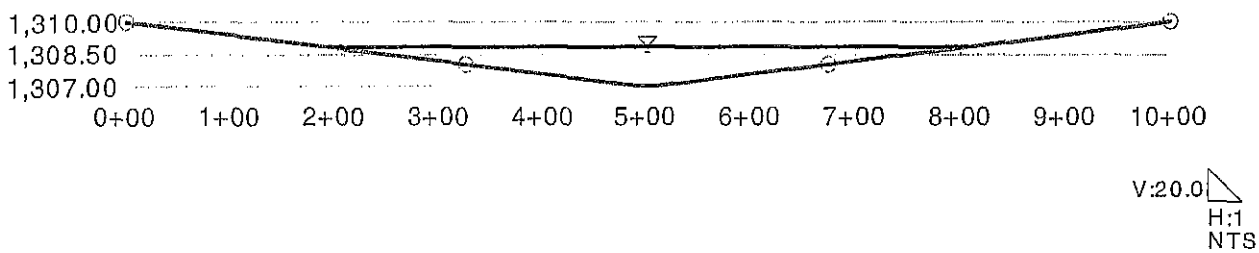
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,310.00
1+63	1,309.00
3+26	1,308.00
4+90	1,307.00
5+10	1,307.00
6+74	1,308.00
8+37	1,309.00
10+00	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.006000	ft/ft
Water Surface Elevation	1,308.82	ft
Elevation Range	1,307.00 to 1,310.00	
Discharge	1,357.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	97.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,388.52	ft
Elevation Range	1,387.00 to 1,390.00	
Flow Area	70.4	ft²
Wetted Perimeter	159.44	ft
Top Width	159.37	ft
Actual Depth	1.52	ft
Critical Elevation	1,388.14	ft
Critical Slope	0.043357	ft/ft
Velocity	1.38	ft/s
Velocity Head	0.03	ft
Specific Energy	1,388.55	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+25	0.050
3+25	3+60	0.045
3+60	5+40	0.050

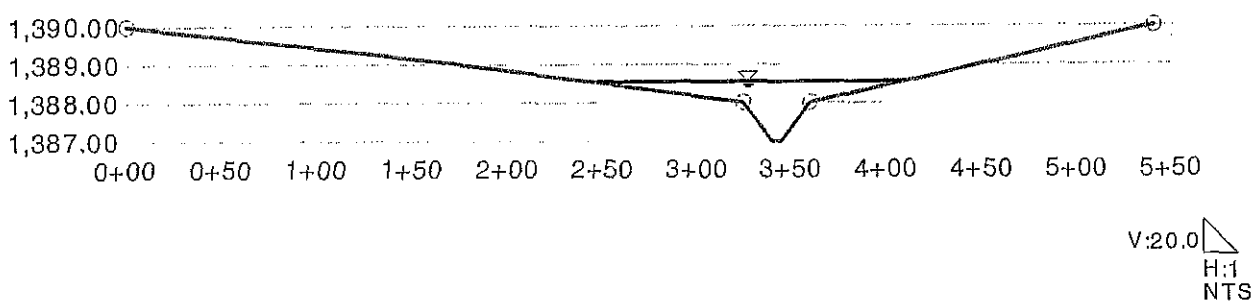
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,390.00
1+75	1,389.00
3+25	1,388.00
3+40	1,387.00
3+45	1,387.00
3+60	1,388.00
4+50	1,389.00
5+40	1,390.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005600	ft/ft
Water Surface Elevation	1,388.52	ft
Elevation Range	1,387.00 to 1,390.00	
Discharge	97.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005800	ft/ft
Discharge	989.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,307.61	ft
Elevation Range	1,306.00 to 1,308.50	
Flow Area	524.8	ft²
Wetted Perimeter	712.65	ft
Top Width	712.55	ft
Actual Depth	1.61	ft
Critical Elevation	1,307.21	ft
Critical Slope	0.046118	ft/ft
Velocity	1.88	ft/s
Velocity Head	0.06	ft
Specific Energy	1,307.66	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	5+50	0.045
5+50	9+50	0.050

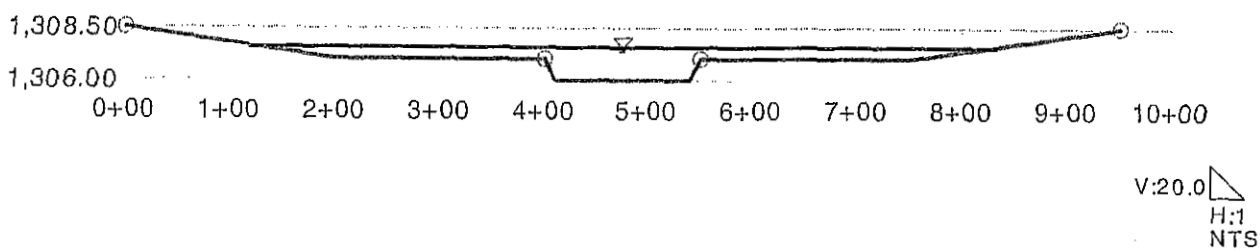
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,308.50
2+00	1,307.00
4+00	1,307.00
4+10	1,306.00
5+40	1,306.00
5+50	1,307.00
7+50	1,307.00
9+50	1,308.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005800	ft/ft
Water Surface Elevation	1,307.61	ft
Elevation Range	1,306.00 to 1,308.50	
Discharge	989.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005300	ft/ft
Discharge	224.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,343.94	ft
Elevation Range	1,343.00 to 1,345.00	
Flow Area	102.7	ft²
Wetted Perimeter	118.87	ft
Top Width	118.78	ft
Actual Depth	0.94	ft
Critical Elevation	1,343.53	ft
Critical Slope	0.037118	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	1,344.01	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+40	0.050
3+40	4+60	0.045
4+60	9+00	0.050

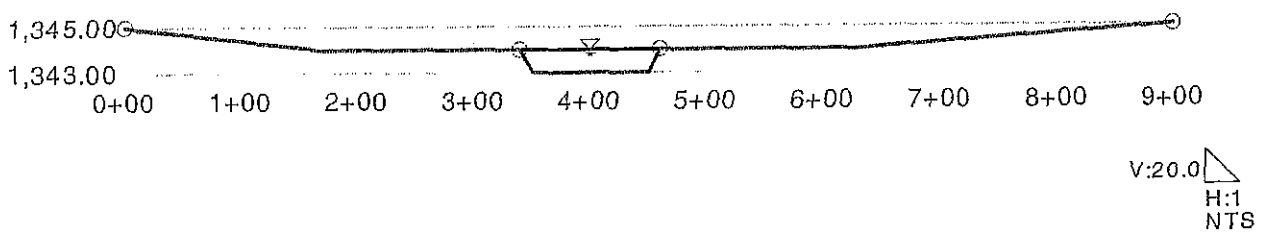
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,345.00
1+70	1,344.00
3+40	1,344.00
3+50	1,343.00
4+50	1,343.00
4+60	1,344.00
6+30	1,344.00
9+00	1,345.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.045
Slope	0.005300 ft/ft
Water Surface Elevation	1,343.94 ft
Elevation Range	1,343.00 to 1,345.00
Discharge	224.00 cfs



Project Summary Report

Project Description	
Worksheet	RDE32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	224.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,353.48	ft
Elevation Range	1,352.00 to 1,354.50	
Flow Area	166.4	ft²
Wetted Perimeter	355.19	ft
Top Width	355.09	ft
Actual Depth	1.48	ft
Critical Elevation	1,353.22	ft
Critical Slope	0.056218	ft/ft
Velocity	1.35	ft/s
Velocity Head	0.03	ft
Specific Energy	1,353.51	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+75	0.045
2+75	5+25	0.050

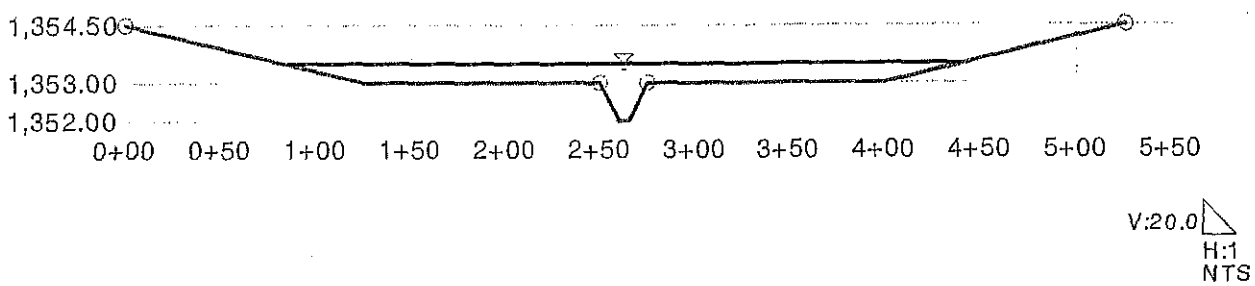
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,354.50
1+25	1,353.00
2+50	1,353.00
2+60	1,352.00
2+65	1,352.00
2+75	1,353.00
4+00	1,353.00
5+25	1,354.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005500	ft/ft
Water Surface Elevation	1,353.48	ft
Elevation Range	1,352.00 to 1,354.50	
Discharge	*224.00*	*cfs*



Project Summary Report

Project Description	
Worksheet	RDE33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	38.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,357.00	ft
Elevation Range	1,356.00 to 1,360.00	
Flow Area	20.1	ft²
Wetted Perimeter	30.20	ft
Top Width	30.10	ft
Actual Depth	1.00	ft
Critical Elevation	1,356.62	ft
Critical Slope	0.038718	ft/ft
Velocity	1.89	ft/s
Velocity Head	0.06	ft
Specific Energy	1,357.06	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+70	0.050
2+70	3+20	0.045
3+20	5+90	0.050

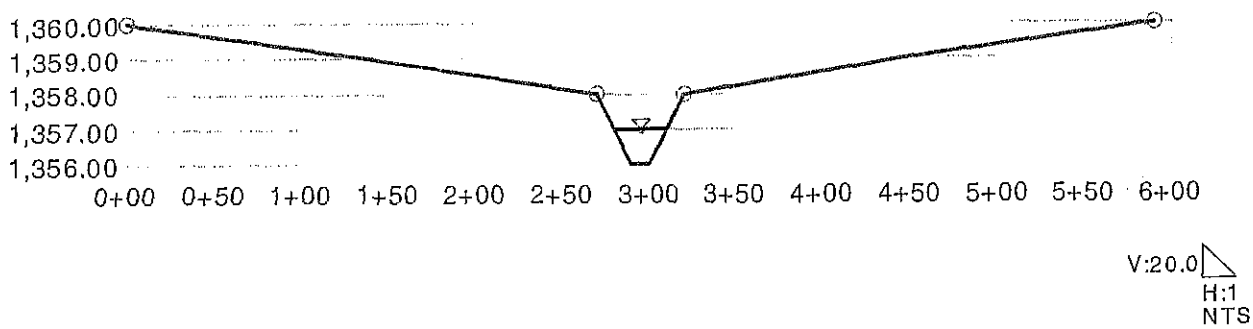
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,360.00
1+35	1,359.00
2+70	1,358.00
2+90	1,356.00
3+00	1,356.00
3+20	1,358.00
4+50	1,359.00
5+90	1,360.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE33
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.045	
Slope	0.005600	ft/ft
Water Surface Elevation	1,357.00	ft
Elevation Range	1,356.00 to 1,360.00	
Discharge	38.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	130.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,327.72	ft
Elevation Range	1,327.00 to 1,330.00	
Flow Area	98.9	ft²
Wetted Perimeter	255.16	ft
Top Width	255.16	ft
Actual Depth	0.72	ft
Critical Elevation	1,327.47	ft
Critical Slope	0.046215	ft/ft
Velocity	1.31	ft/s
Velocity Head	0.03	ft
Specific Energy	1,327.75	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

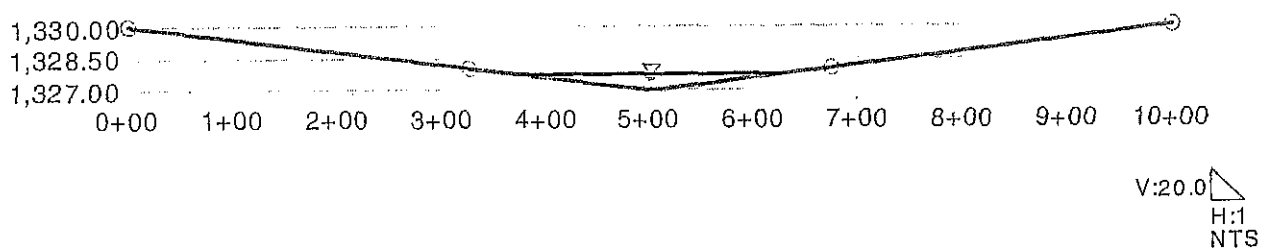
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,330.00
1+63	1,329.00
3+27	1,328.00
4+90	1,327.00
5+10	1,327.00
6+74	1,328.00
8+37	1,329.00
10+00	1,330.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005600	ft/ft
Water Surface Elevation	1,327.72	ft
Elevation Range	1,327.00 to 1,330.00	
Discharge	130.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	85.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,307.61	ft
Elevation Range	1,307.00 to 1,310.00	
Flow Area	72.5	ft²
Wetted Perimeter	218.62	ft
Top Width	218.62	ft
Actual Depth	0.61	ft
Critical Elevation	1,307.39	ft
Critical Slope	0.048944	ft/ft
Velocity	1.17	ft/s
Velocity Head	0.02	ft
Specific Energy	1,307.63	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

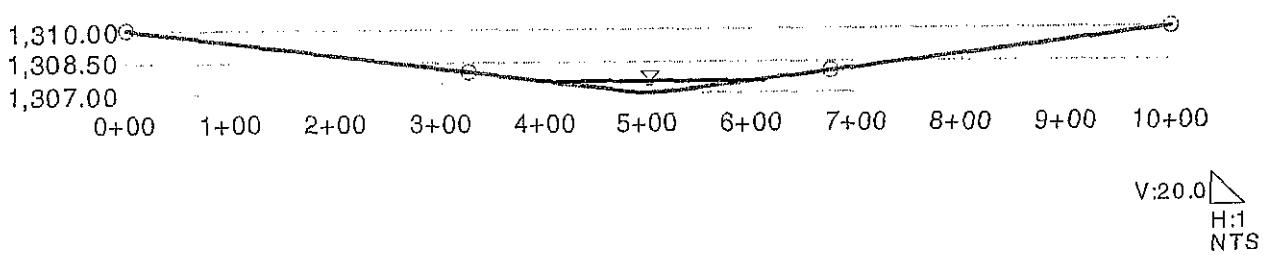
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,310.00
1+63	1,309.00
3+27	1,308.00
4+90	1,307.00
5+10	1,307.00
6+74	1,308.00
8+37	1,309.00
10+00	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005500	ft/ft
Water Surface Elevation	1,307.61	ft
Elevation Range	1,307.00 to 1,310.00	
Discharge	85.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005900	ft/ft
Discharge	779.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,307.72	ft
Elevation Range	1,306.00 to 1,309.00	
Flow Area	454.7	ft²
Wetted Perimeter	704.00	ft
Top Width	703.90	ft
Actual Depth	1.72	ft
Critical Elevation	1,307.37	ft
Critical Slope	0.050440	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	1,307.76	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	5+25	0.045
5+25	10+25	0.050

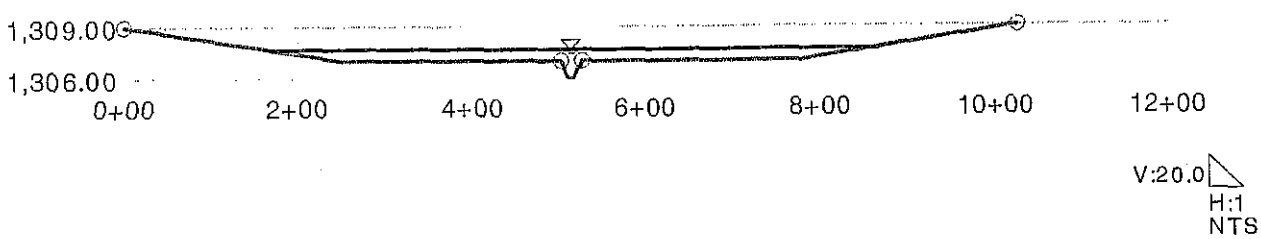
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,309.00
2+50	1,307.00
5+00	1,307.00
5+10	1,306.00
5+15	1,306.00
5+25	1,307.00
7+75	1,307.00
10+25	1,309.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE38
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.005900	ft/ft
Water Surface Elevation	1,307.72	ft
Elevation Range	1,306.00 to 1,309.00	
Discharge	779.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE53
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005300	ft/ft
Discharge	162.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,343.78	ft
Elevation Range	1,343.00 to 1,345.00	
Flow Area	83.6	ft²
Wetted Perimeter	115.60	ft
Top Width	115.52	ft
Actual Depth	0.78	ft
Critical Elevation	1,343.43	ft
Critical Slope	0.039721	ft/ft
Velocity	1.94	ft/s
Velocity Head	0.06	ft
Specific Energy	1,343.83	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+40	0.050
3+40	4+60	0.045
4+60	9+00	0.050

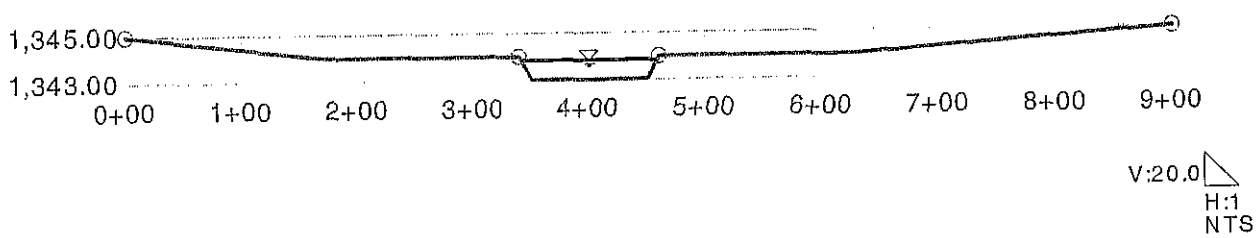
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,345.00
1+70	1,344.00
3+40	1,344.00
3+50	1,343.00
4+50	1,343.00
4+60	1,344.00
6+30	1,344.00
9+00	1,345.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE53
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005300	ft/ft
Water Surface Elevation	1,343.78	ft
Elevation Range	1,343.00 to 1,345.00	
Discharge	162.00	cfs



Project Summary Report

Project Description	
Worksheet	RDE54
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005500	ft/ft
Discharge	249.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,307.94	ft
Elevation Range	1,307.00 to 1,310.00	
Flow Area	162.1	ft²
Wetted Perimeter	326.20	ft
Top Width	326.19	ft
Actual Depth	0.94	ft
Critical Elevation	1,307.62	ft
Critical Slope	0.042348	ft/ft
Velocity	1.54	ft/s
Velocity Head	0.04	ft
Specific Energy	1,307.97	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+27	0.050
3+27	6+74	0.045
6+74	10+00	0.050

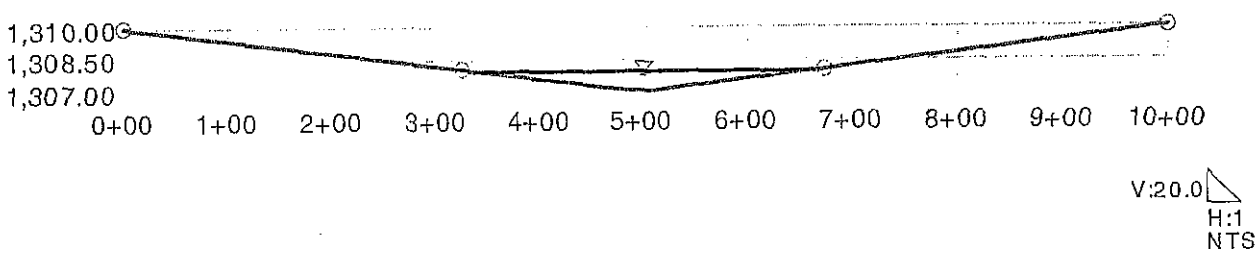
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,310.00
1+63	1,309.00
3+27	1,308.00
4+90	1,307.00
5+10	1,307.00
6+74	1,308.00
8+37	1,309.00
10+00	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDE54
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005500	ft/ft
Water Surface Elevation	1,307.94	ft
Elevation Range	1,307.00 to 1,310.00	
Discharge	249.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005300	ft/ft
Discharge	1,070.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,579.14	ft
Elevation Range	1,577.00 to 1,580.00	
Flow Area	346.6	ft²
Wetted Perimeter	235.32	ft
Top Width	235.13	ft
Actual Depth	2.14	ft
Critical Elevation	1,578.51	ft
Critical Slope	0.031299	ft/ft
Velocity	3.09	ft/s
Velocity Head	0.15	ft
Specific Energy	1,579.29	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	1+85	0.045
1+85	2+44	0.050

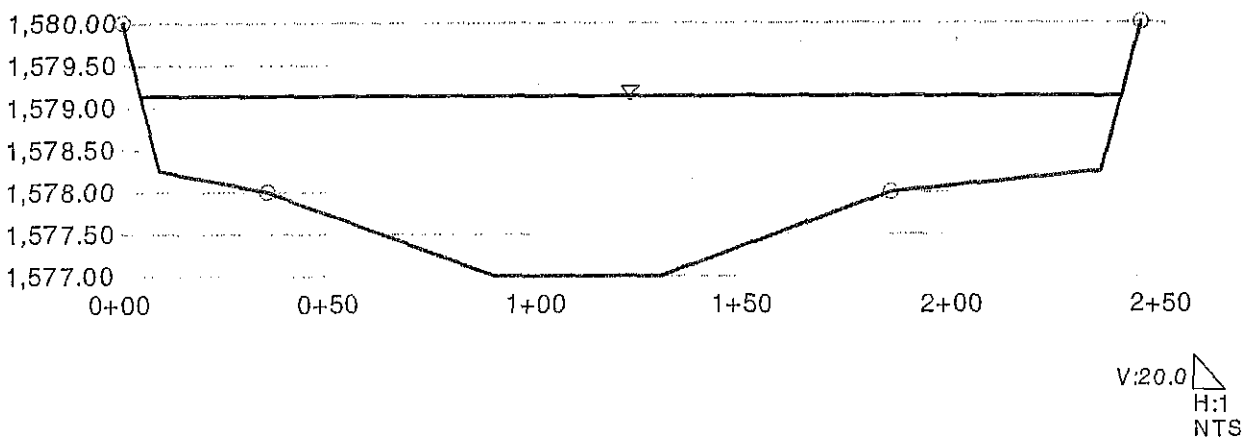
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,580.00
0+09	1,578.25
0+35	1,578.00
0+90	1,577.00
1+30	1,577.00
1+85	1,578.00
2+35	1,578.25
2+44	1,580.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005300	ft/ft
Water Surface Elevation	1,579.14	ft
Elevation Range	1,577.00 to 1,580.00	
Discharge	1,070.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007900	ft/ft
Discharge	130.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,624.16	ft
Elevation Range	1,623.00 to 1,625.00	
Flow Area	129.5	ft²
Wetted Perimeter	563.59	ft
Top Width	563.55	ft
Actual Depth	1.16	ft
Critical Elevation	1,623.82	ft
Critical Slope	0.044612	ft/ft
Velocity	1.00	ft/s
Velocity Head	0.02	ft
Specific Energy	1,624.17	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	4+75	0.045
4+75	9+00	0.050

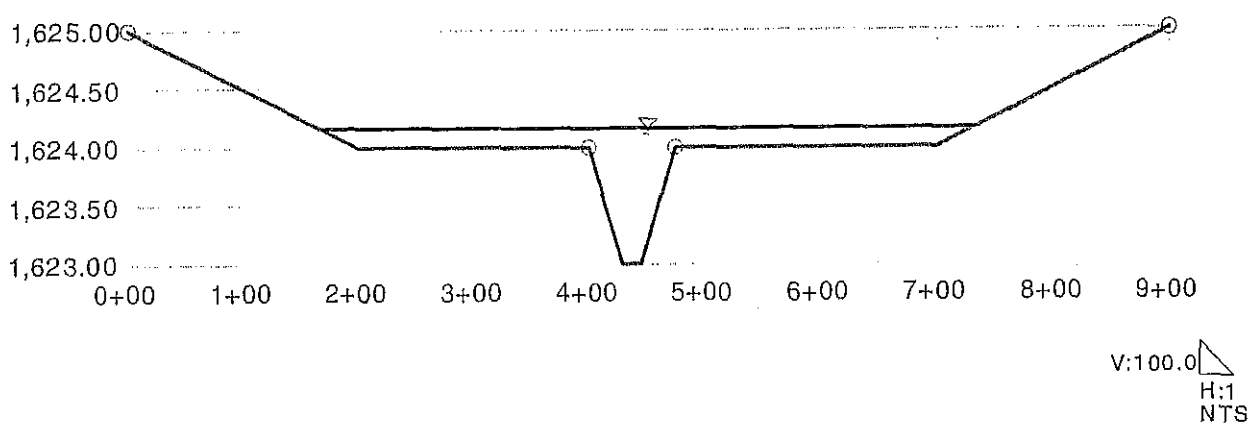
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,625.00
2+00	1,624.00
4+00	1,624.00
4+30	1,623.00
4+45	1,623.00
4+75	1,624.00
7+00	1,624.00
9+00	1,625.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.007900	ft/ft
Water Surface Elevation	1,624.16	ft
Elevation Range	1,623.00 to 1,625.00	
Discharge	130.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.008700	ft/ft
Discharge	961.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,579.47	ft
Elevation Range	1,577.00 to 1,580.00	
Flow Area	280.6	ft²
Wetted Perimeter	216.14	ft
Top Width	215.94	ft
Actual Depth	2.47	ft
Critical Elevation	1,579.01	ft
Critical Slope	0.035546	ft/ft
Velocity	3.42	ft/s
Velocity Head	0.18	ft
Specific Energy	1,579.65	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+30	0.045
1+30	2+21	0.050

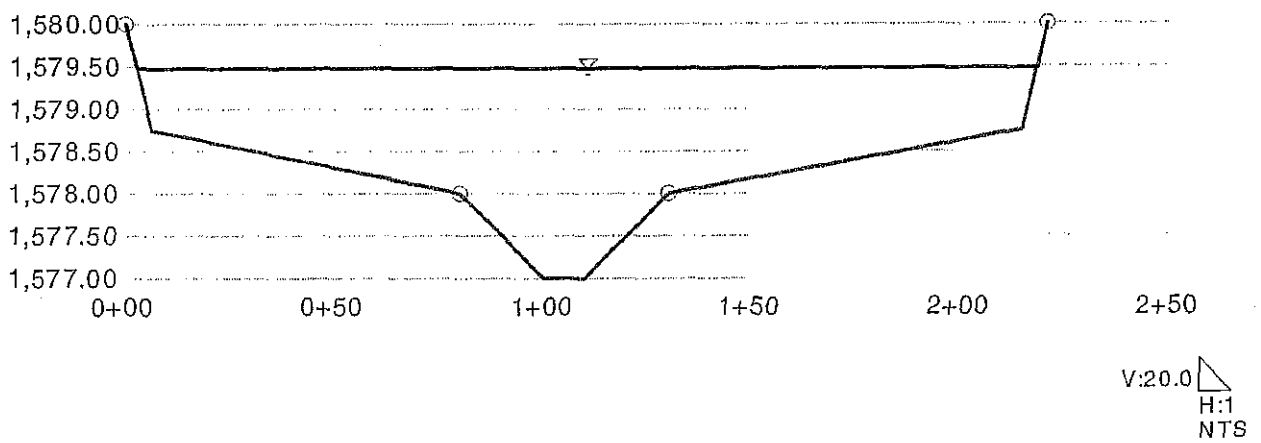
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,580.00
0+06	1,578.75
0+80	1,578.00
1+00	1,577.00
1+10	1,577.00
1+30	1,578.00
2+15	1,578.75
2+21	1,580.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	*0.008700*	*ft/ft*
Water Surface Elevation	1,579.47	ft
Elevation Range	1,577.00 to 1,580.00	
Discharge	961.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	1,509.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,545.14	ft
Elevation Range	1,543.00 to 1,546.00	
Flow Area	566.8	ft^2
Wetted Perimeter	441.65	ft
Top Width	441.40	ft
Actual Depth	2.14	ft
Critical Elevation	1,544.56	ft
Critical Slope	0.035337	ft/ft
Velocity	2.66	ft/s
Velocity Head	0.11	ft
Specific Energy	1,545.25	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+60	0.050
1+60	2+90	0.045
2+90	4+50	0.050

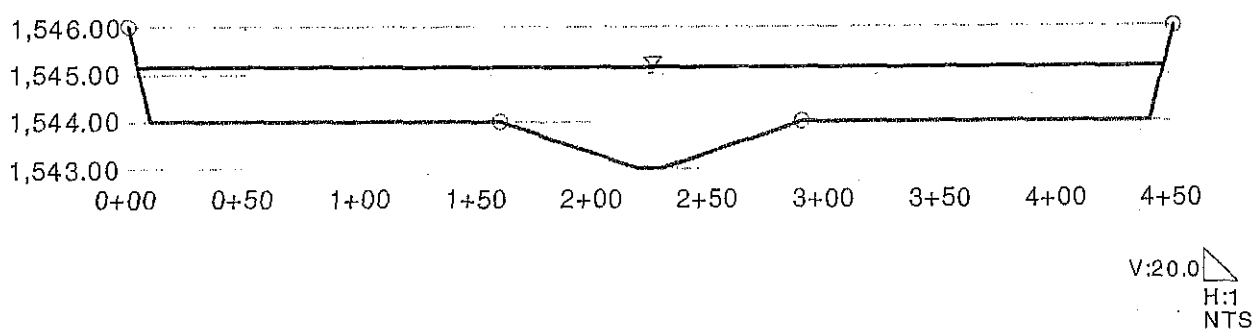
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,546.00
0+10	1,544.00
1+60	1,544.00
2+20	1,543.00
2+30	1,543.00
2+90	1,544.00
4+40	1,544.00
4+50	1,546.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005000	ft/ft
Water Surface Elevation	1,545.14	ft
Elevation Range	1,543.00 to 1,546.00	
Discharge	1,509.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005400	ft/ft
Discharge	2,107.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,504.96	ft
Elevation Range	1,503.00 to 1,506.00	
Flow Area	853.8	ft²
Wetted Perimeter	759.79	ft
Top Width	759.59	ft
Actual Depth	1.96	ft
Critical Elevation	1,504.45	ft
Critical Slope	0.039018	ft/ft
Velocity	2.47	ft/s
Velocity Head	0.09	ft
Specific Energy	1,505.05	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+60	0.050
2+60	5+10	0.045
5+10	7+70	0.050

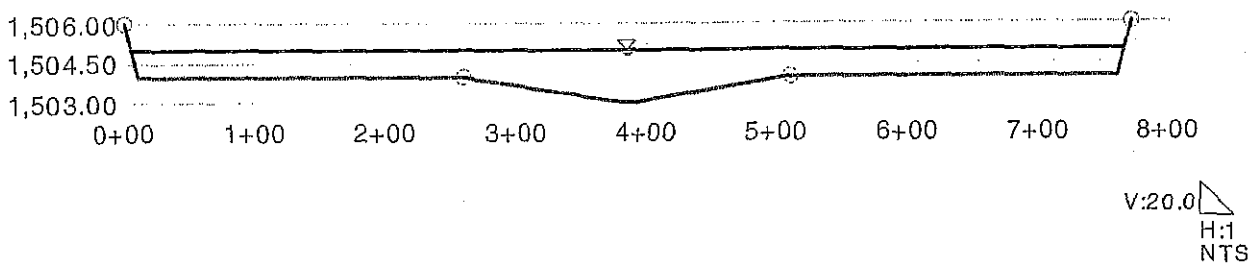
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,506.00
0+10	1,504.00
2+60	1,504.00
3+80	1,503.00
3+90	1,503.00
5+10	1,504.00
7+60	1,504.00
7+70	1,506.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.005400	ft/ft
Water Surface Elevation	1,504.96	ft
Elevation Range	1,503.00 to 1,506.00	
Discharge	2,107.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	913.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,549.52	ft
Elevation Range	1,547.00 to 1,550.50	
Flow Area	326.6	ft²
Wetted Perimeter	249.08	ft
Top Width	248.87	ft
Actual Depth	2.52	ft
Critical Elevation	1,548.94	ft
Critical Slope	0.033035	ft/ft
Velocity	2.80	ft/s
Velocity Head	0.12	ft
Specific Energy	1,549.64	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+85	0.050
0+85	1+35	0.045
1+35	2+59	0.050

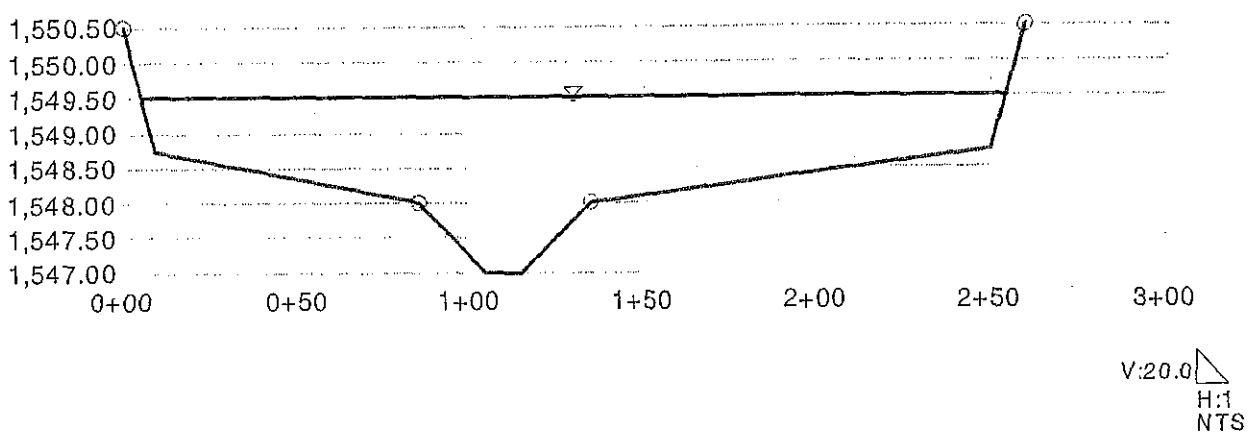
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,550.50
0+09	1,548.75
0+85	1,548.00
1+05	1,547.00
1+15	1,547.00
1+35	1,548.00
2+50	1,548.75
2+59	1,550.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005100	ft/ft
Water Surface Elevation	1,549.52	ft
Elevation Range	1,547.00 to 1,550.50	
Discharge	913.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	2,616.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,465.39	ft
Elevation Range	1,462.50 to 1,466.00	
Flow Area	914.1	ft²
Wetted Perimeter	671.65	ft
Top Width	671.46	ft
Actual Depth	2.89	ft
Critical Elevation	1,464.80	ft
Critical Slope	0.032016	ft/ft
Velocity	2.86	ft/s
Velocity Head	0.13	ft
Specific Energy	1,465.51	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+60	0.050
2+60	4+10	0.045
4+10	6+78	0.050

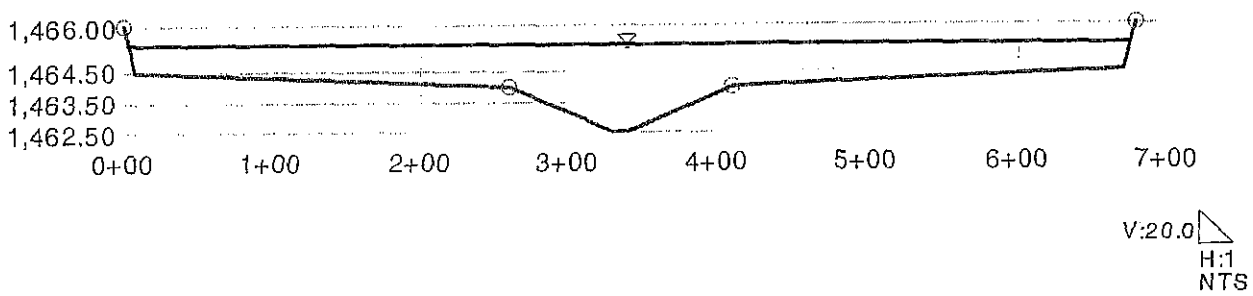
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,466.00
0+08	1,464.50
2+60	1,464.00
3+30	1,462.50
3+40	1,462.50
4+10	1,464.00
6+70	1,464.50
6+78	1,466.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.045	
Slope	0.005000	ft/ft
Water Surface Elevation	1,465.39	ft
Elevation Range	1,462.50 to 1,466.00	
Discharge	2,616.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	1,948.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,409.75	ft
Elevation Range	1,407.00 to 1,411.00	
Flow Area	658.2	ft²
Wetted Perimeter	448.19	ft
Top Width	447.97	ft
Actual Depth	2.75	ft
Critical Elevation	1,409.11	ft
Critical Slope	0.031805	ft/ft
Velocity	2.96	ft/s
Velocity Head	0.14	ft
Specific Energy	1,409.88	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+80	0.050
1+80	2+80	0.045
2+80	4+58	0.050

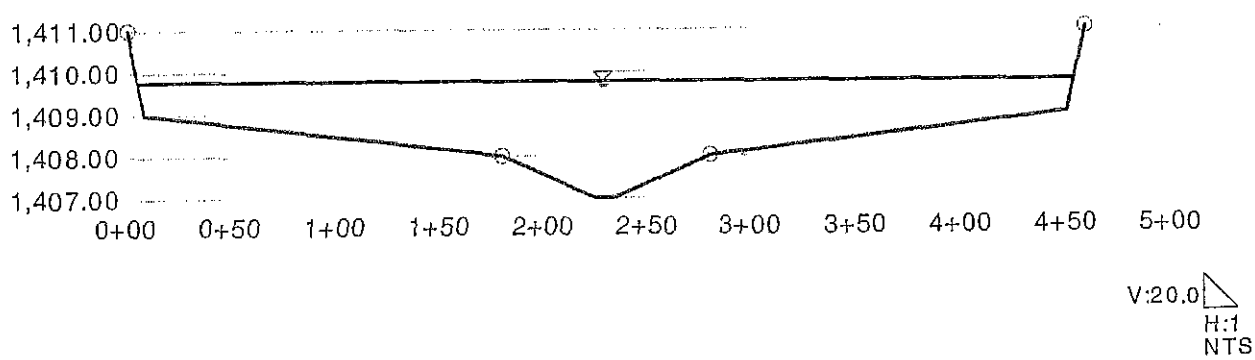
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,411.00
0+08	1,409.00
1+80	1,408.00
2+25	1,407.00
2+35	1,407.00
2+80	1,408.00
4+50	1,409.00
4+58	1,411.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004900	ft/ft
Water Surface Elevation	1,409.75	ft
Elevation Range	1,407.00 to 1,411.00	
Discharge	1,948.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	1,895.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,348.95	ft
Elevation Range	1,347.00 to 1,350.00	
Flow Area	671.8	ft²
Wetted Perimeter	508.36	ft
Top Width	508.22	ft
Actual Depth	1.95	ft
Critical Elevation	1,348.38	ft
Critical Slope	0.032742	ft/ft
Velocity	2.82	ft/s
Velocity Head	0.12	ft
Specific Energy	1,349.08	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	4+60	0.045
4+60	5+19	0.050

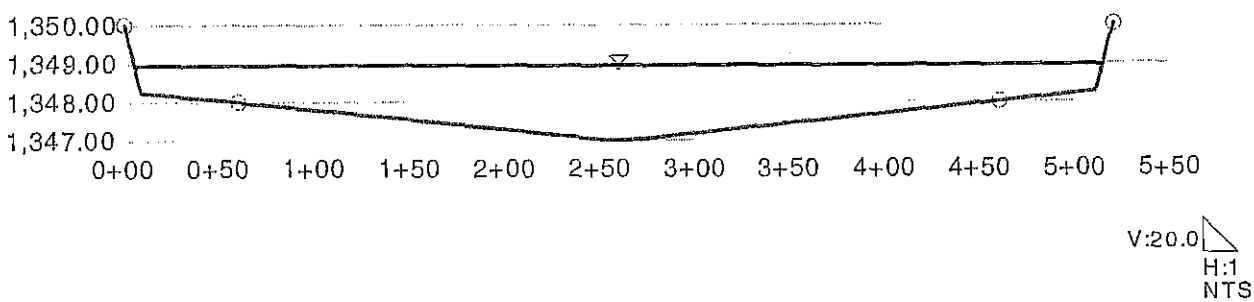
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,350.00
0+09	1,348.25
0+60	1,348.00
2+55	1,347.00
2+65	1,347.00
4+60	1,348.00
5+10	1,348.25
5+19	1,350.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.005100	ft/ft
Water Surface Elevation	1,348.95	ft
Elevation Range	1,347.00 to 1,350.00	
Discharge	1,895.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	1,469.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,379.22	ft
Elevation Range	1,377.00 to 1,380.00	
Flow Area	529.4	ft²
Wetted Perimeter	389.86	ft
Top Width	389.71	ft
Actual Depth	2.22	ft
Critical Elevation	1,378.62	ft
Critical Slope	0.034288	ft/ft
Velocity	2.77	ft/s
Velocity Head	0.12	ft
Specific Energy	1,379.34	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+10	0.050
1+10	3+10	0.045
3+10	3+98	0.050

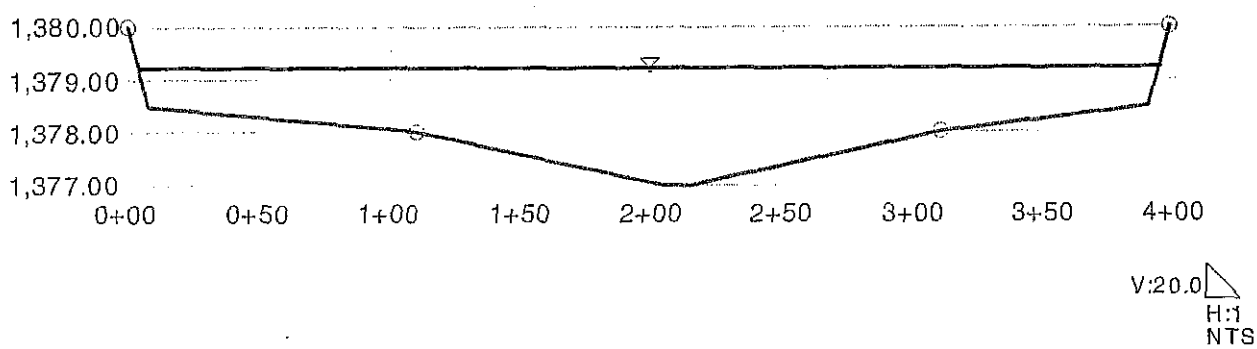
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,380.00
0+08	1,378.50
1+10	1,378.00
2+05	1,377.00
2+15	1,377.00
3+10	1,378.00
3+90	1,378.50
3+98	1,380.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.005000	ft/ft
Water Surface Elevation	1,379.22	ft
Elevation Range	1,377.00 to 1,380.00	
Discharge	1,469.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005600	ft/ft
Discharge	644.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,384.15	ft
Elevation Range	1,382.00 to 1,384.80	
Flow Area	255.4	ft²
Wetted Perimeter	231.29	ft
Top Width	230.96	ft
Actual Depth	2.15	ft
Critical Elevation	1,383.66	ft
Critical Slope	0.037771	ft/ft
Velocity	2.52	ft/s
Velocity Head	0.10	ft
Specific Energy	1,384.25	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+36	0.050

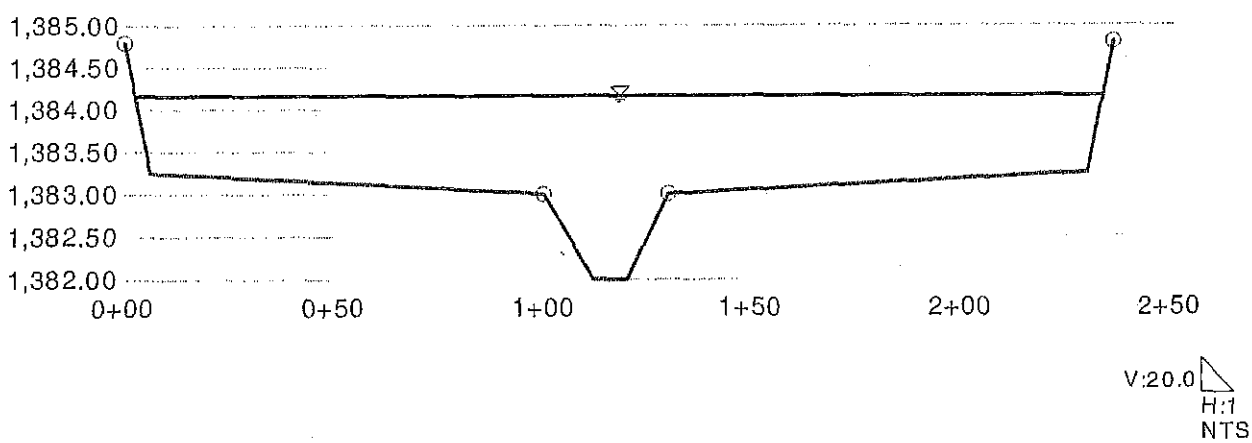
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,384.80
0+06	1,383.25
1+00	1,383.00
1+12	1,382.00
1+20	1,382.00
1+30	1,383.00
2+30	1,383.25
2+36	1,384.80

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.005600	ft/ft
Water Surface Elevation	1,384.15	ft
Elevation Range	1,382.00 to 1,384.80	
Discharge	644.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006400	ft/ft
Discharge	103.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,389.24	ft
Elevation Range	1,388.00 to 1,390.00	
Flow Area	95.6	ft²
Wetted Perimeter	319.45	ft
Top Width	319.39	ft
Actual Depth	1.24	ft
Critical Elevation	1,388.96	ft
Critical Slope	0.042159	ft/ft
Velocity	1.08	ft/s
Velocity Head	0.02	ft
Specific Energy	1,389.26	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+40	0.045
2+40	4+90	0.050

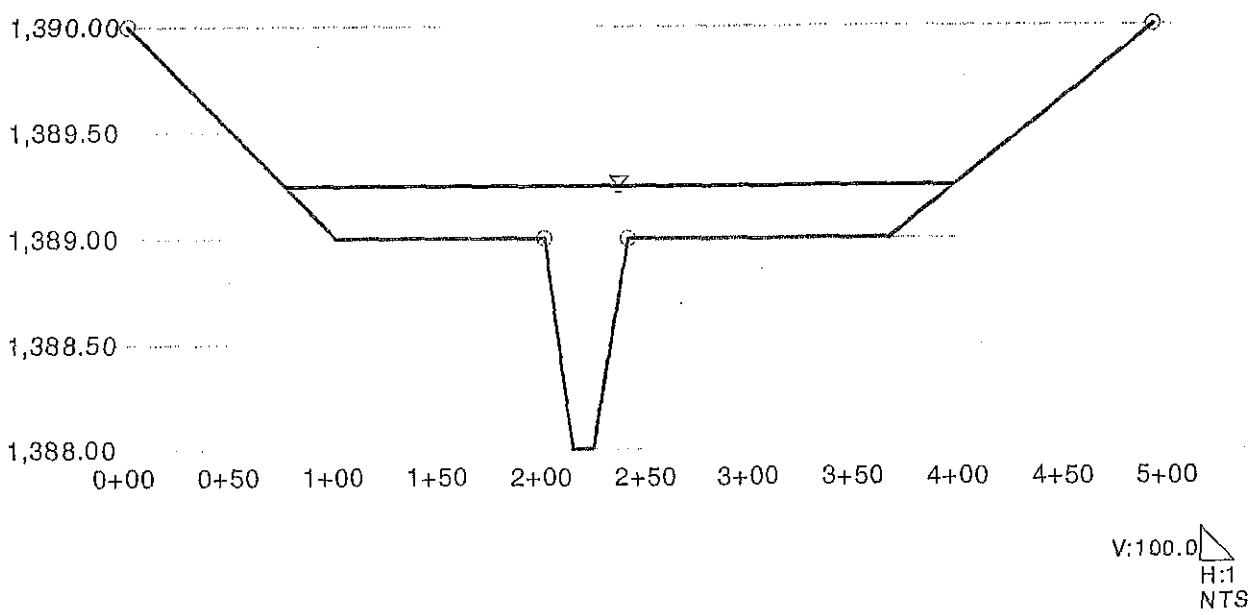
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,390.00
1+00	1,389.00
2+00	1,389.00
2+15	1,388.00
2+25	1,388.00
2+40	1,389.00
3+65	1,389.00
4+90	1,390.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006400	ft/ft
Water Surface Elevation	1,389.24	ft
Elevation Range	1,388.00 to 1,390.00	
Discharge	103.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006400	ft/ft
Discharge	56.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,389.14	ft
Elevation Range	1,388.00 to 1,390.00	
Flow Area	64.4	ft^2
Wetted Perimeter	296.61	ft
Top Width	296.55	ft
Actual Depth	1.14	ft
Critical Elevation	1,388.70	ft
Critical Slope	0.045876	ft/ft
Velocity	0.87	ft/s
Velocity Head	0.01	ft
Specific Energy	1,389.15	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+40	0.045
2+40	4+90	0.050

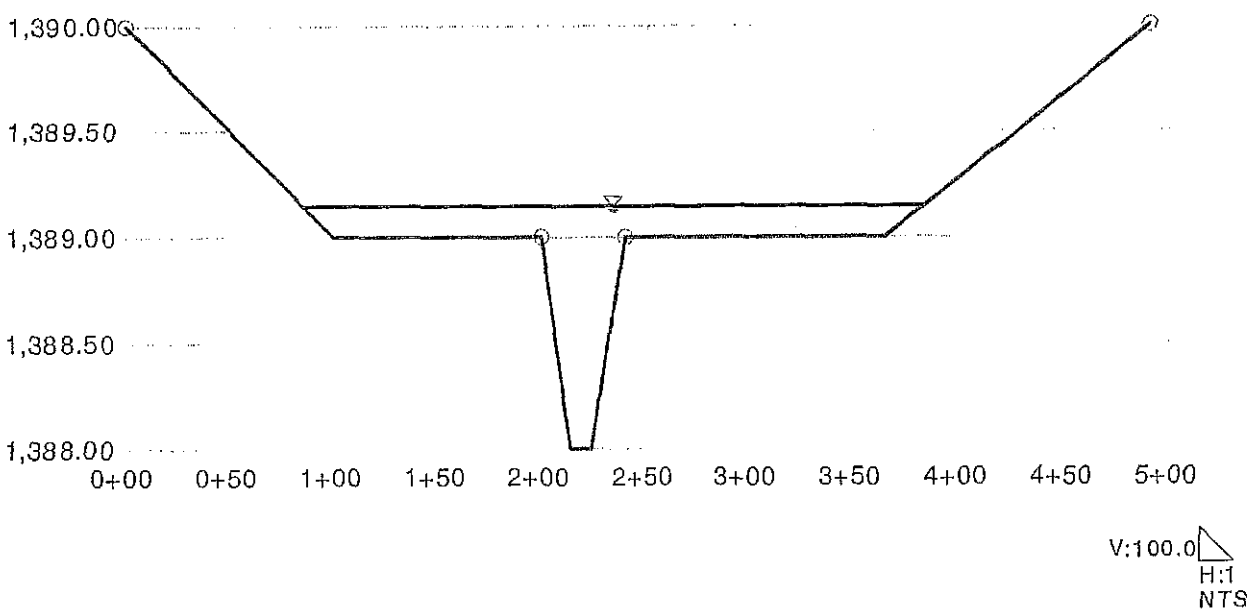
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,390.00
1+00	1,389.00
2+00	1,389.00
2+15	1,388.00
2+25	1,388.00
2+40	1,389.00
3+65	1,389.00
4+90	1,390.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	*RCPF13*
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006400	ft/ft
Water Surface Elevation	1,389.14	ft
Elevation Range	1,388.00 to 1,390.00	
Discharge	56.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.006600	ft/ft
Discharge	181.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,389.37	ft
Elevation Range	1,388.00 to 1,390.00	
Flow Area	137.6	ft²
Wetted Perimeter	347.74	ft
Top Width	347.67	ft
Actual Depth	1.37	ft
Critical Elevation	1,389.15	ft
Critical Slope	0.058561	ft/ft
Velocity	1.32	ft/s
Velocity Head	0.03	ft
Specific Energy	1,389.39	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+40	0.045
2+40	4+90	0.050

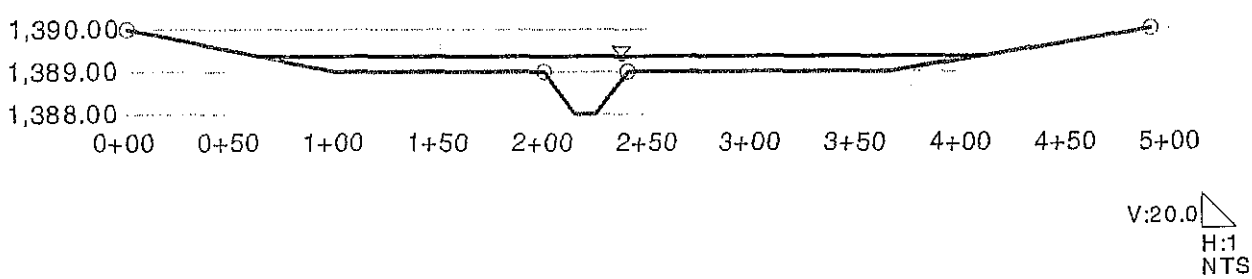
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,390.00
1+00	1,389.00
2+00	1,389.00
2+15	1,388.00
2+25	1,388.00
2+40	1,389.00
3+65	1,389.00
4+90	1,390.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.006600	ft/ft
Water Surface Elevation	1,389.37	ft
Elevation Range	1,388.00 to 1,390.00	
Discharge	181.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005000	ft/ft
Discharge	376.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,374.27	ft
Elevation Range	1,373.00 to 1,375.00	
Flow Area	346.7	ft²
Wetted Perimeter	964.40	ft
Top Width	964.39	ft
Actual Depth	1.27	ft
Critical Elevation	1,373.94	ft
Critical Slope	0.044150	ft/ft
Velocity	1.08	ft/s
Velocity Head	0.02	ft
Specific Energy	1,374.29	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	6+00	0.050
6+00	8+00	0.045
8+00	14+00	0.050

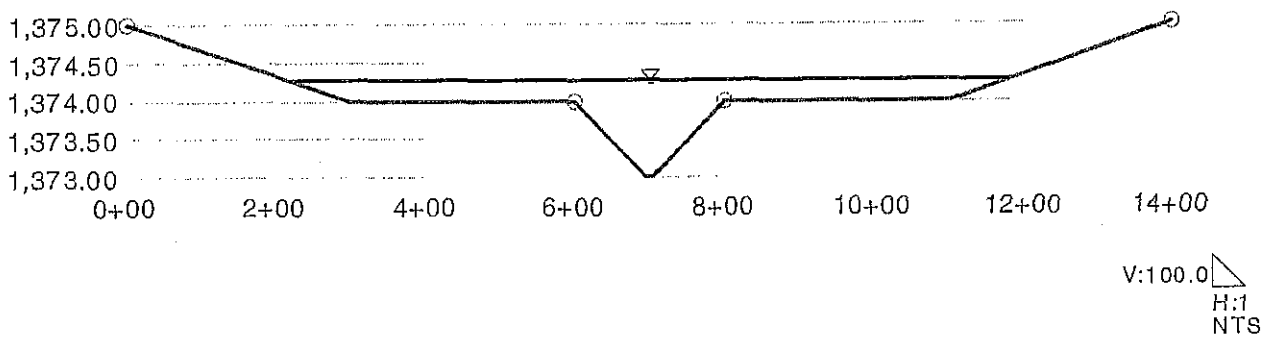
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,375.00
3+00	1,374.00
6+00	1,374.00
6+95	1,373.00
7+05	1,373.00
8+00	1,374.00
11+00	1,374.00
14+00	1,375.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005000	ft/ft
Water Surface Elevation	1,374.27	ft
Elevation Range	1,373.00 to 1,375.00	
Discharge	376.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004500	ft/ft
Discharge	170.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,357.32	ft
Elevation Range	1,356.00 to 1,358.00	
Flow Area	171.3	ft²
Wetted Perimeter	494.78	ft
Top Width	494.73	ft
Actual Depth	1.32	ft
Critical Elevation	1,357.10	ft
Critical Slope	0.064591	ft/ft
Velocity	0.99	ft/s
Velocity Head	0.02	ft
Specific Energy	1,357.33	ft
Froude Number	0.30	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+25	0.050
3+25	3+75	0.045
3+75	7+00	0.050

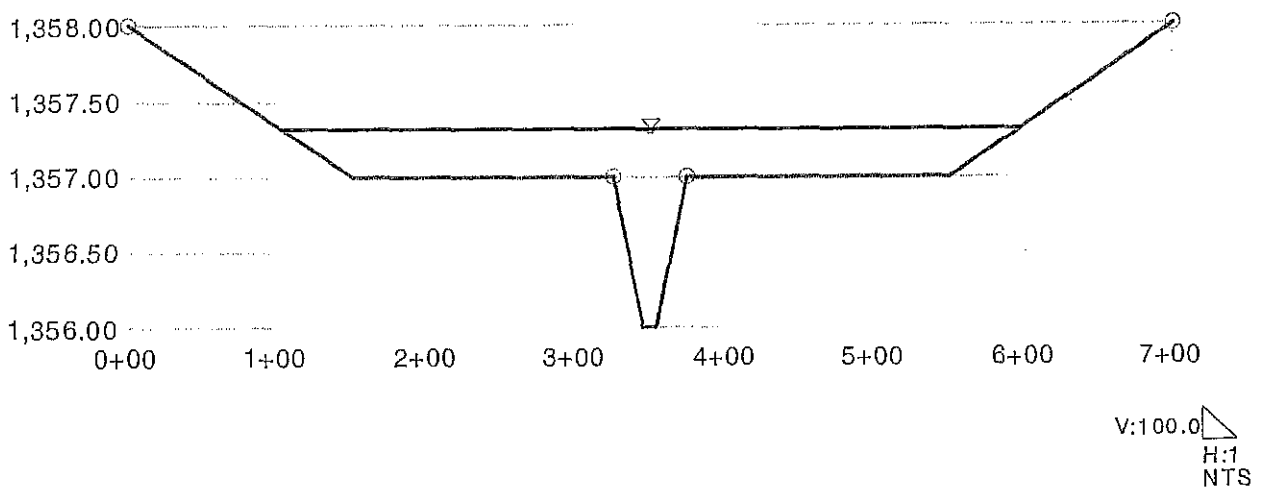
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,358.00
1+50	1,357.00
3+25	1,357.00
3+45	1,356.00
3+55	1,356.00
3+75	1,357.00
5+50	1,357.00
7+00	1,358.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.004500	ft/ft
Water Surface Elevation	1,357.32	ft
Elevation Range	1,356.00 to 1,358.00	
Discharge	170.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	701.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,365.80	ft
Elevation Range	1,364.00 to 1,367.00	
Flow Area	394.4	ft²
Wetted Perimeter	521.13	ft
Top Width	521.11	ft
Actual Depth	1.80	ft
Critical Elevation	1,365.24	ft
Critical Slope	0.041004	ft/ft
Velocity	1.78	ft/s
Velocity Head	0.05	ft
Specific Energy	1,365.85	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

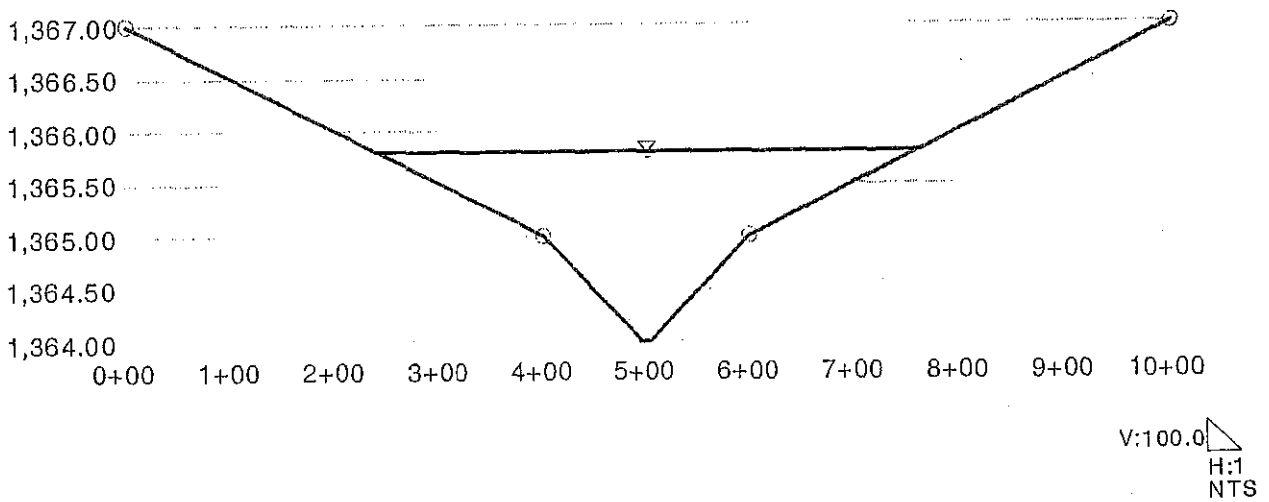
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,367.00
2+00	1,366.00
4+00	1,365.00
4+95	1,364.00
5+05	1,364.00
6+00	1,365.00
8+00	1,366.00
10+00	1,367.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004800	ft/ft
Water Surface Elevation	1,365.80	ft
Elevation Range	1,364.00 to 1,367.00	
Discharge	701.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004700	ft/ft
Discharge	698.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,369.63	ft
Elevation Range	1,368.00 to 1,370.00	
Flow Area	397.6	ft²
Wetted Perimeter	526.37	ft
Top Width	526.35	ft
Actual Depth	1.63	ft
Critical Elevation	1,369.20	ft
Critical Slope	0.044797	ft/ft
Velocity	1.76	ft/s
Velocity Head	0.05	ft
Specific Energy	1,369.68	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	4+00	0.045
4+00	6+00	0.050

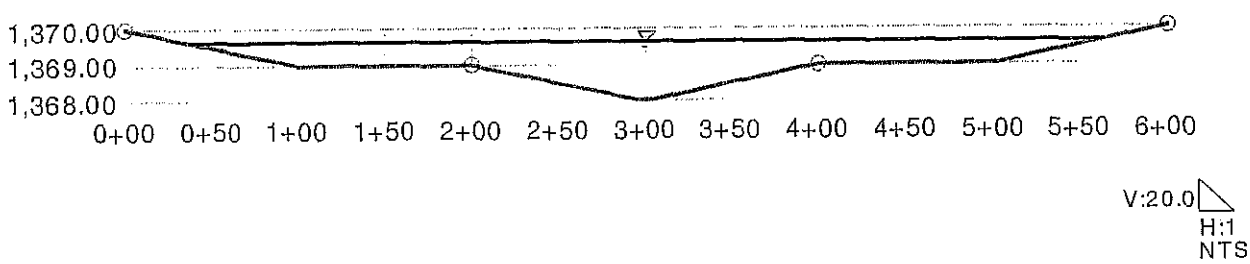
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,370.00
1+00	1,369.00
2+00	1,369.00
2+95	1,368.00
3+05	1,368.00
4+00	1,369.00
5+00	1,369.00
6+00	1,370.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF18
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004700	ft/ft
Water Surface Elevation	1,369.63	ft
Elevation Range	1,368.00 to 1,370.00	
Discharge	698.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004400	ft/ft
Discharge	920.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,328.98	ft
Elevation Range	1,327.00 to 1,330.00	
Flow Area	347.3	ft²
Wetted Perimeter	258.66	ft
Top Width	258.51	ft
Actual Depth	1.98	ft
Critical Elevation	1,328.36	ft
Critical Slope	0.032962	ft/ft
Velocity	2.65	ft/s
Velocity Head	0.11	ft
Specific Energy	1,329.09	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	2+35	0.045
2+35	2+69	0.050

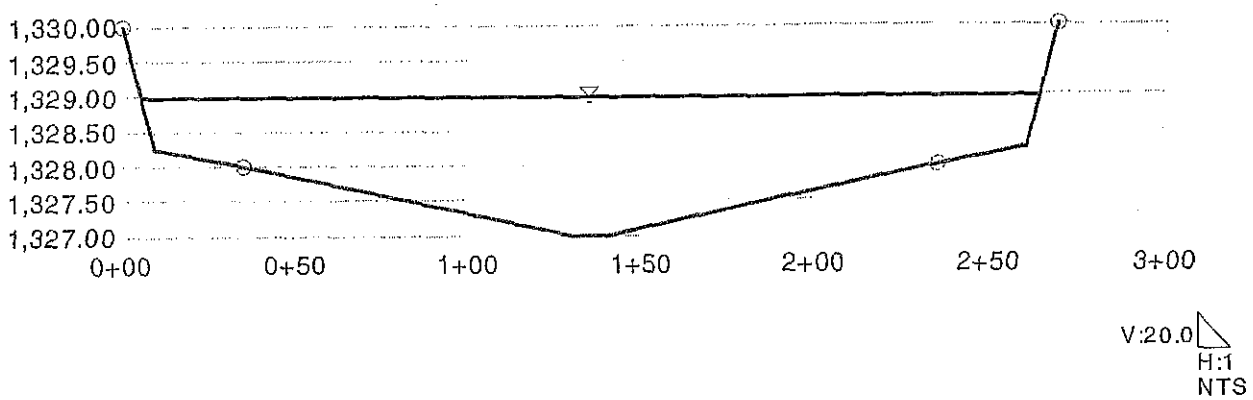
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,330.00
0+09	1,328.25
0+35	1,328.00
1+30	1,327.00
1+40	1,327.00
2+35	1,328.00
2+60	1,328.25
2+69	1,330.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004400	ft/ft
Water Surface Elevation	1,328.98	ft
Elevation Range	1,327.00 to 1,330.00	
Discharge	920.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF21
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.003400	ft/ft
Discharge	1,073.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,313.77	ft
Elevation Range	1,312.00 to 1,315.00	
Flow Area	659.7	ft²
Wetted Perimeter	784.07	ft
Top Width	784.06	ft
Actual Depth	1.77	ft
Critical Elevation	1,313.11	ft
Critical Slope	*0.039967*	*ft/ft*
Velocity	1.63	ft/s
Velocity Head	0.04	ft
Specific Energy	1,313.81	ft
Froude Number	0.31	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	9+00	0.045
9+00	14+00	0.050

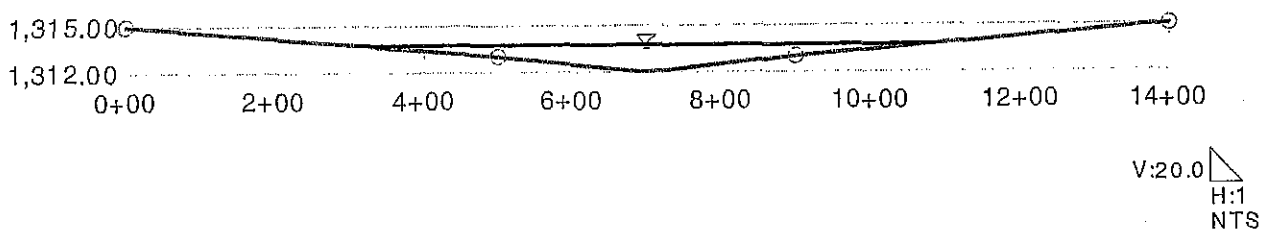
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,315.00
2+50	1,314.00
5+00	1,313.00
6+95	1,312.00
7+05	1,312.00
9+00	1,313.00
11+50	1,314.00
14+00	1,315.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003400	ft/ft
Water Surface Elevation	1,313.77	ft
Elevation Range	1,312.00 to 1,315.00	
Discharge	1,073.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.002800	ft/ft
Discharge	1,249.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,294.96	ft
Elevation Range	1,293.00 to 1,296.00	
Flow Area	774.7	ft²
Wetted Perimeter	792.40	ft
Top Width	792.38	ft
Actual Depth	1.96	ft
Critical Elevation	1,294.34	ft
Critical Slope	0.043020	ft/ft
Velocity	1.61	ft/s
Velocity Head	0.04	ft
Specific Energy	1,295.00	ft
Froude Number	0.29	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

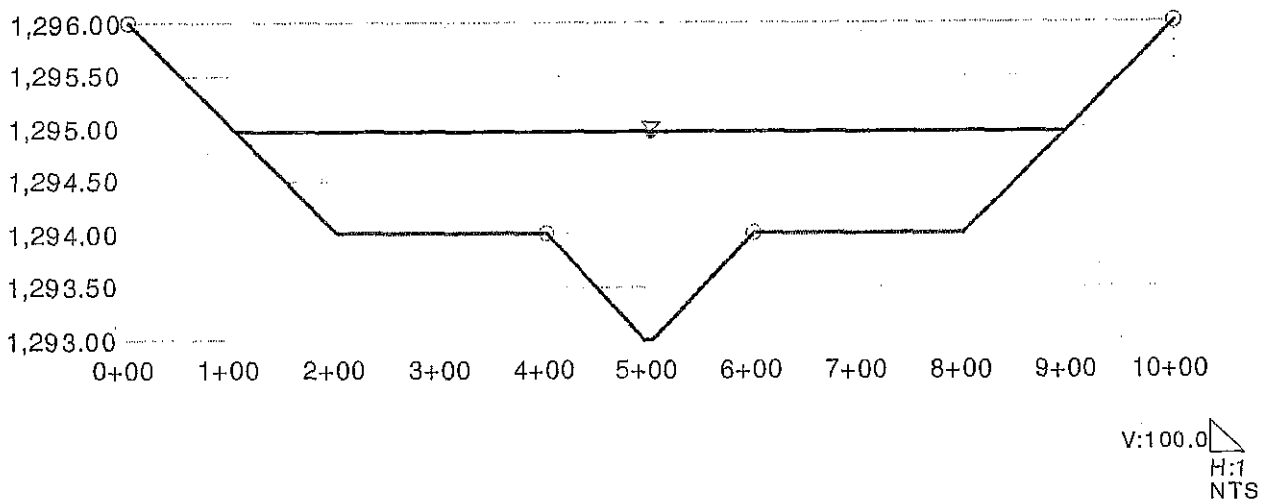
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,296.00
2+00	1,294.00
4+00	1,294.00
4+95	1,293.00
5+05	1,293.00
6+00	1,294.00
8+00	1,294.00
10+00	1,296.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.002800	ft/ft
Water Surface Elevation	1,294.96	ft
Elevation Range	1,293.00 to 1,296.00	
Discharge	1,249.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	200.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,326.21	ft
Elevation Range	1,325.00 to 1,328.00	
Flow Area	155.7	ft²
Wetted Perimeter	283.82	ft
Top Width	283.81	ft
Actual Depth	1.21	ft
Critical Elevation	1,325.72	ft
Critical Slope	0.043298	ft/ft
Velocity	1.28	ft/s
Velocity Head	0.03	ft
Specific Energy	1,326.24	ft
Froude Number	0.31	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

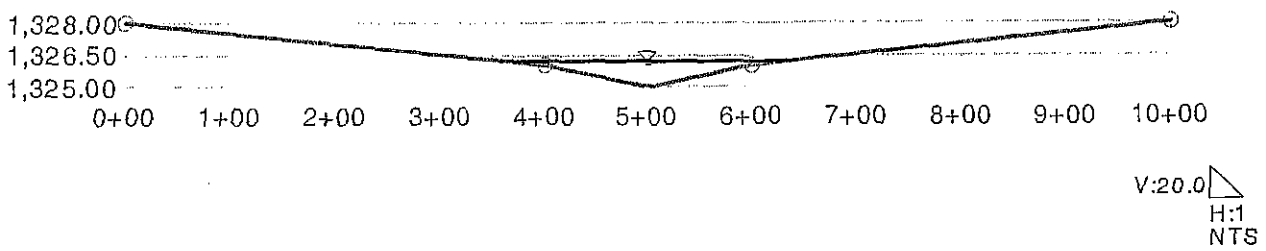
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,328.00
2+00	1,327.00
4+00	1,326.00
4+95	1,325.00
5+05	1,325.00
6+00	1,326.00
8+00	1,327.00
10+00	1,328.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.003600	ft/ft
Water Surface Elevation	1,326.21	ft
Elevation Range	1,325.00 to 1,328.00	
Discharge	200.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004600	ft/ft
Discharge	406.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,313.51	ft
Elevation Range	1,312.00 to 1,315.00	
Flow Area	257.9	ft²
Wetted Perimeter	402.91	ft
Top Width	402.90	ft
Actual Depth	1.51	ft
Critical Elevation	1,312.97	ft
Critical Slope	0.041179	ft/ft
Velocity	1.57	ft/s
Velocity Head	0.04	ft
Specific Energy	1,313.55	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

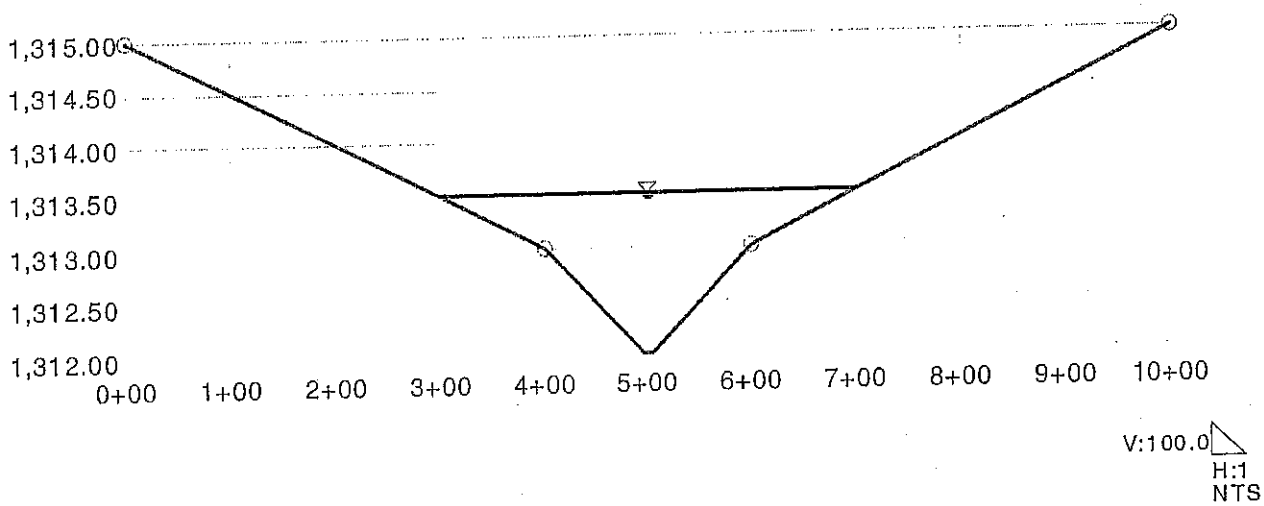
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,315.00
2+00	1,314.00
4+00	1,313.00
4+95	1,312.00
5+05	1,312.00
6+00	1,313.00
8+00	1,314.00
10+00	1,315.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.004600	ft/ft
Water Surface Elevation	1,313.51	ft
Elevation Range	1,312.00 to 1,315.00	
Discharge	406.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004600	ft/ft
Discharge	848.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,313.90	ft
Elevation Range	1,312.00 to 1,315.00	
Flow Area	325.6	ft²
Wetted Perimeter	257.78	ft
Top Width	257.64	ft
Actual Depth	1.90	ft
Critical Elevation	1,313.32	ft
Critical Slope	0.033447	ft/ft
Velocity	2.60	ft/s
Velocity Head	0.11	ft
Specific Energy	1,314.00	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	2+35	0.045
2+35	2+69	0.050

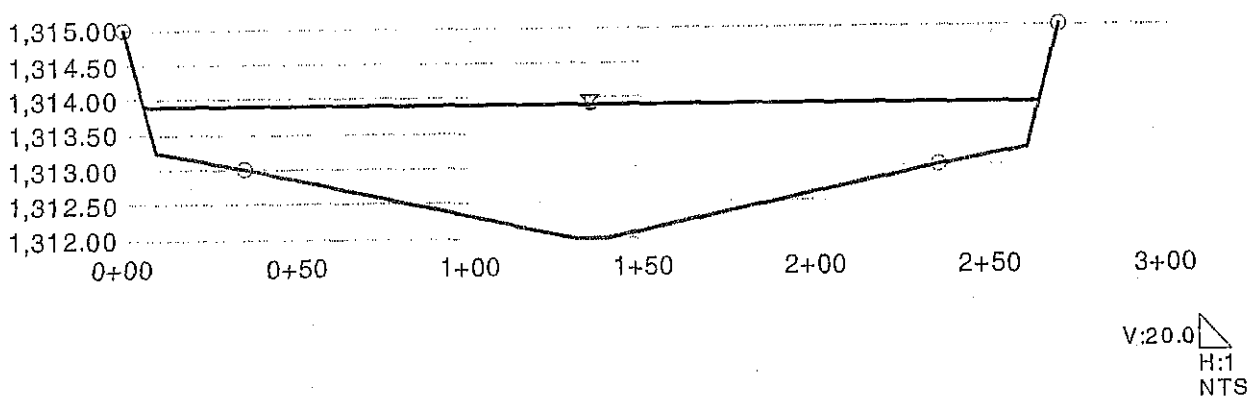
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,315.00
0+09	1,313.25
0+35	1,313.00
1+30	1,312.00
1+40	1,312.00
2+35	1,313.00
2+60	1,313.25
2+69	1,315.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004600	ft/ft
Water Surface Elevation	1,313.90	ft
Elevation Range	1,312.00 to 1,315.00	
Discharge	848.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.001900	ft/ft
Discharge	555.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,303.12	ft
Elevation Range	1,301.00 to 1,310.00	
Flow Area	377.8	ft²
Wetted Perimeter	357.22	ft
Top Width	356.62	ft
Actual Depth	2.12	ft
Critical Elevation	1,302.22	ft
Critical Slope	0.036058	ft/ft
Velocity	1.47	ft/s
Velocity Head	0.03	ft
Specific Energy	1,303.15	ft
Froude Number	0.25	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	3+30	0.045
3+30	15+30	0.050

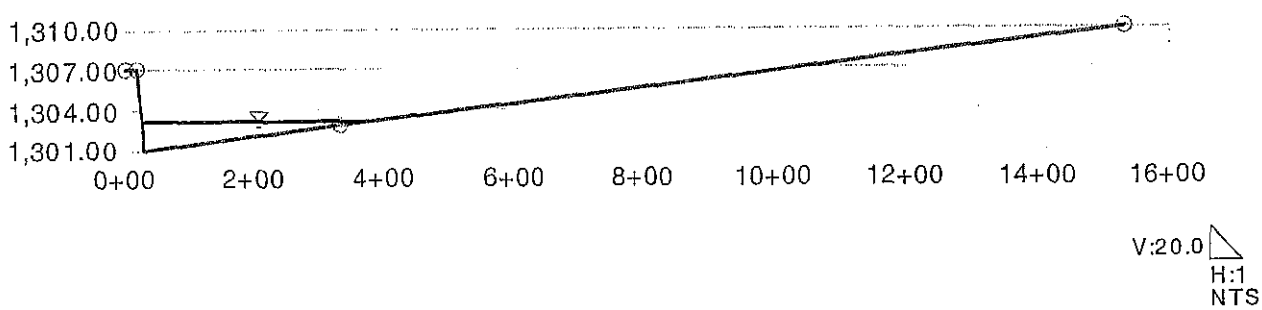
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,307.00
0+20	1,307.00
0+30	1,301.00
3+30	1,302.80
6+30	1,304.60
9+30	1,306.40
12+30	1,308.20
15+30	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.001900	ft/ft
Water Surface Elevation	1,303.12	ft
Elevation Range	1,301.00 to 1,310.00	
Discharge	555.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	389.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,299.70	ft
Elevation Range	1,298.00 to 1,310.00	
Flow Area	219.1	ft²
Wetted Perimeter	258.28	ft
Top Width	257.80	ft
Actual Depth	1.70	ft
Critical Elevation	1,299.10	ft
Critical Slope	0.036067	ft/ft
Velocity	1.78	ft/s
Velocity Head	0.05	ft
Specific Energy	1,299.75	ft
Froude Number	0.34	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	3+90	0.045
3+90	18+30	0.050

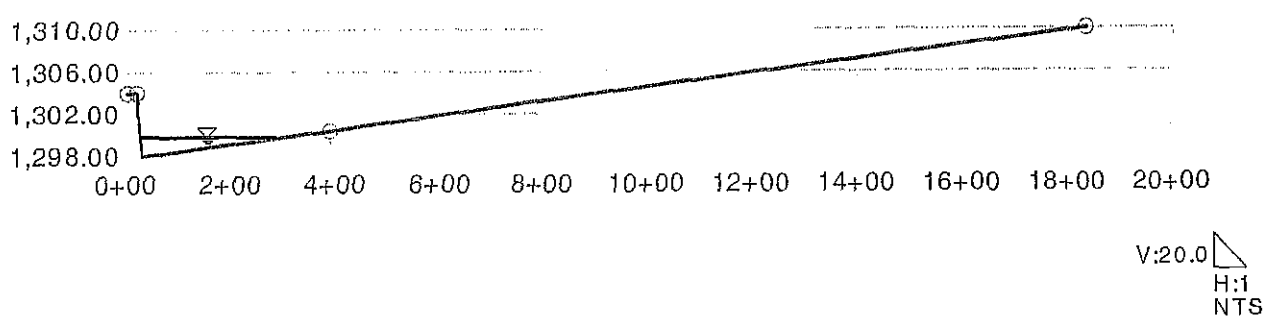
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,304.00
0+20	1,304.00
0+30	1,298.00
3+90	1,300.40
7+50	1,302.80
11+10	1,305.20
14+70	1,307.60
18+30	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003600	ft/ft
Water Surface Elevation	1,299.70	ft
Elevation Range	1,298.00 to 1,310.00	
Discharge	389.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.001400	ft/ft
Discharge	0.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,297.00	ft
Elevation Range	1,297.00 to 1,310.00	
Flow Area	0.0	ft²
Wetted Perimeter	0.00	ft
Top Width	0.00	ft
Actual Depth	0.00	ft
Critical Elevation	0.00	ft
Critical Slope	0.000000	ft/ft
Velocity	0.00	ft/s
Velocity Head	0.00	ft
Specific Energy	1,297.00	ft
Froude Number	0.00	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+20	0.050
0+20	3+50	0.045
3+50	16+30	0.050

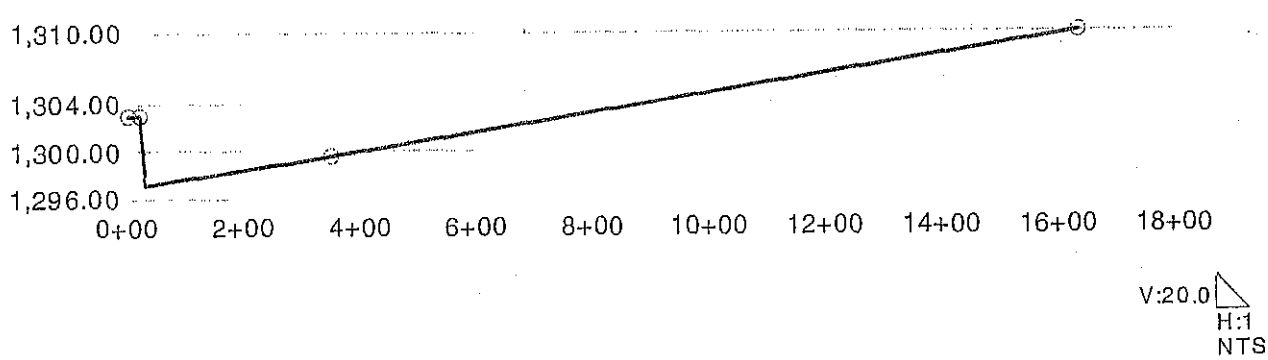
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,303.00
0+20	1,303.00
0+30	1,297.00
3+50	1,299.60
6+70	1,302.20
9+90	1,304.80
13+10	1,307.40
16+30	1,310.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.001400	ft/ft
Water Surface Elevation	1,297.00	ft
Elevation Range	1,297.00 to 1,310.00	
Discharge	0.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	542.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,294.47	ft
Elevation Range	1,293.00 to 1,295.00	
Flow Area	431.2	ft²
Wetted Perimeter	788.03	ft
Top Width	788.02	ft
Actual Depth	1.47	ft
Critical Elevation	1,294.12	ft
Critical Slope	0.053016	ft/ft
Velocity	1.26	ft/s
Velocity Head	0.02	ft
Specific Energy	1,294.49	ft
Froude Number	0.30	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

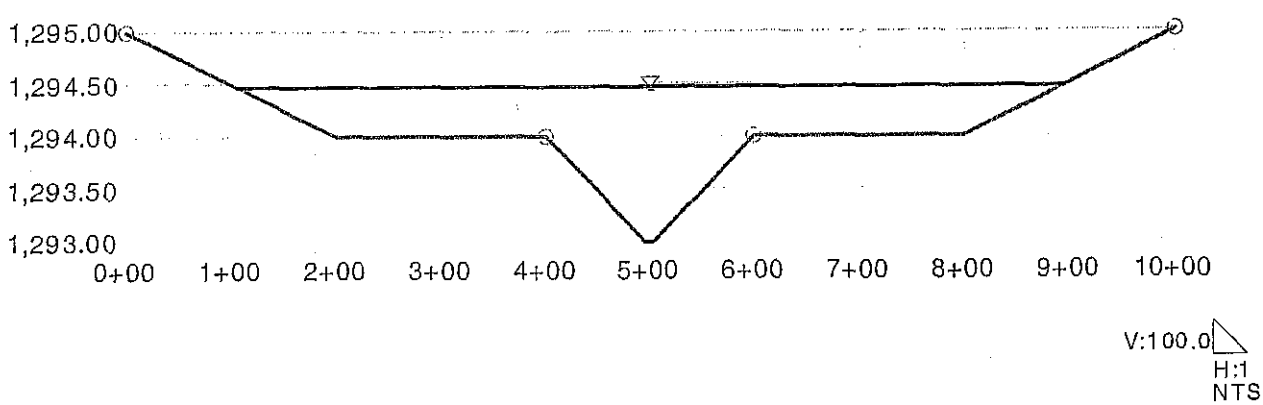
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
2+00	1,294.00
4+00	1,294.00
4+95	1,293.00
5+05	1,293.00
6+00	1,294.00
8+00	1,294.00
10+00	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.003800	ft/ft
Water Surface Elevation	1,294.47	ft
Elevation Range	1,293.00 to 1,295.00	
Discharge	542.00	cfs



Project Summary Report

Project Description	
Worksheet	RCPF36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	103.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,293.89	ft
Elevation Range	1,293.00 to 1,295.00	
Flow Area	83.8	ft²
Wetted Perimeter	178.77	ft
Top Width	178.77	ft
Actual Depth	0.89	ft
Critical Elevation	1,293.54	ft
Critical Slope	0.044312	ft/ft
Velocity	1.23	ft/s
Velocity Head	0.02	ft
Specific Energy	1,293.91	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

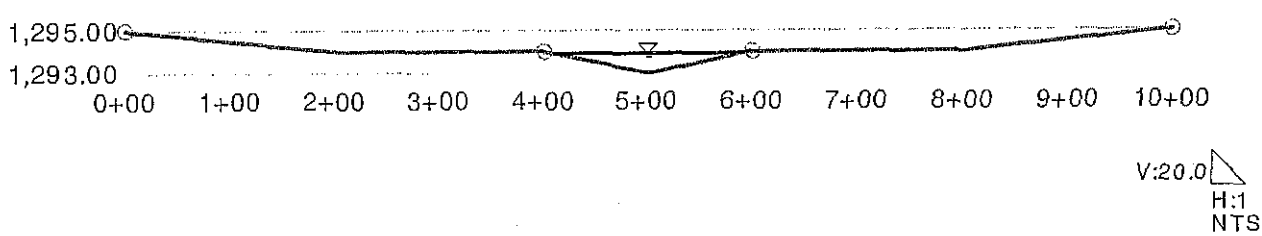
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
2+00	1,294.00
4+00	1,294.00
4+95	1,293.00
5+05	1,293.00
6+00	1,294.00
8+00	1,294.00
10+00	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RCPF36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003800	ft/ft
Water Surface Elevation	1,293.89	ft
Elevation Range	1,293.00 to 1,295.00	
Discharge	103.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007500	ft/ft
Discharge	187.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,593.62	ft
Elevation Range	1,592.00 to 1,595.00	
Flow Area	108.2	ft²
Wetted Perimeter	204.04	ft
Top Width	203.99	ft
Actual Depth	1.62	ft
Critical Elevation	1,593.24	ft
Critical Slope	0.045401	ft/ft
Velocity	1.73	ft/s
Velocity Head	0.05	ft
Specific Energy	1,593.66	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+00	0.045
3+00	5+50	0.050

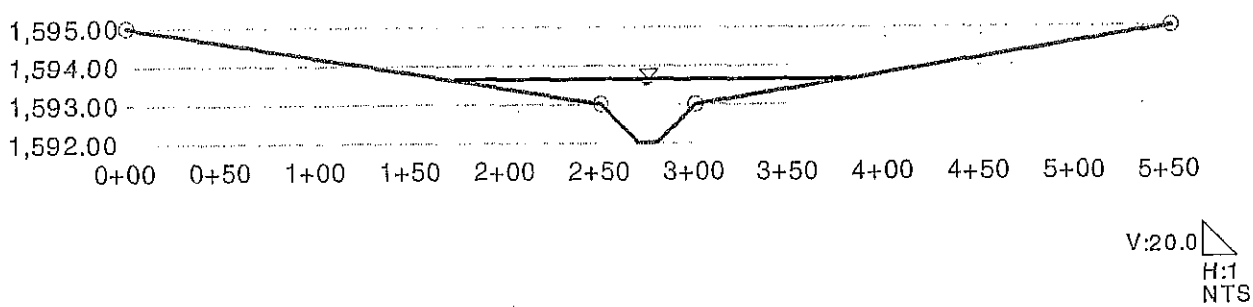
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,595.00
1+25	1,594.00
2+50	1,593.00
2+70	1,592.00
2+80	1,592.00
3+00	1,593.00
4+25	1,594.00
5+50	1,595.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF02
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	*Channel Depth*

Section Data		
Mannings Coefficient	0.049	
Slope	0.007500	ft/ft
Water *Surface Elevation*	1,593.62	ft
Elevation Range	1,592.00 to 1,595.00	
Discharge	187.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005100	ft/ft
Discharge	329.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,394.66	ft
Elevation Range	1,393.00 to 1,395.00	
Flow Area	216.8	ft²
Wetted Perimeter	362.89	ft
Top Width	362.78	ft
Actual Depth	1.66	ft
Critical Elevation	1,394.30	ft
Critical Slope	0.051311	ft/ft
Velocity	1.52	ft/s
Velocity Head	0.04	ft
Specific Energy	1,394.70	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+30	0.045
2+30	4+30	0.050

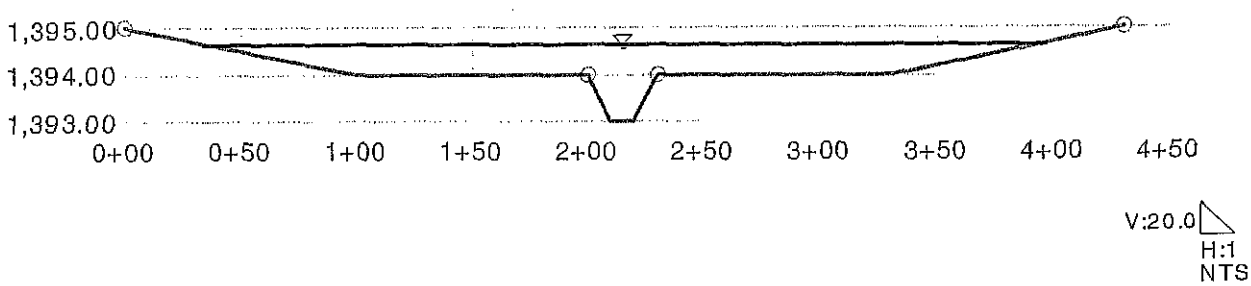
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,395.00
1+00	1,394.00
2+00	1,394.00
2+10	1,393.00
2+20	1,393.00
2+30	1,394.00
3+30	1,394.00
4+30	1,395.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.005100	ft/ft
Water Surface Elevation	1,394.66	ft
Elevation Range	1,393.00 to 1,395.00	
Discharge	329.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.007100	ft/ft
Discharge	94.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Water Surface Elevation	1,407.27	ft
Elevation Range	1,406.00 to 1,408.00	
Flow Area	83.3	ft²
Wetted Perimeter	279.31	ft
Top Width	279.21	ft
Actual Depth	1.27	ft
Critical Elevation	1,407.11	ft
Critical Slope	0.065268	ft/ft
Velocity	1.13	ft/s
Velocity Head	0.02	ft
Specific Energy	1,407.29	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+25	0.045
2+25	4+25	0.050

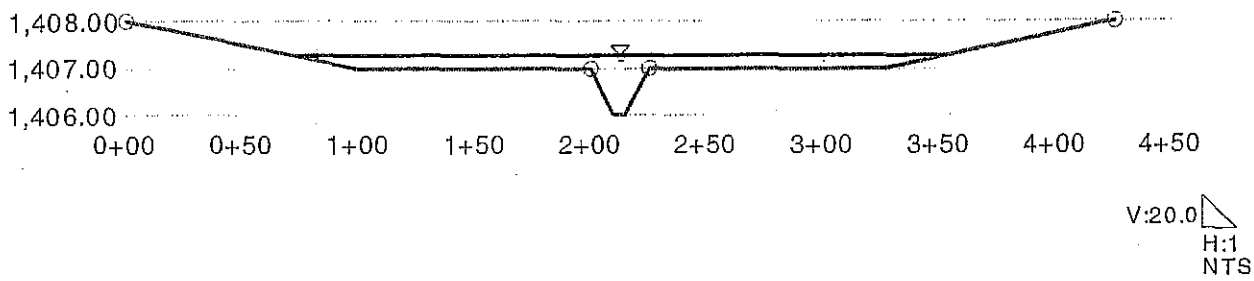
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,408.00
1+00	1,407.00
2+00	1,407.00
2+10	1,406.00
2+15	1,406.00
2+25	1,407.00
3+25	1,407.00
4+25	1,408.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.050	
Slope	0.007100	ft/ft
Water Surface Elevation	1,407.27	ft
Elevation Range	1,406.00 to 1,408.00	
Discharge	94.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.005900	ft/ft
Discharge	113.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Water Surface Elevation	1,433.68	ft
Elevation Range	1,432.00 to 1,435.00	
Flow Area	78.8	ft²
Wetted Perimeter	161.76	ft
Top Width	161.65	ft
Actual Depth	1.68	ft
Critical Elevation	1,433.31	ft
Critical Slope	0.049185	ft/ft
Velocity	1.43	ft/s
Velocity Head	0.03	ft
Specific Energy	1,433.72	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+25	0.045
2+25	4+25	0.050

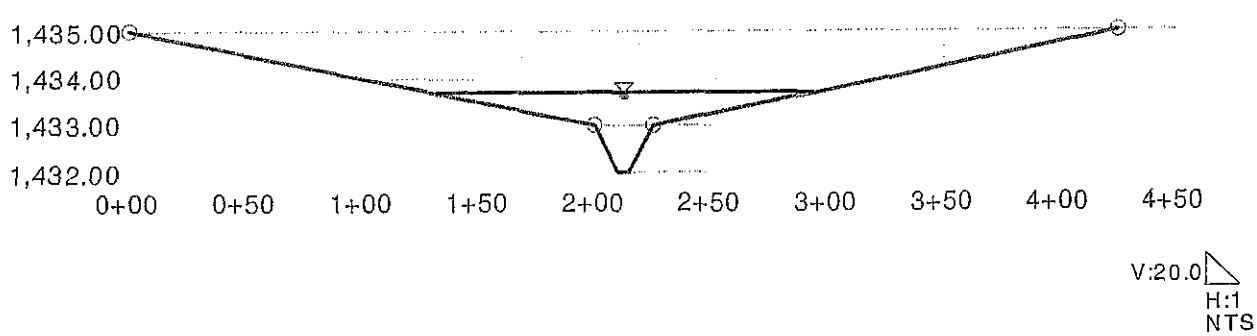
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,435.00
1+00	1,434.00
2+00	1,433.00
2+10	1,432.00
2+15	1,432.00
2+25	1,433.00
3+25	1,434.00
4+25	1,435.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.049	
Slope	0.005900	ft/ft
Water Surface Elevation	1,433.68	ft
Elevation Range	1,432.00 to 1,435.00	
Discharge	113.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	146.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,364.97	ft
Elevation Range	1,364.00 to 1,367.00	
Flow Area	99.8	ft²
Wetted Perimeter	194.97	ft
Top Width	194.96	ft
Actual Depth	0.97	ft
Critical Elevation	1,364.63	ft
Critical Slope	0.042287	ft/ft
Velocity	1.46	ft/s
Velocity Head	0.03	ft
Specific Energy	1,365.01	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

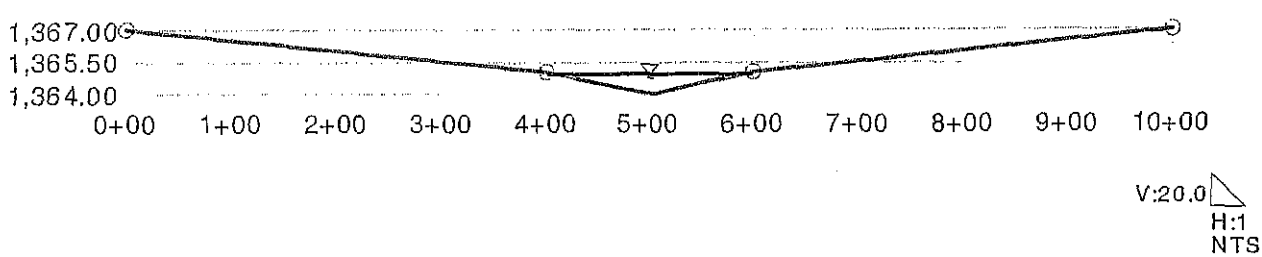
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,367.00
2+00	1,366.00
4+00	1,365.00
4+95	1,364.00
5+05	1,364.00
6+00	1,365.00
8+00	1,366.00
10+00	1,367.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF16
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,364.97	ft
Elevation Range	1,364.00 to 1,367.00	
Discharge	*146.00*	*cfs*



Project Summary Report

Project Description	
Worksheet	RDF18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004900	ft/ft
Discharge	287.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Water Surface Elevation	1,328.31	ft
Elevation Range	1,327.00 to 1,330.00	
Flow Area	187.2	ft²
Wetted Perimeter	325.26	ft
Top Width	325.25	ft
Actual Depth	1.31	ft
Critical Elevation	1,327.84	ft
Critical Slope	0.042063	ft/ft
Velocity	1.53	ft/s
Velocity Head	0.04	ft
Specific Energy	1,328.35	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

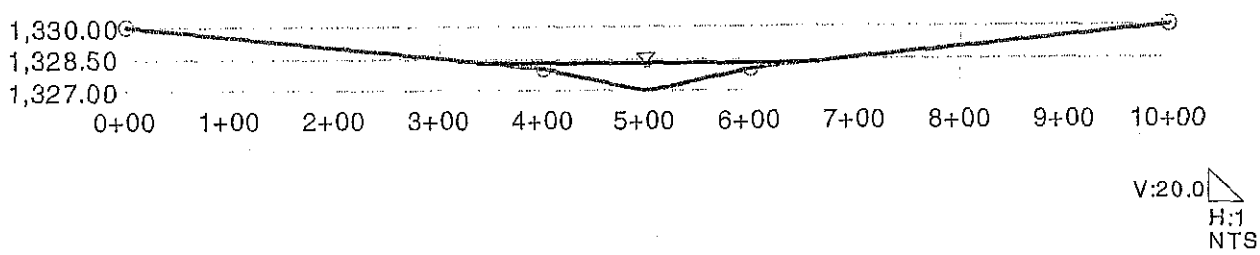
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,330.00
2+00	1,329.00
4+00	1,328.00
4+95	1,327.00
5+05	1,327.00
6+00	1,328.00
8+00	1,329.00
10+00	1,330.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.047	
Slope	0.004900	ft/ft
Water Surface Elevation	1,328.31	ft
Elevation Range	1,327.00 to 1,330.00	
Discharge	287.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF19
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Channel Depth

Input Data		
Slope	0.004800	ft/ft
Discharge	921.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,326.94	ft
Elevation Range	1,325.00 to 1,328.00	
Flow Area	338.2	ft^2
Wetted Perimeter	258.29	ft
Top Width	258.15	ft
Actual Depth	1.94	ft
Critical Elevation	1,326.36	ft
Critical Slope	0.032914	ft/ft
Velocity	2.72	ft/s
Velocity Head	0.12	ft
Specific Energy	1,327.06	ft
Froude Number	0.42	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	2+35	0.045
2+35	2+69	0.050

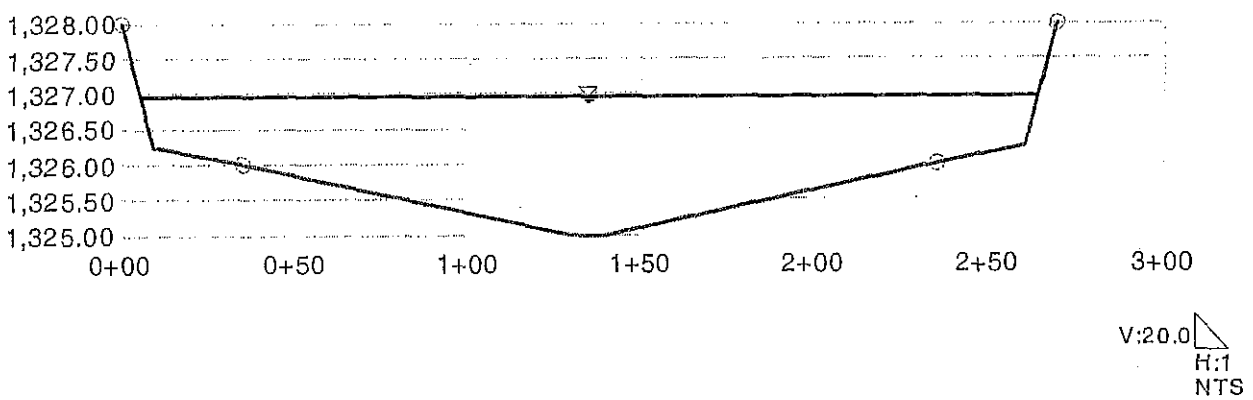
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,328.00
0+09	1,326.25
0+35	1,326.00
1+30	1,325.00
1+40	1,325.00
2+35	1,326.00
2+60	1,326.25
2+69	1,328.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004800	ft/ft
Water Surface Elevation	1,326.94	ft
Elevation Range	1,325.00 to 1,328.00	
Discharge	921.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004000	ft/ft
Discharge	345.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,313.10	ft
Elevation Range	1,312.00 to 1,315.00	
Flow Area	248.9	ft²
Wetted Perimeter	451.58	ft
Top Width	451.58	ft
Actual Depth	1.10	ft
Critical Elevation	1,312.70	ft
Critical Slope	0.042557	ft/ft
Velocity	1.39	ft/s
Velocity Head	0.03	ft
Specific Energy	1,313.13	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+00	0.050
5+00	9+00	0.045
9+00	14+00	0.050

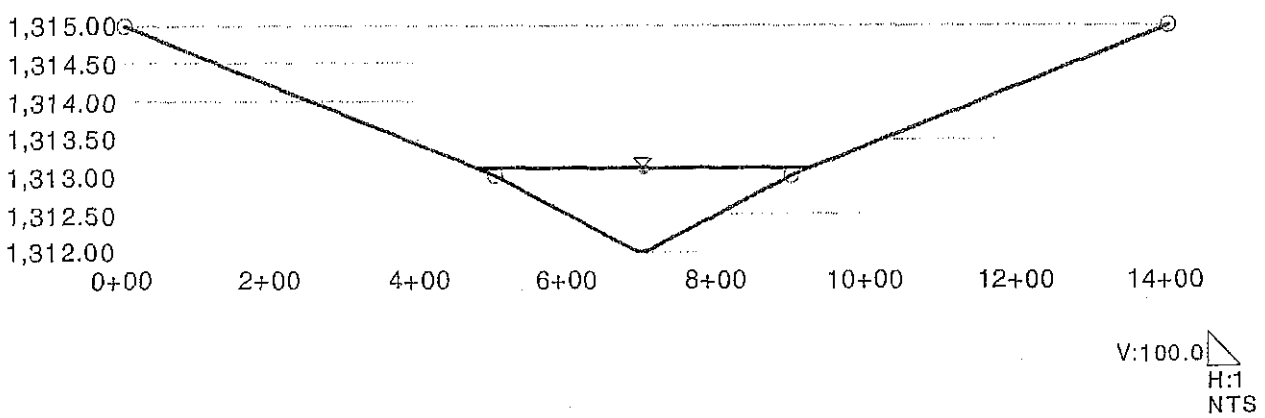
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,315.00
2+50	1,314.00
5+00	1,313.00
6+95	1,312.00
7+05	1,312.00
9+00	1,313.00
11+50	1,314.00
14+00	1,315.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	*0.004000*	*ft/ft*
Water Surface Elevation	1,313.10	ft
Elevation Range	1,312.00 to 1,315.00	
Discharge	345.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	288.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,293.34	ft
Elevation Range	1,292.00 to 1,295.50	
Flow Area	183.6	ft²
Wetted Perimeter	251.74	ft
Top Width	251.71	ft
Actual Depth	1.34	ft
Critical Elevation	1,292.84	ft
Critical Slope	0.040434	ft/ft
Velocity	1.57	ft/s
Velocity Head	0.04	ft
Specific Energy	1,293.38	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	2+35	0.045
2+35	2+69	0.050

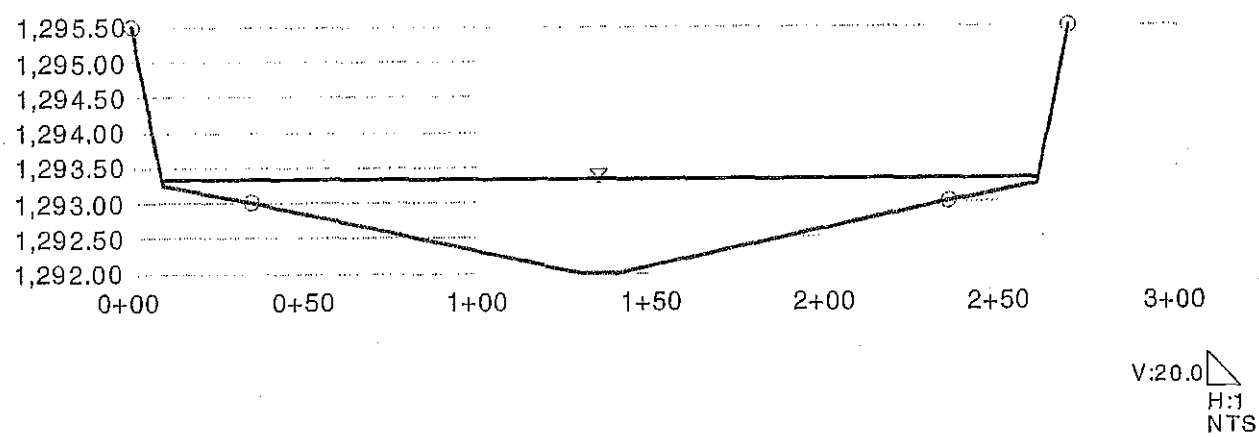
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.50
0+09	1,293.25
0+35	1,293.00
1+30	1,292.00
1+40	1,292.00
2+35	1,293.00
2+60	1,293.25
2+69	1,295.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.003600	ft/ft
Water Surface Elevation	1,293.34	ft
Elevation Range	1,292.00 to 1,295.50	
Discharge	288.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	148.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,277.80	ft
Elevation Range	1,277.00 to 1,280.00	
Flow Area	134.3	ft²
Wetted Perimeter	323.83	ft
Top Width	323.83	ft
Actual Depth	0.80	ft
Critical Elevation	1,277.49	ft
Critical Slope	0.046434	ft/ft
Velocity	1.10	ft/s
Velocity Head	0.02	ft
Specific Energy	1,277.82	ft
Froude Number	0.30	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	8+00	0.045
8+00	12+00	0.050

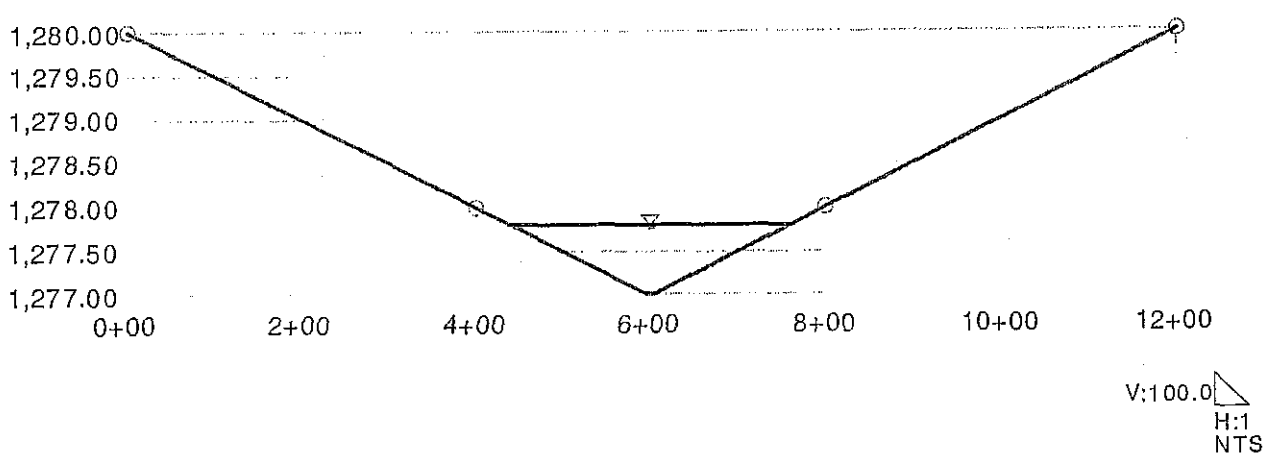
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,280.00
2+00	1,279.00
4+00	1,278.00
5+95	1,277.00
6+05	1,277.00
8+00	1,278.00
10+00	1,279.00
12+00	1,280.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.003600	ft/ft
Water Surface Elevation	1,277.80	ft
Elevation Range	1,277.00 to 1,280.00	
Discharge	148.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	1,385.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,294.48	ft
Elevation Range	1,292.00 to 1,295.50	
Flow Area	474.9	ft²
Wetted Perimeter	261.12	ft
Top Width	260.80	ft
Actual Depth	2.48	ft
Critical Elevation	1,293.59	ft
Critical Slope	0.030515	ft/ft
Velocity	2.92	ft/s
Velocity Head	0.13	ft
Specific Energy	1,294.61	ft
Froude Number	0.38	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	2+35	0.045
2+35	2+69	0.050

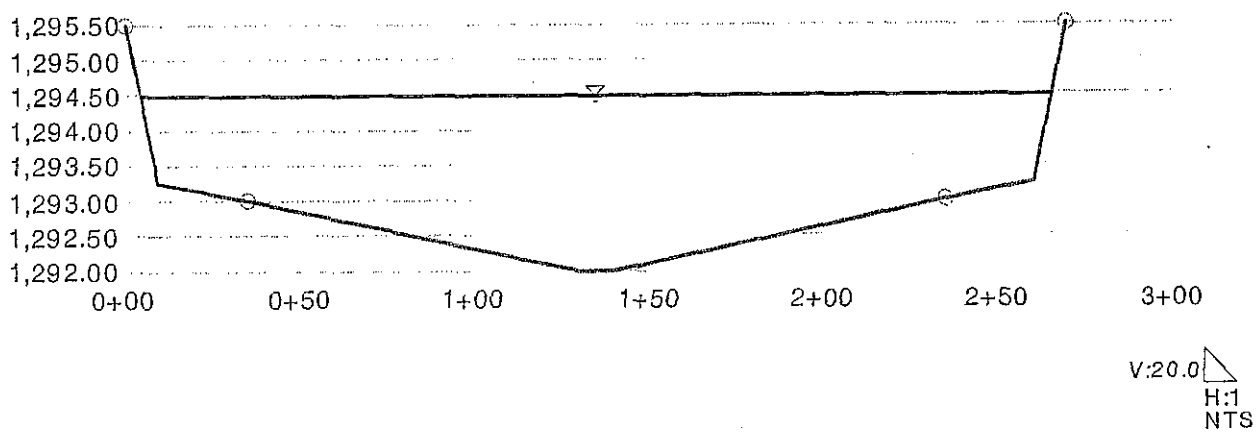
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.50
0+09	1,293.25
0+35	1,293.00
1+30	1,292.00
1+40	1,292.00
2+35	1,293.00
2+60	1,293.25
2+69	1,295.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.003600	ft/ft
Water Surface Elevation	1,294.48	ft
Elevation Range	1,292.00 to 1,295.50	
Discharge	1,385.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF28A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003600	ft/ft
Discharge	185.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Water Surface Elevation	1,293.17	ft
Elevation Range	1,292.00 to 1,295.00	
Flow Area	144.8	ft²
Wetted Perimeter	268.08	ft
Top Width	268.06	ft
Actual Depth	1.17	ft
Critical Elevation	1,292.70	ft
Critical Slope	0.043358	ft/ft
Velocity	1.28	ft/s
Velocity Head	0.03	ft
Specific Energy	1,293.20	ft
Froude Number	0.31	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

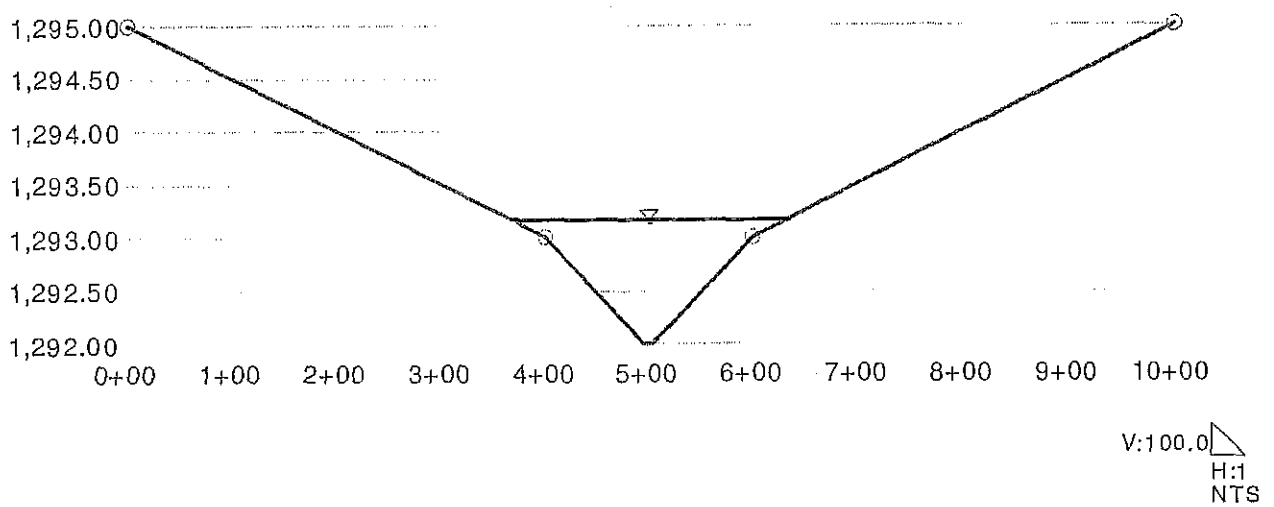
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
2+00	1,294.00
4+00	1,293.00
4+95	1,292.00
5+05	1,292.00
6+00	1,293.00
8+00	1,294.00
10+00	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF28A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.046	
Slope	0.003600	ft/ft
Water Surface Elevation	1,293.17	ft
Elevation Range	1,292.00 to 1,295.00	
Discharge	185.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF28B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.004300	ft/ft
Discharge	102.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Methoı	Horton's Method

Results		
Mannings Coefficient	0.045	
Water Surface Elevation	1,292.86	ft
Elevation Range	1,292.00 to 1,295.00	
Flow Area	79.5	ft^2
Wetted Perimeter	174.06	ft
Top Width	174.05	ft
Actual Depth	0.86	ft
Critical Elevation	1,292.54	ft
Critical Slope	0.044369	ft/ft
Velocity	1.28	ft/s
Velocity Head	0.03	ft
Specific Energy	1,292.89	ft
Froude Number	0.33	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

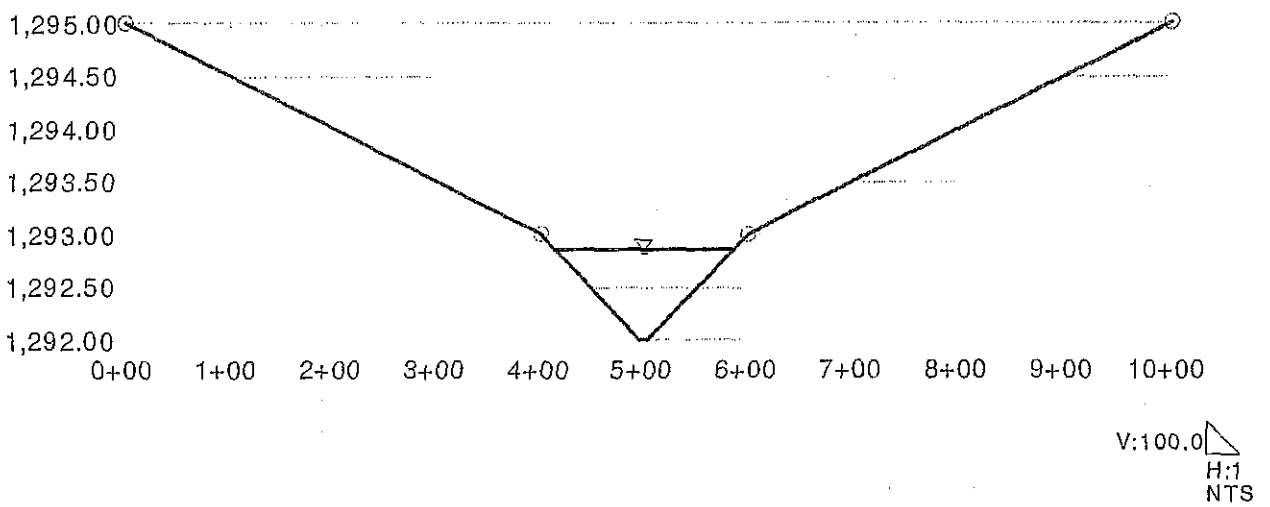
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
2+00	1,294.00
4+00	1,293.00
4+95	1,292.00
5+05	1,292.00
6+00	1,293.00
8+00	1,294.00
10+00	1,295.00

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF28B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.045	
Slope	0.004300	ft/ft
Water Surface Elevation	1,292.86	ft
Elevation Range	1,292.00 to 1,295.00	
Discharge	102.00	cfs



Project Summary Report

Project Description	
Worksheet	RDF29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	0.003800	ft/ft
Discharge	509.00	cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Water Surface Elevation	1,293.68	ft
Elevation Range	1,292.00 to 1,295.50	
Flow Area	335.2	ft²
Wetted Perimeter	473.49	ft
Top Width	473.47	ft
Actual Depth	1.68	ft
Critical Elevation	1,293.09	ft
Critical Slope	0.041413	ft/ft
Velocity	1.52	ft/s
Velocity Head	0.04	ft
Specific Energy	1,293.72	ft
Froude Number	0.32	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	6+00	0.045
6+00	10+00	0.050

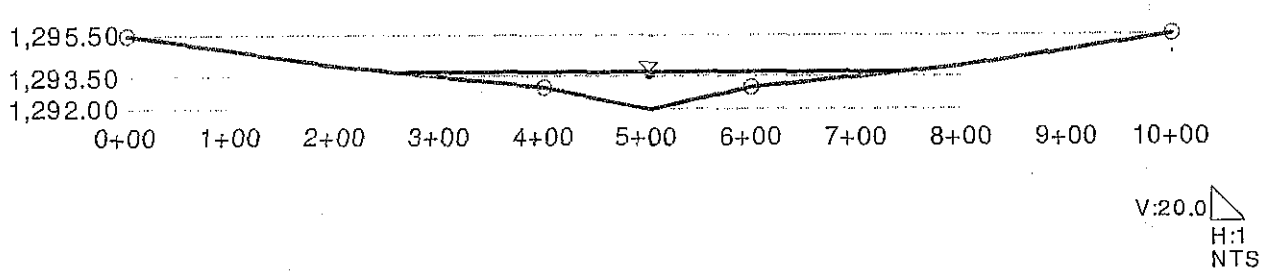
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.50
2+00	1,294.00
4+00	1,293.00
4+95	1,292.00
5+05	1,292.00
6+00	1,293.00
8+00	1,294.00
10+00	1,295.50

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	RDF29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.048	
Slope	0.003800	ft/ft
Water Surface Elevation	1,293.68	ft
Elevation Range	1,292.00 to 1,295.50	
Discharge	509.00	cfs



Appendix D.4

RESERVOIR ROUTING DATA

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:56:55

FILE DATE: 10-09-2003
FILE NAME: 01

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1506.45	1506.30	30.00	1 RCB	18.00	4.20	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 01 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1506.45	0	0	0	0	0	0	0	0	1
1508.71	150	150	0	0	0	0	0	0	1
1509.91	300	300	0	0	0	0	0	0	1
1511.03	450	450	0	0	0	0	0	0	1
1512.24	600	600	0	0	0	0	0	0	1
1513.68	750	750	0	0	0	0	0	0	1
1514.94	900	861	0	0	0	0	0	36	6
1515.36	1050	894	0	0	0	0	0	153	5
1515.61	1200	914	0	0	0	0	0	279	4
1515.81	1350	930	0	0	0	0	0	415	4
1515.98	1500	942	0	0	0	0	0	553	4
1514.40	815	815	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 01 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1506.45	0.00	0	0	0.00
1508.71	0.00	150	0	0.00
1509.91	0.00	300	0	0.00
1511.03	0.00	450	0	0.00
1512.24	0.00	600	0	0.00
1513.68	0.00	750	0	0.00
1514.94	-0.01	900	4	0.39
1515.36	-0.00	1050	2	0.22
1515.61	-0.01	1200	6	0.53
1515.81	-0.00	1350	6	0.42
1515.98	-0.00	1500	5	0.32

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
CURRENT TIME: 14:56:55 FILE NAME: 01

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 4.2) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1506.45	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.15
150	1508.71	2.20	2.26	3-M1t	1.30	1.29	4.54	1.84	3.59	1.84
300	1509.91	3.46	3.46	1-S2n	2.03	2.06	8.21	2.03	4.41	2.60
450	1511.03	4.58	4.58	5-S2n	2.65	2.69	9.44	2.65	4.95	3.17
600	1512.24	5.79	5.79	5-S2n	3.21	3.26	10.39	3.21	5.36	3.65
750	1513.68	7.23	7.23	5-S2n	3.73	3.79	11.17	3.73	5.70	4.06
861	1514.94	8.49	7.58	4-FFt	4.20	4.15	11.39	4.20	5.99	4.43
894	1515.35	8.90	8.17	4-FFt	4.20	4.20	11.83	4.20	6.25	4.76
914	1515.61	9.16	8.64	4-FFt	4.20	4.20	12.09	4.20	6.47	5.07
930	1515.81	9.36	9.05	4-FFt	4.20	4.20	12.30	4.20	6.68	5.36
942	1515.98	9.53	9.43	4-FFt	4.20	4.20	12.46	4.20	6.87	5.62

El. inlet face invert 1506.45 ft El. outlet invert 1506.30 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1506.45
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	1506.30
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	4.20 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

'URRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
'URRENT TIME: 14:56:55 FILE NAME: 01

~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.005
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1506.45
CULVERT NO.1 OUTLET INVERT ELEVATION	1506.30 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1506.45	0.000	0.00	0.00	0.00
150.00	1508.14	0.487	1.69	3.59	0.53
300.00	1508.90	0.497	2.45	4.41	0.76
450.00	1509.47	0.502	3.02	4.95	0.94
600.00	1509.95	0.505	3.50	5.36	1.09
750.00	1510.36	0.508	3.91	5.70	1.22
900.00	1510.73	0.511	4.28	5.99	1.34
1050.00	1511.06	0.513	4.61	6.25	1.44
1200.00	1511.37	0.514	4.92	6.47	1.53
1350.00	1511.66	0.516	5.21	6.68	1.62
1500.00	1511.92	0.517	5.47	6.87	1.71

~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1519.02
2	450.00	1516.85
3	890.00	1514.40

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:06:21

FILE DATE: 10-23-2003
FILE NAME: STR02

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1505.49	1505.37	24.00	2 CSP	3.00	3.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR02 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1505.49	0	0	0	0	0	0	0	0	1
1507.41	30	30	0	0	0	0	0	0	1
1508.95	60	60	0	0	0	0	0	0	1
1509.68	90	90	0	0	0	0	0	0	1
1510.71	120	120	0	0	0	0	0	0	1
1511.80	150	145	0	0	0	0	0	3	10
1512.05	180	151	0	0	0	0	0	28	9
1512.19	210	153	0	0	0	0	0	55	8
1512.30	240	154	0	0	0	0	0	84	7
1512.40	270	150	0	0	0	0	0	118	7
1512.47	300	150	0	0	0	0	0	148	6
1511.60	141	141	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR02 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1505.49	0.00	0	0	0.00
1507.41	0.00	30	0	0.00
1508.95	0.00	60	0	0.00
1509.68	0.00	90	0	0.00
1510.71	0.00	120	0	0.00
1511.80	-0.01	150	1	0.90
1512.05	-0.00	180	1	0.75
1512.19	-0.00	210	1	0.62
1512.30	-0.00	240	1	0.62
1512.40	-0.00	270	2	0.65
1512.47	-0.00	300	2	0.69

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 14:06:21 FILE NAME: STR02

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (3 BY 3) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1505.49	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1507.41	1.73	1.92	2-M2c	1.65	1.23	5.49	1.23	2.31	1.13
60	1508.95	2.65	3.46	6-FFn	3.00	1.77	4.24	3.00	2.80	1.60
90	1509.68	3.60	4.19	6-FFn	3.00	2.18	6.37	3.00	3.12	1.95
120	1510.71	4.80	5.22	6-FFn	3.00	2.49	8.49	3.00	3.36	2.24
145	1511.79	6.08	6.30	6-FFn	3.00	2.69	10.28	3.00	3.57	2.48
151	1512.05	6.38	6.56	6-FFn	3.00	2.73	10.65	3.00	3.74	2.70
153	1512.19	6.54	6.70	6-FFn	3.00	2.75	10.85	3.00	3.89	2.90
154	1512.30	6.58	6.81	4-FFt	3.00	2.76	10.90	3.00	4.03	3.08
150	1512.27	6.34	6.78	4-FFt	3.00	2.73	10.61	3.00	4.15	3.25
150	1512.43	6.34	6.94	4-FFt	3.00	2.73	10.61	3.00	4.27	3.41

El. inlet face invert 1505.49 ft El. outlet invert 1505.37 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1505.49
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1505.37
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:06:21

FILE DATE: 10-23-2003
FILE NAME: STR02

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	7.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1505.37
CULVERT NO.1 OUTLET INVERT ELEVATION	1505.37 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1505.37	0.000	0.00	0.00	0.00
30.00	1506.50	0.383	1.13	2.31	0.28
60.00	1506.97	0.389	1.60	2.80	0.40
90.00	1507.32	0.393	1.95	3.12	0.49
120.00	1507.61	0.396	2.24	3.36	0.56
150.00	1507.85	0.399	2.48	3.57	0.62
180.00	1508.07	0.401	2.70	3.74	0.67
210.00	1508.27	0.403	2.90	3.89	0.72
240.00	1508.45	0.404	3.08	4.03	0.77
270.00	1508.62	0.406	3.25	4.15	0.81
300.00	1508.78	0.407	3.41	4.27	0.85

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1513.55
2	215.00	1512.57
3	430.00	1511.60

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:56:20

FILE DATE: 10-09-2003
FILE NAME: 03

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1502.28	1502.13	30.00	1 RCB	10.00	3.10	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 03 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1502.28	0	0	0	0	0	0	0	0	1
1505.57	150	150	0	0	0	0	0	0	1
1508.46	300	300	0	0	0	0	0	0	1
1509.52	450	339	0	0	0	0	0	108	6
1509.79	600	348	0	0	0	0	0	247	5
1509.98	750	344	0	0	0	0	0	403	5
1510.14	900	332	0	0	0	0	0	565	5
1510.27	1050	320	0	0	0	0	0	722	4
1510.39	1200	309	0	0	0	0	0	884	4
1510.49	1350	302	0	0	0	0	0	1042	4
1510.58	1500	300	0	0	0	0	0	1185	3
1508.79	313	313	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 03 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1502.28	0.00	0	0	0.00
1505.57	0.00	150	0	0.00
1508.46	0.00	300	0	0.00
1509.52	-0.01	450	3	0.73
1509.79	-0.00	600	5	0.77
1509.98	-0.01	750	4	0.47
1510.14	-0.01	900	3	0.34
1510.27	-0.00	1050	8	0.74
1510.39	-0.00	1200	7	0.57
1510.49	-0.01	1350	5	0.40
1510.58	-0.01	1500	15	0.97

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
CURRENT TIME: 14:56:20 FILE NAME: 03

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (10 BY 3.1) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1502.28	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1505.57	3.25	3.29	3-M1t	2.01	1.92	7.05	2.13	3.81	2.13
300	1508.46	6.18	5.46	6-FFn	3.10	3.04	9.68	3.10	4.59	2.98
339	1509.52	7.24	6.66	4-FFt	3.10	3.10	10.93	3.10	5.11	3.61
348	1509.78	7.50	7.34	4-FFt	3.10	3.10	11.23	3.10	5.50	4.12
344	1509.98	7.38	7.70	4-FFt	3.10	3.10	11.09	3.10	5.83	4.56
332	1510.14	7.03	7.86	4-FFt	3.10	3.10	10.70	3.10	6.11	4.95
320	1510.28	6.70	8.00	4-FFt	3.10	3.10	10.32	3.10	6.35	5.30
309	1510.41	6.40	8.13	4-FFt	3.10	3.10	9.96	3.10	6.57	5.62
302	1510.60	6.24	8.32	4-FFt	3.10	3.06	9.75	3.10	6.77	5.92
300	1510.84	6.19	8.56	4-FFt	3.10	3.04	9.69	3.10	6.96	6.20

El. inlet face invert 1502.28 ft El. outlet invert 1502.13 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1502.28
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	1502.13
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.10 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
RRENT TIME: 14:56:20

FILE DATE: 10-09-2003
FILE NAME: 03

~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.005
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1502.13
CULVERT NO.1 OUTLET INVERT ELEVATION	1502.13 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1502.13	0.000	0.00	0.00	0.00
150.00	1504.26	0.460	2.13	3.81	0.66
300.00	1505.11	0.468	2.98	4.59	0.93
450.00	1505.74	0.474	3.61	5.11	1.13
600.00	1506.25	0.478	4.12	5.50	1.28
750.00	1506.69	0.481	4.56	5.83	1.42
900.00	1507.08	0.484	4.95	6.11	1.54
1050.00	1507.43	0.486	5.30	6.35	1.65
1200.00	1507.75	0.489	5.62	6.57	1.75
1350.00	1508.05	0.491	5.92	6.77	1.85
1500.00	1508.33	0.492	6.20	6.96	1.93

~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1510.59
2	225.00	1509.69
3	450.00	1508.79

CURRENT DATE: 10-23-2003
CURRENT TIME: 13:56:27

FILE DATE: 10-23-2003
FILE NAME: STR04

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1496.88	1496.76	24.00	2 CSP	3.00	3.00	.031	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR04 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1496.88	0	0	0	0	0	0	0	0	1
1498.81	30	30	0	0	0	0	0	0	1
1500.45	60	60	0	0	0	0	0	0	1
1501.32	90	90	0	0	0	0	0	0	1
1502.54	120	120	0	0	0	0	0	0	1
1503.10	150	132	0	0	0	0	0	17	9
1503.25	180	135	0	0	0	0	0	44	8
1503.36	210	137	0	0	0	0	0	72	7
1503.44	240	138	0	0	0	0	0	100	6
1503.51	270	138	0	0	0	0	0	131	5
1503.57	300	136	0	0	0	0	0	162	4
1502.76	125	125	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR04 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1496.88	0.00	0	0	0.00
1498.81	0.00	30	0	0.00
1500.45	0.00	60	0	0.00
1501.32	0.00	90	0	0.00
1502.54	0.00	120	0	0.00
1503.10	-0.01	150	1	0.64
1503.25	-0.00	180	2	0.85
1503.36	-0.00	210	1	0.61
1503.44	-0.00	240	1	0.61
1503.51	-0.01	270	2	0.65
1503.57	-0.01	300	2	0.70

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 13:56:27 FILE NAME: STR04

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (3 BY 3) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1496.88	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1498.81	1.73	1.93	2-M2c	1.95	1.23	5.49	1.23	2.50	1.07
60	1500.45	2.65	3.57	6-FFn	3.00	1.77	4.24	3.00	3.03	1.52
90	1501.32	3.60	4.44	6-FFn	3.00	2.18	6.37	3.00	3.38	1.85
120	1502.54	4.80	5.66	6-FFn	3.00	2.49	8.49	3.00	3.65	2.12
132	1503.10	5.35	6.22	6-FFn	3.00	2.58	9.31	3.00	3.87	2.36
135	1503.25	5.50	6.37	6-FFn	3.00	2.60	9.52	3.00	4.06	2.57
137	1503.36	5.61	6.48	6-FFn	3.00	2.62	9.66	3.00	4.23	2.76
138	1503.44	5.69	6.56	6-FFn	3.00	2.63	9.77	3.00	4.38	2.93
138	1503.51	5.67	6.63	4-FFt	3.00	2.63	9.74	3.00	4.51	3.09
136	1503.56	5.58	6.68	4-FFt	3.00	2.61	9.62	3.00	4.64	3.24

El. inlet face invert 1496.88 ft El. outlet invert 1496.76 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1496.88
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1496.76
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CORRUGATED ALUMINUM
BARREL MANNING'S N	0.031
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 13:56:27

FILE DATE: 10-23-2003
FILE NAME: STR04

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~
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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	7.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.005
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1496.76
CULVERT NO.1 OUTLET INVERT ELEVATION	1496.76 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1496.76	0.000	0.00	0.00	0.00
30.00	1497.83	0.427	1.07	2.50	0.33
60.00	1498.28	0.434	1.52	3.03	0.47
90.00	1498.61	0.439	1.85	3.38	0.58
120.00	1498.88	0.442	2.12	3.65	0.66
150.00	1499.12	0.445	2.36	3.87	0.74
180.00	1499.33	0.447	2.57	4.06	0.80
210.00	1499.52	0.449	2.76	4.23	0.86
240.00	1499.69	0.451	2.93	4.38	0.91
270.00	1499.85	0.452	3.09	4.51	0.96
300.00	1500.00	0.454	3.24	4.64	1.01

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~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~
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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1515.13
2	450.00	1503.51
3	660.00	1502.76

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CURRENT DATE: 10-23-2003
URRENT TIME: 14:10:22

FILE DATE: 10-23-2003
FILE NAME: STR05

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1489.21	1489.09	24.00	2 CSP	3.00	3.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR05 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1489.21	0	0	0	0	0	0	0	0	1
1491.13	30	30	0	0	0	0	0	0	1
1492.67	60	60	0	0	0	0	0	0	1
1493.40	90	90	0	0	0	0	0	0	1
1494.43	120	120	0	0	0	0	0	0	1
1495.68	150	149	0	0	0	0	0	0	16
1496.04	180	156	0	0	0	0	0	23	10
1496.18	210	159	0	0	0	0	0	50	8
1496.27	240	159	0	0	0	0	0	79	7
1496.36	270	157	0	0	0	0	0	111	7
1496.42	300	156	0	0	0	0	0	142	6
1495.69	149	149	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR05 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1489.21	0.00	0	0	0.00
1491.13	0.00	30	0	0.00
1492.67	0.00	60	0	0.00
1493.40	0.00	90	0	0.00
1494.43	0.00	120	0	0.00
1495.68	-0.01	150	1	0.90
1496.04	-0.01	180	1	0.81
1496.18	-0.00	210	2	0.80
1496.27	-0.00	240	2	0.73
1496.36	-0.00	270	2	0.59
1496.42	-0.00	300	2	0.81

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 14:10:22 FILE NAME: STR05

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (3 BY 3) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1489.21	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1491.13	1.73	1.92	2-M2c	1.65	1.23	5.49	1.23	2.31	1.13
60	1492.67	2.65	3.46	6-FFn	3.00	1.77	4.24	3.00	2.80	1.60
90	1493.40	3.60	4.19	6-FFn	3.00	2.18	6.37	3.00	3.12	1.95
120	1494.43	4.80	5.22	6-FFn	3.00	2.49	8.49	3.00	3.36	2.24
149	1495.68	6.27	6.47	6-FFn	3.00	2.72	10.51	3.00	3.57	2.48
156	1496.04	6.70	6.83	6-FFn	3.00	2.77	11.03	3.00	3.74	2.70
159	1496.17	6.85	6.96	6-FFn	3.00	2.79	11.21	3.00	3.89	2.90
159	1496.27	6.88	7.06	4-FFt	3.00	2.80	11.25	3.00	4.03	3.08
157	1496.36	6.78	7.15	4-FFt	3.00	2.79	11.14	3.00	4.15	3.25
156	1496.43	6.68	7.22	4-FFt	3.00	2.77	11.01	3.00	4.27	3.41

El. inlet face invert 1489.21 ft El. outlet invert 1489.09 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1489.21
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1489.09
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.00 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

JRRENT DATE: 10-23-2003
RRENT TIME: 14:10:22

FILE DATE: 10-23-2003
FILE NAME: STR05

~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	7.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1489.09
CULVERT NO.1 OUTLET INVERT ELEVATION	1489.09 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1489.09	0.000	0.00	0.00	0.00
30.00	1490.22	0.383	1.13	2.31	0.28
60.00	1490.69	0.389	1.60	2.80	0.40
90.00	1491.04	0.393	1.95	3.12	0.49
120.00	1491.33	0.396	2.24	3.36	0.56
150.00	1491.57	0.399	2.48	3.57	0.62
180.00	1491.79	0.401	2.70	3.74	0.67
210.00	1491.99	0.403	2.90	3.89	0.72
240.00	1492.17	0.404	3.08	4.03	0.77
270.00	1492.34	0.406	3.25	4.15	0.81
300.00	1492.50	0.407	3.41	4.27	0.85

~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1497.91
2	170.00	1497.18
3	660.00	1495.69

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:33:07

FILE DATE: 10-23-2003
FILE NAME: STR06

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1476.54	1476.42	24.00	2 CSP	3.50	3.50	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR06 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1476.54	0	0	0	0	0	0	0	0	1
1478.35	30	30	0	0	0	0	0	0	1
1479.19	60	60	0	0	0	0	0	0	1
1480.59	90	90	0	0	0	0	0	0	1
1481.12	120	120	0	0	0	0	0	0	1
1481.42	150	134	0	0	0	0	0	14	10
1481.56	180	140	0	0	0	0	0	38	8
1481.66	210	145	0	0	0	0	0	64	7
1481.74	240	148	0	0	0	0	0	90	6
1481.80	270	150	0	0	0	0	0	118	6
1481.87	300	150	0	0	0	0	0	148	6
1481.12	120	120	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR06 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1476.54	0.00	0	0	0.00
1478.35	0.00	30	0	0.00
1479.19	0.00	60	0	0.00
1480.59	0.00	90	0	0.00
1481.12	0.00	120	0	0.00
1481.42	-0.00	150	1	0.87
1481.56	-0.00	180	2	0.92
1481.66	-0.00	210	2	0.82
1481.74	-0.00	240	2	0.96
1481.80	-0.00	270	2	0.75
1481.87	-0.00	300	2	0.66

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

'URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 14:33:07 FILE NAME: STR06

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (3.5 BY 3.5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1476.54	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1478.35	1.62	1.81	2-M2c	1.51	1.17	5.31	1.17	2.28	1.07
60	1479.19	2.42	2.65	2-M2c	2.32	1.69	6.53	1.69	2.77	1.53
90	1480.59	3.13	4.05	6-FFn	3.50	2.09	4.68	3.50	3.10	1.87
120	1481.12	3.87	4.58	6-FFn	3.50	2.42	6.24	3.50	3.35	2.16
134	1481.42	4.26	4.88	6-FFn	3.50	2.56	6.98	3.50	3.55	2.40
140	1481.56	4.43	5.02	6-FFn	3.50	2.62	7.30	3.50	3.73	2.62
145	1481.66	4.56	5.12	6-FFn	3.50	2.65	7.52	3.50	3.88	2.81
148	1481.73	4.65	5.19	6-FFn	3.50	2.68	7.67	3.50	4.02	2.99
150	1481.79	4.72	5.25	6-FFn	3.50	2.70	7.80	3.50	4.14	3.16
150	1481.79	4.72	5.25	6-FFn	3.50	2.70	7.80	3.50	4.26	3.32

El. inlet face invert 1476.54 ft El. outlet invert 1476.42 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1476.54
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1476.42
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.50 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:33:07

FILE DATE: 10-23-2003
FILE NAME: STR06

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	8.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1476.42
CULVERT NO.1 OUTLET INVERT ELEVATION	1476.42 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1476.42	0.000	0.00	0.00	0.00
30.00	1477.49	0.388	1.07	2.28	0.27
60.00	1477.95	0.395	1.53	2.77	0.38
90.00	1478.29	0.399	1.87	3.10	0.47
120.00	1478.58	0.402	2.16	3.35	0.54
150.00	1478.82	0.404	2.40	3.55	0.60
180.00	1479.04	0.406	2.62	3.73	0.65
210.00	1479.23	0.408	2.81	3.88	0.70
240.00	1479.41	0.409	2.99	4.02	0.75
270.00	1479.58	0.411	3.16	4.14	0.79
300.00	1479.74	0.412	3.32	4.26	0.83

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1485.99
2	560.00	1482.93
3	1150.00	1481.12

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:55:42

FILE DATE: 10-09-2003
FILE NAME: 07

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1471.41	1471.26	30.00	1 RCB	18.00	4.30	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 07 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1471.41	0	0	0	0	0	0	0	0	1
1473.63	150	150	0	0	0	0	0	0	1
1474.87	300	300	0	0	0	0	0	0	1
1475.98	450	450	0	0	0	0	0	0	1
1477.15	600	600	0	0	0	0	0	0	1
1478.53	750	750	0	0	0	0	0	0	1
1479.39	900	831	0	0	0	0	0	69	4
1479.71	1050	859	0	0	0	0	0	183	4
1479.95	1200	879	0	0	0	0	0	314	4
1480.13	1350	894	0	0	0	0	0	450	4
1480.29	1500	907	0	0	0	0	0	588	4
1478.71	767	767	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 07 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1471.41	0.00	0	0	0.00
1473.63	0.00	150	0	0.00
1474.87	0.00	300	0	0.00
1475.98	0.00	450	0	0.00
1477.15	0.00	600	0	0.00
1478.53	0.00	750	0	0.00
1479.39	-0.00	900	1	0.06
1479.71	-0.01	1050	8	0.73
1479.95	-0.01	1200	7	0.58
1480.13	-0.00	1350	6	0.43
1480.29	-0.00	1500	5	0.34

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:55:42

FILE DATE: 10-09-2003
FILE NAME: 07

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 4.3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1471.41	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1473.63	2.21	2.22	3-M1t	1.30	1.29	4.94	1.69	3.59	1.69
300	1474.87	3.46	3.46	1-S2n	2.03	2.06	8.22	2.03	4.41	2.45
450	1475.98	4.57	4.57	5-S2n	2.65	2.69	9.44	2.65	4.95	3.02
600	1477.15	5.74	5.74	5-S2n	3.21	3.26	10.40	3.21	5.36	3.50
750	1478.53	7.12	7.12	5-S2n	3.73	3.79	11.17	3.73	5.70	3.91
831	1479.39	7.98	7.08	6-FFn	4.30	4.05	10.73	4.30	5.99	4.28
859	1479.71	8.30	7.59	4-FFt	4.30	4.14	11.10	4.30	6.25	4.61
879	1479.95	8.54	8.05	4-FFt	4.30	4.21	11.36	4.30	6.47	4.92
894	1480.13	8.72	8.45	4-FFt	4.30	4.26	11.55	4.30	6.68	5.21
907	1480.28	8.87	8.81	4-FFt	4.30	4.30	11.72	4.30	6.87	5.47

El. inlet face invert 1471.41 ft El. outlet invert 1471.26 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1471.41
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	1471.26
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	4.30 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
URRENT TIME: 14:55:42

FILE DATE: 10-09-2003
FILE NAME: 07

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.005
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1471.26
CULVERT NO.1 OUTLET INVERT ELEVATION	1471.26 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1471.26	0.000	0.00	0.00	0.00
150.00	1472.95	0.487	1.69	3.59	0.53
300.00	1473.71	0.497	2.45	4.41	0.76
450.00	1474.28	0.502	3.02	4.95	0.94
600.00	1474.76	0.505	3.50	5.36	1.09
750.00	1475.17	0.508	3.91	5.70	1.22
900.00	1475.54	0.511	4.28	5.99	1.34
1050.00	1475.87	0.513	4.61	6.25	1.44
1200.00	1476.18	0.514	4.92	6.47	1.53
1350.00	1476.47	0.516	5.21	6.68	1.62
1500.00	1476.73	0.517	5.47	6.87	1.71

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1482.93
2	570.00	1481.12
3	1030.00	1478.71

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:46:37

FILE DATE: 10-23-2003
FILE NAME: STR08

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1461.67	1461.55	24.00	2 CSP	3.50	3.50	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR08 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1461.67	0	0	0	0	0	0	0	0	1
1463.48	30	30	0	0	0	0	0	0	1
1464.32	60	60	0	0	0	0	0	0	1
1465.72	90	90	0	0	0	0	0	0	1
1466.25	120	120	0	0	0	0	0	0	1
1466.92	150	150	0	0	0	0	0	0	1
1467.74	180	180	0	0	0	0	0	0	1
1468.71	210	210	0	0	0	0	0	0	1
1469.12	240	221	0	0	0	0	0	17	8
1469.29	270	225	0	0	0	0	0	42	7
1469.41	300	228	0	0	0	0	0	69	6
1468.75	211	211	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR08 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1461.67	0.00	0	0	0.00
1463.48	0.00	30	0	0.00
1464.32	0.00	60	0	0.00
1465.72	0.00	90	0	0.00
1466.25	0.00	120	0	0.00
1466.92	0.00	150	0	0.00
1467.74	0.00	180	0	0.00
1468.71	0.00	210	0	0.00
1469.12	-0.01	240	2	0.80
1469.29	-0.01	270	3	0.93
1469.41	-0.01	300	3	0.99

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 14:46:37 FILE NAME: STR08

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (3.5 BY 3.5) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1461.67	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1463.48	1.62	1.81	2-M2c	1.51	1.17	5.31	1.17	2.28	1.07
60	1464.32	2.42	2.65	2-M2c	2.32	1.69	6.53	1.69	2.77	1.53
90	1465.72	3.13	4.05	6-FFn	3.50	2.09	4.68	3.50	3.10	1.87
120	1466.25	3.87	4.58	6-FFn	3.50	2.42	6.24	3.50	3.35	2.16
150	1466.92	4.72	5.25	6-FFn	3.50	2.70	7.80	3.50	3.55	2.40
180	1467.74	5.73	6.07	6-FFn	3.50	2.92	9.35	3.50	3.73	2.62
210	1468.71	6.93	7.04	6-FFn	3.50	3.11	10.91	3.50	3.88	2.81
221	1469.12	7.44	7.45	6-FFn	3.50	3.19	11.51	3.50	4.02	2.99
225	1469.29	7.62	7.59	6-FFn	3.50	3.21	11.70	3.50	4.14	3.16
228	1469.40	7.73	7.68	6-FFn	3.50	3.23	11.83	3.50	4.26	3.32

El. inlet face invert 1461.67 ft El. outlet invert 1461.55 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1461.67
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1461.55
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.50 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:46:37

FILE DATE: 10-23-2003
FILE NAME: STR08

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	8.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1461.55
CULVERT NO.1 OUTLET INVERT ELEVATION	1461.55 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1461.55	0.000	0.00	0.00	0.00
30.00	1462.62	0.388	1.07	2.28	0.27
60.00	1463.08	0.395	1.53	2.77	0.38
90.00	1463.42	0.399	1.87	3.10	0.47
120.00	1463.71	0.402	2.16	3.35	0.54
150.00	1463.95	0.404	2.40	3.55	0.60
180.00	1464.17	0.406	2.62	3.73	0.65
210.00	1464.36	0.408	2.81	3.88	0.70
240.00	1464.54	0.409	2.99	4.02	0.75
270.00	1464.71	0.411	3.16	4.14	0.79
300.00	1464.87	0.412	3.32	4.26	0.83

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1471.69
2	460.00	1469.48
3	615.00	1468.75

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:49:40

FILE DATE: 10-23-2003
FILE NAME: STR09

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1454.96	1454.84	24.00	2 CSP	4.00	4.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR09 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1454.96	0	0	0	0	0	0	0	0	1
1456.97	40	40	0	0	0	0	0	0	1
1457.91	80	80	0	0	0	0	0	0	1
1459.51	120	120	0	0	0	0	0	0	1
1460.04	160	160	0	0	0	0	0	0	1
1460.71	200	200	0	0	0	0	0	0	1
1461.53	240	240	0	0	0	0	0	0	1
1462.44	280	277	0	0	0	0	0	2	3
1462.73	320	289	0	0	0	0	0	29	7
1462.89	360	293	0	0	0	0	0	63	6
1463.01	400	297	0	0	0	0	0	101	6
1462.29	272	272	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR09 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1454.96	0.00	0	0	0.00
1456.97	0.00	40	0	0.00
1457.91	0.00	80	0	0.00
1459.51	0.00	120	0	0.00
1460.04	0.00	160	0	0.00
1460.71	0.00	200	0	0.00
1461.53	0.00	240	0	0.00
1462.44	-0.01	280	1	0.27
1462.73	-0.01	320	2	0.71
1462.89	-0.01	360	3	0.86
1463.01	-0.01	400	3	0.67

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 14:49:40 FILE NAME: STR09

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4 BY 4) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1454.96	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1456.97	1.81	2.01	2-M2c	1.66	1.31	5.60	1.31	2.42	1.14
80	1457.91	2.69	2.95	2-M2c	2.53	1.88	6.89	1.88	2.95	1.64
120	1459.51	3.47	4.55	6-FFn	4.00	2.33	4.77	4.00	3.30	2.01
160	1460.04	4.27	5.08	6-FFn	4.00	2.70	6.37	4.00	3.58	2.32
200	1460.71	5.16	5.75	6-FFn	4.00	3.02	7.96	4.00	3.80	2.59
240	1461.53	6.22	6.57	6-FFn	4.00	3.28	9.55	4.00	3.99	2.83
277	1462.44	7.38	7.48	6-FFn	4.00	3.48	11.04	4.00	4.15	3.04
289	1462.73	7.76	7.77	6-FFn	4.00	3.53	11.48	4.00	4.30	3.24
293	1462.89	7.93	7.90	6-FFn	4.00	3.56	11.67	4.00	4.44	3.42
297	1463.01	8.05	8.00	6-FFn	4.00	3.58	11.81	4.00	4.56	3.60

El. inlet face invert 1454.96 ft El. outlet invert 1454.84 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1454.96
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1454.84
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	4.00 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
URRENT TIME: 14:49:40 FILE NAME: STR09

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1454.84
CULVERT NO.1 OUTLET INVERT ELEVATION	1454.84 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1454.84	0.000	0.00	0.00	0.00
40.00	1455.98	0.399	1.14	2.42	0.28
80.00	1456.48	0.407	1.64	2.95	0.41
120.00	1456.85	0.410	2.01	3.30	0.50
160.00	1457.16	0.414	2.32	3.58	0.58
200.00	1457.43	0.416	2.59	3.80	0.65
240.00	1457.67	0.418	2.83	3.99	0.71
280.00	1457.88	0.420	3.04	4.15	0.76
320.00	1458.08	0.421	3.24	4.30	0.81
360.00	1458.26	0.422	3.42	4.44	0.85
400.00	1458.44	0.424	3.60	4.56	0.90

~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1466.20
2	470.00	1463.66
3	800.00	1462.29

CURRENT DATE: 10-23-2003
CURRENT TIME: 14:55:03

FILE DATE: 10-09-2003
FILE NAME: 10

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1440.28	1440.08	30.00	1 RCB	18.00	3.80	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 10 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1440.28	0	0	0	0	0	0	0	0	1
1442.47	150	150	0	0	0	0	0	0	1
1443.74	300	300	0	0	0	0	0	0	1
1444.93	450	450	0	0	0	0	0	0	1
1446.33	600	600	0	0	0	0	0	0	1
1447.74	750	724	0	0	0	0	0	25	6
1448.28	900	766	0	0	0	0	0	138	5
1448.60	1050	789	0	0	0	0	0	264	4
1448.88	1200	809	0	0	0	0	0	417	13
1449.13	1350	750	0	0	0	0	0	589	4
1449.31	1500	750	0	0	0	0	0	743	4
1447.17	676	676	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 10 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1440.28	0.00	0	0	0.00
1442.47	0.00	150	0	0.00
1443.74	0.00	300	0	0.00
1444.93	0.00	450	0	0.00
1446.33	0.00	600	0	0.00
1447.74	-0.00	750	1	0.18
1448.28	0.00	900	-3	-0.35
1448.60	0.00	1050	-3	-0.31
1448.88	0.00	1200	-26	-2.21
1449.13	-0.01	1350	11	0.81
1449.31	-0.01	1500	7	0.50

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

JRRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
RRENT TIME: 14:55:03 FILE NAME: 10

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 3.8) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1440.28	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1442.47	2.19	2.19	1-S2n	1.19	1.29	7.01	1.19	3.95	1.56
300	1443.74	3.46	3.46	1-S2n	1.85	2.06	8.83	1.89	4.87	2.27
450	1444.93	4.65	4.65	5-S2n	2.41	2.69	10.10	2.48	5.47	2.81
600	1446.33	6.05	6.05	5-S2n	2.91	3.26	11.06	3.01	5.93	3.26
724	1447.74	7.46	7.46	5-S2n	3.30	3.70	11.73	3.43	6.31	3.65
766	1448.28	8.00	7.01	4-FFt	3.80	3.80	11.19	3.80	6.63	4.00
789	1448.60	8.32	7.53	4-FFt	3.80	3.80	11.54	3.80	6.91	4.31
809	1448.88	8.60	8.00	4-FFt	3.80	3.80	11.83	3.80	7.17	4.60
750	1448.07	7.79	7.76	4-FFt	3.38	3.79	10.96	3.80	7.40	4.87
750	1448.29	7.79	8.01	4-FFt	3.38	3.79	10.96	3.80	7.61	5.12

El. inlet face invert 1440.28 ft El. outlet invert 1440.08 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1440.28
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	1440.08
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0067
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	3.80 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
CURRENT TIME: 14:55:03 FILE NAME: 10

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.007
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1440.08
CULVERT NO.1 OUTLET INVERT ELEVATION	1440.08 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1440.08	0.000	0.00	0.00	0.00
150.00	1441.64	0.557	1.56	3.95	0.64
300.00	1442.35	0.569	2.27	4.87	0.94
450.00	1442.89	0.575	2.81	5.47	1.16
600.00	1443.34	0.579	3.26	5.93	1.34
750.00	1443.73	0.582	3.65	6.31	1.50
900.00	1444.08	0.584	4.00	6.63	1.65
1050.00	1444.39	0.587	4.31	6.91	1.77
1200.00	1444.68	0.589	4.60	7.17	1.89
1350.00	1444.95	0.591	4.87	7.40	2.01
1500.00	1445.20	0.592	5.12	7.61	2.11

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1454.92
2	460.00	1450.97
3	880.00	1447.17

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:02:31

FILE DATE: 10-09-2003
FILE NAME: 11

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1418.20	1418.13	30.00	1 RCB	57.00	4.50	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 11 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1418.20	0	0	0	0	0	0	0	0	1
1420.48	400	400	0	0	0	0	0	0	1
1421.70	800	800	0	0	0	0	0	0	1
1422.70	1200	1200	0	0	0	0	0	0	1
1423.57	1600	1600	0	0	0	0	0	0	1
1424.72	2000	2000	0	0	0	0	0	0	1
1425.91	2400	2400	0	0	0	0	0	0	1
1427.04	2800	2724	0	0	0	0	0	69	6
1427.56	3200	2755	0	0	0	0	0	440	5
1427.83	3600	2687	0	0	0	0	0	895	4
1428.06	4000	2601	0	0	0	0	0	1384	4
1426.54	2599	2599	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 11 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1418.20	0.00	0	0	0.00
1420.48	0.00	400	0	0.00
1421.70	0.00	800	0	0.00
1422.70	0.00	1200	0	0.00
1423.57	0.00	1600	0	0.00
1424.72	0.00	2000	0	0.00
1425.91	0.00	2400	0	0.00
1427.04	-0.00	2800	7	0.26
1427.56	-0.00	3200	5	0.17
1427.83	-0.01	3600	18	0.49
1428.06	-0.00	4000	15	0.38

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
CURRENT TIME: 15:02:31 FILE NAME: 11

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (57 BY 4.5) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1418.20	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
400	1420.48	1.98	2.28	3-M1t	1.42	1.15	3.44	2.04	3.01	2.04
800	1421.70	3.10	3.50	3-M1t	2.19	1.83	4.62	3.04	3.81	3.04
1200	1422.70	4.05	4.50	3-M1t	2.81	2.40	5.51	3.82	4.35	3.82
1600	1423.57	4.96	5.37	3-M1t	3.36	2.91	6.26	4.48	4.76	4.48
2000	1424.72	5.93	6.52	4-FFt	3.87	3.38	7.80	4.50	5.10	5.07
2400	1425.91	7.03	7.71	4-FFt	4.50	3.81	9.36	4.50	5.40	5.60
2724	1427.03	8.04	8.83	4-FFt	4.50	4.15	10.62	4.50	5.65	6.09
2755	1427.55	8.15	9.35	4-FFt	4.50	4.18	10.74	4.50	5.88	6.54
2687	1427.83	7.92	9.63	4-FFt	4.50	4.11	10.48	4.50	6.09	6.97
2601	1428.06	7.64	9.86	4-FFt	4.50	4.02	10.14	4.50	6.28	7.37

El. inlet face invert 1418.20 ft El. outlet invert 1418.13 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1418.20
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	1418.13
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0023
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	57.00 FT
BARREL RISE	4.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
URRENT TIME: 15:02:31 FILE NAME: 11

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	57.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.002
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1418.13
CULVERT NO.1 OUTLET INVERT ELEVATION	1418.13 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1418.13	0.000	0.00	0.00	0.00
400.00	1420.17	0.372	2.04	3.01	0.29
800.00	1421.17	0.385	3.04	3.81	0.44
1200.00	1421.95	0.392	3.82	4.35	0.55
1600.00	1422.61	0.396	4.48	4.76	0.64
2000.00	1423.20	0.399	5.07	5.10	0.73
2400.00	1423.73	0.402	5.60	5.40	0.80
2800.00	1424.22	0.404	6.09	5.65	0.87
3200.00	1424.67	0.405	6.54	5.88	0.94
3600.00	1425.10	0.406	6.97	6.09	1.00
4000.00	1425.50	0.408	7.37	6.28	1.06

~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1431.46
2	450.00	1428.94
3	900.00	1427.42
4	970.00	1427.47
5	1360.00	1426.54

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:07:25

FILE DATE: 10-09-2003
FILE NAME: 12

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1417.64	1417.52	30.00	1 RCB	12.00	5.60	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 12 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1417.64	0	0	0	0	0	0	0	0	1
1420.56	150	150	0	0	0	0	0	0	1
1422.26	300	300	0	0	0	0	0	0	1
1423.71	450	450	0	0	0	0	0	0	1
1425.18	600	600	0	0	0	0	0	0	1
1426.78	750	733	0	0	0	0	0	14	8
1427.13	900	759	0	0	0	0	0	135	7
1427.32	1050	773	0	0	0	0	0	271	6
1427.45	1200	782	0	0	0	0	0	412	5
1427.55	1350	789	0	0	0	0	0	552	4
1427.64	1500	796	0	0	0	0	0	697	4
1426.54	714	714	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 12 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1417.64	0.00	0	0	0.00
1420.56	0.00	150	0	0.00
1422.26	0.00	300	0	0.00
1423.71	0.00	450	0	0.00
1425.18	0.00	600	0	0.00
1426.78	-0.01	750	4	0.48
1427.13	-0.01	900	5	0.59
1427.32	-0.01	1050	7	0.63
1427.45	-0.01	1200	6	0.46
1427.55	-0.01	1350	8	0.62
1427.64	-0.01	1500	7	0.49

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
URRENT TIME: 15:07:25 FILE NAME: 12

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (12 BY 5.6) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1417.64	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1420.56	2.89	2.92	3-M1t	1.87	1.70	5.91	2.11	3.47	2.11
300	1422.26	4.54	4.62	3-M2t	3.00	2.69	8.37	2.99	4.20	2.99
450	1423.71	6.00	6.07	3-M2t	4.00	3.53	10.33	3.63	4.67	3.63
600	1425.18	7.54	7.35	2-M2c	4.92	4.28	11.70	4.28	5.04	4.16
733	1426.78	9.14	8.47	6-FFn	5.60	4.88	10.90	5.60	5.34	4.61
759	1427.13	9.49	8.69	6-FFn	5.60	5.00	11.30	5.60	5.60	5.01
773	1427.32	9.68	8.80	6-FFn	5.60	5.06	11.50	5.60	5.83	5.38
782	1427.45	9.81	9.00	4-FFt	5.60	5.10	11.64	5.60	6.03	5.71
789	1427.55	9.91	9.37	4-FFt	5.60	5.13	11.74	5.60	6.22	6.02
796	1427.64	10.00	9.71	4-FFt	5.60	5.16	11.84	5.60	6.39	6.31

El. inlet face invert 1417.64 ft El. outlet invert 1417.52 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1417.64
OUTLET STATION (FT)	30.00
OUTLET ELEVATION (FT)	1417.52
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0040
CULVERT LENGTH ALONG SLOPE (FT)	30.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	12.00 FT
BARREL RISE	5.60 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:07:25

FILE DATE: 10-09-2003
FILE NAME: 12

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1417.52
CULVERT NO.1 OUTLET INVERT ELEVATION	1417.52 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1417.52	0.000	0.00	0.00	0.00
150.00	1419.63	0.421	2.11	3.47	0.53
300.00	1420.51	0.428	2.99	4.20	0.75
450.00	1421.15	0.432	3.63	4.67	0.91
600.00	1421.68	0.436	4.16	5.04	1.04
750.00	1422.13	0.439	4.61	5.34	1.15
900.00	1422.53	0.441	5.01	5.60	1.25
1050.00	1422.90	0.443	5.38	5.83	1.34
1200.00	1423.23	0.445	5.71	6.03	1.43
1350.00	1423.54	0.447	6.02	6.22	1.50
1500.00	1423.83	0.448	6.31	6.39	1.57

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1428.94
2	450.00	1427.42
3	920.00	1426.54

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:11:49

FILE DATE: 10-09-2003
FILE NAME: 13

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1417.41	1417.29	24.00	1 RCB	13.00	5.00	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 13 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1417.41	0	0	0	0	0	0	0	0	1
1420.18	150	150	0	0	0	0	0	0	1
1421.78	300	300	0	0	0	0	0	0	1
1423.19	450	450	0	0	0	0	0	0	1
1424.72	600	600	0	0	0	0	0	0	1
1426.48	750	738	0	0	0	0	0	6	15
1426.67	900	751	0	0	0	0	0	141	7
1426.76	1050	757	0	0	0	0	0	286	5
1426.83	1200	762	0	0	0	0	0	427	4
1426.90	1350	767	0	0	0	0	0	574	4
1426.96	1500	767	0	0	0	0	0	726	4
1426.39	731	731	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 13 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1417.41	0.00	0	0	0.00
1420.18	0.00	150	0	0.00
1421.78	0.00	300	0	0.00
1423.19	0.00	450	0	0.00
1424.72	0.00	600	0	0.00
1426.48	-0.01	750	6	0.80
1426.67	-0.01	900	8	0.90
1426.76	-0.01	1050	8	0.72
1426.83	-0.01	1200	11	0.93
1426.90	-0.01	1350	9	0.67
1426.96	-0.01	1500	7	0.46

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
CURRENT TIME: 15:11:49 FILE NAME: 13

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (13 BY 5) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1417.41	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1420.18	2.73	2.77	3-M1t	1.64	1.61	5.62	2.05	3.45	2.05
300	1421.78	4.30	4.37	3-M1t	2.60	2.55	7.92	2.91	4.17	2.91
450	1423.19	5.72	5.78	3-M1t	3.44	3.35	9.75	3.55	4.66	3.55
600	1424.72	7.31	7.02	3-M2t	4.22	4.05	11.33	4.07	5.03	4.07
738	1426.48	9.07	8.09	6-FFn	5.00	4.65	11.35	5.00	5.33	4.52
751	1426.67	9.26	8.20	6-FFn	5.00	4.71	11.55	5.00	5.59	4.92
757	1426.75	9.34	8.54	4-FFt	5.00	4.73	11.64	5.00	5.82	5.28
762	1426.83	9.42	8.92	4-FFt	5.00	4.75	11.72	5.00	6.02	5.62
767	1426.90	9.49	9.27	4-FFt	5.00	4.77	11.79	5.00	6.21	5.92
767	1426.97	9.49	9.56	4-FFt	5.00	4.77	11.80	5.00	6.38	6.21

El. inlet face invert 1417.41 ft El. outlet invert 1417.29 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

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***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION (FT)                          0.00
      INLET ELEVATION (FT)                     1417.41
      OUTLET STATION (FT)                        24.00
      OUTLET ELEVATION (FT)                    1417.29
      NUMBER OF BARRELS                            1
      SLOPE (V-FT/H-FT)                          0.0050
      CULVERT LENGTH ALONG SLOPE (FT)           24.00

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            13.00 FT
      BARREL RISE             5.00 FT
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S N    0.018
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE  (90-45 DEG.)
      INLET DEPRESSION      NONE
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JRRENT DATE: 10-23-2003　　FILE DATE: 10-09-2003
RRENT TIME: 15:11:49　　FILE NAME: 13

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	13.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1417.29
CULVERT NO.1 OUTLET INVERT ELEVATION	1417.29 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1417.29	0.000	0.00	0.00	0.00
150.00	1419.34	0.424	2.05	3.45	0.51
300.00	1420.20	0.431	2.91	4.17	0.73
450.00	1420.84	0.436	3.55	4.66	0.89
600.00	1421.36	0.439	4.07	5.03	1.02
750.00	1421.81	0.442	4.52	5.33	1.13
900.00	1422.21	0.444	4.92	5.59	1.23
1050.00	1422.57	0.446	5.28	5.82	1.32
1200.00	1422.91	0.448	5.62	6.02	1.40
1350.00	1423.21	0.450	5.92	6.21	1.48
1500.00	1423.50	0.451	6.21	6.38	1.55

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~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1426.39
2	470.00	1426.58
3	920.00	1426.53

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CURRENT DATE: 10-23-2003
CURRENT TIME: 15:18:09

FILE DATE: 10-09-2003
FILE NAME: 14

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1419.02	1418.90	24.00	1 RCB	12.00	3.10	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 14 DATE: 10-09-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1419.02	0	0	0	0	0	0	0	0	1
1421.54	120	120	0	0	0	0	0	0	1
1423.09	240	240	0	0	0	0	0	0	1
1425.20	360	360	0	0	0	0	0	0	1
1426.62	480	421	0	0	0	0	0	56	15
1426.72	600	425	0	0	0	0	0	170	6
1426.79	720	424	0	0	0	0	0	291	5
1426.87	840	408	0	0	0	0	0	428	5
1426.94	960	392	0	0	0	0	0	560	4
1427.00	1080	377	0	0	0	0	0	696	4
1427.06	1200	365	0	0	0	0	0	829	4
1426.46	415	415	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 14 DATE: 10-09-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1419.02	0.00	0	0	0.00
1421.54	0.00	120	0	0.00
1423.09	0.00	240	0	0.00
1425.20	0.00	360	0	0.00
1426.62	-0.00	480	3	0.59
1426.72	-0.00	600	4	0.73
1426.79	-0.00	720	5	0.74
1426.87	-0.00	840	4	0.49
1426.94	-0.01	960	8	0.85
1427.00	-0.01	1080	7	0.64
1427.06	-0.01	1200	6	0.47

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

JRRENT DATE: 10-23-2003 FILE DATE: 10-09-2003
RRENT TIME: 15:18:09 FILE NAME: 14

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (12 BY 3.1) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1419.02	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
120	1421.54	2.46	2.52	3-M1t	1.51	1.46	5.31	1.88	3.26	1.88
240	1423.09	4.07	3.98	3-M1t	2.39	2.32	7.47	2.68	3.95	2.68
360	1425.20	6.18	5.57	4-FFt	3.10	3.04	9.68	3.10	4.41	3.26
421	1426.61	7.59	6.95	4-FFt	3.10	3.10	11.32	3.10	4.75	3.74
425	1426.71	7.69	7.43	4-FFt	3.10	3.10	11.43	3.10	5.04	4.16
424	1426.79	7.66	7.77	4-FFt	3.10	3.10	11.40	3.10	5.29	4.52
408	1426.88	7.27	7.86	4-FFt	3.10	3.10	10.97	3.10	5.50	4.86
392	1426.95	6.89	7.93	4-FFt	3.10	3.10	10.54	3.10	5.70	5.16
377	1427.01	6.55	7.99	4-FFt	3.10	3.10	10.13	3.10	5.87	5.44
365	1427.11	6.29	8.09	4-FFt	3.10	3.07	9.81	3.10	6.03	5.71

El. inlet face invert 1419.02 ft El. outlet invert 1418.90 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1419.02
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1418.90
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	12.00 FT
BARREL RISE	3.10 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:18:09

FILE DATE: 10-09-2003
FILE NAME: 14

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1418.90
CULVERT NO.1 OUTLET INVERT ELEVATION	1418.90 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1418.90	0.000	0.00	0.00	0.00
120.00	1420.78	0.418	1.88	3.26	0.47
240.00	1421.58	0.425	2.68	3.95	0.67
360.00	1422.16	0.430	3.26	4.41	0.81
480.00	1422.64	0.433	3.74	4.75	0.93
600.00	1423.06	0.436	4.16	5.04	1.04
720.00	1423.42	0.438	4.52	5.29	1.13
840.00	1423.76	0.440	4.86	5.50	1.21
960.00	1424.06	0.442	5.16	5.70	1.29
1080.00	1424.34	0.443	5.44	5.87	1.36
1200.00	1424.61	0.445	5.71	6.03	1.43

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1426.58
2	440.00	1426.53
3	800.00	1426.46

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:22:05

FILE DATE: 10-23-2003
FILE NAME: STR15

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1418.63	1418.51	24.00	2 RCPE	4.42	2.83	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR15 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1418.63	0	0	0	0	0	0	0	0	1
1420.38	40	40	0	0	0	0	0	0	1
1421.25	80	80	0	0	0	0	0	0	1
1422.42	120	120	0	0	0	0	0	0	1
1423.26	160	160	0	0	0	0	0	0	1
1424.34	200	200	0	0	0	0	0	0	1
1426.03	240	240	0	0	0	0	0	0	1
1426.33	280	246	0	0	0	0	0	31	19
1426.40	320	248	0	0	0	0	0	69	9
1426.45	360	246	0	0	0	0	0	111	7
1426.50	400	243	0	0	0	0	0	154	6
1426.11	242	242	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR15 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1418.63	0.00	0	0	0.00
1420.38	0.00	40	0	0.00
1421.25	0.00	80	0	0.00
1422.42	0.00	120	0	0.00
1423.26	0.00	160	0	0.00
1424.34	0.00	200	0	0.00
1426.03	0.00	240	0	0.00
1426.33	-0.00	280	3	0.91
1426.40	-0.00	320	3	0.98
1426.45	-0.00	360	3	0.96
1426.50	-0.00	400	3	0.87

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:22:05

FILE DATE: 10-23-2003
FILE NAME: STR15

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4.416667 BY 2.833333) RCPE

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1418.63	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1420.38	1.56	1.75	3-M2t	1.41	1.12	5.20	1.14	2.42	1.14
80	1421.25	2.42	2.62	3-M2t	2.22	1.63	6.61	1.64	2.95	1.64
120	1422.42	3.28	3.79	6-FFn	2.83	2.02	5.90	2.83	3.30	2.01
160	1423.26	4.34	4.63	6-FFn	2.83	2.33	7.87	2.83	3.58	2.32
200	1424.34	5.71	5.70	6-FFn	2.83	2.55	9.83	2.83	3.80	2.59
240	1426.03	7.40	7.02	6-FFn	2.83	2.78	11.80	2.83	3.99	2.83
246	1426.32	7.69	7.46	4-FFt	2.83	2.82	12.13	2.83	4.15	3.04
248	1426.39	7.76	7.71	4-FFt	2.83	2.83	12.20	2.83	4.30	3.24
246	1426.46	7.68	7.83	4-FFt	2.83	2.82	12.12	2.83	4.44	3.42
243	1426.51	7.52	7.88	4-FFt	2.83	2.80	11.95	2.83	4.56	3.60

El. inlet face invert 1418.63 ft El. outlet invert 1418.51 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1418.63
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1418.51
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	ELLIPTICAL
BARREL SPAN	4.42 FT
BARREL RISE	2.83 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQ. EDGE WITH HEADWALL
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
URRENT TIME: 15:22:05

FILE DATE: 10-23-2003
FILE NAME: STR15

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1418.51
CULVERT NO.1 OUTLET INVERT ELEVATION	1418.51 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1418.51	0.000	0.00	0.00	0.00
40.00	1419.65	0.399	1.14	2.42	0.28
80.00	1420.15	0.407	1.64	2.95	0.41
120.00	1420.52	0.410	2.01	3.30	0.50
160.00	1420.83	0.414	2.32	3.58	0.58
200.00	1421.10	0.416	2.59	3.80	0.65
240.00	1421.34	0.418	2.83	3.99	0.71
280.00	1421.55	0.420	3.04	4.15	0.76
320.00	1421.75	0.421	3.24	4.30	0.81
360.00	1421.93	0.422	3.42	4.44	0.85
400.00	1422.11	0.424	3.60	4.56	0.90

~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1426.50
2	440.00	1426.30
3	730.00	1426.11

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:26:11

FILE DATE: 10-10-2003
FILE NAME: 16

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1409.00	1408.87	24.00	1 RCB	29.00	4.00	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 16 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1409.00	0	0	0	0	0	0	0	0	1
1412.05	400	400	0	0	0	0	0	0	1
1413.99	800	800	0	0	0	0	0	0	1
1416.42	1200	1200	0	0	0	0	0	0	1
1418.43	1600	1450	0	0	0	0	0	143	4
1418.85	2000	1498	0	0	0	0	0	491	4
1419.17	2400	1469	0	0	0	0	0	914	4
1419.42	2800	1423	0	0	0	0	0	1355	4
1419.63	3200	1375	0	0	0	0	0	1801	4
1419.80	3600	1324	0	0	0	0	0	2263	4
1419.86	4000	1600	0	0	0	0	0	2439	4
1417.80	1378	1378	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 16 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1409.00	0.00	0	0	0.00
1412.05	0.00	400	0	0.00
1413.99	0.00	800	0	0.00
1416.42	0.00	1200	0	0.00
1418.43	-0.01	1600	7	0.43
1418.85	-0.01	2000	11	0.54
1419.17	-0.01	2400	17	0.70
1419.42	-0.01	2800	21	0.76
1419.63	-0.01	3200	23	0.73
1419.80	-0.00	3600	13	0.36
1419.86	0.01	4000	-39	-0.97

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 15:26:11 FILE NAME: 16

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (29 BY 4) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1409.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
400	1412.05	3.05	3.05	1-S2n	1.70	1.81	8.10	1.70	4.18	2.46
800	1413.99	4.99	4.99	5-S2n	2.64	2.88	10.18	2.71	5.15	3.59
1200	1416.42	7.42	6.98	4-FFt	3.44	3.77	10.34	4.00	5.79	4.44
1450	1418.42	9.42	8.91	4-FFt	4.00	4.00	12.50	4.00	6.27	5.14
1498	1418.85	9.85	9.79	4-FFt	4.00	4.00	12.91	4.00	6.67	5.76
1469	1419.18	9.58	10.18	4-FFt	4.00	4.00	12.66	4.00	7.01	6.31
1423	1419.43	9.18	10.43	4-FFt	4.00	4.00	12.27	4.00	7.32	6.81
1375	1419.64	8.77	10.64	4-FFt	4.00	4.00	11.85	4.00	7.59	7.27
1324	1419.81	8.36	10.81	4-FFt	4.00	4.00	11.42	4.00	7.83	7.69
1600	1421.71	10.82	12.71	4-FFt	4.00	4.00	13.79	4.00	8.05	8.09

El. inlet face invert 1409.00 ft El. outlet invert 1408.87 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1409.00
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1408.87
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0054
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	29.00 FT
BARREL RISE	4.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:26:11

FILE DATE: 10-10-2003
FILE NAME: 16

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	29.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1408.87
CULVERT NO.1 OUTLET INVERT ELEVATION	1408.87 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1408.87	0.000	0.00	0.00	0.00
400.00	1411.33	0.469	2.46	4.18	0.61
800.00	1412.46	0.479	3.59	5.15	0.89
1200.00	1413.31	0.484	4.44	5.79	1.11
1600.00	1414.01	0.487	5.14	6.27	1.28
2000.00	1414.63	0.490	5.76	6.67	1.44
2400.00	1415.18	0.492	6.31	7.01	1.57
2800.00	1415.68	0.494	6.81	7.32	1.70
3200.00	1416.14	0.496	7.27	7.59	1.81
3600.00	1416.56	0.497	7.69	7.83	1.92
4000.00	1416.96	0.499	8.09	8.05	2.02

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1421.05
2	450.00	1419.71
3	910.00	1418.17
4	1080.00	1417.80

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:30:41

FILE DATE: 10-10-2003
FILE NAME: 17

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1404.93	1404.81	24.00	1 RCB	17.00	3.20	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 17 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1404.93	0	0	0	0	0	0	0	0	1
1408.12	250	250	0	0	0	0	0	0	1
1410.82	500	500	0	0	0	0	0	0	1
1411.86	750	571	0	0	0	0	0	173	4
1412.28	1000	552	0	0	0	0	0	438	4
1412.57	1250	526	0	0	0	0	0	716	4
1412.79	1500	505	0	0	0	0	0	982	4
1412.96	1750	501	0	0	0	0	0	1236	4
1413.11	2000	500	0	0	0	0	0	1487	4
1413.25	2250	500	0	0	0	0	0	1738	4
1413.38	2500	500	0	0	0	0	0	1988	4
1410.91	506	506	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 17 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1404.93	0.00	0	0	0.00
1408.12	0.00	250	0	0.00
1410.82	0.00	500	0	0.00
1411.86	-0.01	750	6	0.79
1412.28	-0.01	1000	9	0.92
1412.57	-0.01	1250	8	0.68
1412.79	-0.01	1500	13	0.84
1412.96	-0.01	1750	13	0.74
1413.11	-0.00	2000	13	0.64
1413.25	-0.00	2250	12	0.55
1413.38	-0.00	2500	12	0.49

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:30:41 FILE NAME: 17

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (17 BY 3.2) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1404.93	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
250	1408.12	3.19	3.19	1-S2n	1.88	1.89	7.81	1.88	3.89	2.41
500	1410.82	5.89	5.49	4-FFt	3.20	3.00	9.19	3.20	4.72	3.44
571	1411.86	6.93	6.91	4-FFt	3.20	3.20	10.50	3.20	5.27	4.20
552	1412.29	6.64	7.36	4-FFt	3.20	3.20	10.15	3.20	5.70	4.83
526	1412.58	6.25	7.65	4-FFt	3.20	3.10	9.66	3.20	6.04	5.37
505	1412.87	5.96	7.94	4-FFt	3.20	3.02	9.28	3.20	6.34	5.85
501	1413.27	5.90	8.34	4-FFt	3.20	3.00	9.20	3.20	6.60	6.29
500	1413.67	5.89	8.74	4-FFt	3.20	3.00	9.19	3.20	6.83	6.69
500	1414.04	5.89	9.11	4-FFt	3.20	3.00	9.19	3.20	7.04	7.06
500	1414.38	5.89	9.45	4-FFt	3.20	3.00	9.19	3.20	7.24	7.41

El. inlet face invert 1404.93 ft El. outlet invert 1404.81 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1404.93
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1404.81
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	17.00 FT
BARREL RISE	3.20 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:30:41 FILE NAME: 17

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	17.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1404.81
CULVERT NO.1 OUTLET INVERT ELEVATION	1404.81 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1404.81	0.000	0.00	0.00	0.00
250.00	1407.22	0.441	2.41	3.89	0.60
500.00	1408.25	0.449	3.44	4.72	0.86
750.00	1409.01	0.453	4.20	5.27	1.05
1000.00	1409.64	0.457	4.83	5.70	1.21
1250.00	1410.18	0.459	5.37	6.04	1.34
1500.00	1410.66	0.462	5.85	6.34	1.46
1750.00	1411.10	0.464	6.29	6.60	1.57
2000.00	1411.50	0.466	6.69	6.83	1.67
2250.00	1411.87	0.467	7.06	7.04	1.76
2500.00	1412.22	0.469	7.41	7.24	1.85

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1414.29
2	200.00	1413.39
3	710.00	1410.91

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:36:26

FILE DATE: 10-10-2003
FILE NAME: 18

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1398.20	1398.08	24.00	1 RCB	11.00	3.70	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 18 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1398.20	0	0	0	0	0	0	0	0	1
1402.54	250	250	0	0	0	0	0	0	1
1406.36	500	465	0	0	0	0	0	34	7
1407.01	750	493	0	0	0	0	0	252	4
1407.33	1000	503	0	0	0	0	0	487	4
1407.57	1250	500	0	0	0	0	0	740	4
1407.77	1500	500	0	0	0	0	0	992	4
1407.93	1750	500	0	0	0	0	0	1243	4
1408.08	2000	500	0	0	0	0	0	1493	4
1408.21	2250	500	0	0	0	0	0	1743	4
1408.32	2500	500	0	0	0	0	0	1976	3
1405.73	437	437	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 18 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1398.20	0.00	0	0	0.00
1402.54	0.00	250	0	0.00
1406.36	-0.00	500	1	0.20
1407.01	-0.01	750	5	0.65
1407.33	-0.01	1000	10	0.98
1407.57	-0.01	1250	10	0.83
1407.77	-0.00	1500	8	0.53
1407.93	-0.00	1750	7	0.39
1408.08	-0.01	2000	7	0.35
1408.21	-0.01	2250	7	0.32
1408.32	-0.01	2500	24	0.95

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:36:26 FILE NAME: 18

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (11 BY 3.7) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1398.20	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
250	1402.54	4.34	4.34	3-M1t	2.64	2.53	8.10	2.80	4.01	2.80
465	1406.35	8.15	7.12	4-FFt	3.70	3.70	11.44	3.70	4.82	3.90
493	1407.01	8.81	8.34	4-FFt	3.70	3.70	12.12	3.70	5.35	4.70
503	1407.34	9.05	9.14	4-FFt	3.70	3.70	12.36	3.70	5.77	5.35
500	1407.85	8.97	9.65	4-FFt	3.70	3.70	12.29	3.70	6.10	5.91
500	1408.34	8.97	10.14	4-FFt	3.70	3.70	12.29	3.70	6.39	6.41
500	1408.79	8.97	10.59	4-FFt	3.70	3.70	12.29	3.70	6.65	6.85
500	1409.20	8.97	11.00	4-FFt	3.70	3.70	12.29	3.70	6.88	7.26
500	1409.57	8.97	11.37	4-FFt	3.70	3.70	12.29	3.70	7.09	7.64
500	1409.93	8.97	11.73	4-FFt	3.70	3.70	12.29	3.70	7.28	7.99

El. inlet face invert 1398.20 ft El. outlet invert 1398.08 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1398.20
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1398.08
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	11.00 FT
BARREL RISE	3.70 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:36:26

FILE DATE: 10-10-2003
FILE NAME: 18

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TAILWATER

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	11.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1398.08
CULVERT NO.1 OUTLET INVERT ELEVATION	1398.08 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1398.08	0.000	0.00	0.00	0.00
250.00	1400.88	0.422	2.80	4.01	0.70
500.00	1401.98	0.430	3.90	4.82	0.97
750.00	1402.78	0.435	4.70	5.35	1.17
1000.00	1403.43	0.439	5.35	5.77	1.34
1250.00	1403.99	0.443	5.91	6.10	1.48
1500.00	1404.49	0.445	6.41	6.39	1.60
1750.00	1404.93	0.448	6.85	6.65	1.71
2000.00	1405.34	0.450	7.26	6.88	1.81
2250.00	1405.72	0.452	7.64	7.09	1.91
2500.00	1406.07	0.454	7.99	7.28	1.99

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ROADWAY OVERTOPPING DATA

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1408.69
2	550.00	1406.51
3	640.00	1405.73

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CURRENT DATE: 10-23-2003
CURRENT TIME: 15:39:47

FILE DATE: 10-10-2003
FILE NAME: 19

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1397.25	1397.13	24.00	1 RCB	12.00	1.80	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 19 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1397.25	0	0	0	0	0	0	0	0	1
1398.49	40	40	0	0	0	0	0	0	1
1399.18	80	80	0	0	0	0	0	0	1
1399.89	120	120	0	0	0	0	0	0	1
1400.86	160	160	0	0	0	0	0	0	1
1402.12	200	200	0	0	0	0	0	0	1
1402.98	240	222	0	0	0	0	0	18	5
1403.16	280	226	0	0	0	0	0	52	7
1403.30	320	227	0	0	0	0	0	91	6
1403.41	360	224	0	0	0	0	0	134	6
1403.50	400	221	0	0	0	0	0	175	5
1402.62	213	213	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 19 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1397.25	0.00	0	0	0.00
1398.49	0.00	40	0	0.00
1399.18	0.00	80	0	0.00
1399.89	0.00	120	0	0.00
1400.86	0.00	160	0	0.00
1402.12	0.00	200	0	0.00
1402.98	-0.00	240	1	0.24
1403.16	-0.01	280	2	0.72
1403.30	-0.01	320	2	0.74
1403.41	-0.00	360	2	0.57
1403.50	-0.01	400	4	0.95

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:39:47 FILE NAME: 19

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (12 BY 1.8) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1397.25	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1398.49	1.19	1.24	3-M1t	0.75	0.70	3.18	1.05	2.36	1.05
80	1399.18	1.89	1.93	3-M1t	1.16	1.12	4.37	1.52	2.90	1.52
120	1399.89	2.64	2.51	3-M1f	1.51	1.46	5.56	1.80	3.26	1.88
160	1400.86	3.61	3.61	4-FFt	1.80	1.77	7.41	1.80	3.53	2.18
200	1402.12	4.87	4.74	4-FFt	1.80	1.80	9.26	1.80	3.76	2.44
222	1402.97	5.72	5.53	4-FFt	1.80	1.80	10.27	1.80	3.95	2.68
226	1403.16	5.91	5.86	4-FFt	1.80	1.80	10.47	1.80	4.12	2.89
227	1403.31	5.93	6.06	4-FFt	1.80	1.80	10.49	1.80	4.27	3.08
224	1403.42	5.82	6.17	4-FFt	1.80	1.80	10.37	1.80	4.41	3.26
221	1403.51	5.69	6.26	4-FFt	1.80	1.80	10.23	1.80	4.53	3.43

El. inlet face invert 1397.25 ft El. outlet invert 1397.13 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1397.25
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1397.13
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	12.00 FT
BARREL RISE	1.80 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
URRENT TIME: 15:39:47 FILE NAME: 19

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1397.13
CULVERT NO.1 OUTLET INVERT ELEVATION	1397.13 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1397.13	0.000	0.00	0.00	0.00
40.00	1398.18	0.406	1.05	2.36	0.26
80.00	1398.65	0.414	1.52	2.90	0.38
120.00	1399.01	0.418	1.88	3.26	0.47
160.00	1399.31	0.421	2.18	3.53	0.55
200.00	1399.57	0.423	2.44	3.76	0.61
240.00	1399.81	0.425	2.68	3.95	0.67
280.00	1400.02	0.427	2.89	4.12	0.72
320.00	1400.21	0.429	3.08	4.27	0.77
360.00	1400.39	0.430	3.26	4.41	0.81
400.00	1400.56	0.431	3.43	4.53	0.86

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1405.73
2	440.00	1404.23
3	850.00	1402.62

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:43:22

FILE DATE: 10-10-2003
FILE NAME: 20

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1387.12	1387.00	24.00	1 RCB	18.00	4.90	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 20 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1387.12	0	0	0	0	0	0	0	0	1
1390.20	250	250	0	0	0	0	0	0	1
1392.00	500	500	0	0	0	0	0	0	1
1393.82	750	750	0	0	0	0	0	0	1
1395.62	1000	952	0	0	0	0	0	45	5
1396.05	1250	994	0	0	0	0	0	248	5
1396.31	1500	1019	0	0	0	0	0	471	5
1396.50	1750	1020	0	0	0	0	0	714	4
1396.66	2000	1000	0	0	0	0	0	987	4
1396.79	2250	1000	0	0	0	0	0	1241	4
1396.90	2500	1000	0	0	0	0	0	1493	4
1395.16	903	903	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 20 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1387.12	0.00	0	0	0.00
1390.20	0.00	250	0	0.00
1392.00	0.00	500	0	0.00
1393.82	0.00	750	0	0.00
1395.62	-0.01	1000	3	0.34
1396.05	-0.01	1250	7	0.59
1396.31	-0.00	1500	10	0.65
1396.50	-0.01	1750	16	0.93
1396.66	-0.00	2000	13	0.65
1396.79	-0.01	2250	9	0.41
1396.90	-0.01	2500	7	0.30

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:43:22 FILE NAME: 20

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 4.9) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1387.12	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
250	1390.20	3.08	3.08	1-S2n	1.80	1.82	7.71	1.80	3.87	2.36
500	1392.00	4.88	4.88	1-S2n	2.84	2.89	9.78	2.84	4.70	3.37
750	1393.82	6.70	6.70	5-S2n	3.73	3.79	11.18	3.73	5.26	4.13
952	1395.61	8.49	8.49	5-S2n	4.39	4.44	12.04	4.39	5.68	4.75
994	1396.05	8.93	8.32	4-FFt	4.90	4.57	11.27	4.90	6.03	5.29
1019	1396.30	9.18	8.96	4-FFt	4.90	4.64	11.56	4.90	6.33	5.77
1020	1396.51	9.19	9.39	4-FFt	4.90	4.65	11.56	4.90	6.59	6.20
1000	1396.78	8.98	9.66	4-FFt	4.90	4.59	11.34	4.90	6.82	6.60
1000	1397.15	8.98	10.03	4-FFt	4.90	4.59	11.34	4.90	7.03	6.97
1000	1397.50	8.98	10.38	4-FFt	4.90	4.59	11.34	4.90	7.23	7.32

El. inlet face invert 1387.12 ft El. outlet invert 1387.00 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1387.12
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1387.00
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	4.90 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:43:22

FILE DATE: 10-10-2003
FILE NAME: 20

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TAILWATER

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1387.00
CULVERT NO.1 OUTLET INVERT ELEVATION	1387.00 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1387.00	0.000	0.00	0.00	0.00
250.00	1389.36	0.444	2.36	3.87	0.59
500.00	1390.37	0.451	3.37	4.70	0.84
750.00	1391.13	0.456	4.13	5.26	1.03
1000.00	1391.75	0.459	4.75	5.68	1.19
1250.00	1392.29	0.462	5.29	6.03	1.32
1500.00	1392.77	0.464	5.77	6.33	1.44
1750.00	1393.20	0.466	6.20	6.59	1.55
2000.00	1393.60	0.468	6.60	6.82	1.65
2250.00	1393.97	0.470	6.97	7.03	1.74
2500.00	1394.32	0.471	7.32	7.23	1.83

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ROADWAY OVERTOPPING DATA

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1397.92
2	440.00	1396.48
3	900.00	1395.16

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CURRENT DATE: 10-23-2003
CURRENT TIME: 15:52:23

FILE DATE: 10-10-2003
FILE NAME: 21

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1383.45	1383.33	24.00	1 RCB	18.00	3.80	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 21 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1383.45	0	0	0	0	0	0	0	0	1
1385.70	150	150	0	0	0	0	0	0	1
1386.91	300	300	0	0	0	0	0	0	1
1388.11	450	450	0	0	0	0	0	0	1
1389.50	600	600	0	0	0	0	0	0	1
1390.76	750	711	0	0	0	0	0	32	7
1391.09	900	738	0	0	0	0	0	158	6
1391.28	1050	752	0	0	0	0	0	289	5
1391.44	1200	750	0	0	0	0	0	440	5
1391.57	1350	750	0	0	0	0	0	593	5
1391.67	1500	750	0	0	0	0	0	738	4
1390.35	677	677	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 21 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1383.45	0.00	0	0	0.00
1385.70	0.00	150	0	0.00
1386.91	0.00	300	0	0.00
1388.11	0.00	450	0	0.00
1389.50	0.00	600	0	0.00
1390.76	-0.01	750	7	0.94
1391.09	-0.01	900	4	0.47
1391.28	-0.01	1050	9	0.82
1391.44	-0.00	1200	10	0.80
1391.57	-0.01	1350	7	0.51
1391.67	-0.00	1500	12	0.78

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:52:23 FILE NAME: 21

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 3.8) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1383.45	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1385.70	2.20	2.25	3-M1t	1.30	1.29	4.65	1.79	3.32	1.79
300	1386.91	3.46	3.46	1-S2n	2.03	2.06	8.21	2.03	4.07	2.59
450	1388.11	4.66	4.66	5-S2n	2.65	2.69	9.43	2.65	4.57	3.20
600	1389.50	6.05	6.05	5-S2n	3.21	3.26	10.38	3.21	4.95	3.70
711	1390.76	7.31	6.74	4-FFt	3.80	3.65	10.40	3.80	5.26	4.13
738	1391.09	7.64	7.33	4-FFt	3.80	3.74	10.79	3.80	5.52	4.52
752	1391.27	7.82	7.80	4-FFt	3.80	3.79	11.00	3.80	5.76	4.87
750	1391.55	7.80	8.10	4-FFt	3.80	3.79	10.96	3.80	5.96	5.19
750	1391.85	7.80	8.40	4-FFt	3.80	3.79	10.96	3.80	6.15	5.49
750	1392.13	7.80	8.68	4-FFt	3.80	3.79	10.96	3.80	6.33	5.77

El. inlet face invert 1383.45 ft El. outlet invert 1383.33 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1383.45
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1383.33
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	3.80 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 15:52:23 FILE NAME: 21

~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1383.33
CULVERT NO.1 OUTLET INVERT ELEVATION	1383.33 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1383.33	0.000	0.00	0.00	0.00
150.00	1385.12	0.437	1.79	3.32	0.45
300.00	1385.92	0.446	2.59	4.07	0.65
450.00	1386.53	0.450	3.20	4.57	0.80
600.00	1387.03	0.453	3.70	4.95	0.92
750.00	1387.46	0.456	4.13	5.26	1.03
900.00	1387.85	0.458	4.52	5.52	1.13
1050.00	1388.20	0.460	4.87	5.76	1.21
1200.00	1388.52	0.461	5.19	5.96	1.30
1350.00	1388.82	0.463	5.49	6.15	1.37
1500.00	1389.10	0.464	5.77	6.33	1.44

~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1391.78
2	450.00	1390.68
3	550.00	1390.35

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CURRENT DATE: 10-23-2003
CURRENT TIME: 15:55:40

FILE DATE: 10-10-2003
FILE NAME: 22

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1377.95	1377.83	24.00	1 RCB	10.00	3.90	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 22 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1377.95	0	0	0	0	0	0	0	0	1
1380.46	100	100	0	0	0	0	0	0	1
1381.93	200	200	0	0	0	0	0	0	1
1383.35	300	300	0	0	0	0	0	0	1
1385.20	400	399	0	0	0	0	0	1	5
1385.77	500	425	0	0	0	0	0	72	5
1386.02	600	436	0	0	0	0	0	160	5
1386.21	700	444	0	0	0	0	0	253	5
1386.35	800	450	0	0	0	0	0	344	4
1386.48	900	453	0	0	0	0	0	442	4
1386.60	1000	445	0	0	0	0	0	549	4
1385.09	394	394	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 22 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1377.95	0.00	0	0	0.00
1380.46	0.00	100	0	0.00
1381.93	0.00	200	0	0.00
1383.35	0.00	300	0	0.00
1385.20	-0.00	400	0	0.06
1385.77	-0.01	500	3	0.54
1386.02	-0.00	600	4	0.59
1386.21	-0.01	700	3	0.40
1386.35	-0.00	800	6	0.71
1386.48	-0.00	900	5	0.58
1386.60	-0.00	1000	5	0.55

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 15:55:40 FILE NAME: 22

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (10 BY 3.9) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1377.95	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
100	1380.46	2.47	2.51	3-M1t	1.53	1.46	5.45	1.84	3.14	1.84
200	1381.93	3.92	3.98	3-M1t	2.45	2.32	7.73	2.59	3.80	2.59
300	1383.35	5.40	5.24	3-M2t	3.26	3.04	9.54	3.14	4.23	3.14
399	1385.20	7.25	6.45	6-FFn	3.90	3.68	10.23	3.90	4.56	3.60
425	1385.77	7.82	6.90	4-FFt	3.90	3.84	10.90	3.90	4.83	3.99
436	1386.02	8.07	7.40	4-FFt	3.90	3.90	11.18	3.90	5.07	4.33
444	1386.20	8.25	7.83	4-FFt	3.90	3.90	11.38	3.90	5.27	4.65
450	1386.34	8.39	8.21	4-FFt	3.90	3.90	11.54	3.90	5.45	4.93
453	1386.47	8.47	8.52	4-FFt	3.90	3.90	11.61	3.90	5.62	5.20
445	1386.60	8.29	8.65	4-FFt	3.90	3.90	11.42	3.90	5.77	5.45

El. inlet face invert 1377.95 ft El. outlet invert 1377.83 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1377.95
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1377.83
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.90 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 15:55:40

FILE DATE: 10-10-2003
FILE NAME: 22

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1377.83
CULVERT NO.1 OUTLET INVERT ELEVATION	1377.83 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1377.83	0.000	0.00	0.00	0.00
100.00	1379.67	0.409	1.84	3.14	0.46
200.00	1380.42	0.416	2.59	3.80	0.65
300.00	1380.97	0.420	3.14	4.23	0.78
400.00	1381.43	0.424	3.60	4.56	0.90
500.00	1381.82	0.426	3.99	4.83	1.00
600.00	1382.16	0.429	4.33	5.07	1.08
700.00	1382.48	0.431	4.65	5.27	1.16
800.00	1382.76	0.433	4.93	5.45	1.23
900.00	1383.03	0.434	5.20	5.62	1.30
1000.00	1383.28	0.436	5.45	5.77	1.36

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~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1389.05
2	440.00	1387.48
3	920.00	1385.09

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CURRENT DATE: 10-27-2003
CURRENT TIME: 08:34:28

FILE DATE: 10-23-2003
FILE NAME: STR23

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1371.92	1371.80	24.00	3 CSP	2.25	2.25	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR23 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1371.92	0	0	0	0	0	0	0	0	1
1374.98	60	60	0	0	0	0	0	0	1
1377.76	120	120	0	0	0	0	0	0	1
1378.36	180	124	0	0	0	0	0	55	7
1378.55	240	120	0	0	0	0	0	118	8
1378.68	300	117	0	0	0	0	0	181	7
1378.78	360	114	0	0	0	0	0	242	5
1378.86	420	111	0	0	0	0	0	307	5
1378.93	480	108	0	0	0	0	0	367	4
1378.99	540	105	0	0	0	0	0	430	4
1379.05	600	103	0	0	0	0	0	493	4
1377.82	121	121	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR23 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1371.92	0.00	0	0	0.00
1374.98	0.00	60	0	0.00
1377.76	0.00	120	0	0.00
1378.36	-0.01	180	1	0.70
1378.55	-0.00	240	2	0.71
1378.68	-0.00	300	2	0.59
1378.78	-0.01	360	3	0.88
1378.86	-0.00	420	2	0.48
1378.93	-0.01	480	4	0.93
1378.99	-0.01	540	4	0.81
1379.05	-0.01	600	4	0.65

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-27-2003 FILE DATE: 10-23-2003
CURRENT TIME: 08:34:28 FILE NAME: STR23

PERFORMANCE CURVE FOR CULVERT # 1 - 3 (2.25 BY 2.25) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1371.92	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
60	1374.98	2.50	3.06	6-FFn	2.25	1.56	5.03	2.25	2.77	1.53
120	1377.76	5.40	5.84	6-FFn	2.25	2.13	10.06	2.25	3.35	2.16
124	1378.36	5.64	6.44	4-FFt	2.25	2.16	10.36	2.25	3.73	2.62
120	1378.51	5.40	6.59	4-FFt	2.25	2.13	10.06	2.25	4.02	2.99
117	1378.67	5.24	6.75	4-FFt	2.25	2.11	9.84	2.25	4.26	3.32
114	1378.77	5.04	6.85	4-FFt	2.25	2.08	9.59	2.25	4.46	3.60
111	1378.85	4.86	6.93	4-FFt	2.25	2.06	9.33	2.25	4.64	3.86
108	1378.92	4.68	7.00	4-FFt	2.25	2.03	9.08	2.25	4.80	4.10
105	1378.99	4.52	7.07	4-FFt	2.25	2.01	8.84	2.25	4.95	4.32
103	1379.05	4.37	7.13	4-FFt	2.25	1.99	8.61	2.25	5.08	4.52

El. inlet face invert 1371.92 ft El. outlet invert 1371.80 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1371.92
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1371.80
NUMBER OF BARRELS	3
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	2.25 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

ˀURRENT DATE: 10-27-2003
URRENT TIME: 08:34:28

FILE DATE: 10-23-2003
FILE NAME: STR23

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	8.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1371.80
CULVERT NO.1 OUTLET INVERT ELEVATION	1371.80 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1371.80	0.000	0.00	0.00	0.00
60.00	1373.33	0.395	1.53	2.77	0.38
120.00	1373.96	0.402	2.16	3.35	0.54
180.00	1374.42	0.406	2.62	3.73	0.65
240.00	1374.79	0.409	2.99	4.02	0.75
300.00	1375.12	0.412	3.32	4.26	0.83
360.00	1375.40	0.414	3.60	4.46	0.90
420.00	1375.66	0.416	3.86	4.64	0.96
480.00	1375.90	0.418	4.10	4.80	1.02
540.00	1376.12	0.420	4.32	4.95	1.08
600.00	1376.32	0.421	4.52	5.08	1.13

~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1380.71
2	440.00	1378.75
3	700.00	1377.82

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:03:04

FILE DATE: 10-10-2003
FILE NAME: 24

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1364.83	1364.71	24.00	1 RCB	18.00	4.50	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 24 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1364.83	0	0	0	0	0	0	0	0	1
1368.29	300	300	0	0	0	0	0	0	1
1370.50	600	600	0	0	0	0	0	0	1
1373.21	900	892	0	0	0	0	0	6	7
1373.90	1200	952	0	0	0	0	0	246	5
1374.18	1500	976	0	0	0	0	0	510	4
1374.41	1800	950	0	0	0	0	0	840	4
1374.60	2100	912	0	0	0	0	0	1178	4
1374.76	2400	901	0	0	0	0	0	1491	4
1374.88	2700	900	0	0	0	0	0	1777	3
1375.01	3000	900	0	0	0	0	0	2078	3
1373.00	873	873	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 24 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1364.83	0.00	0	0	0.00
1368.29	0.00	300	0	0.00
1370.50	0.00	600	0	0.00
1373.21	-0.01	900	2	0.20
1373.90	-0.00	1200	3	0.22
1374.18	-0.01	1500	14	0.93
1374.41	-0.00	1800	10	0.57
1374.60	-0.00	2100	10	0.49
1374.76	-0.00	2400	8	0.35
1374.88	-0.01	2700	23	0.84
1375.01	-0.01	3000	22	0.73

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

JRRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 16:03:04 FILE NAME: 24

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 4.5) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1364.83	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
300	1368.29	3.46	3.46	1-S2n	2.03	2.06	8.22	2.03	4.07	2.59
600	1370.50	5.67	5.67	5-S2n	3.21	3.26	10.38	3.21	4.95	3.70
892	1373.21	8.38	7.42	4-FFt	4.50	4.25	11.01	4.50	5.52	4.52
952	1373.89	9.06	8.51	4-FFt	4.50	4.44	11.75	4.50	5.96	5.19
976	1374.18	9.35	9.27	4-FFt	4.50	4.50	12.05	4.50	6.33	5.77
950	1374.42	9.03	9.59	4-FFt	4.50	4.43	11.72	4.50	6.64	6.29
912	1374.62	8.60	9.79	4-FFt	4.50	4.31	11.26	4.50	6.91	6.75
901	1374.97	8.47	10.14	4-FFt	4.50	4.28	11.12	4.50	7.15	7.18
900	1375.36	8.47	10.53	4-FFt	4.50	4.28	11.11	4.50	7.37	7.58
900	1375.73	8.47	10.90	4-FFt	4.50	4.28	11.11	4.50	7.58	7.95

El. inlet face invert 1364.83 ft El. outlet invert 1364.71 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1364.83
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1364.71
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	4.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:03:04

FILE DATE: 10-10-2003
FILE NAME: 24

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1364.71
CULVERT NO.1 OUTLET INVERT ELEVATION	1364.71 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1364.71	0.000	0.00	0.00	0.00
300.00	1367.30	0.446	2.59	4.07	0.65
600.00	1368.41	0.453	3.70	4.95	0.92
900.00	1369.23	0.458	4.52	5.52	1.13
1200.00	1369.90	0.461	5.19	5.96	1.30
1500.00	1370.48	0.464	5.77	6.33	1.44
1800.00	1371.00	0.467	6.29	6.64	1.57
2100.00	1371.46	0.469	6.75	6.91	1.69
2400.00	1371.89	0.470	7.18	7.15	1.79
2700.00	1372.29	0.472	7.58	7.37	1.89
3000.00	1372.66	0.474	7.95	7.58	1.98

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1376.06
2	450.00	1374.12
3	830.00	1373.00

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:06:15

FILE DATE: 10-23-2003
FILE NAME: STR25

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1362.33	1362.21	24.00	2 CSP	4.00	4.00	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR25 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1362.33	0	0	0	0	0	0	0	0	1
1364.60	50	50	0	0	0	0	0	0	1
1365.67	100	100	0	0	0	0	0	0	1
1367.26	150	150	0	0	0	0	0	0	1
1368.08	200	200	0	0	0	0	0	0	1
1369.13	250	250	0	0	0	0	0	0	1
1370.13	300	290	0	0	0	0	0	9	3
1370.39	350	297	0	0	0	0	0	50	7
1370.54	400	301	0	0	0	0	0	97	7
1370.65	450	304	0	0	0	0	0	143	6
1370.74	500	307	0	0	0	0	0	189	5
1369.87	280	280	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR25 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1362.33	0.00	0	0	0.00
1364.60	0.00	50	0	0.00
1365.67	0.00	100	0	0.00
1367.26	0.00	150	0	0.00
1368.08	0.00	200	0	0.00
1369.13	0.00	250	0	0.00
1370.13	1.00	300	1	0.40
1370.39	-0.01	350	3	0.86
1370.54	-0.00	400	2	0.59
1370.65	-0.01	450	3	0.68
1370.74	-0.01	500	5	0.98

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 16:06:15 FILE NAME: STR25

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4 BY 4) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1362.33	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
50	1364.60	2.05	2.27	2-M2c	1.89	1.47	5.97	1.47	2.58	1.28
100	1365.67	3.09	3.34	2-M2c	3.00	2.11	7.42	2.11	3.14	1.84
150	1367.26	4.06	4.93	6-FFn	4.00	2.61	5.97	4.00	3.51	2.25
200	1368.08	5.16	5.75	6-FFn	4.00	3.02	7.96	4.00	3.80	2.59
250	1369.13	6.51	6.80	6-FFn	4.00	3.33	9.95	4.00	4.03	2.88
290	1370.13	7.80	7.80	6-FFn	4.00	3.54	11.52	4.00	4.23	3.14
297	1370.39	8.06	8.00	6-FFn	4.00	3.58	11.81	4.00	4.40	3.38
301	1370.53	8.20	8.11	6-FFn	4.00	3.60	11.98	4.00	4.56	3.60
304	1370.65	8.32	8.20	6-FFn	4.00	3.62	12.10	4.00	4.70	3.80
307	1370.74	8.41	8.27	6-FFn	4.00	3.63	12.20	4.00	4.83	3.99

El. inlet face invert 1362.33 ft El. outlet invert 1362.21 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1362.33
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1362.21
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	4.00 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

'URRENT DATE: 10-23-2003
URRENT TIME: 16:06:15

FILE DATE: 10-23-2003
FILE NAME: STR25

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1362.21
CULVERT NO.1 OUTLET INVERT ELEVATION	1362.21 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1362.21	0.000	0.00	0.00	0.00
50.00	1363.49	0.402	1.28	2.58	0.32
100.00	1364.05	0.409	1.84	3.14	0.46
150.00	1364.46	0.413	2.25	3.51	0.56
200.00	1364.80	0.416	2.59	3.80	0.65
250.00	1365.09	0.418	2.88	4.03	0.72
300.00	1365.35	0.420	3.14	4.23	0.78
350.00	1365.59	0.422	3.38	4.40	0.84
400.00	1365.81	0.424	3.60	4.56	0.90
450.00	1366.01	0.425	3.80	4.70	0.95
500.00	1366.20	0.426	3.99	4.83	1.00

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~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1373.00
2	460.00	1371.07
3	800.00	1369.87

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CURRENT DATE: 10-23-2003
CURRENT TIME: 16:21:00

FILE DATE: 10-23-2003
FILE NAME: STR26

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1356.94	1356.82	24.00	2 RCPE	4.42	2.83	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR26 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1356.94	0	0	0	0	0	0	0	0	1
1358.69	40	40	0	0	0	0	0	0	1
1359.56	80	80	0	0	0	0	0	0	1
1360.73	120	120	0	0	0	0	0	0	1
1361.57	160	160	0	0	0	0	0	0	1
1362.65	200	200	0	0	0	0	0	0	1
1364.34	240	240	0	0	0	0	0	0	1
1365.54	280	265	0	0	0	0	0	13	11
1365.75	320	268	0	0	0	0	0	49	8
1365.86	360	270	0	0	0	0	0	87	6
1365.95	400	272	0	0	0	0	0	124	5
1365.25	259	259	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR26 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1356.94	0.00	0	0	0.00
1358.69	0.00	40	0	0.00
1359.56	0.00	80	0	0.00
1360.73	0.00	120	0	0.00
1361.57	0.00	160	0	0.00
1362.65	0.00	200	0	0.00
1364.34	0.00	240	0	0.00
1365.54	-0.01	280	2	0.89
1365.75	-0.01	320	3	0.90
1365.86	-0.01	360	3	0.79
1365.95	-0.01	400	4	0.99

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 16:21:00 FILE NAME: STR26

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4.416667 BY 2.833333) RCPE

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1356.94	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1358.69	1.56	1.75	3-M2t	1.41	1.12	5.20	1.14	2.42	1.14
80	1359.56	2.42	2.62	3-M2t	2.22	1.63	6.61	1.64	2.95	1.64
120	1360.73	3.28	3.79	6-FFn	2.83	2.02	5.90	2.83	3.30	2.01
160	1361.57	4.34	4.63	6-FFn	2.83	2.33	7.87	2.83	3.58	2.32
200	1362.65	5.71	5.70	6-FFn	2.83	2.55	9.83	2.83	3.80	2.59
240	1364.34	7.40	7.02	6-FFn	2.83	2.78	11.80	2.83	3.99	2.83
265	1365.54	8.60	8.16	4-FFt	2.83	2.83	13.04	2.83	4.15	3.04
268	1365.75	8.81	8.50	4-FFt	2.83	2.83	13.22	2.83	4.30	3.24
270	1365.86	8.92	8.77	4-FFt	2.83	2.83	13.32	2.83	4.44	3.42
272	1365.94	8.99	9.00	4-FFt	2.83	2.83	13.39	2.83	4.56	3.60

El. inlet face invert 1356.94 ft El. outlet invert 1356.82 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1356.94
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1356.82
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	ELLIPTICAL
BARREL SPAN	4.42 FT
BARREL RISE	2.83 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQ. EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:21:00

FILE DATE: 10-23-2003
FILE NAME: STR26

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TAILWATER

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1356.82
CULVERT NO.1 OUTLET INVERT ELEVATION	1356.82 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1356.82	0.000	0.00	0.00	0.00
40.00	1357.96	0.399	1.14	2.42	0.28
80.00	1358.46	0.407	1.64	2.95	0.41
120.00	1358.83	0.410	2.01	3.30	0.50
160.00	1359.14	0.414	2.32	3.58	0.58
200.00	1359.41	0.416	2.59	3.80	0.65
240.00	1359.65	0.418	2.83	3.99	0.71
280.00	1359.86	0.420	3.04	4.15	0.76
320.00	1360.06	0.421	3.24	4.30	0.81
360.00	1360.24	0.422	3.42	4.44	0.85
400.00	1360.42	0.424	3.60	4.56	0.90

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ROADWAY OVERTOPPING DATA

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1367.24
2	460.00	1365.75
3	610.00	1365.25

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CURRENT DATE: 10-23-2003
CURRENT TIME: 16:26:30

FILE DATE: 10-23-2003
FILE NAME: STR27

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1352.43	1352.31	24.00	2 RCPE	4.42	2.83	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR27 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1352.43	0	0	0	0	0	0	0	0	1
1354.18	40	40	0	0	0	0	0	0	1
1355.05	80	80	0	0	0	0	0	0	1
1356.22	120	120	0	0	0	0	0	0	1
1357.06	160	160	0	0	0	0	0	0	1
1358.14	200	200	0	0	0	0	0	0	1
1359.71	240	237	0	0	0	0	0	1	10
1360.05	280	245	0	0	0	0	0	34	9
1360.21	320	248	0	0	0	0	0	69	7
1360.31	360	248	0	0	0	0	0	110	6
1360.40	400	245	0	0	0	0	0	151	5
1359.59	235	235	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR27 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1352.43	0.00	0	0	0.00
1354.18	0.00	40	0	0.00
1355.05	0.00	80	0	0.00
1356.22	0.00	120	0	0.00
1357.06	0.00	160	0	0.00
1358.14	0.00	200	0	0.00
1359.71	-0.01	240	1	0.55
1360.05	-0.01	280	2	0.62
1360.21	-0.01	320	3	0.86
1360.31	-0.00	360	2	0.58
1360.40	-0.01	400	3	0.82

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 16:26:30 FILE NAME: STR27

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4.416667 BY 2.833333) RCPE

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1352.43	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1354.18	1.56	1.75	3-M2t	1.41	1.12	5.20	1.14	2.42	1.14
80	1355.05	2.42	2.62	3-M2t	2.22	1.63	6.61	1.64	2.95	1.64
120	1356.22	3.28	3.79	6-FFn	2.83	2.02	5.90	2.83	3.30	2.01
160	1357.06	4.34	4.63	6-FFn	2.83	2.33	7.87	2.83	3.58	2.32
200	1358.14	5.71	5.70	6-FFn	2.83	2.55	9.83	2.83	3.80	2.59
237	1359.71	7.28	6.93	6-FFn	2.83	2.77	11.67	2.83	3.99	2.83
245	1360.05	7.62	7.40	4-FFt	2.83	2.81	12.06	2.83	4.15	3.04
248	1360.20	7.77	7.72	4-FFt	2.83	2.83	12.21	2.83	4.30	3.24
248	1360.32	7.76	7.89	4-FFt	2.83	2.83	12.20	2.83	4.44	3.42
245	1360.41	7.65	7.98	4-FFt	2.83	2.81	12.09	2.83	4.56	3.60

El. inlet face invert 1352.43 ft El. outlet invert 1352.31 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1352.43
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1352.31
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	ELLIPTICAL
BARREL SPAN	4.42 FT
BARREL RISE	2.83 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQ. EDGE WITH HEADWALL
INLET DEPRESSION	NONE

'URRENT DATE: 10-23-2003
URRENT TIME: 16:26:30

FILE DATE: 10-23-2003
FILE NAME: STR27

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1352.31
CULVERT NO.1 OUTLET INVERT ELEVATION	1352.31 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1352.31	0.000	0.00	0.00	0.00
40.00	1353.45	0.399	1.14	2.42	0.28
80.00	1353.95	0.407	1.64	2.95	0.41
120.00	1354.32	0.410	2.01	3.30	0.50
160.00	1354.63	0.414	2.32	3.58	0.58
200.00	1354.90	0.416	2.59	3.80	0.65
240.00	1355.14	0.418	2.83	3.99	0.71
280.00	1355.35	0.420	3.04	4.15	0.76
320.00	1355.55	0.421	3.24	4.30	0.81
360.00	1355.73	0.422	3.42	4.44	0.85
400.00	1355.91	0.424	3.60	4.56	0.90

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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1361.87
2	440.00	1360.23
3	600.00	1359.59

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CURRENT DATE: 10-23-2003
CURRENT TIME: 16:29:51

FILE DATE: 10-10-2003
FILE NAME: 28

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1348.66	1348.54	24.00	1 RCB	12.00	2.30	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 28 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1348.66	0	0	0	0	0	0	0	0	1
1350.90	100	100	0	0	0	0	0	0	1
1352.56	200	200	0	0	0	0	0	0	1
1354.64	300	281	0	0	0	0	0	16	7
1355.07	400	295	0	0	0	0	0	103	6
1355.27	500	300	0	0	0	0	0	196	4
1355.44	600	300	0	0	0	0	0	298	5
1355.58	700	300	0	0	0	0	0	395	4
1355.70	800	300	0	0	0	0	0	495	4
1355.81	900	300	0	0	0	0	0	596	4
1355.91	1000	300	0	0	0	0	0	697	4
1354.24	267	267	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 28 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1348.66	0.00	0	0	0.00
1350.90	0.00	100	0	0.00
1352.56	0.00	200	0	0.00
1354.64	-0.01	300	3	0.97
1355.07	-0.01	400	3	0.65
1355.27	-0.00	500	4	0.79
1355.44	-0.01	600	2	0.40
1355.58	-0.00	700	5	0.72
1355.70	-0.00	800	5	0.57
1355.81	-0.01	900	4	0.42
1355.91	-0.01	1000	3	0.33

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

'URRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
URRENT TIME: 16:29:51 FILE NAME: 28

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (12 BY 2.3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1348.66	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
100	1350.90	2.18	2.23	3-M1t	1.34	1.29	4.86	1.71	3.09	1.71
200	1352.56	3.90	3.74	4-FFt	2.30	2.06	7.25	2.30	3.76	2.44
281	1354.64	5.98	5.66	4-FFt	2.30	2.30	10.17	2.30	4.20	2.99
295	1355.06	6.40	6.38	4-FFt	2.30	2.30	10.67	2.30	4.53	3.43
300	1355.54	6.58	6.88	4-FFt	2.30	2.30	10.87	2.30	4.81	3.82
300	1355.88	6.58	7.22	4-FFt	2.30	2.30	10.87	2.30	5.04	4.16
300	1356.19	6.58	7.53	4-FFt	2.30	2.30	10.87	2.30	5.25	4.47
300	1356.48	6.58	7.82	4-FFt	2.30	2.30	10.87	2.30	5.43	4.75
300	1356.74	6.58	8.08	4-FFt	2.30	2.30	10.87	2.30	5.60	5.01
300	1356.98	6.58	8.32	4-FFt	2.30	2.30	10.87	2.30	5.76	5.26

El. inlet face invert 1348.66 ft El. outlet invert 1348.54 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1348.66
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1348.54
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	12.00 FT
BARREL RISE	2.30 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:29:51

FILE DATE: 10-10-2003
FILE NAME: 28

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1348.54
CULVERT NO.1 OUTLET INVERT ELEVATION	1348.54 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1348.54	0.000	0.00	0.00	0.00
100.00	1350.25	0.416	1.71	3.09	0.43
200.00	1350.98	0.423	2.44	3.76	0.61
300.00	1351.53	0.428	2.99	4.20	0.75
400.00	1351.97	0.431	3.43	4.53	0.86
500.00	1352.36	0.434	3.82	4.81	0.95
600.00	1352.70	0.436	4.16	5.04	1.04
700.00	1353.01	0.438	4.47	5.25	1.11
800.00	1353.29	0.439	4.75	5.43	1.19
900.00	1353.55	0.441	5.01	5.60	1.25
1000.00	1353.80	0.442	5.26	5.76	1.31

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1357.57
2	430.00	1355.09
3	580.00	1354.24

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:32:17

FILE DATE: 10-10-2003
FILE NAME: 29

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1337.95	1337.82	24.00	1 RCB	10.00	4.10	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 29 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1337.95	0	0	0	0	0	0	0	0	1
1340.78	120	120	0	0	0	0	0	0	1
1342.47	240	240	0	0	0	0	0	0	1
1344.24	360	360	0	0	0	0	0	0	1
1346.21	480	460	0	0	0	0	0	20	4
1346.59	600	477	0	0	0	0	0	117	5
1346.82	720	487	0	0	0	0	0	228	5
1346.98	840	494	0	0	0	0	0	341	5
1347.12	960	499	0	0	0	0	0	456	5
1347.24	1080	501	0	0	0	0	0	575	5
1347.36	1200	491	0	0	0	0	0	704	5
1345.84	443	443	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 29 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1337.95	0.00	0	0	0.00
1340.78	0.00	120	0	0.00
1342.47	0.00	240	0	0.00
1344.24	0.00	360	0	0.00
1346.21	-0.00	480	0	0.06
1346.59	-0.01	600	6	0.97
1346.82	-0.00	720	5	0.69
1346.98	-0.01	840	5	0.61
1347.12	-0.01	960	5	0.50
1347.24	-0.01	1080	5	0.43
1347.36	-0.01	1200	5	0.43

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 16:32:17 FILE NAME: 29

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (10 BY 4.1) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1337.95	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
120	1340.78	2.79	2.83	3-M1t	1.69	1.65	5.96	2.01	3.30	2.01
240	1342.47	4.46	4.52	3-M1t	2.71	2.62	8.49	2.83	3.99	2.83
360	1344.24	6.29	5.94	2-M2c	3.61	3.43	10.48	3.43	4.44	3.42
460	1346.21	8.26	7.17	6-FFn	4.10	4.05	11.22	4.10	4.78	3.91
477	1346.58	8.63	7.64	4-FFt	4.10	4.10	11.63	4.10	5.07	4.33
487	1346.82	8.87	8.16	4-FFt	4.10	4.10	11.87	4.10	5.31	4.71
494	1346.98	9.03	8.60	4-FFt	4.10	4.10	12.04	4.10	5.52	5.04
499	1347.12	9.17	8.99	4-FFt	4.10	4.10	12.18	4.10	5.71	5.35
501	1347.25	9.20	9.30	4-FFt	4.10	4.10	12.21	4.10	5.89	5.64
491	1347.36	8.96	9.42	4-FFt	4.10	4.10	11.97	4.10	6.05	5.90

El. inlet face invert 1337.95 ft El. outlet invert 1337.82 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1337.95
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1337.82
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0054
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	4.10 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 16:32:17 FILE NAME: 29

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1337.82
CULVERT NO.1 OUTLET INVERT ELEVATION	1337.82 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1337.82	0.000	0.00	0.00	0.00
120.00	1339.83	0.410	2.01	3.30	0.50
240.00	1340.65	0.418	2.83	3.99	0.71
360.00	1341.24	0.422	3.42	4.44	0.85
480.00	1341.73	0.426	3.91	4.78	0.98
600.00	1342.15	0.429	4.33	5.07	1.08
720.00	1342.53	0.431	4.71	5.31	1.17
840.00	1342.86	0.433	5.04	5.52	1.26
960.00	1343.17	0.435	5.35	5.71	1.34
1080.00	1343.46	0.437	5.64	5.89	1.41
1200.00	1343.72	0.439	5.90	6.05	1.47

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1349.24
2	430.00	1347.53
3	860.00	1345.84

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:35:38

FILE DATE: 10-23-2003
FILE NAME: STR30

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	SITE DATA: OUTLET ELEV. (FT)	SITE DATA: CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1334.26	1334.14	24.00	1 RCB	30.00	3.60	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR30 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1334.26	0	0	0	0	0	0	0	0	1
1336.16	200	200	0	0	0	0	0	0	1
1337.24	400	400	0	0	0	0	0	0	1
1338.21	600	600	0	0	0	0	0	0	1
1339.26	800	800	0	0	0	0	0	0	1
1340.51	1000	1000	0	0	0	0	0	0	1
1341.68	1200	1156	0	0	0	0	0	39	6
1342.11	1400	1209	0	0	0	0	0	185	5
1342.38	1600	1213	0	0	0	0	0	378	4
1342.60	1800	1201	0	0	0	0	0	584	4
1342.77	2000	1200	0	0	0	0	0	789	4
1341.16	1090	1090	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR30 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1334.26	0.00	0	0	0.00
1336.16	0.00	200	0	0.00
1337.24	0.00	400	0	0.00
1338.21	0.00	600	0	0.00
1339.26	0.00	800	0	0.00
1340.51	0.00	1000	0	0.00
1341.68	-0.01	1200	5	0.38
1342.11	-0.01	1400	6	0.44
1342.38	-0.01	1600	10	0.62
1342.60	-0.01	1800	15	0.82
1342.77	-0.01	2000	11	0.57

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 16:35:38 FILE NAME: STR30

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (30 BY 3.6) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1334.26	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200	1336.16	1.90	1.90	1-S2n	1.11	1.12	6.00	1.11	3.33	1.64
400	1337.24	2.98	2.98	1-S2n	1.71	1.77	6.00	1.11	4.16	2.42
600	1338.21	3.95	3.95	5-S2n	2.21	2.32	9.06	2.21	4.71	3.03
800	1339.26	5.00	5.00	5-S2n	2.65	2.81	9.94	2.68	5.13	3.53
1000	1340.51	6.25	6.02	4-FFt	3.06	3.26	9.26	3.60	5.47	3.98
1156	1341.68	7.42	7.14	4-FFt	3.60	3.59	10.71	3.60	5.77	4.38
1209	1342.11	7.85	7.77	4-FFt	3.60	3.60	11.19	3.60	6.03	4.74
1213	1342.39	7.88	8.13	4-FFt	3.60	3.60	11.23	3.60	6.26	5.08
1201	1342.65	7.78	8.39	4-FFt	3.60	3.60	11.12	3.60	6.47	5.40
1200	1342.94	7.78	8.68	4-FFt	3.60	3.60	11.11	3.60	6.66	5.69

El. inlet face invert 1334.26 ft El. outlet invert 1334.14 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1334.26
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1334.14
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	30.00 FT
BARREL RISE	3.60 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:35:38

FILE DATE: 10-23-2003
FILE NAME: STR30

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	30.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1334.14
CULVERT NO.1 OUTLET INVERT ELEVATION	1334.14 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1334.14	0.000	0.00	0.00	0.00
200.00	1335.78	0.458	1.64	3.33	0.41
400.00	1336.56	0.470	2.42	4.16	0.61
600.00	1337.17	0.477	3.03	4.71	0.76
800.00	1337.67	0.481	3.53	5.13	0.88
1000.00	1338.12	0.484	3.98	5.47	0.99
1200.00	1338.52	0.486	4.38	5.77	1.09
1400.00	1338.88	0.488	4.74	6.03	1.18
1600.00	1339.22	0.489	5.08	6.26	1.27
1800.00	1339.54	0.491	5.40	6.47	1.35
2000.00	1339.83	0.492	5.69	6.66	1.42

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1343.98
2	430.00	1342.12
3	640.00	1341.16

CURRENT DATE: 10-23-2003
URRENT TIME: 16:38:46

FILE DATE: 10-10-2003
FILE NAME: 31

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1323.75	1323.63	24.00	1 RCB	18.00	4.30	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 31 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1323.75	0	0	0	0	0	0	0	0	1
1326.41	200	200	0	0	0	0	0	0	1
1327.95	400	400	0	0	0	0	0	0	1
1329.49	600	600	0	0	0	0	0	0	1
1331.31	800	792	0	0	0	0	0	6	5
1331.81	1000	838	0	0	0	0	0	155	5
1332.05	1200	858	0	0	0	0	0	334	5
1332.24	1400	853	0	0	0	0	0	540	5
1332.41	1600	825	0	0	0	0	0	768	5
1332.54	1800	803	0	0	0	0	0	981	4
1332.65	2000	800	0	0	0	0	0	1188	4
1331.10	772	772	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 31 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1323.75	0.00	0	0	0.00
1326.41	0.00	200	0	0.00
1327.95	0.00	400	0	0.00
1329.49	0.00	600	0	0.00
1331.31	-0.01	800	2	0.19
1331.81	-0.01	1000	7	0.71
1332.05	-0.00	1200	8	0.64
1332.24	-0.01	1400	6	0.45
1332.41	-0.01	1600	7	0.41
1332.54	-0.01	1800	16	0.88
1332.65	-0.00	2000	12	0.59

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 16:38:46 FILE NAME: 31

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (18 BY 4.3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1323.75	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
200	1326.41	2.66	2.66	1-S2n	1.56	1.57	7.12	1.56	3.62	2.09
400	1327.95	4.20	4.20	1-S2n	2.45	2.49	9.07	2.45	4.42	3.01
600	1329.49	5.74	5.74	5-S2n	3.21	3.26	10.38	3.21	4.95	3.70
792	1331.31	7.56	6.80	6-FFn	4.30	3.93	10.23	4.30	5.35	4.26
838	1331.81	8.06	7.56	4-FFt	4.30	4.08	10.82	4.30	5.68	4.75
858	1332.04	8.29	8.14	4-FFt	4.30	4.14	11.09	4.30	5.96	5.19
853	1332.25	8.24	8.50	4-FFt	4.30	4.13	11.03	4.30	6.21	5.59
825	1332.42	7.92	8.67	4-FFt	4.30	4.03	10.66	4.30	6.44	5.95
803	1332.60	7.67	8.85	4-FFt	4.30	3.96	10.37	4.30	6.64	6.29
800	1332.90	7.64	9.15	4-FFt	4.30	3.95	10.34	4.30	6.82	6.60

El. inlet face invert 1323.75 ft El. outlet invert 1323.63 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1323.75
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1323.63
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	18.00 FT
BARREL RISE	4.30 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 16:38:46 FILE NAME: 31

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	18.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1323.63
CULVERT NO.1 OUTLET INVERT ELEVATION	1323.63 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1323.63	0.000	0.00	0.00	0.00
200.00	1325.72	0.441	2.09	3.62	0.52
400.00	1326.64	0.449	3.01	4.42	0.75
600.00	1327.33	0.453	3.70	4.95	0.92
800.00	1327.89	0.457	4.26	5.35	1.06
1000.00	1328.38	0.459	4.75	5.68	1.19
1200.00	1328.82	0.461	5.19	5.96	1.30
1400.00	1329.22	0.463	5.59	6.21	1.39
1600.00	1329.58	0.465	5.95	6.44	1.48
1800.00	1329.92	0.467	6.29	6.64	1.57
2000.00	1330.23	0.468	6.60	6.82	1.65

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1332.69
2	440.00	1331.61
3	620.00	1331.10

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:41:53

FILE DATE: 10-10-2003
FILE NAME: 32

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1315.58	1315.46	24.00	1 RCB	11.00	5.90	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 32 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1315.58	0	0	0	0	0	0	0	0	1
1317.95	100	100	0	0	0	0	0	0	1
1319.31	200	200	0	0	0	0	0	0	1
1320.48	300	300	0	0	0	0	0	0	1
1321.55	400	400	0	0	0	0	0	0	1
1322.54	500	500	0	0	0	0	0	0	1
1323.59	600	600	0	0	0	0	0	0	1
1324.85	700	700	0	0	0	0	0	0	1
1325.46	800	744	0	0	0	0	0	53	6
1325.66	900	758	0	0	0	0	0	134	6
1325.81	1000	768	0	0	0	0	0	226	6
1325.01	711	711	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 32 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1315.58	0.00	0	0	0.00
1317.95	0.00	100	0	0.00
1319.31	0.00	200	0	0.00
1320.48	0.00	300	0	0.00
1321.55	0.00	400	0	0.00
1322.54	0.00	500	0	0.00
1323.59	0.00	600	0	0.00
1324.85	0.00	700	0	0.00
1325.46	-0.01	800	3	0.40
1325.66	-0.01	900	8	0.88
1325.81	-0.01	1000	6	0.62

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

JRRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 16:41:53 FILE NAME: 32

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (11 BY 5.9) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1315.58	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
100	1317.95	2.35	2.37	3-M1t	1.42	1.37	4.95	1.84	3.14	1.84
200	1319.31	3.69	3.73	3-M1t	2.26	2.18	7.03	2.59	3.80	2.59
300	1320.48	4.81	4.90	3-M1t	3.00	2.85	8.68	3.14	4.23	3.14
400	1321.55	5.84	5.97	3-M2t	3.67	3.46	10.11	3.60	4.56	3.60
500	1322.54	6.88	6.96	2-M2c	4.31	4.01	11.33	4.01	4.83	3.99
600	1323.59	8.01	7.82	2-M2c	4.93	4.53	12.04	4.53	5.07	4.33
700	1324.85	9.27	8.66	6-FFn	5.90	5.02	10.79	5.90	5.27	4.65
744	1325.46	9.88	9.04	6-FFn	5.90	5.23	11.47	5.90	5.45	4.93
758	1325.66	10.08	9.16	6-FFn	5.90	5.30	11.68	5.90	5.62	5.20
768	1325.81	10.23	9.25	6-FFn	5.90	5.34	11.84	5.90	5.77	5.45

El. inlet face invert 1315.58 ft El. outlet invert 1315.46 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1315.58
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1315.46
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	11.00 FT
BARREL RISE	5.90 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:41:53

FILE DATE: 10-10-2003
FILE NAME: 32

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1315.46
CULVERT NO.1 OUTLET INVERT ELEVATION	1315.46 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1315.46	0.000	0.00	0.00	0.00
100.00	1317.30	0.409	1.84	3.14	0.46
200.00	1318.05	0.416	2.59	3.80	0.65
300.00	1318.60	0.420	3.14	4.23	0.79
400.00	1319.06	0.424	3.60	4.56	0.90
500.00	1319.45	0.426	3.99	4.83	1.00
600.00	1319.79	0.429	4.33	5.07	1.08
700.00	1320.11	0.431	4.65	5.27	1.16
800.00	1320.39	0.433	4.93	5.45	1.23
900.00	1320.66	0.434	5.20	5.62	1.30
1000.00	1320.91	0.436	5.45	5.77	1.36

~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1326.85
2	450.00	1325.84
3	800.00	1325.01

CURRENT DATE: 10-23-2003
URRENT TIME: 16:46:26

FILE DATE: 10-10-2003
FILE NAME: 33

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1316.29	1316.17	24.00	1 RCB	57.00	3.00	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 33 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1316.29	0	0	0	0	0	0	0	0	1
1317.91	300	300	0	0	0	0	0	0	1
1318.84	600	600	0	0	0	0	0	0	1
1319.68	900	900	0	0	0	0	0	0	1
1320.69	1200	1200	0	0	0	0	0	0	1
1321.84	1500	1500	0	0	0	0	0	0	1
1323.09	1800	1799	0	0	0	0	0	0	4
1323.89	2100	1934	0	0	0	0	0	165	4
1324.28	2400	1947	0	0	0	0	0	440	4
1324.56	2700	1935	0	0	0	0	0	746	4
1324.74	3000	2100	0	0	0	0	0	994	12
1323.06	1791	1791	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 33 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1316.29	0.00	0	0	0.00
1317.91	0.00	300	0	0.00
1318.84	0.00	600	0	0.00
1319.68	0.00	900	0	0.00
1320.69	0.00	1200	0	0.00
1321.84	0.00	1500	0	0.00
1323.09	-0.00	1800	1	0.04
1323.89	-0.00	2100	1	0.07
1324.28	-0.01	2400	12	0.51
1324.56	-0.01	2700	19	0.71
1324.74	0.00	3000	-94	-3.14

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 16:46:26 FILE NAME: 33

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (57 BY 3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1316.29	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
300	1317.91	1.62	1.62	1-S2n	0.95	0.95	5.56	0.95	3.25	1.47
600	1318.84	2.55	2.55	1-S2n	1.45	1.51	7.23	1.45	4.15	2.20
900	1319.68	3.39	3.39	5-S2n	1.86	1.98	8.49	1.86	4.77	2.77
1200	1320.69	4.31	4.40	4-FFt	2.22	2.40	7.02	3.00	5.24	3.27
1500	1321.84	5.43	5.55	4-FFt	2.55	2.79	8.77	3.00	5.64	3.71
1799	1323.09	6.80	6.80	4-FFt	3.00	3.00	10.52	3.00	5.97	4.10
1934	1323.90	7.50	7.61	4-FFt	3.00	3.00	11.31	3.00	6.27	4.47
1947	1324.29	7.58	8.00	4-FFt	3.00	3.00	11.39	3.00	6.54	4.81
1935	1324.57	7.51	8.28	4-FFt	3.00	3.00	11.32	3.00	6.78	5.14
2100	1325.45	8.45	9.16	4-FFt	3.00	3.00	12.28	3.00	7.00	5.44

El. inlet face invert 1316.29 ft El. outlet invert 1316.17 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1316.29
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1316.17
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	57.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

JRRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 16:46:26 FILE NAME: 33

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	57.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1316.17
CULVERT NO.1 OUTLET INVERT ELEVATION	1316.17 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1316.17	0.000	0.00	0.00	0.00
300.00	1317.64	0.474	1.47	3.25	0.37
600.00	1318.37	0.494	2.20	4.15	0.55
900.00	1318.94	0.504	2.77	4.77	0.69
1200.00	1319.44	0.511	3.27	5.24	0.82
1500.00	1319.88	0.516	3.71	5.64	0.92
1800.00	1320.27	0.520	4.10	5.97	1.02
2100.00	1320.64	0.523	4.47	6.27	1.12
2400.00	1320.98	0.525	4.81	6.54	1.20
2700.00	1321.31	0.527	5.14	6.78	1.28
3000.00	1321.61	0.529	5.44	7.00	1.36

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1325.84
2	350.00	1325.01
3	890.00	1323.06

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:49:27

FILE DATE: 10-10-2003
FILE NAME: 34

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1312.20	1312.08	24.00	1 RCB	10.00	2.30	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 34 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1312.20	0	0	0	0	0	0	0	0	1
1313.84	50	50	0	0	0	0	0	0	1
1314.71	100	100	0	0	0	0	0	0	1
1315.70	150	150	0	0	0	0	0	0	1
1317.03	200	200	0	0	0	0	0	0	1
1318.55	250	244	0	0	0	0	0	5	10
1318.87	300	252	0	0	0	0	0	45	7
1319.04	350	256	0	0	0	0	0	92	7
1319.16	400	259	0	0	0	0	0	138	6
1319.27	450	257	0	0	0	0	0	190	6
1319.36	500	254	0	0	0	0	0	242	5
1318.34	238	238	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 34 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1312.20	0.00	0	0	0.00
1313.84	0.00	50	0	0.00
1314.71	0.00	100	0	0.00
1315.70	0.00	150	0	0.00
1317.03	0.00	200	0	0.00
1318.55	-0.01	250	1	0.52
1318.87	-0.01	300	3	0.90
1319.04	-0.00	350	2	0.62
1319.16	-0.01	400	3	0.73
1319.27	-0.00	450	3	0.56
1319.36	-0.01	500	5	0.91

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
RRENT TIME: 16:49:27 FILE NAME: 34

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (10 BY 2.3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1312.20	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
50	1313.84	1.56	1.64	3-M1t	0.98	0.92	3.90	1.28	2.58	1.28
100	1314.71	2.48	2.51	3-M1t	1.53	1.46	5.45	1.84	3.14	1.84
150	1315.70	3.50	3.28	3-M1t	2.01	1.92	6.67	2.25	3.51	2.25
200	1317.03	4.83	4.52	4-FFt	2.30	2.30	8.70	2.30	3.80	2.59
244	1318.55	6.35	5.82	4-FFt	2.30	2.30	10.61	2.30	4.03	2.88
252	1318.87	6.67	6.28	4-FFt	2.30	2.30	10.96	2.30	4.23	3.14
256	1319.03	6.83	6.63	4-FFt	2.30	2.30	11.14	2.30	4.40	3.38
259	1319.16	6.96	6.92	4-FFt	2.30	2.30	11.27	2.30	4.56	3.60
257	1319.28	6.88	7.08	4-FFt	2.30	2.30	11.19	2.30	4.70	3.80
254	1319.37	6.73	7.17	4-FFt	2.30	2.30	11.04	2.30	4.83	3.99

El. inlet face invert 1312.20 ft El. outlet invert 1312.08 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1312.20
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1312.08
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	2.30 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 16:49:27

FILE DATE: 10-10-2003
FILE NAME: 34

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~
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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1312.08
CULVERT NO.1 OUTLET INVERT ELEVATION	1312.08 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1312.08	0.000	0.00	0.00	0.00
50.00	1313.36	0.402	1.28	2.58	0.32
100.00	1313.92	0.409	1.84	3.14	0.46
150.00	1314.33	0.413	2.25	3.51	0.56
200.00	1314.67	0.416	2.59	3.80	0.65
250.00	1314.96	0.418	2.88	4.03	0.72
300.00	1315.22	0.420	3.14	4.23	0.78
350.00	1315.46	0.422	3.38	4.40	0.84
400.00	1315.68	0.424	3.60	4.56	0.90
450.00	1315.88	0.425	3.80	4.70	0.95
500.00	1316.07	0.426	3.99	4.83	1.00

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~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~
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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1321.28
2	440.00	1319.42
3	700.00	1318.34

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CURRENT DATE: 10-23-2003
CURRENT TIME: 16:52:47

FILE DATE: 10-10-2003
FILE NAME: 35

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1306.55	1306.43	24.00	1 RCB	12.00	2.60	.018	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: 35 DATE: 10-10-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1306.55	0	0	0	0	0	0	0	0	1
1308.16	60	60	0	0	0	0	0	0	1
1309.07	120	120	0	0	0	0	0	0	1
1309.89	180	180	0	0	0	0	0	0	1
1310.95	240	240	0	0	0	0	0	0	1
1312.30	300	300	0	0	0	0	0	0	1
1313.46	360	343	0	0	0	0	0	14	8
1313.72	420	352	0	0	0	0	0	66	7
1313.87	480	356	0	0	0	0	0	121	6
1313.98	540	360	0	0	0	0	0	175	5
1314.08	600	360	0	0	0	0	0	235	5
1313.15	332	332	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: 35 DATE: 10-10-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1306.55	0.00	0	0	0.00
1308.16	0.00	60	0	0.00
1309.07	0.00	120	0	0.00
1309.89	0.00	180	0	0.00
1310.95	0.00	240	0	0.00
1312.30	0.00	300	0	0.00
1313.46	-0.01	360	3	0.95
1313.72	-0.01	420	2	0.57
1313.87	-0.01	480	3	0.64
1313.98	-0.01	540	5	0.85
1314.08	-0.01	600	5	0.87

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-10-2003
CURRENT TIME: 16:52:47 FILE NAME: 35

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (12 BY 2.6) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1306.55	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
60	1308.16	1.56	1.61	3-M1t	0.96	0.92	3.83	1.31	2.66	1.31
120	1309.07	2.46	2.52	3-M1t	1.51	1.46	5.31	1.88	3.26	1.88
180	1309.89	3.34	3.29	3-M1t	1.97	1.92	6.47	2.32	3.65	2.32
240	1310.95	4.40	4.13	4-FFt	2.60	2.32	7.69	2.60	3.95	2.68
300	1312.30	5.75	5.32	4-FFt	2.60	2.60	9.62	2.60	4.20	2.99
343	1313.46	6.91	6.34	4-FFt	2.60	2.60	10.98	2.60	4.41	3.26
352	1313.72	7.17	6.76	4-FFt	2.60	2.60	11.27	2.60	4.59	3.51
356	1313.86	7.31	7.08	4-FFt	2.60	2.60	11.42	2.60	4.75	3.74
360	1313.98	7.43	7.37	4-FFt	2.60	2.60	11.55	2.60	4.90	3.96
360	1314.11	7.42	7.56	4-FFt	2.60	2.60	11.54	2.60	5.04	4.16

El. inlet face invert 1306.55 ft El. outlet invert 1306.43 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1306.55
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1306.43
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	12.00 FT
BARREL RISE	2.60 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.018
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
RRENT TIME: 16:52:47

FILE DATE: 10-10-2003
FILE NAME: 35

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~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~
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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1306.43
CULVERT NO.1 OUTLET INVERT ELEVATION	1306.43 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1306.43	0.000	0.00	0.00	0.00
60.00	1307.74	0.411	1.31	2.66	0.33
120.00	1308.31	0.418	1.88	3.26	0.47
180.00	1308.75	0.422	2.32	3.65	0.58
240.00	1309.11	0.425	2.68	3.95	0.67
300.00	1309.42	0.428	2.99	4.20	0.75
360.00	1309.69	0.430	3.26	4.41	0.81
420.00	1309.94	0.432	3.51	4.59	0.88
480.00	1310.17	0.433	3.74	4.75	0.93
540.00	1310.39	0.434	3.96	4.90	0.99
600.00	1310.59	0.436	4.16	5.04	1.04

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~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~
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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1316.54
2	460.00	1314.79
3	940.00	1313.15

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CURRENT DATE: 10-23-2003
CURRENT TIME: 07:56:41

FILE DATE: 10-23-2003
FILE NAME: STR36

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1303.36	1303.24	24.00	1 RCB	12.00	1.60	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR36 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1303.36	0	0	0	0	0	0	0	0	1
1305.69	100	100	0	0	0	0	0	0	1
1308.62	200	190	0	0	0	0	0	9	6
1308.83	250	194	0	0	0	0	0	55	10
1309.10	400	187	0	0	0	0	0	211	7
1309.21	500	200	0	0	0	0	0	297	6
1309.30	600	200	0	0	0	0	0	394	5
1309.39	700	200	0	0	0	0	0	495	5
1309.46	800	200	0	0	0	0	0	596	5
1309.53	900	200	0	0	0	0	0	692	4
1309.59	1000	200	0	0	0	0	0	792	4
1308.41	185	185	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR36 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1303.36	0.00	0	0	0.00
1305.69	0.00	100	0	0.00
1308.62	-0.01	200	1	0.59
1308.83	-0.00	250	1	0.60
1309.10	-0.00	400	2	0.62
1309.21	-0.00	500	3	0.58
1309.30	-0.01	600	6	0.98
1309.39	-0.01	700	5	0.72
1309.46	-0.00	800	4	0.51
1309.53	-0.01	900	8	0.93
1309.59	-0.01	1000	8	0.79

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
URRENT TIME: 07:56:41 FILE NAME: STR36

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (12 BY 1.6) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1303.36	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
100	1305.69	2.33	2.29	4-FFt	1.03	1.29	5.21	1.60	3.09	1.71
190	1308.61	5.25	4.84	4-FFt	1.60	1.60	9.87	1.60	3.76	2.44
194	1308.82	5.46	5.24	4-FFt	1.60	1.60	10.10	1.60	3.99	2.73
187	1309.11	5.12	5.75	4-FFt	1.60	1.60	9.72	1.60	4.53	3.43
200	1309.85	5.76	6.49	4-FFt	1.60	1.60	10.42	1.60	4.81	3.82
200	1310.19	5.76	6.83	4-FFt	1.60	1.60	10.42	1.60	5.04	4.16
200	1310.50	5.76	7.14	4-FFt	1.60	1.60	10.42	1.60	5.25	4.47
200	1310.79	5.76	7.43	4-FFt	1.60	1.60	10.42	1.60	5.43	4.75
200	1311.05	5.76	7.69	4-FFt	1.60	1.60	10.42	1.60	5.60	5.01
200	1311.29	5.76	7.93	4-FFt	1.60	1.60	10.42	1.60	5.76	5.26

El. inlet face invert 1303.36 ft El. outlet invert 1303.24 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1303.36
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1303.24
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	12.00 FT
BARREL RISE	1.60 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 07:56:41

FILE DATE: 10-23-2003
FILE NAME: STR36

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1303.24
CULVERT NO.1 OUTLET INVERT ELEVATION	1303.24 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1303.24	0.000	0.00	0.00	0.00
100.00	1304.95	0.416	1.71	3.09	0.43
200.00	1305.68	0.423	2.44	3.76	0.61
250.00	1305.97	0.426	2.73	3.99	0.68
400.00	1306.67	0.431	3.43	4.53	0.86
500.00	1307.06	0.434	3.82	4.81	0.95
600.00	1307.40	0.436	4.16	5.04	1.04
700.00	1307.71	0.438	4.47	5.25	1.11
800.00	1307.99	0.439	4.75	5.43	1.19
900.00	1308.25	0.441	5.01	5.60	1.25
1000.00	1308.50	0.442	5.26	5.76	1.31

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1309.80
2	450.00	1308.80
3	650.00	1308.41

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:06:57

FILE DATE: 10-23-2003
FILE NAME: STR37

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1298.58	1298.46	24.00	1 RCB	10.00	3.70	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR37 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1298.58	0	0	0	0	0	0	0	0	1
1301.05	100	100	0	0	0	0	0	0	1
1302.52	200	200	0	0	0	0	0	0	1
1303.27	250	250	0	0	0	0	0	0	1
1305.92	400	389	0	0	0	0	0	8	10
1306.24	500	400	0	0	0	0	0	95	7
1306.42	600	400	0	0	0	0	0	196	7
1306.55	700	400	0	0	0	0	0	295	6
1306.65	800	400	0	0	0	0	0	393	5
1306.74	900	400	0	0	0	0	0	495	5
1306.82	1000	399	0	0	0	0	0	592	4
1305.71	380	380	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR37 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1298.58	0.00	0	0	0.00
1301.05	0.00	100	0	0.00
1302.52	0.00	200	0	0.00
1303.27	0.00	250	0	0.00
1305.92	-0.01	400	3	0.63
1306.24	-0.01	500	5	0.94
1306.42	-0.00	600	4	0.60
1306.55	-0.00	700	5	0.65
1306.65	-0.01	800	7	0.83
1306.74	-0.01	900	5	0.52
1306.82	-0.01	1000	9	0.87

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 08:06:57 FILE NAME: STR37

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (10 BY 3.7) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1298.58	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
100	1301.05	2.47	2.47	1-S2n	1.17	1.46	7.79	1.28	3.14	1.84
200	1302.52	3.94	3.94	5-S2n	1.86	2.32	9.62	2.08	3.80	2.59
250	1303.27	4.69	4.69	5-S2n	2.16	2.69	10.28	2.43	4.03	2.88
389	1305.92	7.34	7.34	5-S2n	2.94	3.62	11.75	3.32	4.56	3.60
400	1306.16	7.58	6.71	4-FFt	3.00	3.68	10.81	3.70	4.83	3.99
400	1306.16	7.58	7.06	4-FFt	3.00	3.68	10.81	3.70	5.07	4.33
400	1306.16	7.58	7.37	4-FFt	3.00	3.68	10.81	3.70	5.27	4.65
400	1306.24	7.58	7.66	4-FFt	3.00	3.68	10.81	3.70	5.45	4.93
400	1306.50	7.58	7.92	4-FFt	3.00	3.68	10.81	3.70	5.62	5.20
399	1306.74	7.56	8.16	4-FFt	2.99	3.68	10.78	3.70	5.77	5.45

El. inlet face invert 1298.58 ft El. outlet invert 1298.46 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1298.58
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1298.46
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	10.00 FT
BARREL RISE	3.70 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
URRENT TIME: 08:06:57

FILE DATE: 10-23-2003
FILE NAME: STR37

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1298.46
CULVERT NO.1 OUTLET INVERT ELEVATION	1298.46 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1298.46	0.000	0.00	0.00	0.00
100.00	1300.30	0.409	1.84	3.14	0.46
200.00	1301.05	0.416	2.59	3.80	0.65
250.00	1301.34	0.418	2.88	4.03	0.72
400.00	1302.06	0.424	3.60	4.56	0.90
500.00	1302.45	0.426	3.99	4.83	1.00
600.00	1302.79	0.429	4.33	5.07	1.08
700.00	1303.11	0.431	4.65	5.27	1.16
800.00	1303.39	0.433	4.93	5.45	1.23
900.00	1303.66	0.434	5.20	5.62	1.30
1000.00	1303.91	0.436	5.45	5.77	1.36

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1306.97
2	440.00	1305.95
3	550.00	1305.71

CURRENT DATE: 10-23-2003
CURRENT TIME: 09:09:10

FILE DATE: 10-23-2003
FILE NAME: STR38

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1297.39	1297.27	24.00	1 RCB	35.00	3.80	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR38 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1297.39	0	0	0	0	0	0	0	0	1
1299.86	350	350	0	0	0	0	0	0	1
1301.32	700	700	0	0	0	0	0	0	1
1302.85	1050	1050	0	0	0	0	0	0	1
1304.58	1400	1364	0	0	0	0	0	29	7
1304.93	1750	1400	0	0	0	0	0	338	6
1305.11	2100	1400	0	0	0	0	0	687	5
1305.25	2450	1400	0	0	0	0	0	1027	4
1305.37	2800	1400	0	0	0	0	0	1380	4
1305.48	3150	1400	0	0	0	0	0	1733	4
1305.68	3500	700	0	0	0	0	0	2517	11
1304.43	1340	1340	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR38 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1297.39	0.00	0	0	0.00
1299.86	0.00	350	0	0.00
1301.32	0.00	700	0	0.00
1302.85	0.00	1050	0	0.00
1304.58	-0.01	1400	7	0.48
1304.93	-0.01	1750	12	0.71
1305.11	-0.01	2100	13	0.63
1305.25	-0.01	2450	23	0.93
1305.37	-0.00	2800	20	0.71
1305.48	-0.01	3150	17	0.53
1305.68	0.00	3500	283	8.09

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 09:09:10 FILE NAME: STR38

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (35 BY 3.8) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1297.39	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
350	1299.86	2.47	2.47	1-S2n	1.11	1.46	7.96	1.26	3.99	2.12
700	1301.32	3.93	3.93	5-S2n	1.70	2.32	9.82	2.04	5.01	3.15
1050	1302.85	5.46	5.32	4-FFt	2.19	3.04	7.89	3.80	5.69	3.94
1364	1304.58	7.19	7.03	4-FFt	2.58	3.62	10.26	3.80	6.21	4.62
1400	1305.14	7.42	7.75	4-FFt	2.63	3.68	10.53	3.80	6.64	5.21
1400	1305.68	7.42	8.29	4-FFt	2.63	3.68	10.53	3.80	7.00	5.74
1400	1306.17	7.42	8.78	4-FFt	2.63	3.68	10.53	3.80	7.32	6.23
1400	1306.62	7.42	9.23	4-FFt	2.63	3.68	10.53	3.80	7.61	6.69
1400	1307.05	7.42	9.66	4-FFt	2.63	3.68	10.53	3.80	7.86	7.11
700	1305.45	3.93	8.06	4-FFt	1.70	2.32	5.26	3.80	8.10	7.51

El. inlet face invert 1297.39 ft El. outlet invert 1297.27 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1297.39
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1297.27
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	35.00 FT
BARREL RISE	3.80 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 09:09:10

FILE DATE: 10-23-2003
FILE NAME: STR38

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	35.00
SIDE SLOPE H/V (X:1)	3.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1297.27
CULVERT NO.1 OUTLET INVERT ELEVATION	1297.27 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1297.27	0.000	0.00	0.00	0.00
350.00	1299.39	0.483	2.12	3.99	0.53
700.00	1300.42	0.498	3.15	5.01	0.79
1050.00	1301.21	0.505	3.94	5.69	0.98
1400.00	1301.89	0.509	4.62	6.21	1.15
1750.00	1302.48	0.512	5.21	6.64	1.30
2100.00	1303.01	0.515	5.74	7.00	1.43
2450.00	1303.50	0.517	6.23	7.32	1.56
2800.00	1303.96	0.518	6.69	7.61	1.67
3150.00	1304.38	0.520	7.11	7.86	1.77
3500.00	1304.78	0.521	7.51	8.10	1.87

~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1305.95
2	560.00	1304.95
3	1050.00	1304.49
4	1300.00	1304.43

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:24:37

FILE DATE: 10-23-2003
FILE NAME: STR39

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1298.65	1298.53	24.00	1 RCB	17.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR39 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1298.65	0	0	0	0	0	0	0	0	1
1300.92	150	150	0	0	0	0	0	0	1
1302.35	300	300	0	0	0	0	0	0	1
1304.12	450	450	0	0	0	0	0	0	1
1304.71	600	490	0	0	0	0	0	106	15
1304.79	750	469	0	0	0	0	0	276	7
1304.85	900	450	0	0	0	0	0	444	6
1304.90	1050	450	0	0	0	0	0	593	5
1304.96	1200	300	0	0	0	0	0	837	11
1305.01	1350	300	0	0	0	0	0	1043	5
1305.06	1500	266	0	0	0	0	0	1222	4
1304.52	478	478	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR39 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1298.65	0.00	0	0	0.00
1300.92	0.00	150	0	0.00
1302.35	0.00	300	0	0.00
1304.12	0.00	450	0	0.00
1304.71	-0.00	600	4	0.66
1304.79	-0.00	750	5	0.71
1304.85	-0.00	900	6	0.64
1304.90	-0.00	1050	7	0.65
1304.96	0.00	1200	63	5.28
1305.01	-0.00	1350	7	0.51
1305.06	-0.01	1500	12	0.81

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 08:24:37 FILE NAME: STR39

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (17 BY 3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1298.65	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
150	1300.92	2.27	2.27	1-S2n	1.05	1.35	7.59	1.16	3.35	1.84
300	1302.35	3.70	3.70	5-S2n	1.63	2.14	9.38	1.88	4.10	2.65
450	1304.12	5.47	5.04	4-FFt	2.12	2.80	8.82	3.00	4.59	3.26
490	1304.71	6.06	5.91	4-FFt	2.24	2.96	9.62	3.00	4.96	3.77
469	1304.80	5.74	6.15	4-FFt	2.18	2.88	9.20	3.00	5.27	4.20
450	1305.02	5.47	6.37	4-FFt	2.12	2.80	8.82	3.00	5.54	4.59
450	1305.38	5.47	6.73	4-FFt	2.12	2.80	8.82	3.00	5.77	4.95
300	1304.65	3.70	6.00	4-FFt	1.63	2.14	5.88	3.00	5.98	5.27
300	1304.95	3.70	6.30	4-FFt	1.63	2.14	5.88	3.00	6.17	5.57
266	1305.05	3.36	6.40	4-FFt	1.51	1.97	5.21	3.00	6.34	5.85

El. inlet face invert 1298.65 ft El. outlet invert 1298.53 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1298.65
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1298.53
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	17.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

:URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 08:24:37 FILE NAME: STR39

~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	17.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1298.53
CULVERT NO.1 OUTLET INVERT ELEVATION	1298.53 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1298.53	0.000	0.00	0.00	0.00
150.00	1300.37	0.435	1.84	3.35	0.46
300.00	1301.18	0.443	2.65	4.10	0.66
450.00	1301.79	0.448	3.26	4.59	0.81
600.00	1302.30	0.450	3.77	4.96	0.94
750.00	1302.73	0.453	4.20	5.27	1.05
900.00	1303.12	0.455	4.59	5.54	1.15
1050.00	1303.48	0.457	4.95	5.77	1.23
1200.00	1303.80	0.459	5.27	5.98	1.32
1350.00	1304.10	0.460	5.57	6.17	1.39
1500.00	1304.38	0.462	5.85	6.34	1.46

~~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1304.52
2	440.00	1304.70
3	1000.00	1304.66
4	1650.00	1304.55

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:29:31

FILE DATE: 10-23-2003
FILE NAME: STR40

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1298.63	1298.51	24.00	4 CSP	3.17	3.17	.024	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR40 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1298.63	0	0	0	0	0	0	0	0	1
1300.33	50	50	0	0	0	0	0	0	1
1301.13	100	100	0	0	0	0	0	0	1
1302.40	150	150	0	0	0	0	0	0	1
1302.96	200	200	0	0	0	0	0	0	1
1303.68	250	250	0	0	0	0	0	0	1
1304.53	300	299	0	0	0	0	0	0	5
1304.71	350	307	0	0	0	0	0	39	16
1304.76	400	300	0	0	0	0	0	97	8
1304.79	450	299	0	0	0	0	0	147	6
1304.82	500	292	0	0	0	0	0	206	6
1304.55	300	300	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR40 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1298.63	0.00	0	0	0.00
1300.33	0.00	50	0	0.00
1301.13	0.00	100	0	0.00
1302.40	0.00	150	0	0.00
1302.96	0.00	200	0	0.00
1303.68	0.00	250	0	0.00
1304.53	-0.01	300	1	0.49
1304.71	-0.00	350	3	0.90
1304.76	-0.00	400	3	0.67
1304.79	-0.00	450	3	0.72
1304.82	-0.00	500	3	0.56

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 08:29:31 FILE NAME: STR40

PERFORMANCE CURVE FOR CULVERT # 1 - 4 (3.167 BY 3.167) CSP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1298.63	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
50	1300.33	1.52	1.70	2-M2c	1.43	1.09	5.16	1.09	2.43	1.07
100	1301.13	2.28	2.50	2-M2c	2.24	1.59	6.34	1.59	3.02	1.56
150	1302.40	2.97	3.77	6-FFn	3.17	1.96	4.76	3.17	3.40	1.94
200	1302.96	3.71	4.33	6-FFn	3.17	2.27	6.35	3.17	3.69	2.26
250	1303.68	4.57	5.05	6-FFn	3.17	2.53	7.93	3.17	3.93	2.53
299	1304.53	5.59	5.90	6-FFn	3.17	2.71	9.47	3.17	4.14	2.78
307	1304.70	5.80	6.07	6-FFn	3.17	2.74	9.76	3.17	4.32	3.00
300	1304.60	5.62	5.97	4-FFt	3.17	2.72	9.52	3.17	4.48	3.21
299	1304.78	5.61	6.15	4-FFt	3.17	2.71	9.50	3.17	4.62	3.40
292	1304.82	5.43	6.19	4-FFt	3.17	2.69	9.26	3.17	4.76	3.58

El. inlet face invert 1298.63 ft El. outlet invert 1298.51 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1298.63
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1298.51
NUMBER OF BARRELS	4
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.17 FT
BARREL MATERIAL	CORRUGATED STEEL
BARREL MANNING'S N	0.024
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:29:31

FILE DATE: 10-23-2003
FILE NAME: STR40

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	15.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1298.51
CULVERT NO.1 OUTLET INVERT ELEVATION	1298.51 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1298.51	0.000	0.00	0.00	0.00
50.00	1299.58	0.415	1.07	2.43	0.27
100.00	1300.07	0.425	1.56	3.02	0.39
150.00	1300.45	0.430	1.94	3.40	0.48
200.00	1300.77	0.433	2.26	3.69	0.56
250.00	1301.04	0.436	2.53	3.93	0.63
300.00	1301.29	0.438	2.78	4.14	0.69
350.00	1301.51	0.439	3.00	4.32	0.75
400.00	1301.72	0.440	3.21	4.48	0.80
450.00	1301.91	0.442	3.40	4.62	0.85
500.00	1302.09	0.443	3.58	4.76	0.89

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1304.67
2	460.00	1304.66
3	900.00	1304.66
4	1100.00	1304.55

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:38:46

FILE DATE: 10-23-2003
FILE NAME: STR41

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1295.89	1295.77	24.00	2 RCPE	4.42	2.83	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR41 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1295.89	0	0	0	0	0	0	0	0	1
1297.68	50	50	0	0	0	0	0	0	1
1298.73	100	100	0	0	0	0	0	0	1
1299.94	150	150	0	0	0	0	0	0	1
1301.60	200	200	0	0	0	0	0	0	1
1302.26	250	217	0	0	0	0	0	31	10
1302.38	300	219	0	0	0	0	0	78	11
1302.46	350	221	0	0	0	0	0	126	9
1302.53	400	223	0	0	0	0	0	175	8
1302.58	450	224	0	0	0	0	0	222	6
1302.62	500	223	0	0	0	0	0	274	6
1301.99	210	210	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR41 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1295.89	0.00	0	0	0.00
1297.68	0.00	50	0	0.00
1298.73	0.00	100	0	0.00
1299.94	0.00	150	0	0.00
1301.60	0.00	200	0	0.00
1302.26	-0.01	250	2	0.92
1302.38	-0.00	300	2	0.78
1302.46	-0.00	350	3	0.74
1302.53	-0.00	400	3	0.65
1302.58	-0.00	450	4	0.98
1302.62	-0.00	500	3	0.59

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:38:46

FILE DATE: 10-23-2003
FILE NAME: STR41

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4.416667 BY 2.833333) RCPE

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1295.89	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
50	1297.68	1.79	1.79	1-S2n	1.08	1.26	6.53	1.13	2.52	1.18
100	1298.73	2.84	2.84	5-S2n	1.60	1.83	7.98	1.69	3.09	1.71
150	1299.94	4.05	4.05	5-S2n	2.11	2.27	9.05	2.17	3.47	2.11
200	1301.60	5.71	5.16	6-FFn	2.83	2.55	9.83	2.83	3.76	2.44
217	1302.26	6.37	5.58	6-FFn	2.83	2.65	10.65	2.83	3.99	2.73
219	1302.38	6.49	5.81	4-FFt	2.83	2.67	10.81	2.83	4.20	2.99
221	1302.46	6.57	6.09	4-FFt	2.83	2.68	10.90	2.83	4.37	3.22
223	1302.52	6.63	6.34	4-FFt	2.83	2.68	10.98	2.83	4.53	3.43
224	1302.57	6.68	6.58	4-FFt	2.83	2.69	11.04	2.83	4.67	3.63
223	1302.63	6.65	6.74	4-FFt	2.83	2.69	11.00	2.83	4.81	3.82

El. inlet face invert 1295.89 ft El. outlet invert 1295.77 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1295.89
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1295.77
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	ELLIPTICAL
BARREL SPAN	4.42 FT
BARREL RISE	2.83 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQ. EDGE WITH HEADWALL
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
RRENT TIME: 08:38:46

FILE DATE: 10-23-2003
FILE NAME: STR41

~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	12.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1295.77
CULVERT NO.1 OUTLET INVERT ELEVATION	1295.77 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1295.77	0.000	0.00	0.00	0.00
50.00	1296.95	0.409	1.18	2.52	0.30
100.00	1297.48	0.416	1.71	3.09	0.43
150.00	1297.88	0.421	2.11	3.47	0.53
200.00	1298.21	0.423	2.44	3.76	0.61
250.00	1298.50	0.426	2.73	3.99	0.68
300.00	1298.76	0.428	2.99	4.20	0.75
350.00	1298.99	0.430	3.22	4.37	0.80
400.00	1299.20	0.431	3.43	4.53	0.86
450.00	1299.40	0.432	3.63	4.67	0.91
500.00	1299.59	0.434	3.82	4.81	0.95

~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1303.26
2	450.00	1302.57
3	890.00	1302.08
4	960.00	1301.99

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:44:28

FILE DATE: 10-23-2003
FILE NAME: STR42

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1296.56	1296.44	24.00	1 RCB	3.00	3.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR42 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1296.56	0	0	0	0	0	0	0	0	1
1299.55	40	40	0	0	0	0	0	0	1
1301.58	80	74	0	0	0	0	0	5	30
1301.65	120	74	0	0	0	0	0	44	19
1301.68	160	75	0	0	0	0	0	84	11
1301.71	200	75	0	0	0	0	0	123	9
1301.73	240	76	0	0	0	0	0	163	8
1301.76	280	71	0	0	0	0	0	207	7
1301.78	320	67	0	0	0	0	0	250	6
1301.80	360	63	0	0	0	0	0	295	6
1301.81	400	59	0	0	0	0	0	338	5
1301.55	73	73	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR42 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1296.56	0.00	0	0	0.00
1299.55	0.00	40	0	0.00
1301.58	-0.00	80	2	2.11
1301.65	-0.00	120	1	0.88
1301.68	-0.00	160	1	0.80
1301.71	-0.00	200	1	0.74
1301.73	-0.00	240	2	0.63
1301.76	-0.00	280	2	0.72
1301.78	-0.00	320	3	0.93
1301.80	-0.00	360	2	0.68
1301.81	-0.00	400	4	0.93

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
RRENT TIME: 08:44:28 FILE NAME: STR42

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (3 BY 3) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1296.56	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1299.55	2.99	2.99	1-S2n	1.75	1.77	7.62	1.75	2.58	1.63
74	1301.58	5.02	4.59	6-FFn	3.00	2.66	8.17	3.00	3.08	2.20
74	1301.65	5.09	4.63	6-FFn	3.00	2.68	8.27	3.00	3.41	2.61
75	1301.68	5.12	4.65	6-FFn	3.00	2.69	8.32	3.00	3.67	2.95
75	1301.71	5.15	4.90	4-FFt	3.00	2.70	8.36	3.00	3.88	3.23
76	1301.73	5.17	5.17	4-FFt	3.00	2.71	8.39	3.00	4.06	3.49
71	1301.76	4.86	5.20	4-FFt	3.00	2.61	7.93	3.00	4.22	3.71
67	1301.78	4.57	5.22	4-FFt	2.63	2.50	7.45	3.00	4.37	3.92
63	1301.80	4.29	5.24	4-FFt	2.49	2.40	6.99	3.00	4.50	4.11
59	1301.82	4.03	5.26	4-FFt	2.36	2.29	6.52	3.00	4.62	4.29

El. inlet face invert 1296.56 ft El. outlet invert 1296.44 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1296.56
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1296.44
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	3.00 FT
BARREL RISE	3.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:44:28

FILE DATE: 10-23-2003
FILE NAME: STR42

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~
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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	3.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1296.44
CULVERT NO.1 OUTLET INVERT ELEVATION	1296.44 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1296.44	0.000	0.00	0.00	0.00
40.00	1298.07	0.356	1.63	2.58	0.41
80.00	1298.64	0.366	2.20	3.08	0.55
120.00	1299.05	0.372	2.61	3.41	0.65
160.00	1299.39	0.377	2.95	3.67	0.74
200.00	1299.67	0.380	3.23	3.88	0.81
240.00	1299.93	0.383	3.49	4.06	0.87
280.00	1300.15	0.386	3.71	4.22	0.93
320.00	1300.36	0.389	3.92	4.37	0.98
360.00	1300.55	0.391	4.11	4.50	1.03
400.00	1300.73	0.393	4.29	4.62	1.07

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~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~
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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1301.80
2	440.00	1301.55
3	800.00	1301.56
4	1250.00	1301.66
5	1480.00	1301.59

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CURRENT DATE: 10-23-2003
URRENT TIME: 08:48:54

FILE DATE: 10-23-2003
FILE NAME: SRT43

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1295.98	1295.86	24.00	2 RCB	4.00	2.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: SRT43 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1295.98	0	0	0	0	0	0	0	0	1
1298.01	60	60	0	0	0	0	0	0	1
1299.36	120	120	0	0	0	0	0	0	1
1301.19	180	180	0	0	0	0	0	0	1
1301.66	240	192	0	0	0	0	0	46	21
1301.71	300	194	0	0	0	0	0	104	8
1301.75	360	195	0	0	0	0	0	162	6
1301.79	420	188	0	0	0	0	0	229	6
1301.83	480	181	0	0	0	0	0	295	5
1301.86	540	180	0	0	0	0	0	357	5
1301.88	600	180	0	0	0	0	0	414	4
1301.55	189	189	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: SRT43 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1295.98	0.00	0	0	0.00
1298.01	0.00	60	0	0.00
1299.36	0.00	120	0	0.00
1301.19	0.00	180	0	0.00
1301.66	-0.00	240	2	0.87
1301.71	-0.00	300	2	0.63
1301.75	-0.00	360	3	0.85
1301.79	-0.00	420	3	0.60
1301.83	-0.00	480	4	0.91
1301.86	-0.00	540	3	0.57
1301.88	-0.00	600	6	0.95

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 08:48:54 FILE NAME: SRT43

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4 BY 2.5) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1295.98	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
60	1298.01	2.03	2.03	1-S2n	1.08	1.21	6.94	1.08	2.72	1.41
120	1299.36	3.38	3.38	5-S2n	1.78	1.92	8.43	1.78	3.30	2.01
180	1301.19	5.21	4.45	6-FFn	2.50	2.50	9.00	2.50	3.69	2.46
192	1301.66	5.68	5.07	4-FFt	2.50	2.50	9.62	2.50	3.99	2.83
194	1301.71	5.73	5.41	4-FFt	2.50	2.50	9.68	2.50	4.23	3.14
195	1301.74	5.76	5.72	4-FFt	2.50	2.50	9.73	2.50	4.44	3.42
188	1301.80	5.52	5.82	4-FFt	2.50	2.50	9.42	2.50	4.62	3.68
181	1301.85	5.23	5.87	4-FFt	2.50	2.50	9.03	2.50	4.78	3.91
180	1302.06	5.21	6.08	4-FFt	2.50	2.50	9.00	2.50	4.93	4.13
180	1302.26	5.21	6.28	4-FFt	2.50	2.50	9.00	2.50	5.07	4.33

El. inlet face invert 1295.98 ft El. outlet invert 1295.86 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1295.98
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1295.86
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	4.00 FT
BARREL RISE	2.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
URRENT TIME: 08:48:54

FILE DATE: 10-23-2003
FILE NAME: SRT43

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1295.86
CULVERT NO.1 OUTLET INVERT ELEVATION	1295.86 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1295.86	0.000	0.00	0.00	0.00
60.00	1297.27	0.404	1.41	2.72	0.35
120.00	1297.87	0.410	2.01	3.30	0.50
180.00	1298.32	0.415	2.46	3.69	0.61
240.00	1298.69	0.418	2.83	3.99	0.71
300.00	1299.00	0.420	3.14	4.23	0.78
360.00	1299.28	0.422	3.42	4.44	0.85
420.00	1299.54	0.424	3.68	4.62	0.92
480.00	1299.77	0.426	3.91	4.78	0.98
540.00	1299.99	0.427	4.13	4.93	1.03
600.00	1300.19	0.429	4.33	5.07	1.08

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1301.55
2	240.00	1301.56
3	800.00	1301.66
4	1050.00	1301.59

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:53:18

FILE DATE: 10-23-2003
FILE NAME: STR44

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1295.10	1294.98	24.00	1 RCB	4.00	2.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR44 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1295.10	0	0	0	0	0	0	0	0	1
1297.13	30	30	0	0	0	0	0	0	1
1298.48	60	60	0	0	0	0	0	0	1
1299.72	90	81	0	0	0	0	0	4	30
1299.87	120	84	0	0	0	0	0	35	24
1299.94	150	85	0	0	0	0	0	64	17
1299.99	180	86	0	0	0	0	0	93	14
1300.03	210	86	0	0	0	0	0	122	11
1300.06	240	84	0	0	0	0	0	154	10
1300.10	270	81	0	0	0	0	0	187	9
1300.13	300	78	0	0	0	0	0	219	8
1299.61	80	80	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR44 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1295.10	0.00	0	0	0.00
1297.13	0.00	30	0	0.00
1298.48	0.00	60	0	0.00
1299.72	-0.00	90	5	5.08
1299.87	-0.00	120	1	0.86
1299.94	-0.00	150	1	0.88
1299.99	-0.00	180	2	0.88
1300.03	-0.00	210	2	0.94
1300.06	-0.00	240	2	0.74
1300.10	-0.00	270	2	0.87
1300.13	-0.00	300	3	0.98

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

'URRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
URRENT TIME: 08:53:18 FILE NAME: STR44

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (4 BY 2.5) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1295.10	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
30	1297.13	2.03	2.03	1-S2n	1.08	1.21	6.94	1.08	2.36	1.26
60	1298.48	3.38	3.38	5-S2n	1.78	1.92	8.43	1.78	2.84	1.76
81	1299.71	4.61	4.61	5-S2n	2.24	2.35	9.10	2.24	3.15	2.12
84	1299.87	4.77	4.17	6-FFn	2.50	2.39	8.37	2.50	3.39	2.41
85	1299.93	4.84	4.38	4-FFt	2.50	2.41	8.47	2.50	3.59	2.67
86	1299.99	4.89	4.63	4-FFt	2.50	2.43	8.55	2.50	3.76	2.89
86	1300.03	4.93	4.86	4-FFt	2.50	2.44	8.61	2.50	3.91	3.09
84	1300.07	4.81	4.97	4-FFt	2.50	2.41	8.44	2.50	4.05	3.28
81	1300.10	4.59	5.00	4-FFt	2.23	2.34	8.11	2.50	4.17	3.45
78	1300.13	4.39	5.03	4-FFt	2.16	2.28	7.79	2.50	4.29	3.60

El. inlet face invert 1295.10 ft El. outlet invert 1294.98 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1295.10
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1294.98
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	4.00 FT
BARREL RISE	2.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

CURRENT DATE: 10-23-2003
CURRENT TIME: 08:53:18

FILE DATE: 10-23-2003
FILE NAME: STR44

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~~~~~~~~~~~~~~~~~~~~~~~~~~ TAILWATER ~~~~~~~~~~~~~~~~~~~~~~~~~~
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******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	5.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1294.98
CULVERT NO.1 OUTLET INVERT ELEVATION	1294.98 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1294.98	0.000	0.00	0.00	0.00
30.00	1296.24	0.370	1.26	2.36	0.32
60.00	1296.74	0.377	1.76	2.84	0.44
90.00	1297.10	0.381	2.12	3.15	0.53
120.00	1297.39	0.385	2.41	3.39	0.60
150.00	1297.65	0.388	2.67	3.59	0.67
180.00	1297.87	0.390	2.89	3.76	0.72
210.00	1298.07	0.392	3.09	3.91	0.77
240.00	1298.26	0.394	3.28	4.05	0.82
270.00	1298.43	0.396	3.45	4.17	0.86
300.00	1298.58	0.398	3.60	4.29	0.90

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~~~~~~~~~~~~~~~~~~~~~~~~~ ROADWAY OVERTOPPING DATA ~~~~~~~~~~~~~~~~~~~~~~~~~
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ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1300.84
2	580.00	1300.40
3	1200.00	1300.02
4	1670.00	1299.61

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CURRENT DATE: 10-23-2003
CURRENT TIME: 08:57:31

FILE DATE: 10-23-2003
FILE NAME: STR45

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.3

CULV #	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1294.29	1294.17	24.00	2 RCB	4.00	2.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: STR45 DATE: 10-23-2003

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1294.29	0	0	0	0	0	0	0	0	1
1295.85	40	40	0	0	0	0	0	0	1
1296.76	80	80	0	0	0	0	0	0	1
1297.67	120	120	0	0	0	0	0	0	1
1298.81	160	160	0	0	0	0	0	0	1
1299.78	200	188	0	0	0	0	0	12	4
1299.90	240	191	0	0	0	0	0	47	18
1299.98	280	193	0	0	0	0	0	85	14
1300.03	320	194	0	0	0	0	0	123	11
1300.07	360	195	0	0	0	0	0	162	9
1300.11	400	192	0	0	0	0	0	204	8
1299.61	183	183	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: STR45 DATE: 10-23-2003

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1294.29	0.00	0	0	0.00
1295.85	0.00	40	0	0.00
1296.76	0.00	80	0	0.00
1297.67	0.00	120	0	0.00
1298.81	0.00	160	0	0.00
1299.78	-0.00	200	0	0.19
1299.90	-0.00	240	2	0.83
1299.98	-0.00	280	2	0.82
1300.03	-0.00	320	3	0.80
1300.07	-0.00	360	3	0.81
1300.11	-0.00	400	4	0.97

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 10-23-2003 FILE DATE: 10-23-2003
CURRENT TIME: 08:57:31 FILE NAME: STR45

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (4 BY 2.5) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1294.29	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.00
40	1295.85	1.56	1.56	1-S2n	0.82	0.92	6.13	0.82	2.42	1.14
80	1296.76	2.47	2.47	1-S2n	1.32	1.46	7.55	1.32	2.95	1.64
120	1297.67	3.38	3.38	5-S2n	1.78	1.92	8.43	1.78	3.30	2.01
160	1298.81	4.52	4.52	5-S2n	2.21	2.32	9.06	2.21	3.58	2.32
188	1299.78	5.49	4.71	4-FFt	2.50	2.50	9.38	2.50	3.80	2.59
191	1299.90	5.61	5.02	4-FFt	2.50	2.50	9.53	2.50	3.99	2.83
193	1299.98	5.69	5.29	4-FFt	2.50	2.50	9.63	2.50	4.15	3.04
194	1300.03	5.74	5.52	4-FFt	2.50	2.50	9.70	2.50	4.30	3.24
195	1300.07	5.78	5.73	4-FFt	2.50	2.50	9.75	2.50	4.44	3.42
192	1300.12	5.66	5.83	4-FFt	2.50	2.50	9.60	2.50	4.56	3.60

El. inlet face invert 1294.29 ft El. outlet invert 1294.17 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1294.29
OUTLET STATION (FT)	24.00
OUTLET ELEVATION (FT)	1294.17
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0050
CULVERT LENGTH ALONG SLOPE (FT)	24.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	BOX
BARREL SPAN	4.00 FT
BARREL RISE	2.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE (90-45 DEG.)
INLET DEPRESSION	NONE

URRENT DATE: 10-23-2003
URRENT TIME: 08:57:31

FILE DATE: 10-23-2003
FILE NAME: STR45

TAILWATER

******* REGULAR CHANNEL CROSS SECTION ****************

BOTTOM WIDTH (FT)	10.00
SIDE SLOPE H/V (X:1)	4.0
CHANNEL SLOPE V/H (FT/FT)	0.004
MANNING'S N (.01-0.1)	0.035
CHANNEL INVERT ELEVATION (FT)	1294.17
CULVERT NO.1 OUTLET INVERT ELEVATION	1294.17 FT

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (CFS)	W.S.E. (FT)	FROUDE NUMBER	DEPTH (FT)	VEL. (FPS)	SHEAR (PSF)
0.00	1294.17	0.000	0.00	0.00	0.00
40.00	1295.31	0.399	1.14	2.42	0.28
80.00	1295.81	0.407	1.64	2.95	0.41
120.00	1296.18	0.410	2.01	3.30	0.50
160.00	1296.49	0.414	2.32	3.58	0.58
200.00	1296.76	0.416	2.59	3.80	0.65
240.00	1297.00	0.418	2.83	3.99	0.71
280.00	1297.21	0.420	3.04	4.15	0.76
320.00	1297.41	0.421	3.24	4.30	0.81
360.00	1297.59	0.422	3.42	4.44	0.85
400.00	1297.77	0.424	3.60	4.56	0.90

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	18.00

***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1300.84
2	580.00	1300.40
3	1200.00	1300.02
4	1670.00	1299.61

Project Summary Report

Project Description	
Worksheet	Structure 1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004500	ft/ft
Water Surface Elevation	1,510.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,508.91 to 1,520.00	
Discharge	44.10	cfs
Flow Area	17.4	ft^2
Wetted Perimeter	20.68	ft
Top Width	20.37	ft
Actual Depth	1.09	ft
Critical Elevation	1,509.63	ft
Critical Slope	0.021842	ft/ft
Velocity	2.54	ft/s
Velocity Head	0.10	ft
Specific Energy	1,510.10	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	8+40	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,514.40
0+11	1,512.36
0+52	1,514.00
0+67	1,509.07
0+81	1,508.91
0+86	1,510.45
8+40	1,520.00

Project Summary Report

Project Description	
Worksheet	Structure 2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004100	ft/ft
Water Surface Elevation	1,508.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,506.96 to 1,520.00	
Discharge	27.81	cfs
Flow Area	14.6	ft²
Wetted Perimeter	24.71	ft
Top Width	24.48	ft
Actual Depth	1.04	ft
Critical Elevation	1,507.72	ft
Critical Slope	0.024880	ft/ft
Velocity	1.91	ft/s
Velocity Head	0.06	ft
Specific Energy	1,508.06	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	11+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,511.60
0+12	1,509.99
0+53	1,510.68
0+59	1,507.81
0+80	1,506.96
0+93	1,511.34
11+00	1,520.00

Project Summary Report

Project Description	
Worksheet	Structure 3
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003900	ft/ft
Water Surface Elevation	1,508.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,504.87 to 1,510.00	
Discharge	166.84	cfs
Flow Area	77.7	ft²
Wetted Perimeter	106.68	ft
Top Width	105.72	ft
Actual Depth	3.13	ft
Critical Elevation	1,506.58	ft
Critical Slope	0.017186	ft/ft
Velocity	2.15	ft/s
Velocity Head	0.07	ft
Specific Energy	1,508.07	ft
Froude Number	0.44	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+65	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,508.79
0+11	1,507.50
0+49	1,508.75
0+59	1,505.15
0+71	1,504.87
0+80	1,507.65
4+65	1,510.00

Project Summary Report

Project Description	
Worksheet	Structure 4
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003900	ft/ft
Water Surface Elevation	1,501.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,499.21 to 1,510.00	
Discharge	98.16	cfs
Flow Area	32.3	ft²
Wetted Perimeter	26.38	ft
Top Width	25.82	ft
Actual Depth	1.79	ft
Critical Elevation	1,500.43	ft
Critical Slope	0.019259	ft/ft
Velocity	3.04	ft/s
Velocity Head	0.14	ft
Specific Energy	1,501.14	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	8+80	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,503.51
0+13	1,501.87
0+50	1,503.13
0+58	1,499.21
0+74	1,499.67
0+81	1,501.18
8+80	1,510.00

Project Summary Report

Project Description	
Worksheet	Structure 5
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005000	ft/ft
Water Surface Elevation	1,494.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,492.84 to 1,500.00	
Discharge	22.50	cfs
Flow Area	9.3	ft^2
Wetted Perimeter	12.95	ft
Top Width	12.64	ft
Actual Depth	1.16	ft
Critical Elevation	1,493.66	ft
Critical Slope	0.022691	ft/ft
Velocity	2.41	ft/s
Velocity Head	0.09	ft
Specific Energy	1,494.09	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,495.69
0+15	1,494.84
0+48	1,496.28
0+58	1,492.84
0+64	1,493.16
0+75	1,495.99
7+00	1,500.00

Project Summary Report

Project Description	
Worksheet	Structure 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005200	ft/ft
Water Surface Elevation	1,477.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,475.03 to 1,485.00	
Discharge	73.76	cfs
Flow Area	24.9	ft²
Wetted Perimeter	26.18	ft
Top Width	25.29	ft
Actual Depth	1.97	ft
Critical Elevation	1,476.55	ft
Critical Slope	0.020469	ft/ft
Velocity	2.96	ft/s
Velocity Head	0.14	ft
Specific Energy	1,477.14	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	6+71	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,481.13
0+20	1,480.95
0+47	1,481.94
0+54	1,475.03
0+78	1,477.06
0+88	1,480.76
1+71	1,480.00
6+71	1,485.00

Project Summary Report

Project Description	
Worksheet	Structure 7
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005000	ft/ft
Water Surface Elevation	1,475.03	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,473.60 to 1,480.00	
Discharge	106.26	cfs
Flow Area	33.3	ft²
Wetted Perimeter	30.31	ft
Top Width	29.28	ft
Actual Depth	1.43	ft
Critical Elevation	1,474.62	ft
Critical Slope	0.020178	ft/ft
Velocity	3.19	ft/s
Velocity Head	0.16	ft
Specific Energy	1,475.19	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+17	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,478.71
0+21	1,479.09
0+48	1,478.83
0+51	1,473.60
0+77	1,474.04
0+87	1,478.06
4+17	1,480.00

Project Summary Report

Project Description	
Worksheet	Structure 8
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005100	ft/ft
Water Surface Elevation	1,465.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,464.18 to 1,470.00	
Discharge	35.74	cfs
Flow Area	15.9	ft²
Wetted Perimeter	24.89	ft
Top Width	24.65	ft
Actual Depth	0.82	ft
Critical Elevation	1,464.73	ft
Critical Slope	0.023796	ft/ft
Velocity	2.25	ft/s
Velocity Head	0.08	ft
Specific Energy	1,465.08	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+70	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,468.75
0+20	1,469.10
0+58	1,469.76
0+67	1,464.31
0+84	1,464.18
0+99	1,466.07
4+70	1,470.00

Project Summary Report

Project Description	
Worksheet	Structure 9
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006600	ft/ft
Water Surface Elevation	1,461.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,457.39 to 1,465.00	
Discharge	803.75	cfs
Flow Area	226.7	ft²
Wetted Perimeter	217.46	ft
Top Width	216.86	ft
Actual Depth	3.61	ft
Critical Elevation	1,460.60	ft
Critical Slope	0.018637	ft/ft
Velocity	3.55	ft/s
Velocity Head	0.20	ft
Specific Energy	1,461.20	ft
Froude Number	0.61	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	6+52	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,462.29
0+15	1,460.57
0+53	1,463.13
0+68	1,462.51
0+94	1,457.39
1+02	1,457.54
1+13	1,459.65
1+90	1,460.00
6+52	1,465.00

Project Summary Report

Project Description	
Worksheet	Structure 10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006600	ft/ft
Water Surface Elevation	1,446.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,443.00 to 1,450.00	
Discharge	452.69	cfs
Flow Area	169.7	ft²
Wetted Perimeter	249.34	ft
Top Width	248.76	ft
Actual Depth	3.00	ft
Critical Elevation	1,445.68	ft
Critical Slope	0.021273	ft/ft
Velocity	2.67	ft/s
Velocity Head	0.11	ft
Specific Energy	1,446.11	ft
Froude Number	0.57	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	10+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,447.17
0+12	1,445.74
0+56	1,446.78
0+68	1,445.23
0+84	1,445.86
0+95	1,443.00
1+03	1,443.21
1+15	1,444.96
10+00	1,450.00

Project Summary Report

Project Description	
Worksheet	Structure 11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002300	ft/ft
Water Surface Elevation	1,426.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,422.07 to 1,430.00	
Discharge	851.81	cfs
Flow Area	377.7	ft^2
Wetted Perimeter	323.99	ft
Top Width	323.24	ft
Actual Depth	3.93	ft
Critical Elevation	1,424.97	ft
Critical Slope	0.017941	ft/ft
Velocity	2.26	ft/s
Velocity Head	0.08	ft
Specific Energy	1,426.08	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	6+60	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,427.47
0+11	1,425.86
0+53	1,425.50
0+97	1,425.80
1+07	1,422.21
1+15	1,422.07
1+25	1,423.45
6+60	1,430.00

Project Summary Report

Project Description	
Worksheet	Structure 12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.000010	ft/ft
Water Surface Elevation	1,426.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,418.81 to 1,430.00	
Discharge	230.97	cfs
Flow Area	979.9	ft²
Wetted Perimeter	421.24	ft
Top Width	418.93	ft
Actual Depth	7.19	ft
Critical Elevation	1,420.43	ft
Critical Slope	0.017169	ft/ft
Velocity	0.24	ft/s
Velocity Head	8.63e-4	ft
Specific Energy	1,426.00	ft
Froude Number	0.03	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+60	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,426.54
0+11	1,424.70
0+44	1,424.25
0+51	1,418.81
0+73	1,419.18
0+86	1,422.02
7+60	1,430.00

Project Summary Report

Project Description	
Worksheet	Structure 13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.000150	ft/ft
Water Surface Elevation	1,425.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,419.32 to 1,430.00	
Discharge	894.45	cfs
Flow Area	987.3	ft²
Wetted Perimeter	429.27	ft
Top Width	428.26	ft
Actual Depth	6.18	ft
Critical Elevation	1,422.68	ft
Critical Slope	0.017944	ft/ft
Velocity	0.91	ft/s
Velocity Head	0.01	ft
Specific Energy	1,425.51	ft
Froude Number	0.11	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	8+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,426.58
0+13	1,424.26
0+45	1,423.53
0+59	1,419.42
0+62	1,419.32
0+67	1,420.98
8+00	1,430.00

Project Summary Report

Project Description	
Worksheet	Structure 14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.000300	ft/ft
Water Surface Elevation	1,425.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Methoı	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,422.03 to 1,430.00	
Discharge	139.34	cfs
Flow Area	208.9	ft²
Wetted Perimeter	241.88	ft
Top Width	241.45	ft
Actual Depth	3.47	ft
Critical Elevation	1,423.73	ft
Critical Slope	0.018127	ft/ft
Velocity	0.67	ft/s
Velocity Head	0.01	ft
Specific Energy	1,425.51	ft
Froude Number	0.13	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+40	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,426.46
0+12	1,424.98
0+44	1,425.27
0+72	1,424.29
0+83	1,422.03
0+90	1,422.31
1+02	1,424.15
7+40	1,430.00

Project Summary Report

Project Description	
Worksheet	Structure 15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002400	ft/ft
Water Surface Elevation	1,425.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,420.60 to 1,430.00	
Discharge	927.72	cfs
Flow Area	371.1	ft²
Wetted Perimeter	281.52	ft
Top Width	280.16	ft
Actual Depth	4.90	ft
Critical Elevation	1,424.60	ft
Critical Slope	0.018221	ft/ft
Velocity	2.50	ft/s
Velocity Head	0.10	ft
Specific Energy	1,425.60	ft
Froude Number	0.38	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	7+70	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,426.11
0+24	1,423.62
0+36	1,424.42
0+57	1,427.33
0+75	1,427.43
0+92	1,420.60
1+00	1,421.01
1+15	1,423.42
7+70	1,430.00

Project Summary Report

Project Description	
Worksheet	Structure 16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004300	ft/ft
Water Surface Elevation	1,417.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,413.27 to 1,420.00	
Discharge	1,179.61	cfs
Flow Area	388.0	ft²
Wetted Perimeter	340.02	ft
Top Width	339.44	ft
Actual Depth	3.73	ft
Critical Elevation	1,416.41	ft
Critical Slope	0.018410	ft/ft
Velocity	3.04	ft/s
Velocity Head	0.14	ft
Specific Energy	1,417.14	ft
Froude Number	0.50	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	8+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,417.80
0+14	1,416.23
0+43	1,417.42
0+74	1,417.85
0+92	1,413.65
1+03	1,413.27
1+15	1,414.97
8+00	1,420.00

Project Summary Report

Project Description	
Worksheet	Structure 17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004600	ft/ft
Water Surface Elevation	1,410.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,407.03 to 1,420.00	
Discharge	514.13	cfs
Flow Area	190.8	ft²
Wetted Perimeter	210.83	ft
Top Width	210.31	ft
Actual Depth	2.97	ft
Critical Elevation	1,409.57	ft
Critical Slope	0.020374	ft/ft
Velocity	2.69	ft/s
Velocity Head	0.11	ft
Specific Energy	1,410.11	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	11+50	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,410.91
0+11	1,409.10
0+42	1,408.79
0+69	1,409.75
0+80	1,407.03
0+88	1,407.29
1+00	1,408.76
11+50	1,420.00

Project Summary Report

Project Description	
Worksheet	Structure 18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003600	ft/ft
Water Surface Elevation	1,405.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,403.00 to 1,410.00	
Discharge	88.38	cfs
Flow Area	56.9	ft²
Wetted Perimeter	119.47	ft
Top Width	118.59	ft
Actual Depth	2.00	ft
Critical Elevation	1,404.52	ft
Critical Slope	0.022616	ft/ft
Velocity	1.55	ft/s
Velocity Head	0.04	ft
Specific Energy	1,405.04	ft
Froude Number	0.40	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	11+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.73
0+12	1,404.04
0+34	1,404.48
0+41	1,406.32
0+70	1,406.69
0+99	1,408.41
1+07	1,403.00
1+14	1,403.33
1+21	1,404.61
11+00	1,410.00

Project Summary Report

Project Description	
Worksheet	Structure 19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003300	ft/ft
Water Surface Elevation	1,402.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,399.37 to 1,410.00	
Discharge	277.01	cfs
Flow Area	132.8	ft²
Wetted Perimeter	167.99	ft
Top Width	167.61	ft
Actual Depth	2.63	ft
Critical Elevation	1,401.47	ft
Critical Slope	0.021087	ft/ft
Velocity	2.09	ft/s
Velocity Head	0.07	ft
Specific Energy	1,402.07	ft
Froude Number	0.41	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	11+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,402.62
0+12	1,401.70
0+27	1,404.22
0+57	1,404.28
0+84	1,399.37
0+91	1,399.59
0+99	1,400.78
11+00	1,410.00

Project Summary Report

Project Description	
Worksheet	Structure 20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002900	ft/ft
Water Surface Elevation	1,394.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,390.69 to 1,400.00	
Discharge	701.61	cfs
Flow Area	289.9	ft²
Wetted Perimeter	266.21	ft
Top Width	265.54	ft
Actual Depth	3.31	ft
Critical Elevation	1,393.21	ft
Critical Slope	0.018832	ft/ft
Velocity	2.42	ft/s
Velocity Head	0.09	ft
Specific Energy	1,394.09	ft
Froude Number	0.41	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	9+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,395.16
0+11	1,393.73
0+45	1,394.03
0+82	1,395.04
0+94	1,390.69
1+01	1,390.77
1+12	1,391.88
9+00	1,400.00

Project Summary Report

Project Description	
Worksheet	Structure 21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003800	ft/ft
Water Surface Elevation	1,389.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,387.58 to 1,400.00	
Discharge	76.09	cfs
Flow Area	40.6	ft^2
Wetted Perimeter	66.92	ft
Top Width	66.58	ft
Actual Depth	1.42	ft
Critical Elevation	1,388.67	ft
Critical Slope	0.024332	ft/ft
Velocity	1.88	ft/s
Velocity Head	0.05	ft
Specific Energy	1,389.05	ft
Froude Number	0.42	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	16+50	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,390.35
0+13	1,388.31
0+43	1,388.63
0+74	1,389.82
0+86	1,387.62
0+94	1,387.58
1+03	1,389.40
16+50	1,400.00

Project Summary Report

Project Description	
Worksheet	Structure 22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004500	ft/ft
Water Surface Elevation	1,384.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,381.46 to 1,390.00	
Discharge	430.92	cfs
Flow Area	179.3	ft²
Wetted Perimeter	231.27	ft
Top Width	230.94	ft
Actual Depth	2.54	ft
Critical Elevation	1,383.58	ft
Critical Slope	0.021147	ft/ft
Velocity	2.40	ft/s
Velocity Head	0.09	ft
Specific Energy	1,384.09	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	12+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.09
0+12	1,383.49
0+47	1,382.57
0+88	1,383.33
1+02	1,381.46
1+09	1,381.51
1+19	1,383.25
12+00	1,390.00

Project Summary Report

Project Description	
Worksheet	Structure 23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003800	ft/ft
Water Surface Elevation	1,377.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,375.06 to 1,380.00	
Discharge	129.55	cfs
Flow Area	48.3	ft²
Wetted Perimeter	46.51	ft
Top Width	45.80	ft
Actual Depth	1.94	ft
Critical Elevation	1,376.44	ft
Critical Slope	0.019843	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1,377.11	ft
Froude Number	0.46	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	6+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,377.82
0+19	1,375.33
0+29	1,377.64
0+54	1,378.51
0+73	1,379.35
0+89	1,375.06
0+97	1,375.19
1+09	1,377.24
6+00	1,380.00

Project Summary Report

Project Description	
Worksheet	Structure 24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003900	ft/ft
Water Surface Elevation	1,372.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,368.00 to 1,380.00	
Discharge	954.66	cfs
Flow Area	331.1	ft²
Wetted Perimeter	291.99	ft
Top Width	290.89	ft
Actual Depth	4.00	ft
Critical Elevation	1,371.40	ft
Critical Slope	0.018816	ft/ft
Velocity	2.88	ft/s
Velocity Head	0.13	ft
Specific Energy	1,372.13	ft
Froude Number	0.48	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	13+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,373.00
0+13	1,370.50
0+44	1,370.53
0+63	1,370.43
0+79	1,373.57
0+98	1,368.00
1+08	1,368.12
1+20	1,370.47
13+00	1,380.00

Project Summary Report

Project Description	
Worksheet	Structure 25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003100	ft/ft
Water Surface Elevation	1,369.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,364.00 to 1,370.00	
Discharge	1,417.23	cfs
Flow Area	464.2	ft²
Wetted Perimeter	316.31	ft
Top Width	315.34	ft
Actual Depth	5.00	ft
Critical Elevation	1,367.81	ft
Critical Slope	0.016207	ft/ft
Velocity	3.05	ft/s
Velocity Head	0.14	ft
Specific Energy	1,369.14	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+90	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,369.87
0+19	1,368.54
0+44	1,368.87
0+80	1,368.95
0+97	1,368.04
1+07	1,364.00
1+16	1,364.11
1+28	1,365.79
3+90	1,370.00

Project Summary Report

Project Description	
Worksheet	Structure 26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003800	ft/ft
Water Surface Elevation	1,364.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,361.25 to 1,370.00	
Discharge	313.44	cfs
Flow Area	141.4	ft²
Wetted Perimeter	181.33	ft
Top Width	180.36	ft
Actual Depth	3.25	ft
Critical Elevation	1,363.65	ft
Critical Slope	0.017100	ft/ft
Velocity	2.22	ft/s
Velocity Head	0.08	ft
Specific Energy	1,364.58	ft
Froude Number	0.44	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	11+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,365.25
0+17	1,362.57
0+25	1,364.64
0+66	1,365.54
0+84	1,361.55
0+93	1,361.25
1+05	1,363.70
11+00	1,370.00

Project Summary Report

Project Description	
Worksheet	Structure 27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005400	ft/ft
Water Surface Elevation	1,359.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,357.87 to 1,365.00	
Discharge	245.30	cfs
Flow Area	121.2	ft²
Wetted Perimeter	231.76	ft
Top Width	231.55	ft
Actual Depth	1.13	ft
Critical Elevation	1,358.74	ft
Critical Slope	0.024378	ft/ft
Velocity	2.02	ft/s
Velocity Head	0.06	ft
Specific Energy	1,359.06	ft
Froude Number	0.49	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	16+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,359.59
0+18	1,357.87
0+53	1,358.99
0+95	1,360.75
1+04	1,358.07
1+15	1,358.03
4+61	1,360.00
16+00	1,365.00

Project Summary Report

Project Description	
Worksheet	Structure 28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004600	ft/ft
Water Surface Elevation	1,353.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,350.44 to 1,360.00	
Discharge	436.08	cfs
Flow Area	195.4	ft²
Wetted Perimeter	286.25	ft
Top Width	285.86	ft
Actual Depth	2.56	ft
Critical Elevation	1,352.64	ft
Critical Slope	0.022282	ft/ft
Velocity	2.23	ft/s
Velocity Head	0.08	ft
Specific Energy	1,353.08	ft
Froude Number	0.48	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	17+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,354.24
0+17	1,352.45
0+43	1,352.57
0+64	1,354.42
0+82	1,353.92
0+99	1,350.44
1+08	1,350.53
1+20	1,351.89
17+00	1,360.00

Project Summary Report

Project Description	
Worksheet	*Structure 29*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004300	ft/ft
Water Surface Elevation	1,345.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,340.39 to 1,350.00	
Discharge	4,237.65	cfs
Flow Area	1,059.5	ft²
Wetted Perimeter	615.20	ft
Top Width	614.53	ft
Actual Depth	4.61	ft
Critical Elevation	1,344.18	ft
Critical Slope	0.015930	ft/ft
Velocity	4.00	ft/s
Velocity Head	0.25	ft
Specific Energy	1,345.25	ft
Froude Number	0.54	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	14+50	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,345.84
0+10	1,344.40
0+37	1,344.83
0+58	1,345.43
0+77	1,347.29
1+00	1,343.24
1+10	1,340.39
1+18	1,340.45
1+29	1,341.56
14+50	1,350.00

Project Summary Report

Project Description	
Worksheet	Structure 30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003500	ft/ft
Water Surface Elevation	1,341.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,339.06 to 1,345.00	
Discharge	358.44	cfs
Flow Area	173.7	ft²
Wetted Perimeter	233.41	ft
Top Width	232.89	ft
Actual Depth	1.94	ft
Critical Elevation	1,340.23	ft
Critical Slope	0.018809	ft/ft
Velocity	2.06	ft/s
Velocity Head	0.07	ft
Specific Energy	1,341.07	ft
Froude Number	0.42	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	11+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,341.16
0+12	1,340.02
0+39	1,340.74
0+67	1,341.27
0+72	1,339.06
1+24	1,339.16
1+41	1,340.49
11+00	1,345.00

Project Summary Report

Project Description	
Worksheet	Structure 31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002800	ft/ft
Water Surface Elevation	1,330.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,326.66 to 1,335.00	
Discharge	428.07	cfs
Flow Area	227.3	ft²
Wetted Perimeter	296.15	ft
Top Width	295.36	ft
Actual Depth	3.34	ft
Critical Elevation	1,329.41	ft
Critical Slope	0.021130	ft/ft
Velocity	1.88	ft/s
Velocity Head	0.06	ft
Specific Energy	1,330.06	ft
Froude Number	0.38	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	14+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,331.10
0+13	1,329.64
0+38	1,330.36
0+65	1,331.12
0+87	1,331.24
1+00	1,326.71
1+10	1,326.66
1+21	1,328.79
14+00	1,335.00

Project Summary Report

Project Description	
Worksheet	Structure 32
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003600	ft/ft
Water Surface Elevation	1,323.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,319.58 to 1,330.00	
Discharge	624.62	cfs
Flow Area	272.4	ft²
Wetted Perimeter	318.90	ft
Top Width	318.27	ft
Actual Depth	3.42	ft
Critical Elevation	1,322.47	ft
Critical Slope	0.020484	ft/ft
Velocity	2.29	ft/s
Velocity Head	0.08	ft
Specific Energy	1,323.08	ft
Froude Number	0.44	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	19+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,325.01
0+11	1,323.24
0+32	1,324.10
0+61	1,323.68
0+77	1,319.58
0+89	1,319.64
1+00	1,321.70
19+00	1,330.00

Project Summary Report

Project Description	
Worksheet	Structure 33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004100	ft/ft
Water Surface Elevation	1,322.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,316.50 to 1,330.00	
Discharge	5,302.63	cfs
Flow Area	1,380.4	ft²
Wetted Perimeter	821.71	ft
Top Width	821.00	ft
Actual Depth	5.50	ft
Critical Elevation	1,321.23	ft
Critical Slope	0.016414	ft/ft
Velocity	3.84	ft/s
Velocity Head	0.23	ft
Specific Energy	1,322.23	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	27+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,323.06
0+15	1,320.79
0+55	1,320.74
0+76	1,316.50
0+84	1,316.71
0+95	1,318.74
3+60	1,320.00
27+00	1,330.00

Project Summary Report

Project Description	
Worksheet	Structure 34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.003700	ft/ft
Water Surface Elevation	1,317.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,309.74 to 1,320.00	
Discharge	6,130.58	cfs
Flow Area	1,359.6	ft²
Wetted Perimeter	589.26	ft
Top Width	587.92	ft
Actual Depth	7.26	ft
Critical Elevation	1,315.91	ft
Critical Slope	0.014690	ft/ft
Velocity	4.51	ft/s
Velocity Head	0.32	ft
Specific Energy	1,317.32	ft
Froude Number	0.52	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,318.34
0+12	1,316.81
0+40	1,318.11
0+67	1,312.26
0+78	1,309.76
0+83	1,309.74
0+91	1,312.68
10+00	1,320.00

Project Summary Report

Project Description	
Worksheet	Structure 35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002900	ft/ft
Water Surface Elevation	1,312.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,307.98 to 1,320.00	
Discharge	1,763.39	cfs
Flow Area	647.3	ft²
Wetted Perimeter	497.61	ft
Top Width	496.88	ft
Actual Depth	4.02	ft
Critical Elevation	1,311.20	ft
Critical Slope	0.018129	ft/ft
Velocity	2.72	ft/s
Velocity Head	0.12	ft
Specific Energy	1,312.12	ft
Froude Number	0.42	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	20+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,313.15
0+12	1,311.34
0+29	1,312.19
0+53	1,313.01
0+69	1,307.98
0+98	1,309.61
20+00	1,320.00

Project Summary Report

Project Description	
Worksheet	Structure 36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.001900	ft/ft
Water Surface Elevation	1,307.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,304.20 to 1,310.00	
Discharge	676.81	cfs
Flow Area	365.0	ft²
Wetted Perimeter	363.78	ft
Top Width	363.23	ft
Actual Depth	3.30	ft
Critical Elevation	1,306.57	ft
Critical Slope	0.018905	ft/ft
Velocity	1.85	ft/s
Velocity Head	0.05	ft
Specific Energy	1,307.55	ft
Froude Number	0.33	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	9+00	0.035

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,308.41
0+12	1,306.92
0+45	1,308.27
0+63	1,304.38
0+98	1,304.20
1+09	1,306.10
9+00	1,310.00

Project Summary Report

Project Description	
Worksheet	Structure 38-39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002000	ft/ft
Water Surface Elevation	1,304.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,303.00 to 1,305.00	
Discharge	119.57	cfs
Flow Area	100.0	ft²
Wetted Perimeter	200.10	ft
Top Width	200.00	ft
Actual Depth	1.00	ft
Critical Elevation	1,303.62	ft
Critical Slope	0.026447	ft/ft
Velocity	1.20	ft/s
Velocity Head	0.02	ft
Specific Energy	1,304.02	ft
Froude Number	0.30	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	8+50	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,304.50
4+50	1,304.00
4+55	1,303.00
6+50	1,304.00
8+50	1,305.00

Project Summary Report

Project Description	
Worksheet	Structure 40-41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002000	ft/ft
Water Surface Elevation	1,304.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,302.36 to 1,304.64	
Discharge	610.70	cfs
Flow Area	392.4	ft²
Wetted Perimeter	528.60	ft
Top Width	528.57	ft
Actual Depth	1.64	ft
Critical Elevation	1,303.49	ft
Critical Slope	0.023641	ft/ft
Velocity	1.56	ft/s
Velocity Head	0.04	ft
Specific Energy	1,304.04	ft
Froude Number	0.32	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.01 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	9+00	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,303.99
1+00	1,302.36
2+00	1,303.02
3+00	1,303.31
4+00	1,303.43
5+00	1,303.94
6+00	1,304.15
7+00	1,304.18
8+00	1,304.46
9+00	1,304.64

Project Summary Report

Project Description	
Worksheet	Structure 43-44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.002000	ft/ft
Water Surface Elevation	1,301.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.035	
Elevation Range	1,300.00 to 1,303.00	
Discharge	59.76	cfs
Flow Area	50.0	ft²
Wetted Perimeter	100.10	ft
Top Width	100.00	ft
Actual Depth	1.00	ft
Critical Elevation	1,300.62	ft
Critical Slope	0.026467	ft/ft
Velocity	1.20	ft/s
Velocity Head	0.02	ft
Specific Energy	1,301.02	ft
Froude Number	0.30	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	10+50	0.035

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,302.00
6+00	1,301.00
6+05	1,300.00
7+00	1,301.00
8+50	1,302.00
10+50	1,303.00

Structure 1
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 1
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,506.00	1,516.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,508.91	N/A	N/A	N/A	N/A	N/A
1,508.91	N/A	N/A	N/A	N/A	N/A
1,508.91	N/A	N/A	N/A	N/A	N/A
1,509.00	0.13	0.36	0.4	8.18	8.17
1,510.00	44.10	2.54	17.4	20.68	20.37
1,511.00	124.20	2.37	52.3	68.84	68.30
1,512.00	481.73	2.98	161.6	151.00	150.29
1,513.00	1,293.05	3.60	359.2	252.69	251.74
1,514.00	2,838.11	4.25	667.1	365.35	364.13
1,515.00	5,472.65	5.10	1,072.4	447.11	445.24
1,516.00	9,130.56	5.86	1,557.1	527.07	524.19

Structure 2
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 2
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,505.00	1,513.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,506.96	N/A	N/A	N/A	N/A	N/A
1,506.96	N/A	N/A	N/A	N/A	N/A
1,507.00	4.41e-3	0.20	2.2e-2	1.11	1.11
1,508.00	27.81	1.91	14.6	24.71	24.48
1,509.00	139.95	3.37	41.6	30.16	29.54
1,510.00	320.95	4.36	73.6	36.28	35.27
1,511.00	525.73	3.71	141.7	88.92	87.52
1,512.00	923.54	3.57	258.5	171.65	169.75
1,513.00	1,871.36	3.85	486.4	288.93	286.03

Structure 3
Rating Table for Irregular Channel

Project Description	
Worksheet	*Structure 3*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,504.00	1,510.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,504.87	N/A	N/A	N/A	N/A	N/A
1,505.00	0.17	0.43	0.4	6.01	5.99
1,506.00	34.59	2.31	15.0	18.34	18.02
1,507.00	122.63	3.41	36.0	24.68	24.03
1,508.00	166.84	2.15	77.7	106.68	105.72
1,509.00	726.08	2.55	285.0	302.53	301.17
1,510.00	2,247.63	3.36	668.1	467.36	465.00

Structure 4
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 4
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,496.00	1,505.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,499.21	N/A	N/A	N/A	N/A	N/A
1,499.21	N/A	N/A	N/A	N/A	N/A
1,499.21	N/A	N/A	N/A	N/A	N/A
1,499.21	N/A	N/A	N/A	N/A	N/A
1,500.00	16.64	1.69	9.8	19.37	19.14
1,501.00	98.16	3.04	32.3	26.38	25.82
1,502.00	213.19	2.35	90.7	108.65	107.83
1,503.00	745.73	2.83	263.5	238.89	237.75
1,504.00	2,037.26	3.68	553.4	338.17	336.46
1,505.00	4,163.07	4.45	935.1	429.76	427.05

Structure 5
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 5
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,492.00	1,498.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,492.84	N/A	N/A	N/A	N/A	N/A
1,493.00	0.15	0.55	0.3	3.50	3.47
1,494.00	22.50	2.41	9.3	12.95	12.64
1,495.00	76.42	2.95	25.9	26.53	25.92
1,496.00	232.58	3.12	74.6	70.58	69.33
1,497.00	671.89	2.95	228.1	234.73	232.42
1,498.00	1,998.87	3.71	538.5	391.59	388.28

Structure 6
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 6
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005200 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,475.00	1,483.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,475.03	N/A	N/A	N/A	N/A	N/A
1,476.00	11.15	1.85	6.0	12.89	12.45
1,477.00	73.76	2.96	24.9	26.18	25.29
1,478.00	228.84	4.35	52.6	31.02	29.55
1,479.00	458.03	5.45	84.0	35.33	33.26
1,480.00	759.42	6.38	119.1	39.63	36.98
1,481.00	853.20	3.29	259.5	233.18	229.97
1,482.00	2,285.21	4.03	567.1	375.49	371.00
1,483.00	4,918.94	4.98	988.1	476.49	471.00

Structure 7
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 7
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	*0.005000 ft/ft*

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,473.00	1,481.00	1.00

Water *Surface* Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,473.60	N/A	N/A	N/A	N/A	N/A
1,474.00	4.87	1.02	4.8	24.10	23.87
1,475.00	101.89	3.15	32.4	30.19	29.19
1,476.00	286.01	4.53	63.1	34.03	32.25
1,477.00	544.23	5.62	96.9	37.86	35.31
1,478.00	873.22	6.53	133.7	41.69	38.37
1,479.00	786.25	3.13	251.5	236.68	232.58
1,480.00	2,169.43	3.72	582.8	422.11	417.00
1,481.00	5,316.49	5.32	999.8	424.11	417.00

Structure 8
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 8
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,464.00	1,470.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,464.18	N/A	N/A	N/A	N/A	N/A
1,465.00	35.74	2.25	15.9	24.89	24.65
1,466.00	163.90	3.62	45.3	34.82	34.24
1,467.00	362.53	2.98	121.8	125.11	124.24
1,468.00	1,076.87	3.66	294.0	221.45	220.29
1,469.00	2,433.85	4.31	564.1	332.32	330.63
1,470.00	4,746.12	4.89	969.8	472.92	470.00

Structure 9
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 9
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,457.00	1,464.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,457.39	N/A	N/A	N/A	N/A	N/A
1,458.00	11.26	1.95	5.8	13.60	13.50
1,459.00	84.99	3.48	24.4	24.08	23.79
1,460.00	164.30	2.47	66.5	109.71	109.25
1,461.00	803.75	3.55	226.7	217.46	216.86
1,462.00	2,266.20	4.50	504.1	338.70	337.91
1,463.00	4,852.86	5.38	902.6	463.74	462.13
1,464.00	9,036.93	6.38	1,415.7	562.23	559.60

Structure 10
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,442.00	1,449.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,443.00	N/A	N/A	N/A	N/A	N/A
1,443.00	N/A	N/A	N/A	N/A	N/A
1,444.00	28.84	2.57	11.2	17.45	17.26
1,445.00	114.65	3.37	34.0	35.10	34.72
1,446.00	452.69	2.67	169.7	249.34	248.76
1,447.00	1,999.79	3.74	534.2	472.49	471.79
1,448.00	5,346.09	4.88	1,095.1	650.35	648.81
1,449.00	10,735.30	5.86	1,831.7	826.95	824.40

Structure 11
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,422.00	1,429.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,422.07	N/A	N/A	N/A	N/A	N/A
1,423.00	16.37	1.50	10.9	17.14	16.94
1,424.00	67.05	1.52	44.1	68.32	67.91
1,425.00	315.78	2.05	154.2	152.97	152.37
1,426.00	851.81	2.26	377.7	323.99	323.24
1,427.00	2,250.26	3.02	745.2	412.58	411.75
1,428.00	4,392.66	3.66	1,200.2	498.04	496.64
1,429.00	7,347.00	4.23	1,737.7	580.73	578.32

Structure 12
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.000010 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,418.00	1,428.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,418.81	N/A	N/A	N/A	N/A	N/A
1,419.00	0.03	0.03	1.1	11.61	11.54
1,420.00	3.04	0.12	24.6	27.78	27.28
1,421.00	10.09	0.18	54.8	34.10	33.15
1,422.00	20.93	0.23	90.9	40.41	39.01
1,423.00	28.35	0.17	171.2	124.92	123.16
1,424.00	61.88	0.18	337.2	211.01	208.91
1,425.00	121.90	0.20	606.2	330.71	328.49
1,426.00	230.97	0.24	979.9	421.24	418.93
1,427.00	388.03	0.27	1,443.4	509.44	506.62
1,428.00	598.71	0.30	1,992.3	594.90	591.08

Structure 13
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.000150 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,419.00	1,428.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,419.32	N/A	N/A	N/A	N/A	N/A
1,420.00	0.95	0.30	3.2	7.22	7.02
1,421.00	6.33	0.47	13.4	15.50	15.01
1,422.00	29.15	0.41	70.8	100.32	99.68
1,423.00	121.37	0.57	212.8	185.14	184.35
1,424.00	307.35	0.69	443.9	288.90	288.02
1,425.00	654.05	0.83	784.0	385.79	384.83
1,426.00	1,180.92	0.97	1,212.3	472.75	471.69
1,427.00	1,907.51	1.10	1,726.9	557.74	556.21
1,428.00	2,854.28	1.23	2,323.7	640.01	637.47

Structure 14
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 14
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.000300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,422.00	1,428.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,422.03	N/A	N/A	N/A	N/A	N/A
1,423.00	4.99	0.52	9.7	16.38	16.22
1,424.00	25.18	0.80	31.6	27.94	27.61
1,425.00	64.94	0.60	107.9	145.75	145.36
1,426.00	277.21	0.81	344.3	300.50	300.03
1,427.00	733.73	1.05	701.7	413.86	412.82
1,428.00	1,467.97	1.26	1,169.1	523.92	521.88

Structure 15
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,420.00	1,428.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,420.60	N/A	N/A	N/A	N/A	N/A
1,421.00	1.24	0.71	1.8	8.89	8.80
1,422.00	27.77	1.85	15.0	18.01	17.65
1,423.00	95.18	2.57	37.1	26.99	26.36
1,424.00	159.97	1.88	85.2	99.46	98.56
1,425.00	547.39	2.23	245.6	221.92	220.72
1,426.00	1,460.13	2.78	526.0	341.12	339.61
1,427.00	3,077.29	3.34	921.2	452.60	449.92
1,428.00	5,492.55	3.83	1,434.9	574.70	570.91

Structure 16
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,413.00	1,419.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,413.27	N/A	N/A	N/A	N/A	N/A
1,414.00	13.32	1.65	8.1	17.75	17.65
1,415.00	84.60	2.69	31.5	33.15	32.87
1,416.00	315.97	2.35	134.6	173.74	173.34
1,417.00	1,179.61	3.04	388.0	340.02	339.44
1,418.00	3,067.47	3.73	821.3	528.57	527.63
1,419.00	6,527.66	4.61	1,417.0	665.76	663.82

Structure 17
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,407.00	1,413.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,407.03	N/A	N/A	N/A	N/A	N/A
1,408.00	21.81	2.04	10.7	17.88	17.72
1,409.00	73.36	1.84	39.8	77.63	77.29
1,410.00	514.13	2.69	190.8	210.83	210.31
1,411.00	1,666.63	3.70	450.9	309.95	309.25
1,412.00	3,681.94	4.56	806.8	404.37	402.67
1,413.00	6,695.56	5.33	1,256.2	498.79	496.09

Structure 18
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,403.00	1,407.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,403.00	N/A	N/A	N/A	N/A	N/A
1,404.00	14.53	1.86	7.8	12.52	12.14
1,405.00	88.38	1.55	56.9	119.47	118.59
1,406.00	632.75	2.32	272.2	312.32	310.69
1,407.00	2,093.06	3.03	690.7	532.24	529.24

Structure 19
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,399.00	1,404.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,399.37	N/A	N/A	N/A	N/A	N/A
1,400.00	6.99	1.32	5.3	13.31	13.22
1,401.00	45.07	1.66	27.1	48.09	47.85
1,402.00	277.01	2.09	132.8	167.99	167.61
1,403.00	1,026.91	2.81	366.0	296.67	295.72
1,404.00	2,534.05	3.51	721.8	417.87	415.74

Structure 20
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,390.00	1,397.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,390.69	N/A	N/A	N/A	N/A	N/A
1,391.00	1.93	0.84	2.3	10.20	10.13
1,392.00	30.74	1.59	19.4	33.55	33.26
1,393.00	196.59	1.92	102.5	133.53	133.06
1,394.00	701.61	2.42	289.9	266.21	265.54
1,395.00	1,907.90	3.03	629.8	412.90	411.97
1,396.00	4,134.05	3.78	1,093.0	513.61	511.82
1,397.00	7,334.55	4.44	1,653.3	611.66	608.87

Structure 21
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,387.00	1,392.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,387.58	N/A	N/A	N/A	N/A	N/A
1,388.00	5.03	1.25	4.0	12.23	12.15
1,389.00	76.09	1.88	40.6	66.92	66.58
1,390.00	349.64	2.28	153.4	188.88	188.34
1,391.00	1,253.98	3.01	416.6	337.73	336.51
1,392.00	3,084.71	3.73	826.1	484.68	482.45

Structure 22
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,381.00	1,387.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,381.46	N/A	N/A	N/A	N/A	N/A
1,382.00	8.14	1.51	5.4	13.94	13.86
1,383.00	62.79	1.83	34.4	66.89	66.65
1,384.00	430.92	2.40	179.3	231.27	230.94
1,385.00	1,622.50	3.28	494.1	398.98	398.58
1,386.00	4,003.92	4.11	973.4	560.73	559.41
1,387.00	7,850.10	4.87	1,612.8	721.88	719.56

Structure 23
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,375.00	1,379.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,375.06	N/A	N/A	N/A	N/A	N/A
1,376.00	22.98	1.73	13.3	24.57	24.26
1,377.00	129.55	2.68	48.3	46.51	45.80
1,378.00	338.45	2.17	156.0	206.69	205.51
1,379.00	1,316.92	2.83	466.0	415.21	412.88

Structure 24
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 24
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,368.00	1,375.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,368.00	N/A	N/A	N/A	N/A	N/A
1,369.00	27.90	2.13	13.1	18.13	17.90
1,370.00	111.92	3.18	35.2	26.89	26.42
1,371.00	229.37	2.10	109.0	154.13	153.36
1,372.00	954.66	2.88	331.1	291.99	290.89
1,373.00	2,512.64	3.64	690.8	429.86	428.41
1,374.00	5,177.27	4.37	1,184.6	559.67	557.08
1,375.00	9,122.11	5.06	1,803.6	684.49	680.90

Structure 25
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 25
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,364.00	1,372.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,364.00	N/A	N/A	N/A	N/A	N/A
1,365.00	23.32	1.85	12.6	18.09	17.83
1,366.00	81.54	2.24	36.4	39.53	39.02
1,367.00	260.26	2.41	107.8	104.44	103.73
1,368.00	735.17	3.01	243.9	169.35	168.44
1,369.00	1,417.23	3.05	464.2	316.31	315.34
1,370.00	3,160.29	3.86	817.7	391.14	390.00
1,371.00	6,032.82	5.00	1,207.7	393.14	390.00
1,372.00	9,585.36	6.00	1,597.7	395.14	390.00

Structure 26
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,361.00	1,367.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,361.25	N/A	N/A	N/A	N/A	N/A
1,362.00	11.73	1.62	7.2	14.83	14.70
1,363.00	69.94	2.54	27.6	28.93	28.50
1,364.00	159.66	2.19	72.8	94.85	94.03
1,365.00	626.33	2.45	255.8	282.79	281.70
1,366.00	2,044.52	3.21	637.6	470.18	468.25
1,367.00	4,729.00	3.99	1,184.9	629.12	626.19

Structure 27
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 27
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,358.00	1,361.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,358.00	0.18	0.50	0.4	5.43	5.42
1,359.00	245.30	2.02	121.2	231.76	231.55
1,360.00	1,467.10	3.20	458.5	441.40	440.58
1,361.00	4,165.25	4.06	1,025.7	690.75	688.80

Structure 28
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,350.00	1,356.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,350.44	N/A	N/A	N/A	N/A	N/A
1,351.00	9.95	1.56	6.4	15.97	15.88
1,352.00	62.03	2.05	30.2	50.29	50.05
1,353.00	436.08	2.23	195.4	286.25	285.86
1,354.00	1,881.94	3.18	591.6	509.49	508.91
1,355.00	4,930.02	4.06	1,215.6	727.27	725.89
1,356.00	9,957.49	4.88	2,038.9	923.10	920.72

Structure 29
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 29
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,340.00	1,347.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,340.39	N/A	N/A	N/A	N/A	N/A
1,341.00	10.81	1.59	6.8	15.70	15.59
1,342.00	71.96	1.66	43.3	93.80	93.52
1,343.00	543.19	2.51	216.8	253.97	253.54
1,344.00	1,850.78	3.36	551.0	415.75	415.22
1,345.00	4,237.65	4.00	1,059.5	615.20	614.53
1,346.00	8,351.17	4.71	1,771.9	804.44	803.43
1,347.00	14,443.40	5.43	2,661.6	977.99	975.84

Structure 30
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,339.00	1,343.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,339.06	N/A	N/A	N/A	N/A	N/A
1,340.00	111.68	2.16	51.8	65.09	64.86
1,341.00	358.44	2.06	173.7	233.41	232.89
1,342.00	1,443.58	2.74	527.4	463.52	462.08
1,343.00	3,793.46	3.46	1,095.8	677.16	674.72

Structure 31
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,326.00	1,333.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,326.66	N/A	N/A	N/A	N/A	N/A
1,327.00	3.45	0.97	3.6	12.67	12.59
1,328.00	44.17	2.19	20.2	20.97	20.62
1,329.00	86.34	1.75	49.2	71.42	70.82
1,330.00	428.07	1.88	227.3	296.15	295.36
1,331.00	1,629.56	2.51	649.1	549.36	548.33
1,332.00	4,216.87	3.19	1,323.9	784.11	782.13
1,333.00	8,467.41	3.83	2,209.0	991.07	988.08

Structure 32
Rating Table for Irregular Channel

Project Description	
Worksheet	*Structure 32*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	*Maximum*	*Increment*
Water *Surface Elevation (ft)*	1,318.00	1,326.00	1.00

Water *Surface* Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,319.58	N/A	N/A	N/A	N/A	N/A
1,319.58	N/A	N/A	N/A	N/A	N/A
1,320.00	6.71	1.25	5.4	15.65	15.56
1,321.00	65.85	2.58	25.6	25.11	24.80
1,322.00	124.30	1.93	64.5	98.00	97.50
1,323.00	624.62	2.29	272.4	318.90	318.27
1,324.00	2,075.87	2.91	713.2	583.96	583.17
1,325.00	5,211.62	3.68	1,416.8	816.48	815.60
1,326.00	10,278.47	4.39	2,340.9	1,034.40	1,032.53

Structure 33
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 33
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data	
Slope	0.004100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,316.00	1,325.00	1.00

Water *Surface* Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,316.50	N/A	N/A	N/A	N/A	N/A
1,317.00	5.21	1.30	4.0	12.13	12.05
1,318.00	55.26	2.60	21.2	22.69	22.42
1,319.00	113.15	2.03	55.8	86.50	86.06
1,320.00	597.22	2.39	249.5	301.88	301.33
1,321.00	2,051.22	3.02	679.7	581.02	580.39
1,322.00	5,302.63	3.84	1,380.4	821.71	821.00
1,323.00	10,628.15	4.58	2,321.7	1,062.39	1,061.60
1,324.00	18,440.56	5.27	3,500.6	1,297.73	1,296.00
1,325.00	29,041.09	5.91	4,913.6	1,532.74	1,530.00

Structure 34
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 34
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.003700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,309.00	1,319.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,309.74	N/A	N/A	N/A	N/A	N/A
1,310.00	1.36	0.93	1.5	6.84	6.76
1,311.00	26.85	2.28	11.8	14.25	13.88
1,312.00	92.22	3.15	29.2	21.66	21.01
1,313.00	142.81	2.38	60.1	68.04	67.15
1,314.00	485.94	2.54	191.6	196.94	195.95
1,315.00	1,451.71	3.21	452.0	325.85	324.74
1,316.00	3,272.95	3.89	841.1	454.76	453.54
1,317.00	6,130.58	4.51	1,359.6	589.26	587.92
1,318.00	10,174.49	5.02	2,026.6	747.64	746.10
1,319.00	16,037.46	5.65	2,839.7	878.06	875.82

Structure 35
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 35
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,307.00	1,315.00	1.00

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,307.98	N/A	N/A	N/A	N/A	N/A
1,308.00	4.43e-4	0.11	4.2e-3	0.42	0.42
1,309.00	15.83	1.45	10.9	21.58	21.39
1,310.00	81.47	1.47	55.4	107.18	106.82
1,311.00	531.77	2.08	255.3	293.57	293.06
1,312.00	1,763.39	2.72	647.3	497.61	496.88
1,313.00	4,154.92	3.31	1,253.6	718.24	717.26
1,314.00	8,182.93	3.97	2,063.7	903.49	901.64
1,315.00	13,919.11	4.55	3,056.8	1,087.55	1,084.70

Structure 36
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 36
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.001900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,304.00	1,310.00	1.00

Water *Surface* Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,304.20	N/A	N/A	N/A	N/A	N/A
1,305.00	38.20	1.38	27.6	42.64	42.50
1,306.00	175.57	2.33	75.3	53.25	52.92
1,307.00	361.24	1.69	213.3	243.71	243.26
1,308.00	1,199.24	2.08	576.6	483.85	483.21
1,309.00	3,056.43	2.61	1,170.6	698.48	697.18
1,310.00	6,131.24	3.11	1,969.2	902.30	900.00

Structure 38-39
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 38-39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,303.00	1,306.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,303.00	N/A	N/A	N/A	N/A	N/A
1,303.50	18.83	0.75	25.0	100.05	100.00
1,304.00	119.57	1.20	100.0	200.10	200.00
1,304.50	376.26	1.11	337.5	750.10	750.00
1,305.00	1,273.19	1.73	737.5	850.60	850.00
1,305.50	2,716.05	2.34	1,162.5	851.60	850.00
1,306.00	4,561.77	2.87	1,587.5	852.60	850.00

Structure 40-41
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 40-41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	*0.002000 ft/ft*

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,302.00	1,304.50	0.50

Water *Surface* Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,302.36	N/A	N/A	N/A	N/A	N/A
1,302.50	0.67	0.32	2.1	29.80	29.80
1,303.00	38.72	0.89	43.6	136.24	136.23
1,303.50	183.65	1.09	167.8	383.68	383.66
1,304.00	610.70	1.56	392.4	528.60	528.57
1,304.50	1,306.02	1.77	738.9	822.75	822.22

Structure 43-44
Rating Table for Irregular Channel

Project Description	
Worksheet	Structure 43-44
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.002000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,300.00	1,303.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,300.00	N/A	N/A	N/A	N/A	N/A
1,300.50	9.41	0.75	12.5	50.05	50.00
1,301.00	59.76	1.20	50.0	100.10	100.00
1,301.50	202.29	1.04	193.8	475.11	475.00
1,302.00	722.87	1.38	525.0	850.11	850.00
1,302.50	1,882.70	1.93	975.0	950.61	950.00
1,303.00	3,510.18	2.38	1,475.0	1,051.11	1,050.00

WATERMAN WASH STRUCTURES

NO.	TYPE	PHOTOS	M.P.	GPS POINTS	GRND to SOFFIT	HEC-1 ID	POND
1	18' Bridge	1268	875.2	1440-1446	4.2'	CPC13	
2	2- 36" CMPs	1267	n/a	1430-1438	-	CPC31	
3	10' Bridge	1266	875.44	1421-1428	3.1'	CPC14	
4	2- 36" CMPs	1230-1231	n/a	1408-1418	-	CPC10	
5	2- 36" CMPs	1228-1229	n/a	1398-1404	-	CPC30	
6	2- 42" CMPs	1180	n/a	1001-1004 & 1036-1039	-	CPC29	
7	18' Bridge	1181	876.78	1005-1009 & 1040-1043	4.3'	CPC28	
8	2- 42" CMPs	1182	n/a	1014-1018 & 1044-1046	-	CPC27	
9	2- 48" CMPs	1183	n/a	1021-1025 & 1047-1049	-	CPC20	
10	18' Bridge	1184	877.77	1030-1032,1050-1052,2029&3029	3.8'	CPC26	
11	57' Bridge	1185	878.34	1057-1061	4.5'	CPC22	PNDC1
12	12' Bridge	1186	878.42	1062-1068	5.6'	CPC24	PNDC1
13	13' Bridge	1187	878.77	1072-1079	5.0'	CPC25	PNDC2
14	12' Bridge	1188	878.92	1081-1088	3.1'	CPD09	
15	2- 58" x 36" CMPs	1189	n/a	1091-1098	-	CPD12	
16	29' Bridge	1190	879.78	1106-1111	4.0'	CPD13	
17	17' Bridge	1191	n/a	1116-1121	3.2'	CPD46	
18	11' Bridge	1192	880.29	1124-1131	3.7'	CPD10	
19	12' Bridge	1193-1194	880.45	1133-1139	1.8'	CPD47	
20	18' Bridge	1195	880.88	1144-1150	4.9'	CPD15	
21	18' Bridge	1196	881.2	1155-1161	3.8'	CPD17	
22	10' Bridge	1197	881.45	1164-1169	3.9'	CPD18	
23	3- 27" Steel Pipes	1198	n/a	1173-1180	-	CPD19	
24	18' Bridge	1199	882	1183-1189	4.5'	CPD20	
25	2- 48" CMPs	1200	n/a	1192-1197	-	CPD21	
26	2- 58" x 36" CMPs	1201	n/a	1201-1207	-	CPE33	
27	3- 58" x 36" CMPs	1202	n/a	1211-1216	-	CPE32	
28	12' Bridge	1203	882.91	1219-1225	2.3'	CPE53	
29	10' Bridge	1204	883.25	1230-1236	4.1'	CPE31	
30	30' Bridge	1205	883.46	1239-1245	3.6'	CPE30	
31	18' Bridge	1206	884	1252-1258	4.3'	CPE38	
32	10' Bridge*	1207	884.39	1264-1272	5.9'	CPE25	
33	57' Bridge	1208-1209	884.5	1274-1278	3.0'	CPE25	
34	10' Bridge	1210	884.73	1281-1289	2.3'	CPE36	
35	12' Bridge	1211	884.97	1292-1298	2.6'	CPE54	
36	12' Bridge	1212	885.29	1303-1308	1.6'	CPF26	
37	10' Bridge	1213-1214	885.53	1312-1318	3.7'	CPF25	PNDF01
38	35' Bridge	1215-1217	885.82	1321-1326	3.8'	CPF27	PNDF01
39	17' Bridge	1218	885.98	1328-1333	3.0'	CPF28	PNDF02
40	4- 38" Steel Pipes	1219	n/a	1338-1345	-	CPF28	PNDF02
41	2- 54" x 36" CMPs	1220	n/a	1350-1358	-	CPF36	PNDF03
42	3' x 3' Wooden Box	1221	886.91	1359-1364	-	CPF29	PNDF04
43	2-4' x 2.5' Wood Box**	1222-1224	n/a	1366-1372	-	CPF29	PNDF04
44	4' x 2.5' Wood Box***			-	-	CPF20	PNDF05
45	2-4' x 2.5' Wood Box**	1225-1227	n/a	1378-1382	-	CPF20	PNDF05

*Survey calls out 11' bridge which was used to model.
**Survey calls out single, observed in field to be double.
***Not in survey data, observed in field. Approximately 1200' east of structure 43.
Note-Used 60"x38" CMP's to model the 58"x36" CMP's.
Note-Used 36" pipes to model the 38" steel pipes.
Note-Used 53"x34" CMP's to model the 54"x36" CMP's.

Appendix D.4

Split Modeling Technique for Railroad Structures

The process for creating the DI-DQ records for the splits along the railroad involved several steps. The first step was to create a model of the cross section for the flow parallel to the railroad using Flow Master. The survey data (supplemented by contours) was used to create the cross section in Flow Master from which a rating curve was produced. These calculations can be found in Appendix D.5.

The second step was to model the structure and railroad embankment using HY-8. This program also created a rating curve for the performance of the structure. Photographs of the structures and hydraulic calculations can be found in Appendix D.4.

The last step was to combine the rating curves together to come up with the DI-DQ records used in the HEC-1 model "with railroad". In this model all flow through the structure or overtopping the railroad is the diverted Q with the remainder Q routed parallel to the railroad to the next downstream structure or until it enters a floodpool.

Example: Structure #1

The following page shows the record drawing of the structure from which the design data was taken. Page 3 of the example shows the individual rating tables and the combined table as used in the HEC-1 model. FlowMaster and HY-8 output can be found in Appendices D.5 and D.4 respectively.

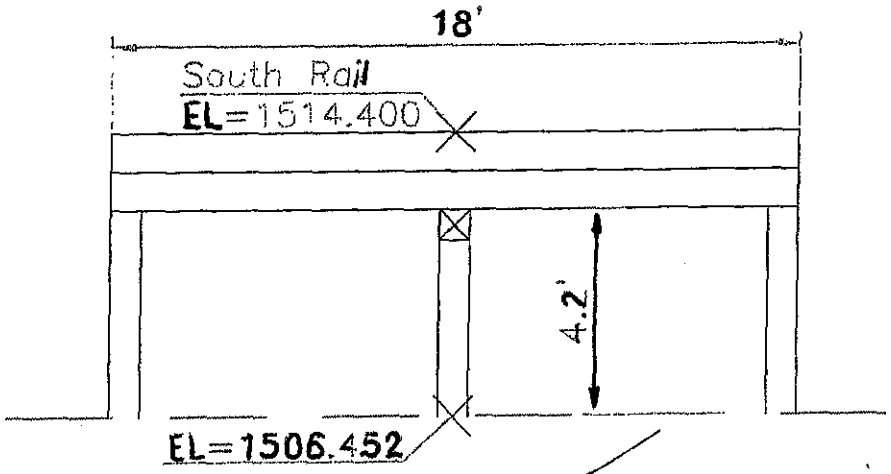
Analyze

Waterman Wash
Structure Details
Engineering Alliance, Inc–Project#20302

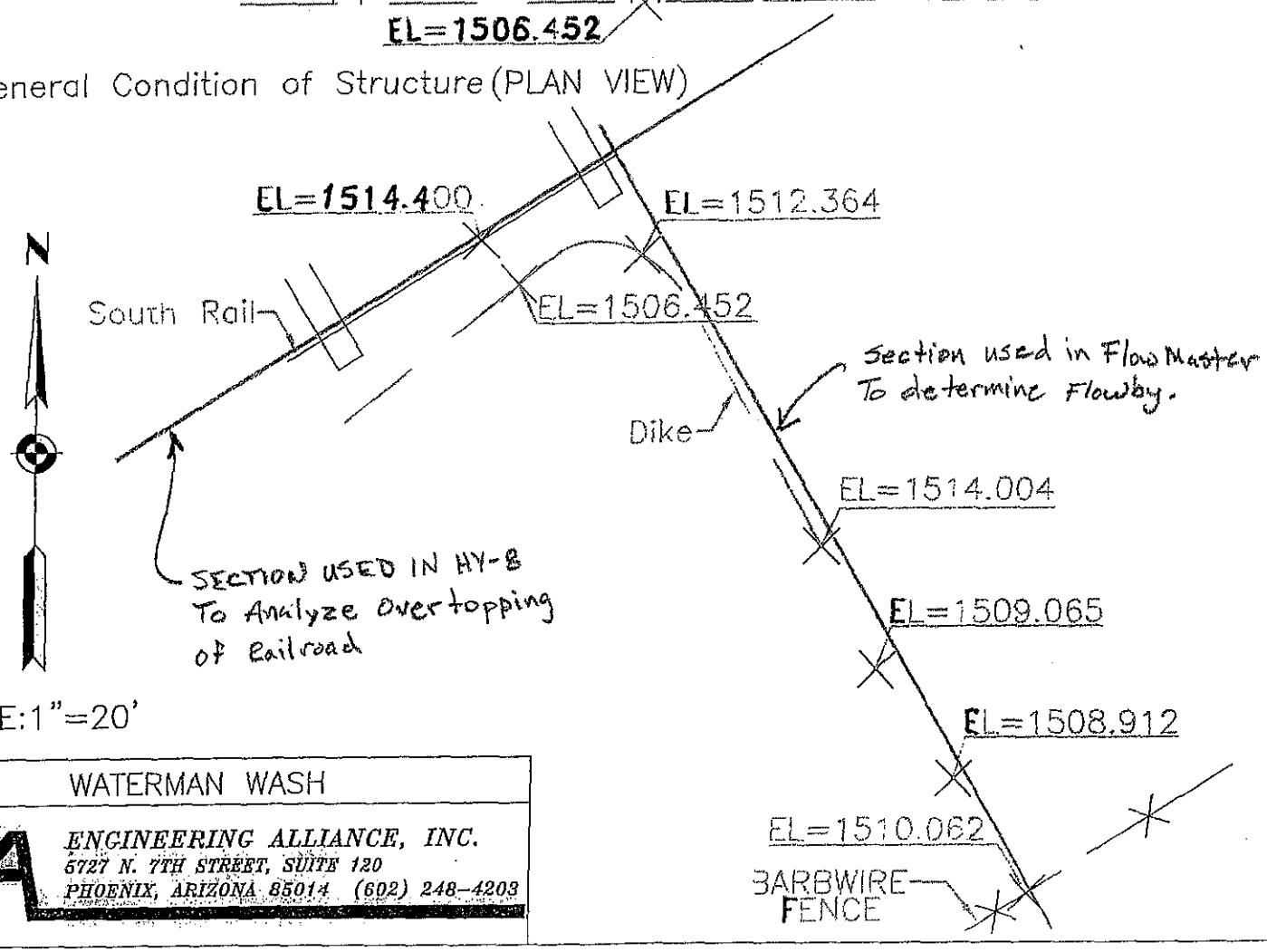
Example 2/3

Type of Structure: Bridge Structure
Date: 10/07/2003
File Name: Waterman Wash
Description: Structure#1
Party Chief: Tom Farnsworth
GDAC Control Pt#:a 366
☒ Photo Taken:#1268

(PROFILE VIEW)



General Condition of Structure (PLAN VIEW)



SCALE: 1"=20'

WATERMAN WASH

ENGINEERING ALLIANCE, INC.
6727 N. 7TH STREET, SUITE 120
PHOENIX, ARIZONA 85014 (602) 248-4203

Structure 1 - CPC13
EXAMPLE - Combining Rating Curves to develop HEC-1 Diversion Record

FlowMaster rating curve for flow conveyed along R/R at CPC13

Elev.	Discharge
1,508.91	N/A
1,508.91	N/A
1,508.91	N/A
1,509.00	0.13
1,510.00	44.1
1,511.00	124.2
1,512.00	481.73
1,513.00	1,293.05
1,514.00	2,838.11
1,515.00	5,472.65
1,516.00	9,130.56

HY-8 rating curve for flow through structure and over R/R at CPC13

Elev.	Structure	Overtopping	Total
1506.45	0	0	0
1508.65	150	0	150
1509.91	300	0	300
1511.03	450	0	450
1512.24	600	0	600
1513.68	750	0	750
1514.4	815	0	815
1514.64	836	63	899
1514.9	858	189	1047
1515.09	874	318	1192
1515.27	888	455	1343
1515.43	901	594	1495

Combined Rating Curve for Structure and Flowby at CPC13

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1,506.45	0	0	0
1,507.00	37	0	37
1,508.00	103	0	103
1,509.00	186	0	186
1,510.00	312	44	356
1,511.00	446	124	570
1,512.00	570	482	1052
1,513.00	679	1293	1972
1,514.00	788	2838	3626
1,515.00	921	5473	6394

DI	0	186	356	570	1052	1972	3626	6394
DQ	0	186	312	446	570	679	788	921

Structure 1
CPC13

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1,506.45	0	0	0
1,507.00	37	0	37
1,508.00	103	0	103
1,509.00	186	0	186
1,510.00	312	44	356
1,511.00	446	124	570
1,512.00	570	482	1052
1,513.00	679	1293	1972
1,514.00	788	2838	3626
1,515.00	921	5473	6394

DI	0	186	356	570	1052	1972	3626	6394
DQ	0	186	312	446	570	679	788	921

Structure 2
CPC31

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1,505.49	0	0	0
1,506.00	8	0	8
1,507.00	24	0	24
1,508.00	41	28	69
1,509.00	62	140	202
1,510.00	99	321	420
1,511.00	128	526	654
1,512.00	174	924	1098
1,513.00		1871	1871

DI	0	24	69	202	420	654	1098
DQ	0	24	41	62	99	128	174

Structure 3
CPC14

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1,502.28	0	0	0
1,503.00	33	0	33
1,504.00	78	0	78
1,505.00	124	0	124
1,506.00	172	35	207
1,507.00	224	123	347
1,508.00	276	167	443
1,509.00	376	726	1102
1,510.00	769	2248	3017

DI	0	124	207	347	443	1102	3017
DQ	0	124	172	224	276	376	769

Structure 4
CPC10

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1,496.88	0	0	0
1,497.00	2	0	2
1,498.00	17	0	17
1,499.00	33	0	33
1,500.00	52	17	69
1,501.00	79	98	177
1,502.00	107	213	320
1,503.00	145	745	890
1,504.00		2037	2037
1,505.00		4163	4163

DI	0	33	69	177	320	890
DQ	0	33	52	79	107	145

Structure 5
CPC30

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1,489.21	0	0	0
1,490.00	12	0	12
1,491.00	28	0	28
1,492.00	47	0	47
1,493.00	74	0	74
1,494.00	107	23	130
1,495.00	134	76	210
1,496.00	177	233	410
1,497.00		672	672
1,498.00		1999	1999

DI	0	74	13	210	410
DQ	0	74	107	134	177

Structure 6
CPC29

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1475.03	0	0	0
1,476.00	0	11	11
1,477.00	8	74	82
1,478.00	24	229	253
1,479.00	53	458	511
1,480.00	77	759	836
1,481.00	113	853	966
1,482.00		2285	2285
1,483.00		4919	4919

DI	0	11	82	253	511	836	966
DQ	0	0	8	24	53	77	113

Structure 7
CPC28

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1471.41	0	0	0
1,472.00	40	0	40
1,473.00	107	0	107
1,474.00	195	5	200
1,475.00	318	102	420
1,476.00	453	286	739
1,477.00	581	544	1125
1,478.00	692	873	1565
1,479.00	832	786	1618
1,480.00	1242	2169	3411

DI	0	107	200	420	739	1125	1565	1618	3411
DQ	0	107	195	318	453	581	692	832	1242

Structure 8
CPC27

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1461.67	0	0	0
1,462.00	5	0	5
1,463.00	22	0	22
1,464.00	49	0	49
1,465.00	75	36	111
1,466.00	106	164	270
1,467.00	153	363	516
1,468.00	188	1077	1265
1,469.00	231	2434	2665
1,470.00		4746	4746

DI	0	49	111	270	516	1265	2665
DQ	0	49	75	106	153	188	231

Structure 9
CPC20

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1454.96	0	0	0
1,455.00	1	0	1
1,456.00	21	0	21
1,457.00	41	0	41
1,458.00	82	11	93
1,459.00	107	85	192
1,460.00	157	164	321
1,461.00	214	804	1018
1,462.00	261	2266	2527
1,463.00	397	4853	5250

DI	0	41	93	192	321	1018	2527	5250
DQ	0	41	82	107	157	214	261	397

Structure 10
CPC26

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1440.28	0	0	0
1,441.00	49	0	49
1,442.00	118	0	118
1,443.00	213	0	213
1,444.00	333	29	362
1,445.00	458	115	573
1,446.00	565	453	1018
1,447.00	671	2000	2671
1,448.00	822	5346	6168
1,449.00	1272	10735	12007

DI	0	213	362	573	1018	2671	6168
DQ	0	213	333	458	565	671	822

Structure 11
CPC22

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1418.20	0	0	0
1,419.00	140	0	140
1,420.00	316	0	316
1,421.00	570	0	570
1,422.00	920	0	920
1,423.00	1338	16	1354
1,424.00	1750	67	1817
1,425.00	2094	316	2410
1,426.00	2432	852	3284
1,427.00	2786	2250	5036
1,428.00	3896	4393	8289

DI	0	920	1354	1817	2410	3284	5036	8289
DQ	0	920	1338	1750	2094	2432	2786	3896

Structure 12
CPC24

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1417.64	0	0	0
1,418.00	18	0	18
1,419.00	70	0	70
1,420.00	121	3	124
1,421.00	189	10	199
1,422.00	277	21	298
1,423.00	377	28	405
1,424.00	480	62	542
1,425.00	582	122	704
1,426.00	677	231	908
1,427.00	844	388	1232
1,428.00		599	599

DI	0	70	124	199	298	405	542	704	908	1232
DQ	0	70	121	189	277	377	480	582	677	844

Structure 13
CPC25

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1417.41	0	0	0
1,418.00	32	0	32
1,419.00	86	0	86
1,420.00	140	1	141
1,421.00	227	6	233
1,422.00	323	29	352
1,423.00	430	121	551
1,424.00	529	307	836
1,425.00	624	654	1278
1,426.00	709	1181	1890
1,427.00		1908	1908
1,428.00		2854	2854

DI	0	86	141	233	352	551	836	1278	1890
DQ	0	0	1	6	29	121	307	654	1181

Structure 14
CPD09

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1419.02	0	0	0
1,420.00	47	0	47
1,421.00	94	0	94
1,422.00	156	0	156
1,423.00	233	5	238
1,424.00	292	25	317
1,425.00	349	65	414
1,426.00	428	277	705
1,427.00	1080	734	1814
1,428.00		1468	1468
1,429.00			0
1,430.00			0

DI	0	156	238	317	414	705	1814
DQ	0	156	233	292	349	428	1028

Structure 15
CPD12

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1418.63	0	0	0
1,419.00	8	0	8
1,420.00	31	0	31
1,421.00	69	1	70
1,422.00	106	28	134
1,423.00	148	95	243
1,424.00	187	160	347
1,425.00	216	547	763
1,426.00	239	1460	1699
1,427.00		3077	3077
1,428.00		5493	5493
1,429.00			0

DI	0	31	70	134	243	347	763	1699
DQ	0	31	69	106	148	187	216	239

Structure 16
CPD13

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1409.00	0	0	0
1,410.00	131	0	131
1411.00	262	0	262
1,412.00	393	0	393
1413.00	596	0	596
1,414.00	802	13	815
1415.00	966	85	1051
1,416.00	1131	316	1447
1417.00	1315	1180	2495
1,418.00	1514	3067	4581
1419.00	2188	6528	8716
1,420.00			0

DI	0	596	815	1051	1447	2495	4581	8716
DQ	0	596	802	966	1131	1315	1514	2188

Structure 17
CPD46

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1404.93	0	0	0
1,405.00	5	0	5
1406.00	84	0	84
1,407.00	162	0	162
1408.00	241	22	263
1,409.00	331	73	404
1410.00	424	514	938
1,411.00	543	1667	2210
1412.00	833	3682	4515
1,413.00	1817	6696	8513

DI	0	162	263	404	938	2210	4515	8513
DQ	0	162	241	331	424	543	833	1817

Structure 18
CPD10

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1398.20	0	0	0
1,399.00	38	0	38
1400.00	96	0	96
1,401.00	153	0	153
1402.00	211	0	211
1,403.00	280	0	280
1404.00	346	15	361
1,405.00	411	88	499
1406.00	476	633	1109
1,407.00	546	2093	2639
1408.00			0
1,409.00			0

DI	0	280	361	499	1109	2639
DQ	0	280	346	411	476	546

Structure 19
CPD47

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1397.25	0	0	0
1,398.00	24	0	24
1399.00	70	0	70
1,400.00	126	7	133
1401.00	164	45	209
1,402.00	196	277	473
1403.00	244	1027	1271
1,404.00		2534	2534
1405.00			0
1,406.00			0

DI	0	70	133	209	473	1271
DQ	0	70	126	164	196	244

Structure 20
CPD15

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1387.12	0	0	0
1,388.00	71	0	71
1389.00	153	0	153
1,390.00	234	0	234
1391.00	361	2	363
1,392.00	500	31	531
1393.00	637	197	834
1,394.00	775	702	1477
1395.00	914	1908	2822
1,396.00	1221	4134	5355
1397.00		7335	7335
1,398.00			0

DI	0	234	363	531	834	1477	2822	5355
DQ	0	234	361	500	637	775	914	1221

Structure 21
CPD17

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1383.45	0	0	0
1,384.00	37	0	37
1385.00	103	0	103
1,386.00	187	0	187
1387.00	311	0	311
1,388.00	436	5	441
1389.00	546	76	622
1,390.00	660	350	1010
1391.00	859	1254	2113
1,392.00		3085	3085
1393.00			0
1,394.00			0

DI	0	311	441	622	1010	2113
DQ	0	311	436	546	660	859

Structure 22
CPD18

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1377.95	0	0	0
1,378.00	2	0	2
1379.00	42	0	42
1,380.00	82	0	82
1381.00	137	0	137
1,382.00	205	8	213
1383.00	275	63	338
1,384.00	335	431	766
1385.00	389	1623	2012
1,386.00	592	4004	4596
1387.00		7850	7850
1,388.00			0

DI	0	137	213	338	766	2012	4596
DQ	0	137	205	275	335	389	592

Structure 23
CPD19

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1371.92	0	0	0
1,372.00	2	0	2
1373.00	21	0	21
1,374.00	41	0	41
1375.00	60	0	60
1,376.00	82	23	105
1377.00	104	130	234
1,378.00	144	338	482
1379.00	550	1317	1867
1,380.00			0
1381.00			0
1,382.00			0

DI	0	60	105	234	482	1867
DQ	0	60	82	104	144	550

Structure 24
CPD20

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1364.83	0	0	0
1,365.00	15	0	15
1366.00	101	0	101
1,367.00	188	0	188
1368.00	275	0	275
1,369.00	396	28	424
1370.00	532	112	644
1,371.00	655	229	884
1372.00	766	955	1721
1,373.00	877	2513	3390
1374.00	1307	5177	6484
1,375.00	2977	9122	12099

DI	0	275	424	644	884	1721	3390	6484	12099
DQ	0	275	396	532	655	766	877	1307	2977

Structure 25
CPD21

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1362.33	0	0	0
1,363.00	15	0	15
1364.00	37	0	37
1,365.00	69	23	92
1366.00	110	82	192
1,367.00	142	260	402
1368.00	195	735	930
1,369.00	244	1417	1661
1370.00	294	3160	3454
1,371.00		6033	6033
1372.00		9585	9585

DI	0	37	92	192	402	930	1661	3454
DQ	0	0	23	82	260	735	1417	3160

**Flowby is the DQ record.

Structure 26
CPE33

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1356.94	0	0	0
1,357.00	1	0	1
1358.00	24	0	24
1,359.00	54	0	54
1360.00	95	0	95
1,361.00	133	0	133
1362.00	176	12	188
1,363.00	208	70	278
1364.00	232	160	392
1,365.00	262	626	888
1366.00		2045	2045
1,367.00		4729	4729

DI	0	133	188	278	392	888
DQ	0	133	176	208	232	262

Structure 27
CPE32

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1352.43	0	0	0
1,353.00	13	0	13
1354.00	36	0	36
1,355.00	78	0	78
1356.00	112	0	112
1,357.00	157	0	157
1358.00	195	0	195
1,359.00	222	245	467
1360.00	274	1467	1741
1,361.00		4165	4165
1362.00			0
1,363.00			0

DI	0	195	467	1741
DQ	0	195	222	274

Structure 28
CPE53

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1348.66	0	0	0
1,349.00	15	0	15
1350.00	60	0	60
1,351.00	106	10	116
1352.00	166	62	228
1,353.00	221	436	657
1354.00	269	1882	2151
1,355.00	384	4930	5314
1356.00			0
1,357.00			0

DI	0	60	116	228	657	2151	5314
DQ	0	60	106	166	221	269	384

Structure 29
CPE31

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1337.95	0	0	0
1,338.00	2	0	2
1339.00	45	0	45
1,340.00	87	0	87
1341.00	136	11	147
1,342.00	207	72	279
1343.00	276	543	819
1,344.00	344	1851	2195
1345.00	406	4238	4644
1,346.00	467	8351	8818
1347.00	857	14443	15300
1,348.00			0

DI	0	87	147	279	819	2195	4644	8818	15300
DQ	0	87	136	207	276	344	406	467	857

Structure 30
CPE30

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1334.26	0	0	0
1,335.00	99	0	99
1336.00	234	0	234
1,337.00	368	0	368
1338.00	550	0	550
1,339.00	749	0	749
1340.00	936	112	1048
1,341.00	1121	358	1479
1342.00	1574	1444	3018
1,343.00	2679	3793	6472
1344.00			0

DI	0	749	1048	1479	3018	6472
DQ	0	749	936	1121	1574	2679

Structure 31
CPE38

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1323.75	0	0	0
1,324.00	19	0	19
1325.00	94	0	94
1,326.00	169	0	169
1327.00	277	3	280
1,328.00	406	44	450
1329.00	536	86	622
1,330.00	656	428	1084
1331.00	766	1630	2396
1,332.00	1158	4217	5375
1333.00		8467	8467
1,334.00			0

DI	0	169	280	450	622	1084	2396	5375
DQ	0	169	277	406	536	656	766	1158

Structure 32
CPE25

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1315.58	0	0	0
1,316.00	18	0	18
1317.00	60	0	60
1,318.00	104	0	104
1319.00	177	0	177
1,320.00	259	7	266
1321.00	349	66	415
1,322.00	445	124	569
1323.00	544	625	1169
1,324.00	633	2076	2709
1325.00	725	5212	5937
1,326.00			0

DI	0	177	266	415	569	1169	2709	5937
DQ	0	177	259	349	445	544	633	725

Structure 33
CPE25

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1316.29	0	0	0
1,317.00	131	5	136
1318.00	329	55	384
1,319.00	657	113	770
1320.00	995	597	1592
1,321.00	1281	2051	3332
1322.00	1538	5303	6841
1,323.00	1778	10628	12406
1324.00			0
1,325.00			0

DI	0	136	384	770	1592	3332	6841	12406
DQ	0	131	329	657	995	1281	1538	1778

Structure 34
CPE36

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1309.74	0	0	0
1,310.00	0	1	1
1311.00	0	27	27
1,312.00	0	92	92
1313.00	24	143	167
1,314.00	59	486	545
1315.00	115	1452	1567
1,316.00	161	3273	3434
1317.00	199	6131	6330
1,318.00	232	10174	10406
1319.00	338		338

DI	0	92	167	545	1567	3434	6330	10406
DQ	0	0	24	59	115	161	199	232

Structure 35
CPE54

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1306.55	0	0	0
1,307.00	17	0	17
1308.00	54	0	54
1,309.00	115	16	131
1310.00	186	81	267
1,311.00	242	532	774
1312.00	287	1763	2050
1,313.00	336	4155	4491
1314.00	552	8183	8735
1,315.00			0

DI	0	54	131	267	774	2050	4491	8735
DQ	0	0	16	81	532	1763	4155	8183

**Flowby is DQ record.

Structure 36
CPF26

Water Surface Elev. (ft)	Culvert/ Weir Q (cfs)	Flowby Q (cfs)	Total Q (cfs)
1303.36	0	0	0
1,304.00	27	0	27
1305.00	70	38	108
1,306.00	111	176	287
1307.00	145	361	506
1,308.00	179	1199	1378
1309.00	344	3056	3400
1,310.00		6131	6131
1311.00			0
1,312.00			0

DI	0	27	108	287	506	1378	3400
DQ	0	27	70	111	145	179	344

Process

1. Using USGS, maps (10' contours), ponds were hand drawn onto maps.
2. The areas were planimetered 3 times and the average was used.
3. The storage volume was calculated using the equation V=d/3(Atop+Abottom+SQRT(Atop*Abottom)).
4. The discharges from the structures were calculated using HY-8.
5. The discharges for the routes were calculated using FlowMaster.
6. Stage-Storage-Discharge cards were then created using the data.
7. Divert cards were added to ponds which required them.

CPC22 and CPC24 - Communal pond

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average Area (Acres)	Depth (ft)	Volume (acre-ft)	Accumulative Volume (acre-ft)
1418.2	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1419	0.62	0.18	0.44	0.42	0.80	0.11	0.1
1420	0.62	0.80	0.71	0.71	1.00	0.56	0.7
1421	1.69	1.33	1.69	1.57	1.00	1.11	1.8
1422	2.76	2.76	2.76	2.76	1.00	2.14	3.9
1423	4.36	4.09	4.27	4.24	1.00	3.47	7.4
1424	5.52	5.43	5.69	5.55	1.00	4.88	12.3
1425	6.85	6.85	7.03	6.91	1.00	6.21	18.5
1426	9.07	9.07	8.90	9.01	1.00	7.94	26.4
1427	10.76	10.76	10.94	10.82	1.00	9.91	36.3
1428	13.52	13.88	13.61	13.67	1.00	12.22	48.5
1429	16.28	16.19	16.37	16.28	1.00	14.96	63.5

From HY-8-Sturcture 11

Elevation	1418.20	1419	1420	1421	1422	1423	1424	1425	1426	1427	1428
Dischrge	0	140	316	570	920	1338	1750	2094	2432	2786	3896

From HY-8-Sturcture 12

Elevation	1417.64	1418	1419	1420	1421	1422	1423	1424	1425	1426	1427
Dischrge	0	18	70	121	189	277	377	480	582	677	844

Stage-Storage-Discharge relationship for combined pond upstream of structure 10

SE	1417.60	1419	1420	1421	1422	1423	1424	1425	1426	1427
SV	0.0	0.5	2.4	5.9	11.4	19.5	30.7	44.8	62.5	84.3
SQ	0	210	437	759	1197	1715	2230	2676	3109	3630

CPC24

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average Area (acres)	Depth (ft)	Volume (acre-ft)	Accumulative Volume (acre-ft)
1417.6	0.00	0.00	0.00	0.00	0.0	0.00	0.0
1418	0.09	0.18	0.18	0.15	0.4	0.02	0.0
1419	0.62	0.98	0.53	0.71	1.0	0.39	0.4
1420	2.05	1.87	1.78	1.90	1.0	1.26	1.7
1421	2.85	2.85	3.02	2.91	1.0	2.38	4.1
1422	3.83	4.36	3.74	3.97	1.0	3.43	7.5
1423	5.34	5.43	5.43	5.40	1.0	4.67	12.1
1424	7.03	6.85	7.38	7.09	1.0	6.22	18.4
1425	8.90	8.54	8.81	8.75	1.0	7.90	26.3
1426	10.94	10.59	11.12	10.88	1.0	9.80	36.1
1427	13.17	12.81	12.90	12.96	1.0	11.91	48.0
1428	15.57	15.21	15.75	15.51	1.0	14.21	62.2
1429	17.26	17.61	16.99	17.29	1.0	16.39	78.6
1430	20.10	19.66	19.30	19.69	1.0	18.48	97.1

CPC25

Elevation (ft)	Trial 1.00	Trial 2.00	Trial 3.00	Average Area (acres)	Depth (ft)	Volume (acre-ft)	Accumulative Volume (acre-ft)
1417.4	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1418	0.62	0.62	0.53	0.59	0.60	0.12	0.1
1419	1.60	1.42	1.60	1.54	1.00	1.03	1.1
1420	2.67	2.31	1.96	2.31	1.00	1.91	3.1
1421	3.47	3.38	3.47	3.44	1.00	2.86	5.9
1422	5.34	5.07	5.16	5.19	1.00	4.28	10.2
1423	5.60	5.87	5.60	5.69	1.00	5.44	15.6
1424	7.38	7.74	7.29	7.47	1.00	6.56	22.2
1425	8.18	8.90	8.54	8.54	1.00	8.00	30.2
1426	10.59	10.23	9.96	10.26	1.00	9.39	39.6
1427	12.28	12.45	12.10	12.28	1.00	11.25	50.8
1428	13.34	14.41	14.50	14.08	1.00	13.17	64.0
1429	15.92	15.92	16.37	16.07	1.00	15.07	79.1

From HY-8, Structure 13

Elevation	1417.41	1418	1419	1420	1421	1422	1423	1424	1425	1426
Discharge	0	32	86	140	227	323	430	529	624	709

Stage-Storage-Discharge relationship for structure 13

SE	1417.4	1418	1419	1420	1421	1422	1423	1424	1425	1426
SV	0.0	0.1	1.1	3.1	5.9	10.2	15.6	22.2	30.2	39.6
SQ	0	32	86	141	233	352	551	836	1278	1890

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average	Depth [ft]	Volume (acre-ft)	Accummulative Volume (acre-ft)
1297.39	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1300	0.70	0.75	0.68	0.71	2.61	0.62	0.6
1301	2.84	2.83	2.86	2.84	1.00	1.66	2.3
1302	12.00	11.91	12.12	12.01	1.00	6.90	9.2
1303	24.05	24.04	23.89	23.99	1.00	17.66	26.8
1304	36.47	36.40	36.51	36.46	1.00	30.01	56.8
1305	49.45	49.41	49.55	49.47	1.00	42.80	99.6
1306	63.96	62.45	62.98	63.13	1.00	56.16	155.8

from HY-8, Structure 37

Elevation	1298.58	1299	1300	1301	1302	1303	1304	1305	1306
Discharge	0	17	58	98	165	232	291	348	425

from HY-8, Structure 38

Elevation	1297.39	1299	1300	1301	1302	1303	1304	1305	1306
Discharge	0	228	384	623	855	1080	1283	1886	4435

from Flowmaster, divert between structures 38 & 39

Elevation	1303	1304	1305	1306
Discharge	0	120	1273	4562

Stage-Storage-Discharge relationship for combined pond upstream of Structures 37-38

SE	1297.4	1299	1300	1301	1302	1303	1304	1305	1306
SV	0	0.4	0.6	2.3	9.2	26.8	56.8	99.6	155.8
SQ	0	245	442	721	1020	1312	1694	3507	9422

Divert after S-S-D (divert flow d/s of structure - remainder flow to pond at Structure 39)

DI	0	442	721	1020	1312	1694	3507	9422
DQ	0	442	721	1020	1312	1574	2234	4860

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average	Depth [ft]	Volume (acre-ft)	Accummulative Volume (acre-ft)
1298.64	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1300	0.81	0.77	0.83	0.80	1.36	0.36	0.4
1301	5.69	5.74	5.63	5.69	1.00	2.88	3.2
1302	15.21	15.26	15.18	15.22	1.00	10.07	13.3
1303	21.90	21.82	21.88	21.87	1.00	18.44	31.7
1304	31.30	31.25	31.38	31.31	1.00	26.45	58.2
1305	39.40	39.33	39.41	39.38	1.00	35.27	93.5

from HY-8, Structure 39

Elevation	1298.64	1299	1300	1301	1302	1303	1304	1304.5
Discharge	0	23	89	158	263	355	440	572

from HY-8, Structure 40

Elevation	1298.63	1299	1300	1301	1302	1303	1304	1304.5
Discharge	0	11	40	92	135	203	269	299

from Flowmaster, divert between structures 40 & 41

Elevation	1302.36	1303	1304	1304.5
Discharge	0	39	610	1306

Stage-Storage-Discharge relationship for combined pond upstream of Structures 39-40

SE	1298.63	1299	1300	1301	1302	1303	1304	1304.5
SV	0	0.05	0.4	3.2	13.3	31.7	58.2	69.9
SQ	0	34	129	250	398	597	1319	2177

Divert after S-S-D (divert flow d/s of structure - remainder flow to pond at Structure 41)

DI	0	34	129	260	398	597	1319	2177
DQ	0	34	129	260	398	558	709	871

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average	Depth [ft]	Volume (acre-ft)	Accummulative Volume (acre-ft)
1295.89	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1298	0.45	0.47	0.42	0.45	2.11	0.31	0.3
1300	0.80	0.84	0.77	0.80	2.00	1.23	1.5
1301	1.05	1.09	1.06	1.07	1.00	0.93	2.5
1302	6.58	6.49	6.72	6.60	1.00	3.44	5.9
1303	22.50	22.44	22.49	22.48	1.00	13.75	19.7

from HY-8, Structure 41

Elevation	1295.89	1297	1298	1299	1300	1301	1302	1302.5	1303
Discharge	0	31	65	111	152	182	210	378	1136

Stage-Storage-Discharge relationship for combined pond upstream of Structure 41

SE	1295.89	1297	1298	1299	1300	1301	1302	1302.5	1303
SV	0	0.1	0.3	0.7	1.5	2.5	5.9	10.5	19.7
SQ	0	31	65	111	152	182	210	378	1136

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average	Depth [ft]	Volume (acre-ft)	Accummulative Volume (acre-ft)
1295.98	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1298	1.16	1.19	1.15	1.17	2.02	0.79	0.8
1300	7.38	7.44	7.32	7.38	2.00	7.65	8.4
1301	16.10	16.13	16.05	16.09	1.00	11.46	19.9
1302	28.40	28.30	28.53	28.41	1.00	21.96	41.9
1303	38.16	40.74	40.74	39.88	1.00	33.98	75.8

from HY-8, Structure 42

Elevation	1296.56	1298	1299	1300	1301	1301.5	1301.8	1302	1302.5
Discharge	0	19	33	49	69	78	360	737	942

from HY-8, Structure 43

Elevation	1295.98	1298	1299	1300	1301	1301.5	1301.8	1302	1302.5
Discharge	0	60	104	121	174	220	435	900	1559

from Flowmaster, divert between structures 43 and 44

Elevation	1300	1301	1302	1303
Discharge	0	202	723	3510

Stage-Storage-Discharge relationship for combined pond upstream of Structures 42-43

SE	1296.56	1298	1299	1300	1301	1301.5	1301.8	1302	1302.5
SV	0	0.8	3.3	8.4	19.9	27.2	33.1	41.9	58.9
SQ	0	79	137	170	243	298	795	1637	2501

Divert to pond F5

DI	0	170	445	761	1414	2360	4618
DQ	0	170	243	298	795	1637	2501

Elevation (ft)	Trial 1	Trial 2	Trial 3	Average Area (acres)	Depth [ft]	Volume (acre-ft)	Accummulative Volume (acre-ft)
1294.19	0.00	0.00	0.00	0.00	0.00	0.00	0.0
1295	1.15	1.18	1.11	1.15	0.81	0.31	0.3
1296	3.46	3.51	3.40	3.46	1.00	2.20	2.5
1297	9.07	9.01	9.14	9.07	1.00	6.04	8.6
1298	14.67	14.72	14.58	14.66	1.00	11.75	20.3
1299	21.40	21.39	21.43	21.41	1.00	17.93	38.2
1300	27.70	27.73	21.74	25.72	1.00	23.53	61.8
1301	36.50	36.42	36.55	36.49	1.00	30.95	92.7

from HY-8, Structure 44

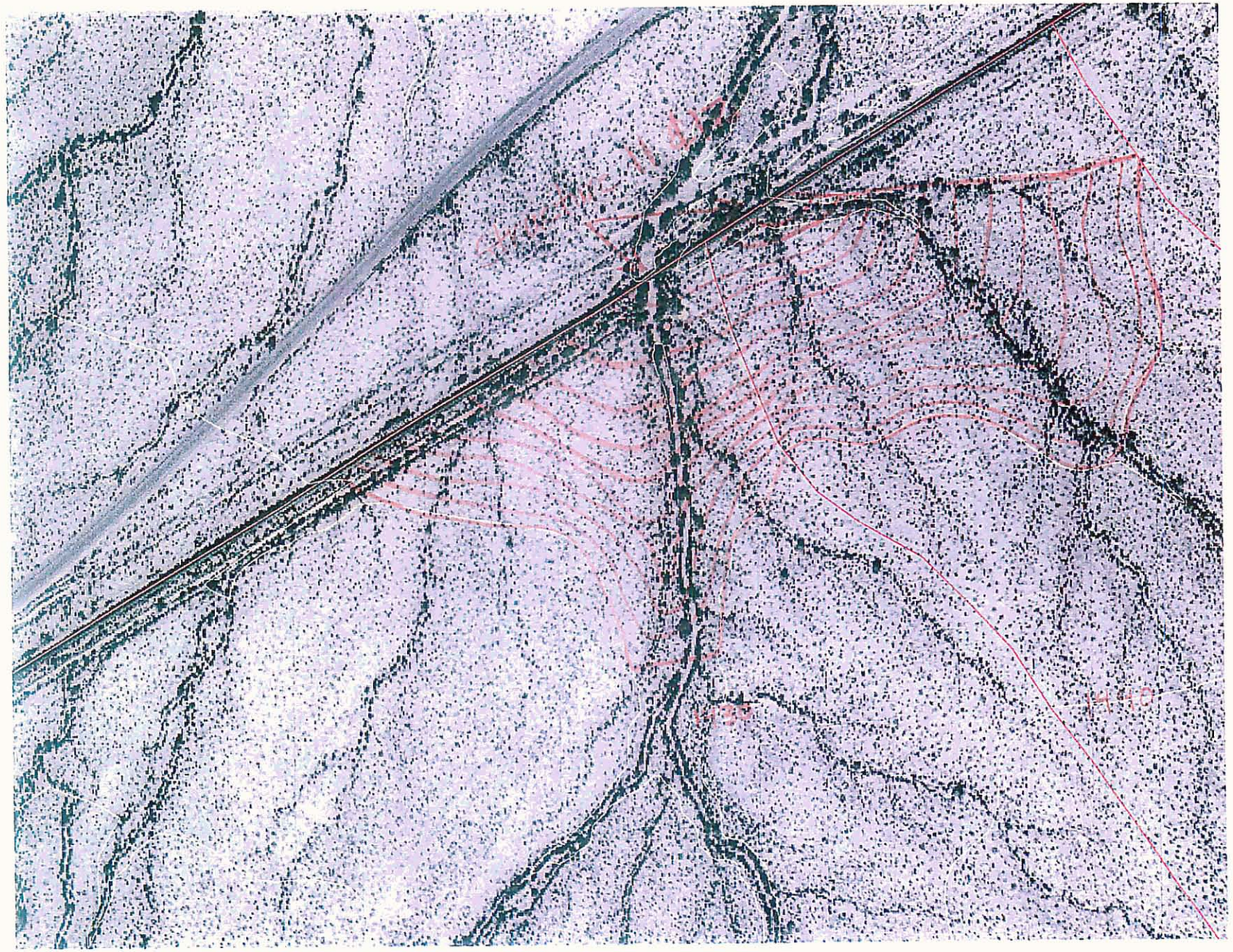
Elevation	1295.1	1296	1297	1298	1299	1300	1300.5	1301
Discharge	0	13	28	49	73	188	809	1018

from HY-8, Structure 45

Elevation	1294.3	1296	1297	1298	1299	1300	1300.5	1301
Discharge	0	47	91	131	168	296	1100	1671

Stage-Storage-Discharge relationship for combined pond upstream of Structures 44-45

SE	1294.3	1296	1297	1298	1299	1300	1300.5	1301.0
SV	0	2.5	8.6	20.3	38.2	61.8	77.3	92.7
SQ	0	60	119	180	241	484	1909	2689



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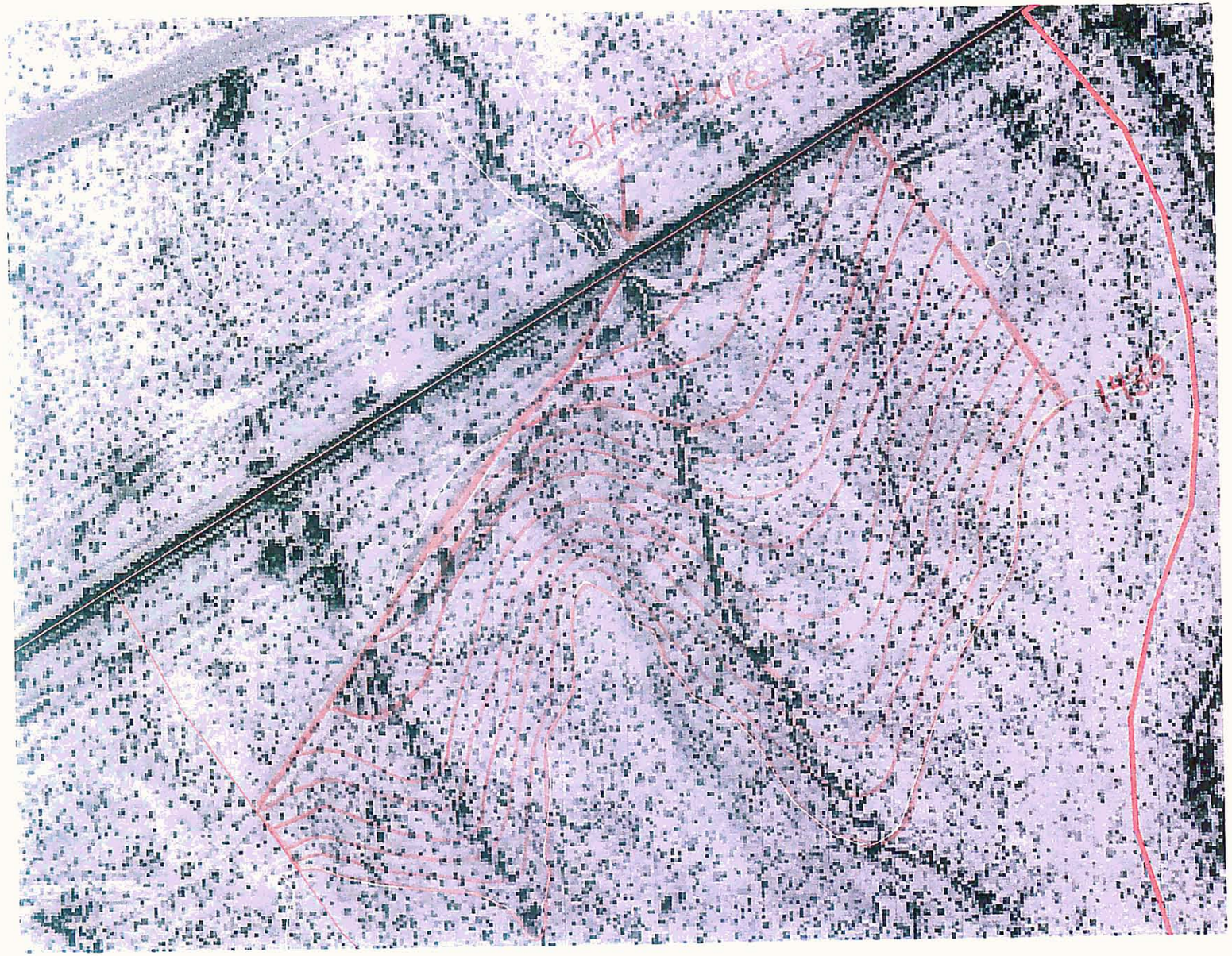

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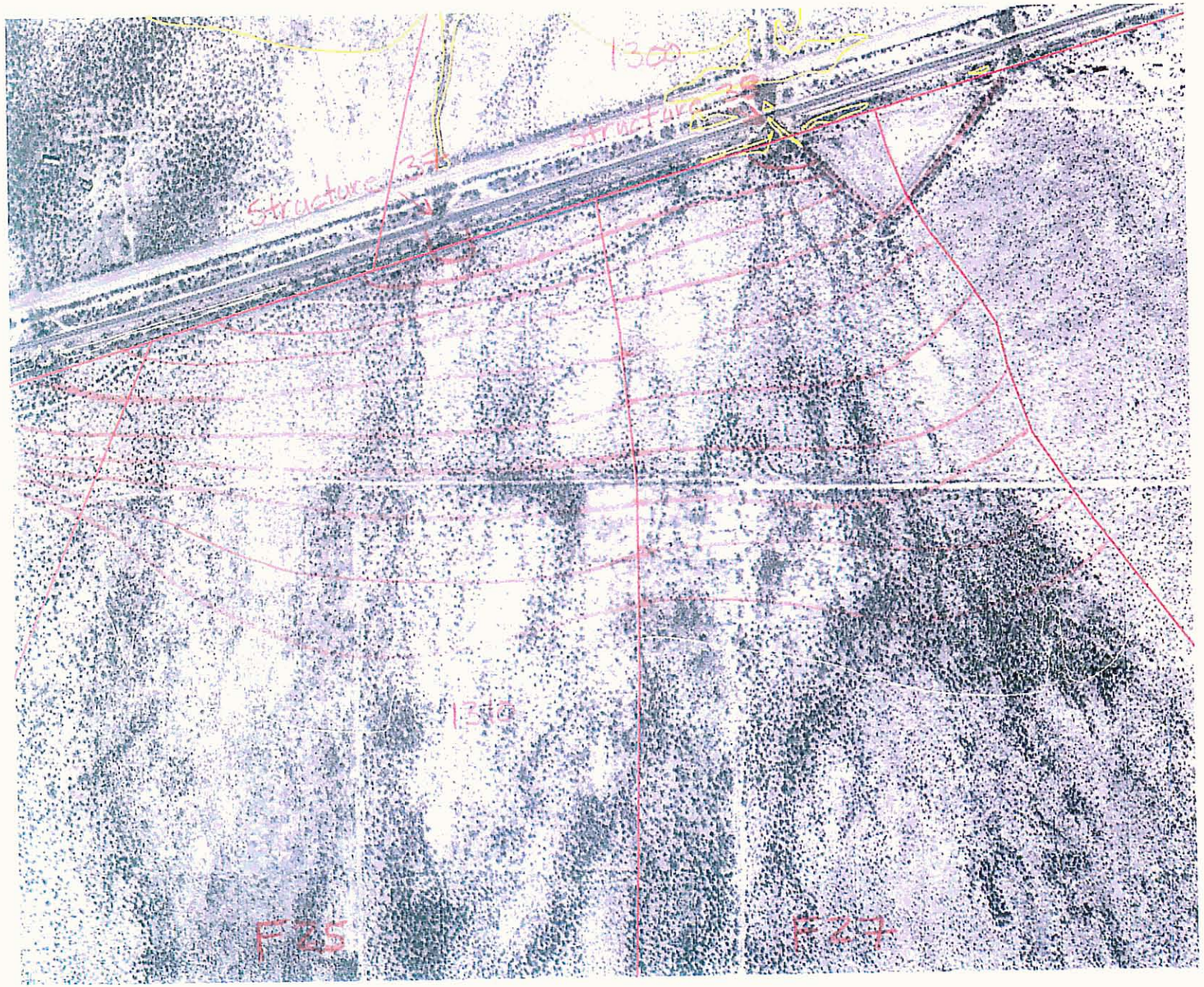

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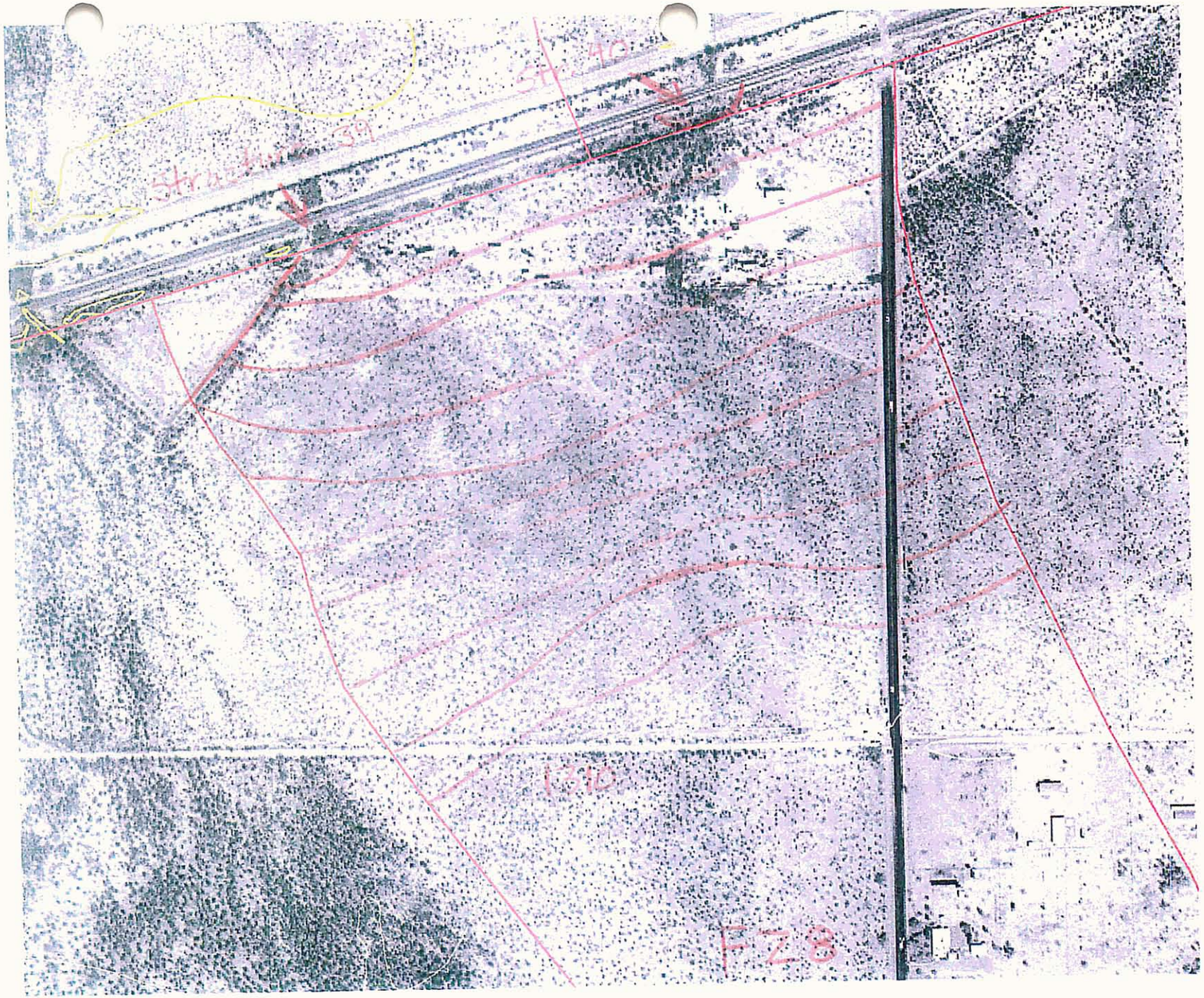

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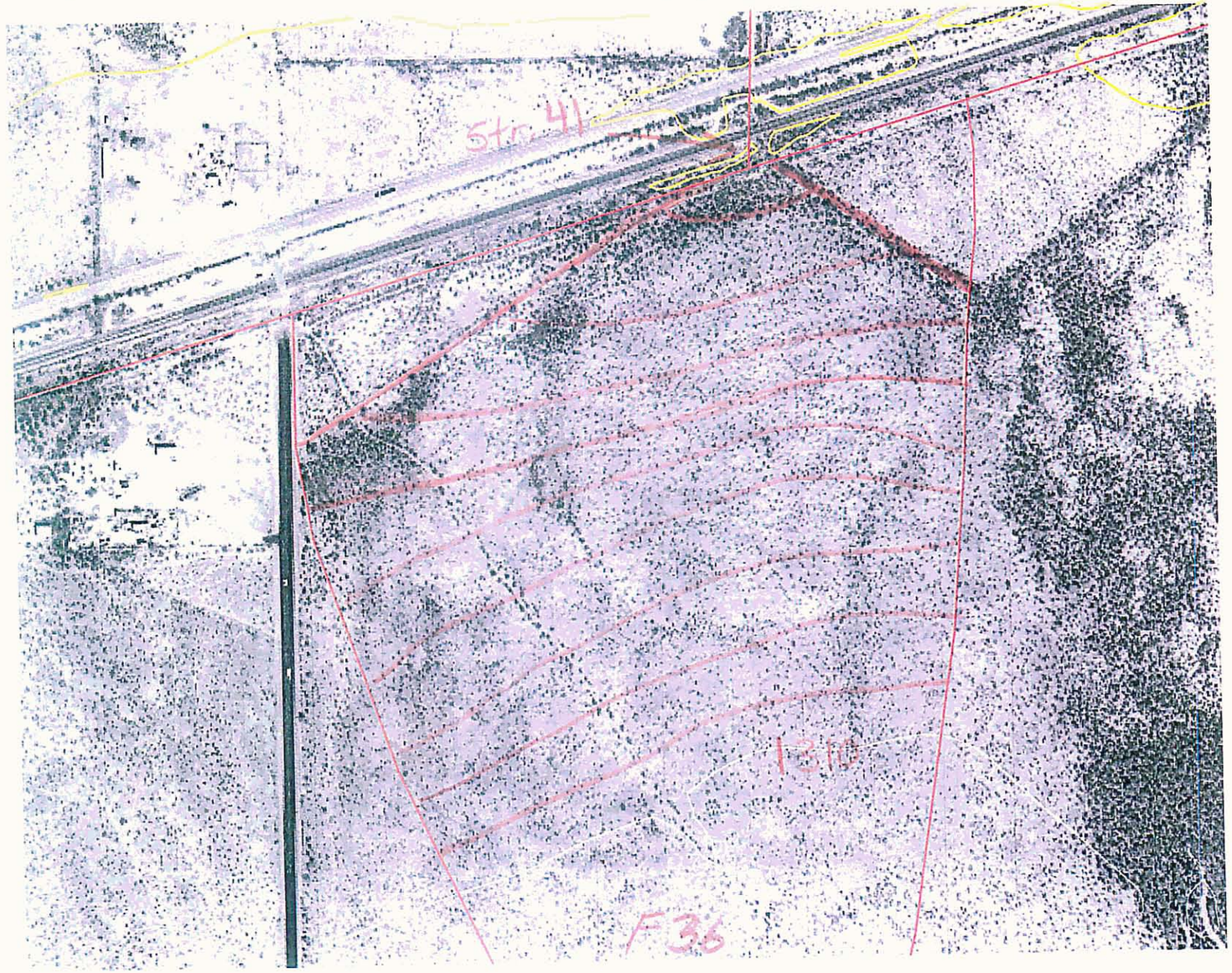

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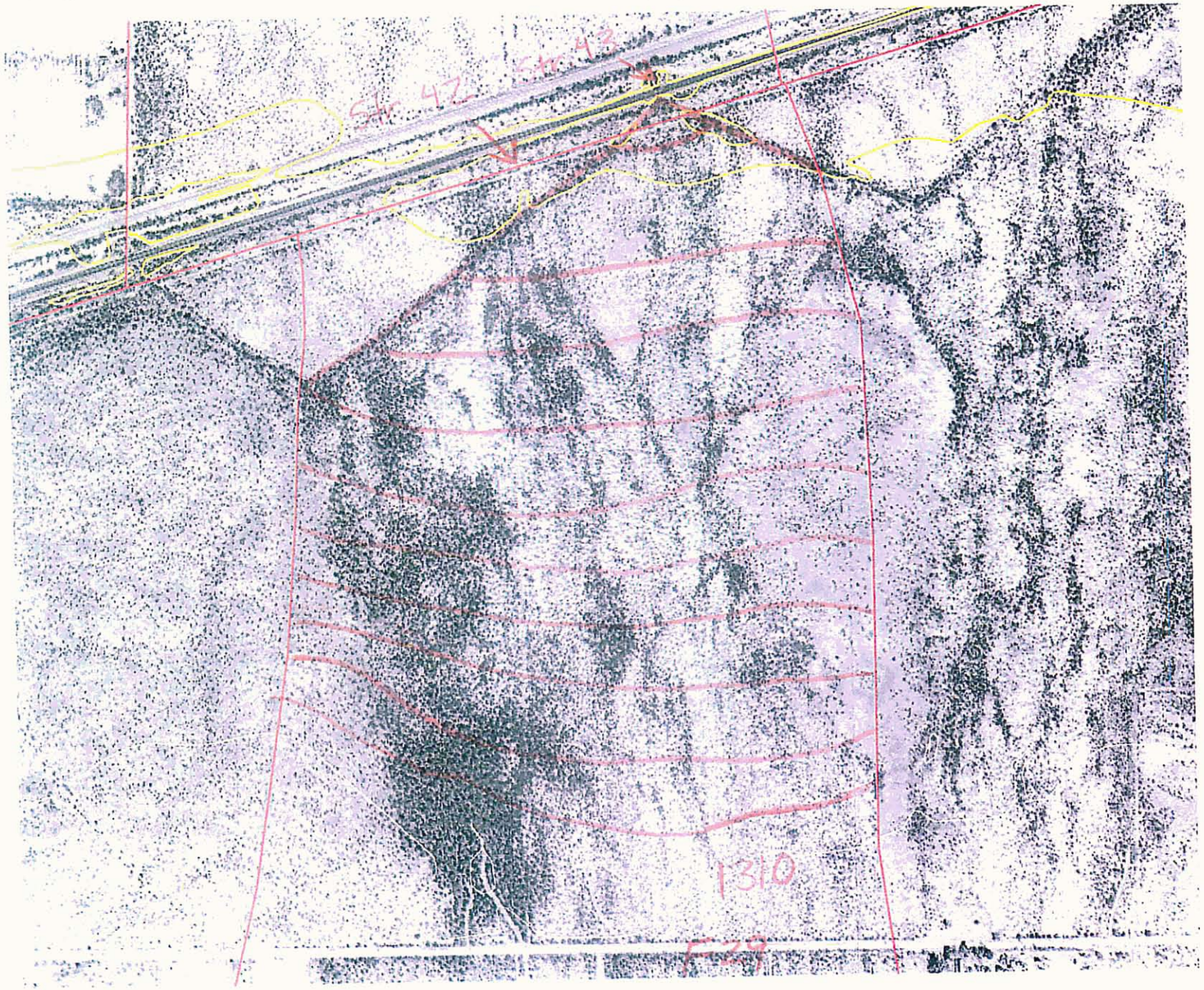

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Appendix D.5

FLOW SPLITS AND DIVERSION DATA

Project Summary Report

Project Description	
Worksheet	A02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005400	ft/ft
Water Surface Elevation	1,265.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,261.00 to 1,265.00	
Discharge	1,352.76	cfs
Flow Area	480.0	ft²
Wetted Perimeter	350.42	ft
Top Width	350.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,264.13	ft
Critical Slope	0.032742	ft/ft
Velocity	2.82	ft/s
Velocity Head	0.12	ft
Specific Energy	1,265.12	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+40	0.050
1+40	1+90	0.045
1+90	3+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,265.00
0+70	1,264.00
1+40	1,263.00
1+50	1,261.00
1+80	1,261.00
1+90	1,263.00
2+70	1,264.00
3+50	1,265.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,261.00	1,267.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,261.00	N/A	N/A	N/A	N/A	N/A
1,261.50	23.60	1.45	16.3	35.10	35.00
1,262.00	77.44	2.21	35.0	40.20	40.00
1,262.50	157.69	2.80	56.2	45.30	45.00
1,263.00	264.16	3.30	80.0	50.40	50.00
1,263.50	278.90	2.25	123.8	125.40	125.00
1,264.00	465.99	2.27	205.0	200.41	200.00
1,264.50	843.90	2.61	323.8	275.42	275.00
1,265.00	1,352.76	2.82	480.0	350.42	350.00
1,265.50	2,247.20	3.43	655.0	351.42	350.00
1,266.00	3,303.41	3.98	830.0	352.42	350.00
1,266.50	4,820.57	4.80	1,005.0	353.42	350.00
1,267.00	6,183.45	5.24	1,180.0	354.42	350.00

Project Summary Report

Project Description	
Worksheet	A02-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005400	ft/ft
Water Surface Elevation	1,265.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,261.00 to 1,265.00	
Discharge	1,351.63	cfs
Flow Area	500.0	ft²
Wetted Perimeter	370.42	ft
Top Width	370.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,264.11	ft
Critical Slope	0.035210	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	1,265.11	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+60	0.050
1+60	2+10	0.045
2+10	3+70	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,265.00
0+80	1,264.00
1+60	1,263.00
1+70	1,261.00
2+00	1,261.00
2+10	1,263.00
2+90	1,264.00
3+70	1,265.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A02-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,261.00	1,267.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,261.00	N/A	N/A	N/A	N/A	N/A
1,261.50	23.60	1.45	16.3	35.10	35.00
1,262.00	77.44	2.21	35.0	40.20	40.00
1,262.50	157.69	2.80	56.2	45.30	45.00
1,263.00	264.16	3.30	80.0	50.40	50.00
1,263.50	275.88	2.21	125.0	130.40	130.00
1,264.00	469.03	2.23	210.0	210.41	210.00
1,264.50	818.57	2.44	335.0	290.41	290.00
1,265.00	1,351.63	2.70	500.0	370.42	370.00
1,265.50	2,322.86	3.39	685.0	371.42	370.00
1,266.00	3,432.26	3.95	870.0	372.42	370.00
1,266.50	5,021.70	4.76	1,055.0	373.42	370.00
1,267.00	6,455.99	5.21	1,240.0	374.42	370.00

Project Summary Report

Project Description	
Worksheet	A02-B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005400	ft/ft
Water Surface Elevation	1,265.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,262.00 to 1,264.00	
Discharge	1,204.08	cfs
Flow Area	376.3	ft²
Wetted Perimeter	232.21	ft
Top Width	230.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,264.31	ft
Critical Slope	0.033024	ft/ft
Velocity	3.20	ft/s
Velocity Head	0.16	ft
Specific Energy	1,265.16	ft
Froude Number	0.44	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.0 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+60	0.050
1+60	1+85	0.045
1+85	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,264.00
0+80	1,263.50
1+60	1,263.00
1+65	1,262.00
1+80	1,262.00
1+85	1,263.00
2+05	1,263.50
2+30	1,264.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A02-B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,261.00	1,267.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,262.00	N/A	N/A	N/A	N/A	N/A
1,262.00	N/A	N/A	N/A	N/A	N/A
1,262.00	N/A	N/A	N/A	N/A	N/A
1,262.50	12.20	1.39	8.8	20.10	20.00
1,263.00	41.60	2.08	20.0	25.20	25.00
1,263.50	78.20	1.36	57.5	125.21	125.00
1,264.00	241.01	1.65	146.3	230.21	230.00
1,264.50	683.58	2.62	261.3	231.21	230.00
1,265.00	1,204.08	3.20	376.3	232.21	230.00
1,265.50	1,841.99	3.75	491.3	233.21	230.00
1,266.00	2,585.61	4.26	606.2	234.21	230.00
1,266.50	3,426.48	4.75	721.2	235.21	230.00
1,267.00	4,358.01	5.21	836.2	236.21	230.00

Project Summary Report

Project Description	
Worksheet	A02-C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005400	ft/ft
Water Surface Elevation	1,265.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,262.00 to 1,264.00	
Discharge	1,446.00	cfs
Flow Area	460.0	ft²
Wetted Perimeter	287.21	ft
Top Width	285.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,264.31	ft
Critical Slope	0.033907	ft/ft
Velocity	3.14	ft/s
Velocity Head	0.15	ft
Specific Energy	1,265.15	ft
Froude Number	0.44	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.0 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	0+85	0.045
0+85	2+85	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,264.00
0+30	1,263.50
0+60	1,263.00
0+65	1,262.00
0+80	1,262.00
0+85	1,263.00
1+85	1,263.50
2+85	1,264.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A02-C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,261.00	1,267.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,262.00	N/A	N/A	N/A	N/A	N/A
1,262.00	N/A	N/A	N/A	N/A	N/A
1,262.00	N/A	N/A	N/A	N/A	N/A
1,262.50	12.20	1.39	8.8	20.10	20.00
1,263.00	41.60	2.08	20.0	25.20	25.00
1,263.50	82.75	1.27	65.0	155.20	155.00
1,264.00	279.99	1.60	175.0	285.21	285.00
1,264.50	808.17	2.55	317.5	286.21	285.00
1,265.00	1,446.00	3.14	460.0	287.21	285.00
1,265.50	2,230.31	3.70	602.5	288.21	285.00
1,266.00	3,146.72	4.22	745.0	289.21	285.00
1,266.50	4,184.84	4.72	887.5	290.21	285.00
1,267.00	5,336.61	5.18	1,030.0	291.21	285.00

Project Summary Report

Project Description	
Worksheet	A04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012800	ft/ft
Water Surface Elevation	1,342.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,342.00 to 1,344.00	
Discharge	37.65	cfs
Flow Area	17.5	ft^2
Wetted Perimeter	40.05	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,342.35	ft
Critical Slope	0.043289	ft/ft
Velocity	2.15	ft/s
Velocity Head	0.07	ft
Specific Energy	1,342.57	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+50	0.045
1+50	2+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,344.00
1+00	1,343.00
1+10	1,342.00
1+40	1,342.00
1+50	1,343.00
2+50	1,344.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,342.00	1,347.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,342.00	N/A	N/A	N/A	N/A	N/A
1,342.50	37.65	2.15	17.5	40.05	40.00
1,343.00	128.61	3.22	40.0	50.10	50.00
1,343.50	222.46	2.47	90.0	150.10	150.00
1,344.00	542.51	2.86	190.0	250.11	250.00
1,344.50	1,282.97	4.07	315.0	251.11	250.00
1,345.00	2,350.59	5.34	440.0	252.11	250.00
1,345.50	3,478.23	6.16	565.0	253.11	250.00
1,346.00	4,782.13	6.93	690.0	254.11	250.00
1,346.50	6,248.71	7.67	815.0	255.11	250.00
1,347.00	7,867.37	8.37	940.0	256.11	250.00

Project Summary Report

Project Description	
Worksheet	A04-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012800	ft/ft
Water Surface Elevation	1,342.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,342.00 to 1,344.00	
Discharge	26.02	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,342.35	ft
Critical Slope	0.043845	ft/ft
Velocity	2.08	ft/s
Velocity Head	0.07	ft
Specific Energy	1,342.57	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+70	0.050
0+70	1+10	0.045
1+10	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,344.00
0+70	1,343.00
0+80	1,342.00
1+00	1,342.00
1+10	1,343.00
2+30	1,344.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A04-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,342.00	1,347.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,342.00	N/A	N/A	N/A	N/A	N/A
1,342.50	26.02	2.08	12.5	30.05	30.00
1,343.00	92.36	3.08	30.0	40.10	40.00
1,343.50	182.28	2.47	73.7	135.11	135.00
1,344.00	464.13	2.81	165.0	230.11	230.00
1,344.50	1,099.92	3.93	280.0	231.11	230.00
1,345.00	2,052.15	5.20	395.0	232.11	230.00
1,345.50	3,070.83	6.02	510.0	233.11	230.00
1,346.00	4,251.53	6.80	625.0	234.11	230.00
1,346.50	5,581.53	7.54	740.0	235.11	230.00
1,347.00	7,050.89	8.25	855.0	236.11	230.00

Project Summary Report

Project Description	
Worksheet	A07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012800	ft/ft
Water Surface Elevation	1,238.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,238.00 to 1,240.00	
Discharge	25.18	cfs
Flow Area	13.8	ft²
Wetted Perimeter	40.08	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,238.36	ft
Critical Slope	0.046177	ft/ft
Velocity	1.83	ft/s
Velocity Head	0.05	ft
Specific Energy	1,238.55	ft
Froude Number	0.55	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.030
1+00	1+40	0.045
1+40	5+20	0.050
5+20	5+45	0.045
5+45	5+95	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,240.00
1+00	1,239.00
1+15	1,238.00
1+25	1,238.00
1+40	1,239.00
3+30	1,240.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
5+20	1,239.00
5+30	1,238.00
5+35	1,238.00
5+45	1,239.00
5+95	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,238.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,238.00	N/A	N/A	N/A	N/A	N/A
1,238.50	25.18	1.83	13.8	40.08	40.00
1,239.00	107.96	2.70	40.0	65.17	65.00
1,239.50	390.34	2.81	138.8	330.18	330.00
1,240.00	1,171.02	3.16	370.0	595.19	595.00
1,240.50	2,848.18	4.27	667.5	596.19	595.00
1,241.00	5,135.01	5.32	965.0	597.19	595.00
1,241.50	7,951.92	6.30	1,262.5	598.19	595.00
1,242.00	11,248.85	7.21	1,560.0	599.19	595.00

Project Summary Report

Project Description	
Worksheet	A07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012800	ft/ft
Water Surface Elevation	1,238.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,238.00 to 1,240.00	
Discharge	30.64	cfs
Flow Area	16.5	ft²
Wetted Perimeter	47.16	ft
Top Width	47.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,238.36	ft
Critical Slope	0.045896	ft/ft
Velocity	1.86	ft/s
Velocity Head	0.05	ft
Specific Energy	1,238.55	ft
Froude Number	0.55	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+50	0.030
0+50	0+80	0.045
0+80	1+50	0.050
1+50	1+70	0.045
1+70	2+10	0.050
2+10	2+25	0.045
2+25	3+25	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,240.00
0+50	1,239.00
0+60	1,238.00
0+70	1,238.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
0+80	1,239.00
1+15	1,240.00
1+50	1,239.00
1+58	1,238.00
1+62	1,238.00
1+70	1,239.00
1+90	1,240.00
2+10	1,239.00
2+20	1,238.00
2+25	1,238.00
2+35	1,239.00
3+25	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,238.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,238.00	N/A	N/A	N/A	N/A	N/A
1,238.50	30.64	1.86	16.5	47.16	47.00
1,239.00	127.65	2.72	47.0	75.32	75.00
1,239.50	374.21	3.23	115.8	200.37	200.00
1,240.00	904.00	3.66	247.0	325.42	325.00
1,240.50	1,905.42	4.65	409.5	326.42	325.00
1,241.00	3,226.80	5.64	572.0	327.42	325.00
1,241.50	4,827.59	6.57	734.5	328.42	325.00
1,242.00	6,681.51	7.45	897.0	329.42	325.00

Project Summary Report

Project Description	
Worksheet	A08
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007500	ft/ft
Water Surface Elevation	1,158.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,158.00 to 1,160.00	
Discharge	22.27	cfs
Flow Area	15.0	ft²
Wetted Perimeter	40.10	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,158.30	ft
Critical Slope	0.047200	ft/ft
Velocity	1.48	ft/s
Velocity Head	0.03	ft
Specific Energy	1,158.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+75	0.050
0+75	1+05	0.045
1+05	3+55	0.050
3+55	3+85	0.045
3+85	4+60	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,160.00
0+75	1,159.00
0+85	1,158.00
0+95	1,158.00
1+05	1,159.00
2+30	1,160.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
3+55	1,159.00
3+65	1,158.00
3+75	1,158.00
3+85	1,159.00
4+60	1,160.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	*Minimum*	*Maximum*	*Increment*
Water Surface Elevation (ft)	1,158.00	1,162.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,158.00	N/A	N/A	N/A	N/A	N/A
1,158.50	22.27	1.48	15.0	40.10	40.00
1,159.00	87.10	2.18	40.0	60.20	60.00
1,159.50	199.12	1.66	120.0	260.21	260.00
1,160.00	596.66	1.99	300.0	460.22	460.00
1,160.50	1,648.83	3.11	530.0	461.22	460.00
1,161.00	2,894.66	3.81	760.0	462.22	460.00
1,161.50	4,421.26	4.47	990.0	463.22	460.00
1,162.00	6,202.33	5.08	1,220.0	464.22	460.00

Project Summary Report

Project Description	
Worksheet	A08-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007500	ft/ft
Water Surface Elevation	1,158.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,158.00 to 1,160.00	
Discharge	17.99	cfs
Flow Area	12.5	ft²
Wetted Perimeter	35.10	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,158.31	ft
Critical Slope	0.047569	ft/ft
Velocity	1.44	ft/s
Velocity Head	0.03	ft
Specific Energy	1,158.53	ft
Froude Number	0.42	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+35	0.050
0+35	0+60	0.045
0+60	2+00	0.050
2+00	2+30	0.045
2+30	3+10	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,160.00
0+35	1,159.00
0+45	1,158.00
0+50	1,158.00
0+60	1,159.00
1+30	1,160.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
2+00	1,159.00
2+10	1,158.00
2+20	1,158.00
2+30	1,159.00
3+10	1,160.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A08-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,158.00	1,162.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,158.00	N/A	N/A	N/A	N/A	N/A
1,158.50	17.99	1.44	12.5	35.10	35.00
1,159.00	73.98	2.11	35.0	55.20	55.00
1,159.50	164.21	1.74	94.4	182.72	182.50
1,160.00	455.65	2.09	217.5	310.23	310.00
1,160.50	1,161.87	3.12	372.5	311.23	310.00
1,161.00	2,072.71	3.93	527.5	312.23	310.00
1,161.50	3,121.94	4.57	682.5	313.23	310.00
1,162.00	4,340.67	5.18	837.5	314.23	310.00

Project Summary Report

Project Description	
Worksheet	A09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007500	ft/ft
Water Surface Elevation	1,192.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,192.00 to 1,194.00	
Discharge	42.19	cfs
Flow Area	27.5	ft²
Wetted Perimeter	70.15	ft
Top Width	70.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,192.30	ft
Critical Slope	0.046537	ft/ft
Velocity	1.53	ft/s
Velocity Head	0.04	ft
Specific Energy	1,192.54	ft
Froude Number	0.43	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	0+90	0.045
0+90	1+50	0.050
1+50	1+90	0.045
1+90	3+70	0.050
3+70	4+00	0.045
4+00	4+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,194.00
0+60	1,193.00
0+70	1,192.00
0+80	1,192.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
0+90	1,193.00
1+20	1,194.00
1+50	1,193.00
1+60	1,192.00
1+80	1,192.00
1+90	1,193.00
2+80	1,194.00
3+70	1,193.00
3+80	1,192.00
3+90	1,192.00
4+00	1,193.00
4+40	1,194.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,192.00	1,196.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,192.00	N/A	N/A	N/A	N/A	N/A
1,192.50	42.19	1.53	27.5	70.15	70.00
1,193.00	157.80	2.25	70.0	100.30	100.00
1,193.50	325.72	2.00	162.5	270.33	270.00
1,194.00	817.20	2.40	340.0	440.36	440.00
1,194.50	1,841.83	3.29	560.0	441.36	440.00
1,195.00	3,207.45	4.11	780.0	442.36	440.00
1,195.50	4,745.23	4.75	1,000.0	443.36	440.00
1,196.00	6,524.89	5.35	1,220.0	444.36	440.00

Project Summary Report

Project Description	
Worksheet	A09-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007500	ft/ft
Water Surface Elevation	1,192.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,192.00 to 1,194.00	
Discharge	6.86	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,192.31	ft
Critical Slope	0.048627	ft/ft
Velocity	1.37	ft/s
Velocity Head	0.03	ft
Specific Energy	1,192.53	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+40	0.050
0+40	0+65	0.045
0+65	1+05	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,194.00
0+40	1,193.00
0+50	1,192.00
0+55	1,192.00
0+65	1,193.00
1+05	1,194.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A09-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,192.00	1,196.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,192.00	N/A	N/A	N/A	N/A	N/A
1,192.50	6.86	1.37	5.0	15.05	15.00
1,193.00	30.43	2.03	15.0	25.10	25.00
1,193.50	69.44	1.85	37.5	65.11	65.00
1,194.00	175.73	2.20	80.0	105.12	105.00
1,194.50	413.39	3.12	132.5	106.12	105.00
1,195.00	748.54	4.05	185.0	107.12	105.00
1,195.50	1,107.63	4.66	237.5	108.12	105.00
1,196.00	1,520.56	5.24	290.0	109.12	105.00

Project Summary Report

Project Description	
Worksheet	A10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008500	ft/ft
Water Surface Elevation	1,108.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,106.00 to 1,108.00	
Discharge	201.93	cfs
Flow Area	90.0	ft²
Wetted Perimeter	125.12	ft
Top Width	125.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,107.59	ft
Critical Slope	0.042487	ft/ft
Velocity	2.24	ft/s
Velocity Head	0.08	ft
Specific Energy	1,108.08	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+50	0.050
0+50	0+75	0.045
0+75	1+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,108.00
0+25	1,107.50
0+50	1,107.00
0+60	1,106.00
0+65	1,106.00
0+75	1,107.00
1+00	1,107.50
1+25	1,108.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,106.00	1,112.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,106.00	N/A	N/A	N/A	N/A	N/A
1,106.50	7.30	1.46	5.0	15.05	15.00
1,107.00	32.40	2.16	15.0	25.10	25.00
1,107.50	74.45	1.86	40.0	75.11	75.00
1,108.00	201.93	2.24	90.0	125.12	125.00
1,108.50	491.94	3.23	152.5	126.12	125.00
1,109.00	904.58	4.21	215.0	127.12	125.00
1,109.50	1,353.06	4.88	277.5	128.12	125.00
1,110.00	1,870.89	5.50	340.0	129.12	125.00
1,110.50	2,452.07	6.09	402.5	130.12	125.00
1,111.00	3,091.90	6.65	465.0	131.12	125.00
1,111.50	3,786.52	7.18	527.5	132.12	125.00
1,112.00	4,532.65	7.68	590.0	133.12	125.00

Project Summary Report

Project Description	
Worksheet	A10-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008500	ft/ft
Water Surface Elevation	1,106.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,106.00 to 1,108.00	
Discharge	8.75	cfs
Flow Area	6.2	ft²
Wetted Perimeter	20.03	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,106.33	ft
Critical Slope	0.048941	ft/ft
Velocity	1.40	ft/s
Velocity Head	0.03	ft
Specific Energy	1,106.53	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+50	0.050
0+50	0+85	0.045
0+85	1+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,108.00
0+25	1,107.50
0+50	1,107.00
0+65	1,106.00
0+70	1,106.00
0+85	1,107.00
1+05	1,107.50
1+25	1,108.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A10-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,106.00	1,112.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,106.00	N/A	N/A	N/A	N/A	N/A
1,106.50	8.75	1.40	6.2	20.03	20.00
1,107.00	41.87	2.09	20.0	35.07	35.00
1,107.50	100.27	2.06	48.7	80.08	80.00
1,108.00	253.80	2.54	100.0	125.09	125.00
1,108.50	553.17	3.40	162.5	126.09	125.00
1,109.00	991.17	4.41	225.0	127.09	125.00
1,109.50	1,456.46	5.07	287.5	128.09	125.00
1,110.00	1,990.95	5.69	350.0	129.09	125.00
1,110.50	2,588.83	6.28	412.5	130.09	125.00
1,111.00	3,245.50	6.83	475.0	131.09	125.00
1,111.50	3,957.18	7.36	537.5	132.09	125.00
1,112.00	4,720.67	7.87	600.0	133.09	125.00

Project Summary Report

Project Description	
Worksheet	A11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,143.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,143.00 to 1,145.00	
Discharge	7.04	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,143.32	ft
Critical Slope	0.048434	ft/ft
Velocity	1.41	ft/s
Velocity Head	0.03	ft
Specific Energy	1,143.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,145.00
0+50	1,144.50
1+00	1,144.00
1+10	1,143.00
1+15	1,143.00
1+25	1,144.00
1+75	1,144.50
2+25	1,145.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,143.00	1,147.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,143.00	N/A	N/A	N/A	N/A	N/A
1,143.50	7.04	1.41	5.0	15.05	15.00
1,144.00	31.23	2.08	15.0	25.10	25.00
1,144.50	79.29	1.51	52.5	125.10	125.00
1,145.00	272.40	1.95	140.0	225.11	225.00
1,145.50	778.52	3.08	252.5	226.11	225.00
1,146.00	1,391.23	3.81	365.0	227.11	225.00
1,146.50	2,142.88	4.49	477.5	228.11	225.00
1,147.00	3,019.60	5.12	590.0	229.11	225.00

Project Summary Report

Project Description	
Worksheet	A11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,143.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,143.00 to 1,145.00	
Discharge	7.04	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,143.32	ft
Critical Slope	0.048434	ft/ft
Velocity	1.41	ft/s
Velocity Head	0.03	ft
Specific Energy	1,143.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,145.00
0+50	1,144.50
1+00	1,144.00
1+10	1,143.00
1+15	1,143.00
1+25	1,144.00
1+75	1,144.50
2+25	1,145.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,143.00	1,147.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,143.00	N/A	N/A	N/A	N/A	N/A
1,143.50	7.04	1.41	5.0	15.05	15.00
1,144.00	31.23	2.08	15.0	25.10	25.00
1,144.50	79.29	1.51	52.5	125.10	125.00
1,145.00	272.40	1.95	140.0	225.11	225.00
1,145.50	778.52	3.08	252.5	226.11	225.00
1,146.00	1,391.23	3.81	365.0	227.11	225.00
1,146.50	2,142.88	4.49	477.5	228.11	225.00
1,147.00	3,019.60	5.12	590.0	229.11	225.00

Project Summary Report

Project Description	
Worksheet	A18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007000	ft/ft
Water Surface Elevation	1,091.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,091.00 to 1,095.00	
Discharge	9.97	cfs
Flow Area	6.7	ft²
Wetted Perimeter	16.74	ft
Top Width	16.67	ft
Actual Depth	0.50	ft
Critical Elevation	1,091.29	ft
Critical Slope	0.046923	ft/ft
Velocity	1.50	ft/s
Velocity Head	0.03	ft
Specific Energy	1,091.53	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+50	0.045
2+50	4+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,095.00
0+25	1,094.00
2+00	1,094.00
2+20	1,091.00
2+30	1,091.00
2+50	1,094.00
4+25	1,094.00
4+50	1,095.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,091.00	1,097.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,091.00	N/A	N/A	N/A	N/A	N/A
1,091.50	9.97	1.50	6.7	16.74	16.67
1,092.00	36.64	2.20	16.7	23.48	23.33
1,092.50	82.47	2.75	30.0	30.22	30.00
1,093.00	150.60	3.23	46.7	36.96	36.67
1,093.50	244.05	3.66	66.7	43.71	43.33
1,094.00	365.74	4.06	90.0	50.45	50.00
1,094.50	585.45	1.98	296.3	425.47	425.00
1,095.00	1,439.84	2.80	515.0	450.49	450.00
1,095.50	2,822.28	3.81	740.0	451.49	450.00
1,096.00	4,255.33	4.41	965.0	452.49	450.00
1,096.50	5,930.03	4.98	1,190.0	453.49	450.00
1,097.00	7,827.87	5.53	1,415.0	454.49	450.00

Project Summary Report

Project Description	
Worksheet	A18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007000	ft/ft
Water Surface Elevation	1,091.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,091.00 to 1,095.00	
Discharge	9.59	cfs
Flow Area	6.2	ft²
Wetted Perimeter	15.10	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,091.29	ft
Critical Slope	0.046632	ft/ft
Velocity	1.53	ft/s
Velocity Head	0.04	ft
Specific Energy	1,091.54	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+40	0.045
2+40	4+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,095.00
0+25	1,094.00
2+00	1,094.00
2+15	1,091.00
2+25	1,091.00
2+40	1,094.00
4+15	1,094.00
4+40	1,095.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,091.00	1,097.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,091.00	N/A	N/A	N/A	N/A	N/A
1,091.50	9.59	1.53	6.2	15.10	15.00
1,092.00	33.98	2.27	15.0	20.20	20.00
1,092.50	74.33	2.83	26.3	25.30	25.00
1,093.00	132.70	3.32	40.0	30.40	30.00
1,093.50	211.23	3.76	56.2	35.50	35.00
1,094.00	311.98	4.16	75.0	40.59	40.00
1,094.50	528.18	1.91	276.3	415.61	415.00
1,095.00	1,337.38	2.73	490.0	440.63	440.00
1,095.50	2,648.83	3.73	710.0	441.63	440.00
1,096.00	4,030.78	4.33	930.0	442.63	440.00
1,096.50	5,649.29	4.91	1,150.0	443.63	440.00
1,097.00	7,486.06	5.46	1,370.0	444.63	440.00

Project Summary Report

Project Description	
Worksheet	A20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008900	ft/ft
Water Surface Elevation	1,077.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,077.00 to 1,080.00	
Discharge	11.46	cfs
Flow Area	6.9	ft²
Wetted Perimeter	17.57	ft
Top Width	17.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,077.32	ft
Critical Slope	0.046074	ft/ft
Velocity	1.67	ft/s
Velocity Head	0.04	ft
Specific Energy	1,077.54	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+40	0.045
2+40	4+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,080.00
0+25	1,079.00
2+00	1,079.00
2+15	1,077.00
2+25	1,077.00
2+40	1,079.00
4+15	1,079.00
4+40	1,080.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A20
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	*Minimum*	*Maximum*	*Increment*
Water Surface Elevation (ft)	1,077.00	1,082.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,077.00	N/A	N/A	N/A	N/A	N/A
1,077.50	11.46	1.67	6.9	17.57	17.50
1,078.00	42.83	2.45	17.5	25.13	25.00
1,078.50	97.62	3.06	31.9	32.70	32.50
1,079.00	179.94	3.60	50.0	40.27	40.00
1,079.50	508.70	2.02	251.3	415.29	415.00
1,080.00	1,486.30	3.20	465.0	440.31	440.00
1,080.50	2,719.43	3.97	685.0	441.31	440.00
1,081.00	4,250.08	4.70	905.0	442.31	440.00
1,081.50	6,048.92	5.38	1,125.0	443.31	440.00
1,082.00	8,095.08	6.02	1,345.0	444.31	440.00

Project Summary Report

Project Description	
Worksheet	A20-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008900	ft/ft
Water Surface Elevation	1,077.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,077.00 to 1,080.00	
Discharge	21.70	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,077.31	ft
Critical Slope	0.045356	ft/ft
Velocity	1.74	ft/s
Velocity Head	0.05	ft
Specific Energy	1,077.55	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+60	0.045
2+60	4+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,080.00
0+25	1,079.00
2+00	1,079.00
2+20	1,077.00
2+40	1,077.00
2+60	1,079.00
4+35	1,079.00
4+60	1,080.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A20-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,077.00	1,082.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,077.00	N/A	N/A	N/A	N/A	N/A
1,077.50	21.70	1.74	12.5	30.05	30.00
1,078.00	77.02	2.57	30.0	40.10	40.00
1,078.50	168.62	3.21	52.5	50.15	50.00
1,079.00	301.23	3.77	80.0	60.20	60.00
1,079.50	633.29	2.17	291.3	435.22	435.00
1,080.00	1,598.66	3.10	515.0	460.24	460.00
1,080.50	3,107.81	4.17	745.0	461.24	460.00
1,081.00	4,752.63	4.87	975.0	462.24	460.00
1,081.50	6,677.05	5.54	1,205.0	463.24	460.00
1,082.00	8,859.74	6.17	1,435.0	464.24	460.00

Project Summary Report

Project Description	
Worksheet	A21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010800	ft/ft
Water Surface Elevation	1,127.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,125.00 to 1,127.00	
Discharge	608.22	cfs
Flow Area	250.0	ft²
Wetted Perimeter	375.22	ft
Top Width	375.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,126.68	ft
Critical Slope	0.042077	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	1,127.09	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+90	0.050
0+90	1+15	0.045
1+15	2+75	0.050
2+75	3+05	0.045
3+05	3+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,127.00
0+90	1,126.00
1+00	1,125.00
1+05	1,125.00
1+15	1,126.00
1+95	1,127.00
2+75	1,126.00
2+85	1,125.00
2+95	1,125.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
3+05	1,126.00
3+75	1,127.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,125.00	1,129.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,125.00	N/A	N/A	N/A	N/A	N/A
1,125.50	21.59	1.73	12.5	35.10	35.00
1,126.00	88.78	2.54	35.0	55.20	55.00
1,126.50	203.82	1.99	102.5	215.21	215.00
1,127.00	608.22	2.43	250.0	375.22	375.00
1,127.50	1,653.51	3.78	437.5	376.22	375.00
1,128.00	2,881.82	4.61	625.0	377.22	375.00
1,128.50	4,383.54	5.40	812.5	378.22	375.00
1,129.00	6,132.87	6.13	1,000.0	379.22	375.00

Project Summary Report

Project Description	
Worksheet	A21-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010800	ft/ft
Water Surface Elevation	1,127.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,125.00 to 1,127.00	
Discharge	754.88	cfs
Flow Area	310.0	ft²
Wetted Perimeter	460.19	ft
Top Width	460.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,126.67	ft
Critical Slope	0.042449	ft/ft
Velocity	2.44	ft/s
Velocity Head	0.09	ft
Specific Energy	1,127.09	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+90	0.050
0+90	1+35	0.045
1+35	3+35	0.050
3+35	3+60	0.045
3+60	4+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,127.00
0+90	1,126.00
1+05	1,125.00
1+20	1,125.00
1+35	1,126.00
2+35	1,127.00
3+35	1,126.00
3+45	1,125.00
3+50	1,125.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
3+60	1,126.00
4+60	1,127.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A21-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,125.00	1,129.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,125.00	N/A	N/A	N/A	N/A	N/A
1,125.50	28.29	1.74	16.3	45.08	45.00
1,126.00	115.01	2.56	45.0	70.17	70.00
1,126.50	260.26	2.02	128.8	265.18	265.00
1,127.00	754.88	2.44	310.0	460.19	460.00
1,127.50	2,056.72	3.81	540.0	461.19	460.00
1,128.00	3,571.10	4.64	770.0	462.19	460.00
1,128.50	5,421.89	5.42	1,000.0	463.19	460.00
1,129.00	7,577.79	6.16	1,230.0	464.19	460.00

Project Summary Report

Project Description	
Worksheet	A64
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009000	ft/ft
Water Surface Elevation	1,163.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,163.00 to 1,165.00	
Discharge	12.20	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,163.32	ft
Critical Slope	0.046473	ft/ft
Velocity	1.63	ft/s
Velocity Head	0.04	ft
Specific Energy	1,163.54	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	1+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,165.00
1+00	1,164.00
1+10	1,163.00
1+20	1,163.00
1+30	1,164.00
1+90	1,165.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A64
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,163.00	1,167.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,163.00	N/A	N/A	N/A	N/A	N/A
1,163.50	12.20	1.63	7.5	20.05	20.00
1,164.00	47.71	2.39	20.0	30.10	30.00
1,164.50	106.54	1.94	55.0	110.11	110.00
1,165.00	295.33	2.27	130.0	190.11	190.00
1,165.50	724.58	3.22	225.0	191.11	190.00
1,166.00	1,360.15	4.25	320.0	192.11	190.00
1,166.50	2,054.77	4.95	415.0	193.11	190.00
1,167.00	2,860.87	5.61	510.0	194.11	190.00

Project Summary Report

Project Description	
Worksheet	A64-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009000	ft/ft
Water Surface Elevation	1,163.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,163.00 to 1,165.00	
Discharge	27.22	cfs
Flow Area	17.5	ft²
Wetted Perimeter	50.15	ft
Top Width	50.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,163.33	ft
Critical Slope	0.047121	ft/ft
Velocity	1.56	ft/s
Velocity Head	0.04	ft
Specific Energy	1,163.54	ft
Froude Number	0.46	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+70	0.050
0+70	1+00	0.045
1+00	1+50	0.050
1+50	1+75	0.045
1+75	1+85	0.050
1+85	2+10	0.045
2+10	2+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,165.00
0+70	1,164.00
0+80	1,163.00
0+90	1,163.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+00	1,164.00
1+25	1,165.00
1+50	1,164.00
1+60	1,163.00
1+65	1,163.00
1+75	1,164.00
1+80	1,165.00
1+85	1,164.00
1+95	1,163.00
2+00	1,163.00
2+10	1,164.00
2+60	1,165.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	A64-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,163.00	1,167.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,163.00	N/A	N/A	N/A	N/A	N/A
1,163.50	27.22	1.56	17.5	50.15	50.00
1,164.00	114.38	2.29	50.0	80.30	80.00
1,164.50	265.07	2.36	112.5	170.43	170.00
1,165.00	571.39	2.60	220.0	260.55	260.00
1,165.50	1,323.65	3.78	350.0	261.55	260.00
1,166.00	2,238.09	4.66	480.0	262.55	260.00
1,166.50	3,262.02	5.35	610.0	263.55	260.00
1,167.00	4,439.65	6.00	740.0	264.55	260.00

Project Summary Report

Project Description	
Worksheet	B03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006300	ft/ft
Water Surface Elevation	1,240.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,235.00 to 1,240.00	
Discharge	1,844.62	cfs
Flow Area	510.0	ft²
Wetted Perimeter	280.34	ft
Top Width	280.00	ft
Actual Depth	5.00	ft
Critical Elevation	1,238.90	ft
Critical Slope	0.029848	ft/ft
Velocity	3.62	ft/s
Velocity Head	0.20	ft
Specific Energy	1,240.20	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+80	0.045
1+80	2+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,240.00
1+00	1,238.00
1+30	1,235.00
1+50	1,235.00
1+80	1,238.00
2+80	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,235.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,235.00	N/A	N/A	N/A	N/A	N/A
1,235.50	18.26	1.46	12.5	30.05	30.00
1,236.00	64.80	2.16	30.0	40.10	40.00
1,236.50	141.86	2.70	52.5	50.15	50.00
1,237.00	253.44	3.17	80.0	60.20	60.00
1,237.50	403.59	3.59	112.5	70.25	70.00
1,238.00	596.30	3.98	150.0	80.30	80.00
1,238.50	682.47	3.37	202.5	130.31	130.00
1,239.00	926.30	3.31	280.0	180.32	180.00
1,239.50	1,310.17	3.43	382.5	230.33	230.00
1,240.00	1,844.62	3.62	510.0	280.34	280.00
1,240.50	2,892.96	4.45	650.0	281.34	280.00
1,241.00	3,941.74	4.99	790.0	282.34	280.00
1,241.50	5,120.15	5.51	930.0	283.34	280.00
1,242.00	6,419.70	6.00	1,070.0	284.34	280.00

Project Summary Report

Project Description	
Worksheet	B03-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data		
Slope	0.006300	ft/ft
Water Surface Elevation	1,240.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,237.00 to 1,240.00	
Discharge	366.71	cfs
Flow Area	170.0	ft^2
Wetted Perimeter	200.28	ft
Top Width	200.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,239.35	ft
Critical Slope	0.038356	ft/ft
Velocity	2.16	ft/s
Velocity Head	0.07	ft
Specific Energy	1,240.07	ft
Froude Number	0.41	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+20	0.045
1+20	2+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,240.00
0+80	1,239.00
0+95	1,237.00
1+05	1,237.00
1+20	1,239.00
2+00	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,236.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,237.00	N/A	N/A	N/A	N/A	N/A
1,237.00	N/A	N/A	N/A	N/A	N/A
1,237.00	N/A	N/A	N/A	N/A	N/A
1,237.50	9.64	1.40	6.9	17.57	17.50
1,238.00	36.03	2.06	17.5	25.13	25.00
1,238.50	82.13	2.58	31.9	32.70	32.50
1,239.00	151.40	3.03	50.0	40.27	40.00
1,239.50	180.93	2.01	90.0	120.27	120.00
1,240.00	366.71	2.16	170.0	200.28	200.00
1,240.50	815.07	3.02	270.0	201.28	200.00
1,241.00	1,356.21	3.67	370.0	202.28	200.00
1,241.50	2,128.15	4.53	470.0	203.28	200.00
1,242.00	2,873.42	5.04	570.0	204.28	200.00

Project Summary Report

Project Description	
Worksheet	B03-B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006300	ft/ft
Water Surface Elevation	1,240.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,234.00 to 1,240.00	
Discharge	3,029.55	cfs
Flow Area	1,165.0	ft²
Wetted Perimeter	1,104.64	ft
Top Width	1,100.00	ft
Actual Depth	6.00	ft
Critical Elevation	1,238.30	ft
Critical Slope	0.025990	ft/ft
Velocity	2.60	ft/s
Velocity Head	0.11	ft
Specific Energy	1,240.11	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+70	0.050
1+70	2+00	0.045
2+00	3+80	0.050
3+80	4+10	0.045
4+10	5+30	0.050
5+30	5+80	0.045
5+80	7+40	0.050
7+40	7+90	0.045
7+90	9+30	0.050
9+30	9+80	0.045
9+80	11+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,240.00
1+70	1,239.00
1+80	1,236.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+90	1,236.00
2+00	1,239.00
2+90	1,240.00
3+80	1,239.00
3+90	1,236.00
4+00	1,236.00
4+10	1,239.00
4+70	1,240.00
5+30	1,239.00
5+50	1,234.00
5+60	1,234.00
5+80	1,239.00
6+60	1,240.00
7+40	1,239.00
7+60	1,235.00
7+70	1,235.00
7+90	1,239.00
8+60	1,240.00
9+30	1,239.00
9+50	1,235.00
9+60	1,235.00
9+80	1,239.00
11+00	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B03-B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,234.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,234.00	N/A	N/A	N/A	N/A	N/A
1,234.50	8.89	1.48	6.0	14.12	14.00
1,235.00	30.75	2.20	14.0	18.25	18.00
1,235.50	84.12	2.30	36.5	52.57	52.00
1,236.00	180.24	2.73	66.0	66.89	66.00
1,236.50	340.26	2.98	114.2	108.17	106.67
1,237.00	576.67	3.34	172.7	129.45	127.33
1,237.50	894.57	3.70	241.5	150.73	148.00
1,238.00	1,301.17	4.06	320.7	172.01	168.67
1,238.50	1,803.92	4.40	410.2	193.30	189.33
1,239.00	2,410.12	4.73	510.0	214.58	210.00
1,239.50	1,886.93	2.60	726.2	659.61	655.00
1,240.00	3,029.55	2.60	1,165.0	1,104.64	1,100.00
1,240.50	5,839.53	3.40	1,715.0	1,105.64	1,100.00
1,241.00	9,456.97	4.18	2,265.0	1,106.64	1,100.00
1,241.50	13,655.63	4.85	2,815.0	1,107.64	1,100.00
1,242.00	18,003.97	5.35	3,365.0	1,108.64	1,100.00

Project Summary Report

Project Description	
Worksheet	B13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,225.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,221.00 to 1,225.00	
Discharge	2,797.29	cfs
Flow Area	1,015.0	ft²
Wetted Perimeter	1,032.41	ft
Top Width	1,030.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,223.93	ft
Critical Slope	0.027605	ft/ft
Velocity	2.76	ft/s
Velocity Head	0.12	ft
Specific Energy	1,225.12	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+50	0.050
0+50	0+75	0.045
0+75	2+05	0.050
2+05	2+50	0.045
2+50	4+80	0.050
4+80	5+30	0.045
5+30	7+20	0.050
7+20	7+70	0.045
7+70	8+30	0.050
8+30	8+80	0.045
8+80	10+30	0.050

Natural Channel Points

Station (ft)	*Elevation* (ft)
0+00	1,225.00
0+50	1,224.00
0+60	1,222.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
0+65	1,222.00
0+75	1,224.00
1+40	1,225.00
2+05	1,224.00
2+20	1,221.00
2+35	1,221.00
2+50	1,224.00
3+65	1,225.00
4+80	1,224.00
5+00	1,221.00
5+10	1,221.00
5+30	1,224.00
6+25	1,225.00
7+20	1,224.00
7+40	1,221.00
7+50	1,221.00
7+70	1,224.00
8+00	1,225.00
8+30	1,224.00
8+50	1,221.00
8+60	1,221.00
8+80	1,224.00
10+30	1,225.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,221.00	1,227.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,221.00	N/A	N/A	N/A	N/A	N/A
1,221.50	46.52	1.62	28.8	70.32	70.00
1,222.00	167.08	2.39	70.0	95.65	95.00
1,222.50	374.97	2.94	127.5	131.07	130.00
1,223.00	686.91	3.43	200.0	161.49	160.00
1,223.50	1,117.15	3.89	287.5	191.91	190.00
1,224.00	1,679.67	4.31	390.0	222.33	220.00
1,224.50	1,656.70	2.76	601.2	627.37	625.00
1,225.00	2,797.29	2.76	1,015.0	1,032.41	1,030.00
1,225.50	5,778.34	3.78	1,530.0	1,033.41	1,030.00
1,226.00	9,404.88	4.60	2,045.0	1,034.41	1,030.00
1,226.50	13,657.63	5.34	2,560.0	1,035.41	1,030.00
1,227.00	18,505.64	6.02	3,075.0	1,036.41	1,030.00

Project Summary Report

Project Description	
Worksheet	B13-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,225.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,221.00 to 1,225.00	
Discharge	672.89	cfs
Flow Area	230.0	ft²
Wetted Perimeter	230.46	ft
Top Width	230.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,223.97	ft
Critical Slope	0.024698	ft/ft
Velocity	2.93	ft/s
Velocity Head	0.13	ft
Specific Energy	1,225.13	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+50	0.045
1+50	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,225.00
1+00	1,224.00
1+20	1,221.00
1+30	1,221.00
1+50	1,224.00
2+30	1,225.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B13-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,221.00	1,227.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,221.00	N/A	N/A	N/A	N/A	N/A
1,221.50	10.59	1.59	6.7	16.74	16.67
1,222.00	38.92	2.34	16.7	23.48	23.33
1,222.50	87.61	2.92	30.0	30.22	30.00
1,223.00	159.99	3.43	46.7	36.96	36.67
1,223.50	259.27	3.89	66.7	43.71	43.33
1,224.00	388.54	4.32	90.0	50.45	50.00
1,224.50	371.20	2.70	137.5	140.45	140.00
1,225.00	672.89	2.93	230.0	230.46	230.00
1,225.50	1,264.17	3.66	345.0	231.46	230.00
1,226.00	2,005.04	4.36	460.0	232.46	230.00
1,226.50	2,878.92	5.01	575.0	233.46	230.00
1,227.00	4,150.02	6.01	690.0	234.46	230.00

Project Summary Report

Project Description	
Worksheet	B17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006800	ft/ft
Water Surface Elevation	1,210.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,208.00 to 1,210.00	
Discharge	238.77	cfs
Flow Area	115.0	ft²
Wetted Perimeter	160.12	ft
Top Width	160.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,209.55	ft
Critical Slope	0.039792	ft/ft
Velocity	2.08	ft/s
Velocity Head	0.07	ft
Specific Energy	1,210.07	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+70	0.050
0+70	1+00	0.045
1+00	1+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,210.00
0+70	1,209.00
0+80	1,208.00
0+90	1,208.00
1+00	1,209.00
1+60	1,210.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,208.00	1,212.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,208.00	N/A	N/A	N/A	N/A	N/A
1,208.50	10.60	1.41	7.5	20.05	20.00
1,209.00	41.47	2.07	20.0	30.10	30.00
1,209.50	85.84	1.67	51.2	95.11	95.00
1,210.00	238.77	2.08	115.0	160.12	160.00
1,210.50	561.10	2.88	195.0	161.12	160.00
1,211.00	1,037.77	3.77	275.0	162.12	160.00
1,211.50	1,552.68	4.37	355.0	163.12	160.00
1,212.00	2,148.28	4.94	435.0	164.12	160.00

Project Summary Report

Project Description	
Worksheet	B17-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006800	ft/ft
Water Surface Elevation	1,210.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,208.00 to 1,210.00	
Discharge	238.77	cfs
Flow Area	115.0	ft²
Wetted Perimeter	160.12	ft
Top Width	160.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,209.55	ft
Critical Slope	0.039792	ft/ft
Velocity	2.08	ft/s
Velocity Head	0.07	ft
Specific Energy	1,210.07	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+70	0.050
0+70	1+00	0.045
1+00	1+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,210.00
0+70	1,209.00
0+80	1,208.00
0+90	1,208.00
1+00	1,209.00
1+60	1,210.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B17-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,208.00	1,212.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,208.00	N/A	N/A	N/A	N/A	N/A
1,208.50	10.60	1.41	7.5	20.05	20.00
1,209.00	41.47	2.07	20.0	30.10	30.00
1,209.50	85.84	1.67	51.2	95.11	95.00
1,210.00	238.77	2.08	115.0	160.12	160.00
1,210.50	561.10	2.88	195.0	161.12	160.00
1,211.00	1,037.77	3.77	275.0	162.12	160.00
1,211.50	1,552.68	4.37	355.0	163.12	160.00
1,212.00	2,148.28	4.94	435.0	164.12	160.00

Project Summary Report

Project Description	
Worksheet	B23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005900	ft/ft
Water Surface Elevation	1,170.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,167.00 to 1,170.00	
Discharge	379.99	cfs
Flow Area	175.0	ft²
Wetted Perimeter	195.25	ft
Top Width	195.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,169.27	ft
Critical Slope	0.036884	ft/ft
Velocity	2.17	ft/s
Velocity Head	0.07	ft
Specific Energy	1,170.07	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+75	0.050
0+75	1+20	0.045
1+20	1+95	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,170.00
0+75	1,169.00
0+90	1,167.00
1+00	1,167.00
1+20	1,169.00
1+95	1,170.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B23
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,167.00	1,172.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,167.00	N/A	N/A	N/A	N/A	N/A
1,167.50	9.60	1.34	7.2	18.81	18.75
1,168.00	36.74	1.96	18.8	27.62	27.50
1,168.50	85.16	2.46	34.7	36.42	36.25
1,169.00	158.92	2.89	55.0	45.23	45.00
1,169.50	196.70	2.04	96.2	120.24	120.00
1,170.00	379.99	2.17	175.0	195.25	195.00
1,170.50	820.68	3.01	272.5	196.25	195.00
1,171.00	1,342.78	3.63	370.0	197.25	195.00
1,171.50	2,089.63	4.47	467.5	198.25	195.00
1,172.00	2,803.86	4.96	565.0	199.25	195.00

Project Summary Report

Project Description	
Worksheet	B23-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005900	ft/ft
Water Surface Elevation	1,170.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,167.00 to 1,170.00	
Discharge	313.10	cfs
Flow Area	150.0	ft²
Wetted Perimeter	190.41	ft
Top Width	190.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,169.42	ft
Critical Slope	0.036132	ft/ft
Velocity	2.09	ft/s
Velocity Head	0.07	ft
Specific Energy	1,170.07	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+75	0.050
0+75	1+05	0.045
1+05	1+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,170.00
0+75	1,169.00
0+85	1,167.00
0+95	1,167.00
1+05	1,169.00
1+90	1,170.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B23-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,167.00	1,172.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,167.00	N/A	N/A	N/A	N/A	N/A
1,167.50	8.80	1.41	6.2	15.10	15.00
1,168.00	31.20	2.08	15.0	20.20	20.00
1,168.50	68.24	2.60	26.3	25.30	25.00
1,169.00	121.83	3.05	40.0	30.40	30.00
1,169.50	135.98	1.81	75.0	110.40	110.00
1,170.00	313.10	2.09	150.0	190.41	190.00
1,170.50	688.46	2.81	245.0	191.41	190.00
1,171.00	1,170.79	3.44	340.0	192.41	190.00
1,171.50	1,853.42	4.26	435.0	193.41	190.00
1,172.00	2,523.14	4.76	530.0	194.41	190.00

Project Summary Report

Project Description	
Worksheet	B26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006000	ft/ft
Water Surface Elevation	23.60	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.044	
Elevation Range	18.77 to 25.23	
Discharge	1,778.30	cfs
Flow Area	636.5	ft²
Wetted Perimeter	577.21	ft
Top Width	576.66	ft
Actual Depth	4.83	ft
Critical Elevation	22.44	ft
Critical Slope	0.024895	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	23.72	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	5+08	0.044
5+08	6+18	0.049
6+18	7+23	0.044

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	25.23
0+19	25.05
0+46	24.77
0+60	24.63
0+97	24.31
1+02	24.27
1+22	24.09
1+44	23.91
1+50	23.32
1+50	23.19
1+51	23.12

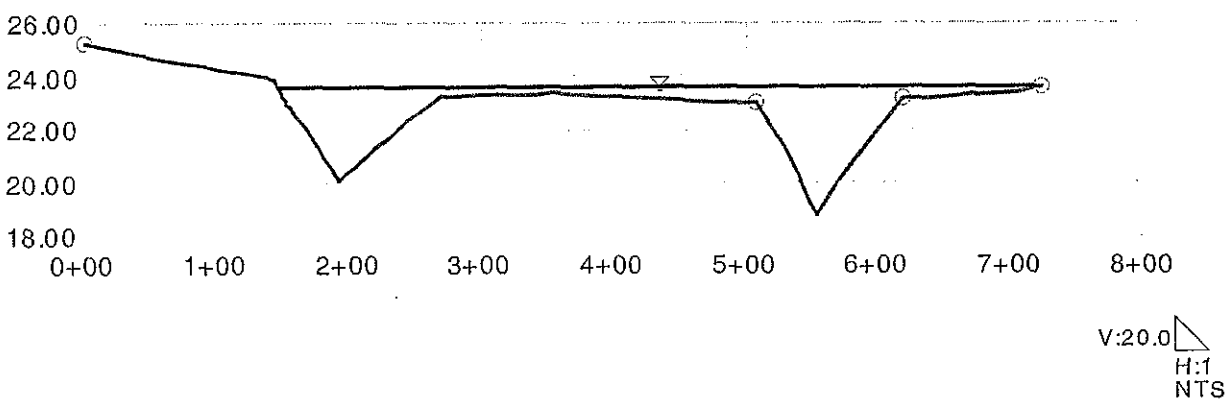
Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+52	23.04
1+53	22.95
1+55	22.83
1+57	22.72
1+67	22.11
1+82	20.98
1+94	20.12
2+05	20.60
2+20	21.24
2+29	21.65
2+35	21.93
2+40	22.14
2+43	22.30
2+68	23.22
3+03	23.27
3+10	23.29
3+40	23.31
3+51	23.33
3+54	23.33
3+93	23.24
4+06	23.19
4+35	23.13
4+57	23.04
4+76	23.03
5+08	22.97
5+29	21.31
5+39	20.33
5+50	19.17
5+53	18.90
5+55	18.77
5+64	19.55
5+72	20.13
6+18	23.15
6+32	23.17
6+57	23.25
6+69	23.27
6+75	23.29
7+05	23.40
7+23	23.60

Cross Section
Cross Section for Irregular Channel

Project Description	
Worksheet	B26
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficient	0.044	
Slope	0.006000	ft/ft
Water Surface Elevation	23.60	ft
Elevation Range	18.77 to 25.23	
Discharge	1,778.30	cfs



Project Summary Report

Project Description	
Worksheet	B30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007500	ft/ft
Water Surface Elevation	1,153.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Elevation Range	1,151.00 to 1,153.00	
Discharge	388.45	cfs
Flow Area	160.0	ft²
Wetted Perimeter	195.06	ft
Top Width	195.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,152.54	ft
Critical Slope	0.036288	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	1,153.09	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	1+15	0.045
1+15	1+95	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,153.00
0+60	1,152.00
0+80	1,151.00
0+95	1,151.00
1+15	1,152.00
1+95	1,153.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B30
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,151.00	1,155.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,151.00	N/A	N/A	N/A	N/A	N/A
1,151.50	17.99	1.44	12.5	35.02	35.00
1,152.00	74.00	2.11	35.0	55.05	55.00
1,152.50	159.79	2.00	80.0	125.06	125.00
1,153.00	388.45	2.43	160.0	195.06	195.00
1,153.50	843.58	3.28	257.5	196.06	195.00
1,154.00	1,492.35	4.20	355.0	197.06	195.00
1,154.50	2,184.11	4.83	452.5	198.06	195.00
1,155.00	2,979.94	5.42	550.0	199.06	195.00

Project Summary Report

Project Description	
Worksheet	B30-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007500	ft/ft
Water Surface Elevation	1,153.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,151.00 to 1,153.00	
Discharge	294.00	cfs
Flow Area	150.0	ft²
Wetted Perimeter	230.11	ft
Top Width	230.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,152.60	ft
Critical Slope	0.044987	ft/ft
Velocity	1.96	ft/s
Velocity Head	0.06	ft
Specific Energy	1,153.06	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,153.00
1+00	1,152.00
1+10	1,151.00
1+20	1,151.00
1+30	1,152.00
2+30	1,153.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	B30-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,151.00	1,155.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,151.00	N/A	N/A	N/A	N/A	N/A
1,151.50	11.13	1.48	7.5	20.05	20.00
1,152.00	43.55	2.18	20.0	30.10	30.00
1,152.50	94.31	1.57	60.0	130.10	130.00
1,153.00	294.00	1.96	150.0	230.11	230.00
1,153.50	823.56	3.11	265.0	231.11	230.00
1,154.00	1,443.98	3.80	380.0	232.11	230.00
1,154.50	2,202.53	4.45	495.0	233.11	230.00
1,155.00	3,085.54	5.06	610.0	234.11	230.00

Project Summary Report

Project Description	
Worksheet	C03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.016700	ft/ft
Water Surface Elevation	1,675.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,673.00 to 1,675.00	
Discharge	468.96	cfs
Flow Area	150.0	ft²
Wetted Perimeter	210.08	ft
Top Width	210.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,674.76	ft
Critical Slope	0.041190	ft/ft
Velocity	3.13	ft/s
Velocity Head	0.15	ft
Specific Energy	1,675.15	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+85	0.050
0+85	1+25	0.045
1+25	2+10	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,675.00
0+85	1,674.00
1+00	1,673.00
1+10	1,673.00
1+25	1,674.00
2+10	1,675.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.016700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	*1,673.00*	*1,677.00*	0.50

Water Surface Elevation (ft)	*Discharge* (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,673.00	N/A	N/A	N/A	N/A	N/A
1,673.50	18.53	2.12	8.8	25.03	25.00
1,674.00	77.90	3.12	25.0	40.07	40.00
1,674.50	171.98	2.60	66.2	125.07	125.00
1,675.00	468.96	3.13	150.0	210.08	210.00
1,675.50	1,150.36	4.51	255.0	211.08	210.00
1,676.00	2,124.91	5.90	360.0	212.08	210.00
1,676.50	3,187.49	6.85	465.0	213.08	210.00
1,677.00	4,418.62	7.75	570.0	214.08	210.00

Project Summary Report

Project Description	
Worksheet	C03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.016700	ft/ft
Water Surface Elevation	1,675.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,673.00 to 1,675.00	
Discharge	545.14	cfs
Flow Area	165.0	ft²
Wetted Perimeter	225.08	ft
Top Width	225.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,674.78	ft
Critical Slope	0.037661	ft/ft
Velocity	3.30	ft/s
Velocity Head	0.17	ft
Specific Energy	1,675.17	ft
Froude Number	0.68	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+45	0.045
1+45	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,675.00
1+00	1,674.00
1+15	1,673.00
1+30	1,673.00
1+45	1,674.00
2+25	1,675.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	*0.016700 ft/ft*

Options	
Current Roughness Method	*Improved Lotter's Method*
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,673.00	1,677.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,673.00	N/A	N/A	N/A	N/A	N/A
1,673.50	24.95	2.22	11.3	30.03	30.00
1,674.00	97.60	3.25	30.0	45.07	45.00
1,674.50	201.18	2.68	75.0	135.07	135.00
1,675.00	545.14	3.30	165.0	225.08	225.00
1,675.50	1,264.99	4.56	277.5	226.08	225.00
1,676.00	2,332.45	5.98	390.0	227.08	225.00
1,676.50	3,480.52	6.93	502.5	228.08	225.00
1,677.00	4,809.51	7.82	615.0	229.08	225.00

Project Summary Report

Project Description	
Worksheet	C06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012700	ft/ft
Water Surface Elevation	1,565.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,562.00 to 1,565.00	
Discharge	470.35	cfs
Flow Area	165.0	ft²
Wetted Perimeter	215.28	ft
Top Width	215.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,564.66	ft
Critical Slope	0.040518	ft/ft
Velocity	2.85	ft/s
Velocity Head	0.13	ft
Specific Energy	1,565.13	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+90	0.050
0+90	1+25	0.045
1+25	2+15	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,565.00
0+90	1,564.00
1+05	1,562.00
1+10	1,562.00
1+25	1,564.00
2+15	1,565.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,562.00	1,567.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,562.00	N/A	N/A	N/A	N/A	N/A
1,562.50	8.06	1.84	4.4	12.57	12.50
1,563.00	33.85	2.71	12.5	20.13	20.00
1,563.50	83.29	3.42	24.4	27.70	27.50
1,564.00	161.89	4.05	40.0	35.27	35.00
1,564.50	204.34	2.55	80.0	125.27	125.00
1,565.00	470.35	2.85	165.0	215.28	215.00
1,565.50	1,106.28	4.06	272.5	216.28	215.00
1,566.00	2,050.02	5.39	380.0	217.28	215.00
1,566.50	3,010.47	6.18	487.5	218.28	215.00
1,567.00	4,120.43	6.93	595.0	219.28	215.00

Project Summary Report

Project Description	
Worksheet	C06-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data		
Slope	0.012700	ft/ft
Water Surface Elevation	1,565.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,562.00 to 1,565.00	
Discharge	470.35	cfs
Flow Area	165.0	ft²
Wetted Perimeter	215.28	ft
Top Width	215.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,564.66	ft
Critical Slope	0.040518	ft/ft
Velocity	2.85	ft/s
Velocity Head	0.13	ft
Specific Energy	1,565.13	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+90	0.050
0+90	1+25	0.045
1+25	2+15	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,565.00
0+90	1,564.00
1+05	1,562.00
1+10	1,562.00
1+25	1,564.00
2+15	1,565.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,562.00	1,567.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,562.00	N/A	N/A	N/A	N/A	N/A
1,562.50	8.06	1.84	4.4	12.57	12.50
1,563.00	33.85	2.71	12.5	20.13	20.00
1,563.50	83.29	3.42	24.4	27.70	27.50
1,564.00	161.89	4.05	40.0	35.27	35.00
1,564.50	204.34	2.55	80.0	125.27	125.00
1,565.00	470.35	2.85	165.0	215.28	215.00
1,565.50	1,106.28	4.06	272.5	216.28	215.00
1,566.00	2,050.02	5.39	380.0	217.28	215.00
1,566.50	3,010.47	6.18	487.5	218.28	215.00
1,567.00	4,120.43	6.93	595.0	219.28	215.00

Project Summary Report

Project Description	
Worksheet	C07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010600	ft/ft
Water Surface Elevation	1,545.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,542.00 to 1,545.00	
Discharge	2,583.52	cfs
Flow Area	950.0	ft²
Wetted Perimeter	1,205.76	ft
Top Width	1,205.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,544.60	ft
Critical Slope	0.038180	ft/ft
Velocity	2.72	ft/s
Velocity Head	0.11	ft
Specific Energy	1,545.11	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+40	0.045
1+40	4+20	0.050
4+20	4+80	0.045
4+80	6+80	0.050
6+80	7+40	0.045
7+40	10+60	0.050
10+60	11+05	0.045
11+05	12+05	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,545.00
1+00	1,544.00
1+15	1,543.00
1+25	1,543.00
1+40	1,544.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
2+80	1,545.00
4+20	1,544.00
4+40	1,542.00
4+60	1,542.00
4+80	1,544.00
5+80	1,545.00
6+80	1,544.00
7+00	1,542.00
7+20	1,542.00
7+40	1,544.00
9+00	1,545.00
10+60	1,544.00
10+75	1,542.00
10+90	1,542.00
11+05	1,544.00
12+05	1,545.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,542.00	1,547.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,542.00	N/A	N/A	N/A	N/A	N/A
1,542.50	65.11	1.89	34.4	82.67	82.50
1,543.00	231.06	2.80	82.5	110.33	110.00
1,543.50	520.59	3.40	153.1	163.03	162.50
1,544.00	965.68	3.94	245.0	205.73	205.00
1,544.50	1,139.00	2.41	472.5	705.75	705.00
1,545.00	2,583.52	2.72	950.0	1,205.76	1,205.00
1,545.50	5,972.73	3.85	1,552.5	1,206.76	1,205.00
1,546.00	10,521.15	4.88	2,155.0	1,207.76	1,205.00
1,546.50	15,854.56	5.75	2,757.5	1,208.76	1,205.00
1,547.00	21,658.28	6.45	3,360.0	1,209.76	1,205.00

Project Summary Report

Project Description	
Worksheet	C07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010600	ft/ft
Water Surface Elevation	1,545.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Elevation Range	1,542.00 to 1,545.00	
Discharge	2,049.70	cfs
Flow Area	800.0	ft²
Wetted Perimeter	1,200.42	ft
Top Width	1,200.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,544.70	ft
Critical Slope	0.036882	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1,545.10	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+50	0.045
1+50	4+10	0.050
4+10	4+50	0.045
4+50	10+50	0.050
10+50	11+00	0.045
11+00	12+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,545.00
1+00	1,544.00
1+15	1,542.00
1+35	1,542.00
1+50	1,544.00
2+80	1,545.00
4+10	1,544.00

Project Summary Report

Natural Channel Points	
Station (ft)	*Elevation* (ft)
4+25	1,543.00
4+35	1,543.00
4+50	1,544.00
7+50	1,545.00
10+50	1,544.00
10+65	1,543.00
10+85	1,543.00
11+00	1,544.00
12+00	1,545.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,542.00	1,547.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,542.00	N/A	N/A	N/A	N/A	N/A
1,542.50	23.03	1.94	11.9	27.57	27.50
1,543.00	79.41	2.89	27.5	35.13	35.00
1,543.50	209.41	3.02	69.4	102.77	102.50
1,544.00	452.55	3.48	130.0	140.40	140.00
1,544.50	668.97	2.01	332.5	670.41	670.00
1,545.00	2,049.70	2.56	800.0	1,200.42	1,200.00
1,545.50	5,242.67	3.74	1,400.0	1,201.42	1,200.00
1,546.00	9,129.28	4.56	2,000.0	1,202.42	1,200.00
1,546.50	13,891.43	5.34	2,600.0	1,203.42	1,200.00
1,547.00	19,564.66	6.11	3,200.0	1,204.42	1,200.00

Project Summary Report

Project Description	
Worksheet	C09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.016700	ft/ft
Water Surface Elevation	1,575.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,572.00 to 1,575.00	
Discharge	615.23	cfs
Flow Area	180.0	ft²
Wetted Perimeter	220.28	ft
Top Width	220.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,574.72	ft
Critical Slope	0.038922	ft/ft
Velocity	3.42	ft/s
Velocity Head	0.18	ft
Specific Energy	1,575.18	ft
Froude Number	0.67	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+90	0.050
0+90	1+30	0.045
1+30	2+20	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,575.00
0+90	1,574.00
1+05	1,572.00
1+15	1,572.00
1+30	1,574.00
2+20	1,575.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.016700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,572.00	1,577.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,572.00	N/A	N/A	N/A	N/A	N/A
1,572.50	15.70	2.28	6.9	17.57	17.50
1,573.00	58.66	3.35	17.5	25.13	25.00
1,573.50	133.72	4.20	31.9	32.70	32.50
1,574.00	246.49	4.93	50.0	40.27	40.00
1,574.50	291.59	3.15	92.5	130.27	130.00
1,575.00	615.23	3.42	180.0	220.28	220.00
1,575.50	1,396.32	4.81	290.0	221.28	220.00
1,576.00	2,351.94	5.88	400.0	222.28	220.00
1,576.50	3,708.72	7.27	510.0	223.28	220.00
1,577.00	5,031.92	8.12	620.0	224.28	220.00

Project Summary Report

Project Description	
Worksheet	C09-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.016700	ft/ft
Water Surface Elevation	1,575.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,572.00 to 1,575.00	
Discharge	540.06	cfs
Flow Area	170.0	ft²
Wetted Perimeter	230.41	ft
Top Width	230.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,574.74	ft
Critical Slope	0.040939	ft/ft
Velocity	3.18	ft/s
Velocity Head	0.16	ft
Specific Energy	1,575.16	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,575.00
1+00	1,574.00
1+10	1,572.00
1+20	1,572.00
1+30	1,574.00
2+30	1,575.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C09-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.016700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,572.00	1,577.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,572.00	N/A	N/A	N/A	N/A	N/A
1,572.50	14.81	2.37	6.2	15.10	15.00
1,573.00	52.49	3.50	15.0	20.20	20.00
1,573.50	114.81	4.37	26.3	25.30	25.00
1,574.00	204.97	5.12	40.0	30.40	30.00
1,574.50	227.01	2.84	80.0	130.40	130.00
1,575.00	540.06	3.18	170.0	230.41	230.00
1,575.50	1,298.82	4.56	285.0	231.41	230.00
1,576.00	2,443.60	6.11	400.0	232.41	230.00
1,576.50	3,605.87	7.00	515.0	233.41	230.00
1,577.00	4,952.21	7.86	630.0	234.41	230.00

Project Summary Report

Project Description	
Worksheet	C11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011600	ft/ft
Water Surface Elevation	1,555.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,553.00 to 1,555.00	
Discharge	337.34	cfs
Flow Area	135.0	ft²
Wetted Perimeter	200.11	ft
Top Width	200.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,554.68	ft
Critical Slope	0.043237	ft/ft
Velocity	2.50	ft/s
Velocity Head	0.10	ft
Specific Energy	1,555.10	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+85	0.050
0+85	1+15	0.045
1+15	2+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,555.00
0+85	1,554.00
0+95	1,553.00
1+05	1,553.00
1+15	1,554.00
2+00	1,555.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,553.00	1,557.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,553.00	N/A	N/A	N/A	N/A	N/A
1,553.50	13.85	1.85	7.5	20.05	20.00
1,554.00	54.16	2.71	20.0	30.10	30.00
1,554.50	114.64	2.04	56.2	115.11	115.00
1,555.00	337.34	2.50	135.0	200.11	200.00
1,555.50	857.39	3.65	235.0	201.11	200.00
1,556.00	1,607.07	4.80	335.0	202.11	200.00
1,556.50	2,434.36	5.60	435.0	203.11	200.00
1,557.00	3,395.24	6.35	535.0	204.11	200.00

Project Summary Report

Project Description	
Worksheet	C11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011600	ft/ft
Water Surface Elevation	1,555.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,553.00 to 1,555.00	
Discharge	330.09	cfs
Flow Area	140.0	ft²
Wetted Perimeter	225.11	ft
Top Width	225.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,554.71	ft
Critical Slope	0.045045	ft/ft
Velocity	2.36	ft/s
Velocity Head	0.09	ft
Specific Energy	1,555.09	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,555.00
1+00	1,554.00
1+10	1,553.00
1+15	1,553.00
1+25	1,554.00
2+25	1,555.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,553.00	1,557.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,553.00	N/A	N/A	N/A	N/A	N/A
1,553.50	8.53	1.71	5.0	15.05	15.00
1,554.00	37.85	2.52	15.0	25.10	25.00
1,554.50	96.08	1.83	52.5	125.10	125.00
1,555.00	330.09	2.36	140.0	225.11	225.00
1,555.50	943.38	3.74	252.5	226.11	225.00
1,556.00	1,685.83	4.62	365.0	227.11	225.00
1,556.50	2,596.65	5.44	477.5	228.11	225.00
1,557.00	3,659.02	6.20	590.0	229.11	225.00

Project Summary Report

Project Description	
Worksheet	C12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011900	ft/ft
Water Surface Elevation	1,560.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,558.00 to 1,560.00	
Discharge	397.89	cfs
Flow Area	155.0	ft²
Wetted Perimeter	225.11	ft
Top Width	225.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,559.68	ft
Critical Slope	0.042748	ft/ft
Velocity	2.57	ft/s
Velocity Head	0.10	ft
Specific Energy	1,560.10	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+95	0.050
0+95	1+30	0.045
1+30	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,560.00
0+95	1,559.00
1+05	1,558.00
1+20	1,558.00
1+30	1,559.00
2+25	1,560.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,558.00	1,562.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,558.00	N/A	N/A	N/A	N/A	N/A
1,558.50	19.53	1.95	10.0	25.05	25.00
1,559.00	71.82	2.87	25.0	35.10	35.00
1,559.50	140.68	2.12	66.2	130.11	130.00
1,560.00	397.89	2.57	155.0	225.11	225.00
1,560.50	998.61	3.73	267.5	226.11	225.00
1,561.00	1,866.84	4.91	380.0	227.11	225.00
1,561.50	2,816.09	5.72	492.5	228.11	225.00
1,562.00	3,918.26	6.48	605.0	229.11	225.00

Project Summary Report

Project Description	
Worksheet	C12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011900	ft/ft
Water Surface Elevation	1,560.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,558.00 to 1,560.00	
Discharge	390.54	cfs
Flow Area	145.0	ft²
Wetted Perimeter	205.11	ft
Top Width	205.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,559.69	ft
Critical Slope	0.039695	ft/ft
Velocity	2.69	ft/s
Velocity Head	0.11	ft
Specific Energy	1,560.11	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+70	0.050
0+70	1+05	0.045
1+05	2+05	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,560.00
0+70	1,559.00
0+80	1,558.00
0+95	1,558.00
1+05	1,559.00
2+05	1,560.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,558.00	1,562.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,558.00	N/A	N/A	N/A	N/A	N/A
1,558.50	19.53	1.95	10.0	25.05	25.00
1,559.00	71.82	2.87	25.0	35.10	35.00
1,559.50	150.18	2.36	63.7	120.11	120.00
1,560.00	390.54	2.69	145.0	205.11	205.00
1,560.50	941.19	3.80	247.5	206.11	205.00
1,561.00	1,739.40	4.97	350.0	207.11	205.00
1,561.50	2,610.27	5.77	452.5	208.11	205.00
1,562.00	3,619.76	6.52	555.0	209.11	205.00

Project Summary Report

Project Description	
Worksheet	C15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.013900	ft/ft
Water Surface Elevation	1,535.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,532.00 to 1,534.00	
Discharge	2,025.01	cfs
Flow Area	390.0	ft²
Wetted Perimeter	237.08	ft
Top Width	235.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,534.66	ft
Critical Slope	0.029588	ft/ft
Velocity	5.19	ft/s
Velocity Head	0.42	ft
Specific Energy	1,535.42	ft
Froude Number	0.71	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.0 ft.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+35	0.045
1+35	2+35	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,534.00
1+00	1,533.00
1+15	1,532.00
1+20	1,532.00
1+35	1,533.00
2+35	1,534.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.013900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,531.00	1,536.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,532.00	N/A	N/A	N/A	N/A	N/A
1,532.00	N/A	N/A	N/A	N/A	N/A
1,532.00	N/A	N/A	N/A	N/A	N/A
1,532.50	11.19	1.79	6.2	20.03	20.00
1,533.00	53.55	2.68	20.0	35.07	35.00
1,533.50	134.43	2.15	62.5	135.07	135.00
1,534.00	417.51	2.69	155.0	235.08	235.00
1,534.50	1,156.46	4.24	272.5	236.08	235.00
1,535.00	2,025.01	5.19	390.0	237.08	235.00
1,535.50	3,085.86	6.08	507.5	238.08	235.00
1,536.00	4,320.11	6.91	625.0	239.08	235.00

Project Summary Report

Project Description	
Worksheet	C15-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.013900	ft/ft
Water Surface Elevation	1,535.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,531.00 to 1,534.00	
Discharge	3,055.58	cfs
Flow Area	517.5	ft²
Wetted Perimeter	272.74	ft
Top Width	270.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,534.67	ft
Critical Slope	0.026110	ft/ft
Velocity	5.90	ft/s
Velocity Head	0.54	ft
Specific Energy	1,535.54	ft
Froude Number	0.75	
Flow Type	Subcritical	

Calculation Messages:
Water elevation exceeds lowest end station by 1.0 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+75	0.050
0+75	1+00	0.045
1+00	1+30	0.050
1+30	1+70	0.045
1+70	2+70	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,534.00
0+75	1,533.00
0+85	1,531.00
0+90	1,531.00
1+00	1,533.00
1+15	1,534.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+30	1,533.00
1+45	1,531.00
1+55	1,531.00
1+70	1,533.00
2+70	1,534.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C15-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.013900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,531.00	1,536.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,531.00	N/A	N/A	N/A	N/A	N/A
1,531.50	21.86	2.06	10.6	27.67	27.50
1,532.00	82.97	3.02	27.5	40.33	40.00
1,532.50	191.23	3.78	50.6	53.00	52.50
1,533.00	355.39	4.44	80.0	65.66	65.00
1,533.50	456.41	3.30	138.1	168.20	167.50
1,534.00	851.82	3.44	247.5	270.74	270.00
1,534.50	1,737.93	4.54	382.5	271.74	270.00
1,535.00	3,055.58	5.90	517.5	272.74	270.00
1,535.50	4,513.64	6.92	652.5	273.74	270.00
1,536.00	6,046.43	7.68	787.5	274.74	270.00

Project Summary Report

Project Description	
Worksheet	C17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010300	ft/ft
Water Surface Elevation	1,515.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,513.00 to 1,515.00	
Discharge	311.04	cfs
Flow Area	140.0	ft²
Wetted Perimeter	225.11	ft
Top Width	225.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,514.68	ft
Critical Slope	0.045345	ft/ft
Velocity	2.22	ft/s
Velocity Head	0.08	ft
Specific Energy	1,515.08	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,515.00
1+00	1,514.00
1+10	1,513.00
1+15	1,513.00
1+25	1,514.00
2+25	1,515.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,512.00	1,517.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,513.00	N/A	N/A	N/A	N/A	N/A
1,513.00	N/A	N/A	N/A	N/A	N/A
1,513.00	N/A	N/A	N/A	N/A	N/A
1,513.50	8.04	1.61	5.0	15.05	15.00
1,514.00	35.66	2.38	15.0	25.10	25.00
1,514.50	90.53	1.72	52.5	125.10	125.00
1,515.00	311.04	2.22	140.0	225.11	225.00
1,515.50	888.95	3.52	252.5	226.11	225.00
1,516.00	1,588.56	4.35	365.0	227.11	225.00
1,516.50	2,446.83	5.12	477.5	228.11	225.00
1,517.00	3,447.89	5.84	590.0	229.11	225.00

Project Summary Report

Project Description	
Worksheet	C17-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010300	ft/ft
Water Surface Elevation	1,515.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,512.00 to 1,515.00	
Discharge	726.77	cfs
Flow Area	260.0	ft²
Wetted Perimeter	300.21	ft
Top Width	300.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,514.53	ft
Critical Slope	0.038136	ft/ft
Velocity	2.80	ft/s
Velocity Head	0.12	ft
Specific Energy	1,515.12	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+80	0.045
1+80	3+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,515.00
1+20	1,514.00
1+40	1,512.00
1+60	1,512.00
1+80	1,514.00
3+00	1,515.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C17-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,512.00	1,517.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,512.00	N/A	N/A	N/A	N/A	N/A
1,512.50	23.34	1.87	12.5	30.05	30.00
1,513.00	82.85	2.76	30.0	40.10	40.00
1,513.50	181.39	3.46	52.5	50.15	50.00
1,514.00	324.06	4.05	80.0	60.20	60.00
1,514.50	368.96	2.64	140.0	180.20	180.00
1,515.00	726.77	2.80	260.0	300.21	300.00
1,515.50	1,600.95	3.90	410.0	301.21	300.00
1,516.00	2,649.89	4.73	560.0	302.21	300.00
1,516.50	4,162.84	5.86	710.0	303.21	300.00
1,517.00	5,607.60	6.52	860.0	304.21	300.00

Project Summary Report

Project Description	
Worksheet	C18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012700	ft/ft
Water Surface Elevation	1,535.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,532.00 to 1,535.00	
Discharge	706.84	cfs
Flow Area	255.0	ft²
Wetted Perimeter	345.27	ft
Top Width	345.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,534.66	ft
Critical Slope	0.041283	ft/ft
Velocity	2.77	ft/s
Velocity Head	0.12	ft
Specific Energy	1,535.12	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+95	0.045
1+95	3+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,535.00
1+50	1,534.00
1+65	1,532.00
1+80	1,532.00
1+95	1,534.00
3+45	1,535.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,532.00	1,537.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,532.00	N/A	N/A	N/A	N/A	N/A
1,532.50	19.42	2.07	9.4	22.57	22.50
1,533.00	68.91	3.06	22.5	30.13	30.00
1,533.50	150.83	3.83	39.4	37.70	37.50
1,534.00	269.42	4.49	60.0	45.27	45.00
1,534.50	297.25	2.48	120.0	195.27	195.00
1,535.00	706.84	2.77	255.0	345.27	345.00
1,535.50	1,701.59	3.98	427.5	346.27	345.00
1,536.00	3,206.77	5.34	600.0	347.27	345.00
1,536.50	4,734.78	6.13	772.5	348.27	345.00
1,537.00	6,507.23	6.89	945.0	349.27	345.00

Project Summary Report

Project Description	
Worksheet	C18-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data		
Slope	0.012700	ft/ft
Water Surface Elevation	1,535.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,533.00 to 1,535.00	
Discharge	641.38	cfs
Flow Area	250.0	ft²
Wetted Perimeter	390.22	ft
Top Width	390.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,534.73	ft
Critical Slope	0.042534	ft/ft
Velocity	2.57	ft/s
Velocity Head	0.10	ft
Specific Energy	1,535.10	ft
Froude Number	0.56	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+65	0.050
2+65	2+90	0.045
2+90	3+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,535.00
1+00	1,534.00
1+10	1,533.00
1+15	1,533.00
1+25	1,534.00
1+95	1,535.00
2+65	1,534.00
2+75	1,533.00
2+80	1,533.00

Natural Channel Points	
Station (ft)	Elevation (ft)
2+90	1,534.00
3+90	1,535.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,532.00	1,537.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,533.00	N/A	N/A	N/A	N/A	N/A
1,533.00	N/A	N/A	N/A	N/A	N/A
1,533.00	N/A	N/A	N/A	N/A	N/A
1,533.50	17.85	1.79	10.0	30.10	30.00
1,534.00	79.21	2.64	30.0	50.20	50.00
1,534.50	205.28	2.11	97.5	220.21	220.00
1,535.00	641.38	2.57	250.0	390.22	390.00
1,535.50	1,775.46	3.99	445.0	391.22	390.00
1,536.00	3,141.62	4.91	640.0	392.22	390.00
1,536.50	4,816.98	5.77	835.0	393.22	390.00
1,537.00	6,772.20	6.57	1,030.0	394.22	390.00

Project Summary Report

Project Description	
Worksheet	C19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010600	ft/ft
Water Surface Elevation	1,510.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,507.00 to 1,510.00	
Discharge	1,636.04	cfs
Flow Area	640.0	ft²
Wetted Perimeter	930.66	ft
Top Width	930.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,509.68	ft
Critical Slope	0.038353	ft/ft
Velocity	2.56	ft/s
Velocity Head	0.10	ft
Specific Energy	1,510.10	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+35	0.045
1+35	2+35	0.050
2+35	2+60	0.045
2+60	4+00	0.050
4+00	4+50	0.045
4+50	8+00	0.050
8+00	8+30	0.045
8+30	9+30	0.050

Natural Channel Points

Station (ft)	*Elevation* (ft)
0+00	1,510.00
1+00	1,509.00
1+15	1,508.00
1+20	1,508.00
1+35	1,509.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+85	1,510.00
2+35	1,509.00
2+45	1,508.00
2+50	1,508.00
2+60	1,509.00
3+30	1,510.00
4+00	1,509.00
4+20	1,508.00
4+30	1,508.00
4+50	1,509.00
6+25	1,510.00
8+00	1,509.00
8+10	1,507.00
8+20	1,507.00
8+30	1,509.00
9+30	1,510.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,507.00	1,512.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,507.00	N/A	N/A	N/A	N/A	N/A
1,507.50	11.80	1.89	6.2	15.10	15.00
1,508.00	41.82	2.79	15.0	20.20	20.00
1,508.50	125.73	2.65	47.5	90.41	90.00
1,509.00	318.75	3.04	105.0	140.61	140.00
1,509.50	560.18	2.05	273.8	535.64	535.00
1,510.00	1,636.04	2.56	640.0	930.66	930.00
1,510.50	4,145.30	3.75	1,105.0	931.66	930.00
1,511.00	7,320.30	4.66	1,570.0	932.66	930.00
1,511.50	11,053.24	5.43	2,035.0	933.66	930.00
1,512.00	15,403.04	6.16	2,500.0	934.66	930.00

Project Summary Report

Project Description	
Worksheet	C19-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010600	ft/ft
Water Surface Elevation	1,510.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,507.00 to 1,510.00	
Discharge	1,356.55	cfs
Flow Area	495.0	ft²
Wetted Perimeter	630.27	ft
Top Width	630.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,509.62	ft
Critical Slope	0.037629	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	1,510.12	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+40	0.045
1+40	4+20	0.050
4+20	4+80	0.045
4+80	6+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,510.00
0+80	1,509.00
1+00	1,508.00
1+20	1,508.00
1+40	1,509.00
2+80	1,510.00
4+20	1,509.00
4+40	1,507.00
4+60	1,507.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
4+80	1,509.00
6+30	1,510.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C19-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,507.00	1,512.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,507.00	N/A	N/A	N/A	N/A	N/A
1,507.50	23.68	1.89	12.5	30.05	30.00
1,508.00	84.05	2.80	30.0	40.10	40.00
1,508.50	210.52	3.12	67.5	90.17	90.00
1,509.00	432.46	3.60	120.0	120.25	120.00
1,509.50	595.06	2.44	243.8	375.26	375.00
1,510.00	1,356.55	2.74	495.0	630.27	630.00
1,510.50	3,021.30	3.73	810.0	631.27	630.00
1,511.00	5,466.98	4.86	1,125.0	632.27	630.00
1,511.50	8,237.90	5.72	1,440.0	633.27	630.00
1,512.00	11,270.43	6.42	1,755.0	634.27	630.00

Project Summary Report

Project Description	
Worksheet	C21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009300	ft/ft
Water Surface Elevation	1,496.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,494.00 to 1,496.00	
Discharge	327.38	cfs
Flow Area	150.0	ft²
Wetted Perimeter	230.11	ft
Top Width	230.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,495.64	ft
Critical Slope	0.044506	ft/ft
Velocity	2.18	ft/s
Velocity Head	0.07	ft
Specific Energy	1,496.07	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,496.00
1+00	1,495.00
1+10	1,494.00
1+20	1,494.00
1+30	1,495.00
2+30	1,496.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,493.00	1,498.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,494.00	N/A	N/A	N/A	N/A	N/A
1,494.00	N/A	N/A	N/A	N/A	N/A
1,494.00	N/A	N/A	N/A	N/A	N/A
1,494.50	12.40	1.65	7.5	20.05	20.00
1,495.00	48.50	2.42	20.0	30.10	30.00
1,495.50	105.02	1.75	60.0	130.10	130.00
1,496.00	327.38	2.18	150.0	230.11	230.00
1,496.50	917.08	3.46	265.0	231.11	230.00
1,497.00	1,607.95	4.23	380.0	232.11	230.00
1,497.50	2,452.64	4.95	495.0	233.11	230.00
1,498.00	3,435.92	5.63	610.0	234.11	230.00

Project Summary Report

Project Description	
Worksheet	C21-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009300	ft/ft
Water Surface Elevation	1,496.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,493.00 to 1,496.00	
Discharge	530.89	cfs
Flow Area	205.0	ft²
Wetted Perimeter	245.28	ft
Top Width	245.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,495.51	ft
Critical Slope	0.038907	ft/ft
Velocity	2.59	ft/s
Velocity Head	0.10	ft
Specific Energy	1,496.10	ft
Froude Number	0.50	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+45	0.045
1+45	2+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,496.00
1+00	1,495.00
1+15	1,493.00
1+30	1,493.00
1+45	1,495.00
2+45	1,496.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C21-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,493.00	1,498.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,493.00	N/A	N/A	N/A	N/A	N/A
1,493.50	16.62	1.77	9.4	22.57	22.50
1,494.00	58.97	2.62	22.5	30.13	30.00
1,494.50	129.07	3.28	39.4	37.70	37.50
1,495.00	230.55	3.84	60.0	45.27	45.00
1,495.50	260.01	2.42	107.5	145.27	145.00
1,496.00	530.89	2.59	205.0	245.28	245.00
1,496.50	1,190.94	3.64	327.5	246.28	245.00
1,497.00	1,992.17	4.43	450.0	247.28	245.00
1,497.50	3,141.90	5.49	572.5	248.28	245.00
1,498.00	4,248.85	6.11	695.0	249.28	245.00

Project Summary Report

Project Description	
Worksheet	C39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012400	ft/ft
Water Surface Elevation	1,365.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,363.00 to 1,365.00	
Discharge	470.93	cfs
Flow Area	185.0	ft²
Wetted Perimeter	280.07	ft
Top Width	280.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,364.71	ft
Critical Slope	0.043521	ft/ft
Velocity	2.55	ft/s
Velocity Head	0.10	ft
Specific Energy	1,365.10	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+60	0.045
1+60	2+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,365.00
1+20	1,364.00
1+35	1,363.00
1+45	1,363.00
1+60	1,364.00
2+80	1,365.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,363.00	1,367.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,363.00	N/A	N/A	N/A	N/A	N/A
1,363.50	15.96	1.82	8.8	25.03	25.00
1,364.00	67.12	2.68	25.0	40.07	40.00
1,364.50	153.49	2.05	75.0	160.07	160.00
1,365.00	470.93	2.55	185.0	280.07	280.00
1,365.50	1,308.04	4.02	325.0	281.07	280.00
1,366.00	2,286.33	4.92	465.0	282.07	280.00
1,366.50	3,482.02	5.76	605.0	283.07	280.00
1,367.00	4,874.06	6.54	745.0	284.07	280.00

Project Summary Report

Project Description	
Worksheet	C39-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012400	ft/ft
Water Surface Elevation	1,365.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,363.00 to 1,365.00	
Discharge	621.15	cfs
Flow Area	240.0	ft²
Wetted Perimeter	355.06	ft
Top Width	355.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,364.70	ft
Critical Slope	0.043013	ft/ft
Velocity	2.59	ft/s
Velocity Head	0.10	ft
Specific Energy	1,365.10	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+05	0.045
2+05	3+55	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,365.00
1+50	1,364.00
1+70	1,363.00
1+85	1,363.00
2+05	1,364.00
3+55	1,365.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C39-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,363.00	1,367.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,363.00	N/A	N/A	N/A	N/A	N/A
1,363.50	23.13	1.85	12.5	35.02	35.00
1,364.00	95.16	2.72	35.0	55.05	55.00
1,364.50	210.58	2.11	100.0	205.05	205.00
1,365.00	621.15	2.59	240.0	355.06	355.00
1,365.50	1,706.80	4.09	417.5	356.06	355.00
1,366.00	2,959.61	4.97	595.0	357.06	355.00
1,366.50	4,489.25	5.81	772.5	358.06	355.00
1,367.00	6,269.53	6.60	950.0	359.06	355.00

Project Summary Report

Project Description	
Worksheet	C40
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012500	ft/ft
Water Surface Elevation	1,325.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,323.00 to 1,325.00	
Discharge	395.92	cfs
Flow Area	155.0	ft²
Wetted Perimeter	235.08	ft
Top Width	235.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,324.71	ft
Critical Slope	0.043518	ft/ft
Velocity	2.55	ft/s
Velocity Head	0.10	ft
Specific Energy	1,325.10	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+35	0.045
1+35	2+35	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,325.00
1+00	1,324.00
1+15	1,323.00
1+20	1,323.00
1+35	1,324.00
2+35	1,325.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C40
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	*Discharge*

Input Data	
Slope	0.012500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,322.00	1,327.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,323.00	N/A	N/A	N/A	N/A	N/A
1,323.00	N/A	N/A	N/A	N/A	N/A
1,323.00	N/A	N/A	N/A	N/A	N/A
1,323.50	10.61	1.70	6.2	20.03	20.00
1,324.00	50.78	2.54	20.0	35.07	35.00
1,324.50	127.48	2.04	62.5	135.07	135.00
1,325.00	395.92	2.55	155.0	235.08	235.00
1,325.50	1,096.68	4.02	272.5	236.08	235.00
1,326.00	1,920.32	4.92	390.0	237.08	235.00
1,326.50	2,926.33	5.77	507.5	238.08	235.00
1,327.00	4,096.78	6.55	625.0	239.08	235.00

Project Summary Report

Project Description	
Worksheet	C40-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data		
Slope	0.012500	ft/ft
Water Surface Elevation	1,325.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings *Coefficient*	0.049	
Elevation Range	1,322.00 to 1,325.00	
Discharge	620.47	cfs
Flow Area	230.0	ft²
Wetted Perimeter	320.27	ft
Top Width	320.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,324.67	ft
Critical Slope	0.041890	ft/ft
Velocity	2.70	ft/s
Velocity Head	0.11	ft
Specific Energy	1,325.11	ft
Froude Number	0.56	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+40	0.050
1+40	1+80	0.045
1+80	3+20	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,325.00
1+40	1,324.00
1+55	1,322.00
1+65	1,322.00
1+80	1,324.00
3+20	1,325.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C40-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,322.00	1,327.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,322.00	N/A	N/A	N/A	N/A	N/A
1,322.50	13.58	1.98	6.9	17.57	17.50
1,323.00	50.75	2.90	17.5	25.13	25.00
1,323.50	115.69	3.63	31.9	32.70	32.50
1,324.00	213.25	4.27	50.0	40.27	40.00
1,324.50	248.77	2.37	105.0	180.27	180.00
1,325.00	620.47	2.70	230.0	320.27	320.00
1,325.50	1,518.53	3.89	390.0	321.27	320.00
1,326.00	2,868.32	5.22	550.0	322.27	320.00
1,326.50	4,263.43	6.00	710.0	323.27	320.00
1,327.00	5,883.27	6.76	870.0	324.27	320.00

Project Summary Report

Project Description	
Worksheet	C41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,327.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.048	
Elevation Range	1,325.00 to 1,327.00	
Discharge	502.61	cfs
Flow Area	195.0	ft²
Wetted Perimeter	280.06	ft
Top Width	280.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,326.68	ft
Critical Slope	0.040065	ft/ft
Velocity	2.58	ft/s
Velocity Head	0.10	ft
Specific Energy	1,327.10	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+30	0.050
1+30	1+80	0.045
1+80	2+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,327.00
1+30	1,326.00
1+50	1,325.00
1+60	1,325.00
1+80	1,326.00
2+80	1,327.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C41
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	*Improved Lotter's Method*
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,325.00	1,329.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,325.00	N/A	N/A	N/A	N/A	N/A
1,325.50	16.72	1.67	10.0	30.02	30.00
1,326.00	74.20	2.47	30.0	50.05	50.00
1,326.50	184.87	2.21	83.7	165.05	165.00
1,327.00	502.61	2.58	195.0	280.06	280.00
1,327.50	1,213.93	3.62	335.0	281.06	280.00
1,328.00	2,261.86	4.76	475.0	282.06	280.00
1,328.50	3,412.24	5.55	615.0	283.06	280.00
1,329.00	4,748.21	6.29	755.0	284.06	280.00

Project Summary Report

Project Description	
Worksheet	C41-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,327.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,325.00 to 1,327.00	
Discharge	385.04	cfs
Flow Area	170.0	ft²
Wetted Perimeter	285.11	ft
Top Width	285.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,326.71	ft
Critical Slope	0.044958	ft/ft
Velocity	2.26	ft/s
Velocity Head	0.08	ft
Specific Energy	1,327.08	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+40	0.050
1+40	1+65	0.045
1+65	2+85	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,327.00
1+40	1,326.00
1+50	1,325.00
1+55	1,325.00
1+65	1,326.00
2+85	1,327.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C41-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,325.00	1,329.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,325.00	N/A	N/A	N/A	N/A	N/A
1,325.50	8.34	1.67	5.0	15.05	15.00
1,326.00	37.02	2.47	15.0	25.10	25.00
1,326.50	106.47	1.77	60.0	155.10	155.00
1,327.00	385.04	2.26	170.0	285.11	285.00
1,327.50	1,110.69	3.55	312.5	286.11	285.00
1,328.00	2,018.34	4.44	455.0	287.11	285.00
1,328.50	3,136.46	5.25	597.5	288.11	285.00
1,329.00	4,444.28	6.01	740.0	289.11	285.00

Project Summary Report

Project Description	
Worksheet	C42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,290.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,287.00 to 1,290.00	
Discharge	596.76	cfs
Flow Area	210.0	ft²
Wetted Perimeter	250.21	ft
Top Width	250.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,289.58	ft
Critical Slope	0.038796	ft/ft
Velocity	2.84	ft/s
Velocity Head	0.13	ft
Specific Energy	1,290.13	ft
Froude Number	0.55	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+50	0.045
1+50	2+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,290.00
1+00	1,289.00
1+20	1,287.00
1+30	1,287.00
1+50	1,289.00
2+50	1,290.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C42
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,287.00	1,292.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,287.00	N/A	N/A	N/A	N/A	N/A
1,287.50	13.55	1.81	7.5	20.05	20.00
1,288.00	52.98	2.65	20.0	30.10	30.00
1,288.50	124.65	3.32	37.5	40.15	40.00
1,289.00	235.09	3.92	60.0	50.20	50.00
1,289.50	289.33	2.63	110.0	150.20	150.00
1,290.00	596.76	2.84	210.0	250.21	250.00
1,290.50	1,335.45	3.99	335.0	251.21	250.00
1,291.00	2,231.85	4.85	460.0	252.21	250.00
1,291.50	3,503.93	5.99	585.0	253.21	250.00
1,292.00	4,742.54	6.68	710.0	254.21	250.00

Project Summary Report

Project Description	
Worksheet	C42-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,290.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,287.00 to 1,290.00	
Discharge	422.95	cfs
Flow Area	150.0	ft²
Wetted Perimeter	190.41	ft
Top Width	190.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,289.62	ft
Critical Slope	0.037105	ft/ft
Velocity	2.82	ft/s
Velocity Head	0.12	ft
Specific Energy	1,290.12	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+60	0.050
0+60	0+90	0.045
0+90	1+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,290.00
0+60	1,289.00
0+70	1,287.00
0+80	1,287.00
0+90	1,289.00
1+90	1,290.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C42-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,287.00	1,292.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,287.00	N/A	N/A	N/A	N/A	N/A
1,287.50	12.08	1.93	6.2	15.10	15.00
1,288.00	42.79	2.85	15.0	20.20	20.00
1,288.50	93.60	3.57	26.3	25.30	25.00
1,289.00	167.11	4.18	40.0	30.40	30.00
1,289.50	186.51	2.49	75.0	110.40	110.00
1,290.00	422.95	2.82	150.0	190.41	190.00
1,290.50	933.55	3.81	245.0	191.41	190.00
1,291.00	1,614.76	4.75	340.0	192.41	190.00
1,291.50	2,542.22	5.64	435.0	193.41	190.00
1,292.00	3,460.84	6.53	530.0	194.41	190.00

Project Summary Report

Project Description	
Worksheet	C42-B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,290.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.047	
Elevation Range	1,287.00 to 1,290.00	
Discharge	432.81	cfs
Flow Area	155.0	ft²
Wetted Perimeter	200.41	ft
Top Width	200.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,289.63	ft
Critical Slope	0.037198	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	1,290.12	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+70	0.050
0+70	1+00	0.045
1+00	2+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,290.00
0+70	1,289.00
0+80	1,287.00
0+90	1,287.00
1+00	1,289.00
2+00	1,290.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C42-B
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,287.00	1,292.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,287.00	N/A	N/A	N/A	N/A	N/A
1,287.50	12.08	1.93	6.2	15.10	15.00
1,288.00	42.79	2.85	15.0	20.20	20.00
1,288.50	93.60	3.57	26.3	25.30	25.00
1,289.00	167.11	4.18	40.0	30.40	30.00
1,289.50	185.91	2.44	76.2	115.40	115.00
1,290.00	432.81	2.79	155.0	200.41	200.00
1,290.50	978.44	3.84	255.0	201.41	200.00
1,291.00	1,670.16	4.70	355.0	202.41	200.00
1,291.50	2,641.60	5.81	455.0	203.41	200.00
1,292.00	3,604.96	6.50	555.0	204.41	200.00

Project Summary Report

Project Description	
Worksheet	C43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,295.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,291.00 to 1,295.00	
Discharge	726.64	cfs
Flow Area	270.0	ft²
Wetted Perimeter	345.45	ft
Top Width	345.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,294.59	ft
Critical Slope	0.040229	ft/ft
Velocity	2.69	ft/s
Velocity Head	0.11	ft
Specific Energy	1,295.11	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+95	0.045
1+95	3+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
1+50	1,294.00
1+70	1,291.00
1+75	1,291.00
1+95	1,294.00
3+45	1,295.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C43
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,291.00	1,297.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,291.00	N/A	N/A	N/A	N/A	N/A
1,291.50	7.27	1.74	4.2	11.74	11.67
1,292.00	29.87	2.56	11.7	18.48	18.33
1,292.50	72.53	3.22	22.5	25.22	25.00
1,293.00	139.78	3.81	36.7	31.96	31.67
1,293.50	235.76	4.35	54.2	38.71	38.33
1,294.00	364.37	4.86	75.0	45.45	45.00
1,294.50	337.98	2.50	135.0	195.45	195.00
1,295.00	726.64	2.69	270.0	345.45	345.00
1,295.50	1,693.07	3.83	442.5	346.45	345.00
1,296.00	2,893.77	4.71	615.0	347.45	345.00
1,296.50	4,640.28	5.89	787.5	348.45	345.00
1,297.00	6,314.22	6.58	960.0	349.45	345.00

Project Summary Report

Project Description	
Worksheet	C43-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011100	ft/ft
Water Surface Elevation	1,295.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Methor	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,291.00 to 1,295.00	
Discharge	1,012.82	cfs
Flow Area	330.0	ft²
Wetted Perimeter	350.31	ft
Top Width	350.00	ft
Actual Depth	4.00	ft
Critical Elevation	1,294.49	ft
Critical Slope	0.036234	ft/ft
Velocity	3.07	ft/s
Velocity Head	0.15	ft
Specific Energy	1,295.15	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+40	0.050
1+40	2+10	0.045
2+10	3+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,295.00
1+40	1,294.00
1+70	1,291.00
1+80	1,291.00
2+10	1,294.00
3+50	1,295.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C43-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,291.00	1,297.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,291.00	N/A	N/A	N/A	N/A	N/A
1,291.50	13.55	1.81	7.5	20.05	20.00
1,292.00	52.98	2.65	20.0	30.10	30.00
1,292.50	124.65	3.32	37.5	40.15	40.00
1,293.00	235.09	3.92	60.0	50.20	50.00
1,293.50	390.38	4.46	87.5	60.25	60.00
1,294.00	596.27	4.97	120.0	70.30	70.00
1,294.50	574.85	3.03	190.0	210.30	210.00
1,295.00	1,012.82	3.07	330.0	350.31	350.00
1,295.50	2,141.66	4.24	505.0	351.31	350.00
1,296.00	3,451.44	5.08	680.0	352.31	350.00
1,296.50	5,006.46	5.86	855.0	353.31	350.00
1,297.00	7,217.71	7.01	1,030.0	354.31	350.00

Project Summary Report

Project Description	
Worksheet	C45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008700	ft/ft
Water Surface Elevation	1,255.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,252.00 to 1,255.00	
Discharge	430.94	cfs
Flow Area	170.0	ft²
Wetted Perimeter	200.28	ft
Top Width	200.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,254.48	ft
Critical Slope	0.038647	ft/ft
Velocity	2.53	ft/s
Velocity Head	0.10	ft
Specific Energy	1,255.10	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+20	0.045
1+20	2+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,255.00
0+80	1,254.00
0+95	1,252.00
1+05	1,252.00
1+20	1,254.00
2+00	1,255.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C45
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,252.00	1,257.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,252.00	N/A	N/A	N/A	N/A	N/A
1,252.50	11.33	1.65	6.9	17.57	17.50
1,253.00	42.34	2.42	17.5	25.13	25.00
1,253.50	96.52	3.03	31.9	32.70	32.50
1,254.00	177.91	3.56	50.0	40.27	40.00
1,254.50	212.62	2.36	90.0	120.27	120.00
1,255.00	430.94	2.53	170.0	200.28	200.00
1,255.50	957.82	3.55	270.0	201.28	200.00
1,256.00	1,593.74	4.31	370.0	202.28	200.00
1,256.50	2,500.87	5.32	470.0	203.28	200.00
1,257.00	3,376.67	5.92	570.0	204.28	200.00

Project Summary Report

Project Description	
Worksheet	C45-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008700	ft/ft
Water Surface Elevation	1,255.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.046	
Elevation Range	1,252.00 to 1,255.00	
Discharge	548.14	cfs
Flow Area	200.0	ft²
Wetted Perimeter	230.21	ft
Top Width	230.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,254.52	ft
Critical Slope	0.033792	ft/ft
Velocity	2.74	ft/s
Velocity Head	0.12	ft
Specific Energy	1,255.12	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+30	0.045
1+30	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,255.00
0+80	1,254.00
1+00	1,252.00
1+10	1,252.00
1+30	1,254.00
2+30	1,255.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C45-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,252.00	1,257.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,252.00	N/A	N/A	N/A	N/A	N/A
1,252.50	11.99	1.60	7.5	20.05	20.00
1,253.00	46.90	2.35	20.0	30.10	30.00
1,253.50	110.36	2.94	37.5	40.15	40.00
1,254.00	208.13	3.47	60.0	50.20	50.00
1,254.50	258.73	2.41	107.5	140.21	140.00
1,255.00	548.14	2.74	200.0	230.21	230.00
1,255.50	1,139.90	3.62	315.0	231.21	230.00
1,256.00	1,879.47	4.37	430.0	232.21	230.00
1,256.50	2,926.09	5.37	545.0	233.21	230.00
1,257.00	3,943.40	5.97	660.0	234.21	230.00

Project Summary Report

Project Description	
Worksheet	C46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008700	ft/ft
Water Surface Elevation	1,234.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.050	
Elevation Range	1,232.00 to 1,234.00	
Discharge	328.20	cfs
Flow Area	165.0	ft²
Wetted Perimeter	275.11	ft
Top Width	275.00	ft
Actual Depth	2.00	ft
Critical Elevation	1,233.66	ft
Critical Slope	0.046643	ft/ft
Velocity	1.99	ft/s
Velocity Head	0.06	ft
Specific Energy	1,234.06	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+50	0.045
1+50	2+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,234.00
1+25	1,233.00
1+35	1,232.00
1+40	1,232.00
1+50	1,233.00
2+75	1,234.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C46
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,231.00	1,236.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,232.00	N/A	N/A	N/A	N/A	N/A
1,232.00	N/A	N/A	N/A	N/A	N/A
1,232.00	N/A	N/A	N/A	N/A	N/A
1,232.50	7.39	1.48	5.0	15.05	15.00
1,233.00	32.78	2.19	15.0	25.10	25.00
1,233.50	88.59	1.51	58.7	150.10	150.00
1,234.00	328.20	1.99	165.0	275.11	275.00
1,234.50	955.59	3.16	302.5	276.11	275.00
1,235.00	1,732.39	3.94	440.0	277.11	275.00
1,235.50	2,688.76	4.66	577.5	278.11	275.00
1,236.00	3,806.95	5.32	715.0	279.11	275.00

Project Summary Report

Project Description	
Worksheet	C46-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008700	ft/ft
Water Surface Elevation	1,234.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,231.00 to 1,234.00	
Discharge	533.30	cfs
Flow Area	240.0	ft²
Wetted Perimeter	340.27	ft
Top Width	340.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,233.58	ft
Critical Slope	0.042803	ft/ft
Velocity	2.22	ft/s
Velocity Head	0.08	ft
Specific Energy	1,234.08	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+90	0.045
1+90	3+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,234.00
1+50	1,233.00
1+65	1,231.00
1+75	1,231.00
1+90	1,233.00
3+40	1,234.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	C46-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data	
Slope	0.008700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,231.00	1,236.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,231.00	N/A	N/A	N/A	N/A	N/A
1,231.50	11.33	1.65	6.9	17.57	17.50
1,232.00	42.34	2.42	17.5	25.13	25.00
1,232.50	96.52	3.03	31.9	32.70	32.50
1,233.00	177.91	3.56	50.0	40.27	40.00
1,233.50	207.96	1.93	107.5	190.27	190.00
1,234.00	533.30	2.22	240.0	340.27	340.00
1,234.50	1,319.80	3.22	410.0	341.27	340.00
1,235.00	2,501.91	4.31	580.0	342.27	340.00
1,235.50	3,732.83	4.98	750.0	343.27	340.00
1,236.00	5,183.49	5.61	920.0	344.27	340.00

Project Summary Report

Project Description	
Worksheet	D01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012000	ft/ft
Water Surface Elevation	1,521.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,520.00 to 1,525.00	
Discharge	175.42	cfs
Flow Area	45.0	ft²
Wetted Perimeter	40.22	ft
Top Width	40.00	ft
Actual Depth	1.50	ft
Critical Elevation	1,521.17	ft
Critical Slope	0.030635	ft/ft
Velocity	3.90	ft/s
Velocity Head	0.24	ft
Specific Energy	1,521.74	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+60	0.045
2+60	4+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,525.00
1+00	1,524.00
2+00	1,523.00
2+20	1,520.00
2+40	1,520.00
2+60	1,523.00
3+60	1,524.00
4+60	1,525.00

Notes: Remainder flows

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,520.00	1,527.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,520.00	N/A	N/A	N/A	N/A	N/A
1,520.50	24.28	2.08	11.7	26.74	26.67
1,521.00	82.88	3.11	26.7	33.48	33.33
1,521.50	175.42	3.90	45.0	40.22	40.00
1,522.00	304.58	4.57	66.7	46.96	46.67
1,522.50	473.56	5.17	91.7	53.71	53.33
1,523.00	685.63	5.71	120.0	60.45	60.00
1,523.50	626.88	3.58	175.0	160.45	160.00
1,524.00	978.85	3.50	280.0	260.46	260.00
1,524.50	1,631.96	3.75	435.0	360.46	360.00
1,525.00	2,628.61	4.11	640.0	460.47	460.00
1,525.50	4,474.90	5.14	870.0	461.47	460.00
1,526.00	6,557.93	5.96	1,100.0	462.47	460.00
1,526.50	9,667.59	7.27	1,330.0	463.47	460.00
1,527.00	12,350.53	7.92	1,560.0	464.47	460.00

Project Summary Report

Project Description	
Worksheet	D01-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012000	ft/ft
Water Surface Elevation	1,521.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,521.00 to 1,525.00	
Discharge	14.08	cfs
Flow Area	7.5	ft^2
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,521.35	ft
Critical Slope	0.045364	ft/ft
Velocity	1.88	ft/s
Velocity Head	0.05	ft
Specific Energy	1,521.55	ft
Froude Number	0.54	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+50	0.045
2+50	4+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,525.00
1+00	1,524.00
2+00	1,523.00
2+20	1,521.00
2+30	1,521.00
2+50	1,523.00
3+50	1,524.00
4+50	1,525.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D01-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,520.00	1,527.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,521.00	N/A	N/A	N/A	N/A	N/A
1,521.00	N/A	N/A	N/A	N/A	N/A
1,521.00	N/A	N/A	N/A	N/A	N/A
1,521.50	14.08	1.88	7.5	20.05	20.00
1,522.00	55.09	2.75	20.0	30.10	30.00
1,522.50	129.61	3.46	37.5	40.15	40.00
1,523.00	244.43	4.07	60.0	50.20	50.00
1,523.50	300.83	2.73	110.0	150.20	150.00
1,524.00	620.48	2.95	210.0	250.21	250.00
1,524.50	1,210.68	3.36	360.0	350.21	350.00
1,525.00	2,131.76	3.81	560.0	450.22	450.00
1,525.50	3,778.51	4.81	785.0	451.22	450.00
1,526.00	6,092.49	6.03	1,010.0	452.22	450.00
1,526.50	8,345.44	6.76	1,235.0	453.22	450.00
1,527.00	10,887.36	7.46	1,460.0	454.22	450.00

Project Summary Report

Project Description	
Worksheet	*D02*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.019000	ft/ft
Water Surface Elevation	1,691.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,691.00 to 1,694.00	
Discharge	19.76	cfs
Flow Area	8.8	ft²
Wetted Perimeter	25.03	ft
Top Width	25.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,691.40	ft
Critical Slope	0.044543	ft/ft
Velocity	2.26	ft/s
Velocity Head	0.08	ft
Specific Energy	1,691.58	ft
Froude Number	0.67	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+40	0.045
1+40	2+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,694.00
0+50	1,693.00
1+00	1,692.00
1+15	1,691.00
1+25	1,691.00
1+40	1,692.00
1+90	1,693.00
2+40	1,694.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.019000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,690.00	1,696.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,691.00	N/A	N/A	N/A	N/A	N/A
1,691.00	N/A	N/A	N/A	N/A	N/A
1,691.00	N/A	N/A	N/A	N/A	N/A
1,691.50	19.76	2.26	8.8	25.03	25.00
1,692.00	83.09	3.32	25.0	40.07	40.00
1,692.50	182.63	3.18	57.5	90.08	90.00
1,693.00	424.95	3.70	115.0	140.09	140.00
1,693.50	847.41	4.29	197.5	190.10	190.00
1,694.00	1,489.76	4.88	305.0	240.11	240.00
1,694.50	2,819.53	6.63	425.0	241.11	240.00
1,695.00	4,139.18	7.59	545.0	242.11	240.00
1,695.50	5,664.56	8.52	665.0	243.11	240.00
1,696.00	7,379.64	9.40	785.0	244.11	240.00

Project Summary Report

Project Description	
Worksheet	D02-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.019000	ft/ft
Water Surface Elevation	1,691.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,690.00 to 1,694.00	
Discharge	246.37	cfs
Flow Area	52.5	ft²
Wetted Perimeter	50.15	ft
Top Width	50.00	ft
Actual Depth	1.50	ft
Critical Elevation	1,691.33	ft
Critical Slope	0.030099	ft/ft
Velocity	4.69	ft/s
Velocity Head	0.34	ft
Specific Energy	1,691.84	ft
Froude Number	0.81	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+60	0.045
1+60	2+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,694.00
0+50	1,693.00
1+00	1,692.00
1+20	1,690.00
1+40	1,690.00
1+60	1,692.00
2+10	1,693.00
2+60	1,694.00

Notes: Remainder

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D02-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.019000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,690.00	1,696.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,690.00	N/A	N/A	N/A	N/A	N/A
1,690.50	31.70	2.54	12.5	30.05	30.00
1,691.00	112.53	3.75	30.0	40.10	40.00
1,691.50	246.37	4.69	52.5	50.15	50.00
1,692.00	440.13	5.50	80.0	60.20	60.00
1,692.50	569.17	4.65	122.5	110.21	110.00
1,693.00	905.46	4.77	190.0	160.22	160.00
1,693.50	1,449.94	5.13	282.5	210.23	210.00
1,694.00	2,232.95	5.58	400.0	260.24	260.00
1,694.50	3,672.02	6.93	530.0	261.24	260.00
1,695.00	5,230.02	7.92	660.0	262.24	260.00
1,695.50	7,002.37	8.86	790.0	263.24	260.00
1,696.00	9,481.03	10.31	920.0	264.24	260.00

Project Summary Report

Project Description	
Worksheet	D03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.019000	ft/ft
Water Surface Elevation	1,661.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,661.00 to 1,665.00	
Discharge	44.26	cfs
Flow Area	16.3	ft²
Wetted Perimeter	35.10	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,661.40	ft
Critical Slope	0.041046	ft/ft
Velocity	2.72	ft/s
Velocity Head	0.12	ft
Specific Energy	1,661.62	ft
Froude Number	0.70	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+00	0.045
2+00	3+00	0.050
3+00	3+40	0.045
3+40	3+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,665.00
0+75	1,664.00
1+50	1,663.00
1+60	1,661.00
1+90	1,661.00
2+00	1,663.00
2+50	1,664.00
3+00	1,663.00
3+10	1,662.00

Project Summary Report

Natural Channel Points	
Station (ft)	*Elevation* (ft)
3+30	1,662.00
3+40	1,663.00
3+90	1,664.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.019000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,661.00	1,667.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,661.00	N/A	N/A	N/A	N/A	N/A
1,661.50	44.26	2.72	16.3	35.10	35.00
1,662.00	145.26	4.15	35.0	40.20	40.00
1,662.50	327.49	4.76	68.7	75.35	75.00
1,663.00	608.03	5.53	110.0	90.50	90.00
1,663.50	732.50	4.00	183.1	203.01	202.50
1,664.00	1,308.75	4.19	312.5	315.53	315.00
1,664.50	2,622.33	5.47	479.4	353.54	352.50
1,665.00	4,116.10	6.19	665.0	391.54	390.00
1,665.50	6,232.78	7.25	860.0	392.54	390.00
1,666.00	8,691.70	8.24	1,055.0	393.54	390.00
1,666.50	12,051.33	9.64	1,250.0	394.54	390.00
1,667.00	15,131.92	10.47	1,445.0	395.54	390.00

Project Summary Report

Project Description	
Worksheet	D03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.019000	ft/ft
Water Surface Elevation	1,661.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,661.00 to 1,665.00	
Discharge	30.83	cfs
Flow Area	11.9	ft²
Wetted Perimeter	27.57	ft
Top Width	27.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,661.40	ft
Critical Slope	0.041887	ft/ft
Velocity	2.60	ft/s
Velocity Head	0.10	ft
Specific Energy	1,661.60	ft
Froude Number	0.70	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+00	0.045
2+00	3+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,665.00
1+00	1,664.00
1+50	1,663.00
1+65	1,661.00
1+85	1,661.00
2+00	1,663.00
2+50	1,664.00
3+50	1,665.00

Notes: Remainder

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.019000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,661.00	1,667.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,661.00	N/A	N/A	N/A	N/A	N/A
1,661.50	30.83	2.60	11.9	27.57	27.50
1,662.00	106.31	3.87	27.5	35.13	35.00
1,662.50	227.05	4.84	46.9	42.70	42.50
1,663.00	397.32	5.68	70.0	50.27	50.00
1,663.50	485.27	4.51	107.5	100.28	100.00
1,664.00	781.72	4.60	170.0	150.29	150.00
1,664.50	1,276.95	4.73	270.0	250.29	250.00
1,665.00	2,057.28	4.90	420.0	350.30	350.00
1,665.50	3,595.56	6.04	595.0	351.30	350.00
1,666.00	5,469.22	7.10	770.0	352.30	350.00
1,666.50	8,216.51	8.69	945.0	353.30	350.00
1,667.00	10,679.41	9.54	1,120.0	354.30	350.00

Project Summary Report

Project Description	
Worksheet	D04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.013300	ft/ft
Water Surface Elevation	1,601.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,601.00 to 1,605.00	
Discharge	19.88	cfs
Flow Area	9.4	ft²
Wetted Perimeter	22.57	ft
Top Width	22.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,601.36	ft
Critical Slope	0.043756	ft/ft
Velocity	2.12	ft/s
Velocity Head	0.07	ft
Specific Energy	1,601.57	ft
Froude Number	0.58	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+95	0.045
1+95	3+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,605.00
0+75	1,604.00
1+50	1,603.00
1+65	1,601.00
1+80	1,601.00
1+95	1,603.00
2+70	1,604.00
3+45	1,605.00

Notes: Remainder

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.013300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,601.00	1,607.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,601.00	N/A	N/A	N/A	N/A	N/A
1,601.50	19.88	2.12	9.4	22.57	22.50
1,602.00	70.52	3.13	22.5	30.13	30.00
1,602.50	154.36	3.92	39.4	37.70	37.50
1,603.00	275.71	4.60	60.0	45.27	45.00
1,603.50	321.28	3.17	101.2	120.27	120.00
1,604.00	597.88	3.32	180.0	195.28	195.00
1,604.50	1,097.34	3.70	296.3	270.29	270.00
1,605.00	1,864.02	4.14	450.0	345.29	345.00
1,605.50	3,243.94	5.21	622.5	346.29	345.00
1,606.00	5,215.69	6.56	795.0	347.29	345.00
1,606.50	7,061.72	7.30	967.5	348.29	345.00
1,607.00	9,138.33	8.02	1,140.0	349.29	345.00

Project Summary Report

Project Description	
Worksheet	D04-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.013300	ft/ft
Water Surface Elevation	1,601.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,601.00 to 1,605.00	
Discharge	14.01	cfs
Flow Area	6.9	ft^2
Wetted Perimeter	17.57	ft
Top Width	17.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,601.36	ft
Critical Slope	0.044483	ft/ft
Velocity	2.04	ft/s
Velocity Head	0.06	ft
Specific Energy	1,601.56	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+40	0.045
1+40	2+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,605.00
0+50	1,604.00
1+00	1,603.00
1+15	1,601.00
1+25	1,601.00
1+40	1,603.00
1+90	1,604.00
2+40	1,605.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D04-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.013300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,601.00	1,607.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,601.00	N/A	N/A	N/A	N/A	N/A
1,601.50	14.01	2.04	6.9	17.57	17.50
1,602.00	52.35	2.99	17.5	25.13	25.00
1,602.50	119.34	3.74	31.9	32.70	32.50
1,603.00	219.97	4.40	50.0	40.27	40.00
1,603.50	278.52	3.38	82.5	90.28	90.00
1,604.00	493.06	3.52	140.0	140.29	140.00
1,604.50	864.26	3.88	222.5	190.30	190.00
1,605.00	1,420.62	4.30	330.0	240.31	240.00
1,605.50	2,423.92	5.39	450.0	241.31	240.00
1,606.00	3,561.31	6.25	570.0	242.31	240.00
1,606.50	5,160.50	7.48	690.0	243.31	240.00
1,607.00	6,625.80	8.18	810.0	244.31	240.00

Project Summary Report

Project Description	
Worksheet	D05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006600	ft/ft
Water Surface Elevation	1,461.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,460.50 to 1,465.00	
Discharge	3.54	cfs
Flow Area	2.4	ft²
Wetted Perimeter	5.89	ft
Top Width	5.60	ft
Actual Depth	0.50	ft
Critical Elevation	1,460.78	ft
Critical Slope	0.048674	ft/ft
Velocity	1.47	ft/s
Velocity Head	0.03	ft
Specific Energy	1,461.03	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+52	0.050
0+52	0+64	0.045
0+64	1+15	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,465.00
0+25	1,464.00
0+52	1,463.00
0+56	1,460.50
0+60	1,460.50
0+64	1,463.00
0+90	1,464.00
1+15	1,465.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,460.00	1,466.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,460.50	N/A	N/A	N/A	N/A	N/A
1,460.50	N/A	N/A	N/A	N/A	N/A
1,461.00	3.54	1.47	2.4	5.89	5.60
1,461.50	12.07	2.16	5.6	7.77	7.20
1,462.00	25.65	2.67	9.6	9.66	8.80
1,462.50	44.75	3.11	14.4	11.55	10.40
1,463.00	69.95	3.50	20.0	13.43	12.00
1,463.50	71.17	2.18	32.6	39.95	38.50
1,464.00	132.33	2.26	58.5	66.47	65.00
1,464.50	248.11	2.55	97.2	91.49	90.00
1,465.00	426.27	2.87	148.5	116.51	115.00
1,465.50	740.29	3.59	206.0	117.51	115.00
1,466.00	1,177.64	4.47	263.5	118.51	115.00

Project Summary Report

Project Description	
Worksheet	D05-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006600	ft/ft
Water Surface Elevation	1,461.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,460.00 to 1,465.00	
Discharge	197.97	cfs
Flow Area	83.3	ft²
Wetted Perimeter	100.29	ft
Top Width	98.67	ft
Actual Depth	1.00	ft
Critical Elevation	1,460.61	ft
Critical Slope	0.036531	ft/ft
Velocity	2.38	ft/s
Velocity Head	0.09	ft
Specific Energy	1,461.09	ft
Froude Number	0.46	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+50	0.050
2+50	2+75	0.045
2+75	4+00	0.050
4+00	4+30	0.045
4+30	4+80	0.050
4+80	5+10	0.045
5+10	5+50	0.050
5+50	5+80	0.045
5+80	8+80	0.050
8+80	9+25	0.045
9+25	10+25	0.050

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,465.00
0+25	1,464.00
1+00	1,463.00
1+10	1,461.00
1+15	1,461.00
1+25	1,463.00
2+00	1,465.00
2+50	1,463.00
2+60	1,460.00
2+65	1,460.00
2+75	1,463.00
3+50	1,465.00
4+00	1,463.00
4+08	1,460.00
4+22	1,460.00
4+30	1,463.00
4+55	1,465.00
4+80	1,463.00
4+88	1,460.00
5+02	1,460.00
5+10	1,463.00
5+30	1,465.00
5+50	1,463.00
5+58	1,460.00
5+72	1,460.00
5+80	1,463.00
7+30	1,465.00
8+80	1,463.00
8+92	1,460.00
9+13	1,460.00
9+25	1,463.00
10+00	1,464.00
10+25	1,465.00

Notes: Remainder

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D05-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,460.00	1,466.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,460.00	N/A	N/A	N/A	N/A	N/A
1,460.50	59.62	1.58	37.8	84.15	83.33
1,461.00	197.97	2.38	83.3	100.29	98.67
1,461.50	413.34	2.95	140.3	126.54	124.00
1,462.00	712.27	3.44	207.3	147.79	144.33
1,462.50	1,100.94	3.87	284.6	169.03	164.67
1,463.00	1,586.25	4.26	372.0	190.28	185.00
1,463.50	1,588.07	3.04	523.2	425.42	420.00
1,464.00	2,288.23	2.89	792.0	660.55	655.00
1,464.50	3,837.65	3.29	1,165.7	845.70	840.00
1,465.00	5,450.71	3.34	1,632.0	1,030.85	1,025.00
1,465.50	9,242.68	4.31	2,144.5	1,031.85	1,025.00
1,466.00	13,248.15	4.99	2,657.0	1,032.85	1,025.00

Project Summary Report

Project Description	
Worksheet	D06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007800	ft/ft
Water Surface Elevation	1,530.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,530.00 to 1,533.00	
Discharge	22.74	cfs
Flow Area	15.0	ft²
Wetted Perimeter	40.02	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,530.31	ft
Critical Slope	0.046943	ft/ft
Velocity	1.52	ft/s
Velocity Head	0.04	ft
Specific Energy	1,530.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+10	0.045
2+10	3+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,533.00
0+75	1,532.00
1+50	1,531.00
1+70	1,530.00
1+90	1,530.00
2+10	1,531.00
2+85	1,532.00
3+60	1,533.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	*D06*
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	*Discharge*

Input Data	
Slope	0.007800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,530.00	1,535.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,530.00	N/A	N/A	N/A	N/A	N/A
1,530.50	22.74	1.52	15.0	40.02	40.00
1,531.00	88.97	2.22	40.0	60.05	60.00
1,531.50	184.13	2.07	88.7	135.06	135.00
1,532.00	418.40	2.39	175.0	210.06	210.00
1,532.50	826.05	2.77	298.8	285.07	285.00
1,533.00	1,445.06	3.14	460.0	360.08	360.00
1,533.50	2,534.07	3.96	640.0	361.08	360.00
1,534.00	4,013.36	4.89	820.0	362.08	360.00
1,534.50	5,488.59	5.49	1,000.0	363.08	360.00
1,535.00	7,149.11	6.06	1,180.0	364.08	360.00

Project Summary Report

Project Description	
Worksheet	D06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007800	ft/ft
Water Surface Elevation	1,530.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,530.00 to 1,533.00	
Discharge	11.36	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,530.31	ft
Critical Slope	0.047042	ft/ft
Velocity	1.51	ft/s
Velocity Head	0.04	ft
Specific Energy	1,530.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+50	0.045
1+50	2+70	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,533.00
0+60	1,532.00
1+20	1,531.00
1+30	1,530.00
1+40	1,530.00
1+50	1,531.00
2+10	1,532.00
2+70	1,533.00

Notes: Remainder

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,530.00	1,535.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,530.00	N/A	N/A	N/A	N/A	N/A
1,530.50	11.36	1.51	7.5	20.05	20.00
1,531.00	44.41	2.22	20.0	30.10	30.00
1,531.50	91.62	1.83	50.0	90.11	90.00
1,532.00	239.36	2.18	110.0	150.12	150.00
1,532.50	515.15	2.58	200.0	210.12	210.00
1,533.00	950.66	2.97	320.0	270.13	270.00
1,533.50	1,830.71	4.02	455.0	271.13	270.00
1,534.00	2,749.75	4.66	590.0	272.13	270.00
1,534.50	3,818.44	5.27	725.0	273.13	270.00
1,535.00	5,025.04	5.84	860.0	274.13	270.00

Project Summary Report

Project Description	
Worksheet	D07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006600	ft/ft
Water Surface Elevation	1,451.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,450.00 to 1,454.00	
Discharge	120.45	cfs
Flow Area	45.0	ft²
Wetted Perimeter	45.15	ft
Top Width	45.00	ft
Actual Depth	1.50	ft
Critical Elevation	1,451.00	ft
Critical Slope	0.033111	ft/ft
Velocity	2.68	ft/s
Velocity Head	0.11	ft
Specific Energy	1,451.61	ft
Froude Number	0.47	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+05	0.045
2+05	3+55	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,454.00
1+00	1,453.00
1+50	1,452.00
1+70	1,450.00
1+85	1,450.00
2+05	1,452.00
2+55	1,453.00
3+55	1,454.00

Notes: Remainder

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,450.00	1,456.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,450.00	N/A	N/A	N/A	N/A	N/A
1,450.50	14.54	1.45	10.0	25.05	25.00
1,451.00	53.49	2.14	25.0	35.10	35.00
1,451.50	120.45	2.68	45.0	45.15	45.00
1,452.00	220.00	3.14	70.0	55.20	55.00
1,452.50	288.53	2.62	110.0	105.21	105.00
1,453.00	474.26	2.71	175.0	155.22	155.00
1,453.50	778.69	2.81	277.5	255.22	255.00
1,454.00	1,252.24	2.91	430.0	355.23	355.00
1,454.50	2,177.91	3.59	607.5	356.23	355.00
1,455.00	3,303.96	4.21	785.0	357.23	355.00
1,455.50	4,944.62	5.14	962.5	358.23	355.00
1,456.00	6,423.76	5.63	1,140.0	359.23	355.00

Project Summary Report

Project Description	
Worksheet	D07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006600	ft/ft
Water Surface Elevation	1,451.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,451.00 to 1,454.00	
Discharge	6.43	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,451.30	ft
Critical Slope	0.049105	ft/ft
Velocity	1.29	ft/s
Velocity Head	0.03	ft
Specific Energy	1,451.53	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+75	0.045
1+75	3+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,454.00
1+00	1,453.00
1+50	1,452.00
1+60	1,451.00
1+65	1,451.00
1+75	1,452.00
2+25	1,453.00
3+25	1,454.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	D07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,450.00	1,456.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,451.00	N/A	N/A	N/A	N/A	N/A
1,451.00	N/A	N/A	N/A	N/A	N/A
1,451.00	N/A	N/A	N/A	N/A	N/A
1,451.50	6.43	1.29	5.0	15.05	15.00
1,452.00	28.55	1.90	15.0	25.10	25.00
1,452.50	65.60	1.64	40.0	75.11	75.00
1,453.00	177.94	1.98	90.0	125.12	125.00
1,453.50	378.04	2.13	177.5	225.12	225.00
1,454.00	758.48	2.41	315.0	325.13	325.00
1,454.50	1,608.07	3.37	477.5	326.13	325.00
1,455.00	2,545.77	3.98	640.0	327.13	325.00
1,455.50	3,655.77	4.56	802.5	328.13	325.00
1,456.00	4,923.73	5.10	965.0	329.13	325.00

Project Summary Report

Project Description	
Worksheet	E05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008000	ft/ft
Water Surface Elevation	1,442.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,442.00 to 1,445.00	
Discharge	23.00	cfs
Flow Area	15.0	ft²
Wetted Perimeter	40.10	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,442.31	ft
Critical Slope	0.046941	ft/ft
Velocity	1.53	ft/s
Velocity Head	0.04	ft
Specific Energy	1,442.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+00	0.050
2+00	2+30	0.045
2+30	3+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,445.00
0+75	1,444.00
1+00	1,443.00
1+10	1,442.00
1+20	1,442.00
1+30	1,443.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+65	1,444.00
2+00	1,443.00
2+10	1,442.00
2+20	1,442.00
2+30	1,443.00
2+55	1,444.00
3+30	1,445.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	*Minimum*	Maximum	Increment
Water Surface Elevation (ft)	1,442.00	1,447.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,442.00	N/A	N/A	N/A	N/A	N/A
1,442.50	23.00	1.53	15.0	40.10	40.00
1,443.00	89.96	2.25	40.0	60.20	60.00
1,443.50	188.62	2.22	85.0	120.23	120.00
1,444.00	406.11	2.54	160.0	180.27	180.00
1,444.50	756.78	2.82	268.8	255.27	255.00
1,445.00	1,307.82	3.15	415.0	330.28	330.00
1,445.50	2,425.12	4.18	580.0	331.28	330.00
1,446.00	3,740.06	5.02	745.0	332.28	330.00
1,446.50	5,101.66	5.61	910.0	333.28	330.00
1,447.00	6,636.54	6.17	1,075.0	334.28	330.00

Project Summary Report

Project Description	
Worksheet	E05-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008000	ft/ft
Water Surface Elevation	1,442.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,442.00 to 1,445.00	
Discharge	8.49	cfs
Flow Area	6.2	ft²
Wetted Perimeter	20.03	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,442.32	ft
Critical Slope	0.049156	ft/ft
Velocity	1.36	ft/s
Velocity Head	0.03	ft
Specific Energy	1,442.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+60	0.045
1+60	2+85	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,445.00
0+75	1,444.00
1+25	1,443.00
1+40	1,442.00
1+45	1,442.00
1+60	1,443.00
2+10	1,444.00
2+85	1,445.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E05-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,442.00	1,447.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,442.00	N/A	N/A	N/A	N/A	N/A
1,442.50	8.49	1.36	6.2	20.03	20.00
1,443.00	40.62	2.03	20.0	35.07	35.00
1,443.50	97.19	1.94	50.0	85.08	85.00
1,444.00	242.11	2.31	105.0	135.09	135.00
1,444.50	500.53	2.62	191.3	210.09	210.00
1,445.00	922.11	2.93	315.0	285.10	285.00
1,445.50	1,831.09	4.00	457.5	286.10	285.00
1,446.00	2,787.92	4.65	600.0	287.10	285.00
1,446.50	3,907.73	5.26	742.5	288.10	285.00
1,447.00	5,177.36	5.85	885.0	289.10	285.00

Project Summary Report

Project Description	
Worksheet	E09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011000	ft/ft
Water Surface Elevation	1,547.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,547.00 to 1,550.00	
Discharge	8.31	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,547.35	ft
Critical Slope	0.047236	ft/ft
Velocity	1.66	ft/s
Velocity Head	0.04	ft
Specific Energy	1,547.54	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,550.00
0+75	1,549.00
1+00	1,548.00
1+10	1,547.00
1+15	1,547.00
1+25	1,548.00
1+50	1,549.00
2+25	1,550.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E09
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	*Minimum*	*Maximum*	*Increment*
Water Surface Elevation (ft)	1,547.00	1,552.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,547.00	N/A	N/A	N/A	N/A	N/A
1,547.50	8.31	1.66	5.0	15.05	15.00
1,548.00	36.86	2.46	15.0	25.10	25.00
1,548.50	85.02	2.52	33.7	50.12	50.00
1,549.00	190.18	2.93	65.0	75.14	75.00
1,549.50	348.93	2.88	121.3	150.15	150.00
1,550.00	672.65	3.13	215.0	225.15	225.00
1,550.50	1,335.94	4.08	327.5	226.15	225.00
1,551.00	2,303.66	5.24	440.0	227.15	225.00
1,551.50	3,291.09	5.96	552.5	228.15	225.00
1,552.00	4,418.85	6.64	665.0	229.15	225.00

Project Summary Report

Project Description	
Worksheet	E09-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011000	ft/ft
Water Surface Elevation	1,547.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,547.00 to 1,550.00	
Discharge	13.48	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,547.34	ft
Critical Slope	0.045695	ft/ft
Velocity	1.80	ft/s
Velocity Head	0.05	ft
Specific Energy	1,547.55	ft
Froude Number	0.52	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,550.00
0+75	1,549.00
1+00	1,548.00
1+10	1,547.00
1+20	1,547.00
1+30	1,548.00
1+55	1,549.00
2+30	1,550.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E09-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,547.00	1,552.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,547.00	N/A	N/A	N/A	N/A	N/A
1,547.50	13.48	1.80	7.5	20.05	20.00
1,548.00	52.74	2.64	20.0	30.10	30.00
1,548.50	112.02	2.72	41.2	55.12	55.00
1,549.00	232.24	3.10	75.0	80.14	80.00
1,549.50	407.23	3.04	133.8	155.15	155.00
1,550.00	748.40	3.25	230.0	230.15	230.00
1,550.50	1,444.08	4.19	345.0	231.15	230.00
1,551.00	2,477.31	5.39	460.0	232.15	230.00
1,551.50	3,502.62	6.09	575.0	233.15	230.00
1,552.00	4,671.18	6.77	690.0	234.15	230.00

Project Summary Report

Project Description	
Worksheet	E10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011000	ft/ft
Water Surface Elevation	1,522.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,522.00 to 1,525.00	
Discharge	25.47	cfs
Flow Area	13.8	ft²
Wetted Perimeter	35.57	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,522.34	ft
Critical Slope	0.045093	ft/ft
Velocity	1.85	ft/s
Velocity Head	0.05	ft
Specific Energy	1,522.55	ft
Froude Number	0.52	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	1+75	0.050
1+75	2+00	0.045
2+00	3+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,525.00
0+50	1,524.00
1+00	1,523.00
1+10	1,522.00
1+15	1,522.00
1+25	1,523.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+50	1,524.00
1+75	1,523.00
1+75	1,522.00
1+90	1,522.00
2+00	1,523.00
2+50	1,524.00
3+00	1,525.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E10
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,522.00	1,527.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,522.00	N/A	N/A	N/A	N/A	N/A
1,522.50	25.47	1.85	13.8	35.57	35.00
1,523.00	94.93	2.71	35.0	51.15	50.00
1,523.50	198.59	2.52	78.7	126.18	125.00
1,524.00	452.92	2.83	160.0	201.21	200.00
1,524.50	916.55	3.36	272.5	251.22	250.00
1,525.00	1,597.11	3.90	410.0	301.23	300.00
1,525.50	2,900.85	5.18	560.0	302.23	300.00
1,526.00	4,192.73	5.91	710.0	303.23	300.00
1,526.50	5,678.70	6.60	860.0	304.23	300.00
1,527.00	7,344.46	7.27	1,010.0	305.23	300.00

Project Summary Report

Project Description	
Worksheet	E10-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011000	ft/ft
Water Surface Elevation	1,522.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,522.00 to 1,525.00	
Discharge	8.31	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,522.35	ft
Critical Slope	0.047236	ft/ft
Velocity	1.66	ft/s
Velocity Head	0.04	ft
Specific Energy	1,522.54	ft
Froude Number	0.51	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+75	0.045
1+75	3+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,525.00
1+00	1,524.00
1+50	1,523.00
1+60	1,522.00
1+65	1,522.00
1+75	1,523.00
2+25	1,524.00
3+25	1,525.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E10-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,522.00	1,527.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,522.00	N/A	N/A	N/A	N/A	N/A
1,522.50	8.31	1.66	5.0	15.05	15.00
1,523.00	36.86	2.46	15.0	25.10	25.00
1,523.50	84.70	2.12	40.0	75.11	75.00
1,524.00	229.72	2.55	90.0	125.12	125.00
1,524.50	488.04	2.75	177.5	225.12	225.00
1,525.00	979.20	3.11	315.0	325.13	325.00
1,525.50	2,076.01	4.35	477.5	326.13	325.00
1,526.00	3,286.57	5.14	640.0	327.13	325.00
1,526.50	4,719.58	5.88	802.5	328.13	325.00
1,527.00	6,356.51	6.59	965.0	329.13	325.00

Project Summary Report

Project Description	
Worksheet	E11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005800	ft/ft
Water Surface Elevation	1,491.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,491.00 to 1,495.00	
Discharge	21.28	cfs
Flow Area	16.9	ft²
Wetted Perimeter	47.52	ft
Top Width	47.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,491.29	ft
Critical Slope	0.048701	ft/ft
Velocity	1.26	ft/s
Velocity Head	0.02	ft
Specific Energy	1,491.52	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	3+30	0.045
3+30	5+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,495.00
1+00	1,494.00
2+00	1,493.00
2+55	1,491.00
2+75	1,491.00
3+30	1,493.00
4+30	1,494.00
5+30	1,495.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,491.00	1,497.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,491.00	N/A	N/A	N/A	N/A	N/A
1,491.50	21.28	1.26	16.9	47.52	47.50
1,492.00	88.07	1.85	47.5	75.04	75.00
1,492.50	214.71	2.34	91.9	102.55	102.50
1,493.00	414.82	2.77	150.0	130.07	130.00
1,493.50	591.77	2.47	240.0	230.08	230.00
1,494.00	982.82	2.59	380.0	330.08	330.00
1,494.50	1,604.17	2.81	570.0	430.09	430.00
1,495.00	2,492.05	3.08	810.0	530.09	530.00
1,495.50	4,109.01	3.82	1,075.0	531.09	530.00
1,496.00	5,871.17	4.38	1,340.0	532.09	530.00
1,496.50	8,387.49	5.23	1,605.0	533.09	530.00
1,497.00	10,637.17	5.69	1,870.0	534.09	530.00

Project Summary Report

Project Description	
Worksheet	E11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005800	ft/ft
Water Surface Elevation	1,491.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,491.00 to 1,495.00	
Discharge	10.35	cfs
Flow Area	8.1	ft²
Wetted Perimeter	22.54	ft
Top Width	22.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,491.28	ft
Critical Slope	0.048603	ft/ft
Velocity	1.27	ft/s
Velocity Head	0.03	ft
Specific Energy	1,491.53	ft
Froude Number	0.37	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+20	0.050
1+20	1+80	0.045
1+80	3+00	0.050
3+00	3+30	0.045
3+30	4+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,495.00
0+60	1,494.00
1+20	1,493.00
1+45	1,491.00
1+55	1,491.00
1+80	1,493.00
2+40	1,494.00
3+00	1,493.00
3+10	1,492.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
3+20	1,492.00
3+30	1,493.00
4+00	1,494.00
4+60	1,495.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,491.00	1,497.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,491.00	N/A	N/A	N/A	N/A	N/A
1,491.50	10.35	1.27	8.1	22.54	22.50
1,492.00	42.08	1.87	22.5	35.08	35.00
1,492.50	111.30	2.20	50.6	67.67	67.50
1,493.00	233.04	2.59	90.0	90.26	90.00
1,493.50	330.36	1.99	166.3	215.28	215.00
1,494.00	658.85	2.16	305.0	340.29	340.00
1,494.50	1,301.53	2.66	490.0	400.30	400.00
1,495.00	2,171.59	3.08	705.0	460.31	460.00
1,495.50	3,568.06	3.82	935.0	461.31	460.00
1,496.00	5,348.59	4.59	1,165.0	462.31	460.00
1,496.50	7,089.09	5.08	1,395.0	463.31	460.00
1,497.00	9,030.23	5.56	1,625.0	464.31	460.00

Project Summary Report

Project Description	
Worksheet	E13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007600	ft/ft
Water Surface Elevation	1,422.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,422.00 to 1,424.00	
Discharge	33.14	cfs
Flow Area	25.0	ft²
Wetted Perimeter	80.01	ft
Top Width	80.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,422.32	ft
Critical Slope	0.049242	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	1,422.53	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	3+40	0.045
3+40	5+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,424.00
0+50	1,423.00
2+00	1,423.00
2+60	1,422.00
2+80	1,422.00
3+40	1,423.00
4+90	1,423.00
5+40	1,424.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,422.00	1,426.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,422.00	N/A	N/A	N/A	N/A	N/A
1,422.50	33.14	1.33	25.0	80.01	80.00
1,423.00	158.57	1.98	80.0	140.02	140.00
1,423.50	617.15	1.97	312.5	490.03	490.00
1,424.00	1,685.45	2.96	570.0	540.04	540.00
1,424.50	3,115.41	3.71	840.0	541.04	540.00
1,425.00	4,889.61	4.41	1,110.0	542.04	540.00
1,425.50	6,974.61	5.05	1,380.0	543.04	540.00
1,426.00	9,346.71	5.66	1,650.0	544.04	540.00

Project Summary Report

Project Description	
Worksheet	E13-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007600	ft/ft
Water Surface Elevation	1,422.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,422.00 to 1,424.00	
Discharge	30.39	cfs
Flow Area	22.5	ft²
Wetted Perimeter	70.01	ft
Top Width	70.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,422.32	ft
Critical Slope	0.048862	ft/ft
Velocity	1.35	ft/s
Velocity Head	0.03	ft
Specific Energy	1,422.53	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	3+20	0.045
3+20	5+20	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,424.00
0+50	1,423.00
2+00	1,423.00
2+50	1,422.00
2+70	1,422.00
3+20	1,423.00
4+70	1,423.00
5+20	1,424.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E13-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,422.00	1,426.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,422.00	N/A	N/A	N/A	N/A	N/A
1,422.50	30.39	1.35	22.5	70.01	70.00
1,423.00	140.66	2.01	70.0	120.02	120.00
1,423.50	566.55	1.94	292.5	470.03	470.00
1,424.00	1,572.44	2.91	540.0	520.04	520.00
1,424.50	2,932.75	3.67	800.0	521.04	520.00
1,425.00	4,624.59	4.36	1,060.0	522.04	520.00
1,425.50	6,615.43	5.01	1,320.0	523.04	520.00
1,426.00	8,882.26	5.62	1,580.0	524.04	520.00

Project Summary Report

Project Description	
Worksheet	E16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008400	ft/ft
Water Surface Elevation	1,451.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,451.00 to 1,455.00	
Discharge	15.80	cfs
Flow Area	9.4	ft²
Wetted Perimeter	22.57	ft
Top Width	22.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,451.31	ft
Critical Slope	0.045666	ft/ft
Velocity	1.68	ft/s
Velocity Head	0.04	ft
Specific Energy	1,451.54	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+45	0.045
1+45	2+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,455.00
0+75	1,454.00
1+00	1,453.00
1+15	1,451.00
1+30	1,451.00
1+45	1,453.00
2+20	1,454.00
2+45	1,455.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,450.00	1,457.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,451.00	N/A	N/A	N/A	N/A	N/A
1,451.00	N/A	N/A	N/A	N/A	N/A
1,451.00	N/A	N/A	N/A	N/A	N/A
1,451.50	15.80	1.68	9.4	22.57	22.50
1,452.00	56.04	2.49	22.5	30.13	30.00
1,452.50	122.67	3.12	39.4	37.70	37.50
1,453.00	219.11	3.65	60.0	45.27	45.00
1,453.50	270.94	2.85	95.0	95.28	95.00
1,454.00	472.74	3.05	155.0	145.29	145.00
1,454.50	767.40	3.20	240.0	195.31	195.00
1,455.00	1,230.39	3.52	350.0	245.32	245.00
1,455.50	2,034.73	4.31	472.5	246.32	245.00
1,456.00	2,975.34	5.00	595.0	247.32	245.00
1,456.50	4,371.49	6.09	717.5	248.32	245.00
1,457.00	5,575.63	6.64	840.0	249.32	245.00

Project Summary Report

Project Description	
Worksheet	E16-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008400	ft/ft
Water Surface Elevation	1,450.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,450.00 to 1,455.00	
Discharge	30.50	cfs
Flow Area	17.5	ft²
Wetted Perimeter	40.05	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,450.31	ft
Critical Slope	0.045114	ft/ft
Velocity	1.74	ft/s
Velocity Head	0.05	ft
Specific Energy	1,450.55	ft
Froude Number	0.46	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+90	0.045
1+90	2+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,455.00
0+75	1,454.00
1+00	1,453.00
1+30	1,450.00
1+60	1,450.00
1+90	1,453.00
2+15	1,454.00
2+90	1,455.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E16-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,450.00	1,457.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,450.00	N/A	N/A	N/A	N/A	N/A
1,450.50	30.50	1.74	17.5	40.05	40.00
1,451.00	104.18	2.60	40.0	50.10	50.00
1,451.50	220.60	3.27	67.5	60.15	60.00
1,452.00	383.15	3.83	100.0	70.20	70.00
1,452.50	595.84	4.33	137.5	80.25	80.00
1,453.00	862.82	4.79	180.0	90.30	90.00
1,453.50	1,086.17	4.70	231.3	115.32	115.00
1,454.00	1,408.26	4.77	295.0	140.34	140.00
1,454.50	1,602.52	4.18	383.8	215.35	215.00
1,455.00	2,085.95	4.09	510.0	290.35	290.00
1,455.50	3,387.00	5.17	655.0	291.35	290.00
1,456.00	4,621.48	5.78	800.0	292.35	290.00
1,456.50	6,014.14	6.36	945.0	293.35	290.00
1,457.00	7,554.13	6.93	1,090.0	294.35	290.00

Project Summary Report

Project Description	
Worksheet	E19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006100	ft/ft
Water Surface Elevation	1,422.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,422.00 to 1,425.00	
Discharge	10.04	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,422.29	ft
Critical Slope	0.048044	ft/ft
Velocity	1.34	ft/s
Velocity Head	0.03	ft
Specific Energy	1,422.53	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+75	0.045
1+75	3+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,425.00
0+25	1,424.00
1+25	1,424.00
1+45	1,422.00
1+55	1,422.00
1+75	1,424.00
2+75	1,424.00
3+00	1,425.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,421.00	1,427.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow *Area* (ft^2)	Wetted *Perimeter* (ft)	Top Width (ft)
1,422.00	N/A	N/A	N/A	N/A	N/A
1,422.00	N/A	N/A	N/A	N/A	N/A
1,422.00	N/A	N/A	N/A	N/A	N/A
1,422.50	10.04	1.34	7.5	20.05	20.00
1,423.00	39.28	1.96	20.0	30.10	30.00
1,423.50	92.41	2.46	37.5	40.15	40.00
1,424.00	174.27	2.90	60.0	50.20	50.00
1,424.50	354.59	1.85	191.3	275.22	275.00
1,425.00	866.50	2.59	335.0	300.24	300.00
1,425.50	1,687.15	3.48	485.0	301.24	300.00
1,426.00	2,575.83	4.06	635.0	302.24	300.00
1,426.50	3,614.70	4.60	785.0	303.24	300.00
1,427.00	4,791.82	5.12	935.0	304.24	300.00

Project Summary Report

Project Description	
Worksheet	E19-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006100	ft/ft
Water Surface Elevation	1,421.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,421.00 to 1,425.00	
Discharge	25.99	cfs
Flow Area	17.5	ft²
Wetted Perimeter	40.05	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,421.28	ft
Critical Slope	0.046568	ft/ft
Velocity	1.49	ft/s
Velocity Head	0.03	ft
Specific Energy	1,421.53	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	2+15	0.045
2+15	3+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,425.00
0+25	1,424.00
1+25	1,424.00
1+55	1,421.00
1+85	1,421.00
2+15	1,424.00
3+15	1,424.00
3+40	1,425.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E19-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,421.00	1,427.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,421.00	N/A	N/A	N/A	N/A	N/A
1,421.50	25.99	1.49	17.5	40.05	40.00
1,422.00	88.78	2.22	40.0	50.10	50.00
1,422.50	187.99	2.79	67.5	60.15	60.00
1,423.00	326.51	3.27	100.0	70.20	70.00
1,423.50	507.76	3.69	137.5	80.25	80.00
1,424.00	735.27	4.08	180.0	90.30	90.00
1,424.50	817.52	2.47	331.3	315.32	315.00
1,425.00	1,601.71	3.24	495.0	340.34	340.00
1,425.50	2,556.70	3.84	665.0	341.34	340.00
1,426.00	3,689.90	4.42	835.0	342.34	340.00
1,426.50	4,986.05	4.96	1,005.0	343.34	340.00
1,427.00	6,771.67	5.76	1,175.0	344.34	340.00

Project Summary Report

Project Description	
Worksheet	E21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006500	ft/ft
Water Surface Elevation	1,428.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,428.00 to 1,430.00	
Discharge	6.39	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,428.30	ft
Critical Slope	0.049162	ft/ft
Velocity	1.28	ft/s
Velocity Head	0.03	ft
Specific Energy	1,428.53	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+50	0.045
1+50	2+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,430.00
1+00	1,429.00
1+25	1,429.00
1+35	1,428.00
1+40	1,428.00
1+50	1,429.00
1+75	1,429.00
2+75	1,430.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E21
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,427.00	1,432.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,428.00	N/A	N/A	N/A	N/A	N/A
1,428.00	N/A	N/A	N/A	N/A	N/A
1,428.00	N/A	N/A	N/A	N/A	N/A
1,428.50	6.39	1.28	5.0	15.05	15.00
1,429.00	28.33	1.89	15.0	25.10	25.00
1,429.50	112.66	1.45	77.5	175.10	175.00
1,430.00	362.37	1.91	190.0	275.11	275.00
1,430.50	928.82	2.84	327.5	276.11	275.00
1,431.00	1,630.40	3.51	465.0	277.11	275.00
1,431.50	2,483.88	4.12	602.5	278.11	275.00
1,432.00	3,474.95	4.70	740.0	279.11	275.00

Project Summary Report

Project Description	
Worksheet	E21-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006500	ft/ft
Water Surface Elevation	1,427.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,427.00 to 1,430.00	
Discharge	10.37	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,427.29	ft
Critical Slope	0.047782	ft/ft
Velocity	1.38	ft/s
Velocity Head	0.03	ft
Specific Energy	1,427.53	ft
Froude Number	0.40	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+35	0.050
1+35	1+65	0.045
1+65	3+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,430.00
1+00	1,429.00
1+35	1,428.00
1+45	1,427.00
1+55	1,427.00
1+65	1,428.00
2+00	1,429.00
3+00	1,430.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E21-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,427.00	1,432.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,427.00	N/A	N/A	N/A	N/A	N/A
1,427.50	10.37	1.38	7.5	20.05	20.00
1,428.00	40.54	2.03	20.0	30.10	30.00
1,428.50	84.25	1.93	43.7	65.11	65.00
1,429.00	188.14	2.21	85.0	100.13	100.00
1,429.50	349.64	2.19	160.0	200.13	200.00
1,430.00	680.30	2.39	285.0	300.14	300.00
1,430.50	1,358.37	3.12	435.0	301.14	300.00
1,431.00	2,345.04	4.01	585.0	302.14	300.00
1,431.50	3,357.52	4.57	735.0	303.14	300.00
1,432.00	4,515.48	5.10	885.0	304.14	300.00

Project Summary Report

Project Description	
Worksheet	E28
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data		
Slope	0.005700	ft/ft
Water Surface Elevation	1,398.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,398.00 to 1,400.00	
Discharge	35.94	cfs
Flow Area	*32.5*	ft^2
Wetted Perimeter	110.02	ft
Top Width	110.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,398.30	ft
Critical Slope	*0.051085*	ft/ft
Velocity	1.11	ft/s
Velocity Head	0.02	ft
Specific Energy	1,398.52	ft
Froude Number	0.36	
Flow Type	*Subcritical*	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	2+35	0.045
2+35	4+00	0.050
4+00	4+65	0.045
4+65	5+65	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,400.00
0+25	1,399.00
1+00	1,399.00
1+60	1,398.00
1+75	1,398.00
2+35	1,399.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
3+00	1,399.00
4+00	1,399.00
4+30	1,398.00
4+35	1,398.00
4+65	1,399.00
5+40	1,399.00
5+65	1,400.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E28
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,398.00	1,402.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,398.00	N/A	N/A	N/A	N/A	N/A
1,398.50	35.94	1.11	32.5	110.02	110.00
1,399.00	118.30	1.08	110.0	365.05	365.00
1,399.50	717.86	1.92	373.8	540.07	540.00
1,400.00	1,764.28	2.71	650.0	565.09	565.00
1,400.50	3,137.18	3.36	932.5	566.09	565.00
1,401.00	4,818.80	3.97	1,215.0	567.09	565.00
1,401.50	6,780.74	4.53	1,497.5	568.09	565.00
1,402.00	9,002.52	5.06	1,780.0	569.09	565.00

Project Summary Report

Project Description	
Worksheet	E28-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005700	ft/ft
Water Surface Elevation	1,398.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,398.00 to 1,400.00	
Discharge	13.26	cfs
Flow Area	12.5	ft^2
Wetted Perimeter	45.01	ft
Top Width	45.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,398.31	ft
Critical Slope	0.052049	ft/ft
Velocity	1.06	ft/s
Velocity Head	0.02	ft
Specific Energy	1,398.52	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+85	0.045
2+85	4+85	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,400.00
0+50	1,399.00
2+00	1,399.00
2+40	1,398.00
2+45	1,398.00
2+85	1,399.00
4+35	1,399.00
4+85	1,400.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	E28-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,398.00	1,402.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,398.00	N/A	N/A	N/A	N/A	N/A
1,398.50	13.26	1.06	12.5	45.01	45.00
1,399.00	73.40	1.63	45.0	85.02	85.00
1,399.50	395.28	1.58	250.0	435.03	435.00
1,400.00	1,148.51	2.39	480.0	485.04	485.00
1,400.50	2,212.50	3.06	722.5	486.04	485.00
1,401.00	3,544.99	3.67	965.0	487.04	485.00
1,401.50	5,119.04	4.24	1,207.5	488.04	485.00
1,402.00	6,915.68	4.77	1,450.0	489.04	485.00

Project Summary Report

Project Description	
Worksheet	F02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,687.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,687.00 to 1,690.00	
Discharge	8.44	cfs
Flow Area	6.2	ft²
Wetted Perimeter	20.03	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,687.32	ft
Critical Slope	0.049202	ft/ft
Velocity	1.35	ft/s
Velocity Head	0.03	ft
Specific Energy	1,687.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+35	0.045
1+35	2+35	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,690.00
0+75	1,689.00
1+00	1,688.00
1+15	1,687.00
1+20	1,687.00
1+35	1,688.00
1+60	1,689.00
2+35	1,690.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F02
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,687.00	1,692.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,687.00	N/A	N/A	N/A	N/A	N/A
1,687.50	8.44	1.35	6.2	20.03	20.00
1,688.00	40.37	2.02	20.0	35.07	35.00
1,688.50	99.26	2.27	43.7	60.09	60.00
1,689.00	211.35	2.64	80.0	85.11	85.00
1,689.50	371.86	2.63	141.3	160.11	160.00
1,690.00	674.51	2.81	240.0	235.12	235.00
1,690.50	1,284.91	3.59	357.5	236.12	235.00
1,691.00	2,189.53	4.61	475.0	237.12	235.00
1,691.50	3,085.49	5.21	592.5	238.12	235.00
1,692.00	4,105.53	5.78	710.0	239.12	235.00

Project Summary Report

Project Description	
Worksheet	F02-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,687.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,687.00 to 1,690.00	
Discharge	7.04	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,687.32	ft
Critical Slope	0.048434	ft/ft
Velocity	1.41	ft/s
Velocity Head	0.03	ft
Specific Energy	1,687.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	2+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,690.00
0+75	1,689.00
1+00	1,688.00
1+10	1,687.00
1+15	1,687.00
1+25	1,688.00
1+50	1,689.00
2+25	1,690.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F02-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,687.00	1,692.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,687.00	N/A	N/A	N/A	N/A	N/A
1,687.50	7.04	1.41	5.0	15.05	15.00
1,688.00	31.23	2.08	15.0	25.10	25.00
1,688.50	72.05	2.13	33.7	50.12	50.00
1,689.00	161.17	2.48	65.0	75.14	75.00
1,689.50	295.70	2.44	121.3	150.15	150.00
1,690.00	570.04	2.65	215.0	225.15	225.00
1,690.50	1,132.15	3.46	327.5	226.15	225.00
1,691.00	1,952.25	4.44	440.0	227.15	225.00
1,691.50	2,789.05	5.05	552.5	228.15	225.00
1,692.00	3,744.78	5.63	665.0	229.15	225.00

Project Summary Report

Project Description	
Worksheet	F11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007100	ft/ft
Water Surface Elevation	1,383.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,383.00 to 1,385.00	
Discharge	29.63	cfs
Flow Area	21.3	ft²
Wetted Perimeter	60.06	ft
Top Width	60.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,383.30	ft
Critical Slope	0.047770	ft/ft
Velocity	1.39	ft/s
Velocity Head	0.03	ft
Specific Energy	1,383.53	ft
Froude Number	0.41	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+00	0.045
2+00	3+00	0.050
3+00	3+45	0.045
3+45	4+95	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.00
0+25	1,384.00
1+50	1,384.00
1+70	1,383.00
1+80	1,383.00
2+00	1,384.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
2+50	1,385.00
3+00	1,384.00
3+15	1,383.00
3+30	1,383.00
3+45	1,384.00
4+70	1,384.00
4+95	1,385.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,383.00	1,387.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,383.00	N/A	N/A	N/A	N/A	N/A
1,383.50	29.63	1.39	21.3	60.06	60.00
1,384.00	122.98	2.05	60.0	95.12	95.00
1,384.50	463.58	1.85	251.3	420.15	420.00
1,385.00	1,284.43	2.68	480.0	495.18	495.00
1,385.50	2,522.26	3.47	727.5	496.18	495.00
1,386.00	4,028.71	4.13	975.0	497.18	495.00
1,386.50	5,812.84	4.75	1,222.5	498.18	495.00
1,387.00	7,852.33	5.34	1,470.0	499.18	495.00

Project Summary Report

Project Description	
Worksheet	F11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007100	ft/ft
Water Surface Elevation	1,383.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,383.00 to 1,385.00	
Discharge	13.37	cfs
Flow Area	10.0	ft²
Wetted Perimeter	30.02	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,383.31	ft
Critical Slope	0.048684	ft/ft
Velocity	1.34	ft/s
Velocity Head	0.03	ft
Specific Energy	1,383.53	ft
Froude Number	0.41	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+75	0.045
1+75	3+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.00
0+25	1,384.00
1+25	1,384.00
1+45	1,383.00
1+55	1,383.00
1+75	1,384.00
2+75	1,384.00
3+00	1,385.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,383.00	1,387.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,383.00	N/A	N/A	N/A	N/A	N/A
1,383.50	13.37	1.34	10.0	30.02	30.00
1,384.00	59.34	1.98	30.0	50.05	50.00
1,384.50	287.96	1.79	161.3	275.07	275.00
1,385.00	829.45	2.72	305.0	300.09	300.00
1,385.50	1,572.57	3.46	455.0	301.09	300.00
1,386.00	2,498.27	4.13	605.0	302.09	300.00
1,386.50	3,587.94	4.75	755.0	303.09	300.00
1,387.00	4,828.33	5.34	905.0	304.09	300.00

Project Summary Report

Project Description	
Worksheet	F12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006400	ft/ft
Water Surface Elevation	1,433.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,433.00 to 1,435.00	
Discharge	21.74	cfs
Flow Area	16.3	ft²
Wetted Perimeter	45.20	ft
Top Width	45.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,433.29	ft
Critical Slope	0.048181	ft/ft
Velocity	1.34	ft/s
Velocity Head	0.03	ft
Specific Energy	1,433.53	ft
Froude Number	0.39	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	1+65	0.050
1+65	1+95	0.045
1+95	2+55	0.050
2+55	2+70	0.045
2+70	3+70	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,435.00
1+00	1,434.00
1+10	1,433.00
1+15	1,433.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+25	1,434.00
1+45	1,435.00
1+65	1,434.00
1+75	1,433.00
1+85	1,433.00
1+95	1,434.00
2+25	1,435.00
2+55	1,434.00
2+60	1,433.00
2+65	1,433.00
2+70	1,434.00
3+70	1,435.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,433.00	1,437.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,433.00	N/A	N/A	N/A	N/A	N/A
1,433.50	21.74	1.34	16.3	45.20	45.00
1,434.00	88.33	1.96	45.0	70.40	70.00
1,434.50	190.76	1.62	117.5	220.44	220.00
1,435.00	513.45	1.94	265.0	370.49	370.00
1,435.50	1,324.73	2.94	450.0	371.49	370.00
1,436.00	2,326.17	3.66	635.0	372.49	370.00
1,436.50	3,491.33	4.26	820.0	373.49	370.00
1,437.00	4,843.97	4.82	1,005.0	374.49	370.00

Project Summary Report

Project Description	
Worksheet	F12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006400	ft/ft
Water Surface Elevation	1,433.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,433.00 to 1,435.00	
Discharge	16.62	cfs
Flow Area	12.5	ft²
Wetted Perimeter	35.10	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,433.29	ft
Critical Slope	0.048189	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	1,433.53	ft
Froude Number	0.39	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+25	0.045
1+25	1+95	0.050
1+95	2+25	0.045
2+25	3+25	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,435.00
1+00	1,434.00
1+10	1,433.00
1+15	1,433.00
1+25	1,434.00
1+60	1,435.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+95	1,434.00
2+05	1,433.00
2+15	1,433.00
2+25	1,434.00
3+25	1,435.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,433.00	1,437.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,433.00	N/A	N/A	N/A	N/A	N/A
1,433.50	16.62	1.33	12.5	35.10	35.00
1,434.00	68.34	1.95	35.0	55.20	55.00
1,434.50	155.63	1.62	96.2	190.22	190.00
1,435.00	431.76	1.92	225.0	325.24	325.00
1,435.50	1,111.05	2.87	387.5	326.24	325.00
1,436.00	1,984.72	3.61	550.0	327.24	325.00
1,436.50	2,996.93	4.21	712.5	328.24	325.00
1,437.00	4,173.45	4.77	875.0	329.24	325.00

Project Summary Report

Project Description	
Worksheet	F13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006400	ft/ft
Water Surface Elevation	1,433.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,433.00 to 1,435.00	
Discharge	6.34	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,433.30	ft
Critical Slope	0.049221	ft/ft
Velocity	1.27	ft/s
Velocity Head	0.02	ft
Specific Energy	1,433.52	ft
Froude Number	0.39	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+50	0.045
1+50	2+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,435.00
0+25	1,434.00
1+25	1,434.00
1+35	1,433.00
1+40	1,433.00
1+50	1,434.00
2+50	1,434.00
2+75	1,435.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F13
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,433.00	1,437.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,433.00	N/A	N/A	N/A	N/A	N/A
1,433.50	6.34	1.27	5.0	15.05	15.00
1,434.00	28.11	1.87	15.0	25.10	25.00
1,434.50	213.24	1.59	133.8	250.12	250.00
1,435.00	642.76	2.43	265.0	275.14	275.00
1,435.50	1,265.31	3.14	402.5	276.14	275.00
1,436.00	2,046.83	3.79	540.0	277.14	275.00
1,436.50	2,970.64	4.38	677.5	278.14	275.00
1,437.00	4,024.95	4.94	815.0	279.14	275.00

Project Summary Report

Project Description	
Worksheet	F13-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.006400	ft/ft
Water Surface Elevation	1,433.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,433.00 to 1,435.00	
Discharge	16.62	cfs
Flow Area	12.5	ft²
Wetted Perimeter	35.10	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,433.29	ft
Critical Slope	0.048189	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	1,433.53	ft
Froude Number	0.39	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	2+20	0.050
2+20	2+45	0.045
2+45	3+45	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,435.00
1+00	1,434.00
1+10	1,433.00
1+20	1,433.00
1+30	1,434.00
1+75	1,435.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
2+20	1,434.00
2+30	1,433.00
2+35	1,433.00
2+45	1,434.00
3+45	1,435.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F13-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.006400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,433.00	1,437.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,433.00	N/A	N/A	N/A	N/A	N/A
1,433.50	16.62	1.33	12.5	35.10	35.00
1,434.00	68.34	1.95	35.0	55.20	55.00
1,434.50	157.99	1.60	98.7	200.22	200.00
1,435.00	446.74	1.90	235.0	345.23	345.00
1,435.50	1,146.84	2.81	407.5	346.23	345.00
1,436.00	2,078.20	3.58	580.0	347.23	345.00
1,436.50	3,147.93	4.18	752.5	348.23	345.00
1,437.00	4,392.46	4.75	925.0	349.23	345.00

Project Summary Report

Project Description	
Worksheet	F16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005600	ft/ft
Water Surface Elevation	1,368.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,368.00 to 1,370.00	
Discharge	11.87	cfs
Flow Area	10.0	ft²
Wetted Perimeter	30.02	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,368.29	ft
Critical Slope	0.049584	ft/ft
Velocity	1.19	ft/s
Velocity Head	0.02	ft
Specific Energy	1,368.52	ft
Froude Number	0.36	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+50	0.045
2+50	4+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,370.00
2+00	1,369.00
2+20	1,368.00
2+30	1,368.00
2+50	1,369.00
4+50	1,370.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F16
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,368.00	1,372.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,368.00	N/A	N/A	N/A	N/A	N/A
1,368.50	11.87	1.19	10.0	30.02	30.00
1,369.00	52.70	1.76	30.0	50.05	50.00
1,369.50	133.56	1.27	105.0	250.05	250.00
1,370.00	458.79	1.64	280.0	450.05	450.00
1,370.50	1,232.92	2.44	505.0	451.05	450.00
1,371.00	2,349.66	3.22	730.0	452.05	450.00
1,371.50	3,623.90	3.79	955.0	453.05	450.00
1,372.00	5,113.44	4.33	1,180.0	454.05	450.00

Project Summary Report

Project Description	
Worksheet	F16-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005600	ft/ft
Water Surface Elevation	1,368.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,368.00 to 1,370.00	
Discharge	9.62	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,368.28	ft
Critical Slope	0.048400	ft/ft
Velocity	1.28	ft/s
Velocity Head	0.03	ft
Specific Energy	1,368.53	ft
Froude Number	0.37	
Flow Type	..Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+55	0.045
1+55	2+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,370.00
1+25	1,369.00
1+35	1,368.00
1+45	1,368.00
1+55	1,369.00
2+80	1,370.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F16-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,368.00	1,372.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,368.00	N/A	N/A	N/A	N/A	N/A
1,368.50	9.62	1.28	7.5	20.05	20.00
1,369.00	37.63	1.88	20.0	30.10	30.00
1,369.50	85.18	1.29	66.2	155.10	155.00
1,370.00	287.44	1.64	175.0	280.11	280.00
1,370.50	822.83	2.61	315.0	281.11	280.00
1,371.00	1,466.30	3.22	455.0	282.11	280.00
1,371.50	2,256.20	3.79	595.0	283.11	280.00
1,372.00	3,178.20	4.32	735.0	284.11	280.00

Project Summary Report

Project Description	
Worksheet	F18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005000	ft/ft
Water Surface Elevation	1,367.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,367.00 to 1,370.00	
Discharge	13.65	cfs
Flow Area	11.3	ft²
Wetted Perimeter	30.03	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,367.27	ft
Critical Slope	0.048808	ft/ft
Velocity	1.21	ft/s
Velocity Head	0.02	ft
Specific Energy	1,367.52	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+95	0.045
2+95	5+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,370.00
1+00	1,369.00
2+50	1,368.00
2+65	1,367.00
2+80	1,367.00
2+95	1,368.00
4+45	1,369.00
5+45	1,370.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,367.00	1,372.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,367.00	N/A	N/A	N/A	N/A	N/A
1,367.50	13.65	1.21	11.3	30.03	30.00
1,368.00	53.40	1.78	30.0	45.07	45.00
1,368.50	115.54	1.28	90.0	195.07	195.00
1,369.00	360.13	1.60	225.0	345.07	345.00
1,369.50	876.08	2.07	422.5	445.08	445.00
1,370.00	1,769.84	2.64	670.0	545.08	545.00
1,370.50	3,013.42	3.20	942.5	546.08	545.00
1,371.00	4,523.84	3.72	1,215.0	547.08	545.00
1,371.50	6,277.20	4.22	1,487.5	548.08	545.00
1,372.00	8,256.03	4.69	1,760.0	549.08	545.00

Project Summary Report

Project Description	
Worksheet	F18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005000	ft/ft
Water Surface Elevation	1,367.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,367.00 to 1,370.00	
Discharge	29.38	cfs
Flow Area	25.0	ft²
Wetted Perimeter	70.01	ft
Top Width	70.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,367.27	ft
Critical Slope	0.049238	ft/ft
Velocity	1.18	ft/s
Velocity Head	0.02	ft
Specific Energy	1,367.52	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+20	0.050
3+20	4+30	0.045
4+30	7+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,370.00
1+00	1,369.00
3+20	1,368.00
3+60	1,367.00
3+90	1,367.00
4+30	1,368.00
6+50	1,369.00
7+50	1,370.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,367.00	1,372.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,367.00	N/A	N/A	N/A	N/A	N/A
1,367.50	29.38	1.18	25.0	70.01	70.00
1,368.00	120.90	1.73	70.0	110.02	110.00
1,368.50	261.05	1.45	180.0	330.03	330.00
1,369.00	693.34	1.73	400.0	550.03	550.00
1,369.50	1,603.10	2.29	700.0	650.03	650.00
1,370.00	2,836.36	2.70	1,050.0	750.04	750.00
1,370.50	4,939.17	3.47	1,425.0	751.04	750.00
1,371.00	7,155.42	3.98	1,800.0	752.04	750.00
1,371.50	9,701.94	4.46	2,175.0	753.04	750.00
1,372.00	12,556.68	4.92	2,550.0	754.04	750.00

Project Summary Report

Project Description	
Worksheet	F19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005100	ft/ft
Water Surface Elevation	1,338.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,338.00 to 1,340.00	
Discharge	5.49	cfs
Flow Area	4.5	ft²
Wetted Perimeter	12.08	ft
Top Width	12.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,338.27	ft
Critical Slope	0.049020	ft/ft
Velocity	1.22	ft/s
Velocity Head	0.02	ft
Specific Energy	1,338.52	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+68	0.045
2+68	5+18	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
0+50	1,339.00
2+50	1,339.00
2+56	1,338.00
2+62	1,338.00
2+68	1,339.00
4+68	1,339.00
5+18	1,340.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F19
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.005100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,338.00	1,342.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,338.00	N/A	N/A	N/A	N/A	N/A
1,338.50	5.49	1.22	4.5	12.08	12.00
1,339.00	21.46	1.79	12.0	18.17	18.00
1,339.50	313.40	1.34	233.5	468.18	468.00
1,340.00	971.92	2.02	480.0	518.19	518.00
1,340.50	2,009.73	2.72	739.0	519.19	518.00
1,341.00	3,300.96	3.31	998.0	520.19	518.00
1,341.50	4,835.06	3.85	1,257.0	521.19	518.00
1,342.00	6,592.62	4.35	1,516.0	522.19	518.00

Project Summary Report

Project Description	
Worksheet	F19-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.005100	ft/ft
Water Surface Elevation	1,338.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,338.00 to 1,340.00	
Discharge	4.57	cfs
Flow Area	3.7	ft²
Wetted Perimeter	10.10	ft
Top Width	10.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,338.27	ft
Critical Slope	0.049174	ft/ft
Velocity	1.22	ft/s
Velocity Head	0.02	ft
Specific Energy	1,338.52	ft
Froude Number	0.35	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+65	0.045
2+65	5+15	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
0+50	1,339.00
2+50	1,339.00
2+55	1,338.00
2+60	1,338.00
2+65	1,339.00
4+65	1,339.00
5+15	1,340.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F19-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data	
Slope	0.005100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel *Weighting Metho*	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,338.00	1,342.00	0.50

Water *Surface* Elevation (ft)	Discharge (*cfs*)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,338.00	N/A	N/A	N/A	N/A	N/A
1,338.50	4.57	1.22	3.7	10.10	10.00
1,339.00	17.84	1.78	10.0	15.20	15.00
1,339.50	306.57	1.33	230.0	465.21	465.00
1,340.00	958.08	2.02	475.0	515.22	515.00
1,340.50	1,983.89	2.71	732.5	516.22	515.00
1,341.00	3,264.43	3.30	990.0	517.22	515.00
1,341.50	4,786.41	3.84	1,247.5	518.22	515.00
1,342.00	6,530.51	4.34	1,505.0	519.22	515.00

Project Summary Report

Project Description	
Worksheet	F22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004700	ft/ft
Water Surface Elevation	1,333.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,333.00 to 1,335.00	
Discharge	35.30	cfs
Flow Area	30.0	ft²
Wetted Perimeter	80.05	ft
Top Width	80.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,333.26	ft
Critical Slope	0.049048	ft/ft
Velocity	1.18	ft/s
Velocity Head	0.02	ft
Specific Energy	1,333.52	ft
Froude Number	0.34	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+60	0.045
1+60	5+00	0.050
5+00	5+60	0.045
5+60	7+10	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,335.00
0+25	1,334.00
1+00	1,334.00
1+20	1,333.00
1+40	1,333.00
1+60	1,334.00

Project Summary Report

Natural Channel Points	
Station (ft)	*Elevation* (ft)
3+30	1,335.00
5+00	1,334.00
5+20	1,333.00
5+40	1,333.00
5+60	1,334.00
6+60	1,334.00
7+10	1,335.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F22
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,333.00	1,337.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,333.00	N/A	N/A	N/A	N/A	N/A
1,333.50	35.30	1.18	30.0	80.05	80.00
1,334.00	138.13	1.73	80.0	120.10	120.00
1,334.50	395.87	1.42	279.4	502.62	502.50
1,335.00	1,136.19	1.95	582.5	710.14	710.00
1,335.50	2,515.39	2.68	937.5	711.14	710.00
1,336.00	4,166.28	3.22	1,292.5	712.14	710.00
1,336.50	6,152.05	3.73	1,647.5	713.14	710.00
1,337.00	8,444.18	4.22	2,002.5	714.14	710.00

Project Summary Report

Project Description	
Worksheet	F22-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.004700	ft/ft
Water Surface Elevation	1,333.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,333.00 to 1,335.00	
Discharge	25.95	cfs
Flow Area	21.9	ft²
Wetted Perimeter	57.67	ft
Top Width	57.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,333.26	ft
Critical Slope	0.049012	ft/ft
Velocity	1.19	ft/s
Velocity Head	0.02	ft
Specific Energy	1,333.52	ft
Froude Number	0.34	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+30	0.045
1+30	4+30	0.050
4+30	4+60	0.045
4+60	6+60	0.050
6+60	6+90	0.045
6+90	7+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,335.00
1+00	1,335.00
1+10	1,333.00
1+20	1,333.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+30	1,334.00
2+80	1,335.00
4+30	1,334.00
4+40	1,333.00
4+50	1,333.00
4+60	1,334.00
5+60	1,335.00
6+60	1,334.00
6+70	1,333.00
6+80	1,333.00
6+90	1,334.00
7+90	1,335.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	F22-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.004700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,333.00	1,337.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,333.00	N/A	N/A	N/A	N/A	N/A
1,333.50	25.95	1.19	21.9	57.67	57.50
1,334.00	100.06	1.74	57.5	85.35	85.00
1,334.50	215.77	1.23	175.6	387.91	387.50
1,335.00	643.69	1.45	445.0	790.47	790.00
1,335.50	1,917.48	2.28	840.0	791.47	790.00
1,336.00	3,608.45	2.92	1,235.0	792.47	790.00
1,336.50	5,617.95	3.45	1,630.0	793.47	790.00
1,337.00	7,981.82	3.94	2,025.0	794.47	790.00

Project Summary Report

Project Description	
Worksheet	G05
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017800	ft/ft
Water Surface Elevation	1,717.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,717.00 to 1,720.00	
Discharge	21.17	cfs
Flow Area	10.0	ft²
Wetted Perimeter	30.02	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,717.40	ft
Critical Slope	0.045420	ft/ft
Velocity	2.12	ft/s
Velocity Head	0.07	ft
Specific Energy	1,717.57	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+50	0.045
2+50	4+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,720.00
1+00	1,719.00
2+00	1,718.00
2+20	1,717.00
2+30	1,717.00
2+50	1,718.00
3+50	1,719.00
4+50	1,720.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G05
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	*Horton's Method*

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,717.00	1,722.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,717.00	N/A	N/A	N/A	N/A	N/A
1,717.50	21.17	2.12	10.0	30.02	30.00
1,718.00	93.96	3.13	30.0	50.05	50.00
1,718.50	215.62	2.70	80.0	150.05	150.00
1,719.00	584.69	3.25	180.0	250.06	250.00
1,719.50	1,275.78	3.87	330.0	350.06	350.00
1,720.00	2,369.12	4.47	530.0	450.07	450.00
1,720.50	4,562.83	6.04	755.0	451.07	450.00
1,721.00	6,879.68	7.02	980.0	452.07	450.00
1,721.50	9,578.88	7.95	1,205.0	453.07	450.00
1,722.00	12,631.82	8.83	1,430.0	454.07	450.00

Project Summary Report

Project Description	
Worksheet	G05-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017800	ft/ft
Water Surface Elevation	1,717.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,717.00 to 1,720.00	
Discharge	98.88	cfs
Flow Area	40.0	ft²
Wetted Perimeter	95.17	ft
Top Width	95.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,717.39	ft
Critical Slope	0.042413	ft/ft
Velocity	2.47	ft/s
Velocity Head	0.09	ft
Specific Energy	1,717.59	ft
Froude Number	0.67	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	3+85	0.045
3+85	5+85	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,720.00
2+00	1,719.00
2+30	1,717.00
2+50	1,717.00
2+65	1,719.00
2+80	1,717.00
3+05	1,717.00
3+20	1,719.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
3+35	1,717.00
3+55	1,717.00
3+85	1,719.00
5+85	1,720.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G05-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,717.00	1,722.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow *Area* (ft²)	Wetted *Perimeter* (ft)	Top Width (ft)
1,717.00	N/A	N/A	N/A	N/A	N/A
1,717.50	98.88	2.47	40.0	95.17	95.00
1,718.00	347.93	3.66	95.0	125.33	125.00
1,718.50	756.22	4.58	165.0	155.50	155.00
1,719.00	1,342.99	5.37	250.0	185.66	185.00
1,719.50	1,653.06	4.21	392.5	385.67	385.00
1,720.00	2,742.59	4.32	635.0	585.67	585.00
1,720.50	5,150.76	5.55	927.5	586.67	585.00
1,721.00	8,380.10	6.87	1,220.0	587.67	585.00
1,721.50	11,867.02	7.85	1,512.5	588.67	585.00
1,722.00	16,684.86	9.24	1,805.0	589.67	585.00

Project Summary Report

Project Description	
Worksheet	G06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011000	ft/ft
Water Surface Elevation	1,531.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,531.00 to 1,535.00	
Discharge	30.17	cfs
Flow Area	15.6	ft²
Wetted Perimeter	37.54	ft
Top Width	37.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,531.34	ft
Critical Slope	0.044436	ft/ft
Velocity	1.93	ft/s
Velocity Head	0.06	ft
Specific Energy	1,531.56	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+25	0.045
2+25	3+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,535.00
0+75	1,534.00
1+50	1,533.00
1+75	1,531.00
2+00	1,531.00
2+25	1,533.00
3+00	1,534.00
3+75	1,535.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,531.00	1,537.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,531.00	N/A	N/A	N/A	N/A	N/A
1,531.50	30.17	1.93	15.6	37.54	37.50
1,532.00	107.09	2.86	37.5	50.08	50.00
1,532.50	234.49	3.57	65.6	62.62	62.50
1,533.00	418.94	4.19	100.0	75.16	75.00
1,533.50	526.06	3.37	156.3	150.17	150.00
1,534.00	863.83	3.46	250.0	225.17	225.00
1,534.50	1,428.72	3.75	381.3	300.18	300.00
1,535.00	2,256.49	4.10	550.0	375.19	375.00
1,535.50	3,771.02	5.11	737.5	376.19	375.00
1,536.00	5,445.40	5.89	925.0	377.19	375.00
1,536.50	7,861.03	7.07	1,112.5	378.19	375.00
1,537.00	10,006.10	7.70	1,300.0	379.19	375.00

Project Summary Report

Project Description	
Worksheet	G06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011000	ft/ft
Water Surface Elevation	1,531.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,531.00 to 1,535.00	
Discharge	24.12	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,531.34	ft
Critical Slope	0.044466	ft/ft
Velocity	1.93	ft/s
Velocity Head	0.06	ft
Specific Energy	1,531.56	ft
Froude Number	0.53	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+10	0.045
2+10	3+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,535.00
0+75	1,534.00
1+50	1,533.00
1+70	1,531.00
1+90	1,531.00
2+10	1,533.00
2+85	1,534.00
3+60	1,535.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,531.00	1,537.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,531.00	N/A	N/A	N/A	N/A	N/A
1,531.50	24.12	1.93	12.5	30.05	30.00
1,532.00	85.62	2.85	30.0	40.10	40.00
1,532.50	187.46	3.57	52.5	50.15	50.00
1,533.00	334.89	4.19	80.0	60.20	60.00
1,533.50	406.25	3.16	128.8	135.21	135.00
1,534.00	699.94	3.26	215.0	210.21	210.00
1,534.50	1,209.14	3.57	338.8	285.22	285.00
1,535.00	1,971.43	3.94	500.0	360.23	360.00
1,535.50	3,355.25	4.93	680.0	361.23	360.00
1,536.00	4,919.38	5.72	860.0	362.23	360.00
1,536.50	7,142.01	6.87	1,040.0	363.23	360.00
1,537.00	9,158.88	7.51	1,220.0	364.23	360.00

Project Summary Report

Project Description	
Worksheet	G08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010000	ft/ft
Water Surface Elevation	1,382.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,382.00 to 1,385.00	
Discharge	12.86	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,382.33	ft
Critical Slope	0.046063	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	1,382.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+30	0.045
2+30	4+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.00
1+25	1,384.00
2+00	1,383.00
2+10	1,382.00
2+20	1,382.00
2+30	1,383.00
3+05	1,384.00
4+30	1,385.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G08
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	*Minimum*	*Maximum*	Increment
Water Surface Elevation (ft)	1,382.00	1,387.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,382.00	N/A	N/A	N/A	N/A	N/A
1,382.50	12.86	1.71	7.5	20.05	20.00
1,383.00	50.29	2.51	20.0	30.10	30.00
1,383.50	105.10	1.96	53.7	105.11	105.00
1,384.00	296.03	2.37	125.0	180.11	180.00
1,384.50	652.02	2.65	246.3	305.12	305.00
1,385.00	1,297.80	3.02	430.0	430.12	430.00
1,385.50	2,692.64	4.17	645.0	431.12	430.00
1,386.00	4,239.53	4.93	860.0	432.12	430.00
1,386.50	6,066.90	5.64	1,075.0	433.12	430.00
1,387.00	8,152.24	6.32	1,290.0	434.12	430.00

Project Summary Report

Project Description	
Worksheet	G08-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010000	ft/ft
Water Surface Elevation	1,382.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,382.00 to 1,385.00	
Discharge	19.30	cfs
Flow Area	11.3	ft²
Wetted Perimeter	30.03	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,382.33	ft
Critical Slope	0.045988	ft/ft
Velocity	1.72	ft/s
Velocity Head	0.05	ft
Specific Energy	1,382.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+45	0.045
2+45	4+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.00
1+25	1,384.00
2+00	1,383.00
2+15	1,382.00
2+30	1,382.00
2+45	1,383.00
3+20	1,384.00
4+45	1,385.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G08-A
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data	
Slope	0.010000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	*Horton's Method*

Attribute	*Minimum*	Maximum	Increment
Water Surface Elevation (ft)	1,382.00	1,387.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,382.00	N/A	N/A	N/A	N/A	N/A
1,382.50	19.30	1.72	11.3	30.03	30.00
1,383.00	75.52	2.52	30.0	45.07	45.00
1,383.50	155.25	2.18	71.2	120.07	120.00
1,384.00	382.81	2.55	150.0	195.08	195.00
1,384.50	788.46	2.83	278.8	320.08	320.00
1,385.00	1,485.98	3.16	470.0	445.09	445.00
1,385.50	3,031.36	4.38	692.5	446.09	445.00
1,386.00	4,672.01	5.11	915.0	447.09	445.00
1,386.50	6,602.07	5.80	1,137.5	448.09	445.00
1,387.00	8,798.67	6.47	1,360.0	449.09	445.00

Project Summary Report

Project Description	
Worksheet	G11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007800	ft/ft
Water Surface Elevation	1,227.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,227.00 to 1,230.00	
Discharge	15.22	cfs
Flow Area	9.4	ft²
Wetted Perimeter	22.57	ft
Top Width	22.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,227.30	ft
Critical Slope	0.045985	ft/ft
Velocity	1.62	ft/s
Velocity Head	0.04	ft
Specific Energy	1,227.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+45	0.045
2+45	4+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
2+00	1,229.00
2+15	1,227.00
2+30	1,227.00
2+45	1,229.00
4+45	1,230.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,227.00	1,232.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,227.00	N/A	N/A	N/A	N/A	N/A
1,227.50	15.22	1.62	9.4	22.57	22.50
1,228.00	54.01	2.40	22.5	30.13	30.00
1,228.50	118.21	3.00	39.4	37.70	37.50
1,229.00	211.14	3.52	60.0	45.27	45.00
1,229.50	234.92	1.77	132.5	245.27	245.00
1,230.00	628.29	2.06	305.0	445.27	445.00
1,230.50	1,563.26	2.96	527.5	446.27	445.00
1,231.00	3,029.00	4.04	750.0	447.27	445.00
1,231.50	4,543.86	4.67	972.5	448.27	445.00
1,232.00	6,308.25	5.28	1,195.0	449.27	445.00

Project Summary Report

Project Description	
Worksheet	G11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007800	ft/ft
Water Surface Elevation	1,227.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,227.00 to 1,230.00	
Discharge	30.49	cfs
Flow Area	18.8	ft²
Wetted Perimeter	45.03	ft
Top Width	45.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,227.30	ft
Critical Slope	0.045880	ft/ft
Velocity	1.63	ft/s
Velocity Head	0.04	ft
Specific Energy	1,227.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+90	0.045
2+90	4+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
2+00	1,229.00
2+30	1,227.00
2+60	1,227.00
2+90	1,229.00
4+90	1,230.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,227.00	1,232.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,227.00	N/A	N/A	N/A	N/A	N/A
1,227.50	30.49	1.63	18.8	45.03	45.00
1,228.00	108.25	2.41	45.0	60.07	60.00
1,228.50	237.04	3.01	78.7	75.10	75.00
1,229.00	423.52	3.53	120.0	90.13	90.00
1,229.50	476.64	2.22	215.0	290.14	290.00
1,230.00	972.87	2.37	410.0	490.14	490.00
1,230.50	2,121.00	3.24	655.0	491.14	490.00
1,231.00	3,659.71	4.07	900.0	492.14	490.00
1,231.50	5,778.42	5.05	1,145.0	493.14	490.00
1,232.00	7,822.71	5.63	1,390.0	494.14	490.00

Project Summary Report

Project Description	
Worksheet	G12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008400	ft/ft
Water Surface Elevation	1,238.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,238.00 to 1,240.00	
Discharge	14.52	cfs
Flow Area	10.0	ft²
Wetted Perimeter	30.10	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,238.32	ft
Critical Slope	0.048209	ft/ft
Velocity	1.45	ft/s
Velocity Head	0.03	ft
Specific Energy	1,238.53	ft
Froude Number	0.44	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00	0+50	0.050
0+50	0+75	0.045
0+75	2+50	0.050
2+50	2+75	0.045
2+75	3+25	0.050

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00	1,240.00
0+50	1,239.00
0+60	1,238.00
0+65	1,238.00
0+75	1,239.00
2+50	1,239.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
2+60	1,238.00
2+65	1,238.00
2+75	1,239.00
3+25	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,238.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,238.00	N/A	N/A	N/A	N/A	N/A
1,238.50	14.52	1.45	10.0	30.10	30.00
1,239.00	39.56	1.32	30.0	225.20	225.00
1,239.50	295.35	1.91	155.0	275.21	275.00
1,240.00	872.89	2.86	305.0	325.22	325.00
1,240.50	1,727.15	3.69	467.5	326.22	325.00
1,241.00	2,783.48	4.42	630.0	327.22	325.00
1,241.50	4,037.42	5.09	792.5	328.22	325.00
1,242.00	5,472.38	5.73	955.0	329.22	325.00

Project Summary Report

Project Description	
Worksheet	G12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008400	ft/ft
Water Surface Elevation	1,238.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,238.00 to 1,240.00	
Discharge	14.54	cfs
Flow Area	10.0	ft²
Wetted Perimeter	30.02	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,238.32	ft
Critical Slope	0.048062	ft/ft
Velocity	1.45	ft/s
Velocity Head	0.03	ft
Specific Energy	1,238.53	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+00	0.045
2+00	3+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,240.00
1+50	1,239.00
1+70	1,238.00
1+80	1,238.00
2+00	1,239.00
3+50	1,240.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,238.00	1,242.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,238.00	N/A	N/A	N/A	N/A	N/A
1,238.50	14.54	1.45	10.0	30.02	30.00
1,239.00	64.54	2.15	30.0	50.05	50.00
1,239.50	154.44	1.67	92.5	200.05	200.00
1,240.00	480.18	2.09	230.0	350.06	350.00
1,240.50	1,336.05	3.30	405.0	351.06	350.00
1,241.00	2,342.38	4.04	580.0	352.06	350.00
1,241.50	3,573.65	4.73	755.0	353.06	350.00
1,242.00	5,008.45	5.39	930.0	354.06	350.00

Project Summary Report

Project Description	
Worksheet	G18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007700	ft/ft
Water Surface Elevation	1,303.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,303.00 to 1,305.00	
Discharge	11.28	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,303.31	ft
Critical Slope	0.047094	ft/ft
Velocity	1.50	ft/s
Velocity Head	0.04	ft
Specific Energy	1,303.54	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+55	0.045
1+55	2+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,305.00
0+25	1,304.00
1+25	1,304.00
1+35	1,303.00
1+45	1,303.00
1+55	1,304.00
2+55	1,304.00
2+80	1,305.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G18
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,303.00	1,307.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,303.00	N/A	N/A	N/A	N/A	N/A
1,303.50	11.28	1.50	7.5	20.05	20.00
1,304.00	44.13	2.21	20.0	30.10	30.00
1,304.50	251.26	1.78	141.3	255.12	255.00
1,305.00	750.10	2.73	275.0	280.14	280.00
1,305.50	1,453.74	3.50	415.0	281.14	280.00
1,306.00	2,334.71	4.21	555.0	282.14	280.00
1,306.50	3,374.53	4.86	695.0	283.14	280.00
1,307.00	4,560.14	5.46	835.0	284.14	280.00

Project Summary Report

Project Description	
Worksheet	G18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007700	ft/ft
Water Surface Elevation	1,303.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,303.00 to 1,305.00	
Discharge	6.95	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,303.32	ft
Critical Slope	0.048529	ft/ft
Velocity	1.39	ft/s
Velocity Head	0.03	ft
Specific Energy	1,303.53	ft
Froude Number	0.42	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+50	0.045
1+50	2+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,305.00
0+25	1,304.00
1+25	1,304.00
1+35	1,303.00
1+40	1,303.00
1+50	1,304.00
2+50	1,304.00
2+75	1,305.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G18-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,303.00	1,307.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,303.00	N/A	N/A	N/A	N/A	N/A
1,303.50	6.95	1.39	5.0	15.05	15.00
1,304.00	30.84	2.06	15.0	25.10	25.00
1,304.50	233.90	1.75	133.8	250.12	250.00
1,305.00	705.02	2.66	265.0	275.14	275.00
1,305.50	1,387.88	3.45	402.5	276.14	275.00
1,306.00	2,245.11	4.16	540.0	277.14	275.00
1,306.50	3,258.41	4.81	677.5	278.14	275.00
1,307.00	4,414.85	5.42	815.0	279.14	275.00

Project Summary Report

Project Description	
Worksheet	G31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011800	ft/ft
Water Surface Elevation	1,340.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,337.00 to 1,340.00	
Discharge	950.96	cfs
Flow Area	245.0	ft²
Wetted Perimeter	190.25	ft
Top Width	190.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,339.51	ft
Critical Slope	0.034568	ft/ft
Velocity	3.88	ft/s
Velocity Head	0.23	ft
Specific Energy	1,340.23	ft
Froude Number	0.60	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+10	0.045
1+10	1+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
0+40	1,339.00
0+80	1,338.00
0+85	1,337.00
1+05	1,337.00
1+10	1,338.00
1+50	1,339.00
1+90	1,340.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,337.00	1,342.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,337.00	N/A	N/A	N/A	N/A	N/A
1,337.50	23.63	2.10	11.3	25.10	25.00
1,338.00	79.06	3.16	25.0	30.20	30.00
1,338.50	134.42	2.69	50.0	70.21	70.00
1,339.00	285.42	3.00	95.0	110.22	110.00
1,339.50	549.48	3.43	160.0	150.24	150.00
1,340.00	950.96	3.88	245.0	190.25	190.00
1,340.50	1,659.34	4.88	340.0	191.25	190.00
1,341.00	2,631.92	6.05	435.0	192.25	190.00
1,341.50	3,582.82	6.76	530.0	193.25	190.00
1,342.00	4,650.24	7.44	625.0	194.25	190.00

Project Summary Report

Project Description	
Worksheet	G31-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.011800	ft/ft
Water Surface Elevation	1,340.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,337.00 to 1,340.00	
Discharge	950.96	cfs
Flow Area	245.0	ft²
Wetted Perimeter	190.25	ft
Top Width	190.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,339.51	ft
Critical Slope	0.034568	ft/ft
Velocity	3.88	ft/s
Velocity Head	0.23	ft
Specific Energy	1,340.23	ft
Froude Number	0.60	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+80	0.050
0+80	1+10	0.045
1+10	1+90	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
0+40	1,339.00
0+80	1,338.00
0+85	1,337.00
1+05	1,337.00
1+10	1,338.00
1+50	1,339.00
1+90	1,340.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G31-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.011800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	*Improved Lotter's Method*
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,337.00	1,342.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,337.00	N/A	N/A	N/A	N/A	N/A
1,337.50	23.63	2.10	11.3	25.10	25.00
1,338.00	79.06	3.16	25.0	30.20	30.00
1,338.50	134.42	2.69	50.0	70.21	70.00
1,339.00	285.42	3.00	95.0	110.22	110.00
1,339.50	549.48	3.43	160.0	150.24	150.00
1,340.00	950.96	3.88	245.0	190.25	190.00
1,340.50	1,659.34	4.88	340.0	191.25	190.00
1,341.00	2,631.92	6.05	435.0	192.25	190.00
1,341.50	3,582.82	6.76	530.0	193.25	190.00
1,342.00	4,650.24	7.44	625.0	194.25	190.00

Project Summary Report

Project Description	
Worksheet	G47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010500	ft/ft
Water Surface Elevation	1,300.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,297.00 to 1,300.00	
Discharge	1,137.81	cfs
Flow Area	310.0	ft²
Wetted Perimeter	240.14	ft
Top Width	240.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,299.46	ft
Critical Slope	0.034711	ft/ft
Velocity	3.67	ft/s
Velocity Head	0.21	ft
Specific Energy	1,300.21	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+40	0.045
1+40	2+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,300.00
0+50	1,299.00
1+00	1,298.00
1+10	1,297.00
1+30	1,297.00
1+40	1,298.00
1+90	1,299.00
2+40	1,300.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G47
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,297.00	1,302.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,297.00	N/A	N/A	N/A	N/A	N/A
1,297.50	23.57	1.89	12.5	30.05	30.00
1,298.00	83.65	2.79	30.0	40.10	40.00
1,298.50	155.97	2.50	62.5	90.11	90.00
1,299.00	339.07	2.83	120.0	140.12	140.00
1,299.50	656.69	3.24	202.5	190.13	190.00
1,300.00	1,137.81	3.67	310.0	240.14	240.00
1,300.50	1,985.44	4.62	430.0	241.14	240.00
1,301.00	3,143.59	5.72	550.0	242.14	240.00
1,301.50	4,283.33	6.39	670.0	243.14	240.00
1,302.00	5,563.85	7.04	790.0	244.14	240.00

Project Summary Report

Project Description	
Worksheet	G47-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010500	ft/ft
Water Surface Elevation	1,300.00	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.049	
Elevation Range	1,297.00 to 1,300.00	
Discharge	1,137.81	cfs
Flow Area	310.0	ft²
Wetted Perimeter	240.14	ft
Top Width	240.00	ft
Actual Depth	3.00	ft
Critical Elevation	1,299.46	ft
Critical Slope	0.034711	ft/ft
Velocity	3.67	ft/s
Velocity Head	0.21	ft
Specific Energy	1,300.21	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+40	0.045
1+40	2+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,300.00
0+50	1,299.00
1+00	1,298.00
1+10	1,297.00
1+30	1,297.00
1+40	1,298.00
1+90	1,299.00
2+40	1,300.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	G47-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,297.00	1,302.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,297.00	N/A	N/A	N/A	N/A	N/A
1,297.50	23.57	1.89	12.5	30.05	30.00
1,298.00	83.65	2.79	30.0	40.10	40.00
1,298.50	155.97	2.50	62.5	90.11	90.00
1,299.00	339.07	2.83	120.0	140.12	140.00
1,299.50	656.69	3.24	202.5	190.13	190.00
1,300.00	1,137.81	3.67	310.0	240.14	240.00
1,300.50	1,985.44	4.62	430.0	241.14	240.00
1,301.00	3,143.59	5.72	550.0	242.14	240.00
1,301.50	4,283.33	6.39	670.0	243.14	240.00
1,302.00	5,563.85	7.04	790.0	244.14	240.00

Project Summary Report

Project Description	
Worksheet	H01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012500	ft/ft
Water Surface Elevation	1,397.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,397.00 to 1,400.00	
Discharge	64.31	cfs
Flow Area	31.3	ft²
Wetted Perimeter	75.08	ft
Top Width	75.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,397.35	ft
Critical Slope	0.043913	ft/ft
Velocity	2.06	ft/s
Velocity Head	0.07	ft
Specific Energy	1,397.57	ft
Froude Number	0.56	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+95	0.045
1+95	6+95	0.050
6+95	7+85	0.045
7+85	8+85	0.050
8+85	9+45	0.045
9+45	10+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,400.00
1+50	1,399.00
1+65	1,398.00
1+80	1,398.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
1+95	1,399.00
2+95	1,400.00
5+95	1,400.00
6+95	1,399.00
7+25	1,397.00
7+55	1,397.00
7+85	1,399.00
8+35	1,400.00
8+85	1,399.00
9+05	1,397.00
9+25	1,397.00
9+45	1,399.00
10+45	1,400.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H01
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,397.00	1,402.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,397.00	N/A	N/A	N/A	N/A	N/A
1,397.50	64.31	2.06	31.3	75.08	75.00
1,398.00	228.31	3.04	75.0	100.17	100.00
1,398.50	521.49	3.66	142.5	155.28	155.00
1,399.00	977.58	4.25	230.0	195.40	195.00
1,399.50	1,287.01	3.25	396.3	470.42	470.00
1,400.00	1,813.28	2.59	700.0	1,045.44	1,045.00
1,400.50	4,589.49	3.75	1,222.5	1,046.44	1,045.00
1,401.00	8,299.60	4.76	1,745.0	1,047.44	1,045.00
1,401.50	13,812.69	6.09	2,267.5	1,048.44	1,045.00
1,402.00	19,312.85	6.92	2,790.0	1,049.44	1,045.00

Project Summary Report

Project Description	
Worksheet	H01-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.012500	ft/ft
Water Surface Elevation	1,397.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,397.00 to 1,400.00	
Discharge	38.60	cfs
Flow Area	18.8	ft²
Wetted Perimeter	45.03	ft
Top Width	45.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,397.35	ft
Critical Slope	0.043894	ft/ft
Velocity	2.06	ft/s
Velocity Head	0.07	ft
Specific Energy	1,397.57	ft
Froude Number	0.56	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	1+40	0.045
1+40	5+40	0.050
5+40	6+30	0.045
6+30	7+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,400.00
1+00	1,399.00
1+15	1,398.00
1+25	1,398.00
1+40	1,399.00
5+40	1,399.00
5+70	1,397.00
6+00	1,397.00
6+30	1,399.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
7+80	1,400.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H01-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.012500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,397.00	1,402.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,397.00	N/A	N/A	N/A	N/A	N/A
1,397.50	38.60	2.06	18.8	45.03	45.00
1,398.00	137.04	3.05	45.0	60.07	60.00
1,398.50	316.10	3.61	87.5	100.13	100.00
1,399.00	548.53	3.78	145.0	530.20	530.00
1,399.50	1,148.79	2.60	441.3	655.20	655.00
1,400.00	2,824.06	3.53	800.0	780.21	780.00
1,400.50	5,795.92	4.87	1,190.0	781.21	780.00
1,401.00	9,049.27	5.73	1,580.0	782.21	780.00
1,401.50	12,838.42	6.52	1,970.0	783.21	780.00
1,402.00	17,163.42	7.27	2,360.0	784.21	780.00

Project Summary Report

Project Description	
Worksheet	H06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017500	ft/ft
Water Surface Elevation	1,381.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,381.00 to 1,385.00	
Discharge	30.43	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,381.39	ft
Critical Slope	0.042602	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	1,381.59	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+10	0.045
3+10	5+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.00
1+25	1,384.00
2+50	1,383.00
2+70	1,381.00
2+90	1,381.00
3+10	1,383.00
4+35	1,384.00
5+60	1,385.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H06
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,381.00	1,387.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,381.00	N/A	N/A	N/A	N/A	N/A
1,381.50	30.43	2.43	12.5	30.05	30.00
1,382.00	108.00	3.60	30.0	40.10	40.00
1,382.50	236.44	4.50	52.5	50.15	50.00
1,383.00	422.40	5.28	80.0	60.20	60.00
1,383.50	478.84	3.39	141.3	185.20	185.00
1,384.00	956.13	3.61	265.0	310.21	310.00
1,384.50	1,842.27	4.08	451.3	435.21	435.00
1,385.00	3,226.43	4.61	700.0	560.22	560.00
1,385.50	5,710.43	5.83	980.0	561.22	560.00
1,386.00	9,235.99	7.33	1,260.0	562.22	560.00
1,386.50	12,629.13	8.20	1,540.0	563.22	560.00
1,387.00	16,458.65	9.04	1,820.0	564.22	560.00

Project Summary Report

Project Description	
Worksheet	H06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017500	ft/ft
Water Surface Elevation	1,381.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,381.00 to 1,385.00	
Discharge	22.80	cfs
Flow Area	9.4	ft²
Wetted Perimeter	22.57	ft
Top Width	22.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,381.39	ft
Critical Slope	0.042670	ft/ft
Velocity	2.43	ft/s
Velocity Head	0.09	ft
Specific Energy	1,381.59	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+95	0.045
2+95	5+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,385.00
1+25	1,384.00
2+50	1,383.00
2+65	1,381.00
2+80	1,381.00
2+95	1,383.00
4+20	1,384.00
5+45	1,385.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H06-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,381.00	1,387.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,381.00	N/A	N/A	N/A	N/A	N/A
1,381.50	22.80	2.43	9.4	22.57	22.50
1,382.00	80.89	3.60	22.5	30.13	30.00
1,382.50	177.06	4.50	39.4	37.70	37.50
1,383.00	316.26	5.27	60.0	45.27	45.00
1,383.50	350.90	3.08	113.8	170.27	170.00
1,384.00	777.15	3.38	230.0	295.27	295.00
1,384.50	1,594.21	3.90	408.8	420.28	420.00
1,385.00	2,896.37	4.46	650.0	545.28	545.00
1,385.50	5,696.84	6.18	922.5	546.28	545.00
1,386.00	8,479.13	7.10	1,195.0	547.28	545.00
1,386.50	11,721.18	7.99	1,467.5	548.28	545.00
1,387.00	15,388.82	8.84	1,740.0	549.28	545.00

Project Summary Report

Project Description	
Worksheet	H07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017500	ft/ft
Water Surface Elevation	1,263.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,263.00 to 1,265.00	
Discharge	17.01	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,263.39	ft
Critical Slope	0.043969	ft/ft
Velocity	2.27	ft/s
Velocity Head	0.08	ft
Specific Energy	1,263.58	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+50	0.050
4+50	4+80	0.045
4+80	9+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,265.00
0+50	1,264.00
4+50	1,264.00
4+60	1,263.00
4+70	1,263.00
4+80	1,264.00
8+80	1,264.00
9+30	1,265.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H07
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,263.00	1,267.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,263.00	N/A	N/A	N/A	N/A	N/A
1,263.50	17.01	2.27	7.5	20.05	20.00
1,264.00	66.52	3.33	20.0	30.10	30.00
1,264.50	1,125.99	2.52	447.5	880.11	880.00
1,265.00	3,473.88	3.86	900.0	930.12	930.00
1,265.50	6,948.64	5.09	1,365.0	931.12	930.00
1,266.00	11,317.58	6.18	1,830.0	932.12	930.00
1,266.50	16,552.60	7.21	2,295.0	933.12	930.00
1,267.00	22,478.76	8.14	2,760.0	934.12	930.00

Project Summary Report

Project Description	
Worksheet	H07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017500	ft/ft
Water Surface Elevation	1,263.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,263.00 to 1,265.00	
Discharge	17.01	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,263.39	ft
Critical Slope	0.043969	ft/ft
Velocity	2.27	ft/s
Velocity Head	0.08	ft
Specific Energy	1,263.58	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+50	0.050
4+50	4+80	0.045
4+80	9+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,265.00
0+50	1,264.00
4+50	1,264.00
4+60	1,263.00
4+70	1,263.00
4+80	1,264.00
8+80	1,264.00
9+30	1,265.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H07-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,263.00	1,267.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,263.00	N/A	N/A	N/A	N/A	N/A
1,263.50	17.01	2.27	7.5	20.05	20.00
1,264.00	66.52	3.33	20.0	30.10	30.00
1,264.50	1,125.99	2.52	447.5	880.11	880.00
1,265.00	3,473.88	3.86	900.0	930.12	930.00
1,265.50	6,948.64	5.09	1,365.0	931.12	930.00
1,266.00	11,317.58	6.18	1,830.0	932.12	930.00
1,266.50	16,552.60	7.21	2,295.0	933.12	930.00
1,267.00	22,478.76	8.14	2,760.0	934.12	930.00

Project Summary Report

Project Description	
Worksheet	H11
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.014300	ft/ft
Water Surface Elevation	1,313.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,313.00 to 1,315.00	
Discharge	11.35	cfs
Flow Area	6.2	ft²
Wetted Perimeter	20.03	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,313.38	ft
Critical Slope	0.047145	ft/ft
Velocity	1.82	ft/s
Velocity Head	0.05	ft
Specific Energy	1,313.55	ft
Froude Number	0.57	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+00	0.050
3+00	3+35	0.045
3+35	6+35	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,315.00
0+50	1,314.00
3+00	1,314.00
3+15	1,313.00
3+20	1,313.00
3+35	1,314.00
5+85	1,314.00
6+35	1,315.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H11
Flow Element	Irregular Channel
Method	*Manning's Formula*
Solve For	Discharge

Input Data	
Slope	0.014300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	*Increment*
Water *Surface Elevation* (ft)	1,313.00	1,317.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,313.00	N/A	N/A	N/A	N/A	N/A
1,313.50	11.35	1.82	6.2	20.03	20.00
1,314.00	54.31	2.72	20.0	35.07	35.00
1,314.50	689.08	2.30	300.0	585.08	585.00
1,315.00	2,095.07	3.46	605.0	635.09	635.00
1,315.50	4,270.58	4.63	922.5	636.09	635.00
1,316.00	6,958.09	5.61	1,240.0	637.09	635.00
1,316.50	10,144.58	6.51	1,557.5	638.09	635.00
1,317.00	13,791.07	7.36	1,875.0	639.09	635.00

Project Summary Report

Project Description	
Worksheet	H11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.014300	ft/ft
Water Surface Elevation	1,313.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,313.00 to 1,315.00	
Discharge	30.79	cfs
Flow Area	15.0	ft²
Wetted Perimeter	40.02	ft
Top Width	40.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,313.37	ft
Critical Slope	0.044603	ft/ft
Velocity	2.05	ft/s
Velocity Head	0.07	ft
Specific Energy	1,313.57	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+00	0.050
3+00	3+60	0.045
3+60	6+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,315.00
0+50	1,314.00
3+00	1,314.00
3+20	1,313.00
3+40	1,313.00
3+60	1,314.00
6+10	1,314.00
6+60	1,315.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H11-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.014300 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,313.00	1,317.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,313.00	N/A	N/A	N/A	N/A	N/A
1,313.50	30.79	2.05	15.0	40.02	40.00
1,314.00	120.47	3.01	40.0	60.05	60.00
1,314.50	796.09	2.39	332.5	610.06	610.00
1,315.00	2,314.21	3.56	650.0	660.07	660.00
1,315.50	4,665.01	4.76	980.0	661.07	660.00
1,316.00	7,506.16	5.73	1,310.0	662.07	660.00
1,316.50	10,865.75	6.63	1,640.0	663.07	660.00
1,317.00	14,703.77	7.46	1,970.0	664.07	660.00

Project Summary Report

Project Description	
Worksheet	H12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017500	ft/ft
Water Surface Elevation	1,302.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,302.00 to 1,305.00	
Discharge	17.01	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,302.39	ft
Critical Slope	0.043969	ft/ft
Velocity	2.27	ft/s
Velocity Head	0.08	ft
Specific Energy	1,302.58	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	2+80	0.045
2+80	5+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,305.00
1+25	1,304.00
2+50	1,303.00
2+60	1,302.00
2+70	1,302.00
2+80	1,303.00
4+05	1,304.00
5+30	1,305.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H12
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,302.00	1,307.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,302.00	N/A	N/A	N/A	N/A	N/A
1,302.50	17.01	2.27	7.5	20.05	20.00
1,303.00	66.52	3.33	20.0	30.10	30.00
1,303.50	150.58	2.27	66.2	155.10	155.00
1,304.00	508.13	2.90	175.0	280.11	280.00
1,304.50	1,234.92	3.57	346.3	405.11	405.00
1,305.00	2,636.16	4.55	580.0	530.12	530.00
1,305.50	4,751.33	5.62	845.0	531.12	530.00
1,306.00	7,363.97	6.63	1,110.0	532.12	530.00
1,306.50	10,426.57	7.58	1,375.0	533.12	530.00
1,307.00	13,905.14	8.48	1,640.0	534.12	530.00

Project Summary Report

Project Description	
Worksheet	H12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017500	ft/ft
Water Surface Elevation	1,302.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,302.00 to 1,305.00	
Discharge	37.96	cfs
Flow Area	17.5	ft²
Wetted Perimeter	50.02	ft
Top Width	50.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,302.39	ft
Critical Slope	0.044766	ft/ft
Velocity	2.17	ft/s
Velocity Head	0.07	ft
Specific Energy	1,302.57	ft
Froude Number	0.65	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+30	0.045
3+30	5+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,305.00
1+25	1,304.00
2+50	1,303.00
2+80	1,302.00
3+00	1,302.00
3+30	1,303.00
4+55	1,304.00
5+80	1,305.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H12-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,302.00	1,307.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,302.00	N/A	N/A	N/A	N/A	N/A
1,302.50	37.96	2.17	17.5	50.02	50.00
1,303.00	159.61	3.19	50.0	80.03	80.00
1,303.50	349.25	2.88	121.3	205.04	205.00
1,304.00	864.67	3.39	255.0	330.04	330.00
1,304.50	1,795.06	3.98	451.3	455.05	455.00
1,305.00	3,237.66	4.56	710.0	580.05	580.00
1,305.50	6,192.01	6.19	1,000.0	581.05	580.00
1,306.00	9,212.43	7.14	1,290.0	582.05	580.00
1,306.50	12,722.46	8.05	1,580.0	583.05	580.00
1,307.00	16,686.42	8.92	1,870.0	584.05	580.00

Project Summary Report

Project Description	
Worksheet	H15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009600	ft/ft
Water Surface Elevation	1,323.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,323.00 to 1,325.00	
Discharge	18.91	cfs
Flow Area	11.3	ft^2
Wetted Perimeter	30.03	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,323.33	ft
Critical Slope	0.046147	ft/ft
Velocity	1.68	ft/s
Velocity Head	0.04	ft
Specific Energy	1,323.54	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+25	0.050
1+25	1+70	0.045
1+70	2+95	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,325.00
1+25	1,324.00
1+40	1,323.00
1+55	1,323.00
1+70	1,324.00
2+95	1,325.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H15
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,322.00	1,327.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,323.00	N/A	N/A	N/A	N/A	N/A
1,323.00	N/A	N/A	N/A	N/A	N/A
1,323.00	N/A	N/A	N/A	N/A	N/A
1,323.50	18.91	1.68	11.3	30.03	30.00
1,324.00	74.00	2.47	30.0	45.07	45.00
1,324.50	156.13	1.86	83.7	170.07	170.00
1,325.00	456.17	2.28	200.0	295.07	295.00
1,325.50	1,157.30	3.33	347.5	296.07	295.00
1,326.00	2,169.06	4.38	495.0	297.07	295.00
1,326.50	3,285.95	5.11	642.5	298.07	295.00
1,327.00	4,584.98	5.80	790.0	299.07	295.00

Project Summary Report

Project Description	
Worksheet	H15-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009600	ft/ft
Water Surface Elevation	1,322.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,322.00 to 1,325.00	
Discharge	16.89	cfs
Flow Area	9.4	ft²
Wetted Perimeter	22.57	ft
Top Width	22.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,322.32	ft
Critical Slope	0.045100	ft/ft
Velocity	1.80	ft/s
Velocity Head	0.05	ft
Specific Energy	1,322.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+95	0.045
1+95	3+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,325.00
0+25	1,324.00
1+50	1,324.00
1+65	1,322.00
1+80	1,322.00
1+95	1,324.00
3+20	1,324.00
3+45	1,325.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H15-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,322.00	1,327.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,322.00	N/A	N/A	N/A	N/A	N/A
1,322.50	16.89	1.80	9.4	22.57	22.50
1,323.00	59.91	2.66	22.5	30.13	30.00
1,323.50	131.14	3.33	39.4	37.70	37.50
1,324.00	234.24	3.90	60.0	45.27	45.00
1,324.50	481.97	2.25	213.8	320.29	320.00
1,325.00	1,212.51	3.19	380.0	345.31	345.00
1,325.50	2,380.10	4.31	552.5	346.31	345.00
1,326.00	3,650.44	5.04	725.0	347.31	345.00
1,326.50	5,137.84	5.72	897.5	348.31	345.00
1,327.00	6,825.21	6.38	1,070.0	349.31	345.00

Project Summary Report

Project Description	
Worksheet	H17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.021400	ft/ft
Water Surface Elevation	1,401.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,401.00 to 1,405.00	
Discharge	35.60	cfs
Flow Area	13.8	ft²
Wetted Perimeter	35.03	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,401.41	ft
Critical Slope	0.042548	ft/ft
Velocity	2.59	ft/s
Velocity Head	0.10	ft
Specific Energy	1,401.60	ft
Froude Number	0.73	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+30	0.045
3+30	5+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
1+50	1,404.00
2+50	1,403.00
2+80	1,401.00
3+00	1,401.00
3+30	1,403.00
4+30	1,404.00
5+80	1,405.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H17
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.021400 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,401.00	1,407.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,401.00	N/A	N/A	N/A	N/A	N/A
1,401.50	35.60	2.59	13.8	35.03	35.00
1,402.00	133.17	3.80	35.0	50.07	50.00
1,402.50	303.67	4.76	63.7	65.10	65.00
1,403.00	559.91	5.60	100.0	80.13	80.00
1,403.50	707.57	4.29	165.0	180.14	180.00
1,404.00	1,252.01	4.47	280.0	280.14	280.00
1,404.50	2,234.28	4.88	457.5	430.15	430.00
1,405.00	3,703.03	5.22	710.0	580.15	580.00
1,405.50	6,445.02	6.45	1,000.0	581.15	580.00
1,406.00	9,777.24	7.58	1,290.0	582.15	580.00
1,406.50	14,495.29	9.17	1,580.0	583.15	580.00
1,407.00	18,872.71	10.09	1,870.0	584.15	580.00

Project Summary Report

Project Description	
Worksheet	H17-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.021400	ft/ft
Water Surface Elevation	1,401.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,401.00 to 1,405.00	
Discharge	33.65	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,401.41	ft
Critical Slope	0.041829	ft/ft
Velocity	2.69	ft/s
Velocity Head	0.11	ft
Specific Energy	1,401.61	ft
Froude Number	0.74	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+10	0.045
3+10	5+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,405.00
1+50	1,404.00
2+50	1,403.00
2+70	1,401.00
2+90	1,401.00
3+10	1,403.00
4+10	1,404.00
5+60	1,405.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H17-A
Flow Element	*Irregular Channel*
Method	Manning's Formula
Solve For	*Discharge*

Input Data	
Slope	*0.021400 ft/ft*

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	*Increment*
Water Surface Elevation (ft)	1,401.00	1,407.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	*Velocity* (ft/s)	*Flow* Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,401.00	N/A	N/A	N/A	N/A	N/A
1,401.50	33.65	2.69	12.5	30.05	30.00
1,402.00	119.43	3.98	30.0	40.10	40.00
1,402.50	261.46	4.98	52.5	50.15	50.00
1,403.00	467.10	5.84	80.0	60.20	60.00
1,403.50	543.70	4.03	135.0	160.20	160.00
1,404.00	1,011.57	4.21	240.0	260.21	260.00
1,404.50	1,874.95	4.60	407.5	410.21	410.00
1,405.00	3,235.13	4.98	650.0	560.22	560.00
1,405.50	5,799.08	6.24	930.0	561.22	560.00
1,406.00	9,649.48	7.97	1,210.0	562.22	560.00
1,406.50	13,309.89	8.93	1,490.0	563.22	560.00
1,407.00	17,459.22	9.86	1,770.0	564.22	560.00

Project Summary Report

Project Description	
Worksheet	H31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009600	ft/ft
Water Surface Elevation	1,301.50	ft

Options	
Current Roughness Method	*Improved Lotter's Method*
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	*1,301.00 to 1,305.00*	
Discharge	22.54	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,301.32	ft
Critical Slope	0.045036	ft/ft
Velocity	1.80	ft/s
Velocity Head	0.05	ft
Specific Energy	1,301.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+10	0.045
3+10	5+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,305.00
0+50	1,304.00
2+50	1,303.00
2+70	1,301.00
2+90	1,301.00
3+10	1,303.00
5+10	1,304.00
5+60	1,305.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H31
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,301.00	1,307.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,301.00	N/A	N/A	N/A	N/A	N/A
1,301.50	22.54	1.80	12.5	30.05	30.00
1,302.00	79.99	2.67	30.0	40.10	40.00
1,302.50	175.12	3.34	52.5	50.15	50.00
1,303.00	312.85	3.91	80.0	60.20	60.00
1,303.50	344.71	2.15	160.0	260.20	260.00
1,304.00	819.56	2.41	340.0	460.20	460.00
1,304.50	1,912.32	3.28	582.5	510.21	510.00
1,305.00	3,340.20	3.93	850.0	560.22	560.00
1,305.50	5,691.10	5.04	1,130.0	561.22	560.00
1,306.00	8,049.78	5.71	1,410.0	562.22	560.00
1,306.50	10,742.01	6.36	1,690.0	563.22	560.00
1,307.00	13,745.87	6.98	1,970.0	564.22	560.00

Project Summary Report

Project Description	
Worksheet	H31-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009600	ft/ft
Water Surface Elevation	1,301.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,301.00 to 1,305.00	
Discharge	22.54	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,301.32	ft
Critical Slope	0.045036	ft/ft
Velocity	1.80	ft/s
Velocity Head	0.05	ft
Specific Energy	1,301.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+60	0.045
2+60	4+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,305.00
0+50	1,304.00
2+00	1,303.00
2+20	1,301.00
2+40	1,301.00
2+60	1,303.00
4+10	1,304.00
4+60	1,305.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H31-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009600 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,301.00	1,307.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width. (ft)
1,301.00	N/A	N/A	N/A	N/A	N/A
1,301.50	22.54	1.80	12.5	30.05	30.00
1,302.00	79.99	2.67	30.0	40.10	40.00
1,302.50	175.12	3.34	52.5	50.15	50.00
1,303.00	312.85	3.91	80.0	60.20	60.00
1,303.50	348.96	2.37	147.5	210.20	210.00
1,304.00	742.94	2.56	290.0	360.21	360.00
1,304.50	1,633.80	3.39	482.5	410.22	410.00
1,305.00	2,776.30	3.97	700.0	460.23	460.00
1,305.50	4,773.49	5.13	930.0	461.23	460.00
1,306.00	6,715.54	5.79	1,160.0	462.23	460.00
1,306.50	8,931.67	6.43	1,390.0	463.23	460.00
1,307.00	11,403.46	7.04	1,620.0	464.23	460.00

Project Summary Report

Project Description	
Worksheet	H32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009800	ft/ft
Water Surface Elevation	1,242.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,242.00 to 1,245.00	
Discharge	7.84	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,242.34	ft
Critical Slope	0.047649	ft/ft
Velocity	1.57	ft/s
Velocity Head	0.04	ft
Specific Energy	1,242.54	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+25	0.045
2+25	4+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,245.00
1+00	1,244.00
2+00	1,243.00
2+10	1,242.00
2+15	1,242.00
2+25	1,243.00
3+25	1,244.00
4+25	1,245.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H32
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,242.00	1,247.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,242.00	N/A	N/A	N/A	N/A	N/A
1,242.50	7.84	1.57	5.0	15.05	15.00
1,243.00	34.79	2.32	15.0	25.10	25.00
1,243.50	88.31	1.68	52.5	125.10	125.00
1,244.00	303.40	2.17	140.0	225.11	225.00
1,244.50	740.18	2.67	277.5	325.11	325.00
1,245.00	1,577.44	3.39	465.0	425.12	425.00
1,245.50	2,846.30	4.20	677.5	426.12	425.00
1,246.00	4,412.76	4.96	890.0	427.12	425.00
1,246.50	6,248.08	5.67	1,102.5	428.12	425.00
1,247.00	8,331.66	6.34	1,315.0	429.12	425.00

Project Summary Report

Project Description	
Worksheet	H32-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009800	ft/ft
Water Surface Elevation	1,242.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,242.00 to 1,245.00	
Discharge	14.19	cfs
Flow Area	8.8	ft²
Wetted Perimeter	25.03	ft
Top Width	25.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,242.33	ft
Critical Slope	0.046904	ft/ft
Velocity	1.62	ft/s
Velocity Head	0.04	ft
Specific Energy	1,242.54	ft
Froude Number	0.48	
Flow Type	*Subcritical*	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+40	0.045
2+40	4+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,245.00
1+00	1,244.00
2+00	1,243.00
2+15	1,242.00
2+25	1,242.00
2+40	1,243.00
3+40	1,244.00
4+40	1,245.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H32-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,242.00	1,247.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,242.00	N/A	N/A	N/A	N/A	N/A
1,242.50	14.19	1.62	8.8	25.03	25.00
1,243.00	59.67	2.39	25.0	40.07	40.00
1,243.50	133.43	1.91	70.0	140.07	140.00
1,244.00	384.32	2.33	165.0	240.08	240.00
1,244.50	867.39	2.80	310.0	340.08	340.00
1,245.00	1,643.03	3.25	505.0	440.09	440.00
1,245.50	3,181.54	4.39	725.0	441.09	440.00
1,246.00	4,840.80	5.12	945.0	442.09	440.00
1,246.50	6,777.78	5.82	1,165.0	443.09	440.00
1,247.00	8,971.51	6.48	1,385.0	444.09	440.00

Project Summary Report

Project Description	
Worksheet	H33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009700	ft/ft
Water Surface Elevation	1,213.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,213.00 to 1,215.00	
Discharge	7.80	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,213.34	ft
Critical Slope	0.047686	ft/ft
Velocity	1.56	ft/s
Velocity Head	0.04	ft
Specific Energy	1,213.54	ft
Froude Number	0.48	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+50	0.050
4+50	4+75	0.045
4+75	9+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,215.00
1+00	1,214.00
4+50	1,214.00
4+60	1,213.00
4+65	1,213.00
4+75	1,214.00
8+25	1,214.00
9+25	1,215.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H33
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,213.00	1,217.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,213.00	N/A	N/A	N/A	N/A	N/A
1,213.50	7.80	1.56	5.0	15.05	15.00
1,214.00	34.61	2.31	15.0	25.10	25.00
1,214.50	732.94	1.82	402.5	825.10	825.00
1,215.00	2,312.29	2.75	840.0	925.11	925.00
1,215.50	4,799.06	3.68	1,302.5	926.11	925.00
1,216.00	7,957.26	4.51	1,765.0	927.11	925.00
1,216.50	11,754.96	5.28	2,227.5	928.11	925.00
1,217.00	16,076.13	5.98	2,690.0	929.11	925.00

Project Summary Report

Project Description	
Worksheet	H33-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.009700	ft/ft
Water Surface Elevation	1,213.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,213.00 to 1,215.00	
Discharge	20.46	cfs
Flow Area	12.5	ft^2
Wetted Perimeter	35.10	ft
Top Width	35.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,213.33	ft
Critical Slope	0.046589	ft/ft
Velocity	1.64	ft/s
Velocity Head	0.04	ft
Specific Energy	1,213.54	ft
Froude Number	0.48	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	1+75	0.045
1+75	6+00	0.050
6+00	6+30	0.045
6+30	7+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,215.00
1+50	1,214.00
1+60	1,213.00
1+65	1,213.00
1+75	1,214.00
6+00	1,214.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
6+10	1,213.00
6+20	1,213.00
6+30	1,214.00
7+80	1,215.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H33-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.009700 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,213.00	1,217.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,213.00	N/A	N/A	N/A	N/A	N/A
1,213.50	20.46	1.64	12.5	35.10	35.00
1,214.00	54.10	1.55	35.0	480.20	480.00
1,214.50	633.86	2.03	312.5	630.20	630.00
1,215.00	1,903.15	2.86	665.0	780.21	780.00
1,215.50	3,929.04	3.72	1,055.0	781.21	780.00
1,216.00	6,538.72	4.53	1,445.0	782.21	780.00
1,216.50	9,696.84	5.28	1,835.0	783.21	780.00
1,217.00	13,304.92	5.98	2,225.0	784.21	780.00

Project Summary Report

Project Description	
Worksheet	H39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010000	ft/ft
Water Surface Elevation	1,193.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,193.00 to 1,195.00	
Discharge	12.86	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,193.33	ft
Critical Slope	0.046063	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	1,193.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	4+30	0.045
4+30	8+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,195.00
0+50	1,194.00
4+00	1,194.00
4+10	1,193.00
4+20	1,193.00
4+30	1,194.00
7+80	1,194.00
8+30	1,195.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H39
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,193.00	1,197.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,193.00	N/A	N/A	N/A	N/A	N/A
1,193.50	12.86	1.71	7.5	20.05	20.00
1,194.00	50.29	2.51	20.0	30.10	30.00
1,194.50	757.73	1.91	397.5	780.11	780.00
1,195.00	2,329.12	2.91	800.0	830.12	830.00
1,195.50	4,668.82	3.84	1,215.0	831.12	830.00
1,196.00	7,653.82	4.70	1,630.0	832.12	830.00
1,196.50	11,144.61	5.45	2,045.0	833.12	830.00
1,197.00	15,138.45	6.15	2,460.0	834.12	830.00

Project Summary Report

Project Description	
Worksheet	H39-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.010000	ft/ft
Water Surface Elevation	1,193.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,193.00 to 1,195.00	
Discharge	12.86	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,193.33	ft
Critical Slope	0.046063	ft/ft
Velocity	1.71	ft/s
Velocity Head	0.05	ft
Specific Energy	1,193.55	ft
Froude Number	0.49	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	4+30	0.045
4+30	8+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,195.00
0+50	1,194.00
4+00	1,194.00
4+10	1,193.00
4+20	1,193.00
4+30	1,194.00
7+80	1,194.00
8+30	1,195.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H39-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.010000 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,193.00	1,197.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,193.00	N/A	N/A	N/A	N/A	N/A
1,193.50	12.86	1.71	7.5	20.05	20.00
1,194.00	50.29	2.51	20.0	30.10	30.00
1,194.50	757.73	1.91	397.5	780.11	780.00
1,195.00	2,329.12	2.91	800.0	830.12	830.00
1,195.50	4,668.82	3.84	1,215.0	831.12	830.00
1,196.00	7,653.82	4.70	1,630.0	832.12	830.00
1,196.50	11,144.61	5.45	2,045.0	833.12	830.00
1,197.00	15,138.45	6.15	2,460.0	834.12	830.00

Project Summary Report

Project Description	
Worksheet	H48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008500	ft/ft
Water Surface Elevation	1,198.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,198.00 to 1,200.00	
Discharge	5.90	cfs
Flow Area	3.7	ft²
Wetted Perimeter	10.10	ft
Top Width	10.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,198.31	ft
Critical Slope	0.047095	ft/ft
Velocity	1.57	ft/s
Velocity Head	0.04	ft
Specific Energy	1,198.54	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+50	0.050
3+50	3+65	0.045
3+65	7+15	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,200.00
0+50	1,199.00
3+50	1,199.00
3+55	1,198.00
3+60	1,198.00
3+65	1,199.00
6+65	1,199.00
7+15	1,200.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H48
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,198.00	1,202.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,198.00	N/A	N/A	N/A	N/A	N/A
1,198.50	5.90	1.57	3.7	10.10	10.00
1,199.00	23.03	2.30	10.0	15.20	15.00
1,199.50	568.23	1.72	330.0	665.21	665.00
1,200.00	1,783.48	2.64	675.0	715.22	715.00
1,200.50	3,617.99	3.50	1,032.5	716.22	715.00
1,201.00	5,952.07	4.28	1,390.0	717.22	715.00
1,201.50	8,700.58	4.98	1,747.5	718.22	715.00
1,202.00	11,848.07	5.63	2,105.0	719.22	715.00

Project Summary Report

Project Description	
Worksheet	H48-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.008500	ft/ft
Water Surface Elevation	1,198.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,198.00 to 1,200.00	
Discharge	13.22	cfs
Flow Area	8.8	ft²
Wetted Perimeter	25.03	ft
Top Width	25.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,198.32	ft
Critical Slope	0.047436	ft/ft
Velocity	1.51	ft/s
Velocity Head	0.04	ft
Specific Energy	1,198.54	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+50	0.050
3+50	3+90	0.045
3+90	7+40	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,200.00
0+50	1,199.00
3+50	1,199.00
3+65	1,198.00
3+75	1,198.00
3+90	1,199.00
6+90	1,199.00
7+40	1,200.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H48-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.008500 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,198.00	1,202.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,198.00	N/A	N/A	N/A	N/A	N/A
1,198.50	13.22	1.51	8.8	25.03	25.00
1,199.00	55.57	2.22	25.0	40.07	40.00
1,199.50	637.46	1.78	357.5	690.08	690.00
1,200.00	1,926.78	2.69	715.0	740.09	740.00
1,200.50	3,855.57	3.55	1,085.0	741.09	740.00
1,201.00	6,327.54	4.35	1,455.0	742.09	740.00
1,201.50	9,203.96	5.04	1,825.0	743.09	740.00
1,202.00	12,493.92	5.69	2,195.0	744.09	740.00

Project Summary Report

Project Description	
Worksheet	H59
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007800	ft/ft
Water Surface Elevation	1,233.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,233.00 to 1,235.00	
Discharge	17.05	cfs
Flow Area	11.3	ft²
Wetted Perimeter	30.03	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,233.31	ft
Critical Slope	0.046969	ft/ft
Velocity	1.52	ft/s
Velocity Head	0.04	ft
Specific Energy	1,233.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	4+45	0.045
4+45	8+45	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,235.00
0+25	1,234.00
4+00	1,234.00
4+15	1,233.00
4+30	1,233.00
4+45	1,234.00
8+20	1,234.00
8+45	1,235.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H59
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,233.00	1,237.00	0.50

Water Surface Elevation (ft)	*Discharge* (cfs)	*Velocity* (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1,233.00	N/A	N/A	N/A	N/A	N/A
1,233.50	17.05	1.52	11.3	30.03	30.00
1,234.00	66.70	2.22	30.0	45.07	45.00
1,234.50	750.84	1.73	433.8	820.09	820.00
1,235.00	2,253.53	2.65	850.0	845.11	845.00
1,235.50	4,409.46	3.47	1,272.5	846.11	845.00
1,236.00	7,154.80	4.22	1,695.0	847.11	845.00
1,236.50	10,340.07	4.88	2,117.5	848.11	845.00
1,237.00	13,976.01	5.50	2,540.0	849.11	845.00

Project Summary Report

Project Description	
Worksheet	H59-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007800	ft/ft
Water Surface Elevation	1,233.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,233.00 to 1,235.00	
Discharge	11.36	cfs
Flow Area	7.5	ft²
Wetted Perimeter	20.05	ft
Top Width	20.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,233.31	ft
Critical Slope	0.047042	ft/ft
Velocity	1.51	ft/s
Velocity Head	0.04	ft
Specific Energy	1,233.54	ft
Froude Number	0.44	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	4+00	0.050
4+00	4+30	0.045
4+30	8+30	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,235.00
0+25	1,234.00
4+00	1,234.00
4+10	1,233.00
4+20	1,233.00
4+30	1,234.00
8+05	1,234.00
8+30	1,235.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H59-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007800 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,233.00	1,237.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,233.00	N/A	N/A	N/A	N/A	N/A
1,233.50	11.36	1.51	7.5	20.05	20.00
1,234.00	44.41	2.22	20.0	30.10	30.00
1,234.50	707.39	1.70	416.3	805.12	805.00
1,235.00	2,165.09	2.62	825.0	830.14	830.00
1,235.50	4,265.58	3.44	1,240.0	831.14	830.00
1,236.00	6,930.15	4.19	1,655.0	832.14	830.00
1,236.50	10,040.91	4.85	2,070.0	833.14	830.00
1,237.00	13,594.06	5.47	2,485.0	834.14	830.00

Project Summary Report

Project Description	
Worksheet	H63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,222.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,222.00 to 1,225.00	
Discharge	7.04	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,222.32	ft
Critical Slope	0.048434	ft/ft
Velocity	1.41	ft/s
Velocity Head	0.03	ft
Specific Energy	1,222.53	ft
Froude Number	0.43	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+75	0.050
1+75	2+00	0.045
2+00	3+75	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,225.00
1+00	1,224.00
1+75	1,223.00
1+85	1,222.00
1+90	1,222.00
2+00	1,223.00
2+75	1,224.00
3+75	1,225.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H63
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.007900 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,221.00	1,227.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,222.00	N/A	N/A	N/A	N/A	N/A
1,222.00	N/A	N/A	N/A	N/A	N/A
1,222.00	N/A	N/A	N/A	N/A	N/A
1,222.50	7.04	1.41	5.0	15.05	15.00
1,223.00	31.23	2.08	15.0	25.10	25.00
1,223.50	74.85	1.62	46.2	100.11	100.00
1,224.00	232.77	2.02	115.0	175.11	175.00
1,224.50	541.08	2.38	227.5	275.12	275.00
1,225.00	1,071.22	2.75	390.0	375.12	375.00
1,225.50	2,154.28	3.73	577.5	376.12	375.00
1,226.00	3,370.69	4.41	765.0	377.12	375.00
1,226.50	4,801.95	5.04	952.5	378.12	375.00
1,227.00	6,430.99	5.64	1,140.0	379.12	375.00

Project Summary Report

Project Description	
Worksheet	H63-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.007900	ft/ft
Water Surface Elevation	1,221.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,221.00 to 1,225.00	
Discharge	20.44	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,221.30	ft
Critical Slope	0.045868	ft/ft
Velocity	1.64	ft/s
Velocity Head	0.04	ft
Specific Energy	1,221.54	ft
Froude Number	0.45	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+00	0.050
2+00	2+60	0.045
2+60	4+60	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,225.00
1+00	1,224.00
2+00	1,223.00
2+20	1,221.00
2+40	1,221.00
2+60	1,223.00
3+60	1,224.00
4+60	1,225.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	H63-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	*0.007900*	*ft/ft*

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,221.00	1,227.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,221.00	N/A	N/A	N/A	N/A	N/A
1,221.50	20.44	1.64	12.5	30.05	30.00
1,222.00	72.56	2.42	30.0	40.10	40.00
1,222.50	158.86	3.03	52.5	50.15	50.00
1,223.00	283.80	3.55	80.0	60.20	60.00
1,223.50	330.35	2.45	135.0	160.20	160.00
1,224.00	614.62	2.56	240.0	260.21	260.00
1,224.50	1,127.94	2.86	395.0	360.21	360.00
1,225.00	1,915.89	3.19	600.0	460.22	460.00
1,225.50	3,335.77	4.02	830.0	461.22	460.00
1,226.00	5,366.91	5.06	1,060.0	462.22	460.00
1,226.50	7,268.93	5.63	1,290.0	463.22	460.00
1,227.00	9,410.02	6.19	1,520.0	464.22	460.00

Project Summary Report

Project Description	
Worksheet	I03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017100	ft/ft
Water Surface Elevation	1,335.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,335.00 to 1,340.00	
Discharge	30.08	cfs
Flow Area	12.5	ft²
Wetted Perimeter	30.05	ft
Top Width	30.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,335.39	ft
Critical Slope	0.042692	ft/ft
Velocity	2.41	ft/s
Velocity Head	0.09	ft
Specific Energy	1,335.59	ft
Froude Number	0.66	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	2+50	0.050
2+50	3+50	0.045
3+50	6+00	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
0+25	1,339.00
2+50	1,339.00
2+90	1,335.00
3+10	1,335.00
3+50	1,339.00
5+75	1,339.00
6+00	1,340.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	I03
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,335.00	1,342.00	0.50

Water Surface Elevation (ft)	*Discharge* (cfs)	*Velocity* (ft/s)	*Flow* Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,335.00	N/A	N/A	N/A	N/A	N/A
1,335.50	30.08	2.41	12.5	30.05	30.00
1,336.00	106.76	3.56	30.0	40.10	40.00
1,336.50	233.72	4.45	52.5	50.15	50.00
1,337.00	417.54	5.22	80.0	60.20	60.00
1,337.50	664.93	5.91	112.5	70.25	70.00
1,338.00	982.41	6.55	150.0	80.30	80.00
1,338.50	1,376.31	7.15	192.5	90.35	90.00
1,339.00	1,852.73	7.72	240.0	100.40	100.00
1,339.50	1,929.41	3.70	521.2	575.42	575.00
1,340.00	3,947.34	4.84	815.0	600.44	600.00
1,340.50	6,806.61	6.10	1,115.0	601.44	600.00
1,341.00	10,033.77	7.09	1,415.0	602.44	600.00
1,341.50	14,704.56	8.57	1,715.0	603.44	600.00
1,342.00	18,885.22	9.37	2,015.0	604.44	600.00

Project Summary Report

Project Description	
Worksheet	I03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.017100	ft/ft
Water Surface Elevation	1,338.99	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,335.00 to 1,340.00	
Discharge	1,713.03	cfs
Flow Area	285.8	ft²
Wetted Perimeter	174.68	ft
Top Width	174.25	ft
Actual Depth	3.99	ft
Critical Elevation	1,338.72	ft
Critical Slope	0.025490	ft/ft
Velocity	5.99	ft/s
Velocity Head	0.56	ft
Specific Energy	1,339.55	ft
Froude Number	0.83	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+00	0.050
1+00	2+00	0.045
2+00	5+00	0.050
5+00	5+80	0.045
5+80	6+80	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,340.00
0+25	1,339.20
1+00	1,339.00
1+40	1,335.00
1+60	1,335.00
2+00	1,339.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
5+00	1,339.20
5+30	1,338.00
5+50	1,338.00
5+80	1,339.00
6+55	1,339.20
6+80	1,340.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	I03-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.017100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,335.00	1,342.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,335.00	N/A	N/A	N/A	N/A	N/A
1,335.50	30.08	2.41	12.5	30.05	30.00
1,336.00	106.76	3.56	30.0	40.10	40.00
1,336.50	233.72	4.45	52.5	50.15	50.00
1,337.00	417.54	5.22	80.0	60.20	60.00
1,337.50	664.93	5.91	112.5	70.25	70.00
1,338.00	982.41	6.55	150.0	80.30	80.00
1,338.50	1,194.49	5.71	209.4	137.87	137.50
1,339.00	1,725.57	6.00	287.5	175.44	175.00
1,339.50	2,182.95	3.90	559.8	649.20	648.75
1,340.00	4,471.97	5.01	892.0	680.47	680.00
1,340.50	7,500.63	6.09	1,232.0	681.47	680.00
1,341.00	11,149.62	7.09	1,572.0	682.47	680.00
1,341.50	15,365.43	8.04	1,912.0	683.47	680.00
1,342.00	21,139.58	9.39	2,252.0	684.47	680.00

Project Summary Report

Project Description	
Worksheet	J04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.015100	ft/ft
Water Surface Elevation	1,228.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,228.00 to 1,230.00	
Discharge	9.73	cfs
Flow Area	5.0	ft²
Wetted Perimeter	15.05	ft
Top Width	15.00	ft
Actual Depth	0.50	ft
Critical Elevation	1,228.38	ft
Critical Slope	0.046129	ft/ft
Velocity	1.95	ft/s
Velocity Head	0.06	ft
Specific Energy	1,228.56	ft
Froude Number	0.59	
Flow Type	Subcritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	3+00	0.050
3+00	3+25	0.045
3+25	6+25	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
0+50	1,229.00
3+00	1,229.00
3+10	1,228.00
3+15	1,228.00
3+25	1,229.00
5+75	1,229.00
6+25	1,230.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	J04
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.015100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,227.00	1,232.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,228.00	N/A	N/A	N/A	N/A	N/A
1,228.00	N/A	N/A	N/A	N/A	N/A
1,228.00	N/A	N/A	N/A	N/A	N/A
1,228.50	9.73	1.95	5.0	15.05	15.00
1,229.00	43.18	2.88	15.0	25.10	25.00
1,229.50	675.03	2.33	290.0	575.11	575.00
1,230.00	2,082.56	3.53	590.0	625.12	625.00
1,230.50	4,259.39	4.72	902.5	626.12	625.00
1,231.00	6,962.88	5.73	1,215.0	627.12	625.00
1,231.50	10,170.78	6.66	1,527.5	628.12	625.00
1,232.00	13,843.53	7.52	1,840.0	629.12	625.00

Project Summary Report

Project Description	
Worksheet	J04-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	0.015100	ft/ft
Water Surface Elevation	1,227.50	ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Results		
Mannings Coefficient	0.045	
Elevation Range	1,227.00 to 1,230.00	
Discharge	49.44	cfs
Flow Area	21.9	ft²
Wetted Perimeter	52.62	ft
Top Width	52.50	ft
Actual Depth	0.50	ft
Critical Elevation	1,227.37	ft
Critical Slope	0.043211	ft/ft
Velocity	2.26	ft/s
Velocity Head	0.08	ft
Specific Energy	1,227.58	ft
Froude Number	0.62	
Flow Type	Subcritical	

Calculation Messages:
Flow is divided.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	1+50	0.050
1+50	2+10	0.045
2+10	4+50	0.050
4+50	4+95	0.045
4+95	6+50	0.050

Natural Channel Points

Station (ft)	Elevation (ft)
0+00	1,230.00
0+25	1,229.00
1+50	1,229.00
1+70	1,227.00
1+90	1,227.00
2+10	1,229.00

Project Summary Report

Natural Channel Points	
Station (ft)	Elevation (ft)
4+50	1,229.00
4+65	1,227.00
4+80	1,227.00
4+95	1,229.00
6+25	1,229.00
6+50	1,230.00

Table
Rating Table for Irregular Channel

Project Description	
Worksheet	J04-A
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	0.015100 ft/ft

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Metho	Horton's Method

Attribute	Minimum	Maximum	Increment
Water Surface Elevation (ft)	1,227.00	1,232.00	0.50

Water Surface Elevation (ft)	Discharge (cfs)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1,227.00	N/A	N/A	N/A	N/A	N/A
1,227.50	49.44	2.26	21.9	52.62	52.50
1,228.00	175.46	3.34	52.5	70.23	70.00
1,228.50	384.10	4.18	91.9	87.85	87.50
1,229.00	417.18	2.98	140.0	345.46	345.00
1,229.50	1,323.00	2.96	446.3	625.48	625.00
1,230.00	3,368.73	4.40	765.0	650.50	650.00
1,230.50	6,121.69	5.62	1,090.0	651.50	650.00
1,231.00	9,225.54	6.52	1,415.0	652.50	650.00
1,231.50	12,844.55	7.38	1,740.0	653.50	650.00
1,232.00	16,940.88	8.20	2,065.0	654.50	650.00

Three way split at CP DA02A			
	Diverted flow from	Remainder flow	
	A02 to A03	to divert DA02B	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,261.00	0	0	0
1,261.50	24	24	47
1,262.00	77	77	155
1,262.50	158	158	315
1,263.00	264	264	528
1,263.50	279	276	555
1,264.00	466	469	935
1,264.50	844	819	1662
1,265.00	1353	1352	2704
1,265.50	2247	2323	4570
1,266.00	3303	3432	6736
1,266.50	4821	5022	9842
1,267.00	6183	6456	12639
Three way split at CP DA02B			
	Diverted flow from	Remainder flow	
	A02 to A10	from A02 to A11	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,261.00	0	0	0
1,261.50	0	0	0
1,262.00	0	0	0
1,262.50	12	12	24
1,263.00	42	42	83
1,263.50	78	83	161
1,264.00	241	280	521
1,264.50	684	808	1492
1,265.00	1204	1446	2650
1,265.50	1842	2230	4072
1,266.00	2586	3147	5732
1,266.50	3426	4185	7611
1,267.00	4358	5337	9695

Split flow at CP DA04			
	Diverted flow from	Remainder flow	
	A04 to A06	from A04 to A07	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,342.00	0	0	0
1,342.50	38	26	64
1,343.00	129	92	221
1,343.50	222	182	405
1,344.00	543	464	1007
1,344.50	1283	1100	2383
1,345.00	2351	2052	4403
1,345.50	3478	3071	6549
1,346.00	4782	4252	9034
1,346.50	6249	5582	11830
1,347.00	7867	7051	14918

Split flow at A07			
	Diverted flow from	Remainder flow	
	A07 to A15	from A07 to A14	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,238.00	0	0	0
1,238.50	25	31	56
1,239.00	108	128	236
1,239.50	390	374	765
1,240.00	1171	904	2075
1,240.50	2848	1905	4754
1,241.00	5135	3227	8362
1,241.50	7952	4828	12780
1,242.00	11249	6682	17930

Split flow at CP DA08			
	Diverted flow from A08 to A19	Remainder flow from A08 to A21	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,158.00	0	0	0
1,158.50	18	22	40
1,159.00	74	87	161
1,159.50	164	199	363
1,160.00	456	597	1052
1,160.50	1162	1649	2811
1,161.00	2073	2895	4967
1,161.50	3122	4421	7543
1,162.00	4341	6202	10543

Split at CP DA09			
	Diverted flow from	Remainder flow	
	A09 to A18	from A09 to A08	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,192.00	0	0	0
1,192.50	7	42	49
1,193.00	30	158	188
1,193.50	69	326	395
1,194.00	176	817	993
1,194.50	413	1842	2255
1,195.00	749	3207	3956
1,195.50	1108	4745	5853
1,196.00	1521	6525	8045

Split at CP DA10			
	Diverted flow from	Remainder flow	
	A10 to A17	from A10 to A16	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,106.00	0	0	0
1,106.50	7	9	16
1,107.00	32	42	74
1,107.50	74	100	175
1,108.00	202	254	456
1,108.50	492	553	1045
1,109.00	905	991	1896
1,109.50	1353	1456	2810
1,110.00	1871	1991	3862
1,110.50	2452	2589	5041
1,111.00	3092	3246	6337
1,111.50	3787	3957	7744
1,112.00	4533	4721	9253

Split at CP DA11			
	Diverted flow from	Remainder flow	
	A11 to A15	from A11 to A14	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,143.00	0	0	0
1,143.50	7	7	14
1,144.00	31	31	62
1,144.50	79	79	159
1,145.00	272	272	545
1,145.50	779	779	1557
1,146.00	1391	1391	2782
1,146.50	2143	2143	4286
1,147.00	3020	3020	6039

Split flow at CP DA18			
	Diverted flow from A18 to A33	Remainder flow from A18 to A19	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,091.00	0	0	0
1,091.50	10	10	20
1,092.00	37	34	71
1,092.50	82	74	157
1,093.00	151	133	283
1,093.50	244	211	455
1,094.00	366	312	678
1,094.50	585	528	1114
1,095.00	1440	1337	2777
1,095.50	2822	2649	5471
1,096.00	4255	4031	8286
1,096.50	5930	5649	11579
1,097.00	7828	7486	15314

Split flow at CP DA20			
	Diverted flow from	Remainder flow	
	A20 to A32	from A20 to A51	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,077.00	0	0	0
1,077.50	11	22	33
1,078.00	43	77	120
1,078.50	98	169	266
1,079.00	180	301	481
1,079.50	509	633	1142
1,080.00	1486	1599	3085
1,080.50	2719	3108	5827
1,081.00	4250	4753	9003
1,081.50	6049	6677	12726
1,082.00	8095	8860	16955

Split flow at CP DA21			
	Diverted flow from	Remainder flow	
	A21 to A32	from A21 to A20	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,125.00	0	0	0
1,125.50	22	28	50
1,126.00	89	115	204
1,126.50	204	260	464
1,127.00	608	755	1363
1,127.50	1654	2057	3710
1,128.00	2882	3571	6453
1,128.50	4384	5422	9805
1,129.00	6133	7578	13711

Split at CP DA64			
	Diverted flow from	Remainder flow	
	A64 to A18	from A64 to A10	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,163.00	0	0	0
1,163.50	12	27	39
1,164.00	48	114	162
1,164.50	107	265	372
1,165.00	295	571	867
1,165.50	725	1324	2048
1,166.00	1360	2238	3598
1,166.50	2055	3262	5317
1,167.00	2861	4440	7301

Split at CP DB03				
	Diverted flow from	Diverted flow from	Remainder flow	
	B03 to B16	B03 to B18	from B03 to B13	
Water Surface				Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,234.00	0	0	0	0
1,234.50	0	0	9	9
1,235.00	0	0	31	31
1,235.50	18	0	84	102
1,236.00	65	0	180	245
1,236.50	142	0	340	482
1,237.00	253	0	577	830
1,237.50	404	10	895	1308
1,238.00	596	36	1301	1934
1,238.50	682	82	1804	2569
1,239.00	926	151	2410	3488
1,239.50	1310	181	1887	3378
1,240.00	1845	367	3030	5241
1,240.50	2893	815	5840	9548
1,241.00	3942	1356	9457	14755
1,241.50	5120	2128	13656	20904
1,242.00	6420	2873	18004	27297
	Diverted flow from			
	B03 to B18			
Water Surface		Total		
Elevation (ft)	Discharge (cfs)	Discharge (cfs)		
1,234.00	0	0		
1,234.50	0	9		
1,235.00	0	31		
1,235.50	0	84		
1,236.00	0	180		
1,236.50	0	340		
1,237.00	0	577		
1,237.50	10	904		
1,238.00	36	1337		
1,238.50	82	1886		
1,239.00	151	2562		
1,239.50	181	2068		
1,240.00	367	3396		
1,240.50	815	6655		
1,241.00	1356	10813		
1,241.50	2128	15784		
1,242.00	2873	20877		

Split at CP DB13			
	Diverted flow from	Remainder flow	
	B13 to B14	from B03 to B05	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,221.00	0	0	0
1,221.50	47	11	57
1,222.00	167	39	206
1,222.50	375	88	463
1,223.00	687	160	847
1,223.50	1117	259	1376
1,224.00	1680	389	2068
1,224.50	1657	371	2028
1,225.00	2797	673	3470
1,225.50	5778	1264	7043
1,226.00	9405	2005	11410
1,226.50	13658	2879	16537
1,227.00	18506	4150	22656

Split at CP DB17			
	Diverted flow from	Remainder flow	
	B17 to B16	from B17 to B18	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,208.00	0	0	0
1,208.50	11	11	21
1,209.00	41	41	83
1,209.50	86	86	172
1,210.00	239	239	478
1,210.50	561	561	1122
1,211.00	1038	1038	2076
1,211.50	1553	1553	3105
1,212.00	2148	2148	4297

Split at CP DB23			
	Diverted flow from	Remainder flow	
	B23 to B24	from B23 to B36	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,167.00	0	0	0
1,167.50	10	9	18
1,168.00	37	31	68
1,168.50	85	68	153
1,169.00	159	122	281
1,169.50	197	136	333
1,170.00	380	313	693
1,170.50	821	688	1509
1,171.00	1343	1171	2514
1,171.50	2090	1853	3943
1,172.00	2804	2523	5327

Split at CP DB26				
The split at B26, was based on the hydraulic calculation of the capacity of the channel RDB35.				
Flowmaster was then used to dtermine the capacity of the channel (see worksheet).				
The discharge was then adjusted in the Hec-Ras model to account for backwater effect.				
The remainder flow was routed to CPB65. This flow is RCPB26.				

Split at CP DB30			
	Diverted flow from	Remainder flow	
	B30 to B57	from B30 to B29	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,151.00	0	0	0
1,151.50	18	11	29
1,152.00	74	44	118
1,152.50	160	94	254
1,153.00	388	294	682
1,153.50	844	824	1667
1,154.00	1492	1444	2936
1,154.50	2184	2203	4387
1,155.00	2980	3086	6065

Split flow at CP DC03			
	Diverted flow from C03 to C06	Remainder flow from C03 to C09	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,673.00	0	0	0
1,673.50	25	19	43
1,674.00	98	78	176
1,674.50	201	172	373
1,675.00	545	469	1014
1,675.50	1265	1150	2415
1,676.00	2332	2125	4457
1,676.50	3481	3187	6668
1,677.00	4810	4419	9228

Split flow at CP DC06			
	Diverted flow from	Remainder flow	
	C06 to C18	from C06 to C16	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,562.00	0	0	0
1,562.50	8	8	16
1,563.00	34	34	68
1,563.50	83	83	167
1,564.00	162	162	324
1,564.50	204	204	409
1,565.00	470	470	941
1,565.50	1106	1106	2213
1,566.00	2050	2050	4100
1,566.50	3010	3010	6021
1,567.00	4120	4120	8241

Split flow at CP DC07			
	Diverted flow from	Remainder flow	
	C07 to C20	from C07 to C19	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,542.00	0	0	0
1,542.50	23	65	88
1,543.00	79	231	310
1,543.50	209	521	730
1,544.00	453	966	1418
1,544.50	669	1139	1808
1,545.00	2050	2584	4633
1,545.50	5243	5973	11215
1,546.00	9129	10521	19650
1,546.50	13891	15855	29746
1,547.00	19565	21658	41223

Split flow at CP DC11			
	Diverted flow from	Remainder flow	
	C11 to C14	from C11 to C31	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,553.00	0	0	0
1,553.50	9	14	22
1,554.00	38	54	92
1,554.50	96	115	211
1,555.00	330	337	667
1,555.50	943	857	1801
1,556.00	1686	1607	3293
1,556.50	2597	2434	5031
1,557.00	3659	3395	7054

Split flow at CP DC09			
	Diverted flow from C09 to C16	Remainder flow from C09 to C15	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,572.00	0	0	0
1,572.50	15	16	31
1,573.00	52	59	111
1,573.50	115	134	249
1,574.00	205	246	451
1,574.50	227	292	519
1,575.00	540	615	1155
1,575.50	1299	1396	2695
1,576.00	2444	2352	4796
1,576.50	3606	3709	7315
1,577.00	4952	5032	9984

Split flow at CP DC12			
	Diverted flow from	Remainder flow	
	C12 to C31	from C12 to C13	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,558.00	0	0	0
1,558.50	20	20	39
1,559.00	72	72	144
1,559.50	150	141	291
1,560.00	391	398	788
1,560.50	941	999	1940
1,561.00	1739	1867	3606
1,561.50	2610	2816	5426
1,562.00	3620	3918	7538

Split flow at CP DC15			
	Diverted flow from C15 to C30	Remainder flow from C15 to C10	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,531.00	0	0	0
1,531.50	22	0	22
1,532.00	83	0	83
1,532.50	191	11	202
1,533.00	355	54	409
1,533.50	456	134	591
1,534.00	852	418	1269
1,534.50	1738	1156	2894
1,535.00	3056	2025	5081
1,535.50	4514	3086	7600
1,536.00	6046	4320	10367

Split flow at CP DC17			
	Diverted flow from	Remainder flow	
	C17 to C29	from C17 to C30	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,512.00	0	0	0
1,512.50	23	0	23
1,513.00	83	0	83
1,513.50	181	8	189
1,514.00	324	36	360
1,514.50	369	91	459
1,515.00	727	311	1038
1,515.50	1601	889	2490
1,516.00	2650	1589	4238
1,516.50	4163	2447	6610
1,517.00	5608	3448	9055

Split flow at CP DC18			
	Diverted flow from C18 to C19	Remainder flow from C18 to C17	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,532.00	0	0	0
1,532.50	0	19	19
1,533.00	0	69	69
1,533.50	18	151	169
1,534.00	79	269	349
1,534.50	205	297	503
1,535.00	641	707	1348
1,535.50	1775	1702	3477
1,536.00	3142	3207	6348
1,536.50	4817	4735	9552
1,537.00	6772	6507	13279

Split flow at CP DC19			
	Diverted flow from	Remainder flow	
	C19 to C27	from C19 to C29	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,507.00	0	0	0
1,507.50	24	12	35
1,508.00	84	42	126
1,508.50	211	126	336
1,509.00	432	319	751
1,509.50	595	560	1155
1,510.00	1357	1636	2993
1,510.50	3021	4145	7167
1,511.00	5467	7320	12787
1,511.50	8238	11053	19291
1,512.00	11270	15403	26673

Split flow at CP DC21			
	Diverted flow from	Remainder flow	
	C21 to C22	from C21 to C20	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,493.00	0	0	0
1,493.50	17	0	17
1,494.00	59	0	59
1,494.50	129	12	141
1,495.00	231	49	279
1,495.50	260	105	365
1,496.00	531	327	858
1,496.50	1191	917	2108
1,497.00	1992	1608	3600
1,497.50	3142	2453	5595
1,498.00	4249	3436	7685

Split flow at CP DC39			
	Diverted flow from	Remainder flow	
	C39 to C38	from C39 to C43	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,363.00	0	0	0
1,363.50	16	23	39
1,364.00	67	95	162
1,364.50	153	211	364
1,365.00	471	621	1092
1,365.50	1308	1707	3015
1,366.00	2286	2960	5246
1,366.50	3482	4489	7971
1,367.00	4874	6270	11144

Split flow at CP DC40			
	Diverted flow from	Remainder flow	
	C40 to C43	from C40 to C42	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,322.00	0	0	0
1,322.50	0	14	14
1,323.00	0	51	51
1,323.50	11	116	126
1,324.00	51	213	264
1,324.50	127	249	376
1,325.00	396	620	1016
1,325.50	1097	1519	2615
1,326.00	1920	2868	4789
1,326.50	2926	4263	7190
1,327.00	4097	5883	9980

Split flow at CP DC41			
	Diverted flow from	Remainder flow	
	C41 to C46	from C41 to C42	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,325.00	0	0	0
1,325.50	8	17	25
1,326.00	37	74	111
1,326.50	106	185	291
1,327.00	385	503	888
1,327.50	1111	1214	2325
1,328.00	2018	2262	4280
1,328.50	3136	3412	6549
1,329.00	4444	4748	9192

Split flow at CP DC42

Water Surface Elevation (ft)	Diverted flow from C42 to C45 Discharge (cfs)	Diverted flow from C42 to C47 Discharge (cfs)	Remainder flow from C42 to C46 Discharge (cfs)	Total Discharge (cfs)
1,287.00	0	0	0	0
1,287.50	14	12	12	38
1,288.00	53	43	43	139
1,288.50	125	94	94	312
1,289.00	235	167	167	569
1,289.50	289	187	186	662
1,290.00	597	423	433	1453
1,290.50	1335	934	978	3247
1,291.00	2232	1615	1670	5517
1,291.50	3504	2542	2642	8688
1,292.00	4743	3461	3605	11808

Water Surface Elevation (ft)	Diverted flow from C42 to C47 Discharge (cfs)	Total Discharge (cfs)
1,287.00	0	0
1,287.50	12	24
1,288.00	43	86
1,288.50	94	187
1,289.00	167	334
1,289.50	187	372
1,290.00	423	856
1,290.50	934	1912
1,291.00	1615	3285
1,291.50	2542	5184
1,292.00	3461	7066

Split flow at CP DC46			
	Diverted flow from	Remainder flow	
	C46 to C47	from C46 to C37	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,231.00	0	0	0
1,231.50	0	11	11
1,232.00	0	42	42
1,232.50	7	97	104
1,233.00	33	178	211
1,233.50	89	208	297
1,234.00	328	533	862
1,234.50	956	1320	2275
1,235.00	1732	2502	4234
1,235.50	2689	3733	6422
1,236.00	3807	5163	8970

Split flow at CP DC43			
	Diverted flow from C43 to C38	Remainder flow from C43 to C44	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,291.00	0	0	0
1,291.50	7	14	21
1,292.00	30	53	83
1,292.50	73	125	197
1,293.00	140	235	375
1,293.50	236	390	626
1,294.00	364	596	961
1,294.50	338	575	913
1,295.00	727	1013	1739
1,295.50	1693	2142	3835
1,296.00	2894	3451	6345
1,296.50	4640	5006	9647
1,297.00	6314	7218	13532

Split flow at CP DC45			
	Diverted flow from	Remainder flow	
	C45 to C47	from C45 to C44	
Water Surface			
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,252.00	0	0	0
1,252.50	12	11	23
1,253.00	47	42	89
1,253.50	110	97	207
1,254.00	208	178	386
1,254.50	259	213	471
1,255.00	548	431	979
1,255.50	1140	958	2098
1,256.00	1879	1594	3473
1,256.50	2926	2501	5427
1,257.00	3943	3377	7320

Split at CP DD01			
	Remainder	Divert	
	flow from	flow from	
	D01 to D09	from D01 to D05	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,520.00	0	0	0
1,520.50	0	24	24
1,521.00	0	83	83
1,521.50	14	175	190
1,522.00	55	305	360
1,522.50	130	474	603
1,523.00	244	686	930
1,523.50	301	627	928
1,524.00	620	979	1599
1,524.50	1211	1632	2843
1,525.00	2132	2629	4760
1,525.50	3779	4475	8253
1,526.00	6092	6558	12650
1,526.50	8345	9668	18013
1,527.00	10887	12351	23238

Split at CP DD02			
	Diverted flow from	Remainder flow	
	D02 to D01	from D02 to D03	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,690.00	0	0	0
1,690.50	0	32	32
1,691.00	0	113	113
1,691.50	20	246	266
1,692.00	83	440	523
1,692.50	183	569	752
1,693.00	425	905	1330
1,693.50	847	1450	2297
1,694.00	1490	2233	3723
1,694.50	2820	3672	6492
1,695.00	4139	5230	9369
1,695.50	5665	7002	12667
1,696.00	7380	9481	16861

Split at CP DD03			
	Diverted flow from	Remainder flow	
	D03 to D01	from D03 to D04	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,661.00	0	0	0
1,661.50	44	31	75
1,662.00	145	106	252
1,662.50	327	227	555
1,663.00	608	397	1005
1,663.50	733	485	1218
1,664.00	1309	782	2090
1,664.50	2622	1277	3899
1,665.00	4116	2057	6173
1,665.50	6233	3596	9828
1,666.00	8692	5469	14161
1,666.50	12051	8217	20268
1,667.00	15132	10679	25811

Split at CP DD04			
	Remaider	Divert	
	flow from	flow from	
	D04 to D01	from D04 to D05	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,601.00	0	0	0
1,601.50	14	20	34
1,602.00	52	71	123
1,602.50	119	154	274
1,603.00	220	276	496
1,603.50	279	321	600
1,604.00	493	598	1091
1,604.50	864	1097	1962
1,605.00	1421	1864	3285
1,605.50	2424	3244	5668
1,606.00	3561	5216	8777
1,606.50	5161	7062	12222
1,607.00	6626	9138	15764

Split at CP DD05			
	Diverted flow from	Remainder flow	
	D05 to D11	from D05 to D13	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,460.00	0	0	0
1,460.50	0	60	60
1,461.00	4	198	202
1,461.50	12	413	425
1,462.00	26	712	738
1,462.50	45	1101	1146
1,463.00	70	1586	1656
1,463.50	71	1588	1659
1,464.00	132	2288	2421
1,464.50	248	3838	4086
1,465.00	426	5451	5877
1,465.50	740	9243	9983
1,466.00	1178	13248	14426

Split at CP DD06			
	Diverted flow from	Remainder flow	
	D06 to D08	from D06 to D10	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,530.00	0	0	0
1,530.50	23	11	34
1,531.00	89	44	133
1,531.50	184	92	276
1,532.00	418	239	658
1,532.50	826	515	1341
1,533.00	1445	951	2396
1,533.50	2534	1831	4365
1,534.00	4013	2750	6763
1,534.50	5489	3818	9307
1,535.00	7149	5025	12174

Split at CP DD07			
	Remainder	Divert	
	flow from	flow from	
	D07 to D15	D07 to D17	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,450.00	0	0	0
1,450.50	0	15	15
1,451.00	0	53	53
1,451.50	6	120	127
1,452.00	29	220	249
1,452.50	66	289	354
1,453.00	178	474	652
1,453.50	378	779	1157
1,454.00	758	1252	2011
1,454.50	1608	2178	3786
1,455.00	2546	3304	5850
1,455.50	3656	4945	8600
1,456.00	4924	6424	11347

Split at CP DE05			
	Remainder	Divert	
	flow from	flow from	
	E05 to E24	E05 to E25	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,442.00	0	0	0
1,442.50	8	23	31
1,443.00	41	90	131
1,443.50	97	189	286
1,444.00	242	406	648
1,444.50	501	757	1257
1,445.00	922	1308	2230
1,445.50	1831	2425	4256
1,446.00	2788	3740	6528
1,446.50	3908	5102	9009
1,447.00	5177	6637	11814

Split at CP DE09			
	Diverted flow from	Remainder flow	
	E09 to E13	from E09 to E10	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,547.00	0	0	0
1,547.50	8	13	22
1,548.00	37	53	90
1,548.50	85	112	197
1,549.00	190	232	422
1,549.50	349	407	756
1,550.00	673	748	1421
1,550.50	1336	1444	2780
1,551.00	2304	2477	4781
1,551.50	3291	3503	6794
1,552.00	4419	4671	9090

Split at CP DE10			
	Diverted flow from	Remainder flow	
	E10 to E13	from E10 to E05	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,522.00	0	0	0
1,522.50	25	8	34
1,523.00	95	37	132
1,523.50	199	85	283
1,524.00	453	230	683
1,524.50	917	488	1405
1,525.00	1597	979	2576
1,525.50	2901	2076	4977
1,526.00	4193	3287	7479
1,526.50	5679	4720	10398
1,527.00	7344	6357	13701

Split at CP DE11			
	Diverted flow from E11 to E12	Remainder flow from E11 to E05	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,491.00	0	0	0
1,491.50	10	21	32
1,492.00	42	88	130
1,492.50	111	215	326
1,493.00	233	415	648
1,493.50	330	592	922
1,494.00	659	983	1642
1,494.50	1302	1604	2906
1,495.00	2172	2492	4664
1,495.50	3568	4109	7677
1,496.00	5349	5871	11220
1,496.50	7089	8387	15477
1,497.00	9030	10637	19667

Split at CP DE13			
	Diverted flow from	Remainder flow	
	E13 to E23	from E13 to E24	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,422.00	0	0	0
1,422.50	33	30	64
1,423.00	159	141	299
1,423.50	617	567	1184
1,424.00	1685	1572	3258
1,424.50	3115	2933	6048
1,425.00	4890	4625	9514
1,425.50	6975	6615	13590
1,426.00	9347	8882	18229

Split at CP DE16			
	Remainder	Divert	
	flow from	flow from	
	E16 to E19	E16 to E20	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,450.00	0	0	0
1,450.50	31	0	31
1,451.00	104	0	104
1,451.50	221	16	236
1,452.00	383	56	439
1,452.50	596	123	719
1,453.00	863	219	1082
1,453.50	1086	271	1357
1,454.00	1408	473	1881
1,454.50	1603	767	2370
1,455.00	2086	1230	3316
1,455.50	3387	2035	5422
1,456.00	4621	2975	7597
1,456.50	6014	4371	10386
1,457.00	7554	5576	13130

Split at CP DE19			
	Remainder	Divert	
	flow from	flow from	
	E19 to E30	from E19 to E29	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,421.00	0	0	0
1,421.50	26	0	26
1,422.00	89	0	89
1,422.50	188	10	198
1,423.00	327	39	366
1,423.50	508	92	600
1,424.00	735	174	910
1,424.50	818	355	1172
1,425.00	1602	867	2468
1,425.50	2557	1687	4244
1,426.00	3690	2576	6266
1,426.50	4986	3615	8601
1,427.00	6772	4792	11563

Split at CP DE21			
	Remainder	Divert	
	flow from	flow from	
	E21 to E20	E21 to E22	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,427.00	0	0	0
1,427.50	10	0	10
1,428.00	41	0	41
1,428.50	84	6	91
1,429.00	188	28	216
1,429.50	350	113	462
1,430.00	680	362	1043
1,430.50	1358	929	2287
1,431.00	2345	1630	3975
1,431.50	3358	2484	5841
1,432.00	4515	3475	7990

Split at CP DE28			
	Diverted flow from	Remainder flow	
	E28 to E29	from E28 to E20	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,398.00	0	0	0
1,398.50	36	13	49
1,399.00	118	73	192
1,399.50	718	395	1113
1,400.00	1764	1149	2913
1,400.50	3137	2213	5350
1,401.00	4819	3545	8364
1,401.50	6781	5119	11900
1,402.00	9003	6916	15918

Split at CP DF02			
	Diverted flow from F02 to F05	Remainder flow from F02 to F04	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,687.00	0	0	0
1,687.50	8	7	15
1,688.00	40	31	72
1,688.50	99	72	171
1,689.00	211	161	373
1,689.50	372	296	668
1,690.00	675	570	1245
1,690.50	1285	1132	2417
1,691.00	2190	1952	4142
1,691.50	3085	2789	5875
1,692.00	4106	3745	7850

Split at CP DF11			
	Diverted flow from	Remainder flow	
	F11 to F17	from F11 to F16	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,383.00	0	0	0
1,383.50	13	30	43
1,384.00	59	123	182
1,384.50	288	464	752
1,385.00	829	1284	2114
1,385.50	1573	2522	4095
1,386.00	2498	4029	6527
1,386.50	3588	5813	9401
1,387.00	4828	7852	12681

Split at CP DF12			
	Diverted flow from F12 to F11	Remainder flow from F12 to F15	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,433.00	0	0	0
1,433.50	17	22	38
1,434.00	68	88	157
1,434.50	156	191	346
1,435.00	432	513	945
1,435.50	1111	1325	2436
1,436.00	1985	2326	4311
1,436.50	2997	3491	6488
1,437.00	4173	4844	9017

Split at CP DF13			
	Diverted flow from	Remainder flow	
	F13 to F12	from F13 to F15	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,433.00	0	0	0
1,433.50	17	6	23
1,434.00	68	28	96
1,434.50	158	213	371
1,435.00	447	643	1090
1,435.50	1147	1265	2412
1,436.00	2078	2047	4125
1,436.50	3148	2971	6119
1,437.00	4392	4025	8417

Split at CP DF16			
	Diverted flow from F16 to F24	Remainder flow from F16 to F25	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,368.00	0	0	0
1,368.50	10	12	21
1,369.00	38	53	90
1,369.50	85	134	219
1,370.00	287	459	746
1,370.50	823	1233	2056
1,371.00	1466	2350	3816
1,371.50	2256	3624	5880
1,372.00	3178	5113	8292

Split at CP DF18			
	Remainder	Divert	
	flow from	flow from	
	F18 to F22	F18 to F21	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,367.00	0	0	0
1,367.50	29	14	43
1,368.00	121	53	174
1,368.50	261	116	377
1,369.00	693	360	1053
1,369.50	1603	876	2479
1,370.00	2836	1770	4606
1,370.50	4939	3013	7953
1,371.00	7155	4524	11679
1,371.50	9702	6277	15979
1,372.00	12557	8256	20813

Split at CP DF19			
	Remainder	Divert	
	flow from	flow from	
	F19 to F21	F19 to F20	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,338.00	0	0	0
1,338.50	5	5	10
1,339.00	18	21	39
1,339.50	307	313	620
1,340.00	958	972	1930
1,340.50	1984	2010	3994
1,341.00	3264	3301	6565
1,341.50	4786	4835	9621
1,342.00	6531	6593	13123

Split at CP DF22			
	Remainder	Divert	
	flow from	flow from	
	F22 to F28	from F22 to F29	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,333.00	0	0	0
1,333.50	26	35	61
1,334.00	100	138	238
1,334.50	216	396	612
1,335.00	644	1136	1780
1,335.50	1917	2515	4433
1,336.00	3608	4166	7775
1,336.50	5618	6152	11770
1,337.00	7982	8444	16426

Split at CP DG05			
	Diverted flow from	Remainder flow	
	G05 to G45	from G05 to G46	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,717.00	0	0	0
1,717.50	21	99	120
1,718.00	94	348	442
1,718.50	216	756	972
1,719.00	585	1343	1928
1,719.50	1276	1653	2929
1,720.00	2369	2743	5112
1,720.50	4563	5151	9714
1,721.00	6880	8380	15260
1,721.50	9579	11867	21446
1,722.00	12632	16685	29317

Split at CP DG06			
	Diverted flow from	Remainder flow	
	G06 to G45	from G06 to G07	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,531.00	0	0	0
1,531.50	30	24	54
1,532.00	107	86	193
1,532.50	234	187	422
1,533.00	419	335	754
1,533.50	526	406	932
1,534.00	864	700	1564
1,534.50	1429	1209	2638
1,535.00	2256	1971	4228
1,535.50	3771	3355	7126
1,536.00	5445	4919	10365
1,536.50	7861	7142	15003
1,537.00	10006	9159	19165

Split at CP DG08			
	Diverted flow from G08 to G09	Remainder flow from G08 to G45	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,382.00	0	0	0
1,382.50	13	19	32
1,383.00	50	76	126
1,383.50	105	155	260
1,384.00	296	383	679
1,384.50	652	788	1440
1,385.00	1298	1486	2784
1,385.50	2693	3031	5724
1,386.00	4240	4672	8912
1,386.50	6067	6602	12669
1,387.00	8152	8799	16951

Split at CP DG11			
	Diverted flow from	Remainder flow	
	G11 to G42	from G11 to E20	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,227.00	0	0	0
1,227.50	15	30	46
1,228.00	54	108	162
1,228.50	118	237	355
1,229.00	211	424	635
1,229.50	235	477	712
1,230.00	628	973	1601
1,230.50	1563	2121	3684
1,231.00	3029	3660	6689
1,231.50	4544	5778	10322
1,232.00	6308	7823	14131

Split at CP DG12			
	Diverted flow from	Remainder flow	
	G12 to G39	from G12 to G38	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,238.00	0	0	0
1,238.50	15	15	29
1,239.00	40	65	104
1,239.50	295	154	450
1,240.00	873	480	1353
1,240.50	1727	1336	3063
1,241.00	2783	2342	5126
1,241.50	4037	3574	7611
1,242.00	5472	5008	10481

Split at CP DG18			
	Diverted flow from	Remainder flow	
	G18 to G16	from G18 to G27	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,303.00	0	0	0
1,303.50	11	7	18
1,304.00	44	31	75
1,304.50	251	234	485
1,305.00	750	705	1455
1,305.50	1454	1388	2842
1,306.00	2335	2245	4580
1,306.50	3375	3258	6633
1,307.00	4560	4415	8975

Split at CP DG31			
	Diverted flow from G31 to G43	Remainder flow from G31 to G47	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,337.00	0	0	0
1,337.50	24	24	47
1,338.00	79	79	158
1,338.50	134	134	269
1,339.00	285	285	571
1,339.50	549	549	1099
1,340.00	951	951	1902
1,340.50	1659	1659	3319
1,341.00	2632	2632	5264
1,341.50	3583	3583	7166
1,342.00	4650	4650	9300

Split at CP DG47			
	Diverted flow from G47 to G32	Remainder flow from G43 to G43	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,297.00	0	0	0
1,297.50	24	24	47
1,298.00	84	84	167
1,298.50	156	156	312
1,299.00	339	339	678
1,299.50	657	657	1313
1,300.00	1138	1138	2276
1,300.50	1985	1985	3971
1,301.00	3144	3144	6287
1,301.50	4283	4283	8567
1,302.00	5564	5564	11128

Split at CP DH01			
	Diverted flow from	Remainder flow	
	H01 to H25	from H01 to H24	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,397.00	0	0	0
1,397.50	64	39	103
1,398.00	228	137	365
1,398.50	521	316	838
1,399.00	978	549	1526
1,399.50	1287	1149	2436
1,400.00	1813	2824	4637
1,400.50	4589	5796	10385
1,401.00	8300	9049	17349
1,401.50	13813	12838	26651
1,402.00	19313	17163	36476

Split at CP DH06			
	Diverted flow from	Remainder flow	
	H06 to H13	from H06 to H14	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,381.00	0	0	0
1,381.50	30	23	53
1,382.00	108	81	189
1,382.50	236	177	414
1,383.00	422	316	739
1,383.50	479	351	830
1,384.00	956	777	1733
1,384.50	1842	1594	3436
1,385.00	3226	2896	6123
1,385.50	5710	5697	11407
1,386.00	9236	8479	17715
1,386.50	12629	11721	24350
1,387.00	16459	15389	31847

Split at CP DH07			
	Diverted flow from	Remainder flow	
	H07 to H36	from H07 to H34	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,263.00	0	0	0
1,263.50	17	17	34
1,264.00	67	67	133
1,264.50	1126	1126	2252
1,265.00	3474	3474	6948
1,265.50	6949	6949	13897
1,266.00	11318	11318	22635
1,266.50	16553	16553	33105
1,267.00	22479	22479	44958

Split at CP DH11			
	Diverted flow from	Remainder flow	
	H11 to H38	from H11 to H35	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,313.00	0	0	0
1,313.50	11	31	42
1,314.00	54	120	175
1,314.50	689	796	1485
1,315.00	2095	2314	4409
1,315.50	4271	4665	8936
1,316.00	6958	7506	14464
1,316.50	10145	10866	21010
1,317.00	13791	14704	28495

Split at CP DH12			
	Diverted flow from	Remainder flow	
	H12 to H35	from H12 to H34	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,302.00	0	0	0
1,302.50	17	38	55
1,303.00	67	160	226
1,303.50	151	349	500
1,304.00	508	865	1373
1,304.50	1235	1795	3030
1,305.00	2636	3238	5874
1,305.50	4751	6192	10943
1,306.00	7364	9212	16576
1,306.50	10427	12722	23149
1,307.00	13905	16686	30592

Split at CP DH17			
	Diverted flow from	Remainder flow	
	H17 to H31	from H17 to H30	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,401.00	0	0	0
1,401.50	36	34	69
1,402.00	133	119	253
1,402.50	304	261	565
1,403.00	560	467	1027
1,403.50	708	544	1251
1,404.00	1252	1012	2264
1,404.50	2234	1875	4109
1,405.00	3703	3235	6938
1,405.50	6445	5799	12244
1,406.00	9777	9649	19427
1,406.50	14495	13310	27805
1,407.00	18873	17459	36332

Split at CP DH31			
	Diverted flow from	Remainder flow	
	H31 to H33	from H31 to H32	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,301.00	0	0	0
1,301.50	23	23	45
1,302.00	80	80	160
1,302.50	175	175	350
1,303.00	313	313	626
1,303.50	345	349	694
1,304.00	820	743	1563
1,304.50	1912	1634	3546
1,305.00	3340	2776	6117
1,305.50	5691	4773	10465
1,306.00	8050	6716	14765
1,306.50	10742	8932	19674
1,307.00	13746	11403	25149

Split at CP DH32			
	Diverted flow from	Remainder flow	
	H32 to H48	from H32 to H50	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,242.00	0	0	0
1,242.50	8	14	22
1,243.00	35	60	94
1,243.50	88	133	222
1,244.00	303	384	688
1,244.50	740	867	1608
1,245.00	1577	1643	3220
1,245.50	2846	3182	6028
1,246.00	4413	4841	9254
1,246.50	6248	6778	13026
1,247.00	8332	8972	17303

Split at CP DH33			
	Diverted flow from	Remainder flow	
	H33 to H46	from H33 to H47	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,213.00	0	0	0
1,213.50	8	20	28
1,214.00	35	54	89
1,214.50	733	634	1367
1,215.00	2312	1903	4215
1,215.50	4799	3929	8728
1,216.00	7957	6539	14496
1,216.50	11755	9697	21452
1,217.00	16076	13305	29381

Split at CP DH39			
	Diverted flow from	Remainder flow	
	H39 to H40	from H39 to H41	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,193.00	0	0	0
1,193.50	13	13	26
1,194.00	50	50	101
1,194.50	758	758	1515
1,195.00	2329	2329	4658
1,195.50	4669	4669	9338
1,196.00	7654	7654	15308
1,196.50	11145	11145	22289
1,197.00	15138	15138	30277

Split at CP DH48			
	Diverted flow from	Remainder flow	
	H48 to H49	from H48 to H50	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,198.00	0	0	0
1,198.50	6	13	19
1,199.00	23	56	79
1,199.50	568	637	1206
1,200.00	1783	1927	3710
1,200.50	3618	3856	7474
1,201.00	5952	6328	12280
1,201.50	8701	9204	17905
1,202.00	11848	12494	24342

Split at CP DH59			
	Diverted flow from	Remainder flow	
	H59 to H61	from H59 to H60	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,233.00	0	0	0
1,233.50	17	11	28
1,234.00	67	44	111
1,234.50	751	707	1458
1,235.00	2254	2165	4419
1,235.50	4409	4266	8675
1,236.00	7155	6930	14085
1,236.50	10340	10041	20381
1,237.00	13976	13594	27570

Split at CP DH63			
	Diverted flow from	Remainder flow	
	H63 to H53	from H63 to H66	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,221.00	0	0	0
1,221.50	0	20	20
1,222.00	0	73	73
1,222.50	7	159	166
1,223.00	31	284	315
1,223.50	75	330	405
1,224.00	233	615	847
1,224.50	541	1128	1669
1,225.00	1071	1916	2987
1,225.50	2154	3336	5490
1,226.00	3371	5367	8738
1,226.50	4802	7269	12071
1,227.00	6431	9410	15841

Split at CP DI03			
	Diverted flow from	Remainder flow	
	I03 to I05	from I03 to I04	
Water Surface			Total
Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Discharge (cfs)
1,335.00	0	0	0
1,335.50	30	30	60
1,336.00	107	107	214
1,336.50	234	234	467
1,337.00	418	418	835
1,337.50	665	665	1330
1,338.00	982	982	1965
1,338.50	1376	1194	2571
1,339.00	1853	1726	3578
1,339.50	1929	2183	4112
1,340.00	3947	4472	8419
1,340.50	6807	7501	14307
1,341.00	10034	11150	21183
1,341.50	14705	15365	30070
1,342.00	18885	21140	40025

Split at CP DJ04			
	Diverted flow from J04 to J06	Remainder flow from J04 to J07	
Water Surface Elevation (ft)	Discharge (cfs)	Discharge (cfs)	Total Discharge (cfs)
1,227.00	0	0	0
1,227.50	0	49	49
1,228.00	0	175	175
1,228.50	10	384	394
1,229.00	43	417	460
1,229.50	675	1323	1998
1,230.00	2083	3369	5451
1,230.50	4259	6122	10381
1,231.00	6963	9226	16188
1,231.50	10171	12845	23015
1,232.00	13844	16941	30784

Appendix D.6
HYDROLOGIC CALCULATIONS

Appendix D.6.1

HEC-1 MODEL WITH RAILROAD LEVEE IN PLACE

```
1****************************************
****************************************
 *                                      *                                                    *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                    *    U.S. ARMY CORPS OF
ENGINEERS      *
 *                JUN   1998             *                                                    *    HYDROLOGIC
 INEERING CENTER    *
                VERSION 4.1             *                                                    *         609 SECOND
ET            *
 *                                      *                                                    *       DAVIS, CALIFORNIA
95616        *
 *  RUN DATE   23FEB05  TIME  07:36:49   *                                                    *           (916) 756-1104
*
 *                                      *                                                    *
*
 ****************************************
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X       XXXXX   X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   1          ID   FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
   2          ID   WATERMAN WASH - Contract # 2002C024
   3          ID
   4          ID   Prepared by:
   5          ID   Engineering and Environmental Consultants, Inc.
   6          ID   3003 N. Central Avenue, Suite 600
   7          ID   Phoenix, Arizona   85012
   8          ID   Phone: 602-248-7702  FAX: 602-248-7851
   9          ID
  10          ID
  11          ID   01/12/04 Filename:  WW w-railroad.IH1
  12          ID                Last Revised: 01/03/05
  13          ID
  14          ID   1. The following model is modeled with the Union Pacific railroad embankment
  15          ID      located adjacent to SR-238.  This model assumes the embankment does not
  16          ID      wash out and that there are storage ponds upstream of the railroad.
  17          ID   2. The storm used was 100-year, 24-hour.
  18          ID   3. S-graph was the unit hydrograph.
  19          ID   4. Time step of 10 minutes.
  20          ID   5. A point rainfall of 4.4 inches from NOAA 2 with Maricopa County Areal
  21          ID      reduction.
  22          ID   6. Green-Ampt loss methods were used. Normal depth Channel routing.
  23          ID   7. The sub-basin parameters were generated using FCDMC's DDMSW software.
  24          ID   8. 100 % of contributing area carried with each branch of every split on
  25          ID      the HC cards.
              *DIAGRAM
  26          IT      10                    300
  27          IO       3
  28          IN      15
              *
  29          JD     4.4   0.001
  30          PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
  31          PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
  32          PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
  33          PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
```

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34          PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
35          PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
36          PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
37          PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
38          PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
39          PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
40          JD   4.180      10
41          JD   4.039      20
42          JD   3.903      40
43          JD   3.771      80
44          JD   3.700     120
45          JD   3.608     200
46          JD   3.524     350
47          JD   3.445     500
            * ******************************************************************************
            *      Runoff Watershed C (south of SR-238/Railroad) divert all flows north of r
            *      and route remainder east along Highway, ultimately into Watershed D
            * ******************************************************************************
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

48          KK     C04
49          KM        Runoff from C04
50          BA   0.234
51          LG    0.35    0.35    2.88    0.94       0
52          UI     331     378     130      46      14       0       0       0       0       0
53          UI       0       0       0       0       0       0       0       0       0       0
            *

54          KK  RCPC04
55          KM        Route flow from CP C04 to CP C12
56          RS       4    FLOW      -1
57          RC   0.050   0.045   0.050    7890  0.0232
58          RX       0      85     170     175     180     190     280     375
59          RY    1667    1666    1665    1663    1663    1665    1666    1667
            *

60          KK     C12
61          KM        Runoff from C12
62          BA   0.201
63          LG    0.35    0.35    3.09    0.85       0
64          UI     129     377     213      46      12       0       0       0       0       0
65          UI       0       0       0       0       0       0       0       0       0       0
            *

66          KK   CPC12
67          KM        Combine C04 with C12
68          HC       2   0.435
            *

69          KK    DC12
70          KM           Divert flow into C31
71          KM        Natural divergence of flow due to a braided channel network.
72          DT   DVC12
73          DI       0      39     144     291     788    1940    3606    5426    7538
74          DQ       0      20      72     150     391     941    1739    2610    3620
            *

75          KK  RCPC12
76          KM        Route remainder flow from CP C12 to CP C13
77          RS       2    FLOW      -1
78          RC   0.050   0.045   0.050    5110  0.0119
79          RX       0      80     130     135     155     160     230     280
80          RY    1529    1528    1527    1525    1525    1527    1528    1529
            *

81          KK     C13
82          KM        Runoff from C13
83          BA   0.520
84          LG    0.35    0.35    3.21    0.80       0
85          UI     167     486     763     402     128      41      22       0       0       0
86          UI       0       0       0       0       0       0       0       0       0       0
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

87          KK   CPC13
88          KM        Combine C12 with C13
89          HC       2   0.955
            *
```

```
 90          KK    DC13
 91          KM            Divert flow into C33A
 92          KM        Flow is split between what passes through/over the structure and
 93          KM        what is diverted parallel to the railroad.
 94          KM            SPRR Structure 1 (18' Bridge)
 95          DT   DVC13
 96          DI       0     186     356     570    1052    1972    3626    6394
 97          DQ       0     186     312     446     570     679     788     921
             *

 98          KK  RCPC13
 99          KM        Route remainder flow from CP C13 to CP C31
100          RS       1    FLOW      -1
101          RC   0.050   0.045   0.050     630  0.0045
102          RX       0      20      30     230     430     630     830    1030
103          RY    1513    1513    1506  1508.8  1511.6  1514.4  1517.2    1520
             *

104          KK     C11
105          KM        Runoff from C11
106          BA   0.289
107          LG    0.35    0.35    3.11    0.85       0
108          UI     111     334     419     180      54      13       0       0       0       0
109          UI       0       0       0       0       0       0       0       0       0       0
             *

110          KK    DC11
111          KM            Divert flow into C14
112          KM        Natural divergence of flow due to a braided channel network.
113          DT   DVC11
114          DI       0      22      92     211     667    1801    3293    5031    7054
115          DQ       0       9      38      96     330     943    1686    2597    3659
             *

116          KK  RCPC11
117          KM        Route remainder flow from CP C11 to CP C31
118          RS       4    FLOW      -1
119          RC   0.050   0.045   0.050    4490  0.0116
120          RX       0     100     190     195     205     210     300     420
121          RY    1537    1536    1535    1534    1534    1535    1536    1537
             *

122          KK   DRC12
123          KM        Return diverted flow from CP C12
124          DR   DVC12
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

125          KK   RDC12
126          KM        Route flow from CP C12 to CP C31
127          RS       4    FLOW      -1
128          RC   0.050   0.045   0.050    5320  0.0118
129          RX       0     100     190     195     205     210     300     420
130          RY    1537    1536    1535    1534    1534    1535    1536    1537
             *

131          KK     C31
132          KM        Runoff from C31
133          BA   0.101
134          LG    0.35    0.35    3.15    0.84       0
135          UI      82     213      80      13       0       0       0       0       0       0
136          UI       0       0       0       0       0       0       0       0       0       0
             *

137          KK   CPC31
138          KM        Combine C13, C11, DRC12 with C31
139          HC       4   1.345
             *

140          KK    DC31
141          KM            Divert flow into C33A
142          KM        Flow is split between what passes through/over the structure and
143          KM        what is diverted parallel to the railroad.
144          KM            SPRR Structure 2 (2-36" CMP's)
145          DT   DVC31
146          DI       0      24      69     202     420     654    1098
147          DQ       0      24      41      62      99     128     174
             *

148          KK  RCPC31
```

```
149          KM        Route remainder flow from CP C31 to CP C14
150          RS       1    FLOW      -1
151          RC   0.050   0.045   0.050     690  0.0041
152          RX       0      20      30     230     430     630     830    1030
153          RY    1510    1510    1504  1506.8  1509.6  1512.4  1515.2    1518
             *

154          KK   DRC11
155          KM        Return diverted flow from CP C11
156          DR   DVC11
             *

157          KK   RDC11
158          KM        Route flow from CP C11 to CP C14
159          RS       7    FLOW      -1
160          RC   0.050   0.045   0.050    4960  0.0103
161          RX       0      90     210     215     230     235     350     430
162          RY    1537    1536    1536    1535    1535    1536    1536    1537
             *
1                                          HEC-1 INPUT                                                    PAGE  5

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

163          KK     C14
164          KM        Runoff from C14
165          BA   0.224
166          LG    0.35    0.35    3.15    0.84       0
167          UI     104     330     295     103      24       0       0       0       0       0
168          UI       0       0       0       0       0       0       0       0       0       0
             *

169          KK   CPC14
170          KM        Combine C31, DRC11 with C14
171          HC       3   1.569
             *

172          KK    DC14
173          KM           Divert flow into C33A
174          KM        Flow is split between what passes through/over the structure and
175          KM        what is diverted parallel to the railroad.
176          KM           SPRR Structure 3 (10' Bridge)
177          DT   DVC14
178          DI       0     124     207     347     443    1102    3017
179          DQ       0     124     172     224     276     376     769
             *

180          KK  RCPC14
181          KM        Route remainder flow from CP C14 to CP C10
182          RS       1    FLOW      -1
183          RC   0.050   0.045   0.050    1310  0.0039
184          RX       0      20      30     210     390     570     750     930
185          RY    1506    1506    1500  1502.6  1505.2  1507.8  1510.4    1513
             *

186          KK     C05
187          KM        Runoff from C05
188          BA   0.228
189          LG    0.35    0.35    2.95    0.88       0
190          UI     353     470      54       0       0       0       0       0       0       0
191          UI       0       0       0       0       0       0       0       0       0       0
             *

192          KK  RCPC05
193          KM        Route flow from CP C05 to CP C10
194          RS       6    FLOW      -1
195          RC   0.050   0.045   0.050   13200  0.0153
196          RX       0      60     120     135     150     165     250     320
197          RY    1616    1615    1615    1613    1613    1615    1615    1616
             *

198          KK     C03
199          KM        Runoff from C03
200          BA   0.295
201          LG    0.35    0.35    2.94    0.90       0
202          UI     211     592     272      52       0       0       0       0       0       0
203          UI       0       0       0       0       0       0       0       0       0       0
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

204          KK    DC03
```

```
205          KM           Divert flow into C06
206          KM       Natural divergence of flow due to a braided channel network.
207          DT   DVC03
208          DI       0      43     176     373    1014    2415    4457    6668    9228
209          DQ       0      25      98     201     545    1265    2332    3481    4810
             *

210          KK  RCPC03
211          KM       Route remainder flow from CP C03 to CP C09
212          RS       2    FLOW      -1
213          RC   0.050   0.045   0.050    6060  0.0167
214          RX       0      90     210     220     230     240     350     450
215          RY    1615    1614    1614    1612    1612    1614    1614    1615
             *

216          KK     C09
217          KM       Runoff from C09
218          BA   0.138
219          LG    0.35    0.35    3.13    0.85       0
220          UI      79     242     161      41       8       0       0       0       0       0
221          UI       0       0       0       0       0       0       0       0       0       0
             *

222          KK   CPC09
223          KM       Combine C03 with C09
224          HC       2   0.433
             *

225          KK    DC09
226          KM           Divert flow into C16
227          KM       Natural divergence of flow due to a braided channel network.
228          DT   DVC09
229          DI       0      31     111     249     519    1155    2695    4796    7315    9984
230          DQ       0      15      52     115     227     540    1299    2444    3606    4952
             *

231          KK  RCPC09
232          KM       Route remainder flow from CP C09 to CP C15
233          RS       2    FLOW      -1
234          RC   0.050   0.045   0.050    3650  0.0139
235          RX       0      40     120     130     155     165     245     300
236          RY    1553    1552    1552    1550    1550    1552    1552    1553
             *

237          KK     C15
238          KM       Runoff from C15
239          BA   0.095
240          LG    0.35    0.35    4.20    0.43       0
241          UI      88     208      61      10       0       0       0       0       0       0
242          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

243          KK   CPC15
244          KM       Combine C09 with C15
245          HC       2   0.528
             *

246          KK    DC15
247          KM           Divert flow into C30
248          KM       Natural divergence of flow due to a braided channel network.
249          DT   DVC15
250          DI       0      22      83     202     409     591    1269    2894    5081    7600
251          DQ       0      22      83     191     355     456     852    1738    3056    4514
             *

252          KK  RCPC15
253          KM       Route remainder flow from CP C15 to CP C10
254          RS       4    FLOW      -1
255          RC   0.050   0.045   0.050    3210  0.0095
256          RX       0      50     150     160     170     180     280     350
257          RY    1617    1616    1616    1614    1614    1616    1616    1617
             *

258          KK     C10
259          KM       Runoff from C10
260          BA   0.548
261          LG    0.35    0.35    3.19    0.82       0
262          UI     117     356     660     524     289     102      41      20       0       0
263          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
264          KK   CPC10
265          KM        Combine C14, C05, C15 with C10
266          HC       4   2.873
             *

267          KK    DC10
268          KM           Divert flow into C33A
269          KM        Flow is split between what passes through/over the structure and
270          KM        what is diverted parallel to the railroad.
271          KM           SPRR Structure 4 (2-36" CMP's)
272          DT   DVC10
273          DI       0      33      69     177     320     890
274          DQ       0      33      52      79     107     145
             *

275          KK  RCPC10
276          KM        Route remainder flow from CP C10 to CP C30
277          RS       2    FLOW      -1
278          RC   0.050   0.045   0.050    2070  0.0039
279          RX       0      20      30     180     330     480     630     780
280          RY    1500    1500    1493  1495.4  1497.8  1500.2  1502.6    1505
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

281          KK   DRC03
282          KM        Return diverted flow from CP C03
283          DR   DVC03
             *

284          KK   RDC03
285          KM        Route flow from CP C03 to CP C06
286          RS       3    FLOW      -1
287          RC   0.050   0.045   0.050    6650  0.0161
288          RX       0      55     150     160     180     190     300     350
289          RY    1629    1628    1628    1626    1626    1628    1628    1629
             *

290          KK     C06
291          KM        Runoff from C06
292          BA   0.349
293          LG    0.35    0.35    3.19    0.81       0
294          UI     162     514     459     161      38       0       0       0       0       0
295          UI       0       0       0       0       0       0       0       0       0       0
             *

296          KK   CPC06
297          KM        Combine DRC03 with C06
298          HC       2   0.644
             *

299          KK    DC06
300          KM           Divert flow into C18
301          KM        Natural divergence of flow due to a braided channel network.
302          DT   DVC06
303          DI       0      16      68     167     324     409     941    2213    4100    6021
304          DQ       0       8      34      83     162     204     470    1106    2050    3010
             *

305          KK  RCPC06
306          KM        Route remainder flow from CP C06 to CP C16
307          RS       1    FLOW      -1
308          RC   0.050   0.045   0.050    1800  0.0127
309          RX       0     120     240     250     270     280     400     500
310          RY    1568    1567    1567    1564    1564    1567    1567    1568
             *

311          KK   DRC09
312          KM        Return diverted flow from CP C09
313          DR   DVC09
             *

314          KK   RDC09
315          KM        Route flow from CP C09 to CP C16
316          RS       1    FLOW      -1
317          RC   0.050   0.045   0.050    2380  0.0132
318          RX       0     120     240     250     270     280     400     500
319          RY    1568    1567    1567    1564    1564    1567    1567    1568
             *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 320          KK     C16
 321          KM        Runoff from C16
 322          BA   0.127
 323          LG    0.35    0.35    3.23    0.79       0
 324          UI      82     238     134      30       7       0       0       0       0       0
 325          UI       0       0       0       0       0       0       0       0       0       0
              *

 326          KK   CPC16
 327          KM        Combine C06, DRC09 with C16
 328          HC       3   0.909
              *

 329          KK  RCPC16
 330          KM        Route flow from CP C16 to CP C30
 331          RS       5    FLOW      -1
 332          RC   0.050   0.045   0.050    5730  0.0106
 333          RX       0      70     200     210     225     235     360     450
 334          RY    1517    1516    1516    1514    1514    1516    1516    1517
              *

 335          KK   DRC06
 336          KM        Return diverted flow from CP C06
 337          DR   DVC06
              *

 338          KK   RDC06
 339          KM        Route flow from CP C06 to CP C18
 340          RS       1    FLOW      -1
 341          RC   0.050   0.045   0.050    2640  0.0117
 342          RX       0     200     240     247     272     280     330     450
 343          RY    1597    1596    1595    1593    1593    1595    1596    1597
              *

 344          KK     C18
 345          KM        Runoff from C18
 346          BA   0.078
 347          LG    0.35    0.35    4.00    0.47       0
 348          UI     181     115       0       0       0       0       0       0       0       0
 349          UI       0       0       0       0       0       0       0       0       0       0
              *

 350          KK   CPC18
 351          KM        Combine DRC06 with C18
 352          HC       2   0.722
              *

 353          KK    DC18
 354          KM           Divert flow into C19
 355          KM        Natural divergence of flow due to a braided channel network.
 356          DT   DVC18
 357          DI       0      69     169     349     503    1348    3477    6348    9552
 358          DQ       0       0      18      79     205     641    1775    3142    4817
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 359          KK  RCPC18
 360          KM        Route remainder flow from CP C18 to CP C17
 361          RS       1    FLOW      -1
 362          RC   0.050   0.045   0.050    2210  0.0103
 363          RX       0      60     170     180     200     210     300     350
 364          RY    1527    1526    1526    1524    1524    1526    1526    1527
              *

 365          KK     C17
 366          KM        Runoff from C17
 367          BA   0.121
 368          LG    0.35    0.35    3.48    0.66       0
 369          UI     154     269      40       0       0       0       0       0       0       0
 370          UI       0       0       0       0       0       0       0       0       0       0
              *

 371          KK   CPC17
 372          KM        Combine C18 with C17
 373          HC       2   0.843
              *

 374          KK    DC17
```

```
375          KM          Divert flow into C29
376          KM       Natural divergence of flow due to a braided channel network.
377          DT   DVC17
378          DI       0      23      83     189     360     459    1038    2490    4238    6610
379          DQ       0      23      83     181     324     369     727    1601    2650    4163
             *

380          KK   RCPC17
381          KM       Route remainder flow from CP C17 to CP C30
382          RS       2    FLOW      -1
383          RC   0.050   0.045   0.050    2920  0.0106
384          RX       0      40     120     150     160     170     250     300
385          RY    1510    1509    1509    1506    1506    1509    1509    1510
             *

386          KK   DRC15
387          KM       Return diverted flow from CP C15
388          DR   DVC15
             *

389          KK   RDC15
390          KM       Route flow from CP C15 to CP C30
391          RS       2    FLOW      -1
392          RC   0.050   0.045   0.050    4430  0.0092
393          RX       0      70     200     210     225     235     360     450
394          RY    1517    1516    1516    1514    1514    1516    1516    1517
             *
```


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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

395          KK     C30
396          KM       Runoff from C30
397          BA   0.235
398          LG    0.35    0.35    4.20    0.43       0
399          UI     191     496     186      29       0       0       0       0       0       0
400          UI       0       0       0       0       0       0       0       0       0       0
             *

401          KK   CPC30
402          KM       Combine C10, C16, C17, DRC15 with C30
403          HC       5   3.784
             *

404          KK    DC30
405          KM          Divert flow into C33A
406          KM       Flow is split between what passes through/over the structure and
407          KM       what is diverted parallel to the railroad.
408          KM          SPRR Structure 5 (2-36" CMP's)
409          DT   DVC30
410          DI       0      74     130     210     410
411          DQ       0      74     107     134     177
             *

412          KK  RCPC30
413          KM       Route remainder flow from CP C30 to CP C29
414          RS       2    FLOW      -1
415          RC   0.050   0.045   0.050    2920  0.0050
416          RX       0      20      30     170     310     450     590     730
417          RY    1488    1488    1483  1485.4  1487.8  1490.2  1492.6    1495
             *

418          KK     C02
419          KM       Runoff from C02
420          BA   0.129
421          LG    0.35    0.35    2.91    0.91       0
422          UI     200     266      30       0       0       0       0       0       0       0
423          UI       0       0       0       0       0       0       0       0       0       0
             *

424          KK  RCPC02
425          KM       Route flow from CP C02 to CP C07
426          RS       5    FLOW      -1
427          RC   0.050   0.045   0.050   11040  0.0220
428          RX       0     200     250     265     285     300     350     550
429          RY    1628    1627    1626    1624    1624    1626    1627    1628
             *

430          KK     C01
431          KM       Runoff from C01
432          BA   0.226
433          LG    0.35    0.35    2.92    0.90       0
434          UI     552     258      53       0       0       0       0       0       0       0
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```
435          UI       0       0       0       0       0       0       0       0       0       0
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

436          KK  RCPC01
437          KM        Route flow from CP C01 to CP C07
438          RS       5    FLOW      -1
439          RC   0.050   0.045   0.050   12650  0.0210
440          RX       0     200     270     280     300     310     380     580
441          RY    1619    1618    1617    1615    1615    1617    1618    1619
             *

442          KK     C08
443          KM        Runoff from C08
444          BA   0.873
445          LG    0.35    0.35    3.13    0.84       0
446          UI     257     751    1251     721     261      87      35       0       0       0
447          UI       0       0       0       0       0       0       0       0       0       0
             *

448          KK  RCPC08
449          KM        Route flow from CP C08 to CP C07
450          RS       1    FLOW      -1
451          RC   0.050   0.045   0.050    3060  0.0099
452          RX       0     300     514     530     570     590     612     806
453          RY    1573    1570    1569    1566    1566    1569    1570    1580
             *

454          KK     C07
455          KM        Runoff from C07
456          BA   1.183
457          LG    0.35    0.35    3.07    0.88       0
458          UI     417    1221    1744     836     246      71       0       0       0       0
459          UI       0       0       0       0       0       0       0       0       0       0
             *

460          KK   CPC07
461          KM        Combine C02, C01, C08 with C07
462          HC       4   2.411
             *

463          KK    DC07
464          KM            Divert flow into C20
465          KM        Natural divergence of flow due to a braided channel network.
466          DT   DVC07
467          DI       0      88     310     730    1418    1808    4633   11215
468          DQ       0      23      79     209     453     669    2050    5243
             *

469          KK  RCPC07
470          KM        Route remainder flow from CP C07 to CP C19
471          RS       1    FLOW      -1
472          RC   0.050   0.045   0.050    3830  0.0106
473          RX       0       8      60      70      85      95     135     143
474          RY    1558  1556.5    1555    1553    1553    1555  1556.5    1558
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

475          KK   DRC18
476          KM        Return diverted flow from CP C18
477          DR   DVC18
             *

478          KK   RDC18
479          KM        Route flow from CP C18 to CP C19
480          RS       2    FLOW      -1
481          RC   0.050   0.045   0.050    3080  0.0130
482          RX       0     100     210     220     245     255     320     450
483          RY    1528    1527    1526    1523    1523    1526    1527    1528
             *

484          KK     C19
485          KM        Runoff from C19
486          BA   0.257
487          LG    0.35    0.35    3.60    0.60       0
488          UI     209     542     203      32       0       0       0       0       0       0
489          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
490          KK   CPC19
491          KM        Combine C07, DRC18 with C19
492          HC       3   3.390
             *

493          KK    DC19
494          KM            Divert flow into C27
495          KM        Natural divergence of flow due to a braided channel network.
496          DT   DVC19
497          DI       0      35     126     336     751    1155    2993    7167   12787
498          DQ       0      24      84     211     432     595    1357    3021    5467
             *

499          KK  RCPC19
500          KM        Route remainder flow from CP C19 to CP C29
501          RS       3    FLOW      -1
502          RC   0.050   0.045   0.050    3370  0.0091
503          RX       0      50     250     260     275     285     400     450
504          RY    1497    1496    1496    1494    1494    1496    1496    1497
             *

505          KK   DRC17
506          KM        Return diverted flow from CP C17
507          DR   DVC17
             *

508          KK   RDC17
509          KM        Route flow from CP C17 to CP C29
510          RS       4    FLOW      -1
511          RC   0.050   0.045   0.050    4890  0.0083
512          RX       0     100     195     200     210     215     260     335
513          RY    1512    1511    1510    1508    1508    1510    1511    1512
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

514          KK     C29
515          KM        Runoff from C29
516          BA   0.339
517          LG    0.35    0.35    3.92    0.49       0
518          UI     195     593     396     100      21       0       0       0       0       0
519          UI       0       0       0       0       0       0       0       0       0       0
             *

520          KK   CPC29
521          KM        Combine C30, C19, DRC17 with C29
522          HC       4   6.791
             *

523          KK    DC29
524          KM            Divert flow into C33B
525          KM        Flow is split between what passes through/over the structure and
526          KM        what is diverted parallel to the railroad.
527          KM            SPRR Structure 6 (2-42" CMP's)
528          DT   DVC29
529          DI       0      11      82     253     511     836     966
530          DQ       0       0       8      24      53      77     113
             *

531          KK  RCPC29
532          KM        Route remainder flow from CP C29 to CP C28
533          RS       1    FLOW      -1
534          RC   0.050   0.045   0.050     520  0.0052
535          RX       0      20      30     130     230     330     430     530
536          RY    1480    1480    1475  1477.0  1479.0  1481.0  1483.0    1485
             *

537          KK     C28
538          KM        Runoff from C28
539          BA   0.050
540          LG    0.35    0.35    4.65    0.32       0
541          UI     157      36       0       0       0       0       0       0       0       0
542          UI       0       0       0       0       0       0       0       0       0       0
             *

543          KK   CPC28
544          KM        Combine C29 with C28
545          HC       2   6.841
             *

546          KK    DC28
```

```
547          KM           Divert flow into C33B
548          KM        Flow is split between what passes through/over the structure and
549          KM        what is diverted parallel to the railroad.
550          KM           SPRR Structure 7 (18' Bridge)
551          DT   DVC28
552          DI       0     107     200     420     739    1125    1565    1618    3411
553          DQ       0     107     195     318     453     581     692     832    1242
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

554          KK  RCPC28
555          KM        Route remainder flow from CP C28 to CP C27
556          RS       1    FLOW      -1
557          RC   0.050   0.045   0.050    1940  0.0050
558          RX       0      20      30     110     190     270     350     430
559          RY    1474    1474    1467  1468.6  1470.2  1471.8  1473.4    1475
             *

560          KK   DRC19
561          KM        Return diverted flow from CP C19
562          DR   DVC19
             *

563          KK   RDC19
564          KM        Route flow from CP C19 to CP C27
565          RS       2    FLOW      -1
566          RC   0.050   0.045   0.050    5130  0.0081
567          RX       0     100     220     240     270     290     390     480
568          RY    1499    1498    1497    1494    1494    1497    1498    1499
             *

569          KK     C27
570          KM        Runoff from C27
571          BA   0.214
572          LG    0.35    0.35    3.60    0.60       0
573          UI     153     429     198      38       0       0       0       0       0
574          UI       0       0       0       0       0       0       0       0       0
             *

575          KK   CPC27
576          KM        Combine C28, DRC19 with C27
577          HC       3   7.055
             *

578          KK    DC27
579          KM           Divert flow into C33B
580          KM        Flow is split between what passes through/over the structure and
581          KM        what is diverted parallel to the railroad.
582          KM           SPRR Structure 8 (2-42" CMP's)
583          DT   DVC27
584          DI       0      49     111     270     516    1265    2665
585          DQ       0      49      75     106     153     188     231
             *

586          KK  RCPC27
587          KM        Route remainder flow from CP C27 to CP C20
588          RS       1    FLOW      -1
589          RC   0.050   0.045   0.050    1360  0.0051
590          RX       0      20      30     170     310     450     590     730
591          RY    1465    1465    1458  1460.0  1462.0  1464.0  1466.0    1468
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

592          KK   DRC07
593          KM        Return diverted flow from CP C07
594          DR   DVC07
             *

595          KK   RDC07
596          KM        Route flow from CP C07 to CP C20
597          RS       3    FLOW      -1
598          RC   0.050   0.045   0.050    9400  0.0096
599          RX       0     110     200     220     250     270     350     450
600          RY    1494    1493    1493    1490    1490    1493    1493    1494
             *

601          KK     C21
602          KM        Runoff from C21
```

```
603          BA   0.563
604          LG    0.35    0.35    2.83    1.02       0
605          UI     603    1263     274       0       0       0       0       0       0       0
606          UI       0       0       0       0       0       0       0       0       0       0
             *

607          KK    DC21
608          KM            Divert flow into C22
609          KM        Natural divergence of flow due to a braided channel network.
610          DT   DVC21
611          DI       0      59     141     365     858    2108    3600    5595    7685
612          DQ       0      59     129     260     531    1191    1992    3142    4249
             *

613          KK  RCPC21
614          KM        Route remainder flow from CP C21 to CP C20
615          RS       2    FLOW      -1
616          RC   0.050   0.045   0.050    4340  0.0093
617          RX       0     110     200     220     250     270     350     450
618          RY    1494    1493    1493    1490    1490    1493    1493    1494
             *

619          KK     C20
620          KM        Runoff from C20
621          BA   0.464
622          LG    0.35    0.35    3.25    0.78       0
623          UI     137     399     665     383     139      46      19       0       0       0
624          UI       0       0       0       0       0       0       0       0       0       0
             *

625          KK   CPC20
626          KM        Combine C27, DRC07, C21 with C20
627          HC       4   8.083
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

628          KK    DC20
629          KM            Divert flow into C33B
630          KM        Flow is split between what passes through/over the structure and
631          KM        what is diverted parallel to the railroad.
632          KM            SPRR Structure 9 (2-48" CMP's)
633          DT   DVC20
634          DI       0      41      93     192     321    1018    2527    5250
635          DQ       0      41      82     107     157     214     261     397
             *

636          KK  RCPC20
637          KM        Route remainder flow from CP C20 to CP C26
638          RS       1    FLOW      -1
639          RC   0.050   0.045   0.050    2300  0.0066
640          RX       0      20      30     210     390     570     750     930
641          RY    1455    1455    1448  1450.4  1452.8  1455.2  1457.6    1460
             *

642          KK     C26
643          KM        Runoff from C26
644          BA   0.101
645          LG    0.35    0.35    3.15    0.83       0
646          UI     109     225      50       0       0       0       0       0       0       0
647          UI       0       0       0       0       0       0       0       0       0       0
             *

648          KK   CPC26
649          KM        Combine C20 with C26
650          HC       2   8.184
             *

651          KK    DC26
652          KM            Divert flow into C33C
653          KM        Flow is split between what passes through/over the structure and
654          KM        what is diverted parallel to the railroad.
655          KM            SPRR Structure 10 (18' Bridge)
656          DT   DVC26
657          DI       0     213     362     573    1018    2671    6168
658          DQ       0     213     333     458     565     671     822
             *

659          KK  RCPC26
660          KM        Route remainder flow from CP C26 to CP C22
661          RS       2    FLOW      -1
662          RC   0.050   0.045   0.050    3100  0.0066
```

```
 663          RX       0      20      30     170     310     450     590     730
 664          RY    1437    1437    1429  1431.2  1433.4  1435.6  1437.8    1440
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 665          KK   DRC21
 666          KM        Return diverted flow from CP C21
 667          DR   DVC21
              *

 668          KK   RDC21
 669          KM        Route flow from CP C21 to CP C22
 670          RS       4    FLOW      -1
 671          RC   0.050   0.045   0.050    8780  0.0092
 672          RX       0      30     170     190     210     230     280     320
 673          RY    1445    1444    1444    1440    1440    1444    1444    1445
              *

 674          KK     C23
 675          KM        Runoff from C23
 676          BA   0.496
 677          LG    0.35    0.35    3.03    0.87       0
 678          UI     768    1023     117       0       0       0       0       0       0       0
 679          UI       0       0       0       0       0       0       0       0       0       0
              *

 680          KK  RCPC23
 681          KM        Route flow from CP C23 to CP C22
 682          RS       1    FLOW      -1
 683          RC   0.050   0.045   0.050    2310  0.0044
 684          RX       0       8      35      50      70      85     110     118
 685          RY    1431  1429.5    1429    1425    1425    1429  1429.5    1431
              *

 686          KK     C22
 687          KM        Runoff from C22
 688          BA   0.804
 689          LG    0.35    0.35    3.11    0.83       0
 690          UI     515    1509     853     184      48       0       0       0       0       0
 691          UI       0       0       0       0       0       0       0       0       0       0
              *

 692          KK   CPC22
 693          KM        Combine C26, DRC21, C23 with C22
 694          HC       4   9.484
              *

 695          KK     C24
 696          KM        Runoff from C24
 697          BA   0.162
 698          LG    0.35    0.35    3.19    0.75       0
 699          UI     174     363      79       0       0       0       0       0       0       0
 700          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 701          KK   CPC24
 702          KM        Combine C22 with C24
 703          HC       2   9.646
              *

 704          KK  PNDC01
 705          KM        Pond C01
 706          KM        Common storage area between CPC22 and CPC24 (behind SPRR embankment)
 707          RS       1    STOR      -1
 708          SV       0     0.5     2.4     5.9    11.4    19.5    30.7    44.8    62.5    84.3
 709          SE  1417.6    1419    1420    1421    1422    1423    1424    1425    1426    1427
 710          SQ       0     210     437     759    1197    1715    2230    2676    3109    3630
              *

 711          KK    DC24
 712          KM           Divert flow to Subbasin C33C
 713          KM        Flow is split between what passes through/over the structure and
 714          KM        what is diverted parallel to the railroad.
 715          KM           SPRR Structures 11 and 12 (57' Bridge and 12' Bridge)
 716          DT   DVC24
 717          DI       0     210     437     759    1197    1715    2230    2676    3109    3630
 718          DQ       0     210     437     759    1197    1715    2230    2676    3109    3630
```

```
*

KK  RCPC24
KM        Artificial route to reduce hydrographs, no flow from CP C24 gets to CP C
KM        Route remainder flow from CP C24 to CP C25
RS       1    FLOW      -1
RC   0.050   0.045   0.050    1500   0.002
RX       0     100     115     120     320     520     720     920
RY    1424    1424    1420    1420    1421    1422    1424    1425
*

KK     C25
KM        Runoff from C25
BA   0.076
LG    0.35    0.35    3.15    0.77       0
UI     237      56       0       0       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPC25
KM        Artificial combine to reduce hydrographs, no flow from CP C24 gets to CP
KM        Since this is an artificial combine, the area does not carry over to CP
KM        And therefore, the area associated with the HC record reflects only the
KM        subbasin C25
HC       2   0.076
*
```



```
LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  PNDC02
KM        POND C02
KM        Storage area for CPC25
RS       1    STOR      -1
SV       0     0.1     1.1     3.1     5.9    10.2    15.6    22.2    30.2    39.6
SE  1417.4    1418    1419    1420    1421    1422    1423    1424    1425    1426
SQ       0      32      86     141     233     352     551     836    1278    1890
*

KK    DC25
KM           Divert flow to Subbasin C33C
KM        Flow is split between what passes through/over the structure and
KM        what is diverted parallel to the railroad.
KM           SPRR Structure 13 (13' Bridge)
DT   DVC25
DI       0      86     141     233     352     551     836    1278    1890
DQ       0      86     140     227     323     430     529     624     709
*

KK  RCPC25
KM        Route remainder flow from CP C25 to CP D09
RS       1    FLOW      -1
RC   0.050   0.045   0.050     830  0.0048
RX       0     275     490     550     575     620     810    1110
RY    1405    1404    1403    1400    1400    1403    1404    1405
* ******************************************************************************
*      Runoff Watershed D (south of SR-238/Railroad) divert all flows north of r
*      and route remainder east along Highway, ultimately into Watershed E
* ******************************************************************************

KK     D02
KM        Runoff from D02
BA   0.496
LG    0.35    0.35    3.15    0.79       0
UI     354     995     458      89       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK    DD02
KM           Divert flow into D01
KM        Natural divergence of flow due to a braided channel network.
DT   DVD02
DI       0     113     266     523     752    1330    2297    3723    6492    9369
DQ       0       0      20      83     183     425     847    1490    2820    4139
*

KK  RCPD02
KM        Route remainder flow from CP D02 to CP D03
RS       1    FLOW      -1
RC   0.050   0.045   0.050    2200  0.0190
RX     175     185     210     215     225     230     255     265
RY    1685    1684    1683    1682    1682    1683    1684    1685
*
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 777          KK     D03
 778          KM        Runoff from D03
 779          BA   0.340
 780          LG    0.35    0.35    2.99    0.92       0
 781          UI     176     546     427     126      29       0       0       0       0       0
 782          UI       0       0       0       0       0       0       0       0       0       0
              *

 783          KK   CPD03
 784          KM        Combine D02 with D03
 785          HC       2   0.836
              *

 786          KK    DD03
 787          KM           Divert flow into D01
 788          KM        Natural divergence of flow due to a braided channel network.
 789          DT   DVD03
 790          DI       0      75     252     555    1005    1218    2090    3899    6173    9828
 791          DQ       0      44     145     327     608     733    1309    2622    4116    6233
              *

 792          KK  RCPD03
 793          KM        Route remainder flow from CP D03 to CP D04
 794          RS       1    FLOW      -1
 795          RC   0.050   0.045   0.050    4290  0.0133
 796          RX       0      70     153     165     185     195     250     340
 797          RY    1643    1642    1641    1638    1638    1641    1642    1643
              *

 798          KK     D04
 799          KM        Runoff from D04
 800          BA   0.198
 801          LG    0.35    0.35    2.85    1.04       0
 802          UI     102     318     250      73      16       0       0       0       0       0
 803          UI       0       0       0       0       0       0       0       0       0       0
              *

 804          KK   CPD04
 805          KM        Combine D03 with D04
 806          HC       2   1.034
              *

 807          KK    DD04
 808          KM           Divert flow into D05
 809          KM        Natural divergence of flow due to a braided channel network.
 810          DT   DVD04
 811          DI       0      34     123     274     496    1091    1962    3285    5668    8777
 812          DQ       0      20      71     155     276     598    1098    1864    3244    5216
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 813          KK  RCPD04
 814          KM        Route remainder flow from CP D04 to CP D01
 815          RS       4    FLOW      -1
 816          RC   0.050   0.045   0.050    7990  0.0120
 817          RX       0     220     360     370     385     395     510     710
 818          RY    1577    1576    1575    1573    1573    1575    1576    1577
              *

 819          KK   DRD02
 820          KM        Return diverted flow from CP D02
 821          DR   DVD02
              *

 822          KK   RDD02
 823          KM        Route flow from CP D02 to CP D01
 824          RS       9    FLOW      -1
 825          RC   0.050   0.045   0.050   14130  0.0120
 826          RX       0     160     295     305     320     330     420     575
 827          RY    1588    1587    1586    1584    1584    1586    1587    1588
              *

 828          KK   DRD03
 829          KM        Return diverted flow from CP D03
 830          DR   DVD03
              *
```

```
831          KK   RDD03
832          KM        Route flow from CP D03 to CP D01
833          RS       5    FLOW      -1
834          RC   0.050   0.045   0.050   12100  0.0120
835          RX     310     330     360     370     385     395     425     445
836          RY    1577    1576    1575    1573    1573    1575    1576    1577
             *

837          KK     D01
838          KM        Runoff from D01
839          BA   2.652
840          LG    0.35    0.35    3.09    0.86       0
841          UI     423    1364    2301    2869    1740     880     384     153      83       0
842          UI       0       0       0       0       0       0       0       0       0       0
843          UI       0       0       0       0       0       0       0       0       0       0
             *

844          KK   CPD01
845          KM        Combine DRD02, DRD03, D04 with D01
846          HC       4   3.686
             *

847          KK    DD01
848          KM           Divert flow into D05
849          KM        Natural divergence of flow due to a braided channel network.
850          DT   DVD01
851          DI       0      83     190     360     603     930    1599    2843    4760    8253
852          DQ       0      83     176     305     473     686     979    1623    2628    4474
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

853          KK  RCPD01
854          KM        Route remainder flow from CP D01 to CP D09
855          RS       4    FLOW      -1
856          RC   0.050   0.045   0.050   12290  0.0088
857          RX       0     150     280     290     330     340     500     650
858          RY    1487    1486    1485    1482    1482    1485    1486    1487
             *

859          KK     D09
860          KM        Runoff from D09
861          BA   0.544
862          LG    0.35    0.35    3.40    0.67       0
863          UI     176     507     798     422     133      43      23       0       0       0
864          UI       0       0       0       0       0       0       0       0       0       0
             *

865          KK   CPD09
866          KM        Combine C25, D01 with D09
867          HC       3   4.305
             *

868          KK    DD09
869          KM           Divert flow into Watershed C, to CP C33C
870          KM        Flow is split between what passes through/over the structure and
871          KM        what is diverted parallel to the railroad.
872          KM           SPRR Structure 14 (12' Bridge)
873          DT   DVD09
874          DI       0     156     238     317     414     705    1814
875          DQ       0     156     233     292     349     428    1028
             *

876          KK  RCPD09
877          KM        Route remainder flow from CP D09 to CP D12
878          RS       1    FLOW      -1
879          RC   0.050   0.045   0.050    1190  0.0048
880          RX       0      20      30     170     310     450     590     730
881          RY    1426    1426    1419  1421.2  1423.4  1425.6  1427.8    1430
             *

882          KK     D12
883          KM        Runoff from D12
884          BA   0.128
885          LG    0.35    0.35    3.17    0.76       0
886          UI     119     280      83      12       0       0       0       0       0       0
887          UI       0       0       0       0       0       0       0       0       0       0
             *

888          KK   CPD12
889          KM        Combine D09 with D12
```

```
890          HC       2   4.433
             *
1                                          HEC-1 INPUT                                                    PAGE 24

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

891          KK    DD12
892          KM            Divert flow into Watershed C, to CP C33C
893          KM        Flow is split between what passes through/over the structure and
894          KM        what is diverted parallel to the railroad.
895          KM            SPRR Structure (2-58"x36" CMP's)
896          DT   DVD12
897          DI       0      31      70     134     243     347     763    1699
898          DQ       0      31      69     106     148     187     216     239
             *

899          KK  RCPD12
900          KM        Route remainder flow from CP D12 to CP D13
901          RS       1    FLOW      -1
902          RC   0.050   0.045   0.050     590  0.0024
903          RX       0      20      30     170     310     450     590     730
904          RY    1425    1425    1417  1419.6  1422.2  1424.8  1427.4    1430
             *

905          KK   DRD01
906          KM        Return diverted flow from CP D01 in basin D05
907          DR   DVD01
             *

908          KK   RDD01
909          KM        Route diverted flow from CP D01 to CP D05
910          RS       4    FLOW      -1
911          RC   0.050   0.045   0.050    7540  0.0092
912          RX      80      90     192     197     207     212     325     335
913          RY  1489.5    1488    1487    1486    1486    1487    1488  1489.5
             *

914          KK   DRD04
915          KM        Return diverted flow from CP D04
916          DR   DVD04
             *

917          KK   RDD04
918          KM        Route flow from CP D04 to CP D05
919          RS      15    FLOW      -1
920          RC   0.050   0.045   0.050   15200  0.0092
921          RX       0      90     192     197     207     212     325     590
922          RY    1489    1488    1487    1486    1486    1487    1488    1489
             *

923          KK     D05
924          KM        Runoff from D05
925          BA   1.927
926          LG    0.35    0.35    3.17    0.83       0
927          UI     135     482     758    1054    1600    1219     883     603     289     190
928          UI     110      41      42      41       0       0       0       0       0       0
929          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                          HEC-1 INPUT                                                    PAGE 25

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

930          KK   CPD05
931          KM        Combine DRD01, DRD04 with D05
932          HC       3   5.613
             *

933          KK    DD05
934          KM            Divert flow into D11
935          KM        Natural divergence of flow due to a braided channel network.
936          DT   DVD05
937          DI       0      60     202     425     738    1146    1656    2421    4086
938          DQ       0       0       4      12      26      45      70     132     248
             *

939          KK  RCPD05
940          KM        Route remainder flow from CP D05 to CP D13
941          RS       3    FLOW      -1
942          RC   0.050   0.045   0.050    5890  0.0080
943          RX      90     100     200     210     240     250     375     385
944          RY  1457.5    1456    1455    1453    1453    1455    1456  1457.5
             *
```

```
 945          KK     D13
 946          KM        Runoff from D13
 947          BA   0.559
 948          LG    0.35    0.35    4.40    0.37       0
 949          UI     358    1049     594     127      33       0       0       0       0       0
 950          UI       0       0       0       0       0       0       0       0       0       0
              *

 951          KK   CPD13
 952          KM        Combine D05, D12 with D13
 953          HC       3   6.919
              *

 954          KK    DD13
 955          KM            Divert flow into D22
 956          KM        Flow is split between what passes through/over the structure and
 957          KM        what is diverted parallel to the railroad.
 958          KM            SPRR Structure 16 (29' Bridge)
 959          DT   DVD13
 960          DI       0     596     815    1051    1447    2495    4581    8716
 961          DQ       0     596     802     966    1131    1315    1514    2188
              *

 962          KK  RCPD13
 963          KM        Route remainder flow from CP D13 to CP D46
 964          RS       3    FLOW      -1
 965          RC   0.050   0.045   0.050    4420  0.0040
 966          RX       0      20      30     230     430     630     830    1030
 967          RY    1411    1411    1405  1408.0  1411.0  1414.0  1417.0    1420
              *
1                                          HEC-1 INPUT                                    PAGE 26

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 968          KK     D46
 969          KM        Runoff from D46
 970          BA   0.055
 971          LG    0.35    0.35    4.65    0.31       0
 972          UI     128      81       0       0       0       0       0       0       0       0
 973          UI       0       0       0       0       0       0       0       0       0       0
              *

 974          KK   CPD46
 975          KM        Combine D13 with D46
 976          HC       2   6.974
              *

 977          KK    DD46
 978          KM            Divert flow into D22
 979          KM        Flow is split between what passes through/over the structure and
 980          KM        what is diverted parallel to the railroad.
 981          KM            SPRR Structure 17 (17' bridge)
 982          DT   DVD46
 983          DI       0     162     263     404     938    2210    4515    8513
 984          DQ       0     162     241     331     424     543     833    1817
              *

 985          KK  RCPD46
 986          KM        Route remainder flow from CP D46 to CP D10
 987          RS       2    FLOW      -1
 988          RC   0.050   0.045   0.050    1100  0.0040
 989          RX       0      20      30     230     430     630     830    1030
 990          RY    1409    1409    1403  1406.0  1409.0  1412.0  1415.0    1418
              *

 991          KK     D06
 992          KM        Runoff from D06
 993          BA   1.216
 994          LG    0.35    0.35    2.82    1.06       0
 995          UI     170     562     898    1320     848     508     211     103      36      36
 996          UI       0       0       0       0       0       0       0       0       0       0
 997          UI       0       0       0       0       0       0       0       0       0       0
              *

 998          KK    DD06
 999          KM            Divert flow into D08
1000          KM        Natural divergence of flow due to a braided channel network.
1001          DT   DVD06
1002          DI       0      34     133     276     658    1341    2396    4365    6763    9307
1003          DQ       0      23      89     184     418     826    1445    2534    4013    5489
              *
```

```
1004          KK  RCPD06
1005          KM        Route flow from CP D06 to CP D10
1006          RS       8    FLOW      -1
1007          RC   0.050   0.045   0.050   16830  0.0078
1008          RX       0     140     310     320     340     350     540     835
1009          RY    1459    1458    1457    1455    1455    1457    1458    1459
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1010          KK   DRD06
1011          KM        Return diverted flow from CP D06
1012          DR   DVD06
              *

1013          KK   RDD06
1014          KM        Route flow from CP D06 to CP D08
1015          RS       2    FLOW      -1
1016          RC   0.050   0.045   0.050    3320  0.0081
1017          RX     290     310     340     350     360     370     390     410
1018          RY    1523    1522    1521    1520    1520    1521    1522    1523
              *

1019          KK     D08
1020          KM        Runoff from D08
1021          BA   0.280
1022          LG    0.35    0.35    3.13    0.85       0
1023          UI     130     412     369     129      30       0       0       0       0       0
1024          UI       0       0       0       0       0       0       0       0       0       0
              *

1025          KK   CPD08
1026          KM        Combine DRD06 with D08
1027          HC       2   1.496
              *

1028          KK  RCPD08
1029          KM        Route flow from CP D08 to CP D10
1030          RS       6    FLOW      -1
1031          RC   0.050   0.045   0.050   13880  0.0078
1032          RX     280     290     310     320     340     350     370     380
1033          RY    1459    1458    1457    1455    1455    1457    1458    1459
              *

1034          KK   DRD05
1035          KM        Return diverted flow from CP D05
1036          DR   DVD05
              *

1037          KK   RDD05
1038          KM        Route flow from CP D05 to CP D11
1039          RS       3    FLOW      -1
1040          RC   0.050   0.045   0.050    6030  0.0084
1041          RX       0      25      52      56      60      64      90     115
1042          RY    1465    1464    1463  1460.5  1460.5    1463    1464    1465
              *

1043          KK     D11
1044          KM        Runoff from D11
1045          BA   0.395
1046          LG    0.35    0.35    3.64    0.59       0
1047          UI     127     369     580     305      97      32      16       0       0       0
1048          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1049          KK   CPD11
1050          KM        Combine DRD05 with D11
1051          HC       2   6.008
              *

1052          KK  RCPD11
1053          KM        Route flow from CP D11 to CP D10
1054          RS       3    FLOW      -1
1055          RC   0.050   0.045   0.050    3640  0.0073
1056          RX     140     150     200     250     300     350     400     410
1057          RY    1416    1415    1415    1414    1414    1415    1415    1416
              *
```

```
1058        KK     D10
1059        KM        Runoff from D10
1060        BA   0.841
1061        LG    0.35     0.35     3.85     0.52        0
1062        UI      84      307      466      771      661      448      266      120       69       22
1063        UI      21        0        0        0        0        0        0        0        0        0
1064        UI       0        0        0        0        0        0        0        0        0        0
            *

1065        KK   CPD10
1066        KM        Combine D06, D08, D11, D46 with D10
1067        HC       5   9.706
            *

1068        KK    DD10
1069        KM           Divert flow into D22
1070        KM        Flow is split between what passes through/over the structure and
1071        KM        what is diverted parallel to the railroad.
1072        KM           SPRR Structure 18 (11' Bridge)
1073        DT   DVD10
1074        DI       0      280      361      499     1109     2639
1075        DQ       0      280      346      411      476      546
            *

1076        KK  RCPD10
1077        KM        Route remainder flow from CP D10 to CP D47
1078        RS       1     FLOW       -1
1079        RC   0.050    0.045    0.050      910   0.0033
1080        RX       0       20       30      170      310      450      590      730
1081        RY    1403     1403     1397   1399.6   1402.2   1404.8   1407.4     1410
            *

1082        KK     D47
1083        KM        Runoff from D47
1084        BA   0.040
1085        LG    0.35     0.35     3.40     0.70        0
1086        UI      77       72        0        0        0        0        0        0        0        0
1087        UI       0        0        0        0        0        0        0        0        0        0
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1088        KK   CPD47
1089        KM        Combine D10 with D47
1090        HC       2   9.746
            *

1091        KK    DD47
1092        KM           Divert flow into D22
1093        KM        Flow is split between what passes through/over the structure and
1094        KM        what is diverted parallel to the railroad.
1095        KM           SPRR Structure 19 (12' Bridge)
1096        DT   DVD47
1097        DI       0       70      133      209      473     1271
1098        DQ       0       70      126      164      196      244
            *

1099        KK  RCPD47
1100        KM        Route remainder flow from CP D47 to CP D15
1101        RS       2     FLOW       -1
1102        RC   0.050    0.045    0.050     2150   0.0040
1103        RX       0       20       30      230      430      630      830     1030
1104        RY    1399     1399     1393   1396.0   1399.0   1402.0   1405.0     1408
            *

1105        KK     D07
1106        KM        Runoff from D07
1107        BA   1.050
1108        LG    0.35     0.35     3.27     0.77        0
1109        UI     120      418      643     1061      786      522      257      131       61       28
1110        UI      29        0        0        0        0        0        0        0        0        0
1111        UI       0        0        0        0        0        0        0        0        0        0
            *

1112        KK    DD07
1113        KM           Divert flow into D17
1114        KM        Natural divergence of flow due to a braided channel network.
1115        DT   DVD07
1116        DI       0       53      127      249      354      652     1157     2011     3786     5850
1117        DQ       0       53      121      220      288      474      779     1253     2178     3304
            *
```

```
1118          KK  RCPD07
1119          KM        Route remainder flow from CP D07 to CP D15
1120          RS       6    FLOW      -1
1121          RC   0.050   0.045   0.050    8710  0.0071
1122          RX     440     455     485     495    510     537     567     582
1123          RY    1425    1424    1423    1422   1422    1423    1424    1425
              *

1124          KK     D15
1125          KM        Runoff from D15
1126          BA   0.653
1127          LG    0.35    0.35    4.40    0.38       0
1128          UI     121     374     679     672     392     164      78      21      21       0
1129          UI       0       0       0       0       0       0       0       0       0       0
1                                          HEC-1 INPUT                                          PAGE 30

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1130          UI       0       0       0       0       0       0       0       0       0       0
              *

1131          KK   CPD15
1132          KM        Combine D07, D47 with D15
1133          HC       3  11.449
              *

1134          KK    DD15
1135          KM           Divert flow into D22
1136          KM        Flow is split between what passes through/over the structure and
1137          KM        what is diverted parallel to the railroad.
1138          KM           SPRR Structure 20 (18' Bridge)
1139          DT   DVD15
1140          DI       0     234     363     531     834    1477    2822    5355
1141          DQ       0     234     361     500     637     775     914    1221
              *

1142          KK  RCPD15
1143          KM        Route remainder flow from CP D15 to CP D17
1144          RS       2    FLOW      -1
1145          RC   0.050   0.045   0.050    1810  0.0029
1146          RX       0      20      30     210     390     570     750     930
1147          RY    1394    1394    1386  1388.8  1391.6  1394.4  1397.2    1400
              *

1148          KK   DRD07
1149          KM        Return diverted flow from CP D07
1150          DR   DVD07
              *

1151          KK   RDD07
1152          KM        Route flow from CP D07 to CP D17
1153          RS       6    FLOW      -1
1154          RC   0.050   0.045   0.050    9970  0.0066
1155          RX     330     340     360     405     425     480     500     510
1156          RY    1425    1424    1423    1422    1422    1423    1424    1425
              *

1157          KK     D17
1158          KM        Runoff from D17
1159          BA   0.778
1160          LG    0.35    0.35    3.50    0.65       0
1161          UI     108     360     574     846     542     324     136      66      23      23
1162          UI       0       0       0       0       0       0       0       0       0       0
1163          UI       0       0       0       0       0       0       0       0       0       0
              *

1164          KK   CPD17
1165          KM        Combine D15, D07 with D17
1166          HC       3  12.227
              *
1                                          HEC-1 INPUT                                          PAGE 31

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1167          KK    DD17
1168          KM           Divert flow into D23
1169          KM        Flow is split between what passes through/over the structure and
1170          KM        what is diverted parallel to the railroad.
1171          KM           SPRR Structure 21 (18' Bridge)
1172          DT   DVD17
1173          DI       0     311     441     622    1010    2113
1174          DQ       0     311     436     546     660     859
              *
```

```
1175          KK  RCPD17
1176          KM        Route remainder flow from CP D17 to CP D18
1177          RS       2    FLOW      -1
1178          RC   0.050   0.045   0.050    1410  0.0038
1179          RX       0      20      30     270     510     750     990    1230
1180          RY    1388    1388    1380  1383.0  1386.0  1389.0  1392.0    1395
              *

1181          KK     D18
1182          KM        Runoff from D18
1183          BA   0.432
1184          LG    0.35    0.35    3.21    0.80       0
1185          UI     107     321     576     388     176      69      18      17       0       0
1186          UI       0       0       0       0       0       0       0       0       0       0
              *

1187          KK   CPD18
1188          KM        Combine D17 with D18
1189          HC       2  12.658
              *

1190          KK    DD18
1191          KM           Divert flow into D23
1192          KM        Flow is split between what passes through/over the structure and
1193          KM        what is diverted parallel to the railroad.
1194          KM           SPRR Structure 22 (10' Bridge)
1195          DT   DVD18
1196          DI       0     137     213     338     766    2012    4596
1197          DQ       0     137     205     275     335     389     592
              *

1198          KK  RCPD18
1199          KM        Route remainder flow from CP D18 to CP D19
1200          RS       1    FLOW      -1
1201          RC   0.050   0.045   0.050    1290  0.0045
1202          RX       0      20      30     210     390     570     750     930
1203          RY    1381    1381    1375  1377.0  1379.0  1381.0  1383.0    1385
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1204          KK     D19
1205          KM        Runoff from D19
1206          BA   0.247
1207          LG    0.35    0.35    3.21    0.80       0
1208          UI     128     397     310      91      21       0       0       0       0       0
1209          UI       0       0       0       0       0       0       0       0       0       0
              *

1210          KK   CPD19
1211          KM        Combine D18 with D19
1212          HC       2  12.905
              *

1213          KK    DD19
1214          KM           Divert flow into D24
1215          KM        Flow is split between what passes through/over the structure and
1216          KM        what is diverted parallel to the railroad.
1217          KM           SPRR Structure 23 (3-27" Steel Pipes)
1218          DT   DVD19
1219          DI       0      60     105     234     482    1867
1220          DQ       0      60      82     104     144     550
              *

1221          KK  RCPD19
1222          KM        Route remainder flow from CP D19 to CP D20
1223          RS       2    FLOW      -1
1224          RC   0.050   0.045   0.050    1700  0.0038
1225          RX       0      20      30     200     370     540     710     880
1226          RY    1375    1375    1368  1370.4  1372.8  1375.2  1377.6    1380
              *

1227          KK     D20
1228          KM        Runoff from D20
1229          BA   0.110
1230          LG    0.35    0.35    3.21    0.80       0
1231          UI     118     246      54       0       0       0       0       0       0       0
1232          UI       0       0       0       0       0       0       0       0       0       0
              *

1233          KK   CPD20
```

```
1234          KM        Combine D19 with D20
1235          HC       2  13.015
              *

1236          KK    DD20
1237          KM            Divert flow into D25
1238          KM        Flow is split between what passes through/over the structure and
1239          KM        what is diverted parallel to the railroad.
1240          KM            SPRR Structure 24 (18' Bridge)
1241          DT   DVD20
1242          DI       0     275     424     644     884    1721    3390    6484   12099
1243          DQ       0     275     396     532     655     766     877    1307    2977
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1244          KK  RCPD20
1245          KM        Route remainder flow from CP D20 to CP D21
1246          RS       1    FLOW      -1
1247          RC   0.050   0.045   0.050     850  0.0039
1248          RX       0      20      30     180     330     480     630     780
1249          RY    1371    1371    1364  1366.2  1368.4  1370.6  1372.8    1375
              *

1250          KK     D21
1251          KM        Runoff from D21
1252          BA   0.077
1253          LG    0.35    0.35    3.21    0.80       0
1254          UI     119     159      18       0       0       0       0       0       0       0
1255          UI       0       0       0       0       0       0       0       0       0       0
              *

1256          KK   CPD21
1257          KM        Combine D20 with D21
1258          HC       2  13.092
              *

1259          KK    DD21
1260          KM            Divert flow into D25
1261          KM        Flow is split between what passes through/over the structure and
1262          KM        what is diverted parallel to the railroad.
1263          KM            SPRR Structure 25 (2-48" CMP's)
1264          DT   DVD21
1265          DI       0      37      92     192     402     930    1661    3454
1266          DQ       0      37      69     110     142     195     244     294
              *

1267          KK  RCPD21
1268          KM        Route remainder flow from CP D21 to CP E33
1269          RS       2    FLOW      -1
1270          RC   0.050   0.045   0.050    1550   0.004
1271          RX       0      20      97     107     177     247     317     390
1272          RY  1369.8  1368.5    1368    1364  1365.5    1367  1368.5    1370
              * ***********************************************************************
              *      Runoff Watershed E (south of SR-238/Railroad) divert all flows north of r
              *      and route remainder east along Highway, ultimately into Watershed F
              * ***********************************************************************

1273          KK     E33
1274          KM        Runoff from E33
1275          BA   0.049
1276          LG    0.35    0.35    3.21    0.80       0
1277          UI      95      87       0       0       0       0       0       0       0       0
1278          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1279          KK   CPE33
1280          KM        Combine D21 with E33
1281          HC       2  13.141
              *

1282          KK    DE33
1283          KM            Divert flow into E39
1284          KM        Flow is split between what passes through/over the structure and
1285          KM        what is diverted parallel to the railroad.
1286          KM            SPRR Structure 26 (2-58"x36" CMP's)
1287          DT   DVE33
1288          DI       0     133     188     278     392     888
```

```
1289        DQ       0     133     176     208     232     262
            *

1290        KK  RCPE33
1291        KM        Route remainder flow from CP E33 to CP E32
1292        RS       1    FLOW      -1
1293        RC   0.050   0.045   0.050    1490  0.0038
1294        RX       0      20      30     270     510     750     990    1230
1295        RY    1363    1363    1355  1357.6  1360.2  1362.8  1365.4    1368
            *

1296        KK     E17
1297        KM        Runoff from E17
1298        BA   1.478
1299        LG    0.35    0.35    3.21    0.80       0
1300        UI     119     472     715    1108    1255     850     579     276     163      85
1301        UI      35      36       0       0       0       0       0       0       0       0
1302        UI       0       0       0       0       0       0       0       0       0       0
            *

1303        KK  RCPE17
1304        KM        Route flow from CP E17 to CP E32
1305        RS       4    FLOW      -1
1306        RC   0.050   0.045   0.050    5190  0.0068
1307        RX       0     140     280     300     310     330     450     570
1308        RY  1383.5    1382    1382    1381    1381    1382    1382  1383.5
            *

1309        KK     E32
1310        KM        Runoff from E32
1311        BA   0.284
1312        LG    0.35    0.35    3.55    0.62       0
1313        UI     147     456     358     105      24       0       0       0       0       0
1314        UI       0       0       0       0       0       0       0       0       0       0
            *

1315        KK   CPE32
1316        KM        Combine E33, E17 with E32
1317        HC       3  14.903
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1318        KK    DE32
1319        KM           Divert flow into E40
1320        KM        Flow is split between what passes through/over the structure and
1321        KM        what is diverted parallel to the railroad.
1322        KM           SPRR Structure 27 (3-58"x36" CMP's)
1323        DT   DVE32
1324        DI       0     195     467    1741
1325        DQ       0     195     222     274
            *

1326        KK  RCPE32
1327        KM        Route remainder flow from CP E32 to CP E53
1328        RS       1    FLOW      -1
1329        RC   0.050   0.045   0.050    1030  0.0048
1330        RX       0      20      30     230     430     630     830    1030
1331        RY    1353    1353    1345  1347.0  1349.0  1351.0  1353.0    1355
            *

1332        KK     E53
1333        KM        Runoff from E53
1334        BA   0.110
1335        LG    0.35    0.35    3.23    0.79       0
1336        UI     140     244      36       0       0       0       0       0       0       0
1337        UI       0       0       0       0       0       0       0       0       0       0
            *

1338        KK   CPE53
1339        KM        Combine E32 with E53
1340        HC       2  15.012
            *

1341        KK    DE53
1342        KM           Divert flow into E42
1343        KM        Flow is split between what passes through/over the structure and
1344        KM        what is diverted parallel to the railroad.
1345        KM           SPRR Structure 28 (12' Bridge)
1346        DT   DVE53
1347        DI       0      60     116     228     657    2151    5314
1348        DQ       0      60     106     166     221     269     384
```

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                *
1349            KK  RCPE53
1350            KM        Route remainder flow from CP E53 to CP E31
1351            RS       2    FLOW      -1
1352            RC   0.050   0.045   0.050    1920  0.0048
1353            RX       0      20      30     230     430     630     830    1030
1354            RY    1351    1351    1343  1345.0  1347.0  1349.0  1351.0    1353
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1355            KK     E18
1356            KM        Runoff from E18
1357            BA   0.730
1358            LG    0.35    0.35    3.35    0.72       0
1359            UI     156     473     880     699     383     137      56      26       0       0
1360            UI       0       0       0       0       0       0       0       0       0       0
                *

1361            KK  RCPE18
1362            KM        Route flow from CP E18 to CP E31
1363            RS       5    FLOW      -1
1364            RC   0.050   0.045   0.050    9290  0.0065
1365            RX       0       9      30      50      60      80     100     109
1366            RY    1390 1388.25    1388    1387    1387    1388 1388.25    1390
                *

1367            KK     E31
1368            KM        Runoff from E31
1369            BA   0.380
1370            LG    0.35    0.35    4.15    0.44       0
1371            UI      75     231     430     375     217      83      35      13       0       0
1372            UI       0       0       0       0       0       0       0       0       0       0
                *

1373            KK   CPE31
1374            KM        Combine E53, E18 with E31
1375            HC       3  16.122
                *

1376            KK    DE31
1377            KM           Divert flow into E43
1378            KM        Flow is split between what passes through/over the structure and
1379            KM        what is diverted parallel to the railroad.
1380            KM           SPRR Structure 29 (10' Bridge)
1381            DT   DVE31
1382            DI       0      87     147     279     819    2195    4644    8818   15300
1383            DQ       0      87     136     207     276     344     406     467     857
                *

1384            KK  RCPE31
1385            KM        Route remainder flow from CP E31 to CP E30
1386            RS       1    FLOW      -1
1387            RC   0.050   0.045   0.050    1110  0.0043
1388            RX       0      20      30     270     510     750     990    1230
1389            RY    1343    1343    1336  1338.2  1340.4  1342.6  1344.8    1347
                *

1390            KK     E01
1391            KM        Runoff from E01
1392            BA   4.541
1393            LG    0.35    0.35    3.03    0.84       0
1394            UI     499    1886    3218    3724    2254    1726    1210     906     614     462
1395            UI     315     221     196      77      78      77      77       0       0       0
1396            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1397            KK  RCPE01
1398            KM        Route flow from CP E01 to CP E02
1399            RS       4    FLOW      -1
1400            RC   0.050   0.045   0.050   12040  0.0118
1401            RX       0       8      60     100     130     160     230     238
1402            RY  1630.5  1628.5    1628    1626    1626    1628  1628.5  1630.5
                *

1403            KK     E02
1404            KM        Runoff from E02
```

```
1405          BA   6.365
1406          LG    0.35     0.35     2.85     0.97        0
1407          UI     640     2317     3525     5841     5003     3391     2014      907      523      165
1408          UI     163        0        0        0        0        0        0        0        0        0
1409          UI       0        0        0        0        0        0        0        0        0        0
              *

1410          KK   CPE02
1411          KM        Combine E01 with E02
1412          HC       2  10.907
              *

1413          KK  RCPE02
1414          KM        Route flow from CP E02 to CP E03
1415          RS       3    FLOW       -1
1416          RC   0.050    0.045    0.050     8490  0.0083
1417          RX       0        8      240      260      290      310      500      508
1418          RY    1551   1549.5     1548     1545     1545     1548   1549.5     1551
              *

1419          KK     E03
1420          KM        Runoff from E03
1421          BA   2.027
1422          LG    0.35     0.35     2.94     0.90        0
1423          UI     465     1408     2579     1885      943      349      119       74        0        0
1424          UI       0        0        0        0        0        0        0        0        0        0
              *

1425          KK   CPE03
1426          KM        Combine E02 with E03
1427          HC       2  12.934
              *

1428          KK  RCPE03
1429          KM        Route flow from CP E03 to CP E16
1430          RS       3    FLOW       -1
1431          RC   0.050    0.045    0.050     8400  0.0084
1432          RX       0        8      100      170      205      270      370      378
1433          RY  1510.5     1509     1508     1505     1505     1508     1509   1510.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1434          KK     E16
1435          KM        Runoff from E16
1436          BA   0.785
1437          LG    0.35     0.35     3.35     0.72        0
1438          UI     253      733     1152      607      194       62       34        0        0        0
1439          UI       0        0        0        0        0        0        0        0        0        0
              *

1440          KK   CPE16
1441          KM        Combine E03 with E16
1442          HC       2  13.719
              *

1443          KK    DE16
1444          KM           Divert flow into E20
1445          KM        Natural divergence of flow due to a braided channel network.
1446          DT   DVE16
1447          DI       0      104      236      439      719     1082     1357     1881     3316     7597
1448          DQ       0        0       15       56      123      219      271      473     1230     2976
              *

1449          KK  RCPE16
1450          KM        Route remainder flow from CP E16 to CP E19
1451          RS       2    FLOW       -1
1452          RC   0.050    0.045    0.050     4900  0.0061
1453          RX       0        5      205      225      235      255      455      460
1454          RY    1445     1443     1442     1440     1440     1442     1443     1445
              *

1455          KK     E19
1456          KM        Runoff from E19
1457          BA   0.466
1458          LG    0.35     0.35     3.71     0.56        0
1459          UI      86      267      485      479      280      117       55       16       15        0
1460          UI       0        0        0        0        0        0        0        0        0        0
1461          UI       0        0        0        0        0        0        0        0        0        0
              *

1462          KK   CPE19
```

```
1463        KM        Combine E16 with E19
1464        HC       2  14.185
            *

1465        KK    DE19
1466        KM            Divert flow into E29
1467        KM        Natural divergence of flow due to a braided channel network.
1468        DT   DVE19
1469        DI       0      89     198     366     600     910    1172    2468    4244    8601
1470        DQ       0       0      10      39      92     175     354     866    1687    3615
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1471        KK  RCPE19
1472        KM        Route remainder flow from CP E19 to CP E30
1473        RS       5    FLOW      -1
1474        RC   0.050   0.045   0.050   13440  0.0065
1475        RX       0       9      35      55      65      85     110     119
1476        RY  1391.5 1388.25    1388    1387    1387    1388 1388.25  1391.5
            *

1477        KK     E30
1478        KM        Runoff from E30
1479        BA   0.637
1480        LG    0.35    0.35    4.40    0.38       0
1481        UI      95     309     513     691     431     241      99      46      19      19
1482        UI       0       0       0       0       0       0       0       0       0       0
1483        UI       0       0       0       0       0       0       0       0       0       0
            *

1484        KK   CPE30
1485        KM        Combine E31, E19 with E30
1486        HC       3  30.944
            *

1487        KK    DE30
1488        KM            Divert flow into E44
1489        KM        Flow is split between what passes through/over the structure and
1490        KM        what is diverted parallel to the railroad.
1491        KM            SPRR Structure 30 (30' Bridge)
1492        DT   DVE30
1493        DI       0     749    1048    1479    3018    6472
1494        DQ       0     749     936    1121    1574    2679
            *

1495        KK  RCPE30
1496        KM        Route remainder flow from CP E30 to CP E38
1497        RS       3    FLOW      -1
1498        RC   0.050   0.045   0.050    2860  0.0035
1499        RX       0      20      30     260     490     720     950    1180
1500        RY    1336    1336    1329  1331.2  1333.4  1335.6  1337.8    1340
            *

1501        KK     E28
1502        KM        Runoff from E28
1503        BA   0.204
1504        LG    0.35    0.35    4.65    0.32       0
1505        UI      78     236     296     127      38       9       0       0       0       0
1506        UI       0       0       0       0       0       0       0       0       0       0
            *

1507        KK    DE28
1508        KM            Divert flow into E29
1509        KM        Natural divergence of flow due to a braided channel network.
1510        DT   DVE28
1511        DI       0      49     192    1113    2913    5350    8364   11900   15918
1512        DQ       0      36     118     718    1764    3137    4819    6781    9003
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1513        KK  RCPE28
1514        KM        Route remainder flow from CP E28 to CP E20
1515        RS      17    FLOW      -1
1516        RC   0.050   0.045   0.050    7060  0.0057
1517        RX       0     125     250     260     265     275     425     575
1518        RY    1395    1394    1394    1393    1393    1394    1394    1395
            *
```

```
KK     E21
KM        Runoff from E21
BA   0.349
LG    0.35    0.35    3.25    0.78       0
UI     112     326     513     269      86      28      15       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK    DE21
KM           Divert flow into E22
KM        Natural divergence of flow due to a braided channel network.
DT   DVE21
DI       0      41      91     216     462    1043    2287    3975    5841    7990
DQ       0       0       7      28     112     363     929    1630    2483    3475
*

KK  RCPE21
KM        Route remainder flow from CP E21 to CP E20
RS      21    FLOW      -1
RC   0.050   0.045   0.050   11950  0.0058
RX       0     125     250     260     265     275     425     575
RY    1395    1394    1394    1393    1393    1394    1394    1395
*

KK   DRE16
KM        Return diverted flow from CP E16
DR   DVE16
*

KK   RDE16
KM        Route flow from CP E16 to CP E20
RS      10    FLOW      -1
RC   0.050   0.045   0.050   15930  0.0063
RX       0       9     180     190     195     205     405     414
RY  1396.5 1394.75    1394    1393    1393    1394 1394.75  1396.5
*

KK     E20
KM        Runoff from E20
BA   0.508
LG    0.35    0.35    4.20    0.43       0
UI      41     163     245     380     432     292     199      95      56      30
UI      12      12       0       0       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*
```


1

HEC-1 INPUT

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK   CPE20
KM        Combine E28, E21, DRE16 with E20
HC       4  14.781
*

KK   DRE28
KM        Return diverted flow from CP E28
DR   DVE28
*

KK   RDE28
KM        Route flow from CP E28 to CP E29
RS       9    FLOW      -1
RC   0.050   0.045   0.050    7170  0.0056
RX       0     175     325     340     345     360     450     540
RY    1390    1389    1388    1387    1387    1388    1389    1390
*

KK   DRE19
KM        Return diverted flow from CP E19
DR   DVE19
*

KK   RDE19
KM        Route flow from CP E19 to CP E29
RS       7    FLOW      -1
RC   0.050   0.045   0.050   10970  0.0065
RX       0       8     160     175     180     195     280     288
RY  1390.5    1389    1388    1387    1387    1388    1389  1390.5
*

KK     E29
KM        Runoff from E29
BA   0.561
```

```
1577          LG    0.35    0.35    4.65    0.32       0
1578          UI      90     288     487     607     368     186      81      33      17       0
1579          UI       0       0       0       0       0       0       0       0       0       0
1580          UI       0       0       0       0       0       0       0       0       0       0
              *

1581          KK  CPE29A
1582          KM        Combine DRE28, DRE19 with E29
1583          HC       3  14.949
              *

1584          KK   CPE29
1585          KM        Combine E20 with E29
1586          HC       2  15.807
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1587          KK  RCPE29
1588          KM        Route flow from CP E29 to CP E38
1589          RS       4    FLOW      -1
1590          RC   0.050   0.045   0.050    5910  0.0064
1591          RX       0     200     370     390     490     510     650     800
1592          RY    1349    1347    1347    1346    1346    1347    1347    1349
              *

1593          KK     E07
1594          KM        Runoff from E07
1595          BA   1.070
1596          LG    0.35    0.35    2.86    0.95       0
1597          UI     213     650    1209    1057     610     234      98      37       0       0
1598          UI       0       0       0       0       0       0       0       0       0       0
              *

1599          KK  RCPE07
1600          KM        Route flow from CP E07 to CP E15
1601          RS       4    FLOW      -1
1602          RC   0.050   0.045   0.050    9640  0.0074
1603          RX       0       9      30      40      50      70      90      99
1604          RY  1490.5 1488.25    1488    1486    1486    1488 1488.25  1490.5
              *

1605          KK     E14
1606          KM        Runoff from E14
1607          BA   0.816
1608          LG    0.35    0.35    2.99    0.88       0
1609          UI     758    1789     523      79       0       0       0       0       0       0
1610          UI       0       0       0       0       0       0       0       0       0       0
              *

1611          KK  RCPE14
1612          KM        Route flow from CP E14 to CP E15
1613          RS       3    FLOW      -1
1614          RC   0.050   0.045   0.050    5980  0.0051
1615          RX       0       9      40      50      60      80     110     119
1616          RY  1490.5 1488.25    1488    1486    1486    1488 1488.25  1490.5
              *

1617          KK     E15
1618          KM        Runoff from E15
1619          BA   0.922
1620          LG    0.35    0.35    3.35    0.72       0
1621          UI     325     951    1360     651     192      55       0       0       0       0
1622          UI       0       0       0       0       0       0       0       0       0       0
              *

1623          KK   CPE15
1624          KM        Combine E07, E14 with E15
1625          HC       3   2.808
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1626          KK  RCPE15
1627          KM        Route flow from CP E15 to CP E22
1628          RS      10    FLOW      -1
1629          RC   0.050   0.045   0.050   15510  0.0065
1630          RX       0       8     160     170     175     185     335     343
1631          RY    1389    1387    1387    1386    1386    1387    1387    1389
              *
```

```
1632          KK     E27
1633          KM         Runoff from E27
1634          BA   0.128
1635          LG    0.35     0.35     4.65     0.32        0
1636          UI      54      167      179       69       19        6        0        0        0        0
1637          UI       0        0        0        0        0        0        0        0        0        0
              *

1638          KK  RCPE27
1639          KM         Route flow from CP E27 to CP E22
1640          RS       4     FLOW       -1
1641          RC   0.050    0.045    0.050     2520   0.0065
1642          RX       0      150      300      310      315      325      475      625
1643          RY    1388     1387     1387     1386     1386     1387     1387     1388
              *

1644          KK   DRE21
1645          KM         Return diverted flow from CP E21
1646          DR   DVE21
              *

1647          KK   RDE21
1648          KM         Route flow from CP E21 to CP E22
1649          RS       9     FLOW       -1
1650          RC   0.050    0.045    0.050     9430   0.0065
1651          RX       0      150      300      310      315      325      475      625
1652          RY    1388     1387     1387     1386     1386     1387     1387     1388
              *

1653          KK     E22
1654          KM         Runoff from E22
1655          BA   1.103
1656          LG    0.35     0.35     3.95     0.48        0
1657          UI      96      368      557      894      908      621      412      182      113       51
1658          UI      27       27        0        0        0        0        0        0        0        0
1659          UI       0        0        0        0        0        0        0        0        0        0
              *

1660          KK   CPE22
1661          KM         Combine E15, E27, DRE21 with E22
1662          HC       4    4.388
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1663          KK  RCPE22
1664          KM         Route flow from CP E22 to CP E37
1665          RS       4     FLOW       -1
1666          RC   0.050    0.045    0.050     4270   0.0060
1667          RX       0      125      250      450      550      600      650      700
1668          RY    1370     1369     1369     1368     1368     1369     1369     1370
              *

1669          KK     E37
1670          KM         Runoff from E37
1671          BA   0.182
1672          LG    0.35     0.35     4.65     0.32        0
1673          UI     148      384      144       23        0        0        0        0        0        0
1674          UI       0        0        0        0        0        0        0        0        0        0
              *

1675          KK   CPE37
1676          KM         Combine E22 with E37
1677          HC       2    4.570
              *

1678          KK  RCPE37
1679          KM         Route flow from CP E37 to CP E38
1680          RS       4     FLOW       -1
1681          RC   0.050    0.045    0.050     4260   0.0053
1682          RX       0      200      400      410      540      550      700      860
1683          RY    1340   1339.5     1339     1338     1338     1339   1339.5     1340
              *

1684          KK     E04
1685          KM         Runoff from E04
1686          BA   1.771
1687          LG    0.35     0.35     2.91     0.91        0
1688          UI     678     2048     2570     1100      330       84        0        0        0        0
1689          UI       0        0        0        0        0        0        0        0        0        0
              *
```

```
1690          KK  RCPE04
1691          KM        Route flow from CP E04 to CP E05
1692          RS      27    FLOW      -1
1693          RC   0.050   0.045   0.050   31530  0.0090
1694          RX       0     100     200     240     250     290     410     530
1695          RY    1471    1469    1469    1468    1468    1469    1469    1471
              *

1696          KK     E06
1697          KM        Runoff from E06
1698          BA   1.056
1699          LG    0.35    0.35    2.89    0.92       0
1700          UI     547    1696    1328     390      89       0       0       0       0       0
1701          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1702          KK  RCPE06
1703          KM        Route flow from CP E06 to CP E05
1704          RS      18    FLOW      -1
1705          RC   0.050   0.045   0.050   19520  0.0080
1706          RX       0     100     200     240     250     290     410     530
1707          RY  1470.5    1469    1469    1468    1468    1469    1469  1470.5
              *

1708          KK     E11
1709          KM        Runoff from E11
1710          BA   2.267
1711          LG    0.35    0.35    3.11    0.80       0
1712          UI     260     901    1390    2290    1697    1126     555     284     130      62
1713          UI      62       0       0       0       0       0       0       0       0       0
1714          UI       0       0       0       0       0       0       0       0       0       0
              *

1715          KK    DE11
1716          KM           Divert flow into E12
1717          KM        Natural divergence of flow due to a braided channel network.
1718          DT   DVE11
1719          DI       0      32     130     326     648     922    1642    2906    4664    7677
1720          DQ       0      10      42     111     233     330     659    1302    2172    3568
              *

1721          KK  RCPE11
1722          KM        Route remainder flow from CP E11 to CP E05
1723          RS       8    FLOW      -1
1724          RC   0.050   0.045   0.050    8860  0.0058
1725          RX       0     100     200     240     250     290     410     530
1726          RY  1470.5    1469    1469    1468    1468    1469    1469  1470.5
              *

1727          KK     E09
1728          KM        Runoff from E09
1729          BA   0.303
1730          LG    0.35    0.35    2.92    0.91       0
1731          UI     247     639     239      38       0       0       0       0       0       0
1732          UI       0       0       0       0       0       0       0       0       0       0
              *

1733          KK    DE09
1734          KM           Divert flow into E13
1735          KM        Natural divergence of flow due to a braided channel network.
1736          DT   DVE09
1737          DI       0      22      90     197     422     756    1421    2780    4781    6794
1738          DQ       0       8      37      85     190     349     673    1336    2304    3291
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1739          KK  RCPE09
1740          KM        Route remainder flow from CP E09 to CP E10
1741          RS       3    FLOW      -1
1742          RC   0.050   0.045   0.050    2830  0.0110
1743          RX       0     100     185     195     200     210     300     400
1744          RY    1530    1529    1529    1528    1528    1529    1529    1530
              *

1745          KK     E10
1746          KM        Runoff from E10
```

```
1747          BA   0.098
1748          LG    0.35    0.35    3.55    0.62       0
1749          UI     124     219      31       0       0       0       0       0       0       0
1750          UI       0       0       0       0       0       0       0       0       0       0
              *

1751          KK   CPE10
1752          KM        Combine E09 with E10
1753          HC       2   0.401
              *

1754          KK    DE10
1755          KM            Divert flow into E13
1756          KM        Natural divergence of flow due to a braided channel network.
1757          DT   DVE10
1758          DI       0      34     132     283     683    1405    2576    4977    7479   10398
1759          DQ       0      25      95     199     453     917    1597    2901    4193    5679
              *

1760          KK  RCPE10
1761          KM        Route remainder flow from CP E10 to CP E05
1762          RS      14    FLOW      -1
1763          RC   0.050   0.045   0.050   11570  0.0071
1764          RX       0     100     200     240     250     290     410     530
1765          RY    1470    1469    1469    1468    1468    1469    1469    1470
              *

1766          KK     E05
1767          KM        Runoff from E05
1768          BA   4.177
1769          LG    0.35    0.35    3.21    0.76       0
1770          UI     239     616    1151    1483    1968    2905    2300    1759    1348     946
1771          UI     483     367     239     105      73      73      73       0       0       0
1772          UI       0       0       0       0       0       0       0       0       0       0
              *

1773          KK   CPE05
1774          KM        Combine E04, E06, E11, E10 with E05
1775          HC       5   9.671
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1776          KK    DE05
1777          KM            Divert flow into E25
1778          KM        Natural divergence of flow due to a braided channel network.
1779          DT   DVE05
1780          DI       0      31     131     286     648    1257    2230    4256    6528    9009
1781          DQ       0      23      90     189     406     756    1308    2425    3740    5101
              *

1782          KK  RCPE05
1783          KM        Route remainder flow from CP E05 to CP E24
1784          RS       5    FLOW      -1
1785          RC   0.050   0.045   0.050    6090  0.0058
1786          RX       0     120     255     270     275     290     420     520
1787          RY    1416    1414    1414    1412    1412    1414    1414    1416
              *

1788          KK   DRE09
1789          KM        Return diverted flow from CP E09
1790          DR   DVE09
              *

1791          KK   RDE09
1792          KM        Route flow from CP E09 to CP E13
1793          RS      15    FLOW      -1
1794          RC   0.050   0.045   0.050   17190  0.0076
1795          RX       0     100     200     220     225     245     345     445
1796          RY  1480.5    1479    1479    1478    1478    1479    1479  1480.5
              *

1797          KK   DRE10
1798          KM        Return diverted flow from CP E10
1799          DR   DVE10
              *

1800          KK   RDE10
1801          KM        Route flow from CP E10 to CP E13
1802          RS      26    FLOW      -1
1803          RC   0.050   0.045   0.050   14450  0.0069
1804          RX       0     100     200     220     225     245     345     445
```

```
1805          RY    1480    1479    1479    1478    1478    1479    1479    1480
              *

1806          KK     E13
1807          KM        Runoff from E13
1808          BA   1.531
1809          LG    0.35    0.35    3.95    0.48       0
1810          UI     118     468     708    1069    1318     899     627     322     182     104
1811          UI      36      36      36       0       0       0       0       0       0       0
1812          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1813          KK   CPE13
1814          KM        Combine DRE09, DRE10 with E13
1815          HC       3   1.932
              *

1816          KK    DE13
1817          KM            Divert flow into E23
1818          KM        Natural divergence of flow due to a braided channel network.
1819          DT   DVE13
1820          DI       0      64     299    1184    3258    6048    9514   13590   18229
1821          DQ       0      33     159     617    1685    3115    4890    6975    9347
              *

1822          KK  RCPE13
1823          KM        Route remainder flow from CP E13 to CP E24
1824          RS       3    FLOW      -1
1825          RC   0.050   0.045   0.050    2710  0.0058
1826          RX       0     120     255     270     275     290     420     520
1827          RY    1415    1414    1414    1412    1412    1414    1414    1415
              *

1828          KK     E24
1829          KM        Runoff from E24
1830          BA   0.228
1831          LG    0.35    0.35    4.35    0.40       0
1832          UI      68     195     327     188      68      23      10       0       0       0
1833          UI       0       0       0       0       0       0       0       0       0       0
              *

1834          KK   CPE24
1835          KM        Combine E05, E13 with E24
1836          HC       3  11.430
              *

1837          KK  RCPE24
1838          KM        Route flow from CP E24 to CP E34
1839          RS       8    FLOW      -1
1840          RC   0.050   0.045   0.050    9820  0.0062
1841          RX       0     100     200     210     310     320     430     640
1842          RY    1360    1359    1359    1358    1358    1359    1359    1360
              *

1843          KK     E08
1844          KM        Runoff from E08
1845          BA   0.959
1846          LG    0.35    0.35    3.29    0.73       0
1847          UI      96     350     530     881     753     511     304     137      78      25
1848          UI      25       0       0       0       0       0       0       0       0       0
1849          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1850          KK  RCPE08
1851          KM        Route flow from CP E08 to CP E23
1852          RS       5    FLOW      -1
1853          RC   0.050   0.045   0.050   10260  0.0058
1854          RX       0       6      30      45      50      65      90      96
1855          RY  1401.5 1399.25    1399    1397    1397    1399 1399.25  1401.5
              *

1856          KK   DRE13
1857          KM        Return diverted flow from CP E13
1858          DR   DVE13
              *
```

```
1859          KK   RDE13
1860          KM        Route flow from CP E13 to CP E23
1861          RS       3    FLOW      -1
1862          RC   0.050   0.045   0.050    6360  0.0055
1863          RX       0       9      35      50      55      70      95     104
1864          RY    1401 1399.25    1399    1397    1397    1399 1399.25    1401
              *

1865          KK     E23
1866          KM        Runoff from E23
1867          BA   0.327
1868          LG    0.35    0.35    4.65    0.32       0
1869          UI      56     177     312     346     206      95      44      14      10       0
1870          UI       0       0       0       0       0       0       0       0       0       0
1871          UI       0       0       0       0       0       0       0       0       0       0
              *

1872          KK   CPE23
1873          KM        Combine E08, DRE13 with E23
1874          HC       3   3.218
              *

1875          KK  RCPE23
1876          KM        Route flow from CP E23 to CP E34
1877          RS       5    FLOW      -1
1878          RC   0.050   0.045   0.050    6170  0.0056
1879          RX       0     100     200     210     310     320     430     640
1880          RY    1360    1359    1359    1358    1358    1359    1359    1360
              *

1881          KK     E34
1882          KM        Runoff from E34
1883          BA   0.299
1884          LG    0.35    0.35    4.65    0.32       0
1885          UI      68     208     380     278     140      51      18      11       0       0
1886          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1887          KK   CPE34
1888          KM        Combine E24, E23 with E34
1889          HC       3  13.015
              *

1890          KK  RCPE34
1891          KM        Route flow from CP E34 to CP E38
1892          RS       3    FLOW      -1
1893          RC   0.050   0.045   0.050    4360  0.0053
1894          RX       0       9     110     120     250     260     350     359
1895          RY    1341 1339.25    1339    1338    1338    1339 1339.25    1341
              *

1896          KK     E38
1897          KM        Runoff from E38
1898          BA   0.480
1899          LG    0.35    0.35    4.30    0.41       0
1900          UI     223     706     632     221      52       0       0       0       0       0
1901          UI       0       0       0       0       0       0       0       0       0       0
              *

1902          KK   CPE38
1903          KM        Combine E30, E29A, E37, E34 with E38
1904          HC       5  50.282
              *

1905          KK    DE38
1906          KM           Divert flow into E44
1907          KM        Flow is split between what passes through/over the structure and
1908          KM        what is diverted parallel to the railroad.
1909          KM           SPRR Structure 31 (18' Bridge)
1910          DT   DVE38
1911          DI       0     169     280     450     622    1084    2396    5375
1912          DQ       0     169     277     406     536     656     766    1158
              *

1913          KK  RCPE38
1914          KM        Route remainder flow from CP E38 to CP E25
1915          RS       2    FLOW      -1
1916          RC   0.050   0.045   0.050    2720  0.0028
1917          RX       0      20      30     230     430     630     830    1030
1918          RY    1328    1328    1320  1322.0  1324.0  1326.0  1328.0    1330
```

```
                *
1919            KK   DRE11
1920            KM        Return diverted flow from CP E11
1921            DR   DVE11
                *
                                          HEC-1 INPUT                                                    PAGE 51

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1922            KK   RDE11
1923            KM        Route flow from CP E11 to CP E12
1924            RS      11    FLOW      -1
1925            RC   0.050   0.045   0.050   13860  0.0065
1926            RX       0     125     250     280     310     340     490     640
1927            RY    1490    1489    1488    1487    1487    1488    1489    1490
                *

1928            KK     E12
1929            KM        Runoff from E12
1930            BA   1.048
1931            LG    0.35    0.35    3.78    0.52       0
1932            UI     156     508     846    1136     708     397     164      75      31      32
1933            UI       0       0       0       0       0       0       0       0       0       0
1934            UI       0       0       0       0       0       0       0       0       0       0
                *

1935            KK   CPE12
1936            KM        Combine DRE11 with E12
1937            HC       2   3.315
                *

1938            KK  RCPE12
1939            KM        Route flow from CP E12 to CP E25
1940            RS       8    FLOW      -1
1941            RC   0.050   0.045   0.050   15780  0.0060
1942            RX       0       9      30      50      70      90     110     119
1943            RY  1355.5 1353.25    1353    1352    1352    1353 1353.25  1355.5
                *

1944            KK   DRE05
1945            KM        Return diverted flow from CP E05
1946            DR   DVE05
                *

1947            KK   RDE05
1948            KM        Route flow from CP E05 to CP E25
1949            RS      10    FLOW      -1
1950            RC   0.050   0.045   0.050   21390  0.0063
1951            RX       0       8      60      80     100     120     170     178
1952            RY  1355.5  1353.5    1353    1352    1352    1353  1353.5  1355.5
                *

1953            KK     E25
1954            KM        Runoff from E25
1955            BA   1.638
1956            LG    0.35    0.35    4.15    0.44       0
1957            UI     102     304     529     695    1010    1171     841     624     450     223
1958            UI     157     102      36      31      32      31       0       0       0       0
1959            UI       0       0       0       0       0       0       0       0       0       0
                *
1                                         HEC-1 INPUT                                                    PAGE 52

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1960            KK   CPE25
1961            KM        Combine E38, E12, DRE05 with E25
1962            HC       4  52.968
                *

1963            KK    DE25
1964            KM           Divert flow into E45
1965            KM        Flow is split between what passes through/over the structure and
1966            KM        what is diverted parallel to the railroad.
1967            KM           SPRR Structures 32 and 33 (10' Bridge and 57' Bridge)
1968            DT   DVE25
1969            DI       0      18     196     488     947    1858    3747    7410   13575
1970            DQ       0      18     191     433     834    1254    1630    1983    2322
                *

1971            KK  RCPE25
1972            KM        Route remainder flow from CP E25 to CP E36
```

```
1973          RS       1    FLOW      -1
1974          RC   0.050   0.045   0.050    1180  0.0039
1975          RX       0      20      30     390     750    1110    1470    1830
1976          RY    1320    1320    1312  1314.6  1317.2  1319.8  1322.4    1325
              *

1977          KK     E26
1978          KM        Runoff from E26
1979          BA   0.324
1980          LG    0.35    0.35    4.65    0.32       0
1981          UI      88     257     451     279     114      42      14       0       0       0
1982          UI       0       0       0       0       0       0       0       0       0       0
              *

1983          KK  RCPE26
1984          KM        Route flow from CP E26 to CP E35
1985          RS       7    FLOW      -1
1986          RC   0.050   0.045   0.050    6100  0.0049
1987          RX       0     163     327     490     510     674     837    1000
1988          RY    1360    1359    1358    1357    1357    1358    1359    1360
              *

1989          KK     E35
1990          KM        Runoff from E35
1991          BA   0.366
1992          LG    0.35    0.35    4.65    0.32       0
1993          UI     170     539     481     169      40       0       0       0       0       0
1994          UI       0       0       0       0       0       0       0       0       0       0
              *

1995          KK   CPE35
1996          KM        Combine E26 with E35
1997          HC       2   0.690
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1998          KK    DE35
1999          KM           Divert flow into E54
2000          KM        Natural divergence of flow due to a braided channel network.
2001          DT   DVE35
2002          DI       0      20      50     100     200     400     800    1600    3200    6400
2003          DQ       0      10      25      50     100     200     400     800    1600    3200
              *

2004          KK  RCPE35
2005          KM        Route remainder flow from CP E35 to CP E36
2006          RS       6    FLOW      -1
2007          RC   0.050   0.045   0.050    5070  0.0056
2008          RX       0     163     327     490     510     674     837    1000
2009          RY    1330    1329    1328    1327    1327    1328    1329    1330
              *

2010          KK     E36
2011          KM        Runoff from E36
2012          BA   0.163
2013          LG    0.35    0.35    4.10    0.46       0
2014          UI     105     306     173      37       9       0       0       0       0       0
2015          UI       0       0       0       0       0       0       0       0       0       0
              *

2016          KK   CPE36
2017          KM        Combine E25, E35 with E36
2018          HC       3  53.821
              *

2019          KK    DE36
2020          KM           Divert flow into E45
2021          KM        Flow is split between what passes through/over the structure and
2022          KM        what is diverted parallel to the railroad.
2023          KM           SPRR Structure 34 (10' Bridge)
2024          DT   DVE36
2025          DI       0      92     167     545    1567    3434    6330   10406
2026          DQ       0       0      24      59     115     161     199     232
              *

2027          KK  RCPE36
2028          KM        Route remainder flow from CP E36 to CP E54
2029          RS       1    FLOW      -1
2030          RC   0.050   0.045   0.050    1430  0.0039
2031          RX       0      20      30     390     750    1110    1470    1830
2032          RY    1320    1320    1312  1314.6  1317.2  1319.8  1322.4    1325
```

```
                *
2033            KK   DRE35
2034            KM        Return diverted flow from CP E35
2035            DR   DVE35
                *
```



```
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2036            KK   RDE35
2037            KM        Route flow from CP E35 to CP E54
2038            RS       7    FLOW      -1
2039            RC   0.050   0.045   0.050    5710  0.0056
2040            RX       0     163     327     490     510     674     837    1000
2041            RY    1330    1329    1328    1327    1327    1328    1329    1330
                *

2042            KK     E54
2043            KM        Runoff from E54
2044            BA   0.122
2045            LG    0.35    0.35    4.50    0.36       0
2046            UI      63     196     154      44      11       0       0       0       0       0
2047            UI       0       0       0       0       0       0       0       0       0       0
                *

2048            KK   CPE54
2049            KM        Combine E36, DRE35 with E54
2050            HC       3  53.943
                *

2051            KK    DE54
2052            KM           Divert flow into E46
2053            KM        Flow is split between what passes through/over the structure and
2054            KM        what is diverted parallel to the railroad.
2055            KM           SPRR Structure 35 (12' Bridge)
2056            DT   DVE54
2057            DI       0      54     131     267     774    2050    4491    8735
2058            DQ       0      54     115     186     242     287     336     552
                *

2059            KK  RCPE54
2060            KM        Route remainder flow from CP E54 to CP F26
2061            RS       1    FLOW      -1
2062            RC   0.050   0.045   0.050    1760   0.004
2063            RX       0      12      29      53      70     370     670     965
2064            RY    1313  1311.3    1312    1313    1308    1310    1312    1314
                * ***************************************************************************
                *      Runoff Watershed F (south of SR-238/Railroad) divert all flows north of r
                *      and route remainder east along Highway, ultimately into the storage ponds
                *      in subbasins F25, F27, F28, F36, F29 and F20.  At F20 all the flow is rou
                *      through the structure or over the railroad.
                *
                *      Beginning at F31 (Waterman Wash) runoff from the east side (Watershed G)
                *      to the total flow (denoted RIV in the nomenclature)
                * ***************************************************************************

2065            KK     F26
2066            KM        Runoff from F26
2067            BA   0.495
2068            LG    0.35    0.35    4.65    0.32       0
2069            UI      85     268     471     525     311     145      65      22      16       0
2070            UI       0       0       0       0       0       0       0       0       0       0
2071            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2072            KK   CPF26
2073            KM        Combine E54 with F26
2074            HC       2  54.439
                *

2075            KK    DF26
2076            KM           Divert flow into F35
2077            KM        Flow is split between what passes through/over the structure and
2078            KM        what is diverted parallel to the railroad.
2079            KM           SPRR Structure 36 (12' Bridge)
2080            DT   DVF26
2081            DI       0      27     108     287     506    1378    3400
2082            DQ       0      27      70     111     145     179     344
```

```
                *

2083            KK  RCPF26
2084            KM        Route remainder flow from CP F26 to CP F25
2085            RS       2    FLOW      -1
2086            RC   0.050   0.045   0.050    1490  0.0019
2087            RX       0      20      30     330     630     930    1230    1530
2088            RY    1307    1307    1301  1302.8  1304.6  1306.4  1308.2    1310
                *

2089            KK     F14
2090            KM        Runoff from F14
2091            BA   0.388
2092            LG    0.35    0.35    3.09    0.83       0
2093            UI     248     729     411      89      23       0       0       0       0       0
2094            UI       0       0       0       0       0       0       0       0       0       0
                *

2095            KK  RCPF14
2096            KM        Route flow from CP F14 to CP F15
2097            RS      11    FLOW      -1
2098            RC   0.050   0.045   0.050    8350  0.0066
2099            RX       0     100     200     215     225     240     365     490
2100            RY    1390    1389    1389    1388    1388    1389    1389    1390
                *

2101            KK     F13
2102            KM        Runoff from F13
2103            BA   0.260
2104            LG    0.35    0.35    2.97    0.89       0
2105            UI     242     569     167      26       0       0       0       0       0       0
2106            UI       0       0       0       0       0       0       0       0       0       0
                *

2107            KK    DF13
2108            KM           Divert flow into F12
2109            KM        Natural divergence of flow due to a braided channel network.
2110            DT   DVF13
2111            DI       0      23      96     371    1090    2412    4125    6119    8417
2112            DQ       0      17      68     158     447    1147    2078    3148    4392
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2113            KK  RCPF13
2114            KM        Route remainder flow from CP F13 to CP F15
2115            RS      18    FLOW      -1
2116            RC   0.050   0.045   0.050    9300  0.0064
2117            RX       0     100     200     215     225     240     365     490
2118            RY    1390    1389    1389    1388    1388    1389    1389    1390
                *

2119            KK   DRF13
2120            KM        Return diverted flow from CP F13
2121            DR   DVF13
                *

2122            KK   RDF13
2123            KM        Route flow from CP F13 to CP F12
2124            RS       2    FLOW      -1
2125            RC   0.050   0.045   0.050    1730  0.0059
2126            RX       0     100     200     210     215     225     325     425
2127            RY    1435    1434    1433    1432    1432    1433    1434    1435
                *

2128            KK     F12
2129            KM        Runoff from F12
2130            BA   0.312
2131            LG    0.35    0.35    3.05    0.85       0
2132            UI     223     626     288      56       0       0       0       0       0       0
2133            UI       0       0       0       0       0       0       0       0       0       0
                *

2134            KK   CPF12
2135            KM        Combine DRF13 with F12
2136            HC       2   0.573
                *

2137            KK    DF12
2138            KM           Divert flow into F11
2139            KM        Natural divergence of flow due to a braided channel network.
2140            DT   DVF12
```

```
2141        DI       0      38     157     346     945    2436    4311    6488    9017
2142        DQ       0      17      68     156     432    1111    1985    2997    4173
            *

2143        KK  RCPF12
2144        KM        Route remainder flow from CP F12 to CP F15
2145        RS      12    FLOW      -1
2146        RC   0.050   0.045   0.050    7740  0.0064
2147        RX       0     100     200     215     225     240     365     490
2148        RY    1390    1389    1389    1388    1388    1389    1389    1390
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2149        KK     F15
2150        KM        Runoff from F15
2151        BA   0.784
2152        LG    0.35    0.35    4.40    0.38       0
2153        UI     134     425     747     830     493     228     105      34      26       0
2154        UI       0       0       0       0       0       0       0       0       0       0
2155        UI       0       0       0       0       0       0       0       0       0       0
            *

2156        KK   CPF15
2157        KM        Combine F14, F13, F12 with F15
2158        HC       4   1.745
            *

2159        KK  RCPF15
2160        KM        Route flow from CP F15 to CP F25
2161        RS      22    FLOW      -1
2162        RC   0.050   0.045   0.050   14250  0.0050
2163        RX       0     300     600     695     705     800    1100    1400
2164        RY    1375    1374    1374    1373    1373    1374    1374    1375
            *

2165        KK   DRF12
2166        KM        Return diverted flow from CP F12
2167        DR   DVF12
            *

2168        KK   RDF12
2169        KM        Route flow from CP F12 to CP F11
2170        RS       8    FLOW      -1
2171        RC   0.050   0.045   0.050    5570  0.0071
2172        RX       0     100     200     210     215     225     325     425
2173        RY    1408    1407    1407    1406    1406    1407    1407    1408
            *

2174        KK     F11
2175        KM        Runoff from F11
2176        BA   1.581
2177        LG    0.35    0.35    3.07    0.84       0
2178        UI     272     856    1505    1675     995     459     211      69      51       0
2179        UI       0       0       0       0       0       0       0       0       0       0
2180        UI       0       0       0       0       0       0       0       0       0       0
            *

2181        KK   CPF11
2182        KM        Combine DRF12 with F11
2183        HC       2   2.154
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2184        KK    DF11
2185        KM           Divert flow into F17
2186        KM        Natural divergence of flow due to a braided channel network.
2187        DT   DVF11
2188        DI       0      43     182     752    2114    4095    6527    9401   12681
2189        DQ       0      13      59     288     829    1573    2498    3588    4828
            *

2190        KK  RCPF11
2191        KM        Route remainder flow from CP F11 to CP F16
2192        RS       2    FLOW      -1
2193        RC   0.050   0.045   0.050    3240  0.0056
2194        RX       0       6     100     112     120     130     230     236
2195        RY  1384.8 1383.25    1383    1382    1382    1383 1383.25  1384.8
            *
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```
2196          KK     F16
2197          KM        Runoff from F16
2198          BA   0.103
2199          LG    0.35     0.35     4.60     0.34        0
2200          UI     111      230       51        0        0        0        0        0        0        0
2201          UI       0        0        0        0        0        0        0        0        0        0
              *

2202          KK   CPF16
2203          KM        Combine F11 with F16
2204          HC       2   2.257
              *

2205          KK    DF16
2206          KM           Divert flow into F24
2207          KM        Natural divergence of flow due to a braided channel network.
2208          DT   DVF16
2209          DI       0       21       90      219      746     2056     3816     5880     8292
2210          DQ       0       10       38       85      287      823     1466     2256     3178
              *

2211          KK  RCPF16
2212          KM        Route remainder flow from CP F16 to CP F25
2213          RS      25     FLOW       -1
2214          RC   0.050    0.045    0.050    14790   0.0045
2215          RX       0      150      325      345      355      375      550      700
2216          RY    1358     1357     1357     1356     1356     1357     1357     1358
              *

2217          KK     F25
2218          KM        Runoff from F25
2219          BA   2.833
2220          LG    0.35     0.35     4.40     0.38        1
2221          UI     187      609     1008     1344     2102     1894     1390      997      609      321
2222          UI     213      110       57       58       57        0        0        0        0        0
2223          UI       0        0        0        0        0        0        0        0        0        0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2224          KK   CPF25
2225          KM        Combine F26, F15, F16 with F25
2226          HC       4  60.700
              *

2227          KK   DRF11
2228          KM        Return diverted flow from CP F11
2229          DR   DVF11
              *

2230          KK   RDF11
2231          KM        Route flow from CP F11 to CP F17
2232          RS       4     FLOW       -1
2233          RC   0.050    0.045    0.050     3880   0.0051
2234          RX       0      100      200      210      220      230      330      430
2235          RY    1395     1394     1394     1393     1393     1394     1394     1395
              *

2236          KK     F17
2237          KM        Runoff from F17
2238          BA   1.146
2239          LG    0.35     0.35     3.33     0.72        2
2240          UI     263      796     1458     1066      533      197       67       42        0        0
2241          UI       0        0        0        0        0        0        0        0        0        0
              *

2242          KK   CPF17
2243          KM        Combine DRF11 with F17
2244          HC       2   3.300
              *

2245          KK  RCPF17
2246          KM        Route flow from CP F17 to CP F24
2247          RS       8     FLOW       -1
2248          RC   0.050    0.045    0.050     8910   0.0048
2249          RX       0      200      400      495      505      600      800     1000
2250          RY    1367     1366     1365     1364     1364     1365     1366     1367
              *

2251          KK   DRF16
2252          KM        Return diverted flow from CP F16
```

```
2253          DR   DVF16
              *

2254          KK   RDF16
2255          KM        Route flow from CP F16 to CP F24
2256          RS      10    FLOW      -1
2257          RC   0.050   0.045   0.050    8930  0.0048
2258          RX       0     200     400     495     505     600     800    1000
2259          RY    1367    1366    1365    1364    1364    1365    1366    1367
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2260          KK     F24
2261          KM        Runoff from F24
2262          BA   1.030
2263          LG    0.35    0.35    4.30    0.41      14
2264          UI     127     428     668    1073     757     491     220     118      47      29
2265          UI      29       0       0       0       0       0       0       0       0       0
2266          UI       0       0       0       0       0       0       0       0       0       0
              *

2267          KK   CPF24
2268          KM        Combine F17, DRF16 with F24
2269          HC       3   4.433
              *

2270          KK  RCPF24
2271          KM        Route flow from CP F24 to CP F27
2272          RS       4    FLOW      -1
2273          RC   0.050   0.045   0.050    6170  0.0046
2274          RX       0       9      35     130     140     235     260     269
2275          RY    1315 1313.25    1313    1312    1312    1313 1313.25    1315
              *

2276          KK     F23
2277          KM        Runoff from F23
2278          BA   0.499
2279          LG    0.35    0.35    4.00    0.47      22
2280          UI      99     303     564     493     285     109      45      17       0       0
2281          UI       0       0       0       0       0       0       0       0       0       0
              *

2282          KK  RCPF23
2283          KM        Route flow from CP F23 to CP F27
2284          RS       6    FLOW      -1
2285          RC   0.050   0.045   0.050    6010  0.0046
2286          RX       0     200     400     495     505     600     800    1000
2287          RY    1315    1314    1313    1312    1312    1313    1314    1315
              *

2288          KK     F27
2289          KM        Runoff from F27
2290          BA   0.610
2291          LG    0.35    0.35    4.50    0.36       5
2292          UI     152     452     813     548     249      98      25      23       0       0
2293          UI       0       0       0       0       0       0       0       0       0       0
              *

2294          KK   CPF27
2295          KM        Combine F25, F24, F23 with F27
2296          HC       4  63.985
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2297          KK  PNDF01
2298          KM        POND F1
2299          KM          Common storage area for CPF25 and CPF27
2300          RS       1    STOR      -1
2301          SV       0     0.4     0.6     2.3     9.2    26.8    56.8    99.6   155.8
2302          SE  1297.4    1299    1300    1301    1302    1303    1304    1305    1306
2303          SQ       0     245     442     721    1020    1312    1694    3507    9422
              *

2304          KK    DF27
2305          KM            Divert flow into F34
2306          KM        Flow is split between what passes through/over the structures and
2307          KM        what is diverted parallel to the railroad.
2308          KM            SPRR Structures 37 and 38 (10' bridge and 35' Bridge)
```

```
2309          DT   DVF27
2310          DI       0     442     721    1020    1312    1694    3507    9422
2311          DQ       0     442     721    1020    1312    1574    2234    4860
              *

2312          KK  RCPF27
2313          KM        Route remainder flow from CP F27 to CP F28
2314          RS       2    FLOW      -1
2315          RC   0.050   0.045   0.050    1990  0.0036
2316          RX       0      20      30     390     750    1110    1470    1830
2317          RY    1304    1304    1298  1300.4  1302.8  1305.2  1307.6    1310
              *

2318          KK     F10
2319          KM        Runoff from F10
2320          BA   2.261
2321          LG    0.35    0.35    3.15    0.80       0
2322          UI     388    1225    2152    2396    1422     658     301      99      73       0
2323          UI       0       0       0       0       0       0       0       0       0       0
2324          UI       0       0       0       0       0       0       0       0       0       0
              *

2325          KK  RCPF10
2326          KM        Route flow from CP F10 to CP F18
2327          RS       2    FLOW      -1
2328          RC   0.050   0.045   0.050    4000  0.0050
2329          RX       0       8     110     205     215     310     390     398
2330          RY    1380  1378.5    1378    1377    1377    1378  1378.5    1380
              *

2331          KK     F18
2332          KM        Runoff from F18
2333          BA   0.302
2334          LG    0.35    0.35    4.10    0.46      20
2335          UI     174     528     353      90      18       0       0       0       0       0
2336          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2337          KK   CPF18
2338          KM        Combine F10 with F18
2339          HC       2   2.564
              *

2340          KK    DF18
2341          KM           Divert flow into F21
2342          KM        Natural divergence of flow due to a braided channel network.
2343          DT   DVF18
2344          DI       0      43     174     377    1053    2479    4606    7953   11679
2345          DQ       0      14      53     116     360     876    1770    3014    4524
              *

2346          KK  RCPF18
2347          KM        Route remainder flow from CP F18 to CP F22
2348          RS       7    FLOW      -1
2349          RC   0.050   0.045   0.050    7370  0.0047
2350          RX       0     100     200     295     305     400     500     600
2351          RY    1370    1369    1369    1368    1368    1369    1369    1370
              *

2352          KK     F22
2353          KM        Runoff from F22
2354          BA   0.366
2355          LG    0.35    0.35    4.45    0.37       8
2356          UI     118     341     538     283      90      29      15       0       0       0
2357          UI       0       0       0       0       0       0       0       0       0       0
              *

2358          KK   CPF22
2359          KM        Combine F18 with F22
2360          HC       2   2.930
              *

2361          KK    DF22
2362          KM           Divert flow into F29
2363          KM        Natural divergence of flow due to a braided channel network.
2364          DT   DVF22
2365          DI       0      61     238     612    1780    4433    7775   11770
2366          DQ       0      35     138     396    1136    2516    4167    6152
              *
```

```
2367          KK  RCPF22
2368          KM        Route remainder flow from CP F22 to CP F28
2369          RS      10    FLOW      -1
2370          RC   0.050   0.045   0.050    7880  0.0036
2371          RX       0     200     400     495     505     600     800    1000
2372          RY    1328    1327    1326    1325    1325    1326    1327    1328
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2373          KK     F28
2374          KM        Runoff from F28
2375          BA   0.474
2376          LG    0.35    0.34    4.15    0.44      19
2377          UI     140     408     678     392     142      47      19       0       0       0
2378          UI       0       0       0       0       0       0       0       0       0       0
              *

2379          KK   CPF28
2380          KM        Combine F27, F22 with F28
2381          HC       3  67.390
              *

2382          KK  PNDF02
2383          KM        POND F2
2384          KM          Storage area for structure 39 and 40
2385          RS       1    STOR      -1
2386          SV       0    0.05     0.4     3.2    13.3    31.7    58.2    69.9
2387          SE  1298.6    1299    1300    1301    1302    1303    1304    1305
2388          SQ       0      34     129     250     398     597    1319    2177
              *

2389          KK   DF28A
2390          KM           Divert flow from F28 into F34
2391          KM        Flow is split between what passes through/over the structure and
2392          KM        what is diverted parallel to the railroad.
2393          KM           SPRR Structure 39 (17' Bridge)
2394          DT  DVF28A
2395          DI       0      34     129     250     398     597    1319    2177
2396          DQ       0      23      89     158     263     355     440     572
              *

2397          KK   DF28B
2398          KM           Divert flow from F28 into F33
2399          KM        Flow is split between what passes through/over the structure and
2400          KM        what is diverted parallel to the railroad.
2401          KM           SPRR Structure 40 (4-38" steel pipes)
2402          DT  DVF28B
2403          DI       0      11      40      92     135     242     879    1602
2404          DQ       0      11      40      92     135     203     269     299
              *

2405          KK  RCPF28
2406          KM        Route remainder flow from CPF28 to CPF36
2407          RS       1    FLOW      -1
2408          RC   0.050   0.045   0.050    2360  0.0014
2409          RX       0      20      30     350     670     990    1310    1630
2410          RY    1303    1303    1297  1299.6  1302.2  1304.8  1307.4    1310
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2411          KK     F36
2412          KM        Runoff from F36
2413          BA   0.167
2414          LG    0.35    0.35    3.92    0.49      25
2415          UI     136     352     132      21       0       0       0       0       0       0
2416          UI       0       0       0       0       0       0       0       0       0       0
              *

2417          KK   CPF36
2418          KM        Combine F28 with F36
2419          HC       2  67.556
              *

2420          KK  PNDF03
2421          KM        POND F3
2422          KM          Storage area for structure 41
2423          RS       1    STOR      -1
2424          SV       0     0.1     0.3     0.7     1.5     2.5     5.9    10.5    21.1
```

```
2425          SE  1295.9    1297    1298    1299    1300    1301    1302  1302.5 1303.15
2426          SQ      0      31      65     111     152     182     210     378    1475
              *

2427          KK  RCPF36
2428          KM        Route flow from Pond F3 at CP F36 to CP F32
2429          KM        SPRR Structure 41 (2-54"x36" CMP's)
2430          RS       8    FLOW      -1
2431          RC   0.050   0.045   0.050    5660  0.0038
2432          RX       0     200     400     495     505     600     800    1000
2433          RY    1295    1294    1294    1293    1293    1294    1294    1295
              *

2434          KK     F02
2435          KM        Runoff from F02
2436          BA   1.023
2437          LG    0.35    0.35    2.92    0.90       0
2438          UI     302     879    1466     845     307     100      43       0       0       0
2439          UI       0       0       0       0       0       0       0       0       0       0
              *

2440          KK .  DF02
2441          KM            Divert flow into F05
2442          KM        Natural divergence of flow due to a braided channel network.
2443          DT   DVF02
2444          DI       0      15      72     171     373     668    1245    2417    4142    5875
2445          DQ       0       8      40      99     211     372     675    1285    2190    3085
              *

2446          KK  RCPF02
2447          KM        Route remainder flow from CP F02 to CP F04
2448          RS      30    FLOW      -1
2449          RC   0.050   0.045   0.050   18300  0.0079
2450          RX       0     200     400     430     445     475     700     900
2451          RY    1625    1624    1624    1623    1623    1624    1624    1625
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2452          KK     F01
2453          KM        Runoff from F01
2454          BA   2.187
2455          LG    0.35    0.35    2.92    0.90       0
2456          UI     306    1011    1614    2376    1524     913     379     187      65      64
2457          UI       0       0       0       0       0       0       0       0       0       0
2458          UI       0       0       0       0       0       0       0       0       0       0
              *

2459          KK  RCPF01
2460          KM        Route flow from CP F01 to CP F04
2461          RS       6    FLOW      -1
2462          RC   0.050   0.045   0.050   10320  0.0053
2463          RX       0       9      35      90     130     185     235     244
2464          RY    1580 1578.25    1578    1577    1577    1578 1578.25    1580
              *

2465          KK     F04
2466          KM        Runoff from F04
2467          BA   2.198
2468          LG    0.35    0.35    2.94    0.89       0
2469          UI     121     297     571     734     948    1440    1251     956     740     554
2470          UI     306     205     140      90      38      37      38      37       0       0
2471          UI       0       0       0       0       0       0       0       0       0       0
              *

2472          KK   CPF04
2473          KM        Combine F02, F01 with F04
2474          HC       3   5.408
              *

2475          KK  RCPF04
2476          KM        Route flow from CP F04 to CP F05
2477          RS       5    FLOW      -1
2478          RC   0.050   0.045   0.050    8220  0.0050
2479          RX       0      10     160     220     230     290     440     450
2480          RY    1546    1544    1544    1543    1543    1544    1544    1546
              *

2481          KK     F03
2482          KM        Runoff from F03
2483          BA   1.629
2484          LG    0.35    0.35    2.94    0.89       0
```

```
2485          UI     199     679    1056    1697    1197     777     347     188      74      46
2486          UI      45       0       0       0       0       0       0       0       0       0
2487          UI       0       0       0       0       0       0       0       0       0       0
              *

2488          KK  RCPF03
2489          KM        Route flow from CP F03 to CP F06
2490          RS       2    FLOW      -1
2491          RC   0.050   0.045   0.050    4460  0.0087
2492          RX       0       6      80     100     110     130     215     221
2493          RY    1580 1578.75    1578    1577    1577    1578 1578.75    1580
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2494          KK     F06
2495          KM        Runoff from F06
2496          BA   1.001
2497          LG    0.35    0.35    2.91    0.91       0
2498          UI     575    1751    1172     296      60       0       0       0       0       0
2499          UI       0       0       0       0       0       0       0       0       0       0
              *

2500          KK   CPF06
2501          KM        Combine F03 with F06
2502          HC       2   2.629
              *

2503          KK  RCPF06
2504          KM        Route flow from CP F06 to CP F05
2505          RS       5    FLOW      -1
2506          RC   0.050   0.045   0.050    8100  0.0051
2507          RX       0       9      85     105     115     135     250     259
2508          RY  1550.5 1548.75    1548    1547    1547    1548 1548.75  1550.5
              *

2509          KK   DRF02
2510          KM        Return diverted flow from CP F02
2511          DR   DVF02
              *

2512          KK   RDF02
2513          KM        Route flow from CP F02 to CP F05
2514          RS      24    FLOW      -1
2515          RC   0.050   0.045   0.050   24410  0.0075
2516          RX       0     125     250     270     280     300     425     550
2517          RY    1595    1594    1593    1592    1592    1593    1594    1595
              *

2518          KK     F05
2519          KM        Runoff from F05
2520          BA   2.944
2521          LG    0.35    0.35    3.21    0.74       0
2522          UI     198     665    1086    1461    2290    1922    1409    1014     554     334
2523          UI     202      86      61      60       0       0       0       0       0       0
2524          UI       0       0       0       0       0       0       0       0       0       0
              *

2525          KK   CPF05
2526          KM        Combine F04, F06, DRF02 with F05
2527          HC       4  10.981
              *

2528          KK  RCPF05
2529          KM        Route flow from CP F05 to CP F08
2530          RS       6    FLOW      -1
2531          RC   0.050   0.045   0.050    9240  0.0054
2532          RX       0      10     260     380     390     510     760     770
2533          RY    1506    1504    1504    1503    1503    1504    1504    1506
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2534          KK     F07
2535          KM        Runoff from F07
2536          BA   3.678
2537          LG    0.35    0.35    3.09    0.80       0
2538          UI     451    1532    2384    3832    2702    1754     785     424     167     103
2539          UI     102       0       0       0       0       0       0       0       0       0
2540          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

2541            KK  RCPF07
2542            KM        Route flow from CP F07 to CP F08
2543            RS       1    FLOW      -1
2544            RC   0.050   0.045   0.050    1290  0.0050
2545            RX       0       8     260     330     340     410     670     678
2546            RY    1466  1464.5    1464  1462.5  1462.5    1464  1464.5    1466
                *

2547            KK     F08
2548            KM        Runoff from F08
2549            BA   0.913
2550            LG    0.35    0.35    3.85    0.47       0
2551            UI     145     470     793     987     599     303     132      53      29       0
2552            UI       0       0       0       0       0       0       0       0       0       0
2553            UI       0       0       0       0       0       0       0       0       0       0
                *

2554            KK   CPF08
2555            KM        Combine F05, F07 with F08
2556            HC       3  15.572
                *

2557            KK  RCPF08
2558            KM        Route flow from CP F08 to CP F09
2559            RS       8    FLOW      -1
2560            RC   0.050   0.045   0.050   14420  0.0049
2561            RX       0       8     180     225     235     280     450     458
2562            RY    1411    1409    1408    1407    1407    1408    1409    1411
                *

2563            KK     F09
2564            KM        Runoff from F09
2565            BA   2.655
2566            LG    0.35    0.35    3.50    0.62       2
2567            UI     166     492     858    1126    1637    1898    1364    1010     730     361
2568            UI     255     166      59      50      51      51       0       0       0       0
2569            UI       0       0       0       0       0       0       0       0       0       0
                *

2570            KK   CPF09
2571            KM        Combine F08 with F09
2572            HC       2  18.227
                *
```



```
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2573            KK  RCPF09
2574            KM        Route flow from CP F09 to CP F19
2575            RS       6    FLOW      -1
2576            RC   0.050   0.045   0.050    9900  0.0051
2577            RX       0       9      60     255     265     460     510     519
2578            RY    1350 1348.25    1348    1347    1347    1348 1348.25    1350
                *

2579            KK     F19
2580            KM        Runoff from F19
2581            BA   0.849
2582            LG    0.35    0.35    4.30    0.41      14
2583            UI     111     372     588     905     608     383     160      91      27      24
2584            UI       0       0       0       0       0       0       0       0       0       0
2585            UI       0       0       0       0       0       0       0       0       0       0
                *

2586            KK   CPF19
2587            KM        Combine F09 with F19
2588            HC       2  19.076
                *

2589            KK    DF19
2590            KM           Divert flow into F20
2591            KM        Natural divergence of flow due to a braided channel network.
2592            DT   DVF19
2593            DI       0      10      39     620    1930    3994    6565    9621   13123
2594            DQ       0       5      21     313     972    2010    3301    4835    6592
                *

2595            KK  RCPF19
2596            KM        Route remainder flow from CP F19 to CP F21
2597            RS       3    FLOW      -1
2598            RC   0.050   0.045   0.050    4500  0.0044
```

```
2599          RX       0       9      35     130     140     235     260     269
2600          RY    1330 1328.25    1328    1327    1327    1328 1328.25    1330
              *

2601          KK   DRF18
2602          KM        Return diverted flow from CP F18
2603          DR   DVF18
              *

2604          KK   RDF18
2605          KM        Route flow from CP F18 to CP F21
2606          RS      11    FLOW      -1
2607          RC   0.050   0.045   0.050   10380  0.0049
2608          RX       0     150     300     495     505     700     950    1200
2609          RY    1330    1329    1328    1327    1327    1328    1329    1330
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2610          KK     F21
2611          KM        Runoff from F21
2612          BA   0.533
2613          LG    0.35    0.35    4.45    0.37       8
2614          UI     106     324     602     526     304     117      48      19       0       0
2615          UI       0       0       0       0       0       0       0       0       0       0
              *

2616          KK   CPF21
2617          KM        Combine F19, DRF18 with F21
2618          HC       3  22.173
              *

2619          KK  RCPF21
2620          KM        Route flow from CP F21 to CP F29
2621          RS       6    FLOW      -1
2622          RC   0.050   0.045   0.050    5930  0.0034
2623          RX       0     250     500     695     705     900    1150    1400
2624          RY    1315    1314    1313    1312    1312    1313    1314    1315
              *

2625          KK   DRF22
2626          KM        Return diverted flow from CP F22
2627          DR   DVF22
              *

2628          KK   RDF22
2629          KM        Route flow from CP F22 to CP F29
2630          RS      11    FLOW      -1
2631          RC   0.050   0.045   0.050    8900  0.0040
2632          RX       0     250     500     695     705     900    1150    1400
2633          RY    1315    1314    1313    1312    1312    1313    1314    1315
              *

2634          KK     F29
2635          KM        Runoff from F29
2636          BA   0.594
2637          LG    0.34    0.34    4.35    0.39      12
2638          UI     110     340     618     611     357     149      70      20      20       0
2639          UI       0       0       0       0       0       0       0       0       0       0
2640          UI       0       0       0       0       0       0       0       0       0       0
              *

2641          KK   CPF29
2642          KM        Combine F21, DRF22 with F29
2643          HC       3  87.759
              *

2644          KK  PNDF04
2645          KM        POND F4
2646          KM          Storage area for structure 42 and 43
2647          RS       1    STOR      -1
2648          SV       0     0.8     3.3     8.4    19.9    27.2    33.1    41.9    58.9
2649          SE  1296.6    1298    1299    1300    1301  1301.5  1301.8    1302  1302.5
1                                          HEC-1 INPUT                                                    PAGE 70

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2650          SQ       0      79     137     170     243     298     795    1637    2501
              *

2651          KK    DF29
2652          KM            Divert flow into F32
```

```
2653        KM        Flow is split between what passes through/over the structure and
2654        KM        what is diverted parallel to the railroad.
2655        KM           SPRR Structure 42 and 43 (3'x3' wooden box, 4'x2.5' wooden box)
2656        DT   DVF29
2657        DI       0     170     445     761    1414    2360    4618
2658        DQ       0     170     243     298     795    1637    2501
            *

2659        KK  RCPF29
2660        KM        Route remainder flow from CP F29 to CP F20
2661        RS       3    FLOW      -1
2662        RC   0.050   0.045   0.050    2130  0.0038
2663        RX       0      20      30     390     750    1110    1470    1830
2664        RY    1301    1301    1295  1297.4  1299.8  1302.2  1304.6    1307
            *

2665        KK   DRF19
2666        KM        Return diverted flow from CP F19
2667        DR   DVF19
            *

2668        KK   RDF19
2669        KM        Route flow from CP F19 to CP F20
2670        RS       7    FLOW      -1
2671        RC   0.050   0.045   0.050   10680  0.0048
2672        RX       0       9      35     130     140     235     260     269
2673        RY    1328 1326.25    1326    1325    1325    1326 1326.25    1328
            *

2674        KK     F20
2675        KM        Runoff from F20
2676        BA   0.797
2677        LG    0.34    0.33    4.25    0.41      16
2678        UI      85     303     463     771     612     410     223     108      55      21
2679        UI      21       0       0       0       0       0       0       0       0       0
2680        UI       0       0       0       0       0       0       0       0       0       0
            *

2681        KK   CPF20
2682        KM        Combine F29, DRF19 with F20
2683        HC       3  88.556
            *

2684        KK  PNDF05
2685        KM        POND F5
2686        KM          Storage area for structure 44 and 45
2687        KM          SPRR Structures 44 and 45 (3'x3' wooden box, 2-4'x2.5' wooden boxes)
2688        RS       1    STOR      -1
2689        SV       0     2.5     8.6    20.3    38.2    61.8    77.3    92.7
2690        SE  1294.3    1296    1297    1298    1299    1300  1300.5    1301
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2691        SQ       0      60     119     180     241     484    1909    2689
            * ******************************************************************************
            * All flow from Pond F5 crosses SR-238.  Hereafter, runoff arrives in Waterman
            * Wash from both sides of the wash.
            * ******************************************************************************

2692        KK  RCPF20
2693        KM        Route flow from CP F20 to CP F31
2694        KM        Crossing at SR-238
2695        RS       4    FLOW      -1
2696        RC   0.050   0.045   0.050    3980  0.0028
2697        RX       0     200     400     495     505     600     800    1000
2698        RY    1296    1294    1294    1293    1293    1294    1294    1296
            *

2699        KK     F31
2700        KM        Runoff from F31
2701        BA   0.272
2702        LG    0.35    0.35    4.55    0.35       4
2703        UI     156     476     319      80      16       0       0       0       0       0
2704        UI       0       0       0       0       0       0       0       0       0       0
            *

2705        KK     G21
2706        KM        Runoff from G21
2707        BA   0.910
2708        LG    0.35    0.35    3.15    0.84       0
2709        UI     247     724    1265     784     320     120      36       0       0       0
2710        UI       0       0       0       0       0       0       0       0       0       0
            *
```

```
2711          KK   CPF31
2712          KM        Combine F20, F31 with G21
2713          HC       3  89.738
              *

2714          KK  RCPF31
2715          KM        Route flow from CP F31 to CP F32RIV (WATERMAN WASH)
2716          RS       2    FLOW      -1
2717          RC   0.050   0.035   0.050    2940  0.0029
2718          RX       0    1100    2400    2625    2675    2900    3700    4500
2719          RY    1295    1290    1287    1285    1285    1287    1290    1295
              *

2720          KK   DRF29
2721          KM        Return diverted flow from CP F29
2722          DR   DVF29
              *

2723          KK   RDF29
2724          KM        Route flow from CP F29 to CP F32
2725          KM        Crossing at SR-238
2726          RS       6    FLOW      -1
2727          RC   0.050   0.045   0.050    5810  0.0038
2728          RX       0     200     400     495     505     600     800    1000
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2729          RY  1295.5    1294    1294    1293    1293    1294    1294  1295.5
              *

2730          KK     F32
2731          KM        Runoff from F32
2732          BA   0.287
2733          LG    0.35    0.35    4.65    0.32       0
2734          UI     110     332     417     178      53      13       0       0       0       0
2735          UI       0       0       0       0       0       0       0       0       0       0
              *

2736          KK   CPF32
2737          KM        Combine F36, DRF29 with F32
2738          HC       3  88.308
              *

2739          KK     G20
2740          KM        Runoff from G20
2741          BA   0.481
2742          LG    0.35    0.35    3.29    0.72       0
2743          UI     249     773     605     177      40       0       0       0       0       0
2744          UI       0       0       0       0       0       0       0       0       0       0
              *

2745          KK  RCPG20
2746          KM        Route flow from CP G20 to CP G22
2747          RS       8    FLOW      -1
2748          RC   0.050   0.045   0.050    8950  0.0077
2749          RX       0     200     330     340     360     370     525     700
2750          RY    1328    1327    1326    1325    1325    1326    1327    1328
              *

2751          KK     G19
2752          KM        Runoff from G19
2753          BA   0.670
2754          LG    0.35    0.35    3.05    0.86      12
2755          UI     429    1257     712     152      41       0       0       0       0       0
2756          UI       0       0       0       0       0       0       0       0       0       0
              *

2757          KK  RCPG19
2758          KM        Route flow from CP G19 to CP G22
2759          RS       5    FLOW      -1
2760          RC   0.050   0.045   0.050   10270  0.0068
2761          RX       0       9      40      50      70      80     110     119
2762          RY  1328.5 1326.25    1326    1325    1325    1326 1326.25  1328.5
              *

2763          KK     G22
2764          KM        Runoff from G22
2765          BA   1.124
2766          LG    0.35    0.35    3.15    0.84       0
2767          UI     240     729    1355    1076     591     211      84      40       0       0
2768          UI       0       0       0       0       0       0       0       0       0       0
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2769          KK   CPG22
2770          KM        Combine G20, G19 with G22
2771          HC       3   2.276
              *

2772          KK  F32RIV
2773          KM        Combine F31RIV, G22 with F32
2774          KM        83rd Avenue crossing at F32RIV
2775          HC       3  92.300
              *

2776          KK  RCPF32
2777          KM        Route flow from CP F32RIV to CP F33RIV (WATERMAN WASH)
2778          RS       2    FLOW      -1
2779          RC   0.050   0.035   0.050    2810  0.0033
2780          RX       0    1000    2100    2280    2320    2500    2900    3700
2781          RY    1285    1280    1277    1275    1275    1277    1280    1285
              *

2782          KK  DRF28B
2783          KM        Return diverted flow from CP F28B
2784          DR  DVF28B
              *

2785          KK  RDF28B
2786          KM        Route flow from CP F28 to CP F33
2787          KM        Crossing at SR-238
2788          RS       9    FLOW      -1
2789          RC   0.050   0.045   0.050    7410  0.0043
2790          RX       0     200     400     495     505     600     800    1000
2791          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

2792          KK     F33
2793          KM        Runoff from F33
2794          BA   0.492
2795          LG    0.35    0.35    4.55    0.35       5
2796          UI     122     365     656     442     201      79      20      19       0       0
2797          UI       0       0       0       0       0       0       0       0       0       0
              *

2798          KK   CPF33
2799          KM        Combine DRF28B with F33
2800          HC       2  68.144
              *

2801          KK  F33RIV
2802          KM        Combine F32RIV with F33
2803          HC       2  92.793
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2804          KK  RCPF33
2805          KM        Route flow from CP F33RIV to CP F34RIV (WATERMAN WASH)
2806          RS       2    FLOW      -1
2807          RC   0.050   0.035   0.050    2280  0.0028
2808          RX       0       9     110     290     330     510     610     619
2809          RY    1274 1272.25    1272    1270    1270    1272 1272.25    1274
              *

2810          KK  DRF28A
2811          KM        Return diverted flow from CP F28A
2812          DR  DVF28A
              *

2813          KK  RDF28A
2814          KM        Route flow from CP F28 to CP F34
2815          KM        Crossing at SR-238
2816          RS      12    FLOW      -1
2817          RC   0.050   0.045   0.050    9420  0.0036
2818          RX       0     200     400     495     505     600     800    1000
2819          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

2820          KK   DRF27
2821          KM        Return diverted flow from CP F27
```

```
2822          DR   DVF27
              *

2823          KK    DF25
2824          KM            Divert flow into F34
2825          KM        Divert included to break flows between structures 37 and 38 (10' bridge
2826          KM        The purpose is to seperate the downstream flows for hydraulic modeling.
2827          DT   DVF25
2828          DI       0     245     442     721    1020    1312    1574    2234    4864
2829          DQ       0      17      58      98     165     232     291     348     425
              *

2830          KK   RDF27
2831          KM        Route remainder flow from CP F27 to CP F34
2832          KM        Crossing at SR-238
2833          RS       5    FLOW      -1
2834          RC   0.050   0.045   0.050    9250  0.0036
2835          RX       0       9      35     130     140     235     260     269
2836          RY  1295.5 1293.25    1293    1292    1292    1293 1293.25  1295.5
              *

2837          KK   DRF25
2838          KM        Return diverted flow from CP F25
2839          DR   DVF25
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2840          KK   RDF25
2841          KM        Route flow from CP F25 to CP F34
2842          KM        Crossing at SR-238
2843          RS      10    FLOW      -1
2844          RC   0.050   0.045   0.050    9280  0.0036
2845          RX       0       9      35     130     140     235     260     269
2846          RY  1295.5 1293.25    1293    1292    1292    1293 1293.25  1295.5
              *

2847          KK     F34
2848          KM        Runoff from F34
2849          BA   0.597
2850          LG    0.35    0.35    4.60    0.34       2
2851          UI     110     342     621     615     358     150      70      21      20       0
2852          UI       0       0       0       0       0       0       0       0       0       0
2853          UI       0       0       0       0       0       0       0       0       0       0
              *

2854          KK   CPF34
2855          KM        Combine DRF28A, DRF27, DRF25 with F34
2856          HC       4  67.986
              *

2857          KK     G23
2858          KM        Runoff from G23
2859          BA   1.197
2860          LG    0.35    0.35    3.01    0.92       0
2861          UI     325     952    1664    1031     422     157      48       0       0       0
2862          UI       0       0       0       0       0       0       0       0       0       0
              *

2863          KK  F34RIV
2864          KM        Combine F33RIV, G23 with F34
2865          HC       3  94.586
              *

2866          KK  RCPF34
2867          KM        Route flow from CP F34RIV to CP F35RIV (WATERMAN WASH)
2868          RS       2    FLOW      -1
2869          RC   0.050   0.035   0.050    2250  0.0025
2870          RX       0      20    1510    1690    1730    1910    3410    3430
2871          RY  1272.5    1268    1261    1259    1259    1261    1268  1272.5
              *

2872          KK   DRF26
2873          KM        Return diverted flow from CP F26
2874          DR   DVF26
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2875          KK   RDF26
```

```
2876          KM        Route flow from CP F26 to CP F35
2877          KM        Crossing at SR-238
2878          RS      17    FLOW      -1
2879          RC   0.050   0.045   0.050   10950  0.0044
2880          RX       0     200     400     595     605     800    1000    1200
2881          RY    1280    1279    1278    1277    1277    1278    1279    1280
              *

2882          KK     F35
2883          KM        Runoff from F35
2884          BA   0.795
2885          LG    0.34    0.34    4.65    0.32       1
2886          UI     104     349     550     848     569     358     150      85      25      23
2887          UI       0       0       0       0       0       0       0       0       0       0
2888          UI       0       0       0       0       0       0       0       0       0       0
              *

2889          KK   CPF35
2890          KM        Combine DRF26 with F35
2891          HC       2  55.233
              *

2892          KK     G24
2893          KM        Runoff from G24
2894          BA   0.349
2895          LG    0.35    0.35    2.99    0.94       0
2896          UI     134     404     506     216      65      17       0       0       0       0
2897          UI       0       0       0       0       0       0       0       0       0       0
              *

2898          KK  RCPG24
2899          KM        Route flow from CP G24 to CP F35RIV
2900          RS       1    FLOW      -1
2901          RC   0.050   0.035   0.050     750  0.0027
2902          RX       0       9     110     140     190     220     300     309
2903          RY    1262 1260.25    1260    1257    1257    1260 1260.25    1262
              *

2904          KK     G25
2905          KM        Runoff from G25
2906          BA   0.358
2907          LG    0.35    0.35    2.94    0.97       0
2908          UI      76     233     432     342     188      67      27      12       0       0
2909          UI       0       0       0       0       0       0       0       0       0       0
              *

2910          KK  F35RIV
2911          KM        Combine F34RIV, G24, G25 with F35
2912          HC       4  96.088
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2913          KK  RCPF35
2914          KM        Route flow from CP F35RIV to CP E48RIV (WATERMAN WASH)
2915          RS       1    FLOW      -1
2916          RC   0.050   0.035   0.050    1663  0.0025
2917          RX       0      10    1200    1380    1420    1600    1800    1810
2918          RY    1272    1270    1262    1260    1260    1262    1270    1272
              * ******************************************************************************
              *       Return diverted flows in Watershed E, route flows to Waterman.  Continue
              *       to add runoff from east side of Waterman Wash (Watershed G).
              *       Watershed F complete at this point.
              * ******************************************************************************

2919          KK   DRE54
2920          KM        Return diverted flow from CP E54
2921          DR   DVE54
              *

2922          KK   RDE54
2923          KM        Route remainder flow from CP E54 to CP E46
2924          KM        Crossing at SR-238
2925          RS       6    FLOW      -1
2926          RC   0.050   0.045   0.050    2630  0.0055
2927          RX       0     163     327     490     510     674     837    1000
2928          RY    1310    1309    1308    1307    1307    1308    1309    1310
              *

2929          KK     E46
2930          KM        Runoff from E46
2931          BA   0.175
```

```
2932          LG    0.30    0.26    4.45    0.37       5
2933          UI      91     281     220      64      15       0       0       0       0       0
2934          UI       0       0       0       0       0       0       0       0       0       0
              *

2935          KK   CPE46
2936          KM        Combine DRE54 with E46
2937          HC       2  54.118
              *

2938          KK  RCPE46
2939          KM        Route flow from CP E46 to CP E47
2940          RS       3    FLOW      -1
2941          RC   0.050   0.045   0.050    2750  0:0058
2942          RX       0     163     327     490     510     674     837    1000
2943          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

2944          KK   DRE25
2945          KM        Return diverted flow from CP E25
2946          DR   DVE25
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2947          KK   RDE25
2948          KM        Route flow from CP E25 to CP E45
2949          KM        Crossing at SR-238
2950          RS       2    FLOW      -1
2951          RC   0.050   0.045   0.050    3250  0.0060
2952          RX       0     163     326     490     510     674     837    1000
2953          RY    1310    1309    1308    1307    1307    1308    1309    1310
              *

2954          KK   DRE36
2955          KM        Return diverted flow from CP E36
2956          DR   DVE36
              *

2957          KK   RDE36
2958          KM        Route flow from CP E36 to CP E45
2959          KM        Crossing at SR-238
2960          RS       5    FLOW      -1
2961          RC   0.050   0.045   0.050    3250  0.0060
2962          RX       0     163     326     490     510     674     837    1000
2963          RY    1310    1309    1308    1307    1307    1308    1309    1310
              *

2964          KK     E45
2965          KM        Runoff from E45
2966          BA   0.320
2967          LG    0.30    0.25    4.55    0.35       5
2968          UI     103     299     469     248      78      26      14       0       0       0
2969          UI       0       0       0       0       0       0       0       0       0       0
              *

2970          KK   CPE45
2971          KM        Combine DRE25, DRE36 with E45
2972          HC       3  54.142
              *

2973          KK  RCPE45
2974          KM        Route flow from CP E45 to CP E47
2975          RS       2    FLOW      -1
2976          RC   0.050   0.045   0.050    2960  0.0058
2977          RX       0       9      35     199     219     383     410     419
2978          RY    1295 1293.25    1293    1292    1292    1293 1293.25    1295
              *

2979          KK     E47
2980          KM        Runoff from E47
2981          BA   0.428
2982          LG    0.30    0.25    4.65    0.32       5
2983          UI     151     442     630     303      89      25       0       0       0       0
2984          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2985          KK   CPE47
```

```
2986          KM        Combine E45, E46 with E47
2987          HC       3  54.866
              *

2988          KK  RCPE47
2989          KM        Route flow from CP E47 to CP E48
2990          RS       5    FLOW      -1
2991          RC   0.050   0.045   0.050    7130  0.0039
2992          RX       0       8     260     295     300     335     585     593
2993          RY    1281  1279.5    1279    1278    1278    1279  1279.5    1281
              *

2994          KK     E48
2995          KM        Runoff from E48
2996          BA   0.861
2997          LG    0.35    0.35    4.60    0.31       0
2998          UI     277     805    1263     665     213      68      37       0       0       0
2999          UI       0       0       0       0       0       0       0       0       0       0
              *

3000          KK   CPE48
3001          KM        Combine E47 with E48
3002          HC       2  55.728
              *

3003          KK     G26
3004          KM        Runoff from G26
3005          BA   1.167
3006          LG    0.35    0.35    2.95    0.95       1
3007          UI     316     928    1623    1006     410     154      46       0       0       0
3008          UI       0       0       0       0       0       0       0       0       0       0
              *

3009          KK  E48RIV
3010          KM        Combine F35RIV, G26 with E48
3011          HC       3  99.040
              *

3012          KK  RCPE48
3013          KM        Route flow from CP E48RIV to CP E49RIV (WATERMAN WASH)
3014          RS       1    FLOW      -1
3015          RC   0.050   0.035   0.050    1620  0.0033
3016          RX       0      15     110     290     330     510     610     625
3017          RY    1255    1252    1252    1250    1250    1252    1252    1255
              *

3018          KK   DRE38
3019          KM        Return diverted flow from CP E38
3020          DR   DVE38
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3021          KK   RDE38
3022          KM        Route flow from CP E38 to CP E44
3023          KM        Crossing at SR-238
3024          RS       7    FLOW      -1
3025          RC   0.050   0.045   0.050    7020  0.0059
3026          RX       0     250     500     510     515     525     775    1025
3027          RY    1309    1307    1307    1306    1306    1307    1307    1309
              *

3028          KK   DRE30
3029          KM        Return diverted flow from CP E30
3030          DR   DVE30
              *

3031          KK   RDE30
3032          KM        Route flow from CP E30 to CP E44
3033          KM        Crossing at SR-238
3034          RS       8    FLOW      -1
3035          RC   0.050   0.045   0.050    9020  0.0058
3036          RX       0     200     400     410     540     550     750     950
3037          RY  1308.5    1307    1307    1306    1306    1307    1307  1308.5
              *

3038          KK     E44
3039          KM        Runoff from E44
3040          BA   0.629
3041          LG    0.35    0.35    3.95    0.48       0
3042          UI     157     466     838     565     257     101      26      23       0       0
3043          UI       0       0       0       0       0       0       0       0       0       0
```

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                *

3044            KK   CPE44
3045            KM        Combine DRE38, DRE30 with E44
3046            HC       3  50.911
                *

3047            KK  RCPE44
3048            KM        Route flow from CP E44 to CP E50
3049            RS       7    FLOW      -1
3050            RC   0.050   0.045   0.050   12210  0.0048
3051            RX       0       9      40     204     224     388     420     429
3052            RY    1275 1273.25    1273    1272    1272    1273 1273.25    1275
                *

3053            KK   DRE31
3054            KM        Return diverted flow from CP E31
3055            DR   DVE31
                *
1                                          HEC-1 INPUT                                                    PAGE 81

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3056            KK   RDE31
3057            KM        Route flow from CP E31 to CP E43
3058            KM        Crossing at SR-238
3059            RS       7    FLOW      -1
3060            RC   0.050   0.045   0.050    8520  0.0053
3061            RX       0     170     340     350     450     460     630     900
3062            RY    1345    1344    1344    1343    1343    1344    1344    1345
                *

3063            KK     E43
3064            KM        Runoff from E43
3065            BA   0.445
3066            LG    0.35    0.35    4.40    0.38       0
3067            UI     131     383     638     367     133      44      19       0       0       0
3068            UI       0       0       0       0       0       0       0       0       0       0
                *

3069            KK   CPE43
3070            KM        Combine DRE31 with E43
3071            HC       2  16.567
                *

3072            KK  RCPE43
3073            KM        Route flow from CP E43 to CP E50
3074            RS       8    FLOW      -1
3075            RC   0.050   0.045   0.050    6960  0.0043
3076            RX       0     163     326     490     510     674     837    1000
3077            RY    1275    1274    1273    1272    1272    1273    1274    1275
                *

3078            KK     E50
3079            KM        Runoff from E50
3080            BA   0.699
3081            LG    0.16    0.25    4.60    0.28      54
3082            UI     190     556     971     603     246      91      29       0       0       0
3083            UI       0       0       0       0       0       0       0       0       0       0
                *

3084            KK   CPE50
3085            KM        Combine E44, E43 with E50
3086            HC       3  52.055
                *

3087            KK  RCPE50
3088            KM        Route flow from CP E50 to CP E49
3089            RS       2    FLOW      -1
3090            RC   0.050   0.045   0.050    3300  0.0031
3091            RX       0      13     115     165     215     265     365     378
3092            RY    1265  1262.5    1262    1260    1260    1262  1262.5    1265
                *
1                                          HEC-1 INPUT                                                    PAGE 82

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3093            KK     E52
3094            KM        Runoff from E52
3095            BA   0.164
3096            LG    0.16    0.26    4.65    0.27      52
3097            UI     381     240       0       0       0       0       0       0       0       0
```

```
3098        UI       0       0       0       0       0       0       0       0       0       0
            *

3099        KK  RCPE52
3100        KM        Route flow from CP E52 to CP E49
3101        RS       3    FLOW      -1
3102        RC   0.050   0.045   0.050    3500  0.0031
3103        RX       0     100     200     300     350     400     500     600
3104        RY    1264    1263    1262    1260    1260    1262    1263    1264
            *

3105        KK     E49
3106        KM        Runoff from E49
3107        BA   0.224
3108        LG    0.34    0.34    3.48    0.60       4
3109        UI      72     210     328     174      55      17       9       0       0       0
3110        UI       0       0       0       0       0       0       0       0       0       0
            *

3111        KK   CPE49
3112        KM        Combine E50, E52 with E49
3113        HC       3  52.442
            *

3114        KK  E49RIV
3115        KM        Combine E48RIV with E49
3116        HC       2 101.200
            *

3117        KK  RCPE49
3118        KM        Route flow from CP E49RIV to CP G27RIV (WATERMAN WASH)
3119        RS       1    FLOW      -1
3120        RC   0.050   0.035   0.050    2650  0.0027
3121        RX       0      15     310     390     430     510     760     775
3122        RY    1246    1243    1242    1240    1240    1242    1243    1246
            *

3123        KK     G18
3124        KM        Runoff from G18
3125        BA   0.322
3126        LG    0.35    0.35    3.48    0.63      29
3127        UI     167     517     405     119      27       0       0       0       0       0
3128        UI       0       0       0       0       0       0       0       0       0       0
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3129        KK    DG18
3130        KM           Divert flow into G17
3131        KM        Natural divergence of flow due to a braided channel network.
3132        DT   DVG18
3133        DI       0      18      75     485    1455    2842    4580    6633    8975
3134        DQ       0      11      44     251     750    1454    2335    3375    4560
            *

3135        KK  RCPG18
3136        KM        Route remainder flow from CP G18 to CP G27
3137        RS      13    FLOW      -1
3138        RC   0.050   0.045   0.050    8180  0.0077
3139        RX       0     250     370     390     410     430     590     800
3140        RY    1282    1281    1281    1280    1280    1281    1281    1282
            *

3141        KK     G27
3142        KM        Runoff from G27
3143        BA   1.408
3144        LG    0.35    0.35    3.13    0.85       0
3145        UI     323     977    1793    1308     656     242      83      51       0       0
3146        UI       0       0       0       0       0       0       0       0       0       0
            *

3147        KK   CPG27
3148        KM        Combine G18 with G27
3149        HC       2   1.730
            *

3150        KK  G27RIV
3151        KM        Combine E49RIV with G27
3152        HC       2 102.930
            *

3153        KK  RCPG27
```

```
3154          KM        Route flow from CP G27RIV to CP G28RIV (WATERMAN WASH)
3155          RS       2    FLOW      -1
3156          RC   0.050   0.035   0.050    3180  0.0025
3157          RX       0       8    2500    2540    2590    2630    3010    3018
3158          RY    1249  1247.5    1237    1234    1234    1237  1247.5    1249
              *

3159          KK     G28
3160          KM        Runoff from G28
3161          BA   0.308
3162          LG    0.35    0.35    3.58    0.61       0
3163          UI     143     453     406     142      33       0       0       0       0       0
3164          UI       0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3165          KK  G28RIV
3166          KM        Combine G27RIV with G28
3167          HC       2 103.239
              *

3168          KK  RCPG28
3169          KM        Route flow from CP G28RIV to CP E51RIV (WATERMAN WASH)
3170          RS       1    FLOW      -1
3171          RC   0.050   0.035   0.050    1930  0.0027
3172          RX       0      10    2010    2090    2130    2210    4260    4270
3173          RY  1245.5    1243    1232    1230    1230    1232    1243  1245.5
              *

3174          KK   DRE53
3175          KM        Return diverted flow from CP E53
3176          DR   DVE53
              *

3177          KK   RDE53
3178          KM        Route flow from CP E53 to CP E42
3179          KM        Crossing at SR-238
3180          RS       8    FLOW      -1
3181          RC   0.050   0.045   0.050    8810  0.0053
3182          RX       0     170     340     350     450     460     630     900
3183          RY    1345    1344    1344    1343    1343    1344    1344    1345
              *

3184          KK   DRE32
3185          KM        Return diverted flow from CP E32
3186          DR   DVE32
              *

3187          KK   RDE32
3188          KM        Route flow from CP E32 to CP E40
3189          KM        Crossing at SR-238
3190          RS       3    FLOW      -1
3191          RC   0.050   0.045   0.050    2750  0.0055
3192          RX       0     125     250     260     265     275     400     525
3193          RY    1354    1353    1353    1352    1352    1353    1353    1354
              *

3194          KK     E40
3195          KM        Runoff from E40
3196          BA   0.066
3197          LG    0.35    0.35    4.40    0.38       0
3198          UI      71     148      32       0       0       0       0       0       0       0
3199          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3200          KK   CPE40
3201          KM        Combine DRE32 with E40
3202          HC       2  14.969
              *

3203          KK   DRE33
3204          KM        Return diverted flow from CP E33
3205          DR   DVE33
              *

3206          KK   RDE33
3207          KM        Route flow from CP E33 to CP E39
```

```
3208          KM        Crossing at SR-238
3209          RS       3    FLOW      -1
3210          RC   0.050   0.045   0.050    3740  0.0056
3211          RX       0     135     270     290     300     320     450     590
3212          RY    1360    1359    1358    1356    1356    1358    1359    1360
              *

3213          KK     E39
3214          KM        Runoff from E39
3215          BA   0.102
3216          LG    0.35    0.35    3.74    0.55       0
3217          UI      73     204      94      19       0       0       0       0       0       0
3218          UI       0       0       0       0       0       0       0       0       0       0
              *

3219          KK  CPE39A
3220          KM        Combine DRE33 with E39
3221          HC       2  13.244
              *

3222          KK   CPE39
3223          KM        COMBINE E40 WITH E39
3224          HC       2  15.071
              *

3225          KK  RCPE39
3226          KM        Route flow from CP E39 to CP E42
3227          RS       6    FLOW      -1
3228          RC   0.050   0.045   0.050    6600  0.0061
3229          RX       0      90     180     200     210     230     370     620
3230          RY    1320    1319    1318    1317    1317    1318    1319    1320
              *

3231          KK     E42
3232          KM        Runoff from E42
3233          BA   0.616
3234          LG    0.35    0.35    3.92    0.49       0
3235          UI     182     530     882     509     185      59      26       0       0       0
3236          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3237          KK   CPE42
3238          KM        Combine DRE53, E39 with E42
3239          HC       3  15.797
              *

3240          KK  RCPE42
3241          KM        Route flow from CP E42 to CP E51
3242          RS      11    FLOW      -1
3243          RC   0.050   0.045   0.050   13700  0.0051
3244          RX       0     250     500     525     675     700     900    1100
3245          RY    1260    1259    1258    1257    1257    1258    1259    1260
              *

3246          KK     E51
3247          KM        Runoff from E51
3248          BA   1.284
3249          LG    0.35    0.35    4.60    0.33       0
3250          UI     179     594     948    1394     895     536     223     110      38      38
3251          UI       0       0       0       0       0       0       0       0       0       0
3252          UI       0       0       0       0       0       0       0       0       0       0
              *

3253          KK   CPE51
3254          KM        Combine E42 with E51
3255          HC       2  17.080
              *

3256          KK  E51RIV
3257          KM        Combine G28RIV with E51
3258          HC       2 105.306
              *

3259          KK  RCPE51
3260          KM        Route flow from CP E51RIV to CP E41RIV (WATERMAN WASH)
3261          RS       2    FLOW      -1
3262          RC   0.050   0.035   0.050    2940  0.0038
3263          RX       0    1200    2400    2480    2520    2600    3400    4200
3264          RY    1230    1225    1222    1220    1220    1222    1225    1230
              *
```

```
3265          KK     E41
3266          KM        Runoff from E41
3267          BA   1.051
3268          LG    0.35     0.35     4.50     0.36        0
3269          UI      64      185      330      430      610      756      549      411      301      159
3270          UI     108       66       33       19       20       20        0        0        0        0
3271          UI       0        0        0        0        0        0        0        0        0        0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3272          KK   DRG18
3273          KM        Return diverted flow from CP G18
3274          DR   DVG18
              *

3275          KK   RDG18
3276          KM        Route flow from CP G18 to CP G17
3277          RS       5    FLOW      -1
3278          RC   0.050   0.045   0.050   10240  0.0078
3279          RX       0      20      40      60      80     100     250     600
3280          RY    1266    1265    1264    1261    1261    1264    1265    1266
              *

3281          KK     G17
3282          KM        Runoff from G17
3283          BA   0.579
3284          LG    0.18     0.28     3.38     0.71       47
3285          UI     157      461      805      498      204       76       23        0        0        0
3286          UI       0        0        0        0        0        0        0        0        0        0
              *

3287          KK   CPG17
3288          KM        Combine DRG18 with G17
3289          HC       2   0.901
              *

3290          KK  RCPG17
3291          KM        Route flow from CP G17 to CP G29
3292          RS       1    FLOW      -1
3293          RC   0.050   0.045   0.050    1970  0.0056
3294          RX       0       6     130     140     170     180     320     326
3295          RY    1232 1230.75    1230    1228    1228    1230 1230.75    1232
              *

3296          KK     G16
3297          KM        Runoff from G16
3298          BA   1.334
3299          LG    0.34     0.35     3.64     0.58       10
3300          UI     265      810     1508     1319      760      293      120       46        0        0
3301          UI       0        0        0        0        0        0        0        0        0        0
              *

3302          KK  RCPG16
3303          KM        Route flow from CP G16 to CP G29
3304          RS       1    FLOW      -1
3305          RC   0.050   0.045   0.050    1940  0.0056
3306          RX       0       6     130     140     170     180     320     326
3307          RY    1232 1230.75    1230    1228    1228    1230 1230.75    1232
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3308          KK     G29
3309          KM        Runoff from G29
3310          BA   2.898
3311          LG    0.35     0.35     4.15     0.44        8
3312          UI     536     1658     3018     2980     1740      728      344       96       96        0
3313          UI       0        0        0        0        0        0        0        0        0        0
3314          UI       0        0        0        0        0        0        0        0        0        0
              *

3315          KK   CPG29
3316          KM        Combine G17, G16 with G29
3317          HC       3   5.133
              *

3318          KK  E41RIV
3319          KM        Combine E51RIV, G29 with E41
```

```
3320          HC       3 111.167
              *

3321          KK  RCPE41
3322          KM        Route flow from CP E41RIV to CP G30RIV (WATERMAN WASH)
3323          RS       1    FLOW      -1
3324          RC   0.050   0.035   0.050    3070  0.0025
3325          RX       0      15     280     290     330     340     635     650
3326          RY    1215  1211.5    1210    1207    1207    1210  1211.5    1215
              * ******************************************************************************
              * Watershed E is complete at this point.
              * Begin watershed D and continue with Watershed G.
              * ******************************************************************************

3327          KK     G15
3328          KM        Runoff from G15
3329          BA   3.381
3330          LG    0.35    0.35    4.00    0.46      11
3331          UI     916    2690    4701    2912    1192     443     135       0       0       0
3332          UI       0       0       0       0       0       0       0       0       0       0
              *

3333          KK  RCPG15
3334          KM        Route flow from CP G15 to CP G30
3335          RS       3    FLOW      -1
3336          RC   0.050   0.045   0.050    6150  0.0059
3337          RX       0       6     350     390     430     470     770     776
3338          RY  1233.5 1231.25    1231    1230    1230    1231 1231.25  1233.5
              *

3339          KK     G30
3340          KM        Runoff from G30
3341          BA   0.322
3342          LG    0.35    0.35    4.40    0.38       0
3343          UI     167     517     405     119      27       0       0       0       0       0
3344          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3345          KK   CPG30
3346          KM        Combine G15 with G30
3347          HC       2   3.704
              *

3348          KK  G30RIV
3349          KM        Combine E41RIV with G30
3350          HC       2 114.871
              *

3351          KK  RCPG30
3352          KM        Route flow from CP G30RIV to CP D27RIV (WATERMAN WASH)
3353          RS       2    FLOW      -1
3354          RC   0.050   0.035   0.050    4340  0.0020
3355          RX       0       9      40     440     480     530     780     789
3356          RY    1210 1208.25    1207    1204    1204    1207 1208.25    1210
              *

3357          KK     G44
3358          KM        Runoff from G44
3359          BA   0.728
3360          LG    0.35    0.35    2.52    1.25       0
3361          UI     634    1240     543     236      98      39       0       0       0       0
3362          UI       0       0       0       0       0       0       0       0       0       0
              *

3363          KK  RCPG44
3364          KM        Route flow from CP G44 to CP G06
3365          RS       7    FLOW      -1
3366          RC   0.050   0.045   0.050   11790  0.0162
3367          RX       0      95     190     200     220     230     350     420
3368          RY    1583    1582    1581    1580    1580    1581    1582    1583
              *

3369          KK     G06
3370          KM        Runoff from G06
3371          BA   2.152
3372          LG    0.35    0.35    3.85    0.50      15
3373          UI     494    1494    2739    2001    1001     370     126      79       0       0
3374          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
3375          KK   CPG06
3376          KM        Combine G44 with G06
3377          HC       2   2.880
              *

3378          KK    DG06
3379          KM            Divert flow into G45
3380          KM        Natural divergence of flow due to a braided channel network.
3381          DT   DVG06
3382          DI       0      54     193     422     754     932    1564    2638    4228    7126
3383          DQ       0      30     107     234     419     526     864    1429    2256    3771
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3384          KK  RCPG06
3385          KM        Route remainder flow from CP G06 to CP G07
3386          RS       6    FLOW      -1
3387          RC   0.050   0.045   0.050   14760  0.0110
3388          RX       0     170     350     410     480     540     700     920
3389          RY    1482    1481    1480    1478    1478    1480    1481    1482
              *

3390          KK     G07
3391          KM        Runoff from G07
3392          BA   1.357
3393          LG    0.35    0.35    4.20    0.42      24
3394          UI     311     943    1726    1262     632     233      79      50       0       0
3395          UI       0       0       0       0       0       0       0       0       0       0
              *

3396          KK   CPG07
3397          KM        Combine G06 with G07
3398          HC       2   4.237
              *

3399          KK  RCPG07
3400          KM        Route flow from CP G07 to CP G43
3401          RS      13    FLOW      -1
3402          RC   0.050   0.045   0.050   19180  0.0127
3403          RX       0     180     300     340     360     400     590     700
3404          RY  1362.5    1361    1361    1360    1360    1361    1361  1362.5
              *

3405          KK     G08
3406          KM        Runoff from G08
3407          BA   0.401
3408          LG    0.35    0.35    3.95    0.50       0
3409          UI     109     319     558     344     142      53      16       0       0       0
3410          UI       0       0       0       0       0       0       0       0       0       0
              *

3411          KK    DG08
3412          KM            Divert flow into G09
3413          KM        Natural divergence of flow due to a braided channel network.
3414          DT   DVG08
3415          DI       0      32     126     260     679    1440    2784    5724    8912   12669
3416          DQ       0      13      50     105     296     652    1298    2693    4240    6067
              *

3417          KK  RCPG08
3418          KM        Route remainder flow from CP G08 to CP G45
3419          RS       1    FLOW      -1
3420          RC   0.050   0.045   0.050    1480  0.0100
3421          RX       0     110     240     250     270     280     360     475
3422          RY    1382    1381    1380    1378    1378    1380    1381    1382
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3423          KK     G05
3424          KM        Runoff from G05
3425          BA   1.587
3426          LG    0.35    0.35    2.53    1.24       1
3427          UI     838    2419    1394     742     372     188      96      54       0       0
3428          UI       0       0       0       0       0       0       0       0       0       0
              *

3429          KK    DG05
3430          KM            Divert flow into G45
```

```
3431          KM        Natural divergence of flow due to a braided channel network.
3432          DT   DVG05
3433          DI       0      120      442      972     1928     2929     5112     9714    15260
3434          DQ       0       21       94      216      585     1276     2369     4563     6880
              *

3435          KK  RCPG05
3436          KM        Route remainder flow from CP G05 to CP G46
3437          RS      14     FLOW       -1
3438          RC   0.050    0.045    0.050    16750   0.0178
3439          RX       0      250      480      490      510      520      720      900
3440          RY    1491     1490     1490     1488     1488     1490     1490     1491
              *

3441          KK     G46
3442          KM        Runoff from G46
3443          BA   1.413
3444          LG    0.35     0.35     3.95     0.47       18
3445          UI     302      917     1702     1352      743      266      106       50        0        0
3446          UI       0        0        0        0        0        0        0        0        0        0
              *

3447          KK   CPG46
3448          KM        Combine G05 with G46
3449          HC       2    2.999
              *

3450          KK     G04
3451          KM        Runoff from G04
3452          BA   2.343
3453          LG    0.35     0.35     3.85     0.52       23
3454          UI     466     1423     2647     2316     1336      513      214       80        0        0
3455          UI       0        0        0        0        0        0        0        0        0        0
              *

3456          KK   CPG04
3457          KM        Combine G46 with G04
3458          HC       2    5.342
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3459          KK  RCPG04
3460          KM        Route flow from CP G04 to CP G45
3461          RS       2     FLOW       -1
3462          RC   0.050    0.045    0.050     5640   0.0086
3463          RX       0       10      190      210      240      260      500      510
3464          RY    1406     1404     1403     1400     1400     1403     1404     1406
              *

3465          KK   DRG06
3466          KM        Return diverted flow from CP G06
3467          DR   DVG06
              *

3468          KK   RDG06
3469          KM        Route flow from CP G06 to CP G45
3470          RS       7     FLOW       -1
3471          RC   0.050    0.045    0.050    16220   0.0103
3472          RX       0        6       50       70      100      120      165      171
3473          RY  1530.5  1529.25     1529     1527     1527     1529  1529.25   1530.5
              *

3474          KK   DRG05
3475          KM        Return diverted flow from CP G05
3476          DR   DVG05
              *

3477          KK   RDG05
3478          KM        Route flow from CP G05 to CP G45
3479          RS      14     FLOW       -1
3480          RC   0.050    0.045    0.050    25220   0.0135
3481          RX       0      160      310      330      360      380      570      780
3482          RY    1531     1530     1529     1527     1527     1529     1530     1531
              *

3483          KK     G45
3484          KM        Runoff from G45
3485          BA   2.000
3486          LG    0.35     0.35     4.40     0.38        0
3487          UI     144      526      818     1154     1695     1245      891      585      275      183
3488          UI      94       44       45       43        0        0        0        0        0        0
```

```
3489          UI       0       0       0       0       0       0       0       0       0       0
              *

3490          KK   CPG45
3491          KM        Combine G08, G04, DRG06, DRG05 with G45
3492          HC       5  10.624
              *

3493          KK  RCPG45
3494          KM        Route flow from CP G45 to CP G31
3495          RS       1    FLOW      -1
3496          RC   0.050   0.045   0.050    3140  0.0106
3497          RX       0       8     270     290     330     350     610     618
3498          RY  1354.5    1353    1352    1350    1350    1352    1353  1354.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3499          KK     G31
3500          KM        Runoff from G31
3501          BA   0.182
3502          LG    0.35    0.35    4.10    0.46       0
3503          UI     282     375      43       0       0       0       0       0       0       0
3504          UI       0       0       0       0       0       0       0       0       0       0
              *

3505          KK   CPG31
3506          KM        Combine G45 with G31
3507          HC       2  10.806
              *

3508          KK    DG31
3509          KM           Divert flow from CP G31 into basin G43
3510          KM        Natural divergence of flow due to a braided channel network.
3511          DT   DVG31
3512          DI       0      48     158     570    1098    1902    3318    5264    7166    9300
3513          DQ       0      24      79     285     549     951    1659    2632    3583    4650
              *

3514          KK  RCPG31
3515          KM        Route remainder flow from CP G31 to CP G47
3516          RS       2    FLOW      -1
3517          RC   0.050   0.045   0.050    4120  0.0103
3518          RX       0     100     200     215     230     245     345     445
3519          RY  1325.5    1324    1323    1321    1321    1323    1324  1325.5
              *

3520          KK     G47
3521          KM        RUNOFF FROM G47
3522          BA   0.121
3523          LG    0.35    0.35    3.95    0.48       0
3524          UI      99     255      95      16       0       0       0       0       0       0
3525          UI       0       0       0       0       0       0       0       0       0       0
              *

3526          KK   CPG47
3527          KM        COMBINE G31 WITH G47
3528          HC       2  10.927
              *

3529          KK    DG47
3530          KM           Divert flow from CP G47 into basin G32
3531          KM        Natural divergence of flow due to a braided channel network.
3532          DT   DVG47
3533          DI       0      48     168     312     678    1314    2276    6288   11128
3534          DQ       0      24      84     156     339     657    1138    3144    5564
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3535          KK  RCPG47
3536          KM        ROUTE REMAINDER FLOW FROM CP G47 TO CP G43
3537          RS      11    FLOW      -1
3538          RC   0.050   0.045   0.050   12980  0.0073
3539          RX       0      10     330     345     375     390     710     720
3540          RY    1251    1249    1249    1248    1248    1249    1249    1251
              *

3541          KK   DRG31
3542          KM        RETURN DIVERTED FLOW FROM CP G31
```

```
3543          DR   DVG31
              *

3544          KK   RDG31
3545          KM        Route diverted flow from CP G31 to CP G43
3546          RS      11    FLOW      -1
3547          RC   0.050   0.045   0.050   16700  0.0073
3548          RX       0      10     330     345     375     390     710     720
3549          RY    1251    1249    1249    1248    1248    1249    1249    1251
              *

3550          KK     G43
3551          KM        Runoff from G43
3552          BA   2.170
3553          LG    0.35    0.35    4.10    0.46       0
3554          UI     189     724    1096    1758    1787    1222     810     358     222     101
3555          UI      53      53       0       0       0       0       0       0       0       0
3556          UI       0       0       0       0       0       0       0       0       0       0
              *

3557          KK   CPG43
3558          KM        Combine G07, DRG31, G47 with G43
3559          HC       4  14.454
              *

3560          KK   DRD17
3561          KM        Return diverted flow from CP D17
3562          DR   DVD17
              *

3563          KK   RDD17
3564          KM        Route flow from CP D17 to CP D23
3565          KM        Crossing at SR-238
3566          RS       6    FLOW      -1
3567          RC   0.050   0.045   0.050   12320  0.0061
3568          RX     280     300     320     330     340     350     370     390
3569          RY    1344    1342    1341    1340    1340    1341    1342    1344
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3570          KK   DRD18
3571          KM        Return diverted flow from CP D18
3572          DR   DVD18
              *

3573          KK   RDD18
3574          KM        Route flow from CP D18 to CP D23
3575          KM        Crossing at SR-238
3576          RS       9    FLOW      -1
3577          RC   0.050   0.045   0.050   11500  0.0061
3578          RX     270     290     320     330     340     350     380     400
3579          RY    1343    1342    1341    1340    1340    1341    1342    1343
              *

3580          KK     D23
3581          KM        Runoff from D23
3582          BA   0.709
3583          LG    0.35    0.35    3.95    0.48       0
3584          UI     113     365     615     767     465     236     102      41      22       0
3585          UI       0       0       0       0       0       0       0       0       0       0
3586          UI       0       0       0       0       0       0       0       0       0       0
              *

3587          KK   CPD23
3588          KM        Combine DRD17, DRD18 with D23
3589          HC       3  13.367
              *

3590          KK   DRD19
3591          KM        Return diverted flow from CP D19
3592          DR   DVD19
              *

3593          KK   RDD19
3594          KM        Route flow from CP D19 to CP D24
3595          KM        Crossing at SR-238
3596          RS       6    FLOW      -1
3597          RC   0.050   0.045   0.050   10380  0.0073
3598          RX       0     210     430     445     455     470     790     975
3599          RY    1343    1342    1342    1340    1340    1342    1342    1343
              *
```

```
3600          KK     D24
3601          KM        Runoff from D24
3602          BA   0.431
3603          LG    0.35    0.35    3.64    0.59       0
3604          UI      92     280     519     413     226      81      32      16       0       0
3605          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3606          KK  CPD24A
3607          KM        Combine DRD19 with D24
3608          HC       2  13.336
              *

3609          KK   CPD24
3610          KM        Combine D23 with D24
3611          HC       2  14.046
              *

3612          KK  RCPD24
3613          KM        Route flow from CP D24 to CP D25
3614          RS       3    FLOW      -1
3615          RC   0.050   0.045   0.050    4350  0.0058
3616          RX     280     300     340     350     365     375     415     435
3617          RY  1304.5    1303    1302    1300    1300    1302    1303  1304.5
              *

3618          KK   DRD20
3619          KM        Return diverted flow from CP D20
3620          DR   DVD20
              *

3621          KK   RDD20
3622          KM        Route flow from CP D20 to CP D25
3623          KM        Crossing at SR-238
3624          RS       9    FLOW      -1
3625          RC   0.050   0.045   0.050   13680  0.0063
3626          RX       0     175     335     355     365     390     540     710
3627          RY    1344    1343    1342    1340    1340    1342    1343    1344
              *

3628          KK   DRD21
3629          KM        Return diverted flow from CP D21
3630          DR   DVD21
              *

3631          KK   RDD21
3632          KM        Route flow from CP D21 to CP D25
3633          KM        Crossing at SR-238
3634          RS      13    FLOW      -1
3635          RC   0.050   0.045   0.050   13340  0.0063
3636          RX       0     175     335     355     365     390     540     710
3637          RY    1344    1343    1342    1340    1340    1342    1343    1344
              *

3638          KK     D25
3639          KM        Runoff from D25
3640          BA   1.343
3641          LG    0.35    0.35    3.35    0.71       0
3642          UI     164     560     871    1399     986     641     286     155      61      38
3643          UI      37       0       0       0       0       0       0       0       0       0
3644          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3645          KK   CPD25
3646          KM        Combine D24, DRD20, DRD21 with D25
3647          HC       4  15.576
              *

3648          KK  RCPD25
3649          KM        Route flow from CP D25 to CP D26
3650          RS       8    FLOW      -1
3651          RC   0.050   0.045   0.050   13920  0.0050
3652          RX     300     320     400     475     525     600     680     700
3653          RY    1253    1251    1251    1250    1250    1251    1251    1253
              *
```

```
3654          KK     D26
3655          KM        Runoff from D26
3656          BA   1.546
3657          LG    0.35    0.35    4.35    0.40       0
3658          UI     111     407     632     892    1310     963     689     452     213     141
3659          UI      73      34      34      34       0       0       0       0       0       0
3660          UI       0       0       0       0       0       0       0       0       0       0
              *

3661          KK   CPD26
3662          KM        Combine D25 with D26
3663          HC       2  17.122
              *

3664          KK  RCPD26
3665          KM        Route flow from CP D26 to CP D27
3666          RS       3    FLOW      -1
3667          RC   0.050   0.045   0.050    4590  0.0040
3668          RX     130     150     300     310     330     340     490     510
3669          RY    1215    1213    1213    1212    1212    1213    1213    1215
              *

3670          KK     D27
3671          KM        Runoff from D27
3672          BA   0.259
3673          LG    0.35    0.36    5.00    0.28       0
3674          UI      55     169     312     247     137      48      20       9       0       0
3675          UI       0       0       0       0       0       0       0       0       0       0
              *

3676          KK   CPD27
3677          KM        Combine D26 with D27
3678          HC       2  17.382
              *

3679          KK  D27RIV
3680          KM        Combine G30RIV, G43 with D27
3681          HC       3 133.615
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3682          KK  RCPD27
3683          KM        Route flow from CP D27RIV to CP D28RIV (WATERMAN WASH)
3684          RS       1    FLOW      -1
3685          RC   0.050   0.035   0.050     830  0.0066
3686          RX       0     600    1300    1500    1520    1800    2300    2800
3687          RY    1208    1205    1203    1200    1200    1203    1205    1208
              *

3688          KK     D28
3689          KM        Runoff from D28
3690          BA   1.687
3691          LG    0.35    0.35    4.65    0.32       0
3692          UI     126     490     748    1109    1446    1015     709     407     215     128
3693          UI      44      39      39       0       0       0       0       0       0       0
3694          UI       0       0       0       0       0       0       0       0       0       0
              *

3695          KK  D28RIV
3696          KM        Combine D27RIV with D28
3697          HC       2 135.302
              *

3698          KK  RCPD28
3699          KM        Route flow from CP D28RIV to CP D29RIV (WATERMAN WASH)
3700          RS       1    FLOW      -1
3701          RC   0.050   0.035   0.050     670  0.0044
3702          RX       0     900    1500    1685    1705    1900    2500    3200
3703          RY    1205    1200    1198    1195    1195    1198    1200    1205
              *

3704          KK     D29
3705          KM        Runoff from D29
3706          BA   3.506
3707          LG    0.35    0.35    3.33    0.70       0
3708          UI     263    1017    1555    2305    3005    2109    1472     849     444     269
3709          UI      91      80      81       0       0       0       0       0       0       0
3710          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
3711          KK  D29RIV
3712          KM        Combine D28RIV with D29
3713          HC       2 138.808
              *

3714          KK  RCPD29
3715          KM        Route flow from CP D29RIV to CP D30RIV (WATERMAN WASH)
3716          RS       1    FLOW      -1
3717          RC   0.050   0.035   0.050    1640  0.0026
3718          RX     730     750    1000    1100    1120    1300    1500    1520
3719          RY    1200    1195    1193    1190    1190    1193    1195    1200
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3720          KK   DRG47
3721          KM        Return diverted flow from CP G47
3722          DR   DVG47
              *

3723          KK   RDG47
3724          KM        Route flow from CP G47 to CP G32
3725          RS       8    FLOW      -1
3726          RC   0.050   0.045   0.050   13400  0.0077
3727          RX       0      10     100     120     140     160     260     270
3728          RY  1233.5  1231.5    1231    1230    1230    1231  1231.5  1233.5
              *

3729          KK     G32
3730          KM        Runoff from G32
3731          BA   1.142
3732          LG    0.35    0.35    4.20    0.43       0
3733          UI     244     741    1376    1093     600     215      85      41       0       0
3734          UI       0       0       0       0       0       0       0       0       0       0
              *

3735          KK   CPG32
3736          KM        Combine DRG47 with G32
3737          HC       2  12.069
              *

3738          KK     D30
3739          KM        Runoff from D30
3740          BA   0.426
3741          LG    0.35    0.35    3.85    0.52       0
3742          UI     106     316     568     383     173      68      18      16       0       0
3743          UI       0       0       0       0       0       0       0       0       0       0
              *

3744          KK  D30RIV
3745          KM        Combine D29RIV, G32 with D30
3746          HC       3 140.377
              *

3747          KK  RCPD30
3748          KM        Route flow from CP D30RIV to CP D31RIV (WATERMAN WASH)
3749          RS       1    FLOW      -1
3750          RC   0.050   0.035   0.050     960  0.0027
3751          RX     730     750    1000    1100    1120    1300    1600    1620
3752          RY    1199    1194    1192    1189    1189    1192    1194    1199
              *

3753          KK     D31
3754          KM        Runoff from D31
3755          BA   0.670
3756          LG    0.35    0.35    3.64    0.58       0
3757          UI      88     293     464     715     479     303     126      71      21      20
3758          UI       0       0       0       0       0       0       0       0       0       0
3759          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3760          KK  D31RIV
3761          KM        Combine D30RIV with D31
3762          HC       2 141.046
              *

3763          KK  RCPD31
3764          KM        Route flow from CP D31RIV to CP G33RIV (WATERMAN WASH)
```

```
3765          RS       1    FLOW      -1
3766          RC   0.050   0.035   0.050    1330  0.0034
3767          RX    1210    1230    1400    1480    1500    1600    1820    1840
3768          RY    1195    1190    1188    1185    1185    1188    1190    1195
              *

3769          KK     G33
3770          KM        Runoff from G33
3771          BA   0.744
3772          LG    0.35    0.35    4.00    0.47       0
3773          UI     202     592    1034     640     263      98      29       0       0       0
3774          UI       0       0       0       0       0       0       0       0       0       0
              *

3775          KK  G33RIV
3776          KM        Combine D31RIV with G33
3777          HC       2 141.790
              *

3778          KK  RCPG33
3779          KM        Route flow from CP G33RIV to CP D32RIV (WATERMAN WASH)
3780          RS       1    FLOW      -1
3781          RC   0.050   0.035   0.050     340  0.0030
3782          RX       0      10    2020    2040    2080    2100    4180    4190
3783          RY    1198    1196    1184    1180    1180    1184    1196    1198
              *

3784          KK     G14
3785          KM        Runoff from G14
3786          BA   0.136
3787          LG    0.35    0.35    3.95    0.48       0
3788          UI     111     287     107      17       0       0       0       0       0       0
3789          UI       0       0       0       0       0       0       0       0       0       0
              *

3790          KK  RCPG14
3791          KM        Route flow from CP G14 to CP G34
3792          RS       3    FLOW      -1
3793          RC   0.050   0.045   0.050    5440  0.0081
3794          RX       0       5     185     195     215     225     415     420
3795          RY    1252    1251    1250    1248    1248    1250    1251    1252
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3796          KK     G34
3797          KM        Runoff from G34
3798          BA   0.205
3799          LG    0.35    0.35    3.95    0.48       0
3800          UI     131     385     217      47      13       0       0       0       0       0
3801          UI       0       0       0       0       0       0       0       0       0       0
              *

3802          KK  CPG34A
3803          KM        Combine G14 with G34
3804          HC       2   0.341
              *

3805          KK     G13
3806          KM        Runoff from G13
3807          BA   0.498
3808          LG    0.35    0.35    3.95    0.48       0
3809          UI      99     303     562     492     284     109      46      17       0       0
3810          UI       0       0       0       0       0       0       0       0       0       0
              *

3811          KK   CPG34
3812          KM        Combine G13 with G34
3813          HC       2   0.840
              *

3814          KK  RCPG34
3815          KM        Route flow from CP G34 to CP G35
3816          RS       5    FLOW      -1
3817          RC   0.050   0.045   0.050    5340  0.0085
3818          RX       0     150     320     350     380     400     580     790
3819          RY    1202    1201    1201    1199    1199    1201    1201    1202
              *

3820          KK     G35
3821          KM        Runoff from G35
3822          BA   0.527
```

```
3823          LG    0.35    0.35    4.00    0.47       0
3824          UI     131     391     702     474     215      85      22      20       0       0
3825          UI       0       0       0       0       0       0       0       0       0       0
              *

3826          KK   CPG35
3827          KM        Combine G34 with G35
3828          HC       2   1.367
              *

3829          KK     D32
3830          KM        Runoff from D32
3831          BA   0.501
3832          LG    0.35    0.35    4.15    0.44       0
3833          UI     161     469     735     387     123      40      21       0       0       0
3834          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3835          KK  D32RIV
3836          KM        Combine G33RIV, G35 with D32
3837          HC       3 143.658
              *

3838          KK  RCPD32
3839          KM        Route flow from CP D32RIV to CP D33RIV (WATERMAN WASH)
3840          RS       1    FLOW      -1
3841          RC   0.050   0.035   0.050    2800  0.0027
3842          RX    1080    1100    1400    1480    1500    1600    1800    1820
3843          RY    1188    1183    1180    1178    1178    1181    1183    1188
              *

3844          KK   DRD13
3845          KM        Return diverted flow from CP D13
3846          DR   DVD13
              *

3847          KK   RDD13
3848          KM        Route diverted flow from CP D13 to CP D22
3849          KM        Crossing at SR-238
3850          RS      16    FLOW      -1
3851          RC   0.050   0.045   0.050   34330  0.0050
3852          RX     430     450     500     520     570     590     620     640
3853          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *

3854          KK   DRD46
3855          KM        Return diverted flow from CP D46
3856          DR   DVD46
              *

3857          KK   RDD46
3858          KM        Route diverted flow from CP D46 to CP D22
3859          KM        Crossing at SR-238
3860          RS      24    FLOW      -1
3861          RC   0.050   0.045   0.050   31100  0.0050
3862          RX       0     300     500     520     570     590     700     940
3863          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *

3864          KK   DRD10
3865          KM        Return diverted flow from CP D10
3866          DR   DVD10
              *

3867          KK   RDD10
3868          KM        Route diverted flow from CP D10 to CP D22
3869          KM        Crossing at SR-238
3870          RS      16    FLOW      -1
3871          RC   0.050   0.045   0.050   30930  0.0050
3872          RX       0     300     500     520     570     590     700     940
3873          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3874          KK   DRD47
3875          KM        Return diverted flow from CP D47
3876          DR   DVD47
```

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                *

3877            KK   RDD47
3878            KM        Route diverted flow from CP D47 to CP D22
3879            KM        Crossing at SR-238
3880            RS      24    FLOW      -1
3881            RC   0.050   0.045   0.050   31080  0.0050
3882            RX       0     300     500     520     570     590     700     940
3883            RY    1295    1294    1293    1290    1290    1293    1294    1295
                *

3884            KK   DRD15
3885            KM        Return diverted flow from CP D15
3886            DR   DVD15
                *

3887            KK   RDD15
3888            KM        Route diverted flow from CP D15 to CP D22
3889            KM        Crossing at SR-238
3890            RS      16    FLOW      -1
3891            RC   0.050   0.045   0.050   29860  0.0050
3892            RX       0     300     500     520     570     590     700     940
3893            RY    1295    1294    1293    1290    1290    1293    1294    1295
                *

3894            KK     D22
3895            KM        Runoff from D22
3896            BA   7.722
3897            LG    0.35    0.35    3.88    0.47       0
3898            UI     339     511    1299    1727    2051    2533    3456    4164    3227    2673
3899            UI    2139    1744    1290     730     573     435     335     156     104     103
3900            UI     104     103       0       0       0       0       0       0       0       0
3901            UI       0       0       0       0       0       0       0       0       0       0
                *

3902            KK   CPD22
3903            KM        Combine DRD13, DRD46, DRD10, DRD47, DRD15 with D22
3904            HC       6  19.171
                *

3905            KK  RCPD22
3906            KM        Route flow from CP D22 to CP D33
3907            RS       5    FLOW      -1
3908            RC   0.050   0.045   0.050   11330  0.0055
3909            RX     230     250     330     360     410     440     590     610
3910            RY    1214    1212    1211    1208    1208    1211    1212    1214
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3911            KK     D33
3912            KM        Runoff from D33
3913            BA   0.650
3914            LG    0.35    0.35    4.25    0.42       0
3915            UI     112     352     618     689     409     189      86      29      21       0
3916            UI       0       0       0       0       0       0       0       0       0       0
3917            UI       0       0       0       0       0       0       0       0       0       0
                *

3918            KK   CPD33
3919            KM        Combine D22 with D33
3920            HC       2  19.821
                *

3921            KK  D33RIV
3922            KM        Combine D32RIV with D33
3923            HC       2 152.030
                *

3924            KK  RCPD33
3925            KM        Route flow from CP D33RIV to CP G36RIV (WATERMAN WASH)
3926            RS       1    FLOW      -1
3927            RC   0.050   0.035   0.050     520  0.0030
3928            RX     680     700    1000    1050    1070    1120    1400    1420
3929            RY    1185    1180    1178    1175    1175    1178    1180    1185
                *

3930            KK     D45
3931            KM        Runoff from D45
3932            BA   0.262
3933            LG    0.35    0.35    4.30    0.41       0
3934            UI     136     421     329      97      22       0       0       0       0       0
```

```
3935          UI       0       0       0       0       0       0       0       0       0       0
              *

3936          KK     G36
3937          KM         Runoff from G36
3938          BA   0.997
3939          LG    0.35    0.35    4.00    0.47       0
3940          UI     139     461     737    1082     695     416     173      85      29      30
3941          UI       0       0       0       0       0       0       0       0       0       0
3942          UI       0       0       0       0       0       0       0       0       0       0
              *

3943          KK  G36RIV
3944          KM         Combine D33RIV, D45 with G36
3945          HC       3 153.289
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3946          KK  RCPG36
3947          KM         Route flow from CP G36RIV to CP G37RIV (WATERMAN WASH)
3948          RS       2    FLOW      -1
3949          RC   0.050   0.035   0.050    2960  0.0020
3950          RX       0      10    1540    1570    1610    1640    3190    3200
3951          RY  1192.5  1190.5    1178    1175    1175    1178  1190.5  1192.5
              *

3952          KK     D44
3953          KM         Runoff from D44
3954          BA   0.332
3955          LG    0.35    0.35    4.20    0.43       0
3956          UI     128     383     482     206      62      15       0       0       0       0
3957          UI       0       0       0       0       0       0       0       0       0       0
              *

3958          KK     G37
3959          KM         Runoff from G37
3960          BA   0.408
3961          LG    0.35    0.35    4.00    0.47       0
3962          UI     156     472     592     253      77      19       0       0       0       0
3963          UI       0       0       0       0       0       0       0       0       0       0
              *

3964          KK  G37RIV
3965          KM         Combine G36RIV, D44 with G37
3966          HC       3 154.029
              *

3967          KK  RCPG37
3968          KM         Route flow from CP G37RIV to CP G38RIV (WATERMAN WASH)
3969          RS       1    FLOW      -1
3970          RC   0.050   0.035   0.050    1450  0.0020
3971          RX       0      10    1590    1615    1670    1700    3260    3270
3972          RY  1185.5  1183.5    1170    1166    1166    1170  1183.5  1185.5
              *

3973          KK     D43
3974          KM         Runoff from D43
3975          BA   0.151
3976          LG    0.35    0.35    4.15    0.44       0
3977          UI     108     303     140      26       0       0       0       0       0       0
3978          UI       0       0       0       0       0       0       0       0       0       0
              *

3979          KK     G12
3980          KM         Runoff from G12
3981          BA   1.032
3982          LG    0.35    0.35    4.00    0.47       0
3983          UI     154     500     832    1119     699     390     160      74      32      31
3984          UI       0       0       0       0       0       0       0       0       0       0
3985          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3986          KK    DG12
3987          KM            Divert flow into G39
3988          KM        Natural divergence of flow due to a braided channel network.
3989          DT   DVG12
3990          DI       0      29     104     450    1353    3063    5126    7611   10481
```

```
3991        DQ       0      15      40     295     873    1727    2783    4037    5472
            *

3992        KK  RCPG12
3993        KM        Route remainder flow from CP G12 to CP G38
3994        RS       4    FLOW      -1
3995        RC   0.050   0.045   0.050    9230  0.0084
3996        RX       0     215     445     460     490     505     710     950
3997        RY    1204    1203    1202    1200    1200    1202    1203    1204
            *

3998        KK     G38
3999        KM        Runoff from G38
4000        BA   0.336
4001        LG    0.35    0.35    4.10    0.46       0
4002        UI      91     267     468     289     118      44      14       0       0       0
4003        UI       0       0       0       0       0       0       0       0       0       0
            *

4004        KK   CPG38
4005        KM        Combine G12 with G38
4006        HC       2   1.368
            *

4007        KK  G38RIV
4008        KM        Combine G37RIV, D43 with G38
4009        HC       3 155.648
            *

4010        KK  RCPG38
4011        KM        Route flow from CP G38RIV to CP D42RIV (WATERMAN WASH)
4012        RS       1    FLOW      -1
4013        RC   0.050   0.035   0.050    1820  0.0020
4014        RX       0      10    1710    1720    1760    1770    3400    3410
4015        RY    1172    1170    1160    1156    1156    1160    1170    1172
            *

4016        KK   DRG12
4017        KM        Return diverted flow from CP G12
4018        DR   DVG12
            *

4019        KK   RDG12
4020        KM        Route flow from CP G12 to CP G39
4021        RS       3    FLOW      -1
4022        RC   0.050   0.045   0.050   10210  0.0080
4023        RX       0     200     430     440     470     480     625     900
4024        RY    1204    1203    1203    1200    1200    1203    1203    1204
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4025        KK     G39
4026        KM        Runoff from G39
4027        BA   0.763
4028        LG    0.35    0.35    4.00    0.47       0
4029        UI      58     234     353     533     657     447     313     160      91      52
4030        UI      18      18      18       0       0       0       0       0       0       0
4031        UI       0       0       0       0       0       0       0       0       0       0
            *

4032        KK   CPG39
4033        KM        Combine DRG12 with G39
4034        HC       2   1.795
            *

4035        KK     D34
4036        KM        Runoff from D34
4037        BA   1.202
4038        LG    0.35    0.35    4.55    0.35       0
4039        UI     239     730    1358    1188     686     263     109      41       0       0
4040        UI       0       0       0       0       0       0       0       0       0       0
            *

4041        KK  RCPD34
4042        KM        Route flow from CP D34 to CP D42
4043        RS       3    FLOW      -1
4044        RC   0.050   0.045   0.050    4770  0.0051
4045        RX     280     290     410     420     440     450     530     540
4046        RY    1173    1172    1171    1168    1168    1171    1172    1173
            *
```

```
4047          KK     D42
4048          KM        Runoff from D42
4049          BA   0.208
4050          LG    0.35    0.35    4.00    0.47       0
4051          UI     149     417     192      37       0       0       0       0       0       0
4052          UI       0       0       0       0       0       0       0       0       0       0
              *

4053          KK   CPD42
4054          KM        Combine D34 with D42
4055          HC       2   1.410
              *

4056          KK  D42RIV
4057          KM        Combine G38RIV, G39 with D42
4058          HC       3 157.720
              *

4059          KK  RCPD42
4060          KM        Route flow from CP D42RIV to CP D41RIV (WATERMAN WASH)
4061          RS       1    FLOW      -1
4062          RC   0.050   0.035   0.050    3000  0.0047
4063          RX       0     900    1300    1350    1370    1420    1750    1770
4064          RY    1165    1160    1154    1150    1150    1154    1160    1165
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4065          KK     D41
4066          KM        Runoff from D41
4067          BA   0.295
4068          LG    0.35    0.35    4.40    0.38       0
4069          UI     125     385     412     159      42      15       0       0       0       0
4070          UI       0       0       0       0       0       0       0       0       0       0
              *

4071          KK  D41RIV
4072          KM        Combine D42RIV with D41
4073          HC       2 158.015
              *

4074          KK  RCPD41
4075          KM        Route flow from CP D41RIV to CP G40RIV (WATERMAN WASH)
4076          RS       1    FLOW      -1
4077          RC   0.050   0.035   0.050     220  0.0020
4078          RX     780     800    1400    1450    1475    1525    1880    1900
4079          RY    1160    1155    1153    1150    1150    1153    1155    1160
              *

4080          KK     G02
4081          KM        Runoff from G02
4082          BA   2.061
4083          LG    0.35    0.35    3.95    0.48      32
4084          UI     329    1059    1789    2230    1351     685     299     119      64       0
4085          UI       0       0       0       0       0       0       0       0       0       0
4086          UI       0       0       0       0       0       0       0       0       0       0
              *

4087          KK     G03
4088          KM        Runoff from G03
4089          BA   2.460
4090          LG    0.35    0.35    3.92    0.48      37
4091          UI     367    1193    1984    2667    1663     931     383     177      74      75
4092          UI       0       0       0       0       0       0       0       0       0       0
4093          UI       0       0       0       0       0       0       0       0       0       0
              *

4094          KK   CPG03
4095          KM        COMBINE G02 WITH G03
4096          HC       2   4.521
              *

4097          KK  RCPG03
4098          KM        Route flow from CP G03 to CP G09
4099          RS       4    FLOW      -1
4100          RC   0.050   0.045   0.050   10960  0.0094
4101          RX       0     110     220     235     265     280     380     480
4102          RY    1346  1343.5    1343    1340    1340    1343  1343.5    1346
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
4103          KK   DRG08
4104          KM        Return diverted flow from CP G08
4105          DR   DVG08
              *

4106          KK   RDG08
4107          KM        Route flow from CP G08 to CP G09
4108          RS       6    FLOW      -1
4109          RC   0.050   0.045   0.050   10230  0.0092
4110          RX       0     270     570     585     615     630     900    1200
4111          RY    1345    1344    1343    1340    1340    1343    1344    1345
              *

4112          KK     G09
4113          KM        Runoff from G09
4114          BA   0.702
4115          LG    0.35    0.35    3.95    0.48       0
4116          UI      92     308     485     750     502     316     132      75      23      20
4117          UI       0       0       0       0       0       0       0       0       0       0
4118          UI       0       0       0       0       0       0       0       0       0       0
              *

4119          KK   CPG09
4120          KM        Combine G03, DRG08 with G09
4121          HC       3   5.625
              *

4122          KK  RCPG09
4123          KM        Route flow from CP G09 to CP G11
4124          RS       3    FLOW      -1
4125          RC   0.050   0.045   0.050    6830  0.0083
4126          RX       0       8     210     270     290     300     530     538
4127          RY  1283.5    1282    1281    1280    1280    1281    1282  1283.5
              *

4128          KK     G48
4129          KM        Runoff from G48
4130          BA   1.909
4131          LG    0.35    0.35    3.95    0.48      58
4132          UI     584    2077    1992    1137     665     387     238     136      69      51
4133          UI      51       0       0       0       0       0       0       0       0       0
4134          UI       0       0       0       0       0       0       0       0       0       0
              *

4135          KK  RCPG48
4136          KM        Route flow from CP G48 to CP G01
4137          RS       3    FLOW      -1
4138          RC   0.050   0.045   0.050    7310  0.0078
4139          RX       0       8     240     250     270     280     400     408
4140          RY  1373.5    1372    1371    1368    1368    1371    1372  1373.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4141          KK     G01
4142          KM        Runoff from G01
4143          BA   1.584
4144          LG    0.35    0.35    3.95    0.50       0
4145          UI     138     528     800    1284    1304     892     592     261     162      74
4146          UI      38      39       0       0       0       0       0       0       0       0
4147          UI       0       0       0       0       0       0       0       0       0       0
              *

4148          KK   CPG01
4149          KM        Combine G48 with G01
4150          HC       2   3.493
              *

4151          KK     G10
4152          KM        Runoff from G10
4153          BA   0.439
4154          LG    0.35    0.35    3.95    0.48       0
4155          UI     109     326     585     394     180      70      18      17       0       0
4156          UI       0       0       0       0       0       0       0       0       0       0
              *

4157          KK   CPG10
4158          KM        Combine G01 with G10
4159          HC       2   3.932
              *
```

```
4160          KK  RCPG10
4161          KM        Route flow from CP G10 to CP G11
4162          RS       6    FLOW      -1
4163          RC   0.050   0.045   0.050    7310  0.0078
4164          RX       0     200     430     440     460     470     590     900
4165          RY    1273    1272    1271    1268    1268    1271    1272    1273
              *

4166          KK     G11
4167          KM        Runoff from G11
4168          BA   0.605
4169          LG    0.35    0.35    3.95    0.48       0
4170          UI     194     566     888     467     150      48      26       0       0       0
4171          UI       0       0       0       0       0       0       0       0       0       0
              *

4172          KK   CPG11
4173          KM        Combine G09, G10 with G11
4174          HC       3  10.161
              *

4175          KK    DG11
4176          KM            Divert flow into G42
4177          KM        Natural divergence of flow due to a braided channel network.
4178          DT   DVG11
4179          DI       0      46     162     355     635     712    1601    3684    6689   10322
4180          DQ       0      15      54     118     211     235     628    1563    3029    4544
              *
1                                          HEC-1 INPUT                                          PAGE111

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4181          KK  RCPG11
4182          KM        Route remainder flow from CP G11 to CP G40
4183          RS       4    FLOW      -1
4184          RC   0.050   0.045   0.050   11460  0.0069
4185          RX       0       9     110     170     220     280     370     379
4186          RY    1195 1193.25    1193    1190    1190    1193 1193.25    1195
              *

4187          KK     G40
4188          KM        Runoff from G40
4189          BA   1.521
4190          LG    0.35    0.35    4.00    0.47       0
4191          UI     174     605     932    1536    1139     756     373     189      88      41
4192          UI      42       0       0       0       0       0       0       0       0       0
4193          UI       0       0       0       0       0       0       0       0       0       0
              *

4194          KK   CPG40
4195          KM        Combine G11 with G40
4196          HC       2  11.682
              *

4197          KK  G40RIV
4198          KM        Combine D41RIV with G40
4199          HC       2 169.296
              *

4200          KK  RCPG40
4201          KM        Route flow from CP G40RIV to CP D40RIV (WATERMAN WASH)
4202          RS       1    FLOW      -1
4203          RC   0.050   0.035   0.050    1350  0.0017
4204          RX       0      10     750     770     820     870    1590    1600
4205          RY    1160    1158    1150    1146    1146    1150    1156    1158
              *

4206          KK     G41
4207          KM        Runoff from G41
4208          BA   0.423
4209          LG    0.35    0.35    4.00    0.47       0
4210          UI     136     395     621     327     104      34      18       0       0       0
4211          UI       0       0       0       0       0       0       0       0       0       0
              *

4212          KK     D40
4213          KM        Runoff from D40
4214          BA   0.232
4215          LG    0.35    0.35    4.50    0.36       0
4216          UI     134     405     271      69      14       0       0       0       0       0
4217          UI       0       0       0       0       0       0       0       0       0       0
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4218          KK  D40RIV
4219          KM        Combine G40RIV, G41 with D40
4220          HC       3 169.951
              *

4221          KK  RCPD40
4222          KM        Route flow from CP D40RIV to CP D39RIV (WATERMAN WASH)
4223          RS       1    FLOW      -1
4224          RC   0.050   0.035   0.050    2270  0.0032
4225          RX    1455    1480    2150    2200    2225    2275    2700    2725
4226          RY    1150    1147    1145    1142    1142    1145    1147    1150
              *

4227          KK     D36
4228          KM        Runoff from D36
4229          BA   0.248
4230          LG    0.35    0.35    4.65    0.32       0
4231          UI     115     365     327     114      27       0       0       0       0       0
4232          UI       0       0       0       0       0       0       0       0       0       0
              *

4233          KK     D35
4234          KM        Runoff from D35
4235          BA   1.178
4236          LG    0.35    0.35    3.92    0.46       0
4237          UI      95     376     570     883    1000     678     461     221     129      68
4238          UI      28      28       0       0       0       0       0       0       0       0
4239          UI       0       0       0       0       0       0       0       0       0       0
              *

4240          KK   CPD35
4241          KM        Combine D36 with D35
4242          HC       2   1.426
              *

4243          KK  RCPD35
4244          KM        Route flow from CP D35 to CP D37
4245          RS       5    FLOW      -1
4246          RC   0.050   0.045   0.050    6560  0.0056
4247          RX     180     200     400     410     420     430     500     800
4248          RY  1202.5    1201    1201    1200    1200    1201    1202    1203
              *

4249          KK     D37
4250          KM        Runoff from D37
4251          BA   0.279
4252          LG    0.35    0.35    4.45    0.37       0
4253          UI      70     206     372     251     114      45      11      10       0       0
4254          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4255          KK   CPD37
4256          KM        Combine D35 with D37
4257          HC       2   1.705
              *

4258          KK     D38
4259          KM        Runoff from D38
4260          BA   0.365
4261          LG    0.35    0.35    4.55    0.35       0
4262          UI      99     290     507     315     129      48      14       0       0       0
4263          UI       0       0       0       0       0       0       0       0       0       0
              *

4264          KK   CPD38
4265          KM        Combine D37 with D38
4266          HC       2   2.071
              *

4267          KK  RCPD38
4268          KM        Route flow from CP D38 to CP D39
4269          RS       3    FLOW      -1
4270          RC   0.050   0.045   0.050    5660  0.0040
4271          RX     230     250     280     290     310     320     350     370
4272          RY  1166.5    1165    1164    1163    1163    1164    1165  1166.5
```

```
                 *

4273             KK     D39
4274             KM        Runoff from D39
4275             BA   0.292
4276             LG    0.35    0.35    4.80    0.30       0
4277             UI      79     233     406     251     103      38      12       0       0       0
4278             UI       0       0       0       0       0       0       0       0       0       0
                 *

4279             KK   CPD39
4280             KM        Combine D38 with D39
4281             HC       2   2.363
                 *

4282             KK  D39RIV
4283             KM        Combine D40RIV with D39
4284             HC       2 172.314
                 *

4285             KK  RCPD39
4286             KM        Route flow from CP D39RIV to CP G42RIV (WATERMAN WASH)
4287             RS       1    FLOW      -1
4288             RC   0.050   0.035   0.050    1730  0.0027
4289             RX       0      10     740     750     800     810    1500    1510
4290             RY    1152    1150    1144    1140    1140    1144    1150    1152
                 *
1                                              HEC-1 INPUT                                                    PAGE114

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


4291             KK   DRG11
4292             KM        Return diverted flow from CP G11
4293             DR   DVG11
                 *

4294             KK   RDG11
4295             KM        Route flow from CP G11 to CP G42
4296             RS       7    FLOW      -1
4297             RC   0.050   0.045   0.050   13900  0.0069
4298             RX       0       8     200     210     230     240     400     408
4299             RY  1211.5    1210    1209    1206    1206    1209    1210  1211.5
                 *

4300             KK     G42
4301             KM        Runoff from G42
4302             BA   0.694
4303             LG    0.35    0.35    4.00    0.47       0
4304             UI     103     337     559     753     469     263     108      49      22      21
4305             UI       0       0       0       0       0       0       0       0       0       0
4306             UI       0       0       0       0       0       0       0       0       0       0
                 *

4307             KK   CPG42
4308             KM        Combine DRG11 with G42
4309             HC       2  10.854
                 *

4310             KK  G42RIV
4311             KM        Combine D39RIV with G42
4312             HC       2 173.007
                 *

4313             KK  RCPG42
4314             KM        Route flow from CP G42RIV to CP B08RIV (WATERMAN WASH)
4315             RS       1    FLOW      -1
4316             RC   0.050   0.035   0.050    2400  0.0050
4317             RX       0    1800    2200    2350    2430    2580    3400    5200
4318             RY    1155    1145    1135    1130    1130    1135    1145    1155
                 * ******************************************************************************
                 * COMPLETED WATERSHEDS D AND G
                 * BEGINNING OF WATERSHED B, C, AND H
                 * FLOW FROM WATERSHED C ROUTED THROUGH WATERSHED B
                 * ALL FLOW FROM C ROUTED THROUGH B07 OR B09
                 * ******************************************************************************

4319             KK     C50
4320             KM        Runoff from C50
4321             BA   0.316
4322             LG    0.45    0.11    4.70    0.41       0
4323             UI      22      55     124     171     184     164     143     109      71      55
4324             UI      34      25      19      13      10       3       3       3       3       2
4325             UI       3       3       3       0       0       0       0       0       0       0
```

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4326          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                          HEC-1 INPUT                                          PAGE115

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4327          KK  RCPC50
4328          KM        Route flow from CP C50 to CP C51
4329          RS       8    FLOW      -1
4330          RC   0.050   0.045   0.050    6120  0.0049
4331          RX       0     163     326     490     510     674     837    1000
4332          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

4333          KK     C51
4334          KM        Runoff from C51
4335          BA   0.334
4336          LG    0.50    0.00    4.70    0.47       0
4337          UI      18      29      72     105     137     150     148     126     116      97
4338          UI      67      53      42      30      22      17      15      10      10       5
4339          UI       2       2       2       2       3       2       2       2       3       2
4340          UI       0       0       0       0       0       0       0       0       0       0
4341          UI       0       0       0       0       0       0       0       0       0       0
              *

4342          KK   CPC51
4343          KM        Combine C50 with C51
4344          HC       2   0.650
              *

4345          KK  RCPC51
4346          KM        Route flow from CP C51 to CP B07
4347          RS       3    FLOW      -1
4348          RC   0.050   0.045   0.050    2630  0.0045
4349          RX       0     163     326     490     510     674     837    1000
4350          RY    1170    1169    1168    1167    1167    1168    1169    1170
              *

4351          KK     C52
4352          KM        Runoff from C52
4353          BA   0.293
4354          LG    0.50    0.00    4.80    0.45       0
4355          UI      16      24      61      90     117     129     130     108     105      86
4356          UI      61      46      39      27      20      16      14       9       9       6
4357          UI       2       1       2       2       2       2       2       2       2       1
4358          UI       2       0       0       0       0       0       0       0       0       0
4359          UI       0       0       0       0       0       0       0       0       0       0
              *

4360          KK  RCPC52
4361          KM        Route flow from CP C52 to CP B07
4362          RS       4    FLOW      -1
4363          RC   0.050   0.045   0.050    2590  0.0045
4364          RX       0     163     326     490     510     674     837    1000
4365          RY    1170    1169    1168    1167    1167    1168    1169    1170
              *
1                                          HEC-1 INPUT                                          PAGE116

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4366          KK     C53
4367          KM        Runoff from C53
4368          BA   0.290
4369          LG    0.50    0.00    4.80    0.45       0
4370          UI      15      26      66      94     122     133     128     113      96      83
4371          UI      57      46      34      24      20      14      11       9       9       2
4372          UI       2       2       2       2       2       2       2       2       2       2
4373          UI       0       0       0       0       0       0       0       0       0       0
4374          UI       0       0       0       0       0       0       0       0       0       0
              *

4375          KK  RCPC53
4376          KM        Route flow from CP C53 to CP B07
4377          RS       4    FLOW      -1
4378          RC   0.050   0.045   0.050    2920  0.0045
4379          RX       0     163     326     490     510     674     837    1000
4380          RY    1170    1169    1168    1167    1167    1168    1169    1170
              *

4381          KK     B07
4382          KM        Runoff from B07
4383          BA   0.340
```

```
4384          LG    0.50    0.00    4.70    0.47       0
4385          UI      19      35      94     122     157     166     147     142     108      82
4386          UI      58      49      32      24      19      15      11      10       3       2
4387          UI       2       3       2       3       2       3       2       2       0       0
4388          UI       0       0       0       0       0       0       0       0       0       0
              *

4389          KK   CPB07
4390          KM        Combine C51, C52, C53 with B07
4391          HC       4   1.574
              *

4392          KK  RCPB07
4393          KM        Route flow from CP B07 to CP B08
4394          RS       4    FLOW      -1
4395          RC   0.050   0.045   0.050    5940  0.0036
4396          RX       0     163     326     490     510     674     837    1000
4397          RY    1050    1049    1048    1047    1047    1048    1049    1050
              *

4398          KK     B08
4399          KM        Runoff from B08
4400          BA   0.430
4401          LG    0.49    0.03    4.45    0.54       0
4402          UI      22      35      86     127     169     187     188     159     157     124
4403          UI      92      71      60      40      31      25      20      15      13      11
4404          UI       3       3       3       2       3       3       3       2       3       3
4405          UI       3       0       0       0       0       0       0       0       0       0
4406          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4407          KK   CPB08
4408          KM        Combine B07 with B08
4409          HC       2   2.004
              *

4410          KK  B08RIV
4411          KM        Combine G42RIV with B08
4412          HC       2 175.011
              *

4413          KK  RCPB08
4414          KM        Route flow from CP B08RIV to CP B12RIV (WATERMAN WASH)
4415          RS       1    FLOW      -1
4416          RC   0.050   0.035   0.050     230  0.0050
4417          RX       0    1800    2200    2350    2430    2580    3400    5200
4418          RY    1150    1140    1130    1125    1125    1130    1140    1150
              * ******************************************************************************
              * RETURNING FLOWS FROM DIVERTS IN C TO C33
              * ROUTES AND DIVERTS DIFFER FROM INDIVIDUAL MODEL
              * ******************************************************************************

4419          KK   DRC13
4420          KM        Return diverted flow from CP C13
4421          DR   DVC13
              *

4422          KK   RDC13
4423          KM        Route flow from CP C13 to CP C33A
4424          KM        Crossing at SR-238
4425          RS       4    FLOW      -1
4426          RC   0.050   0.045   0.050    9170  0.0054
4427          RX       0     230     360     370     405     415     525     780
4428          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *

4429          KK   DRC31
4430          KM        Return diverted flow from CP C31
4431          DR   DVC31
              *

4432          KK   RDC31
4433          KM        Route flow from CP C31 to CP C33A
4434          KM        Crossing at SR-238
4435          RS       7    FLOW      -1
4436          RC   0.050   0.045   0.050    8840  0.0055
4437          RX       0     230     360     370     405     415     525     780
4438          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4439          KK   DRC14
4440          KM        Return diverted flow from CP C14
4441          DR   DVC14
              *

4442          KK   RDC14
4443          KM        Route flow from CP C14 to CP C33A
4444          KM        Crossing at SR-238
4445          RS       4    FLOW      -1
4446          RC   0.050   0.045   0.050    8160  0.0056
4447          RX       0     230     360     370     405     415     525     780
4448          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *

4449          KK   DRC10
4450          KM        Return diverted flow from CP C10
4451          DR   DVC10
              *

4452          KK   RDC10
4453          KM        Route flow from CP C10 to CP C33A
4454          KM        Crossing at SR-238
4455          RS       5    FLOW      -1
4456          RC   0.050   0.045   0.050    6920  0.0055
4457          RX       0     230     360     370     405     415     525     780
4458          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *

4459          KK   DRC30
4460          KM        Return diverted flow from CP C30
4461          DR   DVC30
              *

4462          KK   RDC30
4463          KM        Route flow from CP C30 to CP C33A
4464          KM        Crossing at SR-238
4465          RS       3    FLOW      -1
4466          RC   0.050   0.045   0.050    5210  0.0055
4467          RX       0     230     360     370     405     415     525     780
4468          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *

4469          KK  CPC33A
4470          KM        Temporary combine to reduce hydrographs
4471          KM        Combine DRC13, DRC31, DRC14, DRC10 with DRC30
4472          HC       5   3.784
              *

4473          KK  RC33A
4474          KM        Route flow from CP C33A to CP C33E
4475          RS       7    FLOW      -1
4476          RC   0.050   0.045   0.050   18680  0.0059
4477          RX       0       8      50      75     110     135     180     188
4478          RY    1378  1376.5    1376    1372    1372    1376  1376.5    1378
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4479          KK   DRC29
4480          KM        Return diverted flow from CP C29
4481          DR   DVC29
              *

4482          KK   RDC29
4483          KM        Route flow from CP C29 to CP C33B
4484          KM        Crossing at SR-238
4485          RS      11    FLOW      -1
4486          RC   0.050   0.045   0.050   11170  0.0057
4487          RX       0       9      35      55      65      85     110     119
4488          RY    1446 1444.25    1444    1443    1443    1444 1444.25    1446
              *

4489          KK   DRC28
4490          KM        Return diverted flow from CP C28
4491          DR   DVC28
              *

4492          KK   RDC28
```

```
4493          KM        Route flow from CP C28 to CP C33B
4494          KM        Crossing at SR-238
4495          RS      10     FLOW      -1
4496          RC   0.050    0.045    0.050    10700  0.0059
4497          RX       0      240      420      440      450      470      600      750
4498          RY    1446     1445     1444     1443     1443     1444     1445     1446
              *

4499          KK   DRC27
4500          KM        Return diverted flow from CP C27
4501          DR   DVC27
              *

4502          KK   RDC27
4503          KM        Route flow from CP C27 to CP C33B
4504          KM        Crossing at SR-238
4505          RS       4     FLOW      -1
4506          RC   0.050    0.045    0.050     8740  0.0059
4507          RX       0      215      465      470      485      490      700      965
4508          RY    1420     1419     1418     1415     1415     1418     1419     1420
              *

4509          KK   DRC20
4510          KM        Return diverted flow from CP C20
4511          DR   DVC20
              *

4512          KK   RDC20
4513          KM        Route flow from CP C20 to CP C33B
4514          KM        Crossing at SR-238
4515          RS       3     FLOW      -1
4516          RC   0.050    0.045    0.050     7860  0.0056
4517          RX       0        9       35       40       55       60       85       94
4518          RY    1420 1418.25     1418     1415     1415     1418 1418.25     1420
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4519          KK  CPC33B
4520          KM        Combine DRC29, DRC28, DRC27, with DRC20
4521          HC       4   8.083
              *

4522          KK  RC33B
4523          KM        Route flow from CP C33B to CP C33D
4524          RS       3     FLOW      -1
4525          RC   0.050    0.045    0.050     5650  0.0058
4526          RX       0       10       50       75      110      135      180      188
4527          RY    1378   1376.5     1376     1372     1372     1376  1376.5     1378
              *

4528          KK   DRC24
4529          KM        Return diverted flow from CP C24
4530          DR   DVC24
              *

4531          KK   RDC24
4532          KM        Route flow from CP C22 and C24 to CP C33C
4533          KM        Crossing at SR-238
4534          RS       5     FLOW      -1
4535          RC   0.050    0.045    0.050     5920  0.0048
4536          RX       0      275      490      550      575      620      810     1110
4537          RY    1405     1404     1403     1400     1400     1403     1404     1405
              *

4538          KK   DRC25
4539          KM        Return diverted flow from CP C25
4540          DR   DVC25
              *

4541          KK   RDC25
4542          KM        Route flow from CP C25 to CP C33C
4543          KM        Crossing at SR-238
4544          RS       5     FLOW      -1
4545          RC   0.050    0.045    0.050     4950  0.0048
4546          RX       0      275      490      550      575      620      810     1110
4547          RY    1405     1404     1403     1400     1400     1403     1404     1405
              *

4548          KK   DRC26
4549          KM        Return diverted flow from CP C26
4550          DR   DVC26
```

```
                *
4551            KK   RDC26
4552            KM        Route flow from CP C26 to CP C33C
4553            KM        Crossing at SR-238
4554            RS       8    FLOW      -1
4555            RC   0.050   0.045   0.050    8370  0.0056
4556            RX       0     230     420     430     440     450     610     880
4557            RY    1414    1413    1412    1410    1410    1412    1413    1414
                *
1                                        HEC-1 INPUT                                                    PAGE121

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


4558            KK   DRD09
4559            KM        Return diverted flow from CP D09
4560            DR   DVD09
                *

4561            KK   RDD09
4562            KM        Route flow from CP D09 to CP C33C
4563            KM        Crossing at SR-238
4564            RS       3    FLOW      -1
4565            RC   0.050   0.045   0.050    4890  0.0048
4566            RX       0     275     490     550     575     620     810    1110
4567            RY    1405    1404    1403    1400    1400    1403    1404    1405
                *

4568            KK  CPC33C
4569            KM        Temporary combine to reduce hydrographs
4570            KM        Combine DRC24, DRC25, DRC26 with DRD09
4571            HC       4  13.951
                *

4572            KK  RC33C
4573            KM        Route flow from CP C33C to CP C33D
4574            RS       2    FLOW      -1
4575            RC   0.050   0.045   0.050    3420  0.0050
4576            RX       0     100     300     330     370     400     550     650
4577            RY    1380    1378    1375    1372    1372    1375    1378    1380
                *

4578            KK  CPC33D
4579            KM        Temporary combine to reduce hydrographs
4580            KM        Combine CPC33B WITH CPC33C
4581            HC       2  13.951
                *

4582            KK  RC33D
4583            KM        Route flow from CP C33D to CP C33E
4584            RS       2    FLOW      -1
4585            RC   0.050   0.045   0.050    4530  0.0050
4586            RX       0      20     180     230     290     340     430     450
4587            RY    1350    1348    1345    1340    1340    1345    1348    1350
                *

4588            KK  CPC33E
4589            KM        Temporary combine to reduce hydrographs
4590            KM        Combine CPC33A WITH CPC33D
4591            HC       2  13.951
                *

4592            KK  RC33E
4593            KM        Route flow from CP C33E to CP C33F
4594            RS       2    FLOW      -1
4595            RC   0.050   0.045   0.050    6050  0.0045
4596            RX       0    1400    2000    2045    2125    2170    2770    4170
4597            RY    1340    1328    1325    1320    1320    1325    1328    1340
                *
1                                        HEC-1 INPUT                                                    PAGE122

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


4598            KK   DRD12
4599            KM        Return diverted flow from CP D12
4600            DR   DVD12
                *

4601            KK   RDD12
4602            KM        Route flow from CP D12 to CP C33F
4603            KM        Crossing at SR-238
4604            RS      15    FLOW      -1
```

```
4605          RC   0.050   0.045   0.050   16830  0.0048
4606          RX       0     275     490     550     575     620     810    1110
4607          RY    1405    1404    1403    1400    1400    1403    1404    1405
              *

4608          KK  CPC33F
4609          KM        Temporary combine to reduce hydrographs
4610          KM        Combine CPC33E WITH DRD12
4611          HC       2  14.079
              *

4612          KK  RC33F
4613          KM        Route flow from CP C33F to CP CP C33
4614          RS       1    FLOW      -1
4615          RC   0.050   0.045   0.050    2940  0.0045
4616          RX       0    1400    2000    2045    2125    2170    2770    4170
4617          RY    1320    1308    1305    1300    1300    1305    1308    1320
              *

4618          KK     C33
4619          KM        Runoff from C33
4620          BA  32.501
4621          LG    0.35    0.35    3.48    0.63       0
4622          UI    1444    2261    5603    7439    8842   10980   15191   17500   13427   11081
4623          UI    8930    7179    5102    2841    2406    1673    1430     442     443     439
4624          UI     443     442       0       0       0       0       0       0       0       0
4625          UI       0       0       0       0       0       0       0       0       0       0
              *

4626          KK   CPC33
4627          KM        Combine sum of all routed flows C33F with C33
4628          HC       2  46.580
              *

4629          KK  RCPC33
4630          KM        Route flow from CP C33 to CP C34
4631          RS       6    FLOW      -1
4632          RC   0.050   0.045   0.050   15840  0.0057
4633          RX       0      10     430     500     560     630    1060    1070
4634          RY    1262  1259.5    1258    1255    1255    1258  1259.5    1262
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4635          KK     C34
4636          KM        Runoff from C34
4637          BA   0.834
4638          LG    0.35    0.35    3.45    0.62       0
4639          UI      73     278     421     676     686     470     311     138      86      38
4640          UI      21      20       0       0       0       0       0       0       0       0
4641          UI       0       0       0       0       0       0       0       0       0       0
              *

4642          KK  CPC34A
4643          KM        Combine C33 with C34
4644          HC       2  47.414
              *

4645          KK     C35
4646          KM        Runoff from C35
4647          BA   5.831
4648          LG    0.35    0.35    3.38    0.65       0
4649          UI     714    2430    3780    6074    4284    2781    1244     673     264     164
4650          UI     162       0       0       0       0       0       0       0       0       0
4651          UI       0       0       0       0       0       0       0       0       0       0
              *

4652          KK  RCPC35
4653          KM        Route flow from CP C35 to CP C34
4654          RS       1    FLOW      -1
4655          RC   0.050   0.045   0.050    1280  0.0049
4656          RX       0       8      50     220     280     450     495     503
4657          RY  1219.5 1218.25    1218    1214    1214    1218 1218.25  1219.5
              *

4658          KK   CPC34
4659          KM        Combine C35 with C34
4660          HC       2  53.245
              *

4661          KK  RCPC34
4662          KM        Route flow from CP C34 to CP C36
```

```
4663          RS       2    FLOW      -1
4664          RC   0.050   0.045   0.050    4070  0.0049
4665          RX       0      10     410     580     640     810    1210    1220
4666          RY    1221    1219    1218    1214    1214    1218    1219    1221
              *

4667          KK     C36
4668          KM         Runoff from C36
4669          BA   3.059
4670          LG    0.35    0.35    3.71    0.52       0
4671          UI     308    1113    1694    2807    2405    1629     968     437     250      79
4672          UI      79       0       0       0       0       0       0       0       0       0
4673          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4674          KK   CPC36
4675          KM         Combine C34 with C36
4676          HC       2  56.304
              *

4677          KK  RCPC36
4678          KM         Route flow from CP C36 to CP C49
4679          RS       1    FLOW      -1
4680          RC   0.050   0.045   0.050    2380  0.0043
4681          RX       0      10     440     510     570     640    1080    1090
4682          RY    1198    1196    1195    1190    1190    1195    1196    1198
              *

4683          KK     C49
4684          KM         Runoff from C49
4685          BA   0.186
4686          LG    0.35    0.35    4.45    0.34       0
4687          UI     133     373     172      33       0       0       0       0       0       0
4688          UI       0       0       0       0       0       0       0       0       0       0
              *

4689          KK   CPC49
4690          KM         Combine C36 with C49
4691          HC       2  56.490
              *

4692          KK  RCPC49
4693          KM         Route flow from CP C49 to CP C48
4694          RS       1    FLOW      -1
4695          RC   0.050   0.045   0.050    2300  0.0045
4696          RX       0      10     430     500     560     630    1060    1070
4697          RY  1188.5  1186.5    1185    1180    1180    1185  1186.5  1188.5
              *

4698          KK     C40
4699          KM         Runoff from C40
4700          BA   0.170
4701          LG    0.35    0.35    3.07    0.81       0
4702          UI      97     298     199      50      10       0       0       0       0       0
4703          UI       0       0       0       0       0       0       0       0       0       0
              *

4704          KK    DC40
4705          KM            Divert flow into C43
4706          KM         Natural divergence of flow due to a braided channel network.
4707          DT   DVC40
4708          DI       0      51     126     264     376    1016    2615    4789    7190
4709          DQ       0       0      11      51     127     396    1097    1920    2926
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4710          KK  RCPC40
4711          KM         Route remainder flow from CP C40 to CP C42
4712          RS       2    FLOW      -1
4713          RC   0.050   0.045   0.050    3270  0.0125
4714          RX       0      95     190     220     230     260     330     400
4715          RY    1310    1309    1308    1305    1305    1308    1309    1310
              *

4716          KK     C41
4717          KM         Runoff from C41
4718          BA   0.078
```

```
4719          LG    0.35    0.35    2.97    0.87       0
4720          UI     121     161      18       0       0       0       0       0       0       0
4721          UI       0       0       0       0       0       0       0       0       0       0
              *

4722          KK    DC41
4723          KM            Divert flow into C46
4724          KM        Natural divergence of flow due to a braided channel network.
4725          DT   DVC41
4726          DI       0      25     111     291     888    2325    4280    6549    9192
4727          DQ       0       8      37     106     385    1111    2018    3136    4444
              *

4728          KK  RCPC41
4729          KM        Route remainder flow from CP C41 to CP C42
4730          RS       3    FLOW      -1
4731          RC   0.050   0.045   0.050    3750  0.0111
4732          RX       0     100     200     225     235     260     315     370
4733          RY    1320    1319    1318    1316    1316    1318    1319    1320
              *

4734          KK     C42
4735          KM        Runoff from C42
4736          BA   0.109
4737          LG    0.35    0.35    3.35    0.66       0
4738          UI     117     244      54       0       0       0       0       0       0       0
4739          UI       0       0       0       0       0       0       0       0       0       0
              *

4740          KK   CPC42
4741          KM        Combine C40, C41 with C42
4742          HC       3   0.357
              *

4743          KK   DC42A
4744          KM            Divert flow from C42 into C45
4745          KM        Natural divergence of flow due to a braided channel network.
4746          DT  DVC42A
4747          DI       0      38     139     312     569     662    1453    3247    5517    8688
4748          DQ       0      14      53     125     235     289     597    1335    2232    3504
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4749          KK   DC42B
4750          KM            Divert flow from C42 into C47
4751          KM        Natural divergence of flow due to a braided channel network.
4752          DT  DVC42B
4753          DI       0      24      86     187     334     372     856    1912    3285    7066
4754          DQ       0      12      43      94     167     187     423     934    1615    3461
              *

4755          KK  RCPC42
4756          KM        Route remainder flow from CP C42 to CP C46
4757          RS       4    FLOW      -1
4758          RC   0.050   0.045   0.050    6390  0.0087
4759          RX       0     100     175     195     205     225     300     400
4760          RY    1285    1284    1282    1280    1280    1282    1284    1285
              *

4761          KK   DRC41
4762          KM        Return diverted flow from CP C41
4763          DR   DVC41
              *

4764          KK   RDC41
4765          KM        Route flow from CP C41 to CP C46
4766          RS      10    FLOW      -1
4767          RC   0.050   0.045   0.050    9810  0.0097
4768          RX       0     100     200     230     240     250     350     450
4769          RY    1295    1294    1292    1290    1290    1292    1294    1295
              *

4770          KK     C46
4771          KM        Runoff from C46
4772          BA   0.245
4773          LG    0.35    0.35    4.10    0.42       0
4774          UI      30     102     159     255     180     117      53      28      11       7
4775          UI       7       0       0       0       0       0       0       0       0       0
4776          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
4777          KK   CPC46
4778          KM        Combine C42, DRC41 with C46
4779          HC       3   0.602
              *

4780          KK    DC46
4781          KM           Divert flow into C47
4782          KM        Natural divergence of flow due to a braided channel network.
4783          DT   DVC46
4784          DI       0      42     104     211     297     862    2275    4234    8970
4785          DQ       0       0       7      33      89     328     956    1732    3807
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4786          KK  RCPC46
4787          KM        Route remainder flow from CP C46 to CP C37
4788          RS       3    FLOW      -1
4789          RC   0.050   0.045   0.050    5190  0.0070
4790          RX       0     100     165     195     205     235     300     400
4791          RY    1230  1229.5    1229    1227    1227    1229  1229.5    1230
              *

4792          KK     C37
4793          KM        Runoff from C37
4794          BA   1.795
4795          LG    0.35    0.35    3.67    0.53       0
4796          UI     121     405     662     891    1396    1172     859     618     338     204
4797          UI     123      52      38      37       0       0       0       0       0       0
4798          UI       0       0       0       0       0       0       0       0       0       0
              *

4799          KK   CPC37
4800          KM        Combine C46 with C37
4801          HC       2   2.398
              *

4802          KK  RCPC37
4803          KM        Route flow from CP C37 to CP C48
4804          RS       2    FLOW      -1
4805          RC   0.050   0.045   0.050    3410  0.0061
4806          RX       0       8     100     125     135     160     285     293
4807          RY    1191  1189.5    1189    1187    1187    1189  1189.5    1191
              *

4808          KK     C48
4809          KM        Runoff from C48
4810          BA   0.255
4811          LG    0.35    0.35    4.40    0.35       0
4812          UI     118     376     335     118      28       0       0       0       0       0
4813          UI       0       0       0       0       0       0       0       0       0       0
              *

4814          KK  CPC48A
4815          KM        Combine C37 with C48
4816          HC       2   2.652
              *

4817          KK   CPC48
4818          KM        Combine C49 with C48
4819          HC       2  59.142
              *

4820          KK  RCPC48
4821          KM        Route flow from CP C48 to CP C47
4822          RS       1    FLOW      -1
4823          RC   0.050   0.045   0.050    1420  0.0072
4824          RX       0       8     250     320     380     450     700     708
4825          RY    1178  1176.5    1175    1170    1170    1175  1176.5    1178
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4826          KK     C39
4827          KM        Runoff from C39
4828          BA   0.129
4829          LG    0.35    0.35    2.85    0.96       0
4830          UI      92     259     120      22       0       0       0       0       0       0
4831          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
4832          KK    DC39
4833          KM            Divert flow into C38
4834          KM        Natural divergence of flow due to a braided channel network.
4835          DT   DVC39
4836          DI       0      39     162     364    1092    3015    5246    7971   11144
4837          DQ       0      16      67     153     471    1308    2286    3482    4874
              *

4838          KK  RCPC39
4839          KM        Route remainder flow from CP C39 to CP C43
4840          RS       4    FLOW      -1
4841          RC   0.050   0.045   0.050    5730  0.0124
4842          RX       0      50      95     120     130     155     225     300
4843          RY    1356    1355    1354    1353    1353    1354    1355    1356
              *

4844          KK   DRC40
4845          KM        Return diverted flow from CP C40
4846          DR   DVC40
              *

4847          KK   RDC40
4848          KM        Route flow from CP C40 to CP C43
4849          RS       2    FLOW      -1
4850          RC   0.050   0.045   0.050    2750  0.0111
4851          RX       0     100     175     195     205     225     300     400
4852          RY    1328    1327    1326    1324    1324    1326    1326    1327
              *

4853          KK     C43
4854          KM        Runoff from C43
4855          BA   0.209
4856          LG    0.35    0.35    2.97    0.87       0
4857          UI     150     418     194      37       0       0       0       0       0       0
4858          UI       0       0       0       0       0       0       0       0       0       0
              *

4859          KK   CPC43
4860          KM        Combine C39, DRC40 with C43
4861          HC       3   0.508
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4862          KK    DC43
4863          KM            Divert flow into C38
4864          KM        Natural divergence of flow due to a braided channel network.
4865          DT   DVC43
4866          DI       0      21      83     197     626     961    1739    3835    6345    9647
4867          DQ       0       7      30      73     236     364     727    1693    2894    4640
              *

4868          KK  RCPC43
4869          KM        Route remainder flow from CP C43 to CP C44
4870          RS       3    FLOW      -1
4871          RC   0.050   0.045   0.050    5090  0.0100
4872          RX       0     100     155     190     210     245     300     400
4873          RY    1268    1267    1266    1264    1264    1266    1267    1268
              *

4874          KK  DRC42A
4875          KM        Return diverted flow from CP C42
4876          DR  DVC42A
              *

4877          KK  RDC42A
4878          KM        Route flow from CP C42 to CP C45
4879          RS       2    FLOW      -1
4880          RC   0.050   0.045   0.050    3540  0.0087
4881          RX       0     100     200     230     245     275     350     450
4882          RY    1275    1274    1273    1270    1270    1273    1274    1275
              *

4883          KK     C45
4884          KM        Runoff from C45
4885          BA   0.125
4886          LG    0.35    0.35    4.35    0.36       0
4887          UI     102     264      98      16       0       0       0       0       0       0
4888          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
4889          KK   CPC45
4890          KM        Combine DRC42A with C45
4891          HC       2   0.482
              *

4892          KK    DC45
4893          KM           Divert flow into C47
4894          KM        Natural divergence of flow due to a braided channel network.
4895          DT   DVC45
4896          DI       0      23      89     207     386     979    2098    3473    5427    7320
4897          DQ       0      12      47     110     208     548    1140    1879    2926    3943
              *
```



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1                                   HEC-1 INPUT

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4898          KK  RCPC45
4899          KM        Route remainder flow from CP C45 to CP C44
4900          RS       1    FLOW      -1
4901          RC   0.050   0.045   0.050    1060  0.0097
4902          RX       0      80     160     170     180     190     270     350
4903          RY    1253    1252    1251    1250    1250    1251    1252    1253
              *

4904          KK     C44
4905          KM        Runoff from C44
4906          BA   0.170
4907          LG    0.35    0.35    4.90    0.26       0
4908          UI     109     319     181      38      10       0       0       0       0       0
4909          UI       0       0       0       0       0       0       0       0       0       0
              *

4910          KK   CPC44
4911          KM        Combine C43, C45 with C44
4912          HC       3   0.990
              *

4913          KK  RCPC44
4914          KM        Route flow from CP C44 to CP C47
4915          RS       6    FLOW      -1
4916          RC   0.050   0.045   0.050   11370  0.0070
4917          RX       0      75     150     180     190     220     295     370
4918          RY    1220  1219.5    1219    1216    1216    1219  1219.5    1220
              *

4919          KK   DRC39
4920          KM        Return diverted flow from CP C39
4921          DR   DVC39
              *

4922          KK   RDC39
4923          KM        Route flow from CP C39 to CP C38
4924          RS       8    FLOW      -1
4925          RC   0.050   0.045   0.050    9860  0.0107
4926          RX       0      50     105     125     135     155     210     260
4927          RY    1350    1349    1348    1346    1346    1348    1349    1350
              *

4928          KK   DRC43
4929          KM        Return diverted flow from CP C43
4930          DR   DVC43
              *

4931          KK   RDC43
4932          KM        Route flow from CP C43 to CP C38
4933          RS       3    FLOW      -1
4934          RC   0.050   0.045   0.050    3900  0.0092
4935          RX       0     100     190     230     240     280     330     380
4936          RY    1280    1279    1278    1276    1276    1278    1279    1280
              *
```



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1                                   HEC-1 INPUT

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4937          KK     C38
4938          KM        Runoff from C38
4939          BA   0.687
4940          LG    0.35    0.35    3.38    0.65       0
4941          UI      90     301     475     734     491     310     129      74      22      19
4942          UI       0       0       0       0       0       0       0       0       0       0
4943          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
4944          KK   CPC38
4945          KM        Combine DRC39, DRC43 with C38
4946          HC       3   1.194
              *

4947          KK  RCPC38
4948          KM        Route flow from CP C38 to CP C47
4949          RS       9    FLOW      -1
4950          RC   0.050   0.045   0.050   12750  0.0074
4951          RX       0      75     150     180     190     220     295     370
4952          RY    1220  1219.5    1219    1216    1216    1219  1219.5    1220
              *

4953          KK  DRC42B
4954          KM        Return diverted flow from CP C42
4955          DR  DVC42B
              *

4956          KK  RDC42B
4957          KM        Route flow from CP C42 to CP C47
4958          RS      14    FLOW      -1
4959          RC   0.050   0.045   0.050   15450  0.0078
4960          RX       0      50     125     170     180     225     300     350
4961          RY    1205  1204.5    1204    1201    1201    1204  1204.5    1205
              *

4962          KK   DRC45
4963          KM        Return diverted flow from CP C45
4964          DR   DVC45
              *

4965          KK   RDC45
4966          KM        Route flow from CP C45 to CP C47
4967          RS       7    FLOW      -1
4968          RC   0.050   0.045   0.050    9610  0.0073
4969          RX       0      50     125     170     180     225     300     350
4970          RY    1205  1204.5    1204    1201    1201    1204  1204.5    1205
              *

4971          KK   DRC46
4972          KM        Return diverted flow from CP C46
4973          DR   DVC46
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4974          KK   RDC46
4975          KM        Route flow from CP C46 to CP C47
4976          RS      10    FLOW      -1
4977          RC   0.050   0.045   0.050    9620  0.0067
4978          RX       0      50     125     170     180     225     300     350
4979          RY    1205  1204.5    1204    1201    1201    1204  1204.5    1205
              *

4980          KK     C47
4981          KM        Runoff from C47
4982          BA   1.000
4983          LG    0.35    0.35    4.60    0.31       0
4984          UI     122     417     649    1041     735     477     213     116      45      28
4985          UI      28       0       0       0       0       0       0       0       0       0
4986          UI       0       0       0       0       0       0       0       0       0       0
              *

4987          KK  CPC47A
4988          KM        Combine C44, C38, DRC42B, DRC45, DRC46 with C47
4989          HC       6   2.922
              *

4990          KK   CPC47
4991          KM        Combine C48 with C47
4992          HC       2  61.462
              *

4993          KK  RCPC47
4994          KM        Route flow from CP C47 to CP B09
4995          RS       5    FLOW      -1
4996          RC   0.050   0.045   0.050    7940  0.0038
4997          RX       0    1100    2250    2410    2525    2600    4300    5300
4998          RY    1160    1155    1150    1147    1147    1150    1155    1160
              * ******************************************************************************
              * WATERSHED C COMPLETED
```

```
                 * BEGIN WATERSHED B
                 * ***************************************************************************

4999             KK     B09
5000             KM        Runoff from B09
5001             BA   0.263
5002             LG    0.38     0.29     3.71     0.58        0
5003             UI      39      128      212      285      178       99       42       18        8        8
5004             UI       0        0        0        0        0        0        0        0        0        0
5005             UI       0        0        0        0        0        0        0        0        0        0
                 *

5006             KK   CPB09
5007             KM        Combine C47 with B09
5008             HC       2  61.725
                 *
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LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5009             KK  RCPB09
5010             KM        Route flow from CP B09 to CP B12
5011             RS       1    FLOW      -1
5012             RC   0.050    0.045    0.050     1070   0.0111
5013             RX       0     1100     2250     2410     2525     2600     4300     5300
5014             RY    1150     1145     1140     1137     1137     1140     1145     1150
                 *

5015             KK     B01
5016             KM        Runoff from B01
5017             BA   5.157
5018             LG    0.35     0.35     2.86     1.00        0
5019             UI     448     1722     2603     4179     4248     2903     1925      852      527      239
5020             UI     126      127        0        0        0        0        0        0        0        0
5021             UI       0        0        0        0        0        0        0        0        0        0
                 *

5022             KK  RCPB01
5023             KM        Route flow from CP B01 to CP B03
5024             RS      14    FLOW      -1
5025             RC   0.050    0.045    0.050    23370   0.0091
5026             RX    2490     2500     2750     2900     3100     3250     3500     3510
5027             RY    1400     1399     1398     1397     1397     1398     1399     1400
                 *

5028             KK     B02
5029             KM        Runoff from B02
5030             BA   3.584
5031             LG    0.35     0.35     3.27     0.72        0
5032             UI     383     1364     2080     3468     2750     1844     1006      481      251       94
5033             UI      95        0        0        0        0        0        0        0        0        0
5034             UI       0        0        0        0        0        0        0        0        0        0
                 *

5035             KK  RCPB02
5036             KM        Route flow from CP B02 to CP B03
5037             RS       2    FLOW      -1
5038             RC   0.050    0.045    0.050     4490   0.0063
5039             RX       0      250      500      775      825     1100     1350     1600
5040             RY    1280     1279     1278     1275     1275     1278     1279     1280
                 *

5041             KK     B03
5042             KM        Runoff from B03
5043             BA  13.216
5044             LG    0.35     0.35     3.19     0.79        0
5045             UI     706     1633     3233     4164     5287     7891     7828     5910     4627     3578
5046             UI    2296     1234      996      703      261      217      215      218        0        0
5047             UI       0        0        0        0        0        0        0        0        0        0
                 *
1                                          HEC-1 INPUT                                                    PAGE134

LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5048             KK   CPB03
5049             KM        Combine B01, B02 with B03
5050             HC       3  21.957
                 *

5051             KK   DB03A
5052             KM           Divert flow from CP B03 into basin B16
5053             KM        Natural divergence of flow due to a braided channel network.
```

```
5054          DT  DVB03A
5055          DI       0      31     102     245     482     830    1308    1934    3488    5241
5056          DQ       0       0      18      65     142     253     404     596     926    1845
              *

5057          KK   DB03B
5058          KM           Divert flow from CP B03 into basin B18
5059          KM        Natural divergence of flow due to a braided channel network.
5060          DT  DVB03B
5061          DI       0     577     904    1337    1886    2562    3396    6655   10813   15784
5062          DQ       0       0      10      36      82     151     367     815    1356    2128
              *

5063          KK  RCPB03
5064          KM        Route remainder flow from CP B03 to CP B13
5065          RS       1    FLOW      -1
5066          RC   0.050   0.045   0.050    3000  0.0079
5067          RX     590     600     830     880     920     970    1210    1220
5068          RY    1240  1238.5    1237    1234    1234    1237  1238.5    1240
              *

5069          KK     B13
5070          KM        Runoff from B13
5071          BA   0.155
5072          LG    0.35    0.35    4.25    0.39       0
5073          UI     197     345      50       0       0       0       0       0       0       0
5074          UI       0       0       0       0       0       0       0       0       0       0
              *

5075          KK   CPB13
5076          KM        Combine B03 with B13
5077          HC       2  22.112
              *

5078          KK    DB13
5079          KM           Divert flow from CP B13 into basin B14
5080          KM        Natural divergence of flow due to a braided channel network.
5081          DT   DVB13
5082          DI       0      57     206     463     847    1376    2068    3470    7043   11410
5083          DQ       0      47     167     375     687    1117    1680    2797    5778    9405
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5084          KK  RCPB13
5085          KM        Route remainder flow from CP B13 to CP B05
5086          RS       2    FLOW      -1
5087          RC   0.050   0.045   0.050    4040  0.0054
5088          RX       0     200     400     530     570     700     950    1200
5089          RY    1220    1219    1218    1215    1215    1218    1219    1220
              *

5090          KK     B04
5091          KM        Runoff from B04
5092          BA   0.845
5093          LG    0.35    0.35    4.20    0.40       0
5094          UI     126     410     681     916     572     319     132      60      26      26
5095          UI       0       0       0       0       0       0       0       0       0       0
5096          UI       0       0       0       0       0       0       0       0       0       0
              *

5097          KK  RCPB04
5098          KM        Route flow from CP B04 to CP B05
5099          RS       2    FLOW      -1
5100          RC   0.050   0.045   0.050    3540  0.0054
5101          RX       0     200     400     530     570     700     950    1200
5102          RY    1220    1219    1218    1215    1215    1218    1219    1220
              *

5103          KK     B05
5104          KM        Runoff from B05
5105          BA   0.532
5106          LG    0.35    0.35    4.50    0.33       0
5107          UI     106     323     601     526     303     116      49      19       0       0
5108          UI       0       0       0       0       0       0       0       0       0       0
              *

5109          KK   CPB05
5110          KM        Combine B13, B04 with B05
5111          HC       3  23.489
              *
```

```
5112          KK  RCPB05
5113          KM        Route flow from CP B05 to CP B10
5114          RS       7    FLOW      -1
5115          RC   0.050   0.045   0.050    8260  0.0049
5116          RX    1140    1150    1200    1450    1550    1800    1850    1860
5117          RY    1181  1180.5    1180    1179    1179    1180  1180.5    1181
              *

5118          KK     B06
5119          KM        Runoff from B06
5120          BA   0.566
5121          LG    0.35    0.35    4.60    0.31       0
5122          UI     153     451     787     487     200      74      23       0       0       0
5123          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5124          KK  RCPB06
5125          KM        Route flow from CP B06 to CP B10
5126          RS       8    FLOW      -1
5127          RC   0.050   0.045   0.050    6960  0.0045
5128          RX       0     600    1200    1450    1550    1800    2400    3000
5129          RY    1181  1180.5    1180    1179    1179    1180  1180.5    1181
              *

5130          KK     B10
5131          KM        Runoff from B10
5132          BA   0.552
5133          LG    0.35    0.35    4.70    0.29       0
5134          UI     150     438     768     476     194      73      22       0       0       0
5135          UI       0       0       0       0       0       0       0       0       0       0
              *

5136          KK   CPB10
5137          KM        Combine B05, B06 with B10
5138          HC       3  24.607
              *

5139          KK     B11
5140          KM        Runoff from B11
5141          BA   0.239
5142          LG    0.35    0.35    4.70    0.29       0
5143          UI      77     223     351     185      58      19      10       0       0       0
5144          UI       0       0       0       0       0       0       0       0       0       0
              *

5145          KK   CPB11
5146          KM        Combine B10 with B11
5147          HC       2  24.846
              *

5148          KK  RCPB11
5149          KM        Route flow from CP B11 to CP B12
5150          RS       5    FLOW      -1
5151          RC   0.050   0.045   0.050    4880  0.0062
5152          RX       0     900    1900    2000    2100    2200    3400    4000
5153          RY    1160    1155    1150    1149    1149    1150    1151    1152
              *

5154          KK     B12
5155          KM        Runoff from B12
5156          BA   0.332
5157          LG    0.35    0.35    4.55    0.32       0
5158          UI      57     179     317     352     209      96      45      14      10       0
5159          UI       0       0       0       0       0       0       0       0       0       0
5160          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5161          KK  CPB12A
5162          KM        Combine B11 with B12
5163          HC       2  25.179
              *

5164          KK   CPB12
5165          KM        Combine B09 with B12
5166          HC       2  86.903
              *
```

```
5167          KK     H02
5168          KM        Runoff from H02
5169          BA   1.584
5170          LG    0.35    0.35    3.95    0.45      61
5171          UI     837    2414    1391     741     371     188      96      53       0       0
5172          UI       0       0       0       0       0       0       0       0       0       0
              *

5173          KK  RCPH02
5174          KM        Route flow from CP H02 to CP H01
5175          RS       2    FLOW      -1
5176          RC   0.050   0.045   0.050    8320  0.0250
5177          RX     165     185     250     275     300     325     385     405
5178          RY    1499    1498    1497    1495    1495    1497    1498    1499
              *

5179          KK     H01
5180          KM        Runoff from H01
5181          BA   1.613
5182          LG    0.35    0.35    3.95    0.49      23
5183          UI     569    1663    2380    1139     336      96       0       0       0       0
5184          UI       0       0       0       0       0       0       0       0       0       0
              *

5185          KK   CPH01
5186          KM        Combine H02 with H01
5187          HC       2   3.197
              *

5188          KK    DH01
5189          KM           Divert flow into H25
5190          KM        Natural divergence of flow due to a braided channel network.
5191          DT   DVH01
5192          DI       0     103     365     838    1526    2436    4637   10385   17349
5193          DQ       0      64     228     521     978    1287    1813    4589    8300
              *

5194          KK  RCPH01
5195          KM        Route remainder flow from CP H01 to CP H24
5196          RS       2    FLOW      -1
5197          RC   0.050   0.045   0.050    5720  0.0125
5198          RX     180     200     300     315     325     340     440     460
5199          RY    1361    1359    1358    1357    1357    1358    1359    1361
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5200          KK     H24
5201          KM        Runoff from H24
5202          BA   0.416
5203          LG    0.35    0.35    3.95    0.48       0
5204          UI     297     835     384      74       0       0       0       0       0       0
5205          UI       0       0       0       0       0       0       0       0       0       0
              *

5206          KK   CPH24
5207          KM        Combine H01 with H24
5208          HC       2   3.613
              *

5209          KK  RCPH24
5210          KM        Route flow from CP H24 to CP H55
5211          RS       3    FLOW      -1
5212          RC   0.050   0.045   0.050    6120  0.0089
5213          RX     160     180     300     310     315     325     460     480
5214          RY  1310.5    1309    1308    1307    1307    1308    1309  1310.5
              *

5215          KK     H55
5216          KM        Runoff from H55
5217          BA   0.339
5218          LG    0.35    0.35    3.95    0.48       0
5219          UI     195     593     396     100      21       0       0       0       0       0
5220          UI       0       0       0       0       0       0       0       0       0       0
              *

5221          KK   CPH55
5222          KM        Combine H24 with H55
5223          HC       2   3.953
              *
```

```
5224          KK  RCPH55
5225          KM        Route flow from CP H55 to CP H56
5226          RS       4    FLOW      -1
5227          RC   0.050   0.045   0.050    7220  0.0077
5228          RX     200     220     360     375     380     395     520     540
5229          RY    1231    1229    1228    1227    1227    1228    1229    1231
              *

5230          KK     H56
5231          KM        Runoff from H56
5232          BA   0.395
5233          LG    0.35    0.35    4.00    0.47       0
5234          UI     184     581     520     182      43       0       0       0       0       0
5235          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5236          KK   CPH56
5237          KM        Combine H55 with H56
5238          HC       2   4.347
              *

5239          KK  RCPH56
5240          KM        Route flow from CP H56 to CP H57
5241          RS       4    FLOW      -1
5242          RC   0.050   0.045   0.050    7020  0.0071
5243          RX     200     220     325     340     345     360     480     500
5244          RY    1181    1179    1178    1177    1177    1178    1179    1181
              *

5245          KK     H57
5246          KM        Runoff from H57
5247          BA   0.421
5248          LG    0.35    0.35    4.00    0.47       0
5249          UI     196     619     554     195      45       0       0       0       0       0
5250          UI       0       0       0       0       0       0       0       0       0       0
              *

5251          KK   CPH57
5252          KM        Combine H56 with H57
5253          HC       2   4.768
              *

5254          KK  RCPH57
5255          KM        Route flow from CP H57 to CP H68
5256          RS       3    FLOW      -1
5257          RC   0.050   0.045   0.050    5990  0.0056
5258          RX     190     210     300     330     350     380     470     490
5259          RY    1143    1142    1141    1140    1140    1141    1142    1143
              *

5260          KK     H68
5261          KM        Runoff from H68
5262          BA   0.339
5263          LG    0.35    0.35    3.95    0.48       0
5264          UI     217     636     361      76      21       0       0       0       0       0
5265          UI       0       0       0       0       0       0       0       0       0       0
              *

5266          KK   CPH68
5267          KM        Combine H57 with H68
5268          HC       2   5.107
              *

5269          KK  B12RIV
5270          KM        Combine B08RIV, H68 with B12
5271          HC       3 262.589
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5272          KK  RCPB12
5273          KM        Route flow from CP B12RIV to CP H69RIV (WATERMAN WASH)
5274          RS       1    FLOW      -1
5275          RC   0.050   0.035   0.050    1510  0.0026
5276          RX       0     800    1600    1665    1735    1800    2600    3400
5277          RY    1140    1136    1134    1130    1130    1134    1136    1140
              *
```

```
5278          KK   DRH01
5279          KM        Return diverted flow from CP H01
5280          DR   DVH01
              *

5281          KK   RDH01
5282          KM        Route flow from CP H01 to CP H25
5283          RS       2    FLOW      -1
5284          RC   0.050   0.045   0.050    5620  0.0125
5285          RX     260     280     325     350     375     400     440     460
5286          RY    1345 1343.25    1343    1341    1341    1343 1343.25    1345
              *

5287          KK     H25
5288          KM        Runoff from H25
5289          BA   0.317
5290          LG    0.35    0.35    3.95    0.49       0
5291          UI     226     636     293      57       0       0       0       0       0       0
5292          UI       0       0       0       0       0       0       0       0       0       0
              *

5293          KK   CPH25
5294          KM        Combine DRH01 with H25
5295          HC       2   3.514
              *

5296          KK  RCPH25
5297          KM        Route flow from CP H25 to CP H58
5298          RS       3    FLOW      -1
5299          RC   0.050   0.045   0.050    6160  0.0089
5300          RX     160     180     260     270     275     285     390     410
5301          RY  1320.5    1319    1318    1317    1317    1318    1319  1320.5
              *

5302          KK     H58
5303          KM        Runoff from H58
5304          BA   0.305
5305          LG    0.35    0.35    3.95    0.48       0
5306          UI     175     534     357      90      18       0       0       0       0       0
5307          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5308          KK   CPH58
5309          KM        Combine H25 with H58
5310          HC       2   3.819
              *

5311          KK  RCPH58
5312          KM        Route flow from CP H58 to CP H59
5313          RS       2    FLOW      -1
5314          RC   0.050   0.045   0.050    5200  0.0078
5315          RX     300     320     400     420     430     450     530     550
5316          RY    1256    1254    1253    1252    1252    1253    1254    1256
              *

5317          KK     H26
5318          KM        Runoff from H26
5319          BA   0.754
5320          LG    0.35    0.35    3.95    0.48       0
5321          UI     161     489     909     721     397     142      56      26       0       0
5322          UI       0       0       0       0       0       0       0       0       0       0
              *

5323          KK  RCPH26
5324          KM        Route flow from CP H26 to CP H59
5325          RS       2    FLOW      -1
5326          RC   0.050   0.045   0.050    3880  0.0079
5327          RX     350     370     400     420     430     450     480     500
5328          RY    1255    1254    1253    1252    1252    1253    1254    1255
              *

5329          KK     H59
5330          KM        Runoff from H59
5331          BA   0.386
5332          LG    0.35    0.35    3.95    0.48       0
5333          UI     276     774     357      69       0       0       0       0       0       0
5334          UI       0       0       0       0       0       0       0       0       0       0
              *

5335          KK   CPH59
```

```
5336          KM        Combine H58, H26 with H59
5337          HC       3   4.959
              *

5338          KK    DH59
5339          KM           Divert flow into H61
5340          KM        Natural divergence of flow due to a braided channel network.
5341          DT   DVH59
5342          DI       0      28     111    1458    4419    8675   14085
5343          DQ       0      17      67     751    2254    4409    7155
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5344          KK  RCPH59
5345          KM        Route remainder flow from CP H59 to CP H60
5346          RS       5    FLOW      -1
5347          RC   0.050   0.045   0.050    9190  0.0071
5348          RX     350     370     400     430     470     500     530     550
5349          RY    1183    1182    1181    1180    1180    1181    1182    1183
              *

5350          KK     H60
5351          KM        Runoff from H60
5352          BA   0.551
5353          LG    0.35    0.35    3.95    0.48       0
5354          UI     163     473     790     454     166      54      23       0       0       0
5355          UI       0       0       0       0       0       0       0       0       0       0
              *

5356          KK   CPH60
5357          KM        Combine H59 with H60
5358          HC       2   5.510
              *

5359          KK  RCPH60
5360          KM        Route flow from CP H60 to CP H69
5361          RS       3    FLOW      -1
5362          RC   0.050   0.045   0.050    6110  0.0068
5363          RX     300     320     350     400     415     465     495     515
5364          RY    1145    1144    1143    1142    1142    1143    1144    1145
              *

5365          KK   DRH59
5366          KM        Return diverted flow from CP H59
5367          DR   DVH59
              *

5368          KK   RDH59
5369          KM        Route flow from CP H59 to CP H61
5370          RS       4    FLOW      -1
5371          RC   0.050   0.045   0.050    9090  0.0072
5372          RX     330     350     400     410     420     430     480     500
5373          RY    1184  1182.2    1182    1180    1180    1182  1182.2    1184
              *

5374          KK     H61
5375          KM        Runoff from H61
5376          BA   0.473
5377          LG    0.35    0.35    4.00    0.47       0
5378          UI     140     406     678     391     141      47      19       0       0       0
5379          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5380          KK   CPH61
5381          KM        Combine DRH59 with H61
5382          HC       2   5.431
              *

5383          KK  RCPH61
5384          KM        Route flow from CP H61 to CP H69
5385          RS       3    FLOW      -1
5386          RC   0.050   0.045   0.050    6470  0.0065
5387          RX     300     320     350     400     415     465     495     515
5388          RY    1145    1144    1143    1142    1142    1143    1144    1145
              *

5389          KK     H69
```

```
5390          KM        Runoff from H69
5391          BA   0.530
5392          LG    0.35    0.35    3.95    0.48       0
5393          UI     246     780     698     244      57       0       0       0       0       0
5394          UI       0       0       0       0       0       0       0       0       0       0
              *

5395          KK   CPH69
5396          KM        Combine H60, H61 with H69
5397          HC       3   6.513
              *

5398          KK  H69RIV
5399          KM        Combine B12RIV with H69
5400          HC       2 265.904
              *

5401          KK  RCPH69
5402          KM        Route flow from CP H69RIV to CP B15RIV (WATERMAN WASH)
5403          RS       1    FLOW      -1
5404          RC   0.050   0.035   0.050    1210  0.0033
5405          RX     680     700    1400    1465    1535    1600    2300    2320
5406          RY    1134    1130    1124    1120    1120    1124    1130    1134
              *

5407          KK     H65
5408          KM        Runoff from H65
5409          BA   0.416
5410          LG    0.35    0.35    4.00    0.47       0
5411          UI     134     388     611     322     102      33      18       0       0       0
5412          UI       0       0       0       0       0       0       0       0       0       0
              *

5413          KK  RCPH65
5414          KM        Route flow from CP H65 to CP H67
5415          RS       6    FLOW      -1
5416          RC   0.050   0.045   0.050    5890  0.0071
5417          RX       0     163     326     490     510     674     837    1000
5418          RY    1180    1179    1178    1177    1177    1178    1179    1180
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5419          KK     H67
5420          KM        Runoff from H67
5421          BA   0.186
5422          LG    0.35    0.35    4.00    0.47       0
5423          UI      86     274     245      85      21       0       0       0       0       0
5424          UI       0       0       0       0       0       0       0       0       0       0
              *

5425          KK   CPH67
5426          KM        Combine H65 with H67
5427          HC       2   0.602
              *

5428          KK  RCPH67
5429          KM        Route flow from CP H67 to CP H70
5430          RS       6    FLOW      -1
5431          RC   0.050   0.045   0.050    5410  0.0062
5432          RX       0     163     326     490     510     674     837    1000
5433          RY    1140    1139    1138    1137    1137    1138    1139    1140
              *

5434          KK     H70
5435          KM        Runoff from H70
5436          BA   0.493
5437          LG    0.35    0.35    4.00    0.47       0
5438          UI     159     460     723     382     122      38      22       0       0       0
5439          UI       0       0       0       0       0       0       0       0       0       0
              *

5440          KK   CPH70
5441          KM        Combine H67 with H70
5442          HC       2   1.095
              *

5443          KK     B15
5444          KM        Runoff from B15
5445          BA   0.644
5446          LG    0.35    0.35    4.40    0.35       0
5447          UI     161     476     859     579     263     103      27      24       0       0
```

```
5448          UI       0       0       0       0       0       0       0       0       0       0
              *

5449          KK  B15RIV
5450          KM        Combine H69RIV, H70 with B15
5451          KM        Bullard Avenue crossing at B15RIV
5452          HC       3 267.644
              *

5453          KK  RCPB15
5454          KM        Route flow from CP B15RIV to CP B45RIV (WATERMAN WASH)
5455          RS       1    FLOW      -1
5456          RC   0.050   0.035   0.050    4500  0.0049
5457          RX       0    1700    3420    3570    3650    3800    4900    6900
5458          RY    1140    1130    1120    1115    1115    1120    1130    1140
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5459          KK   DRB13
5460          KM        Return diverted flow from CP B13
5461          DR   DVB13
              *

5462          KK   RDB13
5463          KM        Route diverted flow from CP B13 to CP B14
5464          RS       4    FLOW      -1
5465          RC   0.050   0.045   0.050    8410  0.0054
5466          RX     690     710     830     880     920     970    1070    1090
5467          RY    1210  1208.5    1207    1204    1204    1207  1208.5    1210
              *

5468          KK     B14
5469          KM        Runoff from B14
5470          BA   0.393
5471          LG    0.35    0.35    4.45    0.34       0
5472          UI      90     273     500     365     183      68      23      15       0       0
5473          UI       0       0       0       0       0       0       0       0       0       0
              *

5474          KK   CPB14
5475          KM        Combine DRB13 with B14
5476          HC       2  22.505
              *

5477          KK     B21
5478          KM        Runoff from B21
5479          BA   0.313
5480          LG    0.35    0.35    4.15    0.41       0
5481          UI     110     323     462     221      65      19       0       0       0       0
5482          UI       0       0       0       0       0       0       0       0       0       0
              *

5483          KK   CPB21
5484          KM        Combine B14 with B21
5485          HC       2  22.818
              *

5486          KK  RCPB21
5487          KM        Route flow from CP B21 to CP B45
5488          RS       9    FLOW      -1
5489          RC   0.050   0.045   0.050   10600  0.0057
5490          RX     180     210     340     440     460     560     670     700
5491          RY    1169  1167.5    1167    1165    1165    1167  1167.5    1169
              *

5492          KK     B45
5493          KM        Runoff from B45
5494          BA   0.963
5495          LG    0.35    0.35    4.30    0.37       0
5496          UI     135     445     711    1046     671     402     167      82      29      28
5497          UI       0       0       0       0       0       0       0       0       0       0
5498          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5499          KK   CPB45
5500          KM        Combine B21 with B45
5501          HC       2  23.780
```

```
                *

5502            KK  B45RIV
5503            KM        Combine B15RIV with B45
5504            HC       2 269.312
                *

5505            KK  RCPB45
5506            KM        Route flow from CP B45RIV to CP H72RIV (WATERMAN WASH)
5507            RS       1    FLOW      -1
5508            RC   0.050   0.035   0.050     210  0.0038
5509            RX       0    1700    2700    2765    2835    2900    3700    5400
5510            RY    1130    1120    1115    1110    1110    1115    1120    1130
                *

5511            KK     H22
5512            KM        Runoff from H22
5513            BA   1.461
5514            LG    0.35    0.35    4.15    0.46      22
5515            UI     679    2149    1924     674     158       0       0       0       0       0
5516            UI       0       0       0       0       0       0       0       0       0       0
                *

5517            KK  RCPH22
5518            KM        Route flow from CP H22 to CP H23
5519            RS       2    FLOW      -1
5520            RC   0.050   0.045   0.050    5100  0.0088
5521            RX       0     150     300     350     380     430     580     730
5522            RY    1336    1334    1332    1330    1330    1332    1334    1336
                *

5523            KK     H03
5524            KM        Runoff from H03
5525            BA   1.423
5526            LG    0.35    0.35    3.88    0.46      61
5527            UI     955    2321    1176     565     268     125      54       0       0       0
5528            UI       0       0       0       0       0       0       0       0       0       0
                *

5529            KK  RCPH03
5530            KM        Route flow from CP H03 to CP H21
5531            RS       1    FLOW      -1
5532            RC   0.050   0.045   0.050    6650  0.0358
5533            RX       0     125     225     265     285     325     425     550
5534            RY    1520    1518    1515    1512    1512    1515    1518    1520
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5535            KK     H21
5536            KM        Runoff from H21
5537            BA   0.763
5538            LG    0.35    0.35    3.95    0.48      36
5539            UI     489    1432     810     173      46       0       0       0       0       0
5540            UI       0       0       0       0       0       0       0       0       0       0
                *

5541            KK   CPH21
5542            KM        Combine H03 with H21
5543            HC       2   2.186
                *

5544            KK  RCPH21
5545            KM        Route flow from CP H21 to CP H23
5546            RS       2    FLOW      -1
5547            RC   0.050   0.045   0.050    9450  0.0142
5548            RX     250     270     300     350     380     430     460     480
5549            RY    1336    1334    1332    1330    1330    1332    1334    1336
                *

5550            KK     H23
5551            KM        Runoff from H23
5552            BA   0.707
5553            LG    0.35    0.35    3.95    0.51       0
5554            UI     271     817    1026     439     133      32       0       0       0       0
5555            UI       0       0       0       0       0       0       0       0       0       0
                *

5556            KK   CPH23
5557            KM        Combine H22, H21 with H23
5558            HC       3   4.354
                *
```

```
5559          KK  RCPH23
5560          KM        Route flow from CP H23 to CP H62
5561          RS       2    FLOW      -1
5562          RC   0.050   0.045   0.050    6290  0.0089
5563          RX     120     140     300     350     380     430     600     620
5564          RY  1285.3    1284    1283    1281    1281    1283    1284  1285.3
              *

5565          KK     H27
5566          KM        Runoff from H27
5567          BA   0.383
5568          LG    0.35    0.35    3.95    0.50       0
5569          UI     199     614     482     142      32       0       0       0       0       0
5570          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5571          KK  RCPH27
5572          KM        Route flow from CP H27 to CP H62
5573          RS       3    FLOW      -1
5574          RC   0.050   0.045   0.050    6110  0.0097
5575          RX       0     150     300     350     380     430     580     730
5576          RY    1285    1284    1283    1281    1281    1283    1284    1285
              *

5577          KK     H62
5578          KM        Runoff from H62
5579          BA   0.494
5580          LG    0.35    0.35    3.95    0.48       0
5581          UI     284     864     578     147      29       0       0       0       0       0
5582          UI       0       0       0       0       0       0       0       0       0       0
              *

5583          KK   CPH62
5584          KM        Combine H23, H27 with H62
5585          HC       3   5.231
              *

5586          KK  RCPH62
5587          KM        Route flow from CP H62 to CP H63
5588          RS       2    FLOW      -1
5589          RC   0.050   0.045   0.050    3970  0.0079
5590          RX      80     100     400     420     430     450     750     770
5591          RY    1251    1249    1248    1247    1247    1248    1249    1251
              *

5592          KK     H20
5593          KM        Runoff from H20
5594          BA   0.518
5595          LG    0.35    0.35    3.95    0.52       1
5596          UI     269     831     652     191      44       0       0       0       0       0
5597          UI       0       0       0       0       0       0       0       0       0       0
              *

5598          KK  RCPH20
5599          KM        Route flow from CP H20 to CP H28
5600          RS       3    FLOW      -1
5601          RC   0.050   0.045   0.050    7390  0.0125
5602          RX     230     250     280     290     295     305     335     355
5603          RY  1300.5    1299    1298    1297    1297    1298    1299  1300.5
              *

5604          KK     H28
5605          KM        Runoff from H28
5606          BA   0.719
5607          LG    0.35    0.35    3.95    0.48       0
5608          UI     334    1058     947     332      77       0       0       0       0       0
5609          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5610          KK   CPH28
5611          KM        Combine H20 with H28
5612          HC       2   1.237
              *

5613          KK  RCPH28
```

```
5614          KM        Route flow from CP H28 to CP H63
5615          RS       2    FLOW      -1
5616          RC   0.050   0.045   0.050    3920  0.0079
5617          RX     340     360     400     420     430     450     490     510
5618          RY    1251    1249    1248    1247    1247    1248    1249    1251
              *

5619          KK     H63
5620          KM        Runoff from H63
5621          BA   0.167
5622          LG    0.35    0.35    4.00    0.47       0
5623          UI     155     366     108      16       0       0       0       0       0       0
5624          UI       0       0       0       0       0       0       0       0       0       0
              *

5625          KK   CPH63
5626          KM        Combine H62, H28 with H63
5627          HC       3   6.635
              *

5628          KK    DH63
5629          KM            Divert flow into H53
5630          KM        Natural divergence of flow due to a braided channel network.
5631          DT   DVH63
5632          DI       0      73     166     315     405     847    1669    2987    5490    8738
5633          DQ       0       0       7      31      75     233     541    1071    2154    3371
              *

5634          KK  RCPH63
5635          KM        Route remainder flow from CP H63 to CP H66
5636          RS       3    FLOW      -1
5637          RC   0.050   0.045   0.050    7290  0.0074
5638          RX     260     280     450     470     475     495     640     660
5639          RY  1201.5    1199    1198    1197    1197    1198    1199  1201.5
              *

5640          KK     H66
5641          KM        Runoff from H66
5642          BA   0.722
5643          LG    0.35    0.35    4.00    0.47       0
5644          UI     134     413     751     743     433     182      86      24      24       0
5645          UI       0       0       0       0       0       0       0       0       0       0
5646          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5647          KK   CPH66
5648          KM        Combine H63 with H66
5649          HC       2   7.357
              *

5650          KK  RCPH66
5651          KM        Route flow from CP H66 to CP H71
5652          RS       3    FLOW      -1
5653          RC   0.050   0.045   0.050    6460  0.0068
5654          RX     180     200     300     320     330     350     575     595
5655          RY    1171    1169    1168    1167    1167    1168    1169    1171
              *

5656          KK     H71
5657          KM        Runoff from H71
5658          BA   0.648
5659          LG    0.35    0.35    4.00    0.47       0
5660          UI     301     954     853     299      70       0       0       0       0       0
5661          UI       0       0       0       0       0       0       0       0       0       0
              *

5662          KK   CPH71
5663          KM        Combine H66 with H71
5664          HC       2   8.005
              *

5665          KK  RCPH71
5666          KM        Route flow from CP H71 to CP H72
5667          RS       2    FLOW      -1
5668          RC   0.050   0.045   0.050    3330  0.0060
5669          RX     180     200     400     420     430     450     650     670
5670          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

5671          KK     H72
```

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5672          KM        Runoff from H72
5673          BA   0.422
5674          LG    0.35     0.35     4.15     0.44        0
5675          UI     343      891      333       53        0        0        0        0        0        0
5676          UI       0        0        0        0        0        0        0        0        0        0
              *

5677          KK   CPH72
5678          KM        Combine H71 with H72
5679          HC       2   8.427
              *

5680          KK  H72RIV
5681          KM        Combine H70RIV with H72
5682          HC       2 277.739
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5683          KK  RCPH72
5684          KM        Route flow from CP H72RIV to CP B46RIV (WATERMAN WASH)
5685          RS       3    FLOW      -1
5686          RC   0.050   0.035   0.050    6010  0.0031
5687          RX       0    1600    2850    2925    3025    3100    4200    6200
5688          RY    1120    1110    1105    1100    1100    1105    1110    1120
              *

5689          KK     B20
5690          KM        Runoff from B20
5691          BA   0.177
5692          LG    0.35     0.35     4.00     0.43        0
5693          UI     102      309      208       52       10        0        0        0        0        0
5694          UI       0        0        0        0        0        0        0        0        0        0
              *

5695          KK  RCPB20
5696          KM        Route flow from CP B20 to CP B44
5697          RS       9    FLOW      -1
5698          RC   0.050   0.045   0.050   10890  0.0065
5699          RX       0     100     200     250     280     330     430     530
5700          RY    1130  1129.5    1129    1127    1127    1129  1129.5    1130
              *

5701          KK     B44
5702          KM        Runoff from B44
5703          BA   0.375
5704          LG    0.35     0.35     4.30     0.37        0
5705          UI      86      260      478      349      174       64       22       14        0        0
5706          UI       0        0        0        0        0        0        0        0        0        0
              *

5707          KK   CPB44
5708          KM        Combine B20 with B44
5709          HC       2   0.553
              *

5710          KK  RCPB44
5711          KM        Route flow from CP B44 to CP B46
5712          RS       6    FLOW      -1
5713          RC   0.050   0.045   0.050    7420  0.0038
5714          RX       0     100     200     220     230     250     350     450
5715          RY    1123    1122    1120    1117    1117    1120    1122    1123
              *

5716          KK     B42
5717          KM        Runoff from B42
5718          BA   0.197
5719          LG    0.35     0.35     4.00     0.43        0
5720          UI     102      316      248       73       17        0        0        0        0        0
5721          UI       0        0        0        0        0        0        0        0        0        0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5722          KK  RCPB42
5723          KM        Route flow from CP B42 to CP B43
5724          RS       5    FLOW      -1
5725          RC   0.050   0.045   0.050    5600  0.0072
5726          RX     290     300     325     375     425     475     500     510
5727          RY    1161  1159.5    1159  1158.5  1158.5    1159  1159.5    1161
```

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                *

5728            KK     B43
5729            KM        Runoff from B43
5730            BA   0.174
5731            LG    0.35    0.35    4.70    0.29       0
5732            UI      74     227     243      93      26       9       0       0       0       0
5733            UI       0       0       0       0       0       0       0       0       0       0
                *

5734            KK   CPB43
5735            KM        Combine B42 with B43
5736            HC       2   0.371
                *

5737            KK     B41
5738            KM        Runoff from B41
5739            BA   0.445
5740            LG    0.35    0.35    4.20    0.40       0
5741            UI      71     229     386     482     291     148      65      26      13       0
5742            UI       0       0       0       0       0       0       0       0       0       0
5743            UI       0       0       0       0       0       0       0       0       0       0
                *

5744            KK   CPB41
5745            KM        Combine B43 with B41
5746            HC       2   0.816
                *

5747            KK  RCPB41
5748            KM        Route flow from CP B41 to CP B46
5749            RS       4    FLOW      -1
5750            RC   0.050   0.045   0.050    5910  0.0057
5751            RX       0     200     400     475     525     600     800    1000
5752            RY    1125    1124    1123    1121    1121    1123    1124    1125
                *

5753            KK     B46
5754            KM        Runoff from B46
5755            BA   1.063
5756            LG    0.35    0.35    4.45    0.34       0
5757            UI      99     370     562     924     852     584     367     161     100      37
5758            UI      27      27       0       0       0       0       0       0       0       0
5759            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5760            KK   CPB46
5761            KM        Combine B44, B41 with B46
5762            HC       3   2.432
                *

5763            KK  B46RIV
5764            KM        Combine H72RIV with B46
5765            HC       2 280.171
                *

5766            KK  RCPB46
5767            KM        Route flow from CP B46RIV to CP H74RIV (WATERMAN WASH)
5768            RS       1    FLOW      -1
5769            RC   0.050   0.035   0.050     450  0.0050
5770            RX       0     950    1900    2110    2190    2400    3900    5400
5771            RY    1110    1105    1100    1095    1095    1100    1105    1110
                *

5772            KK   DRH63
5773            KM        Return diverted flow from CP H63
5774            DR   DVH63
                *

5775            KK   RDH63
5776            KM        Route flow from CP H63 to CP H53
5777            RS       3    FLOW      -1
5778            RC   0.050   0.045   0.050    5920  0.0075
5779            RX     120     140     250     265     270     285     420     440
5780            RY  1210.5    1209    1208    1207    1207    1208    1209  1210.5
                *

5781            KK     H53
5782            KM        Runoff from H53
5783            BA   0.386
```

```
5784          LG    0.35    0.35    4.00    0.47       0
5785          UI      89     268     491     359     179      67      23      14       0       0
5786          UI       0       0       0       0       0       0       0       0       0       0
              *

5787          KK   CPH53
5788          KM        Combine DRH63 with H53
5789          HC       2   7.021
              *

5790          KK     H18
5791          KM        Runoff from H18
5792          BA   0.438
5793          LG    0.35    0.35    3.95    0.52       0
5794          UI     280     822     465     100      27       0       0       0       0       0
5795          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5796          KK  RCPH18
5797          KM        Route flow from CP H18 to CP H29
5798          RS       8    FLOW      -1
5799          RC   0.050   0.045   0.050   15830  0.0108
5800          RX     350     370     400     415     420     435     465     485
5801          RY    1300    1299    1298    1297    1297    1298    1299    1300
              *

5802          KK     H29
5803          KM        Runoff from H29
5804          BA   1.041
5805          LG    0.35    0.35    4.00    0.47       0
5806          UI     128     433     675    1085     764     497     222     120      47      29
5807          UI      30       0       0       0       0       0       0       0       0       0
5808          UI       0       0       0       0       0       0       0       0       0       0
              *

5809          KK   CPH29
5810          KM        Combine H18 with H29
5811          HC       2   1.479
              *

5812          KK     H04
5813          KM        Runoff from H04
5814          BA   1.059
5815          LG    0.35    0.35    3.38    0.66      35
5816          UI     448    1475     964     552     306     165      93      42      32       0
5817          UI       0       0       0       0       0       0       0       0       0       0
5818          UI       0       0       0       0       0       0       0       0       0       0
              *

5819          KK  RCPH04
5820          KM        Route flow from CP H04 to CP H17
5821          RS       2    FLOW      -1
5822          RC   0.050   0.045   0.050    7950  0.0214
5823          RX     250     270     300     335     365     400     430     450
5824          RY    1460    1459    1458    1456    1456    1458    1459    1460
              *

5825          KK     H17
5826          KM        Runoff from H17
5827          BA   0.579
5828          LG    0.35    0.35    3.95    0.52       2
5829          UI     300     930     728     214      49       0       0       0       0       0
5830          UI       0       0       0       0       0       0       0       0       0       0
              *

5831          KK   CPH17
5832          KM        Combine H04 with H17
5833          HC       2   1.639
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5834          KK    DH17
5835          KM            Divert flow into H32
5836          KM        Natural divergence of flow due to a braided channel network.
5837          DT   DVH17
5838          DI       0      69     253     565    1027    1251    2264    4109    6938   12244
5839          DQ       0      36     133     304     560     708    1252    2234    3703    6445
```

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                *

5840            KK  RCPH17
5841            KM        Route remainder flow from CP H17 to CP H30
5842            RS       3    FLOW      -1
5843            RC   0.050   0.045   0.050    7900  0.0151
5844            RX     200     220     250     270     285     305     335     355
5845            RY    1300    1299    1298    1297    1297    1298    1299    1300
                *

5846            KK     H30
5847            KM        Runoff from H30
5848            BA   0.477
5849            LG    0.35    0.34    3.95    0.49       0
5850            UI     222     701     628     220      52       0       0       0       0       0
5851            UI       0       0       0       0       0       0       0       0       0       0
                *

5852            KK   CPH30
5853            KM        Combine H17 with H30
5854            HC       2   2.115
                *

5855            KK  RCPH30
5856            KM        Route flow from CP H30 to CP H51
5857            RS       2    FLOW      -1
5858            RC   0.050   0.045   0.050    5110  0.0100
5859            RX     330     350     400     408     412     420     470     490
5860            RY  1250.5    1249    1248    1247    1247    1248    1249  1250.5
                *

5861            KK     H51
5862            KM        Runoff from H51
5863            BA   0.303
5864            LG    0.35    0.35    4.00    0.47       0
5865            UI     247     639     239      38       0       0       0       0       0       0
5866            UI       0       0       0       0       0       0       0       0       0       0
                *

5867            KK   CPH51
5868            KM        Combine H30 with H51
5869            HC       2   2.419
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5870            KK  RCPH51
5871            KM        Route flow from CP H51 to CP H52
5872            RS       2    FLOW      -1
5873            RC   0.050   0.045   0.050    5500  0.0082
5874            RX     320     340     370     385     390     405     435     455
5875            RY    1211    1209    1208    1207    1207    1208    1209    1211
                *

5876            KK     H52
5877            KM        Runoff from H52
5878            BA   0.225
5879            LG    0.35    0.35    4.00    0.47       0
5880            UI     129     394     263      67      13       0       0       0       0       0
5881            UI       0       0       0       0       0       0       0       0       0       0
                *

5882            KK  CPH52A
5883            KM        Combine H51 with H52
5884            HC       2   2.643
                *

5885            KK  CPH52B
5886            KM        Combine H53, H29 and H52
5887            HC       3  11.144
                *

5888            KK  RCPH52
5889            KM        Route flow from CP H52B to CP H54
5890            RS       2    FLOW      -1
5891            RC   0.050   0.045   0.050    4210  0.0060
5892            RX     340     370     400     420     430     450     480     510
5893            RY    1172    1169    1168    1167    1167    1168    1169    1172
                *

5894            KK     H54
5895            KM        Runoff from H54
```

```
5896          BA   0.213
5897          LG    0.35     0.35     4.00     0.47        0
5898          UI     152      427      197       38        0        0        0        0        0        0
5899          UI       0        0        0        0        0        0        0        0        0        0
              *

5900          KK   CPH54
5901          KM        Combine H52B with H54
5902          HC       2  11.357
              *

5903          KK  RCPH54
5904          KM        Route flow from CP H54 to CP H73
5905          RS       1    FLOW      -1
5906          RC   0.050   0.045    0.050     2610  0.0058
5907          RX     180     200      400      420      430      450      680      700
5908          RY    1151    1149     1148     1147     1147     1148     1149     1151
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5909          KK     H16
5910          KM        Runoff from H16
5911          BA   0.366
5912          LG    0.35     0.35     3.74     0.51       54
5913          UI     319      623      274      117       51       19        0        0        0        0
5914          UI       0        0        0        0        0        0        0        0        0        0
              *

5915          KK  RCPH16
5916          KM        Route flow from CP H16 to CP H05
5917          RS       1    FLOW      -1
5918          RC   0.050   0.045    0.050     1940  0.0553
5919          RX     180     200      230      245      255      270      300      320
5920          RY    1525    1524     1523     1522     1522     1523     1524     1525
              *

5921          KK     H05
5922          KM        Runoff from H05
5923          BA   1.141
5924          LG    0.35     0.35     3.38     0.68       26
5925          UI     367     1067     1674      882      281       90       49        0        0        0
5926          UI       0        0        0        0        0        0        0        0        0        0
              *

5927          KK   CPH05
5928          KM        Combine H16 with H05
5929          HC       2   1.507
              *

5930          KK  RCPH05
5931          KM        Route flow from CP H05 to CP H31
5932          RS       2    FLOW      -1
5933          RC   0.050   0.045    0.050     6610  0.0158
5934          RX     310     330      400      420      430      450      530      550
5935          RY  1360.5    1359     1358     1357     1357     1358     1359   1360.5
              *

5936          KK     H31
5937          KM        Runoff from H31
5938          BA   0.372
5939          LG    0.35     0.35     3.95     0.51        0
5940          UI     238      699      394       85       22        0        0        0        0        0
5941          UI       0        0        0        0        0        0        0        0        0        0
              *

5942          KK   CPH31
5943          KM        Combine H05 with H31
5944          HC       2   2.092
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5945          KK    DH31
5946          KM           Divert flow into H33
5947          KM        Natural divergence of flow due to a braided channel network.
5948          DT   DVH31
5949          DI       0       45      160      350      626      694     1563     3546     6117    10465
5950          DQ       0       23       80      175      313      345      820     1912     3340     5691
              *
```

```
5951          KK  RCPH31
5952          KM        Route remainder flow from CP H31 to CP H32
5953          RS       3    FLOW      -1
5954          RC   0.050   0.045   0.050    6980  0.0098
5955          RX     155     175     250     260     280     290     370     390
5956          RY    1276    1274    1273    1272    1272    1273    1274    1276
              *

5957          KK   DRH17
5958          KM        Return diverted flow from CP H17
5959          DR   DVH17
              *

5960          KK   RDH17
5961          KM        Route flow from CP H17 to CP H32
5962          RS       4    FLOW      -1
5963          RC   0.050   0.045   0.050   11540  0.0164
5964          RX     350     370     400     420     430     450     480     500
5965          RY    1360  1358.2    1358    1357    1357    1358  1358.2    1360
              *

5966          KK     H32
5967          KM        Runoff from H32
5968          BA   0.714
5969          LG    0.35    0.35    3.95    0.48       0                .
5970          UI     164     496     908     664     332     123      42      26       0       0
5971          UI       0       0       0       0       0       0       0       0       0       0
              *

5972          KK   CPH32
5973          KM        Combine H31, DRH17 with H32
5974          HC       3   4.231
              *

5975          KK    DH32
5976          KM           Divert flow into H48
5977          KM        Natural divergence of flow due to a braided channel network.
5978          DT   DVH32
5979          DI       0      22      94     222     688    1608    3220    6028    9254   13026
5980          DQ       0       8      35      88     303     740    1577    2846    4413    6248
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5981          KK  RCPH32
5982          KM        Route remainder flow from CP H32 to CP H50
5983          RS       6    FLOW      -1
5984          RC   0.050   0.045   0.050   11430  0.0080
5985          RX     350     370     400     420     430     450     480     500
5986          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

5987          KK   DRH32
5988          KM        Return diverted flow from CP H32
5989          DR   DVH32
              *

5990          KK   RDH32
5991          KM        Route flow from CP H32 to CP H48
5992          RS       3    FLOW      -1
5993          RC   0.050   0.045   0.050    5580  0.0085
5994          RX     330     350     400     410     420     430     480     500
5995          RY    1230    1229    1228    1227    1227    1228    1229    1230
              *

5996          KK     H48
5997          KM        Runoff from H48
5998          BA   0.334
5999          LG    0.35    0.35    4.00    0.47       0
6000          UI     141     437     466     179      49      17       0       0       0       0
6001          UI       0       0       0       0       0       0       0       0       0       0
              *

6002          KK   CPH48
6003          KM        Combine DRH32 with H48
6004          HC       2   4.565
              *

6005          KK    DH48
6006          KM           Divert flow into H49
6007          KM        Natural divergence of flow due to a braided channel network.
```

```
6008          DT   DVH48
6009          DI       0      19      79    1206    3710    7474   12280   17905
6010          DQ       0       6      23     568    1783    3618    5952    8701
              *

6011          KK  RCPH48
6012          KM        Route remainder flow from CP H48 to CP H50
6013          RS       4    FLOW      -1
6014          RC   0.050   0.045   0.050    6020  0.0069
6015          RX     350     370     400     420     430     450     480     500
6016          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6017          KK     H50
6018          KM        Runoff from H50
6019          BA   0.625
6020          LG    0.35    0.35    4.00    0.47       0
6021          UI     108     338     595     662     393     182      84      27      20       0
6022          UI       0       0       0       0       0       0       0       0       0       0
6023          UI       0       0       0       0       0       0       0       0       0       0
              *

6024          KK   CPH50
6025          KM        Combine H32, H48 with H50
6026          HC       3   5.190
              *

6027          KK  RCPH50
6028          KM        Route flow from CP H50 to CP H73
6029          RS       2    FLOW      -1
6030          RC   0.050   0.045   0.050    2970  0.0058
6031          RX     340     360     400     420     430     450     490     510
6032          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

6033          KK   DRH48
6034          KM        Return diverted flow from CP H48
6035          DR   DVH48
              *

6036          KK   RDH48
6037          KM        Route flow from CP H48 to CP H49
6038          RS       4    FLOW      -1
6039          RC   0.050   0.045   0.050    5410  0.0074
6040          RX     350     370     400     420     430     450     480     500
6041          RY    1190  1188.2    1188    1187    1187    1188  1188.2    1190
              *

6042          KK     H49
6043          KM        Runoff from H49
6044          BA   0.478
6045          LG    0.35    0.35    4.00    0.47       0
6046          UI     130     379     666     411     169      63      19       0       0       0
6047          UI       0       0       0       0       0       0       0       0       0       0
              *

6048          KK   CPH49
6049          KM        Combine DRH48 with H49
6050          HC       2   5.043
              *

6051          KK  RCPH49
6052          KM        Route flow from CP H49 to CP H73
6053          RS       2    FLOW      -1
6054          RC   0.050   0.045   0.050    3540  0.0078
6055          RX     350     370     400     420     430     450     480     500
6056          RY    1150    1149    1148    1147    1147    1148    1149    1150
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6057          KK     H73
6058          KM        Runoff from H73
6059          BA   0.290
6060          LG    0.35    0.35    3.95    0.48       0
6061          UI     310     651     141       0       0       0       0       0       0       0
6062          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
6063          KK   CPH73
6064          KM        Combine H54, H50, H49 with H73
6065          HC       4  15.677
              *

6066          KK  RCPH73
6067          KM        Route flow from CP H73 to CP H74
6068          RS       5    FLOW      -1
6069          RC   0.050   0.045   0.050    8820  0.0055
6070          RX      80     100     400     420     430     450     750     770
6071          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

6072          KK     H74
6073          KM        Runoff from H74
6074          BA   0.802
6075          LG    0.35    0.35    4.00    0.47       0
6076          UI     514    1505     851     183      48       0       0       0       0       0
6077          UI       0       0       0       0       0       0       0       0       0       0
              *

6078          KK   CPH74
6079          KM        Combine H73 with H74
6080          HC       2  16.479
              *

6081          KK  H74RIV
6082          KM        Combine B46RIV with H74
6083          HC       2 290.015
              *

6084          KK  RCPH74
6085          KM        Route flow from CP H74RIV to CP H77RIV (WATERMAN WASH)
6086          RS       1    FLOW      -1
6087          RC   0.050   0.035   0.050    4040  0.0031
6088          RX    3050    3100    3500    3565    3635    3700    4200    4250
6089          RY    1103    1100    1095    1090    1090    1095    1100    1103
              *

6090          KK     H15
6091          KM        Runoff from H15
6092          BA   0.775
6093          LG    0.35    0.35    3.95    0.48      32
6094          UI     445    1355     909     229      46       0       0       0       0       0
6095          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6096          KK  RCPH15
6097          KM        Route flow from CP H15 to CP H33
6098          RS       5    FLOW      -1
6099          RC   0.050   0.045   0.050   12510  0.0097
6100          RX     350     370     400     420     430     450     480     500
6101          RY    1260  1258.2    1258    1257    1257    1258  1258.2    1260
              *

6102          KK   DRH31
6103          KM        Return diverted flow from CP H31
6104          DR   DVH31
              *

6105          KK   RDH31
6106          KM        Route flow from CP H31 to CP H33
6107          RS       5    FLOW      -1
6108          RC   0.050   0.045   0.050   10890  0.0094
6109          RX     330     350     400     420     430     450     550     570
6110          RY  1260.2    1258    1258    1257    1257    1258    1258  1260.2
              *

6111          KK     H33
6112          KM        Runoff from H33
6113          BA   1.083
6114          LG    0.35    0.35    3.95    0.48       0
6115          UI     173     557     939    1172     710     360     157      62      34       0
6116          UI       0       0       0       0       0       0       0       0       0       0
6117          UI       0       0       0       0       0       0       0       0       0       0
              *

6118          KK   CPH33
6119          KM        Combine H15, DRH31 with H33
```

```
6120          HC       3   3.737
              *

6121          KK    DH33
6122          KM           Divert flow into H46
6123          KM        Natural divergence of flow due to a braided channel network.
6124          DT   DVH33
6125          DI       0      28      89    1367    4215    8728   14496
6126          DQ       0       8      35     733    2312    4799    7957
              *

6127          KK  RCPH33
6128          KM        Route remainder flow from CP H33 to CP H47
6129          RS       4    FLOW      -1
6130          RC   0.050   0.045   0.050    5480  0.0087
6131          RX       0     163     326     490     510     674     837    1000
6132          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6133          KK     H47
6134          KM        Runoff from H47
6135          BA   0.383
6136          LG    0.35    0.35    4.00    0.47       0
6137          UI     274     768     354      68       0       0       0       0       0       0
6138          UI       0       0       0       0       0       0       0       0       0       0
              *

6139          KK   CPH47
6140          KM        Combine H33 with H47
6141          HC       2   4.120
              *

6142          KK  RCPH47
6143          KM        Route flow from CP H47 to CP H75
6144          RS       3    FLOW      -1
6145          RC   0.050   0.045   0.050    5620  0.0075
6146          RX     350     370     400     420     430     450     480     500
6147          RY    1150    1149    1148    1147    1147    1148    1149    1150
              *

6148          KK     H75
6149          KM        Runoff from H75
6150          BA   0.747
6151          LG    0.50    0.00    3.95    0.72       0
6152          UI      47      97     245     312     391     387     337     275     223     150
6153          UI     120      78      58      42      33      26      17       6       5       6
6154          UI       6       6       5       6       6       6       0       0       0       0
6155          UI       0       0       0       0       0       0       0       0       0       0
              *

6156          KK   CPH75
6157          KM        Combine H47 with H75
6158          HC       2   4.867
              *

6159          KK  RCPH75
6160          KM        Route flow from CP H75 to CP H76
6161          RS       3    FLOW      -1
6162          RC   0.050   0.045   0.050    5360  0.0066
6163          RX     340     360     400     420     430     450     490     510
6164          RY  1120.5    1119    1118    1117    1117    1118    1119  1120.5
              *

6165          KK     H76
6166          KM        Runoff from H76
6167          BA   0.752
6168          LG    0.35    0.35    4.00    0.47       0
6169          UI     390    1207     946     277      64       0       0       0       0       0
6170          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6171          KK   CPH76
6172          KM        Combine H75 with H76
6173          HC       2   5.620
              *
```

```
6174          KK  RCPH76
6175          KM        Route flow from CP H76 to CP H77
6176          RS       2    FLOW      -1
6177          RC   0.050   0.045   0.050    3560  0.0047
6178          RX     330     350     400     420     430     450     500     520
6179          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *

6180          KK     H77
6181          KM        Runoff from H77
6182          BA   0.273
6183          LG    0.35    0.35    4.25    0.42       0
6184          UI     254     598     175      26       0       0       0       0       0       0
6185          UI       0       0       0       0       0       0       0       0       0       0
              *

6186          KK   CPH77
6187          KM        Combine H76 with H77
6188          HC       2   5.893
              *

6189          KK  H77RIV
6190          KM        Combine H74RIV with H77
6191          KM        Riggs Road crossing at H77RIV
6192          HC       2 294.029
              *

6193          KK  RCPH77
6194          KM        Route flow from CP H77RIV to CP B61RIV (WATERMAN WASH)
6195          RS       1    FLOW      -1
6196          RC   0.050   0.035   0.050    3680  0.0028
6197          RX    2575    2600    3450    3525    3625    3700    4500    4525
6198          RY    1082    1080    1073    1068    1068    1073    1080    1082
              *

6199          KK     B40
6200          KM        Runoff from B40
6201          BA   0.182
6202          LG    0.35    0.35    3.19    0.75       0
6203          UI      64     188     268     129      38      11       0       0       0       0
6204          UI       0       0       0       0       0       0       0       0       0       0
              *

6205          KK  RCPB40
6206          KM        Route flow from CP B40 to CP B50
6207          RS       6    FLOW      -1
6208          RC   0.050   0.045   0.050    8170  0.0065
6209          RX       0     100     150     190     210     250     300     400
6210          RY    1150    1149    1148    1146    1146    1148    1149    1150
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6211          KK     B49
6212          KM        Runoff from B49
6213          BA   0.269
6214          LG    0.35    0.36    5.00    0.25       0
6215          UI      86     252     395     207      67      21      12       0       0       0
6216          UI       0       0       0       0       0       0       0       0       0       0
              *

6217          KK  RCPB49
6218          KM        Route flow from CP B49 to CP B50
6219          RS       1    FLOW      -1
6220          RC   0.050   0.045   0.050    2680  0.0068
6221          RX       0     100     150     190     210     250     300     400
6222          RY    1120    1119    1118    1116    1116    1118    1119    1120
              *

6223          KK     B50
6224          KM        Runoff from B50
6225          BA   0.273
6226          LG    0.35    0.35    4.45    0.34       0
6227          UI      54     166     309     269     156      60      25       9       0       0
6228          UI       0       0       0       0       0       0       0       0       0       0
              *

6229          KK   CPB50
6230          KM        Combine B40, B49 with B50
6231          HC       3   0.724
              *
```

```
6232          KK  RCPB50
6233          KM        ROUTE FLOW FROM CP B50 TO CP B61
6234          RS       8    FLOW      -1
6235          RC   0.050   0.045   0.050    6660  0.0054
6236          RX       0     163     326     490     510     674     837    1000
6237          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

6238          KK     B19
6239          KM        Runoff from B19
6240          BA   0.538
6241          LG    0.35    0.35    4.15    0.41       0
6242          UI      70     236     373     574     385     242     102      56      18      15
6243          UI       0       0       0       0       0       0       0       0       0       0
6244          UI       0       0       0       0       0       0       0       0       0       0
              *

6245          KK  RCPB19
6246          KM        Route flow from CP B19 to CP B48
6247          RS       4    FLOW      -1
6248          RC   0.050   0.045   0.050    6720  0.0050
6249          RX       0     100     170     220     250     300     400     500
6250          RY    1140  1139.5    1139    1136    1136    1138    1139    1140
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6251          KK     B48
6252          KM        Runoff from B48
6253          BA   0.574
6254          LG    0.35    0.35    4.55    0.32       0
6255          UI     156     456     798     494     203      75      23       0       0       0
6256          UI       0       0       0       0       0       0       0       0       0       0
              *

6257          KK   CPB48
6258          KM        Combine B19 with B48
6259          HC       2   1.112
              *

6260          KK  RCPB48
6261          KM        Route flow from CP B48 to CP B61
6262          RS       7    FLOW      -1
6263          RC   0.050   0.045   0.050    7720  0.0054
6264          RX       0     163     326     490     510     674     837    1000
6265          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

6266          KK     B47
6267          KM        Runoff from B47
6268          BA   0.316
6269          LG    0.35    0.35    4.50    0.33       0
6270          UI     121     365     459     196      59      15       0       0       0       0
6271          UI       0       0       0       0       0       0       0       0       0       0
              *

6272          KK  RCPB47
6273          KM        Route flow from CP B47 to CP B61
6274          RS       7    FLOW      -1
6275          RC   0.050   0.045   0.050    8100  0.0054
6276          RX       0     163     326     490     510     674     837    1000
6277          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

6278          KK     B61
6279          KM        Runoff from B61
6280          BA   0.746
6281          LG    0.50    0.00    4.60    0.50       0
6282          UI      29      29      63     126     166     198     226     242     244     223
6283          UI     205     203     155     147     112      85      88      56      47      39
6284          UI      35      26      27      17      17      16      11       4       4       3
6285          UI       4       3       4       3       4       4       3       4       3       4
6286          UI       3       4       0       0       0       0       0       0       0       0
6287          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6288          KK   CPB61
6289          KM        Combine B50, B48, B47 with B61
```

```
6290          HC       4   2.898
              *

6291          KK  B61RIV
6292          KM        Combine H77RIV with B61
6293          HC       2 296.927
              *

6294          KK  RCPB61
6295          KM        Route flow from CP B61RIV to CP H80RIV (WATERMAN WASH)
6296          RS       1    FLOW      -1
6297          RC   0.050   0.035   0.050     100  0.0050
6298          RX       0    1450    2900    3110    3190    3400    4150    4900
6299          RY    1080    1075    1070    1065    1065    1070    1075    1080
              *

6300          KK     B22
6301          KM        Runoff from B22
6302          BA   0.548
6303          LG    0.35    0.35    3.53    0.58       0
6304          UI     351    1028     582     125      33       0       0       0       0       0
6305          UI       0       0       0       0       0       0       0       0       0       0
              *

6306          KK  RCPB22
6307          KM        Route flow from CP B22 to CP B37
6308          RS       3    FLOW      -1
6309          RC   0.050   0.045   0.050    5160  0.0063
6310          RX     170     180     200     240     260     300     320     330
6311          RY    1160  1159.5    1159    1157    1157    1159  1159.5    1160
              *

6312          KK     B23
6313          KM        Runoff from B23
6314          BA   0.299
6315          LG    0.35    0.35    2.91    0.91       0
6316          UI     380     665      98       0       0       0       0       0       0       0
6317          UI       0       0       0       0       0       0       0       0       0       0
              *

6318          KK    DB23
6319          KM           Divert flow into B24
6320          KM        Natural divergence of flow due to a braided channel network.
6321          DT   DVB23
6322          DI       0      18      68     153     281     333     693    1509    2514    5327
6323          DQ       0      10      37      85     159     197     380     821    1343    2804
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6324          KK  RCPB23
6325          KM        Route remainder flow from CP B23 to CP B36
6326          RS       3    FLOW      -1
6327          RC   0.050   0.045   0.050    3440  0.0059
6328          RX       0     100     225     265     285     325     450     550
6329          RY    1170    1168    1167    1166    1166    1167    1168    1170
              *

6330          KK     B36
6331          KM        Runoff from B36
6332          BA   0.184
6333          LG    0.35    0.35    4.55    0.32       0
6334          UI      85     271     242      85      20       0       0       0       0       0
6335          UI       0       0       0       0       0       0       0       0       0       0
              *

6336          KK   CPB36
6337          KM        Combine B23 with B36
6338          HC       2    0.482
              *

6339          KK   DRB23
6340          KM        Return divert from CP B23 in basin B24
6341          DR   DVB23
              *

6342          KK   RDB23
6343          KM        Route diverted flow from CP B23 to CP B24
6344          RS       2    FLOW      -1
6345          RC   0.050   0.045   0.050    3380  0.0061
6346          RX       0      75     150     190     210     250     350     450
6347          RY    1160    1159    1158    1156    1156    1158    1159    1160
```

```
                *

6348            KK     B24
6349            KM        Runoff from B24
6350            BA   0.238
6351            LG    0.35    0.35    3.19    0.75       0
6352            UI     194     502     188      30       0       0       0       0       0       0
6353            UI       0       0       0       0       0       0       0       0       0       0
                *

6354            KK  CPB24A
6355            KM        Combine DRB23 with B24
6356            HC       2   0.537
                *

6357            KK   CPB24
6358            KM        Combine B36 with B24
6359            HC       2   0.720
                *
1                                        HEC-1 INPUT                                          PAGE169

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6360            KK  RCPB24
6361            KM        Route flow from CP B24 to CP B37
6362            RS       1    FLOW      -1
6363            RC   0.050   0.045   0.050    2000  0.0052
6364            RX       0     100     195     235     265     305     400     500
6365            RY    1145  1144.5    1144    1141    1141    1144  1144.5    1145
                *

6366            KK     B37
6367            KM        Runoff from B37
6368            BA   0.086
6369            LG    0.35    0.35    4.55    0.32       0
6370            UI      62     172      79      15       0       0       0       0       0       0
6371            UI       0       0       0       0       0       0       0       0       0       0
                *

6372            KK   CPB37
6373            KM        Combine B22, B24 with B37
6374            HC       3   1.354
                *

6375            KK     B25
6376            KM        Runoff from B25
6377            BA   0.298
6378            LG    0.35    0.35    3.07    0.81       0
6379            UI     155     478     374     111      25       0       0       0       0       0
6380            UI       0       0       0       0       0       0       0       0       0       0
                *

6381            KK   CPB25
6382            KM        COMBINE B37 WITH B25
6383            HC       2   1.652
                *

6384            KK  RCPB25
6385            KM        Route flow from CP B25 to CP B26
6386            RS       2    FLOW      -1
6387            RC   0.050   0.045   0.050    3350  0.0063
6388            RX       0     175     350     395     410     445     625     800
6389            RY    1130  1129.5    1129    1126    1126    1128    1129    1130
                *

6390            KK     B26
6391            KM        Runoff from B26
6392            BA   0.353
6393            LG    0.35    0.35    3.19    0.75       0
6394            UI     125     364     520     249      74      21       0       0       0       0
6395            UI       0       0       0       0       0       0       0       0       0       0
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6396            KK   CPB26
6397            KM        Combine B25 with B26
6398            HC       2   2.004
                *

6399            KK    DB26
```

```
6400          KM           Divert flow into B33
6401          KM        Natural divergence of flow due to a braided channel network.
6402          DT   DVB26
6403          DI       0      60     120     360     720    1500    3000    3900    4800
6404          DQ       0      40      80     240     480    1000    2000    2600    3200
              *

6405          KK  RCPB26
6406          KM        Route remainder flow from CP B26 to CP B65
6407          RS       1    FLOW      -1
6408          RC   0.050   0.045   0.050    3100  0.0105
6409          RX       0     110     220     345     375     500     650     800
6410          RY  1105.2  1104.5    1104    1103    1103    1104    1105 1106.25
              *

6411          KK  DRB03B
6412          KM        Return diverted flow from B03
6413          DR  DVB03B
              *

6414          KK  RDB03B
6415          KM        Route diverted flow from CP B03 to CP B18
6416          RS      10    FLOW      -1
6417          RC   0.050   0.045   0.050   15260  0.0067
6418          RX     360     375     400     450     470     520     545     560
6419          RY    1190    1189    1187    1186    1186    1187    1189    1190
              *

6420          KK     B17
6421          KM        Runoff from B17
6422          BA   0.048
6423          LG    0.35    0.35    3.60    0.55       0
6424          UI      74     100      11       0       0       0       0       0       0       0
6425          UI       0       0       0       0       0       0       0       0       0       0
              *

6426          KK    DB17
6427          KM           Divert flow into B16
6428          KM        Natural divergence of flow due to a braided channel network.
6429          DT   DVB17
6430          DI       0      21      83     172     478    1122    2076    3105    4297
6431          DQ       0      11      41      86     239     561    1038    1553    2148
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6432          KK  RCPB17
6433          KM        Route remainder flow from CP B17 to CP B18
6434          RS      18    FLOW      -1
6435          RC   0.050   0.045   0.050   10530  0.0068
6436          RX       0     200     400     450     470     520     720    1000
6437          RY    1190    1189    1187    1186    1186    1187    1189    1190
              *

6438          KK     B18
6439          KM        Runoff from B18
6440          BA   0.623
6441          LG    0.35    0.35    3.58    0.56       0
6442          UI      81     274     431     664     447     280     118      66      20      18
6443          UI       0       0       0       0       0       0       0       0       0       0
6444          UI       0       0       0       0       0       0       0       0       0       0
              *

6445          KK   CPB18
6446          KM        Combine DRB03, B17 with B18
6447          HC       3  22.629
              *

6448          KK  DRB03A
6449          KM        Return diverted flow from B03
6450          DR  DVB03A
              *

6451          KK  RDB03A
6452          KM        Route diverted flow from CP B03 to CP B16
6453          RS       4    FLOW      -1
6454          RC   0.050   0.045   0.050    9150  0.0071
6455          RX       0     125     250     350     370     430     540     560
6456          RY    1210    1209    1207    1205    1205    1207    1209    1210
              *

6457          KK   DRB17
```

```
6458          KM        Return diverted flow from B17
6459          DR   DVB17
              *

6460          KK   RDB17
6461          KM        Route flow from CP B17 to CP B16
6462          RS       6    FLOW      -1
6463          RC   0.050   0.045   0.050    4640  0.0067
6464          RX       0     450     900     960     975    1035    1550    2000
6465          RY    1200    1199    1198    1195    1195    1198    1199    1200
              *

6466          KK     B16
6467          KM        Runoff from B16
6468          BA   0.821
6469          LG    0.35    0.35    3.58    0.56       0
6470          UI     264     767    1205     635     202      65      35       0       0       0
6471          UI       0       0       0       0       0       0       0       0       0       0
              *
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1
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6472          KK   CPB16
6473          KM        Combine DRB03A, DRB17 with B16
6474          HC       3  22.827
              *

6475          KK  RCPB16
6476          KM        Route flow from CP B16 to CP B39
6477          RS       3    FLOW      -1
6478          RC   0.050   0.045   0.050    6430  0.0065
6479          RX     170     200     300     425     450     575     710     740
6480          RY    1171  1169.5    1169    1167    1167    1169  1169.5    1171
              *

6481          KK     B39
6482          KM        Runoff from B39
6483          BA   0.390
6484          LG    0.35    0.35    3.74    0.51       0
6485          UI     115     335     560     321     117      39      16       0       0       0
6486          UI       0       0       0       0       0       0       0       0       0       0
              *

6487          KK  CPB39A
6488          KM        Combine B16 with B39
6489          HC       2  23.217
              *

6490          KK   CPB39
6491          KM        Combine B18 with B39
6492          HC       2  23.840
              *

6493          KK  RCPB39
6494          KM        Route flow from CP B39 to CP B54
6495          RS       2    FLOW      -1
6496          RC   0.050   0.045   0.050    3340  0.0061
6497          RX     220     240     385     435     465     515     660     680
6498          RY    1126    1124    1123    1121    1121    1123    1124    1126
              *

6499          KK     B54
6500          KM        Runoff from B54
6501          BA   0.295
6502          LG    0.35    0.35    4.50    0.33       0
6503          UI      80     235     410     254     104      38      12       0       0       0
6504          UI       0       0       0       0       0       0       0       0       0       0
              *

6505          KK   CPB54
6506          KM        Combine B39 with B54
6507          HC       2  24.136
              *
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1
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6508          KK  RCPB54
6509          KM        Route flow from CP B54 to CP B38
6510          RS       1    FLOW      -1
6511          RC   0.050   0.045   0.050    1870  0.0061
```

```
6512          RX     130     150     300     350     370     420     570     590
6513          RY  1116.5  1114.5    1114    1112    1112    1114  1114.5  1116.5
              *

6514          KK     B38
6515          KM        Runoff from B38
6516          BA   0.463
6517          LG    0.35    0.35    4.65    0.30       0
6518          UI      80     251     440     491     291     134      62      21      15       0
6519          UI       0       0       0       0       0       0       0       0       0       0
6520          UI       0       0       0       0       0       0       0       0       0       0
              *

6521          KK   CPB38
6522          KM        Combine B54 with B38
6523          HC       2  24.598
              *

6524          KK  RCPB38
6525          KM        Route flow from CP B38 to CP B65
6526          RS       1    FLOW      -1
6527          RC   0.050   0.045   0.050    1000  0.0105
6528          RX       0     110     220     345     375     500     650     800
6529          RY  1105.2  1104.5    1104    1103    1103    1104    1105 1106.25
              *

6530          KK     B65
6531          KM        RUNOFF FROM B65
6532          BA   0.168
6533          LG    0.34    0.33    4.55    0.32       1
6534          UI     108     315     178      38      10       0       0       0       0       0
6535          UI       0       0       0       0       0       0       0       0       0       0
              *

6536          KK   CPB65
6537          KM        COMBINE B26, B38 WITH B65
6538          KM        NEED NEW AREA
6539          HC       3  24.764
              *

6540          KK  RCPB65
6541          KM        ROUTE FLOW FROM B65 TO B59
6542          RS       3    FLOW      -1
6543          RC   0.050   0.045   0.050    5650  0.0055
6544          RX     205     225     326     490     510     674     775     795
6545          RY    1096    1094    1093    1092    1092    1093    1094    1096
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6546          KK     B27
6547          KM        Runoff from B27
6548          BA   0.856
6549          LG    0.35    0.35    3.03    0.84       0
6550          UI     492    1497    1002     253      52       0       0       0       0       0
6551          UI       0       0       0       0       0       0       0       0       0       0
              *

6552          KK  RCPB27
6553          KM        Route flow from CP B27 to CP B35
6554          RS       2    FLOW      -1
6555          RC   0.050   0.045   0.050    3100  0.0068
6556          RX     340     360     400     425     435     460     520     540
6557          RY    1130    1129    1128    1126    1126    1128    1129    1130
              *

6558          KK     B35
6559          KM        Runoff from B35
6560          BA   0.249
6561          LG    0.35    0.35    3.19    0.75       0
6562          UI      80     233     365     193      61      20      10       0       0       0
6563          UI       0       0       0       0       0       0       0       0       0       0
              *

6564          KK  CPB35A
6565          KM        Combine B27 with B35
6566          HC       2   1.105
              *

6567          KK   DRB26
6568          KM        Return diverted flow from B26
6569          DR   DVB26
```

```
                *

6570            KK   CPB35
6571            KM        COMBINE B26 WITH B35
6572            HC       2   3.109
                *

6573            KK  RCPB35
6574            KM        Route flow from CP B35 to CP B33
6575            RS       1    FLOW      -1
6576            RC   0.050   0.045   0.050    2190  0.0058
6577            RX       0      50     115     145     155     185     250     300
6578            RY  1120.5    1119    1118    1116    1116    1118    1119  1120.5
                *

6579            KK     B28
6580            KM        Runoff from B28
6581            BA   0.386
6582            LG    0.35    0.35    3.03    0.84       0
6583            UI     179     568     508     179      42       0       0       0       0       0
6584            UI       0       0       0       0       0       0       0       0       0       0
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6585            KK     B34
6586            KM        Runoff from B34
6587            BA   0.125
6588            LG    0.35    0.35    3.15    0.77       0
6589            UI      53     163     175      67      18       6       0       0       0       0
6590            UI       0       0       0       0       0       0       0       0       0       0
                *

6591            KK   CPB34
6592            KM        Combine B28 with B34
6593            HC       2   0.511
                *

6594            KK  RCPB34
6595            KM        Route flow from CP B34 to CP B33
6596            RS       3    FLOW      -1
6597            RC   0.050   0.045   0.050    3970  0.0077
6598            RX       0      50     115     145     155     185     250     300
6599            RY    1130    1129    1128    1126    1126    1128  1128.5    1129
                *

6600            KK     B33
6601            KM        Runoff from B33
6602            BA   0.283
6603            LG    0.35    0.35    3.31    0.68       0
6604            UI      84     243     405     234      85      28      12       0       0       0
6605            UI       0       0       0       0       0       0       0       0       0       0
                *

6606            KK  CPB33A
6607            KM        Combine B34 with B33
6608            HC       2   0.796
                *

6609            KK   CPB33
6610            KM        Combine B35 with B33
6611            HC       2   3.905
                *

6612            KK  RCPB33
6613            KM        Route flow from CP B33 to CP B55
6614            RS       1    FLOW      -1
6615            RC   0.050   0.045   0.050     490  0.0055
6616            RX     205     225     326     490     510     674     775     795
6617            RY    1096    1094    1093    1092    1092    1093    1094    1096
                *

6618            KK     B55
6619            KM        Runoff from B55
6620            BA   0.079
6621            LG    0.35    0.35    3.38    0.65       0
6622            UI     100     176      26       0       0       0       0       0       0       0
6623            UI       0       0       0       0       0       0       0       0       0       0
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
6624          KK   CPB55
6625          KM        COMBINE B33 WITH B55
6626          HC       2   3.983
              *

6627          KK  RCPB55
6628          KM        Route flow from CP B55 to CP B59
6629          RS       4    FLOW      -1
6630          RC   0.050   0.045   0.050    6850  0.0044
6631          RX       0     163     326     490     510     674     837    1000
6632          RY    1095    1094    1093    1092    1092    1093    1094    1095
              *

6633          KK     B31
6634          KM        Runoff from B31
6635          BA   0.160
6636          LG    0.35    0.35    3.01    0.89       0
6637          UI     171     359      78       0       0       0       0       0       0       0
6638          UI       0       0       0       0       0       0       0       0       0       0
              *

6639          KK  RCPB31
6640          KM        Route flow from CP B31 to CP B29
6641          RS       6    FLOW      -1
6642          RC   0.050   0.045   0.050    9120  0.0081
6643          RX       0      50     115     145     155     185     250     300
6644          RY    1170  1169.5    1169    1167    1167    1169  1169.5    1170
              *

6645          KK     B32
6646          KM        Runoff from B32
6647          BA   0.043
6648          LG    0.35    0.35    2.97    0.91       0
6649          UI      55      95      14       0       0       0       0       0       0       0
6650          UI       0       0       0       0       0       0       0       0       0       0
              *

6651          KK  RCPB32
6652          KM        Route flow from CP B32 to CP B29
6653          RS       8    FLOW      -1
6654          RC   0.050   0.045   0.050    8130  0.0081
6655          RX       0      50     115     145     155     185     250     300
6656          RY    1170  1169.5    1169    1167    1167    1169  1169.5    1170
              *

6657          KK     B30
6658          KM        Runoff from B30
6659          BA   0.534
6660          LG    0.35    0.35    2.88    0.98       0
6661          UI     188     551     788     377     111      32       0       0       0       0
6662          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6663          KK    DB30
6664          KM           Divert flow into B57
6665          KM        Natural divergence of flow due to a braided channel network.
6666          DT   DVB30
6667          DI       0      29     118     254     682    1667    2936    4387    6065
6668          DQ       0      18      74     160     388     844    1492    2184    2980
              *

6669          KK  RCPB30
6670          KM        Route remainder flow from CP B30 to CP B29
6671          RS       6    FLOW      -1
6672          RC   0.050   0.045   0.050    5630  0.0075
6673          RX       0      50     115     145     155     185     250     300
6674          RY    1140  1139.5    1139    1138    1138    1139  1139.5    1140
              *

6675          KK     B29
6676          KM        Runoff from B29
6677          BA   0.914
6678          LG    0.35    0.35    3.17    0.76       0
6679          UI     269     787    1310     754     273      90      38       0       0       0
6680          UI       0       0       0       0       0       0       0       0       0       0
              *

6681          KK   CPB29
```

```
6682          KM        Combine B31, B32, B30 with B29
6683          HC       4   1.651
              *

6684          KK  RCPB29
6685          KM        Route flow from CP B29 to CP B59
6686          RS       7    FLOW      -1
6687          RC   0.050   0.045   0.050    6990  0.0043
6688          RX       0     163     326     490     510     674     837    1000
6689          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

6690          KK   DRB30
6691          KM        Return diverted flow from B30
6692          DR   DVB30
              *

6693          KK   RDB30
6694          KM        Route diverted flow from CP B30 to CP B57
6695          RS       2    FLOW      -1
6696          RC   0.050   0.045   0.050    4290  0.0111
6697          RX     190     200     225     245     255     275     300     310
6698          RY    1135    1134    1133    1132    1132    1133  1133.5    1134
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6699          KK     B57
6700          KM        Runoff from B57
6701          BA   0.099
6702          LG    0.35    0.35    4.30    0.37       0
6703          UI      71     198      91      18       0       0       0       0       0       0
6704          UI       0       0       0       0       0       0       0       0       0       0
              *

6705          KK   CPB57
6706          KM        Combine DRB30 with B57
6707          HC       2   0.633
              *

6708          KK  RCPB57
6709          KM        Route flow from CP B57 to CP B56
6710          RS       1    FLOW      -1
6711          RC   0.050   0.045   0.050    1420  0.0144
6712          RX       0     200     400     475     495     570     620     670
6713          RY    1110    1109    1108    1106    1106    1108  1109.5    1110
              *

6714          KK     B56
6715          KM        Runoff from B56
6716          BA   0.222
6717          LG    0.35    0.35    4.40    0.35       0
6718          UI      61     176     308     191      79      29       9       0       0       0
6719          UI       0       0       0       0       0       0       0       0       0       0
              *

6720          KK   CPB56
6721          KM        Combine B57 with B56
6722          HC       2   0.854
              *

6723          KK  RCPB56
6724          KM        Route flow from CP B56 to CP B58
6725          RS       1    FLOW      -1
6726          RC   0.050   0.045   0.050    1060  0.0144
6727          RX       0     200     400     475     495     570     620     670
6728          RY    1110    1109    1108    1106    1106    1108  1109.5    1110
              *

6729          KK     B58
6730          KM        Runoff from B58
6731          BA   0.243
6732          LG    0.34    0.32    3.92    0.46       1
6733          UI     173     488     224      44       0       0       0       0       0       0
6734          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6735          KK   CPB58
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6736          KM        Combine B56 with B58
6737          HC       2   1.097
              *

6738          KK  RCPB58
6739          KM        Route flow from CP B58 to CP B59
6740          RS       5    FLOW      -1
6741          RC   0.050   0.045   0.050    5030  0.0040
6742          RX       0     163     326     490     510     674     837    1000
6743          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

6744          KK     B59
6745          KM        Runoff from B59
6746          BA   0.497
6747          LG    0.35    0.35    4.30    0.41       0
6748          UI     123     369     663     446     203      80      20      19       0       0
6749          UI       0       0       0       0       0       0       0       0       0       0
              *

6750          KK   CPB59
6751          KM        Combine B65, B55, B29, B58 with B59
6752          HC       5  31.458
              *

6753          KK  RCPB59
6754          KM        Route flow from CP B59 to CP B60
6755          RS       4    FLOW      -1
6756          RC   0.050   0.045   0.050    5300  0.0019
6757          RX     100     120     326     490     510     674     875     895
6758          RY  1089.5    1087    1086    1085    1085    1086    1087  1089.5
              *

6759          KK     B52
6760          KM        Runoff from B52
6761          BA   0.576
6762          LG    0.35    0.35    3.74    0.51       0
6763          UI     156     458     801     496     203      76      23       0       0       0
6764          UI       0       0       0       0       0       0       0       0       0       0
              *

6765          KK  RCPB52
6766          KM        Route flow from CP B52 to CP B60
6767          RS       8    FLOW      -1
6768          RC   0.050   0.045   0.050    6980  0.0044
6769          RX       0     163     326     490     510     674     837    1000
6770          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6771          KK     B53
6772          KM        Runoff from B53
6773          BA   0.537
6774          LG    0.34    0.34    4.00    0.43       1
6775          UI     146     427     747     462     189      71      21       0       0       0
6776          UI       0       0       0       0       0       0       0       0       0       0
              *

6777          KK  RCPB53
6778          KM        Route flow from CP B53 to CP B60
6779          RS      13    FLOW      -1
6780          RC   0.050   0.045   0.050    9830  0.0031
6781          RX       0     163     326     490     510     674     837    1000
6782          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

6783          KK     B60
6784          KM        Runoff from B60
6785          BA   1.003
6786          LG    0.50    0.00    4.60    0.50       0
6787          UI      33      32      54      89     158     190     206     253     272     273
6788          UI     272     246     227     251     174     185     144     125      95      96
6789          UI      79      59      52      43      40      30      29      27      18      18
6790          UI      19      17       4       4       5       4       4       4       4       4
6791          UI       4       4       4       4       4       4       4       4       5       4
6792          UI       4       0       0       0       0       0       0       0       0       0
6793          UI       0       0       0       0       0       0       0       0       0       0
              *

6794          KK   CPB60
6795          KM        Combine B52, B53, B59 with B60
```

```
6796          HC       4  33.575
              *

6797          KK  RCPB60
6798          KM        Route flow from CP B60 to CP H80RIV
6799          RS       1    FLOW      -1
6800          RC   0.050   0.045   0.050    1500  0.0067
6801          RX     220     240     326     490     510     674     760     780
6802          RY    1081    1079    1078    1077    1077    1078    1079    1081
              *

6803          KK   DRH33
6804          KM        Return diverted flow from CP H33
6805          DR   DVH33
              *

6806          KK   RDH33
6807          KM        Route flow from CP H33 to CP H46
6808          RS       2    FLOW      -1
6809          RC   0.050   0.045   0.050    4900  0.0094
6810          RX     340     360     400     420     430     450     490     510
6811          RY    1190  1188.2    1188    1187    1187    1188  1188.2    1190
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6812          KK     H46
6813          KM        Runoff from H46
6814          BA   0.315
6815          LG    0.35    0.35    4.00    0.47       0
6816          UI     181     551     369      93      19       0       0       0       0       0
6817          UI       0       0       0       0       0       0       0       0       0       0
              *

6818          KK   CPH46
6819          KM        Combine DRH33 with H46
6820          HC       2   4.053
              *

6821          KK  RCPH46
6822          KM        Route flow from CP H46 to CP H78
6823          RS       2    FLOW      -1
6824          RC   0.050   0.045   0.050    5300  0.0075
6825          RX     350     370     400     420     430     450     480     500
6826          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

6827          KK     H06
6828          KM        Runoff from H06
6829          BA   1.228
6830          LG    0.35    0.35    2.83    1.00       0
6831          UI     433    1267    1811     867     256      73       0       0       0       0
6832          UI       0       0       0       0       0       0       0       0       0       0
              *

6833          KK    DH06
6834          KM           Divert flow into H13
6835          KM        Natural divergence of flow due to a braided channel network.
6836          DT   DVH06
6837          DI       0      53     189     414     739     830    1733    3436    6123   11407
6838          DQ       0      30     108     236     422     479     956    1842    3226    5710
              *

6839          KK  RCPH06
6840          KM        Route remainder flow from CP H06 to CP H14
6841          RS       2    FLOW      -1
6842          RC   0.050   0.045   0.050    5890  0.0175
6843          RX     350     370     400     420     430     450     480     500
6844          RY    1345    1344    1343    1342    1342    1343    1344    1345
              *

6845          KK     H14
6846          KM        Runoff from H14
6847          BA   1.138
6848          LG    0.35    0.35    3.50    0.64       6
6849          UI     402    1173    1679     804     236      68       0       0       0       0
6850          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
6851          KK   CPH14
6852          KM        Combine H06 with H14
6853          HC       2   2.365
              *

6854          KK  RCPH14
6855          KM        Route flow from CP H14 to CP H13
6856          RS       1    FLOW      -1
6857          RC   0.050   0.045   0.050    2930  0.0115
6858          RX     280     300     400     420     430     450     570     590
6859          RY    1290    1289    1288    1287    1287    1288    1289    1290
              *

6860          KK   DRH06
6861          KM        Return diverted flow from CP H06
6862          DR   DVH06
              *

6863          KK   RDH06
6864          KM        Route flow from CP H06 to CP H13
6865          RS       3    FLOW      -1
6866          RC   0.050   0.045   0.050    8020  0.0169
6867          RX     250     270     300     315     335     350     380     400
6868          RY    1345  1343.5    1343    1342    1342    1343  1343.5    1345
              *

6869          KK     H13
6870          KM        Runoff from H13
6871          BA   0.519
6872          LG    0.35    0.35    3.95    0.48       0
6873          UI     220     677     725     278      77      26       0       0       0       0
6874          UI       0       0       0       0       0       0       0       0       0       0
              *

6875          KK   CPH13
6876          KM        Combine H14, DRH06 with H13
6877          HC       3   2.885
              *

6878          KK  RCPH13
6879          KM        Route flow from CP H13 to CP H34
6880          RS       2    FLOW      -1
6881          RC   0.050   0.045   0.050    4030 ·0.0096
6882          RX     180     200     325     335     340     350     485     505
6883          RY    1241    1239    1238    1237    1237    1238    1239    1241
              *

6884          KK     H12
6885          KM        Runoff from H12
6886          BA   0.438
6887          LG    0.35    0.35    3.74    0.54       9
6888          UI     155     452     645     309      92      26       0       0       0       0
6889          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6890          KK    DH12
6891          KM            Divert flow into H35
6892          KM        Natural divergence of flow due to a braided channel network.
6893          DT   DVH12
6894          DI       0      55     226     500    1373    3030    5874   10943   16576
6895          DQ       0      17      67     151     508    1235    2636    4751    7364
              *

6896          KK  RCPH12
6897          KM        Route remainder flow from CP H12 to CP H07
6898          RS       1    FLOW      -1
6899          RC   0.050   0.045   0.050    3300  0.0175
6900          RX     300     320     350     360     365     375     405     425
6901          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

6902          KK     H07
6903          KM        Runoff from H07
6904          BA   1.183
6905          LG    0.35    0.35    3.78    0.54       0
6906          UI     272     821    1505    1100     551     203      70      43       0       0
6907          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
6908          KK   CPH07
6909          KM        Combine H12 with H07
6910          HC       2   1.621
              *

6911          KK    DH07
6912          KM            Divert flow into H36
6913          KM        Natural divergence of flow due to a braided channel network.
6914          DT   DVH07
6915          DI       0      34     133    2252    6948   13897   22635
6916          DQ       0      17      67    1126    3474    6949   11318
              *

6917          KK  RCPH07
6918          KM        Route remainder flow from CP H07 to CP H34
6919          RS       2    FLOW      -1
6920          RC   0.050   0.045   0.050    3720  0.0108
6921          RX     350     370     400     420     430     450     480     500
6922          RY    1250    1249    1248    1247    1247    1248    1249    1250
              *

6923          KK     H34
6924          KM        Runoff from H34
6925          BA   0.407
6926          LG    0.35    0.35    4.00    0.47       0
6927          UI     436     913     198       0       0       0       0       0       0       0
6928          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                          HEC-1 INPUT                                          PAGE184

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6929          KK   CPH34
6930          KM        Combine H13, H07 with H34
6931          HC       3   4.912
              *

6932          KK  RCPH34
6933          KM        Route flow from CP H34 to CP H45
6934          RS       3    FLOW      -1
6935          RC   0.050   0.045   0.050    5950  0.0086
6936          RX     200     220     400     420     430     450     640     660
6937          RY    1211    1209    1208    1207    1207    1208    1209    1211
              *

6938          KK     H45
6939          KM        Runoff from H45
6940          BA   0.278
6941          LG    0.35    0.35    4.00    0.47       0
6942          UI     144     446     350     103      23       0       0       0       0       0
6943          UI       0       0       0       0       0       0       0       0       0       0
              *

6944          KK   CPH45
6945          KM        Combine H34 with H45
6946          HC       2   5.191
              *

6947          KK  RCPH45
6948          KM        Route flow from CP H45 to CP H78
6949          RS       3    FLOW      -1
6950          RC   0.050   0.045   0.050    5270  0.0075
6951          RX     230     250     400     420     430     450     600     620
6952          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

6953          KK   DRH07
6954          KM        Return diverted flow from CP H07
6955          DR   DVH07
              *

6956          KK   RDH07
6957          KM        Route flow from CP H07 to CP H36
6958          RS       3    FLOW      -1
6959          RC   0.050   0.045   0.050    5180  0.0102
6960          RX     310     330     400     420     430     450     510     530
6961          RY    1250  1248.5    1248    1247    1247    1248  1248.5    1250
              *

6962          KK     H36
6963          KM        Runoff from H36
6964          BA   0.437
6965          LG    0.35    0.35    4.00    0.47       0
```

```
6966          UI     251     764     512     129      26       0       0       0       0       0
6967          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6968          KK   CPH36
6969          KM        Combine DRH07 with H36
6970          HC       2   2.058
              *

6971          KK  RCPH36
6972          KM        Route flow from CP H36 to CP H44
6973          RS       3    FLOW      -1
6974          RC   0.050   0.045   0.050    6550  0.0094
6975          RX     350     370     400     420     430     450     480     500
6976          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

6977          KK     H44
6978          KM        Runoff from H44
6979          BA   0.554
6980          LG    0.35    0.35    4.00    0.47       0
6981          UI     287     889     698     204      47       0       0       0       0       0
6982          UI       0       0       0       0       0       0       0       0       0       0
              *

6983          KK   CPH44
6984          KM        Combine H36 with H44
6985          HC       2   2.612
              *

6986          KK  RCPH44
6987          KM        Route flow from CP H44 to CP H78
6988          RS       2    FLOW      -1
6989          RC   0.050   0.045   0.050    3090  0.0058
6990          RX     340     360     400     420     430     450     490     510
6991          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

6992          KK     H78
6993          KM        Runoff from H78
6994          BA   0.489
6995          LG    0.35    0.35    4.00    0.47       0
6996          UI     349     981     452      87       0       0       0       0       0       0
6997          UI       0       0       0       0       0       0       0       0       0       0
              *

6998          KK   CPH78
6999          KM        Combine H44, H45, H46 with H78
7000          HC       4  10.723
              *

7001          KK  RCPH78
7002          KM        Route flow from CP H78 to CP H79
7003          RS       3    FLOW      -1
7004          RC   0.050   0.045   0.050    5400  0.0066
7005          RX     150     170     400     420     430     450     680     700
7006          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7007          KK     H79
7008          KM        Runoff from H79
7009          BA   0.503
7010          LG    0.35    0.35    4.00    0.47       0
7011          UI     289     880     589     149      30       0       0       0       0       0
7012          UI       0       0       0       0       0       0       0       0       0       0
              *

7013          KK   CPH79
7014          KM        Combine H78 with H79
7015          HC       2  11.227
              *

7016          KK  RCPH79
7017          KM        Route flow from CP H79 to CP H80
7018          RS       3    FLOW      -1
7019          RC   0.050   0.045   0.050    5340  0.0054
```

```
7020          RX      80     100     400     420     430     450     750     770
7021          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *

7022          KK     H80
7023          KM        Runoff from H80
7024          BA   0.458
7025          LG    0.44    0.15    4.10    0.59       0
7026          UI      68     269     421     387     267     158      80      51      30      12
7027          UI       6       6       7       6       0       0       0       0       0       0
7028          UI       0       0       0       0       0       0       0       0       0       0
              *

7029          KK   CPH80
7030          KM        Combine H79 with H80
7031          HC       2  11.685
              *

7032          KK  H80RIV
7033          KM        Combine B61RIV, B60 with H80
7034          HC       3 316.491
              *

7035          KK  RCPH80
7036          KM        Route flow from CP H80RIV to CP B62RIV (WATERMAN WASH)
7037          RS       1    FLOW      -1
7038          RC   0.050   0.035   0.050    4370  0.0023
7039          RX    2280    2300    2500    2710    2790    3000    3200    3220
7040          RY    1070    1065    1060    1055    1055    1060    1065    1070
              *

7041          KK     B62
7042          KM        Runoff from B62
7043          BA   0.334
7044          LG    0.50    0.00    4.60    0.50       0
7045          UI      16      22      49      90     109     122     133     127     112     107
7046          UI      88      66      51      47      30      24      20      15      14       9
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7047          UI       9       7       2       2       2       2       2       2       2       2
7048          UI       2       2       2       2       0       0       0       0       0       0
7049          UI       0       0       0       0       0       0       0       0       0       0
              *

7050          KK  B62RIV
7051          KM        Combine H80RIV with B62
7052          HC       2 316.826
              *

7053          KK  RCPB62
7054          KM        Route flow from CP B62RIV to CP B63RIV (WATERMAN WASH)
7055          RS       1    FLOW      -1
7056          RC   0.050   0.035   0.050    1310  0.0036
7057          RX       0    1300    2600    2810    2890    3100    4700    6300
7058          RY    1070    1065    1060    1055    1055    1060    1065    1070
              *

7059          KK     H43
7060          KM        Runoff from H43
7061          BA   0.220
7062          LG    0.35    0.35    4.00    0.47       0
7063          UI     179     464     174      28       0       0       0       0       0       0
7064          UI       0       0       0       0       0       0       0       0       0       0
              *

7065          KK  RCPH43
7066          KM        Route flow from CP H43 to CP H81
7067          RS       2    FLOW      -1
7068          RC   0.050   0.045   0.050    2820  0.0077
7069          RX     350     370     400     420     430     450     480     500
7070          RY    1150    1149    1148    1147    1147    1148    1149    1150
              *

7071          KK     H81
7072          KM        Runoff from H81
7073          BA   0.243
7074          LG    0.35    0.35    4.00    0.47       0
7075          UI     470     432       0       0       0       0       0       0       0       0
7076          UI       0       0       0       0       0       0       0       0       0       0
              *

7077          KK  CPH81
```

```
7078          KM        Combine H43 with H81
7079          HC       2   0.463
              *

7080          KK  RCPH81
7081          KM        Route flow from CP H81 to CP H82
7082          RS       3    FLOW      -1
7083          RC   0.050   0.045   0.050    5450  0.0075
7084          RX     350     370     400     420     430     450     480     500
7085          RY    1120    1119    1118    1117    1117    1118    1119    1120
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7086          KK     H08
7087          KM        Runoff from H08
7088          BA   1.392
7089          LG    0.35    0.35    3.38    0.66      17
7090          UI     589    1819    1943     746     206      68       0       0       0       0
7091          UI       0       0       0       0       0       0       0       0       0       0
              *

7092          KK  RCPH08
7093          KM        Route flow from CP H08 to CP H35
7094          RS       2    FLOW      -1
7095          RC   0.050   0.045   0.050    6270  0.0143
7096          RX     130     150     250     260     265     275     350     370
7097          RY    1341    1339    1338    1337    1337    1338    1339    1341
              *

7098          KK     H11
7099          KM        Runoff from H11
7100          BA   0.273
7101          LG    0.35    0.35    3.95    0.49       0
7102          UI     175     513     289      62      17       0       0       0       0       0
7103          UI       0       0       0       0       0       0       0       0       0       0
              *

7104          KK    DH11
7105          KM           Divert flow into H38
7106          KM        Natural divergence of flow due to a braided channel network.
7107          DT   DVH11
7108          DI       0      42     175    1485    4409    8936   14464
7109          DQ       0      11      54     689    2095    4271    6958
              *

7110          KK  RCPH11
7111          KM        Route remainder flow from CP H11 to CP H35
7112          RS       2    FLOW      -1
7113          RC   0.050   0.045   0.050    3390  0.0143
7114          RX       0     180     250     270     285     305     375     555
7115          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

7116          KK   DRH12
7117          KM        Return diverted flow from CP H12
7118          DR   DVH12
              *

7119          KK   RDH12
7120          KM        Route flow from CP H12 to CP H35
7121          RS       2    FLOW      -1
7122          RC   0.050   0.045   0.050    3230  0.0125
7123          RX       0     180     250     265     280     295     375     550
7124          RY    1290    1289    1288    1287    1287    1288    1289    1290
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7125          KK     H35
7126          KM        Runoff from H35
7127          BA   0.338
7128          LG    0.35    0.35    3.95    0.48       0
7129          UI     314     741     217      33       0       0       0       0       0       0
7130          UI       0       0       0       0       0       0       0       0       0       0
              *

7131          KK   CPH35
7132          KM        Combine H08, H11, DRH12 with H35
7133          HC       4   2.441
```

```
                *

7134            KK  RCPH35
7135            KM        Route flow from CP H35 to CP H37
7136            RS       2    FLOW      -1
7137            RC   0.050   0.045   0.050    5230  0.0102
7138            RX     210     230     300     310     320     330     420     440
7139            RY  1250.8    1249    1248    1247    1247    1248    1249  1250.8
                *

7140            KK     H37
7141            KM        Runoff from H37
7142            BA   0.563
7143            LG    0.35    0.35    3.95    0.48       0
7144            UI     361    1056     598     128      34       0       0       0       0       0
7145            UI       0       0       0       0       0       0       0       0       0       0
                *

7146            KK   CPH37
7147            KM        Combine H35 with H37
7148            HC       2   3.004
                *

7149            KK  RCPH37
7150            KM        Route flow from CP H37 to CP H42
7151            RS       3    FLOW      -1
7152            RC   0.050   0.045   0.050    7690  0.0084
7153            RX     240     260     330     345     355     370     440     460
7154            RY    1186    1184    1183    1182    1182    1183    1184    1186
                *

7155            KK     H42
7156            KM        Runoff from H42
7157            BA   0.442
7158            LG    0.35    0.35    4.00    0.47       0
7159            UI     169     512     641     275      82      20       0       0       0       0
7160            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7161            KK   CPH42
7162            KM        Combine H37 with H42
7163            HC       2   3.446
                *

7164            KK  RCPH42
7165            KM        Route flow from CP H42 to CP H82
7166            RS       3    FLOW      -1
7167            RC   0.050   0.045   0.050    5960  0.0075
7168            RX     300     320     400     420     430     450     530     550
7169            RY    1121    1119    1118    1117    1117    1118    1119    1121
                *

7170            KK     H82
7171            KM        Runoff from H82
7172            BA   0.502
7173            LG    0.35    0.35    4.00    0.47       0
7174            UI     260     806     631     186      42       0       0       0       0       0
7175            UI       0       0       0       0       0       0       0       0       0       0
                *

7176            KK   CPH82
7177            KM        Combine H81, H42 with H82
7178            HC       3   4.411
                *

7179            KK  RCPH82
7180            KM        Route flow from CP H82 to CP H83
7181            RS       3    FLOW      -1
7182            RC   0.050   0.045   0.050    5750  0.0053
7183            RX     300     320     400     420     430     450     560     580
7184            RY    1081    1079    1078    1077    1077    1078    1079    1081
                *

7185            KK     H83
7186            KM        Runoff from H83
7187            BA   0.660
7188            LG    0.41    0.21    4.10    0.55       0
7189            UI     105     340     572     715     433     218      96      38      21       0
7190            UI       0       0       0       0       0       0       0       0       0       0
7191            UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

7192            KK   CPH83
7193            KM        Combine H82 with H83
7194            HC       2   5.071
                *

7195            KK     B63
7196            KM        Runoff from B63
7197            BA   0.217
7198            LG    0.50    0.00    4.50    0.54       0
7199            UI      13      23      63      82     100     107      94      89      71      49
7200            UI      37      29      19      16      11       9       7       5       1       2
1                                          HEC-1 INPUT                                                PAGE191

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7201            UI       1       2       2       1       2       1       2       2       0       0
7202            UI       0       0       0       0       0       0       0       0       0       0
                *

7203            KK  B63RIV
7204            KM        Combine B62RIV, H83 with B63
7205            KM        Buenos Aires Road crossing at B63RIV
7206            HC       3 321.675
                *

7207            KK  RCPB63
7208            KM        Route flow from CP B63RIV to CP B64RIV (WATERMAN WASH)
7209            RS       1    FLOW      -1
7210            RC   0.050   0.035   0.050    2290  0.0040
7211            RX       0    1900    3100    3310    3390    3600    4700    5800
7212            RY    1070    1060    1055    1050    1050    1055  1057.5    1060
                *

7213            KK     B64
7214            KM        Runoff from B64
7215            BA   0.304
7216            LG    0.50    0.00    4.70    0.47       0
7217            UI      14      20      51      68      80     100     136     164     127     105
7218            UI      85      68      51      28      23      18      13       6       4       4
7219            UI       4       4       0       0       0       0       0       0       0       0
7220            UI       0       0       0       0       0       0       0       0       0       0
                *

7221            KK  B64RIV
7222            KM        Combine B63RIV with B64
7223            HC       2 321.980
                *

7224            KK  RCPB64
7225            KM        Route flow from CP B64RIV to CP H86RIV (WATERMAN WASH)
7226            RS       1    FLOW      -1
7227            RC   0.050   0.035   0.050    1230  0.0033
7228            RX    2475    2500    3700    3765    3835    3900    4500    4525
7229            RY    1054    1052    1045    1040    1040    1045    1052    1054
                *

7230            KK     H09
7231            KM        Runoff from H09
7232            BA   1.076
7233            LG    0.35    0.35    3.81    0.49      53
7234            UI     823    1798     849     387     174      75      43       0       0       0
7235            UI       0       0       0       0       0       0       0       0       0       0
                *

7236            KK  RCPH09
7237            KM        Route flow from CP H09 to CP H10
7238            RS       2    FLOW      -1
7239            RC   0.050   0.045   0.050    7010  0.0239
7240            RX     220     240     280     300     330     350     390     410
7241            RY    1415    1414    1413    1412    1412    1413    1414    1415
                *
1                                          HEC-1 INPUT                                                PAGE192

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7242            KK     H10
7243            KM        Runoff from H10
7244            BA   0.555
7245            LG    0.35    0.35    3.95    0.49       3
7246            UI     452    1170     439      70       0       0       0       0       0       0
7247            UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

7248            KK   CPH10
7249            KM        Combine H09 with H10
7250            HC       2   1.630
                *

7251            KK  RCPH10
7252            KM        Route flow from CP H10 to CP H38
7253            RS       2    FLOW      -1
7254            RC   0.050   0.045   0.050    5200  0.0143
7255            RX     300     320     400     420     430     450     530     550
7256            RY    1291    1289    1288    1287    1287    1288    1289    1291
                *

7257            KK   DRH11
7258            KM        Return diverted flow from CP H11
7259            DR   DVH11
                *

7260            KK   RDH11
7261            KM        Route flow from CP H11 to CP H38
7262            RS       4    FLOW      -1
7263            RC   0.050   0.045   0.050    5430  0.0132
7264            RX       0     250     325     340     345     360     460     650
7265            RY    1290    1289    1288    1287    1287    1288    1289    1290
                *

7266            KK     H38
7267            KM        Runoff from H38
7268            BA   0.480
7269            LG    0.35    0.35    3.95    0.48       0
7270            UI     391    1012     379      61       0       0       0       0       0       0
7271            UI       0       0       0       0       0       0       0       0       0       0
                *

7272            KK   CPH38
7273            KM        Combine H10, DRH11 with H38
7274            HC       3   2.384
                *

7275            KK  RCPH38
7276            KM        Route flow from CP H38 to CP H39
7277            RS       2    FLOW      -1
7278            RC   0.050   0.045   0.050    5100  0.0100
7279            RX     125     145     225     235     240     250     365     385
7280            RY  1230.8    1229    1228    1227    1227    1228    1229  1230.8
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7281            KK     H39
7282            KM        Runoff from H39
7283            BA   0.379
7284            LG    0.35    0.35    4.00    0.47       0
7285            UI     308     800     299      48       0       0       0       0       0       0
7286            UI       0       0       0       0       0       0       0       0       0       0
                *

7287            KK   CPH39
7288            KM        Combine H38 with H39
7289            HC       2   2.763
                *

7290            KK    DH39
7291            KM           Divert flow into H40
7292            KM        Natural divergence of flow due to a braided channel network.
7293            DT   DVH39
7294            DI       0      26     101    1515    4658    9338   15308
7295            DQ       0      13      50     758    2329    4669    7654
                *

7296            KK  RCPH39
7297            KM        Route remainder flow from CP H39 to CP H41
7298            RS       2    FLOW      -1
7299            RC   0.050   0.045   0.050    4970  0.0094
7300            RX     190     210     250     260     265     275     315     335
7301            RY    1176    1174    1173    1172    1172    1173    1174    1176
                *

7302            KK     H41
7303            KM        Runoff from H41
```

```
7304          BA   0.300
7305          LG    0.35    0.35    4.00    0.47       0
7306          UI     244     633     237      38       0       0       0       0       0
7307          UI       0       0       0       0       0       0       0       0       0
              *

7308          KK   CPH41
7309          KM        Combine H39 with H41
7310          HC       2   3.063
              *

7311          KK  RCPH41
7312          KM        Route flow from CP H41 to CP H84
7313          RS       2    FLOW      -1
7314          RC   0.050   0.045   0.050    5390  0.0075
7315          RX     350     370     400     420     430     450     480     500
7316          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7317          KK   DRH39
7318          KM        Return diverted flow from CP H39
7319          DR   DVH39
              *

7320          KK   RDH39
7321          KM        Route flow from CP H39 to CP H40
7322          RS       3    FLOW      -1
7323          RC   0.050   0.045   0.050    7040  0.0093
7324          RX     130     150     200     210     215     225     300     320
7325          RY    1170    1169    1168    1167    1167    1168  1168.5    1170
              *

7326          KK     H40
7327          KM        Runoff from H40
7328          BA   0.470
7329          LG    0.35    0.35    4.00    0.47       0
7330          UI     244     754     591     174      39       0       0       0       0       0
7331          UI       0       0       0       0       0       0       0       0       0       0
              *

7332          KK   CPH40
7333          KM        Combine DRH39 with H40
7334          HC       2   3.233
              *

7335          KK  RCPH40
7336          KM        Route flow from CP H40 to CP H84
7337          RS       1    FLOW      -1
7338          RC   0.050   0.045   0.050    2780  0.0074
7339          RX     350     370     400     420     430     450     480     500
7340          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

7341          KK     H84
7342          KM        Runoff from H84
7343          BA   0.756
7344          LG    0.35    0.35    4.00    0.47       0
7345          UI     484    1419     803     172      45       0       0       0       0       0
7346          UI       0       0       0       0       0       0       0       0       0       0
              *

7347          KK   CPH84
7348          KM        Combine H41, H40 with H84
7349          HC       3   4.289
              *

7350          KK  RCPH84
7351          KM        Route flow from CP H84 to CP H85
7352          RS       3    FLOW      -1
7353          RC   0.050   0.045   0.050    5270  0.0067
7354          RX     280     300     400     420     430     450     570     590
7355          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7356          KK     H85
7357          KM        Runoff from H85
```

```
7358          BA   0.976
7359          LG    0.50    0.00    4.00    0.70       0
7360          UI      60     120     311     399     494     506     429     370     300     202
7361          UI     164     104      78      59      46      34      28       8       8       7
7362          UI       8       7       8       7       8       7       0       0       0       0
7363          UI       0       0       0       0       0       0       0       0       0       0
              *

7364          KK   CPH85
7365          KM        Combine H84 with H85
7366          HC       2   5.265
              *

7367          KK  RCPH85
7368          KM        Route flow from CP H85 to CP H86
7369          RS       3    FLOW      -1
7370          RC   0.050   0.045   0.050    6440  0.0056
7371          RX     270     290     400     420     430     450     560     580
7372          RY    1061 1058.45    1058    1057    1057    1058 1058.45    1061
              *

7373          KK     H86
7374          KM        Runoff from H86
7375          BA   1.077
7376          LG    0.48    0.05    4.25    0.60       0
7377          UI      69     153     375     494     584     556     514     383     290     206
7378          UI     148     102      75      60      40      38       9       9       8       9
7379          UI       9       8       9       9       8       0       0       0       0       0
7380          UI       0       0       0       0       0       0       0       0       0       0
              *

7381          KK   CPH86
7382          KM        Combine H85 with H86
7383          HC       2   6.343
              *

7384          KK  H86RIV
7385          KM        Combine B64RIV with H86
7386          HC       2 328.049
              *

7387          KK  RCPH86
7388          KM        Route flow from CP H86RIV to CP A41RIV (WATERMAN WASH)
7389          RS       1    FLOW      -1
7390          RC   0.050   0.035   0.050    4670  0.0033
7391          RX    2175    2200    3700    3765    3835    3900    5400    5425
7392          RY    1034    1032    1025    1020    1020    1025    1032    1034
              * ******************************************************************************
              * COMPLETED WATERSHEDS B, C, AND H
              * BEGINNING OF WATERSHEDS A AND I
              * ROUTES DIFFER FROM INDIVIDUAL MODELS
              * ******************************************************************************
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1                                   HEC-1 INPUT

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7393          KK     I02
7394          KM        Runoff subbasin I02
7395          BA   0.431
7396          LG    0.35    0.35    3.95    0.45      46
7397          UI     308     864     399      76       0       0       0       0       0       0
7398          UI       0       0       0       0       0       0       0       0       0       0
              *

7399          KK     I01
7400          KM        Runoff subbasin I01
7401          BA   0.580
7402          LG    0.35    0.35    3.95    0.46      45
7403          UI     333    1014     680     171      35       0       0       0       0       0
7404          UI       0       0       0       0       0       0       0       0       0       0
              *

7405          KK   CPI01
7406          KM        Combine I02 with I01
7407          HC       2   1.011
              *

7408          KK  RCPI01
7409          KM        Route flow from CP I01 to CP I03
7410          RS       1    FLOW      -1
7411          RC   0.050   0.045   0.050     930  0.0171
7412          RX       0     100     175     300     315     440     515     615
7413          RY    1360    1359    1358    1355    1355    1358    1359    1360
```

```
                *

7414            KK     I03
7415            KM        Runoff subbasin I03
7416            BA   0.094
7417            LG    0.35    0.35    3.95    0.48       0
7418            UI     257     102       0       0       0       0       0       0       0       0
7419            UI       0       0       0       0       0       0       0       0       0       0
                *

7420            KK   CPI03
7421            KM        Combine I01 with I03
7422            HC       2   1.104
                *

7423            KK    DI03
7424            KM           Divert flow from CP I03 into I05
7425            KM        Natural divergence of flow due to a braided channel network.
7426            DT   DVI03
7427            DI       0      60     214     467     835    1330    1965    2571    3578    8419
7428            DQ       0      30     107     234     418     665     982    1376    1853    3947
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7429            KK  RCPI03
7430            KM        Route remainder flow from CP I03 to CP I04
7431            RS       2    FLOW      -1
7432            RC   0.050   0.045   0.050    5060  0.0153
7433            RX       0     100     200     230     240     270     360     450
7434            RY    1310    1309    1308    1306    1306    1308    1309    1310
                *

7435            KK     I04
7436            KM        Runoff subbasin I04
7437            BA   0.329
7438            LG    0.35    0.35    3.95    0.48       0
7439            UI     306     721     211      32       0       0       0       0       0       0
7440            UI       0       0       0       0       0       0       0       0       0       0
                *

7441            KK   CPI04
7442            KM        Combine I03 with I04
7443            HC       2   1.433
                *

7444            KK  RCPI04
7445            KM        Route flow from CP I04 to CP I06
7446            RS       2    FLOW      -1
7447            RC   0.050   0.045   0.050    4360  0.0126
7448            RX       0     100     200     350     370     520     620     720
7449            RY    1260    1259    1258    1257    1257    1258    1259    1260
                *

7450            KK     I06
7451            KM        Runoff subbasin I06
7452            BA   0.499
7453            LG    0.35    0.35    4.00    0.47       0
7454            UI     464    1093     321      47       0       0       0       0       0       0
7455            UI       0       0       0       0       0       0       0       0       0       0
                *

7456            KK   CPI06
7457            KM        Combine I04 with I06
7458            HC       2   1.932
                *

7459            KK  RCPI06
7460            KM        Route flow from CP I06 to CP I08
7461            RS       5    FLOW      -1
7462            RC   0.050   0.045   0.050    6090  0.0101
7463            RX       0      50     350     400     410     460     760     810
7464            RY    1190    1189    1188    1187    1187    1188    1189    1190
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7465            KK     I08
7466            KM        Runoff subbasin I08
7467            BA   0.791
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```
7468          LG    0.35    0.35    4.00    0.47       0
7469          UI     454    1384     926     233      49       0       0       0       0       0
7470          UI       0       0       0       0       0       0       0       0       0       0
              *

7471          KK   CPI08
7472          KM        Combine I06 with I08
7473          HC       2   2.723
              *

7474          KK  RCPI08
7475          KM        Route flow from CP I08 to CP I10
7476          RS       2    FLOW      -1
7477          RC   0.050   0.045   0.050    5220  0.0086
7478          RX       0       9      40      60      70      90     120     129
7479          RY    1141 1138.25    1138    1137    1137    1138 1138.25    1141
              *

7480          KK     I10
7481          KM        Runoff subbasin I10
7482          BA   0.497
7483          LG    0.35    0.35    4.00    0.47       0
7484          UI     355     997     459      88       0       0       0       0       0       0
7485          UI       0       0       0       0       0       0       0       0       0       0
              *

7486          KK   CPI10
7487          KM        Combine I08 with I10
7488          HC       2   3.220
              *

7489          KK  RCPI10
7490          KM        Route flow from CP I10 to CP I12
7491          RS       2    FLOW      -1
7492          RC   0.050   0.045   0.050    5260  0.0078
7493          RX       0       9      40      60      70      90     120     129
7494          RY    1101 1098.25    1098    1097    1097    1098 1098.25    1101
              *

7495          KK   DRI03
7496          KM             Return Diverted flow from CP I03 in basin I05
7497          DR   DVI03
              *

7498          KK   RDI03
7499          KM        Route diverted flow from CP I03 CP I05
7500          RS       1    FLOW      -1
7501          RC   0.050   0.045   0.050    4450  0.0171
7502          RX       0       9      35      45      50      60      85      94
7503          RY    1300 1298.25    1298    1297    1297    1298 1298.25    1300
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7504          KK     I05
7505          KM        Runoff subbasin I05
7506          BA   0.205
7507          LG    0.35    0.35    3.95    0.48       0
7508          UI     260     456      68       0       0       0       0       0       0       0
7509          UI       0       0       0       0       0       0       0       0       0       0
              *

7510          KK   CPI05
7511          KM        Combine I03 with I05
7512          HC       2   1.310
              *

7513          KK  RCPI05
7514          KM        Route flow from CP I05 to CP I07
7515          RS       2    FLOW      -1
7516          RC   0.050   0.045   0.050    3990  0.0138
7517          RX       0     100     200     350     370     520     620     720
7518          RY    1260    1259    1258    1257    1257    1258    1259    1260
              *

7519          KK     I07
7520          KM        Runoff subbasin I07
7521          BA   0.194
7522          LG    0.35    0.35    4.00    0.47       0
7523          UI     246     432      63       0       0       0       0       0       0       0
7524          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
7525          KK   CPI07
7526          KM        Combine I05 with I07
7527          HC       2   1.503
              *

7528          KK  RCPI07
7529          KM        Route flow from CP I07 to CP I09
7530          RS       4    FLOW      -1
7531          RC   0.050   0.045   0.050    5390  0.0112
7532          RX       0      50     350     400     410     460     760     810
7533          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

7534          KK     I09
7535          KM        Runoff subbasin I09
7536          BA   0.315
7537          LG    0.35    0.35    4.00    0.47       0
7538          UI     256     665     249      39       0       0       0       0       0       0
7539          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7540          KK   CPI09
7541          KM        Combine I07 with I09
7542          HC       2   1.819
              *

7543          KK  RCPI09
7544          KM        Route flow from CP I09 to CP I11
7545          RS       4    FLOW      -1
7546          RC   0.050   0.045   0.050    4470  0.0102
7547          RX       0     100     400     420     430     450     750     850
7548          RY    1140    1139    1138    1137    1137    1138    1139    1140
              *

7549          KK     I11
7550          KM        Runoff subbasin I11
7551          BA   0.289
7552          LG    0.35    0.35    3.95    0.48       0
7553          UI     150     464     363     107      25       0       0       0       0       0
7554          UI       0       0       0       0       0       0       0       0       0       0
              *

7555          KK   CPI11
7556          KM        Combine I09 with I11
7557          HC       2   2.107
              *

7558          KK  RCPI11
7559          KM        Route flow from CP I11 to CP I12
7560          RS       5    FLOW      -1
7561          RC   0.050   0.045   0.050    5400  0.0075
7562          RX       0     100     400     420     430     450     750     850
7563          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

7564          KK     I12
7565          KM        Runoff subbasin I12
7566          BA   0.509
7567          LG    0.35    0.35    4.00    0.47       0
7568          UI     326     955     541     115      32       0       0       0       0       0
7569          UI       0       0       0       0       0       0       0       0       0       0
              *

7570          KK   CPI12
7571          KM        Combine I10, I11 with I12
7572          HC       3   4.732
              *

7573          KK  RCPI12
7574          KM        Route flow from CP I12 to CP I13
7575          RS       2    FLOW      -1
7576          RC   0.050   0.045   0.050    5220  0.0067
7577          RX       0      11      50      70      80     100     140     151
7578          RY  1061.5 1058.25    1058    1057    1057    1058 1058.25  1061.5
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
7579          KK     I13
7580          KM        Runoff subbasin I13
7581          BA   0.519
7582          LG    0.35     0.35     4.25     0.42        0
7583          UI     333      973      552      117       32        0        0        0        0        0
7584          UI       0        0        0        0        0        0        0        0        0        0
              *

7585          KK   CPI13
7586          KM        Combine I12 with I13
7587          HC       2   5.251
              *

7588          KK  RCPI13
7589          KM        Route flow from CP I13 to CP I14
7590          RS       1     FLOW       -1
7591          RC   0.050    0.045    0.050     2560   0.0065
7592          RX       0       10       60       80       90      110      160      170
7593          RY    1041   1038.5     1038     1037     1037     1038   1038.5     1041
              *

7594          KK     I14
7595          KM        Runoff subbasin I14
7596          BA   0.240
7597          LG    0.35     0.36     5.20     0.25        0
7598          UI     465      426        0        0        0        0        0        0        0        0
7599          UI       0        0        0        0        0        0        0        0        0        0
              *

7600          KK   CPI14
7601          KM        Combine I13 with I14
7602          HC       2   5.491
              *

7603          KK     A12
7604          KM        Runoff from A12
7605          BA   1.064
7606          LG    0.35     0.34     4.50     0.34        0
7607          UI     183      576     1013     1127      669      310      142       46       35        0
7608          UI       0        0        0        0        0        0        0        0        0        0
7609          UI       0        0        0        0        0        0        0        0        0        0
              *

7610          KK  RCPA12
7611          KM        Route flow from CP A12 to CP A41
7612          RS       9     FLOW       -1
7613          RC   0.050    0.045    0.050    13850   0.0049
7614          RX       0      163      326      490      510      674      837     1000
7615          RY    1070     1069     1068     1067     1067     1068     1069     1070
              *
```



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1                                   HEC-1 INPUT

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7616          KK     A41
7617          KM        Runoff from A41
7618          BA   0.907
7619          LG    0.39     0.15     4.55     0.45        9
7620          UI      75      249      472      594      568      491      358      227      157       99
7621          UI      69       46       38        9        9        9        9        9        9        9
7622          UI       0        0        0        0        0        0        0        0        0        0
7623          UI       0        0        0        0        0        0        0        0        0        0
              *

7624          KK   CPA41
7625          KM        Combine A12 with A41
7626          HC       2   1.971
              *

7627          KK  A41RIV
7628          KM        Combine H86RIV, I14 with A41
7629          KM        Rainbow Boulevard crossing at A41RIV
7630          HC       3 335.511
              *

7631          KK  RCPA41
7632          KM        Route flow in Waterman Wash from CP A41RIV to CP A42RIV (WATERMAN WASH)
7633          RS       3     FLOW       -1
7634          RC   0.050    0.035    0.050     2560   0.0032
7635          RX       0     1500     3700     3920     4000     4100     6000     8300
7636          RY    1060     1050     1045     1040     1040     1046     1050     1060
              *
```

```
7637          KK     I15
7638          KM        Runoff subbasin I15
7639          BA   0.663
7640          LG    0.35    0.35    4.10    0.45      14
7641          UI     425    1244     704     151      40       0       0       0       0       0
7642          UI       0       0       0       0       0       0       0       0       0       0
              *

7643          KK  RCPI15
7644          KM        Route flow from CP I15 to CP I18
7645          RS       2    FLOW      -1
7646          RC   0.050   0.045   0.050    5330  0.0115
7647          RX       0       9      60      70      75      85     135     144
7648          RY    1210 1208.25    1208    1207    1207    1208 1208.25    1210
              *

7649          KK     I16
7650          KM        Runoff subbasin I16
7651          BA   0.487
7652          LG    0.35    0.35    3.95    0.47      24
7653          UI     522    1092     238       0       0       0       0       0       0       0
7654          UI       0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7655          KK  RCPI16
7656          KM        Route flow from CP I16 to CP I18
7657          RS       2    FLOW      -1
7658          RC   0.050   0.045   0.050    5420  0.0115
7659          RX       0       9      40      50      55      65      95     104
7660          RY  1210.5 1208.25    1208    1207    1207    1208 1208.25  1210.5
              *

7661          KK     I17
7662          KM        Runoff subbasin I17
7663          BA   0.363
7664          LG    0.35    0.35    4.40    0.37      33
7665          UI     295     766     286      47       0       0       0       0       0       0
7666          UI       0       0       0       0       0       0       0       0       0       0
              *

7667          KK  RCPI17
7668          KM        Route flow from CP I17 to CP I18
7669          RS       2    FLOW      -1
7670          RC   0.050   0.045   0.050    5190  0.0115
7671          RX       0       9      35      45      50      60      85      94
7672          RY    1210 1208.25    1208    1207    1207    1208 1208.25    1210
              *

7673          KK     I18
7674          KM        Runoff subbasin I18
7675          BA   0.664
7676          LG    0.35    0.35    3.95    0.48       0
7677          UI     474    1332     614     118       0       0       0       0       0       0
7678          UI       0       0       0       0       0       0       0       0       0       0
              *

7679          KK   CPI18
7680          KM        Combine I15, I16, I17 with I18
7681          HC       4   2.176
              *

7682          KK  RCPI18
7683          KM        Route flow from CP I18 to CP I19
7684          RS       2    FLOW      -1
7685          RC   0.050   0.045   0.050    5000  0.0098
7686          RX       0       9     110     120     125     135     235     244
7687          RY    1161 1158.75    1158    1157    1157    1158 1158.75    1161
              *

7688          KK     I19
7689          KM        Runoff subbasin I19
7690          BA   0.354
7691          LG    0.35    0.35    4.00    0.47       0
7692          UI     288     747     279      45       0       0       0       0       0       0
7693          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
7694          KK   CPI19
7695          KM        Combine I18 with I19
7696          HC       2   2.530
              *

7697          KK  RCPI19
7698          KM        Route flow from CP I19 to CP I20
7699          RS       3    FLOW      -1
7700          RC   0.050   0.045   0.050    6800  0.0082
7701          RX       0      10     110     120     125     135     235     245
7702          RY    1111    1109    1108    1107    1107    1108    1109    1111
              *

7703          KK     I20
7704          KM        Runoff subbasin I20
7705          BA   0.619
7706          LG    0.35    0.35    4.00    0.47       0
7707          UI     321     994     778     229      52       0       0       0       0       0
7708          UI       0       0       0       0       0       0       0       0       0       0
              *

7709          KK   CPI20
7710          KM        Combine I19 with I20
7711          HC       2   3.150
              *

7712          KK  RCPI20
7713          KM        Route flow from CP I20 to CP I21
7714          RS       2    FLOW      -1
7715          RC   0.050   0.045   0.050    5250  0.0067
7716          RX       0       9      80      90     110     120     190     199
7717          RY    1061 1058.25    1058    1057    1057    1058 1058.25    1061
              *

7718          KK     I21
7719          KM        Runoff subbasin I21
7720          BA   0.469
7721          LG    0.35    0.35    4.00    0.47       0
7722          UI     301     880     498     107      28       0       0       0       0       0
7723          UI       0       0       0       0       0       0       0       0       0       0
              *

7724          KK   CPI21
7725          KM        Combine I20 with I21
7726          HC       2   3.619
              *

7727          KK  RCPI21
7728          KM        Route flow from CP I21 to CP I22
7729          RS       1    FLOW      -1
7730          RC   0.050   0.045   0.050    3860  0.0065
7731          RX       0       9      60      80      90     110     160     169
7732          RY    1041 1038.25    1038    1037    1037    1038 1038.25    1041
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7733          KK     I22
7734          KM        Runoff subbasin I22
7735          BA   0.385
7736          LG    0.44    0.13    4.40    0.50       0
7737          UI      58     225     354     326     224     133      67      43      25      10
7738          UI       6       5       5       6       0       0       0       0       0       0
7739          UI       0       0       0       0       0       0       0       0       0       0
              *

7740          KK   CPI22
7741          KM        Combine I21 with I22
7742          HC       2   4.004
              *

7743          KK     A40
7744          KM        Runoff from A40
7745          BA   0.498
7746          LG    0.35    0.35    4.90    0.29       0
7747          UI     191     575     723     310      93      23       0       0       0       0
7748          UI       0       0       0       0       0       0       0       0       0       0
              *

7749          KK  RCPA40
```

```
7750          KM        Route flow from CP A40 to CP A42
7751          RS       8    FLOW      -1
7752          RC   0.050   0.045   0.050   10130  0.0054
7753          RX       0     163     326     490     510     674     837    1000
7754          RY    1051    1049    1048    1047    1047    1048    1049    1051
              *

7755          KK     A42
7756          KM        Runoff from A42
7757          BA   0.852
7758          LG    0.50    0.00    4.70    0.47       0
7759          UI      37      45      97     197     213     284     311     310     284     270
7760          UI     234     209     154     123     109      81      62      49      42      34
7761          UI      29      21      21      18       5       4       5       4       5       5
7762          UI       4       5       5       4       5       4       5       5       0       0
7763          UI       0       0       0       0       0       0       0       0       0       0
              *

7764          KK   CPA42
7765          KM        Combine A40 with A42
7766          HC       2   1.350
              *

7767          KK  A42RIV
7768          KM        Combine A41RIV, I22 with A42
7769          HC       3 340.865
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7770          KK  RCPA42
7771          KM        Route flow in Waterman Wash from CP A42RIV to CP A44RIV (WATERMAN WASH)
7772          RS       2    FLOW      -1
7773          RC   0.050   0.035   0.050    2250  0.0024
7774          RX       0    1500    3300    3500    3580    3700    5000    7200
7775          RY    1040    1030    1025    1020    1020    1026    1030    1040
              *

7776          KK     A13
7777          KM        Runoff from A13
7778          BA   0.580
7779          LG    0.33    0.33    5.80    0.19       2
7780          UI      93     298     503     627     381     193      84      33      18       0
7781          UI       0       0       0       0       0       0       0       0       0       0
7782          UI       0       0       0       0       0       0       0       0       0       0
              *

7783          KK  RCPA13
7784          KM        Route flow from CP A13 to CP A39
7785          RS       6    FLOW      -1
7786          RC   0.050   0.045   0.050    6080  0.0053
7787          RX       0     163     326     490     510     674     837    1000
7788          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *

7789          KK     A39
7790          KM        Runoff from A39
7791          BA   0.495
7792          LG    0.50    0.00    4.80    0.45       0
7793          UI      25      39      96     143     186     214     213     184     184     138
7794          UI     113      83      74      46      37      31      23      18      14      15
7795          UI       5       3       3       3       4       3       3       3       3       4
7796          UI       3       3       0       0       0       0       0       0       0       0
7797          UI       0       0       0       0       0       0       0       0       0       0
              *

7798          KK   CPA39
7799          KM        Combine A13 with A39
7800          HC       2   1.075
              *

7801          KK  RCPA39
7802          KM        Route flow from CP A39 to CP A43
7803          RS       4    FLOW      -1
7804          RC   0.050   0.045   0.050    5310  0.0077
7805          RX       0     163     326     490     510     674     837    1000
7806          RY    1060    1059    1058    1057    1057    1058    1059    1060
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
7807          KK     A43
7808          KM        Runoff from A43
7809          BA   0.505
7810          LG    0.50    0.00    4.80    0.45       0
7811          UI      33      71     176     231     274     261     242     179     135      98
7812          UI      69      47      36      28      18      18       4       4       4       4
7813          UI       5       4       4       4       4       0       0       0       0       0
7814          UI       0       0       0       0       0       0       0       0       0       0
              *

7815          KK   CPA43
7816          KM        Combine A39 with A43
7817          HC       2   1.580
              *

7818          KK  RCPA43
7819          KM        Route flow from CP A43 to CP A44
7820          RS       5    FLOW      -1
7821          RC   0.050   0.045   0.050    5230  0.0039
7822          RX       0     163     326     490     510     674     837    1000
7823          RY    1030    1029    1028    1027    1027    1028    1029    1030
              *

7824          KK     A44
7825          KM        Runoff from A44
7826          BA   0.366
7827          LG    0.45    0.12    4.70    0.41       0
7828          UI      33     113     202     258     231     194     135      88      52      35
7829          UI      24      18       9       3       4       4       4       4       3       0
7830          UI       0       0       0       0       0       0       0       0       0       0
7831          UI       0       0       0       0       0       0       0       0       0       0
              *

7832          KK   CPA44
7833          KM        Combine A43 with A44
7834          HC       2   1.945
              *

7835          KK  A44RIV
7836          KM        Combine A42RIV with A44
7837          KM        Queen Creek Road crossing A44RIV
7838          HC       2 342.810
              *

7839          KK  RCPA44
7840          KM        Route flow in Waterman Wash from CP A44RIV to CP I36RIV (WATERMAN WASH)
7841          RS       2    FLOW      -1
7842          RC   0.050   0.035   0.050    3510  0.0033
7843          RX       0    1700    3500    3700    3780    3900    7800   10200
7844          RY    1030    1020    1014    1010    1010    1015    1020    1030
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7845          KK     I24
7846          KM        Runoff subbasin I24
7847          BA   0.282
7848          LG    0.35    0.35    4.65    0.32      26
7849          UI     358     628      92       0       0       0       0       0       0       0
7850          UI       0       0       0       0       0       0       0       0       0       0
              *

7851          KK  RCPI24
7852          KM        Route flow from CP I24 to CP I26
7853          RS       6    FLOW      -1
7854          RC   0.050   0.045   0.050    6360  0.0138
7855          RX       0     100     400     420     430     450     750     850
7856          RY    1210    1209    1208    1207    1207    1208    1209    1210
              *

7857          KK     I26
7858          KM        Runoff subbasin I26
7859          BA   0.532
7860          LG    0.35    0.35    4.15    0.44       1
7861          UI     380    1067     491      96       0       0       0       0       0       0
7862          UI       0       0       0       0       0       0       0       0       0       0
              *

7863          KK   CPI26
7864          KM        Combine I24 with I26
7865          HC       2   0.814
```

```
                *

7866            KK  RCPI26
7867            KM        Route flow from CP I26 to CP I28
7868            RS       5    FLOW      -1
7869            RC   0.050   0.045   0.050    5180  0.0096
7870            RX       0     100     400     420     430     450     750     850
7871            RY    1160    1159    1158    1157    1157    1158    1159    1160
                *

7872            KK     I28
7873            KM        Runoff subbasin I28
7874            BA   0.442
7875            LG    0.35    0.35    4.00    0.47       0
7876            UI     316     886     409      78       0       0       0       0       0       0
7877            UI       0       0       0       0       0       0       0       0       0       0
                *

7878            KK   CPI28
7879            KM        Combine I26 with I28
7880            HC       2   1.256
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


7881            KK  RCPI28
7882            KM        Route flow from CP I28 to CP I30
7883            RS       4    FLOW      -1
7884            RC   0.050   0.045   0.050    4590  0.0089
7885            RX       0     100     400     420     430     450     750     850
7886            RY    1110    1109    1108    1107    1107    1108    1109    1110
                *

7887            KK     I30
7888            KM        Runoff subbasin I30
7889            BA   0.423
7890            LG    0.35    0.35    4.00    0.47       0
7891            UI     393     927     272      40       0       0       0       0       0       0
7892            UI       0       0       0       0       0       0       0       0       0       0
                *

7893            KK   CPI30
7894            KM        Combine I28 with I30
7895            HC       2   1.678
                *

7896            KK  RCPI30
7897            KM        Route flow from CP I30 to CP I32
7898            RS       5    FLOW      -1
7899            RC   0.050   0.045   0.050    5280  0.0077
7900            RX       0     100     400     420     430     450     750     850
7901            RY    1070    1069    1068    1067    1067    1068    1069    1070
                *

7902            KK     I32
7903            KM        Runoff subbasin I32
7904            BA   0.506
7905            LG    0.35    0.35    4.00    0.47       0
7906            UI     324     950     537     115      31       0       0       0       0       0
7907            UI       0       0       0       0       0       0       0       0       0       0
                *

7908            KK   CPI32
7909            KM        Combine I30 with I32
7910            HC       2   2.184
                *

7911            KK  RCPI32
7912            KM        Route flow from CP I32 to CP I34
7913            RS       6    FLOW      -1
7914            RC   0.050   0.045   0.050    5290  0.0062
7915            RX       0     100     400     420     430     450     750     850
7916            RY    1030    1029    1028    1027    1027    1028    1029    1030
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


7917            KK     I34
7918            KM        Runoff subbasin I34
7919            BA   0.510
```

```
7920          LG    0.42    0.18    4.40    0.48       0
7921          UI      58     203     313     515     382     253     125      64      29      14
7922          UI      14       0       0       0       0       0       0       0       0       0
7923          UI       0       0       0       0       0       0       0       0       0       0
              *

7924          KK   CPI34
7925          KM        Combine I32 with I34
7926          HC       2   2.694
              *

7927          KK  RCPI34
7928          KM        Route flow from CP I34 to CP I36
7929          RS       2    FLOW      -1
7930          RC   0.050   0.045   0.050    3130  0.0044
7931          RX       0       9      35      55      65      85     110     119
7932          RY    1016 1013.25    1013    1012    1012    1013 1013.25    1016
              *

7933          KK     I36
7934          KM        Runoff subbasin I36
7935          BA   0.194
7936          LG    0.35    0.35    4.45    0.37       0
7937          UI     208     435      94       0       0       0       0       0       0       0
7938          UI       0       0       0       0       0       0       0       0       0       0
              *

7939          KK   CPI36
7940          KM        Combine I34 with I36
7941          HC       2   2.888
              *

7942          KK  I36RIV
7943          KM        Combine A44RIV with flow from I36
7944          HC       2 345.689
              *

7945          KK  RCPI36
7946          KM        Route flow from CP I36RIV to CP I37RIV (WATERMAN WASH)
7947          RS       1    FLOW      -1
7948          RC   0.050   0.035   0.050    2270  0.0030
7949          RX       0    1700    3080    3155    3225    3300    5400    7400
7950          RY    1010    1000     995     990     990     995    1000    1010
              *

7951          KK     A01
7952          KM        Runoff from A01
7953          BA   6.980
7954          LG    0.35    0.35    3.33    0.72       0
7955          UI     491    1742    2748    3817    5796    4414    3200    2184    1047     688
7956          UI     399     150     150     150       0       0       0       0       0       0
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7957          UI       0       0       0       0       0       0       0       0       0       0
              *

7958          KK  RCPA01
7959          KM        Route flow from CP A01 to CP A02
7960          RS       3    FLOW      -1
7961          RC   0.050   0.045   0.050    7330  0.0054
7962          RX       0      15     200     245     290     335     485     500
7963          RY    1300    1297    1296    1292    1292    1296    1297    1300
              *

7964          KK     A02
7965          KM        Runoff from A02
7966          BA   2.379
7967          LG    0.35    0.35    2.76    1.08       0
7968          UI     645    1892    3308    2049     839     312      94       0       0       0
7969          UI       0       0       0       0       0       0       0       0       0       0
              *

7970          KK   CPA02
7971          KM        Combine A01 with A02
7972          HC       2   9.359
              *

7973          KK   DA02A
7974          KM           Divert flow from A02 into A03
7975          KM        Natural divergence of flow due to a braided channel network.
7976          DT  DVA02A
7977          DI       0      47     155     315     528     935    1662    2704    4570    6736
```

```
7978          DQ       0      24      77     158     264     466     844    1353    2247    3303
              *

7979          KK   DA02B
7980          KM           Divert flow from A02 into A10
7981          KM        Natural divergence of flow due to a braided channel network.
7982          DT  DVA02B
7983          DI       0      24      83     161     521    1492    2650    4072    5732    7611
7984          DQ       0      12      42      78     241     684    1204    1842    2586    3426
              *

7985          KK  RCPA02
7986          KM        Route remainder flow from CP A02 to CP A11
7987          RS      10    FLOW      -1
7988          RC   0.050   0.045   0.050   15310  0.0079
7989          RX       0       5     105     185     225     305     405     410
7990          RY    1219    1218    1218    1216    1216    1218    1218    1219
              *

7991          KK     A11
7992          KM        Runoff from A11
7993          BA   1.804
7994          LG    0.35    0.35    3.21    0.78       0
7995          UI     206     718    1106    1822    1350     897     442     225     104      49
7996          UI      49       0       0       0       0       0       0       0       0       0
7997          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7998          KK   CPA11
7999          KM        Combine A02 with A11
8000          HC       2  11.163
              *

8001          KK    DA11
8002          KM           Divert flow from A11 into A15
8003          KM        Natural divergence of flow due to a braided channel network.
8004          DT   DVA11
8005          DI       0      14      62     159     545    1557    2782    4286    6039
8006          DQ       0       7      31      79     272     779    1391    2143    3020
              *

8007          KK  RCPA11
8008          KM        Route remainder flow from CP A11 to CP A14
8009          RS       4    FLOW      -1
8010          RC   0.050   0.045   0.050    6510  0.0080
8011          RX       0       5      50      80      90     120     165     170
8012          RY    1120    1119    1118    1117    1117    1118    1119    1120
              *

8013          KK     A14
8014          KM        Runoff from A14
8015          BA   0.856
8016          LG    0.33    0.30    4.70    0.31       2
8017          UI      91     327     496     828     657     440     241     115      59      23
8018          UI      22       0       0       0       0       0       0       0       0       0
8019          UI       0       0       0       0       0       0       0       0       0       0
              *

8020          KK   CPA14
8021          KM        Combine A11 with A14
8022          HC       2  12.019
              *

8023          KK  RCPA14
8024          KM        Route flow from CP A14 to CP A37
8025          RS       5    FLOW      -1
8026          RC   0.050   0.045   0.050   10430  0.0072
8027          RX       0       5      55      90     100     135     195     200
8028          RY    1060    1059    1058    1056    1056    1058    1059    1060
              *

8029          KK     A38
8030          KM        Runoff from A38
8031          BA   0.482
8032          LG    0.50    0.00    4.55    0.52       0
8033          UI      25      41     101     147     192     213     214     177     173     142
8034          UI      99      76      65      43      34      26      24      14      14      10
8035          UI       3       4       3       3       3       3       3       3       4       3
8036          UI       3       0       0       0       0       0       0       0       0       0
8037          UI       0       0       0       0       0       0       0       0       0       0
```

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                *
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 8038           KK  RCPA38
 8039           KM        Route flow from CP A38 to CP A37
 8040           RS      10    FLOW      -1
 8041           RC   0.050   0.045   0.050    9320  0.0065
 8042           RX       0     163     326     490     510     674     837    1000
 8043           RY    1060    1059    1058    1057    1057    1058    1059    1060
                *

 8044           KK     A37
 8045           KM        Runoff from A37
 8046           BA   1.346
 8047           LG    0.34    0.32    4.90    0.29       1
 8048           UI     143     513     781    1303    1032     693     378     180      94      36
 8049           UI      36       0       0       0       0       0       0       0       0       0
 8050           UI       0       0       0       0       0       0       0       0       0       0
                *

 8051           KK   CPA37
 8052           KM        Combine A14, A38 with A37
 8053           HC       3  13.848
                *

 8054           KK  RCPA37
 8055           KM        Route flow from CP A37 to CP A45
 8056           RS       5    FLOW      -1
 8057           RC   0.050   0.045   0.050    7020  0.0071
 8058           RX       0     163     326     490     510     674     837    1000
 8059           RY    1015    1014    1013    1012    1012    1013    1014    1015
                *

 8060           KK     A45
 8061           KM        Runoff from A45
 8062           BA   0.533
 8063           LG    0.37    0.30    4.50    0.39       0
 8064           UI      92     288     508     565     335     155      70      24      17       0
 8065           UI       0       0       0       0       0       0       0       0       0       0
 8066           UI       0       0       0       0       0       0       0       0       0       0
                *

 8067           KK   CPA45
 8068           KM        Combine A37 with A45
 8069           HC       2  14.381
                *

 8070           KK     I23
 8071           KM        Runoff subbasin I23
 8072           BA   0.414
 8073           LG    0.35    0.35    4.15    0.41      56
 8074           UI     487     704     260      97      34      21       0       0       0       0
 8075           UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 8076           KK  RCPI23
 8077           KM        Route flow from CP I23 to CP I25
 8078           RS       3    FLOW      -1
 8079           RC   0.050   0.045   0.050    5260  0.0212
 8080           RX       0     100     230     245     255     260     400     500
 8081           RY    1300    1299    1298    1296    1296    1298    1299    1300
                *

 8082           KK     I25
 8083           KM        Runoff subbasin I25
 8084           BA   0.318
 8085           LG    0.35    0.35    4.55    0.35       0
 8086           UI     227     638     293      58       0       0       0       0       0       0
 8087           UI       0       0       0       0       0       0       0       0       0       0
                *

 8088           KK   CPI25
 8089           KM        Combine I23 with I25
 8090           HC       2   0.732
                *

 8091           KK  RCPI25
```

```
8092          KM        Route flow from CP I25 to CP I27
8093          RS       2    FLOW      -1
8094          RC   0.050   0.045   0.050    5160  0.0118
8095          RX       0       8      60      70      75      85     145     153
8096          RY    1200  1198.5    1198    1197    1197    1198  1198.5    1200
              *

8097          KK     I27
8098          KM        Runoff subbasin I27
8099          BA   0.403
8100          LG    0.35    0.35    4.25    0.42       0
8101          UI     328     850     318      51       0       0       0       0       0       0
8102          UI       0       0       0       0       0       0       0       0       0       0
              *

8103          KK   CPI27
8104          KM        Combine I25 with I27
8105          HC       2   1.135
              *

8106          KK  RCPI27
8107          KM        Route flow from CP I27 to CP I29
8108          RS       1    FLOW      -1
8109          RC   0.050   0.045   0.050    3890  0.0100
8110          RX       0      11      35      45      50      60      85      96
8111          RY  1150.5 1148.25    1148    1147    1147    1148 1148.25  1150.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8112          KK     I29
8113          KM        Runoff subbasin I29
8114          BA   0.373
8115          LG    0.35    0.35    4.00    0.47       0
8116          UI     399     837     182       0       0       0       0       0       0       0
8117          UI       0       0       0       0       0       0       0       0       0       0
              *

8118          KK   CPI29
8119          KM        Combine I27 with I29
8120          HC       2   1.508
              *

8121          KK  RCPI29
8122          KM        Route flow from CP I29 to CP I31
8123          RS       1    FLOW      -1
8124          RC   0.050   0.045   0.050    3780  0.0090
8125          RX       0      11      35      45      50      60      85      96
8126          RY  1121.5 1118.25    1118    1117    1117    1118 1118.25  1121.5
              *

8127          KK     I31
8128          KM        Runoff subbasin I31
8129          BA   0.361
8130          LG    0.35    0.35    3.95    0.48       0
8131          UI     458     804     118       0       0       0       0       0       0       0
8132          UI       0       0       0       0       0       0       0       0       0       0
              *

8133          KK   CPI31
8134          KM        Combine I29 with I31
8135          HC       2   1.869
              *

8136          KK  RCPI31
8137          KM        Route flow from CP I31 to CP I33
8138          RS       2    FLOW      -1
8139          RC   0.050   0.045   0.050    5320  0.0077
8140          RX       0       9      35      55      65      85     110     119
8141          RY    1071 1068.25    1068    1067    1067    1068 1068.25    1071
              *

8142          KK     I33
8143          KM        Runoff subbasin I33
8144          BA   0.504
8145          LG    0.35    0.35    4.00    0.47       0
8146          UI     323     946     534     115      31       0       0       0       0       0
8147          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
8148          KK   CPI33
8149          KM        Combine I31 with I33
8150          HC       2   2.373
              *

8151          KK  RCPI33
8152          KM        Route flow from CP I33 to CP I35
8153          RS       2    FLOW      -1
8154          RC   0.050   0.045   0.050    5310  0.0062
8155          RX       0       9      35      55      65      85     110     119
8156          RY    1031 1028.25    1028    1027    1027    1028 1028.25    1031
              *

8157          KK     I35
8158          KM        Runoff subbasin I35
8159          BA   0.507
8160          LG    0.37    0.30    4.70    0.33       0
8161          UI     194     586     736     315      95      24       0       0       0       0
8162          UI       0       0       0       0       0       0       0       0       0       0
              *

8163          KK   CPI35
8164          KM        Combine I33 with I35
8165          HC       2   2.880
              *

8166          KK  RCPI35
8167          KM        Route flow from CP I35 to CP I37
8168          RS       2    FLOW      -1
8169          RC   0.050   0.045   0.050    4060  0.0048
8170          RX       0       9      35      55      65      85     110     119
8171          RY    1017 1013.25    1013    1012    1012    1013 1013.25    1017
              *

8172          KK     I37
8173          KM        Runoff subbasin I37
8174          BA   0.409
8175          LG    0.35    0.37    5.20    0.25       0
8176          UI     333     863     322      52       0       0       0       0       0       0
8177          UI       0       0       0       0       0       0       0       0       0       0
              *

8178          KK   CPI37
8179          KM        Combine I35 with I37
8180          HC       2   3.289
              *

8181          KK  I37RIV
8182          KM        Combine I36RIV, A45 with I37
8183          HC       3 363.368
              *
```


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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8184          KK  RCPI37
8185          KM        Route flow from CP I37RIV to CP A46RIV (WATERMAN WASH)
8186          RS       1    FLOW      -1
8187          RC   0.050   0.035   0.050    2050  0.0031
8188          RX       0    2500    5060    5140    5220    5300    7500    8600
8189          RY    1000     990     985     980     980     985     990    1000
              *

8190          KK     A36
8191          KM        Runoff from A36
8192          BA   0.435
8193          LG    0.34    0.33    4.90    0.29       1
8194          UI     100     302     553     405     202      75      26      15       0       0
8195          UI       0       0       0       0       0       0       0       0       0       0
              *

8196          KK  RCPA36
8197          KM        Route flow from CP A36 to CP A46
8198          RS       5    FLOW      -1
8199          RC   0.050   0.045   0.050    5270  0.0058
8200          RX       0     163     326     490     510     674     837    1000
8201          RY    1010    1009    1008    1007    1007    1008    1009    1010
              *

8202          KK     A46
8203          KM        Runoff from A46
```

```
8204          BA   0.198
8205          LG    0.49    0.03    4.65    0.47       0
8206          UI      11      20      55      71      92      96      86      82      64      47
8207          UI      34      29      18      15      10       9       6       6       2       1
8208          UI       2       1       2       1       2       1       2       1       0       0
8209          UI       0       0       0       0       0       0       0       0       0       0
              *

8210          KK   CPA46
8211          KM        Combine A36 with A46
8212          HC       2   0.633
              *

8213          KK  A46RIV
8214          KM        Combine A45RIV with A46
8215          HC       2 364.001
              *

8216          KK  RCPA46
8217          KM        Route flow in Waterman Wash from CP A46RIV to CP I50RIV (WATERMAN WASH)
8218          RS       1    FLOW      -1
8219          RC   0.050   0.035   0.050    2250  0.0029
8220          RX       0    3700    3900    4050    4200    4550    4900    6200
8221          RY     990     980     979     975     975     979     980     990
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8222          KK     I38
8223          KM        Runoff subbasin I38
8224          BA   0.248
8225          LG    0.35    0.35    4.40    0.37      41
8226          UI     230     544     159      24       0       0       0       0       0       0
8227          UI       0       0       0       0       0       0       0       0       0       0
              *

8228          KK  RCPI38
8229          KM        Route flow from CP I38 to CP I39
8230          RS       3    FLOW      -1
8231          RC   0.050   0.045   0.050    4510  0.0156
8232          RX       0     100     225     235     240     250     375     500
8233          RY    1220    1219    1218    1217    1217    1218    1219    1220
              *

8234          KK     I39
8235          KM        Runoff subbasin I39
8236          BA   0.217
8237          LG    0.35    0.35    4.25    0.42       0
8238          UI     276     482      71       0       0       0       0       0       0       0
8239          UI       0       0       0       0       0       0       0       0       0       0
              *

8240          KK   CPI39
8241          KM        Combine I38 with I39
8242          HC       2   0.465
              *

8243          KK  RCPI39
8244          KM        Route flow from CP I39 to CP I40
8245          RS       2    FLOW      -1
8246          RC   0.050   0.045   0.050    5140  0.0115
8247          RX       0       9      35      50      55      70      95     104
8248          RY    1190 1188.25    1188    1187    1187    1188 1188.25    1190
              *

8249          KK     I40
8250          KM        Runoff subbasin I40
8251          BA   0.408
8252          LG    0.35    0.35    4.20    0.43       0
8253          UI     332     861     322      51       0       0       0       0       0       0
8254          UI       0       0       0       0       0       0       0       0       0       0
              *

8255          KK   CPI40
8256          KM        Combine I39 with I40
8257          HC       2   0.873
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
8258          KK  RCPI40
8259          KM        Route flow from CP I40 to CP I41
8260          RS       2    FLOW      -1
8261          RC   0.050   0.045   0.050    5160  0.0096
8262          RX       0      10      35      45      55      65      90     100
8263          RY  1130.5  1128.5    1128    1127    1127    1128  1128.5  1130.5
              *

8264          KK     I41
8265          KM        Runoff subbasin I41
8266          BA   0.476
8267          LG    0.35    0.35    4.00    0.47       0
8268          UI     387    1005     375      60       0       0       0       0       0       0
8269          UI       0       0       0       0       0       0       0       0       0       0
              *

8270          KK   CPI41
8271          KM        Combine I40 with I41
8272          HC       2  1.350
              *

8273          KK  RCPI41
8274          KM        Route flow from CP I41 to CP I42
8275          RS       4    FLOW      -1
8276          RC   0.050   0.045   0.050    5250  0.0087
8277          RX       0     100     400     420     430     450     750     850
8278          RY    1080    1079    1078    1077    1077    1078    1079    1080
              *

8279          KK     I42
8280          KM        Runoff subbasin I42
8281          BA   0.422
8282          LG    0.30    0.25    3.95    0.48       5
8283          UI     105     313     562     380     172      67      18      16       0       0
8284          UI       0       0       0       0       0       0       0       0       0       0
              *

8285          KK   CPI42
8286          KM        Combine I41 with I42
8287          HC       2   1.771
              *

8288          KK  RCPI42
8289          KM        Route flow from CP I42 to CP I43
8290          RS       2    FLOW      -1
8291          RC   0.050   0.045   0.050    5330  0.0075
8292          RX       0      10      35      55      65      85     110     120
8293          RY  1040.5  1038.5    1038    1037    1037    1038  1038.5  1040.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8294          KK     I43
8295          KM        Runoff subbasin I43
8296          BA   0.432
8297          LG    0.35    0.35    4.50    0.36       0
8298          UI     277     811     458      98      27       0       0       0       0       0
8299          UI       0       0       0       0       0       0       0       0       0       0
              *

8300          KK   CPI43
8301          KM        Combine I42 with I43
8302          HC       2   2.203
              *

8303          KK  RCPI43
8304          KM        Route flow from CP I43 to CP I49
8305          RS       1    FLOW      -1
8306          RC   0.050   0.045   0.050    2760  0.0077
8307          RX       0       9      35      55      65      85     110     119
8308          RY    1010 1008.25    1008    1007    1007    1008 1008.25    1010
              *

8309          KK     I44
8310          KM        Runoff subbasin I44
8311          BA   0.709
8312          LG    0.35    0.35    4.15    0.44      20
8313          UI     454    1331     753     161      43       0       0       0       0       0
8314          UI       0       0       0       0       0       0       0       0       0       0
              *

8315          KK  RCPI44
```

```
8316          KM        Route flow from CP I44 to CP I45
8317          RS       2    FLOW      -1
8318          RC   0.050   0.045   0.050    5170  0.0113
8319          RX       0       9      60      70      75      80     130     139
8320          RY  1200.5 1198.25    1198    1197    1197    1198 1198.25  1200.5
              *

8321          KK     I45
8322          KM        Runoff subbasin I45
8323          BA   0.351
8324          LG    0.35    0.35    4.45    0.37       0
8325          UI     286     740     277      45       0       0       0       0       0       0
8326          UI       0       0       0       0       0       0       0       0       0       0
              *

8327          KK   CPI45
8328          KM        Combine I44 with I45
8329          HC       2   1.060
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8330          KK  RCPI45
8331          KM        Route flow from CP I45 to CP I46
8332          RS       2    FLOW      -1
8333          RC   0.050   0.045   0.050    5390  0.0111
8334          RX       0       8      60      70      75      85     135     143
8335          RY  1140.5  1138.5    1138    1137    1137    1138  1138.5  1140.5
              *

8336          KK     I46
8337          KM        Runoff subbasin I46
8338          BA   0.460
8339          LG    0.35    0.35    4.10    0.46       0
8340          UI     329     922     425      82       0       0       0       0       0       0
8341          UI       0       0       0       0       0       0       0       0       0       0
              *

8342          KK   CPI46
8343          KM        Combine I45 with I46
8344          HC       2   1.520
              *

8345          KK  RCPI46
8346          KM        Route flow from CP I46 to CP I47
8347          RS       2    FLOW      -1
8348          RC   0.050   0.045   0.050    5230  0.0087
8349          RX       0       9      35      55      65      85     110     119
8350          RY    1081 1078.25    1078    1077    1077    1078 1078.25    1081
              *

8351          KK     I47
8352          KM        Runoff subbasin I47
8353          BA   0.349
8354          LG    0.30    0.25    4.00    0.47       6
8355          UI      80     242     445     324     162      60      21      12       0       0
8356          UI       0       0       0       0       0       0       0       0       0       0
              *

8357          KK   CPI47
8358          KM        Combine I46 with I47
8359          HC       2   1.868
              *

8360          KK  RCPI47
8361          KM        Route flow from CP I47 to CP I48
8362          RS       2    FLOW      -1
8363          RC   0.050   0.045   0.050    5360  0.0065
8364          RX       0       9      50      70      80     100     140     149
8365          RY    1026 1023.25    1023    1022    1022    1023 1023.25    1026
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8366          KK     I48
8367          KM        Runoff subbasin I48
8368          BA   0.337
8369          LG    0.35    0.35    4.30    0.41       0
8370          UI     241     675     312      60       0       0       0       0       0       0
8371          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

8372            KK   CPI48
8373            KM        Combine I47 with I48
8374            HC       2   2.206
                *

8375            KK  RCPI48
8376            KM        Route flow from CP I48 to CP I49
8377            RS       1    FLOW      -1
8378            RC   0.050   0.045   0.050    2920  0.0077
8379            RX       0       9      35      55      65      85     110     119
8380            RY    1011 1008.25    1008    1007    1007    1008 1008.25    1011
                *

8381            KK     I49
8382            KM        Runoff subbasin I49
8383            BA   0.383
8384            LG    0.35    0.35    4.60    0.34       1
8385            UI     487     852     125       0       0       0       0       0       0       0
8386            UI       0       0       0       0       0       0       0       0       0       0
                *

8387            KK   CPI49
8388            KM        Combine I43, I48 with I49
8389            HC       3   4.792
                *

8390            KK  RCPI49
8391            KM        Route flow from CP I49 to CP I50
8392            RS       2    FLOW      -1
8393            RC   0.050   0.045   0.050    4260  0.0060
8394            RX       0      10      60      80      90     110     160     170
8395            RY   991.5   988.5     988     987     987     988   988.5   991.5
                *

8396            KK     I61
8397            KM        Runoff subbasin I61
8398            BA   0.250
8399            LG    0.35    0.35    4.65    0.32       9
8400            UI     683     273       0       0       0       0       0       0       0       0
8401            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8402            KK  RCPI61
8403            KM        Route flow from CP I61 to CP I50
8404            RS       4    FLOW      -1
8405            RC   0.050   0.045   0.050    4060  0.0083
8406            RX       0     100     400     420     430     450     750     850
8407            RY     990     989     988     987     987     988     989     990
                *

8408            KK     I50
8409            KM        Runoff subbasin I50
8410            BA   0.600
8411            LG    0.35    0.35    4.50    0.36       0
8412            UI     488    1266     473      76       0       0       0       0       0       0
8413            UI       0       0       0       0       0       0       0       0       0       0
                *

8414            KK   CPI50
8415            KM        Combine I49, I61 with I50
8416            HC       3   5.642
                *

8417            KK  I50RIV
8418            KM        Combine A46RIV with I50
8419            HC       2 369.644
                *

8420            KK  RCPI50
8421            KM        Route flow from CP I50RIV to CP I62RIV (WATERMAN WASH)
8422            RS       1    FLOW      -1
8423            RC   0.050   0.035   0.050    2920  0.0047
8424            RX       0      40    1300    1375    1445    1520    2120    2160
8425            RY     984     981     973     968     968     973     981     984
                *

8426            KK     I62
8427            KM        Runoff subbasin I62
```

```
8428          BA   0.422
8429          LG    0.35    0.35    4.60    0.34      20
8430          UI     392     925     271      40       0       0       0       0       0       0
8431          UI       0       0       0       0       0       0       0       0       0       0
              *

8432          KK  I62RIV
8433          KM        Combine I50RIV with I62
8434          HC       2 370.066
              *

8435          KK  RCPI62
8436          KM        Route flow from CP I62RIV to CP A49RIV (WATERMAN WASH)
8437          RS       2    FLOW      -1
8438          RC   0.050   0.035   0.050    5100  0.0032
8439          RX       0      20    1010    1085    1160    1235    2235    2255
8440          RY     955     953     945     940     940     945     953     955
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8441          KK   DRA11
8442          KM            Return diverted flow from CP A11 in basin A15
8443          DR   DVA11
              *

8444          KK   RDA11
8445          KM        Route diverted flow from CP A11 to CP A15
8446          RS       6    FLOW      -1
8447          RC   0.050   0.045   0.050   11540  0.0080
8448          RX       0       5      35      65      70     100     135     140
8449          RY    1098    1097    1096    1095    1095    1096    1097    1098
              *

8450          KK     A15
8451          KM        Runoff from A15
8452          BA   0.941
8453          LG    0.35    0.37    5.30    0.24       0
8454          UI      82     314     475     762     776     529     351     156      97      43
8455          UI      23      23       0       0       0       0       0       0       0       0
8456          UI       0       0       0       0       0       0       0       0       0       0
              *

8457          KK   CPA15
8458          KM        Combine DRA11 with A15
8459          HC       2  12.104
              *

8460          KK     A16
8461          KM        Runoff from A16
8462          BA   0.333
8463          LG    0.35    0.40    6.00    0.18       0
8464          UI      76     231     424     310     155      58      19      12       0       0
8465          UI       0       0       0       0       0       0       0       0       0       0
              *

8466          KK   CPA16
8467          KM        Combine A15 with A16
8468          HC       2  12.437
              *

8469          KK  RCPA16
8470          KM        Route flow from CP A16 to CP A35
8471          RS       3    FLOW      -1
8472          RC   0.050   0.045   0.050    5320  0.0061
8473          RX       0     110     220     295     310     385     495     605
8474          RY    1045  1043.5    1042    1041    1041    1042  1043.5    1045
              *

8475          KK  DRA02A
8476          KM            Return diverted flow from CP A02A in basin A03
8477          DR  DVA02A
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8478          KK  RDA02A
8479          KM        Route diverted flow from CP A02 to CP A03
8480          RS       5    FLOW      -1
8481          RC   0.050   0.045   0.050    3101  0.0090
```

```
8482          RX       0       8      95     115     130     150     250     258
8483          RY  1260.5    1259    1258    1257    1257    1258    1259  1260.5
              *

8484          KK     A03
8485          KM         Runoff from A03
8486          BA   1.064
8487          LG    0.35    0.35    2.80    1.07       0
8488          UI     211     647    1202    1052     606     233      97      37       0       0
8489          UI       0       0       0       0       0       0       0       0       0       0
              *

8490          KK   CPA03
8491          KM         Combine DRA02A with A03
8492          HC       2  10.424
              *

8493          KK  RCPA03
8494          KM         Route flow from CP A03 to CP A64
8495          RS       4    FLOW      -1
8496          RC   0.050   0.045   0.050    9580  0.0069
8497          RX       0      10     155     170     185     200     320     330
8498          RY  1190.5    1189    1188    1187    1187    1188    1189  1190.5
              *

8499          KK     A64
8500          KM         Runoff from A64
8501          BA   0.778
8502          LG    0.35    0.35    3.58    0.62       0
8503          UI     155     472     879     769     444     170      71      26       0       0
8504          UI       0       0       0       0       0       0       0       0       0       0
              *

8505          KK   CPA64
8506          KM         Combine flow from CP A03 with A64
8507          HC       2  11.202
              *

8508          KK    DA64
8509          KM             Divert flow from CP A64 into basin A18
8510          KM         Natural divergence of flow due to a braided channel network.
8511          DT   DVA64
8512          DI       0      39     162     372     867    2048    3598    5317    7301
8513          DQ       0      12      48     107     295     725    1360    2055    2861
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8514          KK  RCPA64
8515          KM         Route remainder flow from CP A64 to CP A10
8516          RS       4    FLOW      -1
8517          RC   0.050   0.045   0.050    6760  0.0069
8518          RX       0       5     155     170     185     200     320     325
8519          RY    1150    1149    1148    1147    1147    1148    1149    1150
              *

8520          KK  DRA02B
8521          KM             Return Diverted flow from CP A02 in basin A10
8522          DR  DVA02B
              *

8523          KK  RDA02B
8524          KM         Route diverted flow from CP A02 to CP A10
8525          RS       8    FLOW      -1
8526          RC   0.050   0.045   0.050   18990  0.0085
8527          RX       0      10      30      45      60      75      95     105
8528          RY  1190.5  1188.5    1188    1187    1187    1188  1188.5  1190.5
              *

8529          KK     A10
8530          KM         Runoff from A10
8531          BA   0.928
8532          LG    0.35    0.35    4.80    0.30       0
8533          UI      87     322     491     807     743     510     321     140      87      33
8534          UI      23      23       0       0       0       0       0       0       0       0
8535          UI       0       0       0       0       0       0       0       0       0       0
              *

8536          KK   CPA10
8537          KM         Combine A64, DR02B with A10
8538          HC       3  12.130
              *
```

```
8539          KK    DA10
8540          KM          Divert flow from CP A10 into A17
8541          KM       Natural divergence of flow due to a braided channel network.
8542          DT   DVA10
8543          DI       0      16      74     175     456    1045    1896    2810    5041
8544          DQ       0       7      32      74     202     492     905    1353    2452
              *

8545          KK  RCPA10
8546          KM       Route remainder flow from CP A10 to CP A34
8547          RS       4    FLOW      -1
8548          RC   0.050   0.045   0.050    8920  0.0082
8549          RX       0       5      55      75      85     105     155     160
8550          RY  1090.5    1089    1088    1087    1087    1088    1089  1090.5
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


8551          KK     A34
8552          KM       Runoff from A34
8553          BA   0.385
8554          LG    0.35    0.39    5.70    0.20       0
8555          UI     136     397     568     271      81      23       0       0       0       0
8556          UI       0       0       0       0       0       0       0       0       0       0
              *

8557          KK   CPA34
8558          KM       Combine A10 with A34
8559          HC       2  12.515
              *

8560          KK  RCPA34
8561          KM       Route flow from CP A34 to CP A35
8562          RS       2    FLOW      -1
8563          RC   0.050   0.045   0.050    3080  0.0061
8564          RX       0     110     220     295     310     385     495     605
8565          RY    1045  1043.5    1042    1041    1041    1042  1043.5    1045
              *

8566          KK     A35
8567          KM       Runoff from A35
8568          BA   0.847
8569          LG    0.35    0.35    5.00    0.28       0
8570          UI     195     587    1079     787     394     145      50      32       0       0
8571          UI       0       0       0       0       0       0       0       0       0       0
              *

8572          KK   CPA35
8573          KM       Combine A16, A34 with A35
8574          HC       3  16.440
              *

8575          KK  RCPA35
8576          KM       Route flow from CP A35 to CP A47
8577          RS       3    FLOW      -1
8578          RC   0.050   0.045   0.050    5260  0.0078
8579          RX       0     163     326     490     510     674     837    1000
8580          RY    1010    1009    1008    1007    1007    1008    1009    1010
              *

8581          KK     A47
8582          KM       Runoff from A47
8583          BA   0.791
8584          LG    0.48    0.05    4.60    0.48       0
8585          UI      43      73     186     264     342     367     349     313     257     220
8586          UI     151     130      80      64      50      40      29      24      20       6
8587          UI       5       6       5       6       5       6       5       6       5       6
8588          UI       0       0       0       0       0       0       0       0       0       0
8589          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


8590          KK   CPA47
8591          KM       Combine A35 with A47
8592          HC       2  17.231
              *

8593          KK  RCPA47
```

```
8594          KM        Route flow from CP A47 to CP A49
8595          RS       5    FLOW      -1
8596          RC   0.050   0.045   0.050    7640  0.0042
8597          RX       0       8      38     202     222     386     416     424
8598          RY     980   978.5     978     977     977     978   978.5     980
              *

8599          KK     A48
8600          KM        Runoff from A48
8601          BA   1.059
8602          LG    0.38    0.22    4.65    0.39       7
8603          UI      61     156     291     377     498     737     583     446     341     240
8604          UI     123      93      60      27      18      19      19       0       0       0
8605          UI       0       0       0       0       0       0       0       0       0       0
              *

8606          KK  RCPA48
8607          KM        Route flow from CP A48 to CP A49
8608          RS       2    FLOW      -1
8609          RC   0.050   0.045   0.050    2240  0.0043
8610          RX       0     163     326     490     510     674     837    1000
8611          RY     970     969     968     967     967     968     969     970
              *

8612          KK     A49
8613          KM        Runoff from A49
8614          BA   0.751
8615          LG    0.35    0.35    4.45    0.37       0
8616          UI     120     386     652     812     493     249     109      44      23       0
8617          UI       0       0       0       0       0       0       0       0       0       0
8618          UI       0       0       0       0       0       0       0       0       0       0
              *

8619          KK   CPA49
8620          KM        Combine A47, A48 with A49
8621          HC       3  19.041
              *

8622          KK  A49RIV
8623          KM        Combine CP I62RIV with CP A49
8624          KM        Tuthill Road crossing at A49RIV
8625          HC       2 377.944
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8626          KK  RCPA49
8627          KM        Route flow in Waterman Wash from CP A49RIV TO CP A51RIV (WATERMAN WASH)
8628          RS       2    FLOW      -1
8629          RC   0.050   0.035   0.050    3330  0.0030
8630          RX       0     600    2800    3000    3150    3300    6400    8500
8631          RY     970     960     950     945     945     950     960     970
              *

8632          KK     A04
8633          KM        Runoff from A04
8634          BA   0.743
8635          LG    0.35    0.35    2.57    1.25       0
8636          UI     427    1299     870     220      45       0       0       0       0       0
8637          UI       0       0       0       0       0       0       0       0       0       0
              *

8638          KK    DA04
8639          KM            Divert flow from CP A04 into basin A06
8640          KM        Natural divergence of flow due to a braided channel network.
8641          DT   DVA04
8642          DI       0      64     221     405    1007    2383    4403    6549    9034   11830
8643          DQ       0      38     129     222     543    1283    2351    3478    4782    6249
              *

8644          KK  RCPA04
8645          KM        Route remainder flow from CP A04 to CP A07
8646          RS       7    FLOW      -1
8647          RC   0.050   0.045   0.050    8740  0.0128
8648          RX       0     150     300     310     340     360     510     680
8649          RY    1296    1295    1294    1293    1293    1294    1295    1297
              *

8650          KK     A07
8651          KM        Runoff from A07
8652          BA   0.523
8653          LG    0.35    0.35    2.79    1.09       0
```

```
8654          UI     201     604     759     325      98      24       0       0       0       0
8655          UI       0       0       0       0       0       0       0       0       0       0
              *

8656          KK   CPA07
8657          KM        Combine A04 with A07
8658          HC       2   1.266
              *

8659          KK    DA07
8660          KM            Divert flow from CP A07 into basin A22
8661          KM        Natural divergence of flow due to a braided channel network.
8662          DT   DVA07
8663          DI       0      56     236     765    2075    4754    8362   12780   17930
8664          DQ       0      25     108     390    1171    2848    5135    7952   11249
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8665          KK  RCPA07
8666          KM        Route remainder flow from CP A07 to CP A21
8667          RS       9    FLOW      -1
8668          RC   0.050   0.045   0.050   12400  0.0108
8669          RX       0     110     243     280     300     350     550     780
8670          RY    1110    1108    1107    1106    1106    1107    1108    1109
              *

8671          KK     A09
8672          KM        Runoff from A09
8673          BA   0.784
8674          LG    0.35    0.35    2.92    0.98       0
8675          UI     167     509     945     750     413     146      59      28       0       0
8676          UI       0       0       0       0       0       0       0       0       0       0
              *

8677          KK    DA09
8678          KM            Divert flow from CP A09 into basin A18
8679          KM        Natural divergence of flow due to a braided channel network.
8680          DT   DVA09
8681          DI       0      49     188     395     993    2255    3956    5853    8045
8682          DQ       0       7      30      69     176     413     749    1108    1521
              *

8683          KK  RCPA09
8684          KM        Route remainder flow from CP A09 to CP A08
8685          RS       3    FLOW      -1
8686          RC   0.050   0.045   0.050    4350  0.0074
8687          RX       0       8      80     110     120     150     210     218
8688          RY    1181  1179.5    1179    1178    1178    1179  1179.5    1181
              *

8689          KK     A08
8690          KM        Runoff from A08
8691          BA   2.117
8692          LG    0.35    0.35    3.05    0.89       0
8693          UI     149     529     832    1159    1757    1339     971     662     317     209
8694          UI     121      46      45      46       0       0       0       0       0       0
8695          UI       0       0       0       0       0       0       0       0       0       0
              *

8696          KK   CPA08
8697          KM        Combine A09 with A08
8698          HC       2   2.901
              *

8699          KK    DA08
8700          KM            Divert flow from CP A08 into basin A19
8701          KM        Natural divergence of flow due to a braided channel network..
8702          DT   DVA08
8703          DI       0      40     161     363    1052    2811    4967    7543   10543
8704          DQ       0      18      74     164     456    1162    2073    3122    4341
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8705          KK  RCPA08
8706          KM        Route remainder flow from CP A08 to CP A21
8707          RS       2    FLOW      -1
8708          RC   0.050   0.045   0.050    4210  0.0292
8709          RX       0     180     300     336     400     460     590     850
```

```
8710          RY    1151    1150    1149    1148    1148    1149    1150    1152
              *

8711          KK     A21
8712          KM        Runoff from A21
8713          BA   1.056
8714          LG    0.35    0.35    4.60    0.34       0
8715          UI     148     487     780    1147     736     441     183      90      32      31
8716          UI       0       0       0       0       0       0       0       0       0       0
8717          UI       0       0       0       0       0       0       0       0       0       0
              *

8718          KK   CPA21
8719          KM        Combine A08, A07 with A21
8720          HC       3   5.222
              *

8721          KK    DA21
8722          KM            Divert flow from CP A21 into basin A32
8723          KM        Natural divergence of flow due to a braided channel network.
8724          DT   DVA21
8725          DI       0      50     204     464    1363    3710    6453    9805   13711
8726          DQ       0      22      89     204     608    1654    2882    4384    6133
              *

8727          KK  RCPA21
8728          KM        Route remainder flow from CP A21 to CP A20
8729          RS       5    FLOW      -1
8730          RC   0.050   0.045   0.050    5780  0.0089
8731          RX       0     125     240     290     310     350     500     790
8732          RY    1110    1108    1107    1106    1106    1107    1107    1108
              *

8733          KK     A20
8734          KM        Runoff from A20
8735          BA   0.337
8736          LG    0.35    0.36    5.00    0.28       0
8737          UI     108     316     493     261      84      26      15       0       0       0
8738          UI       0       0       0       0       0       0       0       0       0       0
              *

8739          KK   CPA20
8740          KM        Combine A21 with A20
8741          HC       2   5.559
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8742          KK    DA20
8743          KM            Divert flow from CP A20 into basin A32
8744          KM        Natural divergence of flow due to a braided channel network.
8745          DT   DVA20
8746          DI       0      33     120     266     481    1142    3085    5827    9003   12726
8747          DQ       0      11      43      98     180     509    1486    2719    4250    6049
              *

8748          KK  RCPA20
8749          KM        Route remainder flow from CP A20 to CP A51
8750          RS      25    FLOW      -1
8751          RC   0.050   0.045   0.050   23360  0.0058
8752          RX       0     200     420     455     485     521     750     900
8753          RY    1050    1049    1048    1047    1047    1048    1049    1050
              *

8754          KK     A51
8755          KM        Runoff from A51
8756          BA   1.527
8757          LG    0.35    0.35    4.70    0.31       0
8758          UI      93     270     478     624     888    1098     798     596     437     233
8759          UI     155      96      48      29      29      29       0       0       0       0
8760          UI       0       0       0       0       0       0       0       0       0       0
              *

8761          KK  CPA51A
8762          KM        Combine A20 with A51
8763          HC       2   7.087
              *

8764          KK   DRA09
8765          KM            Return diverted flow A09
8766          DR   DVA09
              *
```

```
8767          KK   RDA09
8768          KM        Route diverted flow from CP A09 to CP A18
8769          RS      11    FLOW      -1
8770          RC   0.050   0.045   0.050   11950  0.0075
8771          RX       0     100     200     245     255     300     400     500
8772          RY    1140    1139    1138    1136    1136    1138    1139    1140
              *

8773          KK   DRA64
8774          KM            Return diverted flow A64
8775          DR   DVA64
              *

8776          KK   RDA64
8777          KM        Route diverted flow from CP A64 to CP A18
8778          RS       6    FLOW      -1
8779          RC   0.050   0.045   0.050    8360  0.0070
8780          RX       0     100     200     245     255     300     400     500
8781          RY    1140    1139    1138    1136    1136    1138    1139    1140
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8782          KK     A18
8783          KM        Runoff from A18
8784          BA   0.691
8785          LG    0.35    0.39    5.80    0.19       0
8786          UI     110     356     599     747     454     229     101      40      21       0
8787          UI       0       0       0       0       0       0       0       0       0       0
8788          UI       0       0       0       0       0       0       0       0       0       0
              *

8789          KK   CPA18
8790          KM        Combine DRA09, DRA64 with A18
8791          HC       3  12.677
              *

8792          KK    DA18
8793          KM            Divert flow from CP A18 into basin A33
8794          KM        Natural divergence of flow due to a braided channel network.
8795          DT   DVA18
8796          DI       0      20      71     157     283     455     678    1114    2777    5471
8797          DQ       0      10      37      82     151     244     366     585    1440    2822
              *

8798          KK  RCPA18
8799          KM        Route remainder flow from CP A18 to CPA19
8800          RS       1    FLOW      -1
8801          RC   0.050   0.045   0.050    2190  0.0071
8802          RX       0      80     115     145     160     190     225     305
8803          RY    1095    1094    1093    1091    1091    1093    1094    1095
              *

8804          KK   DRA08
8805          KM            Return diverted flow from CP A08
8806          DR   DVA08
              *

8807          KK   RDA08
8808          KM        Route diverted flow from CP A08 to CP A19
8809          RS       5    FLOW      -1
8810          RC   0.050   0.045   0.050    9690  0.0076
8811          RX       0      80     115     145     160     190     225     305
8812          RY    1095    1094    1093    1091    1091    1093    1094    1095
              *

8813          KK     A19
8814          KM        Runoff from A19
8815          BA   0.464
8816          LG    0.35    0.38    5.40    0.23       0
8817          UI     137     399     665     383     139      46      19       0       0       0
8818          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8819          KK  CPA19A
8820          KM        Combine DRA08 with A19
8821          HC       2   3.364
```

```
                 *

8822             KK   CPA19
8823             KM        Combine CPA19A with routed flow from A18
8824             HC       2  15.257
                 *

8825             KK  RCPA19
8826             KM        ROUTE FLOW FROM A19 TO A63
8827             RS       4    FLOW      -1
8828             RC   0.050   0.045   0.050    8410  0.0071
8829             RX       0      80     115     145     160     190     225     305
8830             RY    1050    1049    1048    1046    1046    1048    1049    1050
                 *

8831             KK     A63
8832             KM        RUNOFF FROM A63
8833             BA   0.607
8834             LG    0.35    0.37    5.30    0.24       0
8835             UI     195     567     891     469     150      48      26       0       0       0
8836             UI       0       0       0       0       0       0       0       0       0       0
                 *

8837             KK  CPA63A
8838             KM        COMBINE A19 WITH A63
8839             HC       2  15.864
                 *

8840             KK   DRA10
8841             KM            Return diverted flow from CP A10
8842             DR   DVA10
                 *

8843             KK   RDA10
8844             KM        Route diverted flow from CP A10 to CP A17
8845             RS       4    FLOW      -1
8846             RC   0.050   0.045   0.050    9190  0.0079
8847             RX       0      45      90     120     135     165     210     255
8848             RY  1059.5  1058.5    1058    1057    1057    1059    1060    1061
                 *

8849             KK     A17
8850             KM        Runoff from A17
8851             BA   0.573
8852             LG    0.35    0.39    5.80    0.19       0
8853             UI      75     251     397     611     410     259     108      60      19      17
8854             UI       0       0       0       0       0       0       0       0       0       0
8855             UI       0       0       0       0       0       0       0       0       0       0
                 *
```



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LINE             ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8856             KK   CPA17
8857             KM        Combine DRA10 with A17
8858             HC       2  12.703
                 *

8859             KK   DRA18
8860             KM            Return diverted flow from CP A18
8861             DR   DVA18
                 *

8862             KK   RDA18
8863             KM        Route diverted flow from CP A18 to CP A33
8864             RS       6    FLOW      -1
8865             RC   0.050   0.045   0.050    7360  0.0090
8866             RX       0      65     130     180     200     250     315     380
8867             RY    1068    1067    1067    1066    1066    1067    1069    1070
                 *

8868             KK     A33
8869             KM        Runoff from A33
8870             BA   0.284
8871             LG    0.35    0.40    6.00    0.18       0
8872             UI     100     293     419     201      59      17       0       0       0       0
8873             UI       0       0       0       0       0       0       0       0       0       0
                 *

8874             KK  CPA33A
8875             KM        Combine DRA18 with A33
8876             HC       2  12.960
                 *
```

```
8877          KK   CPA33
8878          KM        COMBINE A17 WITH A33
8879          HC       2  14.462
              *

8880          KK  RCPA33
8881          KM        Route flow from CP A33 to CP A63
8882          RS       4    FLOW      -1
8883          RC   0.050   0.045   0.050    4200  0.0024
8884          RX       0      90     180     230     255     305     405     500
8885          RY    1040    1039    1038    1037    1037    1038    1038    1039
              *

8886          KK   CPA63
8887          KM        COMBINE A33 WITH CPA63A
8888          HC       2  17.649
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8889          KK  RCPA63
8890          KM        Route flow from CP A63 to CP A50
8891          RS       7    FLOW      -1
8892          RC   0.050   0.045   0.050   10560  0.0067
8893          RX       0     163     326     490     510     674     837    1000
8894          RY    1000     999     998     997     997     998     999    1000
              *

8895          KK     A50
8896          KM        Runoff from A50
8897          BA   0.994
8898          LG    0.30    0.33    4.65    0.35      14
8899          UI     212     645    1198     951     523     187      74      36       0       0
8900          UI       0       0       0       0       0       0       0       0       0       0
              *

8901          KK   CPA50
8902          KM        Combine A63 with A50
8903          HC       2  18.643
              *

8904          KK  RCPA50
8905          KM        Route flow from CP A50 to CP A51
8906          RS       2    FLOW      -1
8907          RC   0.050   0.045   0.050    3870  0.0048
8908          RX       0       9      40     115     165     255     285     294
8909          RY     959  957.25     957     956     956     957  957.25     959
              *

8910          KK   CPA51
8911          KM        Combine A50 with CPA51A
8912          HC       2  22.829
              *

8913          KK  A51RIV
8914          KM        Combine A49RIV with A51
8915          HC       2 388.643
              *

8916          KK  RCPA51
8917          KM        Route flow in Waterman Wash from CP A51RIV to CP A56RIV (WATERMAN WASH)
8918          RS       1    FLOW      -1
8919          RC   0.050   0.035   0.050     270  0.0057
8920          RX       0      10    1500    1660    1800    1900    3400    3410
8921          RY     952     950     943     940     940     943     950     952
              *

8922          KK     A05
8923          KM        Runoff from A05
8924          BA   2.141
8925          LG    0.35    0.35    2.99    0.93       0
8926          UI     457    1389    2581    2048    1126     402     160      77       0       0
8927          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8928          KK  RCPA05
8929          KM        Route flow from CP A05 to CP A26
```

```
8930          RS       6    FLOW      -1
8931          RC   0.050   0.045   0.050    9390  0.0087
8932          RX       0       5     155     170     180     200     400     405
8933          RY    1137    1136    1135    1133    1133    1135    1136    1137
              *

8934          KK     A23
8935          KM         Runoff from A23
8936          BA   0.233
8937          LG    0.35    0.35    3.09    0.87       0
8938          UI      53     163     296     217     108      40      13       9       0       0
8939          UI       0       0       0       0       0       0       0       0       0       0
              *

8940          KK  RCPA23
8941          KM         Route flow from CP A23 to CP A26
8942          RS       5    FLOW      -1
8943          RC   0.050   0.045   0.050    9070  0.0079
8944          RX       0     175     335     350     370     390     590     790
8945          RY    1138    1136    1135    1133    1133    1135    1136    1137
              *

8946          KK     A25
8947          KM         Runoff from A25
8948          BA   0.215
8949          LG    0.35    0.35    3.19    0.82       0
8950          UI      76     222     317     152      44      13       0       0       0       0
8951          UI       0       0       0       0       0       0       0       0       0       0
              *

8952          KK  RCPA25
8953          KM         Route flow from CP A25 to CP A26
8954          RS       2    FLOW      -1
8955          RC   0.050   0.045   0.050    3340  0.0092
8956          RX       0      70     140     175     205     250     360     700
8957          RY    1108    1107    1105    1104    1104    1105    1107    1108
              *

8958          KK     A26
8959          KM         Runoff from A26
8960          BA   0.499
8961          LG    0.35    0.35    3.74    0.55       0
8962          UI     124     370     665     448     204      80      21      19       0       0
8963          UI       0       0       0       0       0       0       0       0       0       0
              *

8964          KK   CPA26
8965          KM         Combine A05, A23, A25 with A26
8966          HC       4   3.088
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8967          KK  RCPA26
8968          KM         Route flow from CP A26 to CP A27
8969          RS       5    FLOW      -1
8970          RC   0.050   0.045   0.050    7990  0.0073
8971          RX       0       5     150     155     170     185     335     340
8972          RY    1048    1047    1046    1045    1045    1046    1047    1048
              *

8973          KK     A27
8974          KM         Runoff from A27
8975          BA   1.105
8976          LG    0.35    0.35    3.58    0.61       0
8977          UI     154     511     816    1200     770     461     192      95      32      33
8978          UI       0       0       0       0       0       0       0       0       0       0
8979          UI       0       0       0       0       0       0       0       0       0       0
              *

8980          KK  CPA27A
8981          KM         Combine A26 with A27
8982          HC       2   4.194
              *

8983          KK     A28
8984          KM         Runoff from A28
8985          BA   0.551
8986          LG    0.35    0.35    3.38    0.71       0
8987          UI     233     720     769     295      82      27       0       0       0       0
8988          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
8989          KK  RCPA28
8990          KM        Route flow from CP A28 to CP A27
8991          RS       1    FLOW      -1
8992          RC   0.050   0.045   0.050    2220  0.0041
8993          RX       0     480     560     620     650     670     900    1500
8994          RY    1045    1040    1037    1034    1034    1037    1040    1043
              *

8995          KK   CPA27
8996          KM        Combine A28 with A27
8997          HC       2   4.745
              *

8998          KK  RCPA27
8999          KM        Route flow from CP A27 to CP A29
9000          RS       2    FLOW      -1
9001          RC   0.050   0.045   0.050    4120  0.0052
9002          RX       0      10      35      50      75     110     160     170
9003          RY    1017    1015    1014    1011    1011    1014    1015    1017
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


9004          KK     A29
9005          KM        Runoff from A29
9006          BA   1.188
9007          LG    0.35    0.35    2.97    0.95       0
9008          UI     204     643    1131    1259     747     346     159      51      39       0
9009          UI       0       0       0       0       0       0       0       0       0       0
9010          UI       0       0       0       0       0       0       0       0       0       0
              *

9011          KK   CPA29
9012          KM        Combine A27 with A29
9013          HC       2   5.933
              *

9014          KK   DRA04
9015          KM            Return diverted flow from CP A04
9016          DR   DVA04
              *

9017          KK   RDA04
9018          KM        Route diverted flow from CP A04 to CP A06
9019          RS      13    FLOW      -1
9020          RC   0.050   0.045   0.050   15250  0.0130
9021          RX       0     100     210     220     240     255     550     830
9022          RY    1298    1297    1296    1295    1295    1296    1297    1300
              *

9023          KK     A06
9024          KM        Runoff from A06
9025          BA   1.108
9026          LG    0.35    0.35    2.85    1.03       0
9027          UI     191     599    1055    1174     697     323     147      48      36       0
9028          UI       0       0       0       0       0       0       0       0       0       0
9029          UI       0       0       0       0       0       0       0       0       0       0
              *

9030          KK   CPA06
9031          KM        Combine DRA04 with A06
9032          HC       2   1.850
              *

9033          KK  RCPA06
9034          KM        Route flow from CP A06 to CP A24
9035          RS       7    FLOW      -1
9036          RC   0.050   0.045   0.050   10750  0.0087
9037          RX       0     100     210     237     260     300     400     510
9038          RY    1120    1119    1118    1117    1117    1118    1119    1120
              *
1                                          HEC-1 INPUT                                                    PAGE240

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


9039          KK   DRA07
9040          KM            Return diverted flow from CP A07
9041          DR   DVA07
              *
```

```
9042          KK   RDA07
9043          KM        Route diverted flow from CP A07 to CP A22
9044          RS      19    FLOW      -1
9045          RC   0.050   0.045   0.050   16610  0.0103
9046          RX       0     190     390     400     410     424     700    1000
9047          RY    1200    1199    1198    1197    1197    1198    1199    1200
              *

9048          KK     A22
9049          KM        Runoff from A22
9050          BA   0.578
9051          LG    0.35    0.35    3.71    0.56       0
9052          UI      44     177     267     404     498     339     236     122      69      39
9053          UI      14      13      14       0       0       0       0       0       0       0
9054          UI       0       0       0       0       0       0       0       0       0       0
              *

9055          KK   CPA22
9056          KM        Combine DRA07 with A22
9057          HC       2   1.844
              *

9058          KK  RCPA22
9059          KM        Route flow from CP A22 to CP A24
9060          RS       1    FLOW      -1
9061          RC   0.050   0.045   0.050    1520  0.0074
9062          RX       0       5      35      45      60      70     180     185
9063          RY    1080    1079    1078    1077    1077    1078    1079    1080
              *

9064          KK     A24
9065          KM        Runoff from A24
9066          BA   1.355
9067          LG    0.35    0.35    3.17    0.83       0
9068          UI     145     516     786    1311    1040     697     380     182      95      36
9069          UI      36       0       0       0       0       0       0       0       0       0
9070          UI       0       0       0       0       0       0       0       0       0       0
              *

9071          KK   CPA24
9072          KM        Combine A06, A22 with A24
9073          HC       3   4.307
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9074          KK  RCPA24
9075          KM        Route flow from CP A24 to CP A30
9076          RS       4    FLOW      -1
9077          RC   0.050   0.045   0.050    8420  0.0072
9078          RX       0       8      50      65      85      95     182     190
9079          RY    1048  1046.5    1045    1043    1043    1045  1046.5    1048
              *

9080          KK     A30
9081          KM        Runoff from A30
9082          BA   0.675
9083          LG    0.35    0.35    3.88    0.50       0
9084          UI      68     246     374     619     531     359     214      96      55      18
9085          UI      17       0       0       0       0       0       0       0       0       0
9086          UI       0       0       0       0       0       0       0       0       0       0
              *

9087          KK  CPA30A
9088          KM        Combine A24 with A30
9089          HC       2   4.982
              *

9090          KK   CPA30
9091          KM        Combine A29 with A30
9092          HC       2  10.915
              *

9093          KK  RCPA30
9094          KM        Route flow from CP A30 to CP A52
9095          RS       1    FLOW      -1
9096          RC   0.050   0.045   0.050    3020  0.0063
9097          RX       0     150     270     320     400     445     600     750
9098          RY    1005    1003    1001   997.5   997.5    1001    1003    1005
              *

9099          KK     A52
```

```
9100          KM        Runoff from A52
9101          BA   0.218
9102          LG    0.35    0.35    4.60    0.34       0
9103          UI     113     350     274      80      19       0       0       0       0       0
9104          UI       0       0       0       0       0       0       0       0       0       0
              *

9105          KK  CPA52A
9106          KM        Combine A30 with A52
9107          HC       2  11.132
              *

9108          KK     A31
9109          KM        Runoff from A31
9110          BA   0.538
9111          LG    0.35    0.38    5.60    0.22       0
9112          UI      66     224     349     560     395     257     115      62      24      15
9113          UI      15       0       0       0       0       0       0       0       0       0
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9114          UI       0       0       0       0       0       0       0       0       0       0
              *

9115          KK  RCPA31
9116          KM        Route flow from CP A31 to CP A32
9117          RS       4    FLOW      -1
9118          RC   0.050   0.045   0.050    7790  0.0067
9119          RX       0       9      60      65      80      90     115     124
9120          RY    1039 1037.25    1037    1036    1036    1037 1037.25    1039
              *

9121          KK   DRA21
9122          KM            Return diverted flow from CP A21
9123          DR   DVA21
              *

9124          KK   RDA21
9125          KM        Route diverted flow from CP A21 to CP A32
9126          RS      14    FLOW      -1
9127          RC   0.050   0.045   0.050   17400  0.0077
9128          RX       0     180     360     385     405     430     570     700
9129          RY    1100    1098    1097    1096    1096    1097    1098    1099
              *

9130          KK   DRA20
9131          KM            Return diverted flow from CP A20
9132          DR   DVA20
              *

9133          KK   RDA20
9134          KM        Route diverted flow from CP A20 to CP A32
9135          RS      11    FLOW      -1
9136          RC   0.050   0.045   0.050   11660  0.0075
9137          RX       0     180     360     385     405     430     570     700
9138          RY    1100    1098    1097    1096    1096    1097    1098    1099
              *

9139          KK     A32
9140          KM        Runoff from A32
9141          BA   1.208
9142          LG    0.35    0.39    5.70    0.20       0
9143          UI     113     420     639    1050     968     664     416     183     114      42
9144          UI      30      31       0       0       0       0       0       0       0       0
9145          UI       0       0       0       0       0       0       0       0       0       0
              *

9146          KK  CPA32A
9147          KM        Combine DRA21, DRA20 with A32
9148          HC       3   6.768
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9149          KK   CPA32
9150          KM        Combine A31 with A32
9151          HC       2   7.306
              *

9152          KK  RCPA32
9153          KM        Route flow from CP A32 to CP A52
```

```
9154          RS       1    FLOW      -1
9155          RC   0.050   0.045   0.050    1510  0.0071
9156          RX       0       8      40      52      93     111     152     160
9157          RY    1002  1000.5    1000     997     997    1000  1000.5    1002
              *

9158          KK   CPA52
9159          KM        Combine A32 with A52
9160          HC       2  17.173
              *

9161          KK  RCPA52
9162          KM        Route flow from CP A52 to CP A55
9163          RS       1    FLOW      -1
9164          RC   0.050   0.045   0.050    1960  0.0042
9165          RX       0       8     150     175     215     255     435     443
9166          RY     994   992.5     990   987.5   987.5     990   992.5     994
              *

9167          KK     A53
9168          KM        Runoff from A53
9169          BA   1.746
9170          LG    0.35    0.35    2.86    1.02       0
9171          UI.    300     945    1662    1851    1098     508     232      76      57       0
9172          UI       0       0       0       0       0       0       0       0       0       0
9173          UI       0       0       0       0       0       0       0       0       0       0
              *

9174          KK     A54
9175          KM        Runoff from A54
9176          BA   0.507
9177          LG    0.35    0.35    3.27    0.71      19
9178          UI     179     523     748     358     105      30       0       0       0       0
9179          UI       0       0       0       0       0       0       0       0       0       0
              *

9180          KK   CPA54
9181          KM        COMBINE A53 WITH A54
9182          HC       2   2.253
              *

9183          KK  RCPA54
9184          KM        Route flow from CP A54 to CP A55
9185          RS       1    FLOW      -1
9186          RC   0.050   0.045   0.050    3860  0.0066
9187          RX       0     245     270     290     310     330     360     620
9188          RY    1005    1000     998     995     995     998    1000    1004
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9189          KK     A55
9190          KM        Runoff from A55
9191          BA   0.613
9192          LG    0.35    0.35    3.64    0.59       1
9193          UI     234     709     890     381     114      29       0       0       0       0
9194          UI       0       0       0       0       0       0       0       0       0       0
              *

9195          KK  CPA55A
9196          KM        Combine A54 with A55
9197          HC       2   2.865
              *

9198          KK   CPA55
9199          KM        Combine A52 with A55
9200          HC       2  20.038
              *

9201          KK  RCPA55
9202          KM        Route flow from CP A55 to CP A56
9203          RS       4    FLOW      -1
9204          RC   0.050   0.045   0.050    9140  0.0048
9205          RX       0      10     160     175     255     325     455     465
9206          RY   963.5   961.5     960     958     958     960   961.5   963.5
              *

9207          KK     A56
9208          KM        Runoff from A56
9209          BA   1.839
9210          LG    0.35    0.35    4.40    0.37      13
9211          UI     294     945    1596    1989    1207     610     267     106      58       0
```

```
9212          UI       0       0       0       0       0       0       0       0       0       0
9213          UI       0       0       0       0       0       0       0       0       0       0
              *

9214          KK   CPA56
9215          KM        Combine A55 with A56
9216          HC       2  21.877
              *

9217          KK  A56RIV
9218          KM        Combine A51RIV with A56
9219          HC       2 404.960
              *

9220          KK  RCPA56
9221          KM        Route flow in Waterman Wash from CP A56RIV TO CP I63RIV (WATERMAN WASH)
9222          RS       1    FLOW      -1
9223          RC   0.050   0.035   0.050    1890  0.0046
9224          RX       0      10    1000    1100    1280    1400    2400    2410
9225          RY     942     940     932     930     930     932     940     942
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9226          KK     I51
9227          KM        Runoff subbasin I51
9228          BA   0.287
9229          LG    0.35    0.35    4.25    0.42       0
9230          UI     445     591      67       0       0       0       0       0       0       0
9231          UI       0       0       0       0       0       0       0       0       0       0
              *

9232          KK  RCPI51
9233          KM        Route flow from CP I51 to CP I53
9234          RS       4    FLOW      -1
9235          RC   0.050   0.045   0.050    5390  0.0160
9236          RX       0     100     400     420     430     450     750     850
9237          RY    1200    1199    1198    1197    1197    1198    1199    1200
              *

9238          KK     I53
9239          KM        Runoff subbasin I53
9240          BA   0.372
9241          LG    0.35    0.35    4.25    0.42       0
9242          UI     303     785     293      47       0       0       0       0       0       0
9243          UI       0       0       0       0       0       0       0       0       0       0
              *

9244          KK   CPI53
9245          KM        Combine I51 with I53
9246          HC       2   0.659
              *

9247          KK  RCPI53
9248          KM        Route flow from CP I53 to CP I55
9249          RS       2    FLOW      -1
9250          RC   0.050   0.045   0.050    5590  0.0105
9251          RX       0       9      35      45      50      60      85      94
9252          RY    1130 1128.25    1128    1127    1127    1128 1128.25    1130
              *

9253          KK     I55
9254          KM        Runoff subbasin I55
9255          BA   0.249
9256          LG    0.35    0.35    4.10    0.46       0
9257          UI     178     499     230      45       0       0       0       0       0       0
9258          UI       0       0       0       0       0       0       0       0       0       0
              *

9259          KK   CPI55
9260          KM        Combine I53 with I55
9261          HC       2   0.908
              *
1                                          HEC-1 INPUT                                          PAGE246

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9262          KK  RCPI55
9263          KM        Route flow from CP I55 to CP I57
9264          RS       1    FLOW      -1
9265          RC   0.050   0.045   0.050    3210  0.0091
```

```
9266          RX       0       9      35      45      50      60      85      94
9267          RY    1095 1093.25    1093    1092    1092    1093 1093.25    1095
              *

9268          KK     I57
9269          KM        Runoff subbasin I57
9270          BA   0.190
9271          LG    0.34    0.34    4.70    0.31      23
9272          UI     241     423      62       0       0       0       0       0       0       0
9273          UI       0       0       0       0       0       0       0       0       0       0
              *

9274          KK   CPI57
9275          KM        Combine I55 with I57
9276          HC       2   1.098
              *

9277          KK  RCPI57
9278          KM        Route flow from CP I57 to CP I72
9279          RS       3    FLOW      -1
9280          RC   0.050   0.045   0.050    2910  0.0079
9281          RX       0     100     400     420     430     450     750     850
9282          RY    1080    1079    1078    1077    1077    1078    1079    1080
              *

9283          KK     I72
9284          KM        Runoff subbasin I72
9285          BA   0.206
9286          LG    0.31    0.27    4.50    0.36      12
9287          UI      79     238     299     128      39       9       0       0       0       0
9288          UI       0       0       0       0       0       0       0       0       0       0
              *

9289          KK   CPI72
9290          KM        Combine I57 with I72
9291          HC       2   1.304
              *

9292          KK  RCPI72
9293          KM        Route flow from CP I72 to CP I60
9294          RS       4    FLOW      -1
9295          RC   0.050   0.045   0.050    8520  0.0087
9296          RX       0       9      35      55      65      85     110     119
9297          RY    1025 1023.25    1023    1022    1022    1023 1023.25    1025
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9298          KK     I60
9299          KM        Runoff subbasin I60
9300          BA   1.025
9301          LG    0.35    0.35    4.70    0.31       9
9302          UI     330     958    1503     793     253      80      45       0       0       0
9303          UI       0       0       0       0       0       0       0       0       0       0
              *

9304          KK  CPI60A
9305          KM        Combine I72 with I60
9306          HC       2   2.329
              *

9307          KK     I52
9308          KM        Runoff subbasin I52
9309          BA   0.261
9310          LG    0.35    0.35    4.10    0.46       3
9311          UI     331     582      84       0       0       0       0       0       0       0
9312          UI       0       0       0       0       0       0       0       0       0       0
              *

9313          KK  RCPI52
9314          KM        Route flow from CP I52 to CP I54
9315          RS       4    FLOW      -1
9316          RC   0.050   0.045   0.050    5120  0.0160
9317          RX       0     100     400     420     430     450     750     850
9318          RY    1200    1199    1198    1197    1197    1198    1199    1200
              *

9319          KK     I54
9320          KM        Runoff subbasin I54
9321          BA   0.352
9322          LG    0.35    0.35    4.00    0.47       0
9323          UI     327     771     227      33       0       0       0       0       0       0
```

```
9324          UI       0       0       0       0       0       0       0       0       0       0
              *

9325          KK   CPI54
9326          KM        Combine I52 with I54
9327          HC       2   0.613
              *

9328          KK  RCPI54
9329          KM        Route flow from CP I54 to CP I56
9330          RS       4    FLOW      -1
9331          RC   0.050   0.045   0.050    5370  0.0109
9332          RX       0     160     320     330     335     350     530     710
9333          RY    1130    1129    1128    1127    1127    1128    1129    1130
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9334          KK     I56
9335          KM        Runoff subbasin I56
9336          BA   0.432
9337          LG    0.35    0.35    4.10    0.46       0
9338          UI     352     911     341      55       0       0       0       0       0       0
9339          UI       0       0       0       0       0       0       0       0       0       0
              *

9340          KK   CPI56
9341          KM        Combine I54 with I56
9342          HC       2   1.045
              *

9343          KK  RCPI56
9344          KM        Route flow from CP I56 to CP I58
9345          RS       9    FLOW      -1
9346          RC   0.050   0.045   0.050   11740  0.0080
9347          RX       0     100     230     250     265     285     450     620
9348          RY    1070    1069    1068    1067    1067    1068    1069    1070
              *

9349          KK     I58
9350          KM        Runoff subbasin I58
9351          BA   0.745
9352          LG    0.35    0.35    4.60    0.34      11
9353          UI     119     383     647     806     488     248     107      44      23       0
9354          UI       0       0       0       0       0       0       0       0       0       0
9355          UI       0       0       0       0       0       0       0       0       0       0
              *

9356          KK   CPI58
9357          KM        Combine I56 with I58
9358          KM        Route length to CPI64 is insignificant
9359          HC       2   1.790
              *

9360          KK     I59
9361          KM        Runoff subbasin I59
9362          BA   0.392
9363          LG    0.35    0.38    5.60    0.22      23
9364          UI     251     736     416      89      24       0       0       0       0       0
9365          UI       0       0       0       0       0       0       0       0       0       0
              *

9366          KK     I64
9367          KM        Runoff subbasin I64
9368          BA   0.272
9369          LG    0.35    0.37    6.60    0.14      32
9370          UI     253     596     174      26       0       0       0       0       0       0
9371          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9372          KK   CPI64
9373          KM        Combine I58, I59 with I64
9374          HC       3   2.454
              *

9375          KK  RCPI64
9376          KM        Route flow from CP I64 to CP I65
9377          RS       3    FLOW      -1
```

```
9378          RC   0.050   0.045   0.050    3560  0.0045
9379          RX       0     200     600     690     710     800    1200    1400
9380          RY    1010    1009    1008    1007    1007    1008    1009    1010
              *

9381          KK     I65
9382          KM         Runoff subbasin I65
9383          BA   0.338
9384          LG    0.35    0.36    5.10    0.26       7
9385          UI     216     635     359      77      20       0       0       0       0       0
9386          UI       0       0       0       0       0       0       0       0       0       0
              *

9387          KK   CPI65
9388          KM         Combine I64 with I65
9389          HC       2   2.792
              *

9390          KK   CPI60
9391          KM         COMBINE I65 WITH I60
9392          HC       2   5.120
              *

9393          KK  RCPI60
9394          KM         Route flow from CP I60 to CP I66
9395          RS       1    FLOW      -1
9396          RC   0.050   0.045   0.050    2250  0.0044
9397          RX       0      13     110     130     145     165     305     318
9398          RY     995   993.5     992     990     990     992   993.5     995
              *

9399          KK     I66
9400          KM         Runoff subbasin I66
9401          BA   0.906
9402          LG    0.35    0.39    5.70    0.20      25
9403          UI     580    1700     962     207      55       0       0       0       0       0
9404          UI       0       0       0       0       0       0       0       0       0       0
              *

9405          KK   CPI66
9406          KM         Combine I60 with I66
9407          HC       2   6.027
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9408          KK  RCPI66
9409          KM         Route flow from CP I66 to CP I67
9410          RS       3    FLOW      -1
9411          RC   0.050   0.045   0.050    5610  0.0044
9412          RX       0       6     200     220     240     260     460     466
9413          RY     975  973.75     972     970     970     972  973.75     975
              *

9414          KK     I67
9415          KM         Runoff subbasin I67
9416          BA   0.970
9417          LG    0.35    0.36    5.10    0.26      14
9418          UI     503    1557    1220     359      81       0       0       0       0       0
9419          UI       0       0       0       0       0       0       0       0       0       0
              *

9420          KK   CPI67
9421          KM         Combine I66 with I67
9422          KM         Route length to CPI69 is insignificant
9423          HC       2   6.997
              *

9424          KK     I68
9425          KM         Runoff subbasin I68
9426          BA   0.292
9427          LG    0.35    0.35    4.55    0.35      17
9428          UI     238     616     230      37       0       0       0       0       0       0
9429          UI       0       0       0       0       0       0       0       0       0       0
              *

9430          KK     I69
9431          KM         Runoff subbasin I69
9432          BA   0.173
9433          LG    0.35    0.35    4.40    0.38      17
9434          UI     268     357      40       0       0       0       0       0       0       0
9435          UI       0       0       0       0       0       0       0       0       0       0
```

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                *

9436            KK   CPI69
9437            KM        COMBINE I67, I68 WITH I69
9438            HC       3   7.461
                *

9439            KK  RCPI69
9440            KM        Route flow from CP I69 to CP I70
9441            RS       3    FLOW      -1
9442            RC   0.050   0.045   0.050    5330  0.0046
9443            RX       0     450     900     925     950     975    1350    1700
9444            RY     970     965     962     960     960     962     965     970
                *
1                                          HEC-1 INPUT                                                          PAGE251

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9445            KK     I70
9446            KM        Runoff subbasin I70
9447            BA   0.368
9448            LG    0.35    0.35    4.90    0.29      12
9449            UI     211     644     431     108      23       0       0       0       0       0
9450            UI       0       0       0       0       0       0       0       0       0       0
                *

9451            KK   CPI70
9452            KM        Combine I69 with I70
9453            HC       2   7.829
                *

9454            KK     I71
9455            KM        Runoff subbasin I71
9456            BA   0.421
9457            LG    0.35    0.35    4.50    0.36      16
9458            UI     391     923     271      40       0       0       0       0       0       0
9459            UI       0       0       0       0       0       0       0       0       0       0
                *

9460            KK   CPI71
9461            KM        Combine I70 with I71
9462            HC       2   8.250
                *

9463            KK  RCPI71
9464            KM        Route flow from CP I71 to CP I63
9465            RS       1    FLOW      -1
9466            RC   0.050   0.045   0.050    1250  0.0045
9467            RX       0      10     210     235     260     285     460     470
9468            RY     945     943     942     940     940     942     943     945
                *

9469            KK     I63
9470            KM        Runoff subbasin I63
9471            BA   0.293
9472            LG    0.35    0.35    4.60    0.34       6
9473            UI     209     588     270      53       0       0       0       0       0       0
9474            UI       0       0       0       0       0       0       0       0       0       0
                *

9475            KK   CPI63
9476            KM        Combine I71 with I63
9477            HC       2   8.543
                *

9478            KK  I63RIV
9479            KM        Combine A56RIV with I63
9480            HC       2 413.504
                *
1                                          HEC-1 INPUT                                                          PAGE252

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9481            KK  RCPI63
9482            KM        Route flow in Waterman Wash from CP I63RIV TO CP A57RIV (WATERMAN WASH)
9483            RS       1    FLOW      -1
9484            RC   0.050   0.035   0.050    4640  0.0046
9485            RX       0      10    1000    1100    1280    1400    2400    2410
9486            RY     940     938     930     928     928     930     938     940
                *

9487            KK     A57
```

```
9488          KM        Runoff from A57
9489          BA   1.469
9490          LG    0.28    0.32    4.50    0.39      33
9491          UI     761    2359    1847     543     124       0       0       0       0       0
9492          UI       0       0       0       0       0       0       0       0       0       0
              *

9493          KK  A57RIV
9494          KM        Combine I63RIV with A57
9495          HC       2 414.972
              *

9496          KK  RCPA57
9497          KM        Route flow in Waterman Wash from CP A57RIV TO CP A60RIV (WATERMAN WASH)
9498          RS       3    FLOW      -1
9499          RC   0.050   0.035   0.050    7520  0.0019
9500          RX       0     400     600     700     900    1000    2300    3500
9501          RY     920     910     900     894     894     900     910     915
              *

9502          KK     A58
9503          KM        Runoff from A58
9504          BA   2.131
9505          LG    0.35    0.35    4.00    0.43      23
9506          UI     214     776    1180    1956    1675    1135     674     304     175      55
9507          UI      55       0       0       0       0       0       0       0       0       0
9508          UI       0       0       0       0       0       0       0       0       0       0
              *

9509          KK     A59
9510          KM        Runoff from A59
9511          BA   1.255
9512          LG    0.35    0.35    4.35    0.37      26
9513          UI     341     997    1746    1080     443     164      50       0       0       0
9514          UI       0       0       0       0       0       0       0       0       0       0
              *

9515          KK   CPA59
9516          KM        COMBINE A58 WITH A59
9517          HC       2   3.387
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

9518          KK  RCPA59
9519          KM        Route flow from CP A59 to CP A60
9520          RS       2    FLOW      -1
9521          RC   0.050   0.045   0.050    6400  0.0080
9522          RX       0      10      30      45      80      95     115     125
9523          RY   930.5   928.5   927.5     924     924   927.5   928.5   930.5
              *

9524          KK     A60
9525          KM        Runoff from A60
9526          BA   1.667
9527          LG    0.34    0.34    4.45    0.36      17
9528          UI     382    1158    2122    1550     775     286      98      62       0       0
9529          UI       0       0       0       0       0       0       0       0       0       0
              *

9530          KK   CPA60
9531          KM        Combine A59 with A60
9532          HC       2   5.054
              *

9533          KK  A60RIV
9534          KM        Combine A57RIV with A60
9535          KM        Approxmately 2500 feet upstream of Eagle Mt. Rd. and 125th Av. intersect
9536          HC       2 420.026
              *

9537          KK  RCPA60
9538          KM        Route flow in Waterman Wash from CP A60RIV to CP A62RIV (WATERMAN WASH)
9539          RS       1    FLOW      -1
9540          RC   0.050   0.035   0.050    5140  0.0055
9541          RX       0     600    1000    1200    1380    2100    2600    4300
9542          RY     895     890     884     879     878     883     890     895
              *

9543          KK     A61
9544          KM        Runoff from A61
9545          BA   1.880
```

```
9546          LG    0.31    0.28    4.45    0.38      10
9547          UI     141     545     834    1236    1612    1131     789     455     238     145
9548          UI      48      43      43       0       0       0       0       0       0       0
9549          UI       0       0       0       0       0       0       0       0       0       0
              *

9550          KK     A62
9551          KM        Runoff from A62
9552          BA   0.288
9553          LG    0.30    0.26    4.10    0.46       5
9554          UI      85     248     412     238      87      28      12       0       0       0
9555          UI       0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


9556          KK  A62RIV
9557          KM        Combine A61, A62 with A60RIV
9558          HC       3 422.194
              *
9559          ZZ
```

1

```
     SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   48        C04
              V
              V
   54     RCPC04
              .
              .
   60         .         C12
              .           .
              .           .
   66      CPC12............
              .
              .
   72         .-------->   DVC12
   69       DC12
              V
              V
   75     RCPC12
              .
              .
   81         .         C13
              .           .
              .           .
   87      CPC13............
              .
              .
   95         .-------->   DVC13
   90       DC13
              V
              V
   98     RCPC13
              .
              .
  104         .         C11
              .           .
              .           .
  113         .           .-------->   DVC11
  110         .        DC11
              .           V
              .           V
  116         .      RCPC11
              .           .
              .           .
  124         .           .           .<--------   DVC12
  122         .           .       DRC12
              .           .           V
              .           .           V
  125         .           .       RDC12
              .           .           .
              .           .           .
  131         .           .           .         C31
              .           .           .           .
              .           .           .           .
  137     CPC31.................................
              .
```

```
                .
145             .-------->   DVC31
140          DC31
                V
                V
148         RCPC31
                .
                .
156             .            .<-------   DVC11
154             .        DRC11
                .            V
                .            V
157             .        RDC11
                .            .
                .            .
163             .            .         C14
                .            .           .
                .            .           .
169          CPC14.......................
                .
                .
177             .-------->   DVC14
172          DC14
                V
                V
180         RCPC14
                .
                .
186             .          C05
                .            V
                .            V
192             .       RCPC05
                .            .
                .            .
198             .            .         C03
                .            .           .
                .            .           .
207             .            .           .-------->   DVC03
204             .            .        DC03
                .            .           V
                .            .           V
210             .            .      RCPC03
                .            .           .
                .            .           .
216             .            .           .         C09
                .            .           .           .
                .            .           .           .
222             .            .      CPC09.../.........
                .            .           .
                .            .           .
228             .            .           .-------->   DVC09
225             .            .        DC09
                .            .           V
                .            .           V
231             .            .      RCPC09
                .            .           .
                .            .           .
237             .            .           .         C15
                .            .           .           .
                .            .           .           .
243             .            .      CPC15............
                .            .           .
                .            .           .
249             .            .           .-------->   DVC15
246             .            .        DC15
                .            .           V
                .            .           V
252             .            .      RCPC15
                .            .           .
                .            .           .
258             .            .           .         C10
                .            .           .           .
                .            .           .           .
264          CPC10.................................
                .
                .
272             .-------->   DVC10
267          DC10
                V
                V
275         RCPC10
                .
                .
283             .            .<-------   DVC03
```

```
281          .       DRC03
             .           V
             .           V
284          .       RDC03
             .           .
             .           .
290          .           .         C06
             .           .           .
             .           .           .
296          .       CPC06............
             .           .
             .           .
302          .           .-------->   DVC06
299          .        DC06
             .           V
             .           V
305          .      RCPC06
             .           .
             .           .
313          .           .           .<-------   DVC09
311          .           .       DRC09
             .           .           V
             .           .           V
314          .           .       RDC09
             .           .           .
             .           .           .
320          .           .           .         C16
             .           .           .           .
             .           .           .           .
326          .       CPC16........................
             .           V
             .           V
329          .      RCPC16
             .           .
             .           .
337          .           .           .<-------   DVC06
335          .           .       DRC06
             .           .           V
             .           .           V
338          .           .       RDC06
             .           .           .
             .           .           .
344          .           .           .         C18
             .           .           .           .
             .           .           .           .
350          .           .       CPC18............
             .           .           .
             .           .           .
356          .           .           .-------->   DVC18
353          .           .        DC18
             .           .           V
             .           .           V
359          .           .      RCPC18
             .           .           .
             .           .           .
365          .           .           .         C17
             .           .           .           .
             .           .           .           .
371          .           .       CPC17............
             .           .           .
             .           .           .
377          .           .           .-------->   DVC17
374          .           .        DC17
             .           .           V
             .           .           V
380          .           .      RCPC17
             .           .           .
             .           .           .
388          .           .           .           .<-------   DVC15
386          .           .           .       DRC15
             .           .           .           V
             .           .           .           V
389          .           .           .       RDC15
             .           .           .           .
             .           .           .           .
395          .           .           .           .         C30
             .           .           .           .           .
             .           .           .           .           .
401       CPC30.............................................
             .
             .
409          .-------->   DVC30
404       DC30
             V
```

```
                V
412        RCPC30
                .
                .
418             .          C02
                .            V
                .            V
424             .       RCPC02
                .            .
                .            .
430             .            .          C01
                .            .            V
                .            .            V
436             .            .       RCPC01
                .            .            .
                .            .            .
442             .            .            .          C08
                .            .            .            V
                .            .            .            V
448             .            .            .       RCPC08
                .            .            .            .
                .            .            .            .
454             .            .            .            .          C07
                .            .            .            .            .
                .            .            .            .            .
460             .        CPC07.............................
                .            .
                .            .
466             .            .-------->   DVC07
463             .         DC07
                .            V
                .            V
469             .       RCPC07
                .            .
                .            .
477             .            .            .<-------   DVC18
475             .            .        DRC18
                .            .            V
                .            .            V
478             .            .        RDC18
                .            .            .
                .            .            .
484             .            .            .          C19
                .            .            .            .
                .            .            .            .
490             .        CPC19.......................
                .            .
                .            .
496             .            .-------->   DVC19
493             .         DC19
                .            V
                .            V
499             .       RCPC19
                .            .
                .            .
507             .            .            .<-------   DVC17
505             .            .        DRC17
                .            .            V
                .            .            V
508             .            .        RDC17
                .            .            .
                .            .            .
514             .            .            .          C29
                .            .            .            .
                .            .            .            .
520        CPC29.................................
                .
                .
528             .-------->   DVC29
523         DC29
                V
                V
531        RCPC29
                .
                .
537             .          C28
                .            .
                .            .
543        CPC28............
                .
                .
551             .-------->   DVC28
546         DC28
                V
```

```
                V
554        RCPC28
                .
                .
562             .            .<-------   DVC19
560             .        DRC19
                .            V
                .            V
563             .        RDC19
                .            .
                .            .
569             .            .         C27
                .            .           .
                .            .           .
575         CPC27.......................
                .
                .
583             .------->   DVC27
578          DC27
                V
                V
586        RCPC27
                .
                .
594             .            .<-------   DVC07
592             .        DRC07
                .            V
                .            V
595             .        RDC07
                .            .
                .            .
601             .            .         C21
                .            .           .
                .            .           .
610             .            .           .------->   DVC21
607             .            .        DC21
                .            .           V
                .            .           V
613             .            .      RCPC21
                .            .           .
                .            .           .
619             .            .           .         C20
                .            .           .           .
                .            .           .           .
625         CPC20.................................
                .
                .
633             .------->   DVC20
628          DC20
                V
                V
636        RCPC20
                .
                .
642             .         C26
                .           .
                .           .
648         CPC26............
                .
                .
656             .------->   DVC26
651          DC26
                V
                V
659        RCPC26
                .
                .
667             .            .<-------   DVC21
665             .        DRC21
                .            V
                .            V
668             .        RDC21
                .            .
                .            .
674             .            .         C23
                .            .           V
                .            .           V
680             .            .      RCPC23
                .            .           .
                .            .           .
686             .            .           .         C22
                .            .           .           .
                .            .           .           .
692         CPC22.................................
```

```
                .
                .
695             .         C24
                .           .
                .           .
701        CPC24............
                V
                V
704       PNDC01
                .
                .
716             .-------->   DVC24
711         DC24
                V
                V
719       RCPC24
                .
                .
726             .         C25
                .           .
                .           .
732        CPC25............
                V
                V
738       PNDC02
                .
                .
750             .-------->   DVC25
745         DC25
                V
                V
753       RCPC25
                .
                .
759             .         D02
                .           .
                .           .
768             .           .-------->   DVD02
765             .        DD02
                .           V
                .           V
771             .      RCPD02
                .           .
                .           .
777             .           .         D03
                .           .           .
                .           .           .
783             .       CPD03............
                .           .
                .           .
789             .           .-------->   DVD03
786             .        DD03
                .           V
                .           V
792             .      RCPD03
                .           .
                .           .
798             .           .         D04
                .           .           .
                .           .           .
804             .       CPD04............
                .           .
                .           .
810             .           .-------->   DVD04
807             .        DD04
                .           V
                .           V
813             .      RCPD04
                .           .
                .           .
821             .           .           .<-------   DVD02
819             .           .       DRD02
                .           .           V
                .           .           V
822             .           .       RDD02
                .           .           .
                .           .           .
830             .           .           .           .<-------   DVD03
828             .           .           .       DRD03
                .           .           .           V
                .           .           .           V
831             .           .           .       RDD03
                .           .           .           .
                .           .           .           .
```

```
837          .           .           .           .         D01
             .           .           .           .           .
             .           .           .           .           .
844          .       CPD01.................................
             .           .
             .           .
850          .           .-------->   DVD01
847          .        DD01
             .           V
             .           V
853          .      RCPD01
             .           .
             .           .
859          .           .         D09
             .           .           .
             .           .           .
865       CPD09......................
             .
             .
873          .-------->   DVD09
868        DD09
             V
             V
876      RCPD09
             .
             .
882          .         D12
             .           .
             .           .
888       CPD12............
             .
             .
896          .-------->   DVD12
891        DD12
             V
             V
899      RCPD12
             .
             .
907          .           .<--------   DVD01
905          .       DRD01
             .           V
             .           V
908          .       RDD01
             .           .
             .           .
916          .           .           .<--------   DVD04
914          .           .       DRD04
             .           .           V
             .           .           V
917          .           .       RDD04
             .           .           .
             .           .           .
923          .           .           .         D05
             .           .           .           .
             .           .           .           .
930          .       CPD05........................
             .           .
             .           .
936          .           .-------->   DVD05
933          .        DD05
             .           V
             .           V
939          .      RCPD05
             .           .
             .           .
945          .           .         D13
             .           .           .
             .           .           .
951      CPD13........................
             .
             .
959          .-------->   DVD13
954        DD13
             V
             V
962      RCPD13
             .
             .
968          .         D46
             .           .
             .           .
974      CPD46............
             .
```

```
                .
982             .-------->   DVD46
977          DD46
                V
                V
985         RCPD46
                .
                .
991             .         D06
                .           .
                .           .
1001            .           .-------->   DVD06
998             .        DD06
                .           V
                .           V
1004            .      RCPD06
                .           .
                .           .
1012            .           .           .<-------   DVD06
1010            .           .       DRD06
                .           .           V
                .           .           V
1013            .           .       RDD06
                .           .           .
                .           .           .
1019            .           .           .         D08
                .           .           .           .
                .           .           .           .
1025            .           .       CPD08............
                .           .           V
                .           .           V
1028            .           .      RCPD08
                .           .           .
                .           .           .
1036            .           .           .           .<-------   DVD05
1034            .           .           .       DRD05
                .           .           .           V
                .           .           .           V
1037            .           .           .       RDD05
                .           .           .           .
                .           .           .           .
1043            .           .           .           .         D11
                .           .           .           .           .
                .           .           .           .           .
1049            .           .           .       CPD11............
                .           .           .           V
                .           .           .           V
1052            .           .           .      RCPD11
                .           .           .           .
                .           .           .           .
1058            .           .           .           .         D10
                .           .           .           .           .
                .           .           .           .           .
1065         CPD10.............................................
                .
                .
1073            .-------->   DVD10
1068         DD10
                V
                V
1076        RCPD10
                .
                .
1082            .         D47
                .           .
                .           .
1088         CPD47............
                .
                .
1096            .-------->   DVD47
1091         DD47
                V
                V
1099        RCPD47
                .
                .
1105            .         D07
                .           .
                .           .
1115            .           .-------->   DVD07
1112            .        DD07
                .           V
                .           V
1118            .      RCPD07
```

```
                .           .
                .           .
1124            .           .         D15
                .           .           .
                .           .           .
1131       CPD15.......................
                .
                .
1139            .------->   DVD15
1134        DD15
                V
                V
1142      RCPD15
                .
                .
1150            .           .<-------   DVD07
1148            .       DRD07
                .           V
                .           V
1151            .       RDD07
                .           .
                .           .
1157            .           .         D17
                .           .           .
                .           .           .
1164       CPD17.......................
                .
                .
1172            .------->   DVD17
1167        DD17
                V
                V
1175      RCPD17
                .
                .
1181            .         D18
                .           .
                .           .
1187       CPD18............
                .
                .
1195            .------->   DVD18
 190        DD18
                V
                V
1198      RCPD18
                .
                .
1204            .         D19
                .           .
                .           .
1210       CPD19............
                .
                .
1218            .------->   DVD19
1213        DD19
                V
                V
1221      RCPD19
                .
                .
1227            .         D20
                .           .
                .           .
1233       CPD20............
                .
                .
1241            .------->   DVD20
1236        DD20
                V
                V
1244      RCPD20
                .
                .
1250            .         D21
                .           .
                .           .
1256       CPD21............
                .
                .
1264            .------->   DVD21
1259        DD21
                V
                V
```

```
1267      RCPD21
               .
               .
1273           .          E33
               .            .
               .            .
1279       CPE33............
               .
               .
1287           .-------->   DVE33
1282        DE33
               V
               V
1290      RCPE33
               .
               .
1296           .          E17
               .            V
               .            V
1303           .       RCPE17
               .            .
               .            .
1309           .            .          E32
               .            .            .
               .            .            .
1315       CPE32........................
               .
               .
1323           .-------->   DVE32
1318        DE32
               V
               V
1326      RCPE32
               .
               .
1332           .          E53
               .            .
               .            .
1338       CPE53............
               .
               .
1346           .-------->   DVE53
1341        DE53
               V
               V
1349      RCPE53
               .
               .
1355           .          E18
               .            V
               .            V
1361           .       RCPE18
               .            .
               .            .
1367           .            .          E31
               .            .            .
               .            .            .
1373       CPE31........................
               .
               .
1381           .-------->   DVE31
1376        DE31
               V
               V
1384      RCPE31
               .
               .
1390           .          E01
               .            V
               .            V
1397           .       RCPE01
               .            .
               .            .
1403           .            .          E02
               .            .            .
               .            .            .
1410           .        CPE02............
               .            V
               .            V
1413           .       RCPE02
               .            .
               .            .
1419           .            .          E03
               .            .            .
```

```
                .          .          .
1425            .      CPE03...........
                .          V
                .          V
1428            .     RCPE03
                .          .
                .          .
1434            .          .        E16
                .          .          .
                .          .          .
1440            .      CPE16...........
                .          .
                .          .
1446            .          .-------->   DVE16
1443            .       DE16
                .          V
                .          V
1449            .     RCPE16
                .          .
                .          .
1455            .          .        E19
                .          .          .
                .          .          .
1462            .      CPE19...........
                .          .
                .          .
1468            .          .-------->   DVE19
1465            .       DE19
                .          V
                .          V
1471            .     RCPE19
                .          .
                .          .
1477            .          .        E30
                .          .          .
                .          .          .
1484         CPE30........................
                .
                .
1492            .-------->   DVE30
1487         DE30
                V
                V
1495        RCPE30
                .
                .
1501            .        E28
                .          .
                .          .
1510            .          .-------->   DVE28
1507            .       DE28
                .          V
                .          V
1513            .     RCPE28
                .          .
                .          .
1519            .          .        E21
                .          .          .
                .          .          .
1528            .          .          .-------->   DVE21
1525            .          .       DE21
                .          .          V
                .          .          V
1531            .          .     RCPE21
                .          .          .
                .          .          .
1539            .          .          .          .<--------   DVE16
1537            .          .          .      DRE16
                .          .          .          V
                .          .          .          V
1540            .          .          .      RDE16
                .          .          .          .
                .          .          .          .
1546            .          .          .          .        E20
                .          .          .          .          .
                .          .          .          .          .
1553            .      CPE20...................................
                .          .
                .          .
1558            .          .          .<--------   DVE28
1556            .          .      DRE28
                .          .          V
                .          .          V
1559            .          .      RDE28
```

```
                                                  .<-------   DVE19
1567
1565                                        DRE19
                                              V
                                              V
1568                                        RDE19
                                                .
                                                .
1574                                            .         E29
                                                .           .
                                                .           .
1581                                CPE29A.......................
                                                .
                                                .
1584                        CPE29............
                              V
                              V
1587                        RCPE29
                                .
                                .
1593                            E07
                                  V
                                  V
1599                        RCPE07
                                .
                                .
1605                            .         E14
                                .           V
                                .           V
1611                            .      RCPE14
                                .           .
                                .           .
1617                            .           .         E15
                                .           .           .
                                .           .           .
1623                        CPE15.......................
                                  V
                                  V
1626                        RCPE15
                                .
                                .
1632                            .         E27
                                .           V
                                .           V
1638                            .      RCPE27
                                .           .
                                .           .
1646                            .           .           .<-------   DVE21
1644                            .           .       DRE21
                                .           .         V
                                .           .         V
1647                            .           .       RDE21
                                .           .           .
                                .           .           .
1653                            .           .           .         E22
                                .           .           .           .
                                .           .           .           .
1660                        CPE22.................................
                                  V
                                  V
1663                        RCPE22
                                .
                                .
1669                            .         E37
                                .           .
                                .           .
1675                        CPE37............
                                  V
                                  V
1678                        RCPE37
                                .
                                .
1684                            .         E04
                                .           V
                                .           V
1690                            .      RCPE04
                                .           .
                                .           .
1696                            .           .         E06
                                .           .           V
                                .           .           V
1702                            .           .       RCPE06
                                .           .           .
```

```
1708                                                  E11
                                                       .
                                                       .
1718                                                   .-------> DVE11
1715                                              DE11
                                                     V
                                                     V
21                                            RCPE11
                                                       .
                                                       .
1727                                                   .       E09
                                                       .         .
                                                       .         .
1736                                                   .         .-------> DVE09
1733                                                   .      DE09
                                                       .         V
                                                       .         V
1739                                                   .    RCPE09
                                                       .         .
                                                       .         .
1745                                                   .         .        E10
                                                       .         .         .
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1751                                                   .     CPE10...........
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1757                                                   .         .-------> DVE10
1754                                                   .      DE10
                                                       .         V
                                                       .         V
1760                                                   .    RCPE10
                                                       .         .
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1766                                                   .         .        E05
                                                       .         .         .
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1773                                       CPE05.......................................
                                                 .
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1779                                             .-------> DVE05
1776                                        DE05
                                                 V
                                                 V
82                                         RCPE05
                                                 .
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1790                                             .         .<-------  DVE09
1788                                             .      DRE09
                                                 .         V
                                                 .         V
1791                                             .      RDE09
                                                 .         .
                                                 .         .
1799                                             .         .         .<-------  DVE10
1797                                             .         .      DRE10
                                                 .         .         V
                                                 .         .         V
1800                                             .         .      RDE10
                                                 .         .         .
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1806                                             .         .         .       E13
                                                 .         .         .         .
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1813                                             .      CPE13.......................
                                                 .         .
                                                 .         .
1819                                             .         .-------> DVE13
1816                                             .       DE13
                                                 .         V
                                                 .         V
1822                                             .     RCPE13
                                                 .         .
                                                 .         .
1828                                             .         .         E24
                                                 .         .          .
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1834                                       CPE24.......................
                                                 V
                                                 V
37                                         RCPE24
                                                 .
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1843                                             .       E08
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                 .           .           .           .           V
                 .           .           .           .           V
1850             .           .           .           .       RCPE08
                 .           .           .           .           .
                 .           .           .           .           .
1858             .           .           .           .           .<-------   DVE13
1856             .           .           .           .       DRE13
                 .           .           .           .           V
                 .           .           .           .           V
1859             .           .           .           .       RDE13
                 .           .           .           .           .
                 .           .           .           .           .
1865             .           .           .           .           .         E23
                 .           .           .           .           .           .
                 .           .           .           .           .           .
1872             .           .           .           .      CPE23.......................
                 .           .           .           .           V
                 .           .           .           .           V
1875             .           .           .           .      RCPE23
                 .           .           .           .           .
                 .           .           .           .           .
1881             .           .           .           .           .         E34
                 .           .           .           .           .           .
                 .           .           .           .           .           .
1887             .           .           .      CPE34.......................
                 .           .           .           V
                 .           .           .           V
1890             .           .           .      RCPE34
                 .           .           .           .
                 .           .           .           .
1896             .           .           .           .         E38
                 .           .           .           .           .
                 .           .           .           .           .
1902         CPE38.............................................
                 .
                 .
1910             .------->   DVE38
1905          DE38
                 V
                 V
1913         RCPE38
                 .
                 .
1921             .           .<-------   DVE11
1919             .       DRE11
                 .           V
                 .           V
1922             .       RDE11
                 .           .
                 .           .
1928             .           .         E12
                 .           .           .
                 .           .           .
1935             .       CPE12............
                 .           V
                 .           V
1938             .      RCPE12
                 .           .
                 .           .
1946             .           .           .<-------   DVE05
1944             .           .       DRE05
                 .           .           V
                 .           .           V
1947             .           .       RDE05
                 .           .           .
                 .           .           .
1953             .           .           .         E25
                 .           .           .           .
                 .           .           .           .
1960         CPE25.................................
                 .
                 .
1968             .------->   DVE25
1963          DE25
                 V
                 V
1971         RCPE25
                 .
                 .
1977             .         E26
                 .           V
                 .           V
1983             .      RCPE26
                 .           .
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                .           .
1989            .           .         E35
                .           .           .
                .           .           .
1995            .       CPE35............
                .           .
                .           .
001             .           .-------->   DVE35
98              .        DE35
                .           V
                .           V
2004            .      RCPE35
                .           .
                .           .
2010            .           .         E36
                .           .           .
                .           .           .
2016        CPE36........................
                .
                .
2024            .-------->   DVE36
2019         DE36
                V
                V
2027       RCPE36
                .
                .
2035            .           .<-------   DVE35
2033            .       DRE35
                .           V
                .           V
2036            .       RDE35
                .           .
                .           .
2042            .           .         E54
                .           .           .
                .           .           .
2048        CPE54........................
                .
                .
2056            .-------->   DVE54
2051         DE54
                V
                V
59         RCPE54
                .
                .
2065            .         F26
                .           .
                .           .
2072        CPF26............
                .
                .
2080            .-------->   DVF26
2075         DF26
                V
                V
2083       RCPF26
                .
                .
2089            .         F14
                .           V
                .           V
2095            .      RCPF14
                .           .
                .           .
2101            .           .         F13
                .           .           .
                .           .           .
2110            .           .           .-------->   DVF13
2107            .           .        DF13
                .           .           V
                .           .           V
2113            .           .      RCPF13
                .           .           .
                .           .           .
2121            .           .           .           .<-------   DVF13
2119            .           .           .       DRF13
                .           .           .           V
                .           .           .           V
22              .           .           .       RDF13
                .           .           .           .
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2128            .           .           .           .         F12
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2134            .           .           .       CPF12............
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2140            .           .           .           .-------->   DVF12
2137            .           .           .        DF12
                .           .           .           V
                .           .           .           V
2143            .           .           .      RCPF12
                .           .           .           .
                .           .           .           .
2149            .           .           .           .         F15
                .           .           .           .           .
                .           .           .           .           .
2156            .       CPF15...................................
                .           V
                .           V
2159            .      RCPF15
                .           .
                .           .
2167            .           .           .<-------   DVF12
2165            .           .       DRF12
                .           .           V
                .           .           V
2168            .           .       RDF12
                .           .           .
                .           .           .
2174            .           .           .         F11
                .           .           .           .
                .           .           .           .
2181            .           .       CPF11............
                .           .           .
                .           .           .
2187            .           .           .-------->   DVF11
2184            .           .        DF11
                .           .           V
                .           .           V
2190            .           .      RCPF11
                .           .           .
                .           .           .
2196            .           .           .         F16
                .           .           .           .
                .           .           .           .
2202            .           .       CPF16............
                .           .           .
                .           .           .
2208            .           .           .-------->   DVF16
2205            .           .        DF16
                .           .           V
                .           .           V
2211            .           .      RCPF16
                .           .           .
                .           .           .
2217            .           .           .         F25
                .           .           .           .
                .           .           .           .
2224        CPF25...................................
                .
                .
2229            .           .<-------   DVF11
2227            .       DRF11
                .           V
                .           V
2230            .       RDF11
                .           .
                .           .
2236            .           .         F17
                .           .           .
                .           .           .
2242            .       CPF17............
                .           V
                .           V
2245            .      RCPF17
                .           .
                .           .
2253            .           .           .<-------   DVF16
2251            .           .       DRF16
                .           .           V
                .           .           V
2254            .           .       RDF16
                .           .           .
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2260            .           .           .         F24
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2267            .      CPF24.......................
                .          V
                .          V
2270            .     RCPF24
                .          .
                .          .
2276            .          .        F23
                .          .          V
                .          .          V
2282            .          .     RCPF23
                .          .          .
                .          .          .
2288            .          .          .         F27
                .          .          .           .
                .          .          .           .
2294       CPF27.................................
               V
               V
2297      PNDF01
               .
               .
2309           .------->   DVF27
2304        DF27
               V
               V
2312      RCPF27
               .
               .
2318           .        F10
               .          V
               .          V
2325           .     RCPF10
               .          .
               .          .
2331           .          .        F18
               .          .          .
               .          .          .
2337           .      CPF18............
               .          .
               .          .
2343           .          .-------->   DVF18
2340           .       DF18
               .          V
               .          V
2346           .     RCPF18
               .          .
               .          .
2352           .          .        F22
               .          .          .
               .          .          .
2358           .      CPF22............
               .          .
               .          .
2364           .          .------->   DVF22
2361           .       DF22
               .          V
               .          V
2367           .     RCPF22
               .          .
               .          .
2373           .          .        F28
               .          .          .
               .          .          .
2379       CPF28........................
               V
               V
2382      PNDF02
               .
               .
2394           .-------->  DVF28A
2389       DF28A
               .
               .
2402           .-------->  DVF28B
2397       DF28B
               V
               V
2405      RCPF28
               .
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2411           .        F36
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                .           .
2417       CPF36............
                V
                V
2420       PNDF03
                V
                V
2427       RCPF36
                .
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2434            .        F02
                .          .
                .          .
2443            .          .-------->   DVF02
2440            .       DF02
                .          V
                .          V
2446            .     RCPF02
                .          .
                .          .
2452            .          .        F01
                .          .          V
                .          .          V
2459            .          .     RCPF01
                .          .          .
                .          .          .
2465            .          .          .         F04
                .          .          .           .
                .          .          .           .
2472            .      CPF04.......................
                .          V
                .          V
2475            .     RCPF04
                .          .
                .          .
2481            .          .        F03
                .          .          V
                .          .          V
2488            .          .     RCPF03
                .          .          .
                .          .          .
2494            .          .          .         F06
                .          .          .           .
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2500            .          .      CPF06............
                .          .          V
                .          .          V
2503            .          .     RCPF06
                .          .          .
                .          .          .
2511            .          .          .           .<-------   DVF02
2509            .          .          .      DRF02
                .          .          .          V
                .          .          .          V
2512            .          .          .      RDF02
                .          .          .          .
                .          .          .          .
2518            .          .          .          .         F05
                .          .          .          .           .
                .          .          .          .           .
2525            .      CPF05.................................
                .          V
                .          V
2528            .     RCPF05
                .          .
                .          .
2534            .          .        F07
                .          .          V
                .          .          V
2541            .          .     RCPF07
                .          .          .
                .          .          .
2547            .          .          .         F08
                .          .          .           .
                .          .          .           .
2554            .      CPF08.......................
                .          V
                .          V
2557            .     RCPF08
                .          .
                .          .
2563            .          .        F09
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2570          .      CPF09............
              .          V
              .          V
2573          .     RCPF09
              .          .
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2579          .          .         F19
              .          .           .
              .          .           .
2586          .      CPF19............
              .          .
              .          .
2592          .          .-------->   DVF19
2589          .       DF19
              .          V
              .          V
2595          .     RCPF19
              .          .
              .          .
2603          .          .           .<-------   DVF18
2601          .          .       DRF18
              .          .           V
              .          .           V
2604          .          .       RDF18
              .          .           .
              .          .           .
2610          .          .           .         F21
              .          .           .           .
              .          .           .           .
2616          .      CPF21........................
              .          V
              .          V
2619          .     RCPF21
              .          .
              .          .
2627          .          .           .<-------   DVF22
2625          .          .       DRF22
              .          .           V
              .          .           V
2628          .          .       RDF22
              .          .           .
              .          .           .
2634          .          .           .         F29
              .          .           .           .
              .          .           .           .
2641          .      CPF29........................
              .          V
              .          V
2644          .     PNDF04
              .          .
              .          .
2656          .          .-------->   DVF29
2651          .       DF29
              .          V
              .          V
2659          .     RCPF29
              .          .
              .          .
2667          .          .           .<-------   DVF19
2665          .          .       DRF19
              .          .           V
              .          .           V
2668          .          .       RDF19
              .          .           .
              .          .           .
2674          .          .           .         F20
              .          .           .           .
              .          .           .           .
2681          .      CPF20........................
              .          V
              .          V
2684          .     PNDF05
              .          V
              .          V
2692          .     RCPF20
              .          .
              .          .
2699          .          .         F31
              .          .           .
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2705          .          .           .         G21
              .          .           .           .
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2711          .      CPF31........................
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                 .          V
                 .          V
2714             .     RCPF31
                 .          .
                 .          .
2722             .          .          .<-------   DVF29
2720             .          .     DRF29
                 .          .         V
                 .          .         V
2723             .          .     RDF29
                 .          .          .
                 .          .          .
2730             .          .          .         F32
                 .          .          .          .
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2736             .     CPF32.......................
                 .          .
                 .          .
2739             .          .       G20
                 .          .         V
                 .          .         V
2745             .          .     RCPG20
                 .          .          .
                 .          .          .
2751             .          .          .         G19
                 .          .          .           V
                 .          .          .           V
2757             .          .          .      RCPG19
                 .          .          .           .
                 .          .          .           .
2763             .          .          .           .         G22
                 .          .          .           .           .
                 .          .          .           .           .
2769             .          .     CPG22.......................
                 .          .          .
                 .          .          .
2772        F32RIV.........................
                 V
                 V
2776        RCPF32
                 .
                 .
2784             .          .<-------  DVF28B
2782             .     DRF28B
                 .          V
                 .          V
2785             .     RDF28B
                 .          .
                 .          .
2792             .          .       F33
                 .          .          .
                 .          .          .
2798             .     CPF33............
                 .          .
                 .          .
2801        F33RIV............
                 V
                 V
2804        RCPF33
                 .
                 .
2812             .          .<-------  DVF28A
2810             .     DRF28A
                 .          V
                 .          V
2813             .     RDF28A
                 .          .
                 .          .
2822             .          .          .<-------   DVF27
2820             .          .     DRF27
                 .          .          .
                 .          .          .
2827             .          .          .-------->  DVF25
2823             .          .      DF25
                 .          .         V
                 .          .         V
2830             .          .     RDF27
                 .          .          .
                 .          .          .
2839             .          .          .           .<-------   DVF25
2837             .          .          .      DRF25
                 .          .          .          V
                 .          .          .          V
2840             .          .          .      RDF25
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                .          .          .          .
                .          .          .          .          F34
2847            .          .          .          .            .
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2854            .      CPF34..........................
                .          .
                .          .
57              .          .        G23
                .          .          .
                .          .          .
2863      F34RIV.......................
              V
              V
2866      RCPF34
                .
                .
2874            .          .<-------   DVF26
2872            .      DRF26
                .          V
                .          V
2875            .      RDF26
                .          .
                .          .
2882            .          .        F35
                .          .          .
                .          .          .
2889            .      CPF35............
                .          .
                .          .
2892            .          .        G24
                .          .          V
                .          .          V
2898            .          .     RCPG24
                .          .          .
                .          .          .
2904            .          .          .         G25
                .          .          .           .
                .          .          .           .
2910      F35RIV.......................................
              V
              V
913       RCPF35
                .
                .
921             .          .<-------   DVE54
2919            .      DRE54
                .          V
                .          V
2922            .      RDE54
                .          .
                .          .
2929            .          .        E46
                .          .          .
                .          .          .
2935            .      CPE46............
                .          V
                .          V
2938            .     RCPE46
                .          .
                .          .
2946            .          .          .<-------   DVE25
2944            .          .     DRE25
                .          .          V
                .          .          V
2947            .          .     RDE25
                .          .          .
                .          .          .
2956            .          .          .           .<-------   DVE36
2954            .          .          .       DRE36
                .          .          .           V
                .          .          .           V
2957            .          .          .       RDE36
                .          .          .           .
                .          .          .           .
2964            .          .          .           .         E45
                .          .          .           .           .
                .          .          .           .           .
970             .          .     CPE45........................
                .          .          V
                .          .          V
973             .          .     RCPE45
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2979          .           .           .         E47
              .           .           .           .
              .           .           .           .
2985          .       CPE47.......................
              .           V
              .           V
2988          .      RCPE47
              .           .
              .           .
2994          .           .         E48
              .           .           .
              .           .           .
3000          .       CPE48............
              .           .
              .           .
3003          .           .         G26
              .           .           .
              .           .           .
3009     E48RIV......................
              V
              V
3012     RCPE48
              .
              .
3020          .           .<-------   DVE38
3018          .       DRE38
              .           V
              .           V
3021          .       RDE38
              .           .
              .           .
3030          .           .           .<-------   DVE30
3028          .           .       DRE30
              .           .           V
              .           .           V
3031          .           .       RDE30
              .           .           .
              .           .           .
3038          .           .           .         E44
              .           .           .           .
              .           .           .           .
3044          .       CPE44.......................
              .           V
              .           V
3047          .      RCPE44
              .           .
              .           .
3055          .           .           .<-------   DVE31
3053          .           .       DRE31
              .           .           V
              .           .           V
3056          .           .       RDE31
              .           .           .
              .           .           .
3063          .           .           .         E43
              .           .           .           .
              .           .           .           .
3069          .           .       CPE43............
              .           .           V
              .           .           V
3072          .           .      RCPE43
              .           .           .
              .           .           .
3078          .           .           .         E50
              .           .           .           .
              .           .           .           .
3084          .       CPE50.......................
              .           V
              .           V
3087          .      RCPE50
              .           .
              .           .
3093          .           .         E52
              .           .           V
              .           .           V
3099          .           .      RCPE52
              .           .           .
              .           .           .
3105          .           .           .         E49
              .           .           .           .
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3111          .       CPE49.......................
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3114      E49RIV............
               V
               V
3117      RCPE49
               .
               .
`123           .         G18
               .           .
               .           .
132            .           .-------->   DVG18
3129           .        DG18
               .           V
               .           V
3135           .      RCPG18
               .           .
               .           .
3141           .           .         G27
               .           .           .
               .           .           .
3147           .       CPG27............
               .           .
               .           .
3150      G27RIV............
               V
               V
3153      RCPG27
               .
               .
3159           .         G28
               .           .
               .           .
3165      G28RIV............
               V
               V
3168      RCPG28
               .
               .
3176           .           .<-------   DVE53
3174           .       DRE53
               .           V
               .           V
3177           .       RDE53
               .           .
               .           .
86             .           .           .<-------   DVE32
3184           .           .       DRE32
               .           .           V
               .           .           V
3187           .           .       RDE32
               .           .           .
               .           .           .
3194           .           .           .         E40
               .           .           .           .
               .           .           .           .
3200           .           .       CPE40............
               .           .           .
               .           .           .
3205           .           .           .           .<-------   DVE33
3203           .           .           .       DRE33
               .           .           .           V
               .           .           .           V
3206           .           .           .       RDE33
               .           .           .           .
               .           .           .           .
3213           .           .           .           .         E39
               .           .           .           .           .
               .           .           .           .           .
3219           .           .           .      CPE39A............
               .           .           .           .
               .           .           .           .
3222           .           .       CPE39............
               .           .           V
               .           .           V
3225           .           .      RCPE39
               .           .           .
               .           .           .
3231           .           .           .         E42
               .           .           .           .
               .           .           .           .
237            .       CPE42........................
               .           V
               .           V
3240           .      RCPE42
               .           .
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                .           .
3246            .           .         E51
                .           .           .
                .           .           .
3253            .       CPE51............
                .           .
                .           .
3256      E51RIV............
               V
               V
3259      RCPE51
                .
                .
3265            .         E41
                .           .
                .           .
3274            .           .           .<-------   DVG18
3272            .           .       DRG18
                .           .           V
                .           .           V
3275            .           .       RDG18
                .           .           .
                .           .           .
3281            .           .           .         G17
                .           .           .           .
                .           .           .           .
3287            .           .       CPG17............
                .           .           V
                .           .           V
3290            .           .      RCPG17
                .           .           .
                .           .           .
3296            .           .           .         G16
                .           .           .           V
                .           .           .           V
3302            .           .           .      RCPG16
                .           .           .           .
                .           .           .           .
3308            .           .           .           .         G29
                .           .           .           .           .
                .           .           .           .           .
3315            .           .       CPG29........................
                .           .           .
                .           .           .
3318      E41RIV........................
               V
               V
3321      RCPE41
                .
                .
3327            .         G15
                .           V
                .           V
3333            .      RCPG15
                .           .
                .           .
3339            .           .         G30
                .           .           .
                .           .           .
3345            .       CPG30............
                .           .
                .           .
3348      G30RIV............
               V
               V
3351      RCPG30
                .
                .
3357            .         G44
                .           V
                .           V
3363            .      RCPG44
                .           .
                .           .
3369            .           .         G06
                .           .           .
                .           .           .
3375            .       CPG06............
                .           .
                .           .
3381            .           .-------->  DVG06
3378            .        DG06
                .           V
                .           V
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3384          .      RCPG06
              .          .
              .          .
3390          .          .        G07
              .          .         .
              .          .         .
`396          .      CPG07............
              .          V
              .          V
399           .      RCPG07
              .          .
              .          .
3405          .          .        G08
              .          .         .
              .          .         .
3414          .          .         .-------->   DVG08
3411          .          .      DG08
              .          .         V
              .          .         V
3417          .          .    RCPG08
              .          .         .
              .          .         .
3423          .          .         .        G05
              .          .         .         .
              .          .         .         .
3432          .          .         .         .-------->   DVG05
3429          .          .         .      DG05
              .          .         .         V
              .          .         .         V
3435          .          .         .    RCPG05
              .          .         .         .
              .          .         .         .
3441          .          .         .         .        G46
              .          .         .         .         .
              .          .         .         .         .
3447          .          .         .    CPG46............
              .          .         .         .
              .          .         .         .
3450          .          .         .         .        G04
              .          .         .         .         .
              .          .         .         .         .
3456          .          .         .    CPG04............
              .          .         .         V
              .          .         .         V
59            .          .         .    RCPG04
              .          .         .         .
              .          .         .         .
3467          .          .         .         .         .<-------   DVG06
3465          .          .         .         .      DRG06
              .          .         .         .         V
              .          .         .         .         V
3468          .          .         .         .      RDG06
              .          .         .         .         .
              .          .         .         .         .
3476          .          .         .         .         .          .<-------   DVG05
3474          .          .         .         .         .      DRG05
              .          .         .         .         .         V
              .          .         .         .         .         V
3477          .          .         .         .         .      RDG05
              .          .         .         .         .         .
              .          .         .         .         .         .
3483          .          .         .         .         .         .        G45
              .          .         .         .         .         .         .
              .          .         .         .         .         .         .
3490          .          .    CPG45.............................................
              .          .         V
              .          .         V
3493          .          .    RCPG45
              .          .         .
              .          .         .
3499          .          .         .        G31
              .          .         .         .
              .          .         .         .
3505          .          .    CPG31............
              .          .         .
              .          .         .
3511          .          .         .-------->   DVG31
3508          .          .     DG31
              .          .         V
              .          .         V
14            .          .    RCPG31
              .          .         .
              .          .         .
3520          .          .         .        G47
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3526                CPG47............
                        .
                        .-------->   DVG47
3532
3529                DG47
                      V
                      V
3535                RCPG47
                        .
                        .<-------   DVG31
3543
3541                        DRG31
                              V
                              V
3544                        RDG31
                                .
                                .
3550                            .          G43
                                .           .
                                .           .
3557        CPG43.................................
                        .
                        .<-------   DVD17
3562
3560                DRD17
                      V
                      V
3563                RDD17
                        .
                        .<-------   DVD18
3572
3570                        DRD18
                              V
                              V
3573                        RDD18
                                .
                                .
3580                            .          D23
                                .           .
                                .           .
3587                CPD23......................
                        .
                        .<-------   DVD19
3592
3590                        DRD19
                              V
                              V
3593                        RDD19
                                .
                                .
3600                            .          D24
                                .           .
                                .           .
3606                        CPD24A............
                                .
                                .
3609                CPD24............
                      V
                      V
3612                RCPD24
                        .
                        .<-------   DVD20
3620
3618                        DRD20
                              V
                              V
3621                        RDD20
                                .
                                .<-------   DVD21
3630
3628                            .      DRD21
                                .        V
                                .        V
3631                            .      RDD21
                                .        .
                                .        .          D25
3638                            .        .           .
                                .        .           .
3645                CPD25.....................................
                      V
                      V
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3648                    .           .       RCPD25
                        .           .           .
3654                    .           .           .          D26
                        .           .           .            .
`661                    .           .       CPD26............
                        .           .           V
                        .           .           V
664                     .           .       RCPD26
                        .           .           .
3670                    .           .           .          D27
                        .           .           .            .
3676                    .           .       CPD27............
                        .           .           .
3679            D27RIV.......................
                    V
                    V
3682            RCPD27
                    .
                    .
3688                .         D28
                    .           .
                    .           .
3695            D28RIV............
                    V
                    V
3698            RCPD28
                    .
                    .
3704                .         D29
                    .           .
                    .           .
3711            D29RIV............
                    V
                    V
3714            RCPD29
                    .
                    .
'722                .           .<-------   DVG47
/20                 .       DRG47
                    .           V
                    .           V
3723                .       RDG47
                    .           .
                    .           .
3729                .           .       G32
                    .           .         .
                    .           .         .
3735                .       CPG32............
                    .           .
                    .           .
3738                .           .       D30
                    .           .         .
                    .           .         .
3744            D30RIV.......................
                    V
                    V
3747            RCPD30
                    .
                    .
3753                .         D31
                    .           .
                    .           .
3760            D31RIV............
                    V
                    V
3763            RCPD31
                    .
                    .
3769                .         G33
                    .           .
                    .           .
3775            G33RIV............
                    V
                    V
 78             RCPG33
                    .
                    .
3784                .         G14
                    .           V
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                    V
3790            RCPG14
                    .
                    .
3796                .          G34
                    .            .
                    .            .
3802            CPG34A............
                    .
                    .
3805                .          G13
                    .            .
                    .            .
3811             CPG34............
                    V
                    V
3814            RCPG34
                    .
                    .
3820                .          G35
                    .            .
                    .            .
3826             CPG35............
                    .
                    .
3829                .          D32
                    .            .
                    .            .
3835      D32RIV........................
               V
               V
3838      RCPD32
               .
               .
3846           .<-------   DVD13
3844        DRD13
               V
               V
3847        RDD13
               .
               .
3856           .       .<-------   DVD46
3854           .    DRD46
               .       V
               .       V
3857           .    RDD46
               .       .
               .       .
3866           .       .       .<-------   DVD10
3864           .       .    DRD10
               .       .       V
               .       .       V
3867           .       .    RDD10
               .       .       .
               .       .       .
3876           .       .       .       .<-------   DVD47
3874           .       .       .    DRD47
               .       .       .       V
               .       .       .       V
3877           .       .       .    RDD47
               .       .       .       .
               .       .       .       .
3886           .       .       .       .       .<-------   DVD15
3884           .       .       .       .    DRD15
               .       .       .       .       V
               .       .       .       .       V
3887           .       .       .       .    RDD15
               .       .       .       .       .
               .       .       .       .       .          D22
3894           .       .       .       .       .            .
               .       .       .       .       .            .
3902        CPD22.......................................................
               V
               V
3905        RCPD22
               .
               .
3911           .          D33
               .            .
               .            .
3918        CPD33............
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3921      D33RIV............
               V
               V
3924      RCPD33
               .
               .
3930           .         D45
               .           .
               .           .
3936           .           .         G36
               .           .           .
               .           .           .
3943      G36RIV.......................
               V
               V
3946      RCPG36
               .
               .
3952           .         D44
               .           .
               .           .
3958           .           .         G37
               .           .           .
               .           .           .
3964      G37RIV.......................
               V
               V
3967      RCPG37
               .
               .
3973           .         D43
               .           .
               .           .
3979           .           .         G12
               .           .           .
               .           .           .
3989           .           .           .-------->   DVG12
3986           .           .        DG12
               .           .          V
               .           .          V
3992           .           .      RCPG12
               .           .           .
               .           .           .
3998           .           .           .         G38
               .           .           .           .
               .           .           .           .
4004           .           .      CPG38............
               .           .           .
               .           .           .
4007      G38RIV.......................
               V
               V
4010      RCPG38
               .
               .
4018           .           .<-------   DVG12
4016           .       DRG12
               .          V
               .          V
4019           .       RDG12
               .           .
               .           .
4025           .           .         G39
               .           .           .
               .           .           .
4032           .       CPG39............
               .           .
               .           .
4035           .           .         D34
               .           .           V
               .           .           V
4041           .           .      RCPD34
               .           .           .
               .           .           .
4047           .           .           .         D42
               .           .           .           .
               .           .           .           .
4053           .           .      CPD42............
               .           .           .
               .           .           .
4056      D42RIV.......................
               V
               V
4059      RCPD42
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                 .
4065             .          D41
                 .           .
                 .           .
4071       D41RIV............
                 V
                 V
4074       RCPD41
                 .
                 .
4080             .          G02
                 .           .
                 .           .
4087             .           .          G03
                 .           .           .
                 .           .           .
4094             .       CPG03............
                 .           V
                 .           V
4097             .      RCPG03
                 .           .
                 .           .
                 .           .<-------   DVG08
4105             .           .
4103             .           .      DRG08
                 .           .          V
                 .           .          V
4106             .           .      RDG08
                 .           .           .
                 .           .           .
4112             .           .           .          G09
                 .           .           .           .
                 .           .           .           .
4119             .       CPG09........................
                 .           V
                 .           V
4122             .      RCPG09
                 .           .
                 .           .
4128             .           .          G48
                 .           .           V
                 .           .           V
4135             .           .      RCPG48
                 .           .           .
                 .           .           .
4141             .           .           .          G01
                 .           .           .           .
                 .           .           .           .
4148             .           .      CPG01............
                 .           .           .
                 .           .           .
4151             .           .           .          G10
                 .           .           .           .
                 .           .           .           .
4157             .           .      CPG10............
                 .           .           V
                 .           .           V
4160             .           .      RCPG10
                 .           .           .
                 .           .           .
4166             .           .           .          G11
                 .           .           .           .
                 .           .           .           .
4172             .       CPG11........................
                 .           .
                 .           .
4178             .           .-------->  DVG11
4175             .        DG11
                 .           V
                 .           V
4181             .      RCPG11
                 .           .
                 .           .
4187             .           .          G40
                 .           .           .
                 .           .           .
4194             .       CPG40............
                 .           .
                 .           .
4197       G40RIV............
                 V
                 V
4200       RCPG40
                 .
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4206            .
                .          G41
                .            .
                .            .
4212            .            .          D40
                .            .            .
                .            .            .
 118      D40RIV.......................
               V
               V
4221      RCPD40
               .
               .
4227            .          D36
                .            .
                .            .
4233            .            .          D35
                .            .            .
                .            .            .
4240            .       CPD35............
                .           V
                .           V
4243            .      RCPD35
                .            .
                .            .
4249            .            .          D37
                .            .            .
                .            .            .
4255            .       CPD37............
                .            .
                .            .
4258            .            .          D38
                .            .            .
                .            .            .
4264            .       CPD38............
                .           V
                .           V
4267            .      RCPD38
                .            .
                .            .
4273            .            .          D39
                .            .            .
                .            .            .
 79             .       CPD39............
                .            .
                .            .
4282      D39RIV............
               V
               V
4285      RCPD39
               .
               .
4293            .            .<-------   DVG11
4291            .       DRG11
                .           V
                .           V
4294            .       RDG11
                .            .
                .            .
4300            .            .         G42
                .            .           .
                .            .           .
4307            .       CPG42............
                .            .
                .            .
4310      G42RIV............
               V
               V
4313      RCPG42
               .
               .
4319            .         C50
                .           V
                .           V
4327            .      RCPC50
                .            .
                .            .
4333            .            .         C51
                .            .           .
                .            .           .
 42             .       CPC51............
                .           V
                .           V
4345            .      RCPC51
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                 .          .
                 .          .
4351             .          .        C52
                 .          .         V
                 .          .         V
4360             .          .      RCPC52
                 .          .          .
                 .          .          .
4366             .          .          .        C53
                 .          .          .         V
                 .          .          .         V
4375             .          .          .      RCPC53
                 .          .          .          .
                 .          .          .          .
4381             .          .          .          .        B07
                 .          .          .          .         .
                 .          .          .          .         .
4389             .       CPB07.........................................
                 .          V          .
                 .          V          .
4392             .      RCPB07         .
                 .          .          .
                 .          .          .
4398             .          .        B08
                 .          .          .
                 .          .          .
4407             .       CPB08............
                 .          .
                 .          .
4410          B08RIV.........
                 V
                 V
4413          RCPB08
                 .
                 .
4421             .          .<-------   DVC13
4419             .       DRC13
                 .          V
                 .          V
4422             .       RDC13
                 .          .
                 .          .
4431             .          .        .<-------   DVC31
4429             .          .     DRC31
                 .          .        V
                 .          .        V
4432             .          .     RDC31
                 .          .          .
                 .          .          .
4441             .          .          .        .<-------   DVC14
4439             .          .          .     DRC14
                 .          .          .        V
                 .          .          .        V
4442             .          .          .     RDC14
                 .          .          .          .
                 .          .          .          .
4451             .          .          .          .        .<-------   DVC10
4449             .          .          .          .     DRC10
                 .          .          .          .        V
                 .          .          .          .        V
4452             .          .          .          .     RDC10
                 .          .          .          .          .
                 .          .          .          .          .
4461             .          .          .          .          .        .<-------   DVC30
4459             .          .          .          .          .     DRC30
                 .          .          .          .          .        V
                 .          .          .          .          .        V
4462             .          .          .          .          .     RDC30
                 .          .          .          .          .          .
                 .          .          .          .          .          .
4469             .       CPC33A.......................................................
                 .          V          .          .          .
                 .          V          .          .          .
4473             .       RC33A         .          .          .
                 .          .          .          .          .
                 .          .          .          .          .
4481             .          .          .        .<-------   DVC29
4479             .          .          .     DRC29
                 .          .          .        V
                 .          .          .        V
4482             .          .          .     RDC29
                 .          .          .          .
                 .          .          .          .
4491             .          .          .          .<-------   DVC28
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4489                DRC28
                      V
                      V
4492                RDC28
                      .
                      .
'501                  .<-------   DVC27
199                 DRC27
                      V
                      V
4502                RDC27
                      .
                      .
4511                  .<-------   DVC20
4509                DRC20
                      V
                      V
4512                RDC20
                      .
                      .
4519        CPC33B.....................
                V
                V
4522        RC33B
                .
                .
4530                  .<-------   DVC24
4528              DRC24
                      V
                      V
4531              RDC24
                      .
                      .
4540                  .<-------   DVC25
4538            DRC25
                      V
                      V
4541            RDC25
                      .
                      .
4550                  .<-------   DVC26
4548              DRC26
                      V
                      V
51                RDC26
                      .
                      .
4560                  .<-------   DVD09
4558                DRD09
                      V
                      V
4561                RDD09
                      .
                      .
4568          CPC33C.....................
                      V
                      V
4572          RC33C
                      .
                      .
4578        CPC33D............
                V
                V
4582        RC33D
                .
                .
4588    CPC33E............
            V
            V
4592    RC33E
            .
            .
4600                  .<-------   DVD12
4598        DRD12
                V
                V
4601        RDD12
                .
                .
508     CPC33F............
            V
            V
4612    RC33F
            .
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4618                C33
                     .
                     .
4626        CPC33............
                V
                V
4629        RCPC33
                .
                .
4635                C34
                     .
                     .
4642        CPC34A...........
                .
                .
4645                C35
                     V
                     V
4652                RCPC35
                     .
                     .
4658        CPC34............
                V
                V
4661        RCPC34
                .
                .
4667                C36
                     .
                     .
4674        CPC36............
                V
                V
4677        RCPC36
                .
                .
4683                C49
                     .
                     .
4689        CPC49............
                V
                V
4692        RCPC49
                .
                .
4698                C40
                     .
                     .-------->   DVC40
4707
4704                DC40
                     V
                     V
4710                RCPC40
                     .
                     .
4716                         C41
                              .
                              .-------->   DVC41
4725
4722                       DC41
                              V
                              V
4728                     RCPC41
                              .
                              .
4734                                   C42
                              .         .
                              .         .
4740                CPC42.......................
                     .
                     .-------->  DVC42A
4746
4743                DC42A
                     .
                     .-------->  DVC42B
4752
4749                DC42B
                     V
                     V
4755                RCPC42
                     .
                     .
                              .<--------   DVC41
4763
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4761                                  DRC41
                                          V
                                          V
4764                                  RDC41
                                          .
                                          .
770                                       .          C46
                                          .           .
                                          .           .
77                            CPC46.......................
                                          .
                                          .
4783                                      .-------->   DVC46
4780                              DC46
                                     V
                                     V
4786                          RCPC46
                                          .
                                          .
4792                                      .         C37
                                          .           .
                                          .           .
4799                          CPC37............
                                     V
                                     V
4802                          RCPC37
                                          .
                                          .
4808                                      .         C48
                                          .           .
                                          .           .
4814                          CPC48A............
                                          .
                                          .
4817                      CPC48............
                              V
                              V
4820                      RCPC48
                                  .
                                  .
4826                                 C39
                                  .
                                  .
35                                .-------->   DVC39
32                                DC39
                                     V
                                     V
4838                              RCPC39
                                  .
                                  .
4846                              .           .<-------   DVC40
4844                              .       DRC40
                                  .           V
                                  .           V
4847                              .       RDC40
                                  .           .
                                  .           .
4853                              .           .          C43
                                  .           .           .
                                  .           .           .
4859                              CPC43.......................
                                  .
                                  .
4865                              .-------->   DVC43
4862                              DC43
                                     V
                                     V
4868                              RCPC43
                                  .
                                  .
4876                              .           .<-------  DVC42A
4874                              .      DRC42A
                                  .           V
                                  .           V
4877                              .      RDC42A
                                  .           .
                                  .           .
4883                              .           .          C45
                                  .           .           .
                                  .           .           .
89                                .       CPC45............
                                  .           .
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4895                              .           .-------->   DVC45
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4892                                  DC45
                                         V
                                         V
4898                                 RCPC45
                                         .
                                         .
4904                                     .          C44
                                         .           .
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4910                            CPC44.....................
                                    V
                                    V
4913                            RCPC44
                                         .
                                         .
4921                                     .<-------   DVC39
4919                                 DRC39
                                         V
                                         V
4922                                 RDC39
                                         .
                                         .
4930                                     .           .<-------   DVC43
4928                                     .       DRC43
                                         .           V
                                         .           V
4931                                     .       RDC43
                                         .           .
                                         .           .
4937                                     .           .         C38
                                         .           .          .
                                         .           .          .
4944                                 CPC38.......................
                                         V
                                         V
4947                                 RCPC38
                                         .
                                         .
4955                                     .           .<-------  DVC42B
4953                                     .      DRC42B
                                         .           V
                                         .           V
4956                                     .      RDC42B
                                         .           .
                                         .           .
4964                                     .           .          .<-------   DVC45
4962                                     .           .      DRC45
                                         .           .          V
                                         .           .          V
4965                                     .           .      RDC45
                                         .           .          .
                                         .           .          .
4973                                     .           .          .           .<-------   DVC46
4971                                     .           .          .       DRC46
                                         .           .          .           V
                                         .           .          .           V
4974                                     .           .          .       RDC46
                                         .           .          .           .
                                         .           .          .           .
4980                                     .           .          .           .         C47
                                         .           .          .           .          .
                                         .           .          .           .          .
4987                            CPC47A.......................................................
                                         .
                                         .
4990                        CPC47............
                                    V
                                    V
4993                        RCPC47
                                    .
                                    .
4999                                .        B09
                                    .         .
                                    .         .
5006                        CPB09............
                                    V
                                    V
5009                        RCPB09
                                    .
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5015                                .        B01
                                    .          V
                                    .          V
5022                                .      RCPB01
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5028                    B02
                         V
                         V
5035                 RCPB02
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41                       .          B03
                         .           .
                         .           .
5048            CPB03.......................
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                    .
5054                .-------> DVB03A
5051            DB03A
                    .
                    .
5060                .-------> DVB03B
5057            DB03B
                    V
                    V
5063           RCPB03
                    .
                    .
5069                .         B13
                    .           .
                    .           .
5075            CPB13............
                    .
                    .
5081                .------->   DVB13
5078             DB13
                    V
                    V
5084           RCPB13
                    .
                    .
5090                .         B04
                    .           V
                    .           V
5097                .      RCPB04
                    .           .
                    .           .
03                  .           .          B05
                    .           .           .
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5109            CPB05.......................
                    V
                    V
5112           RCPB05
                    .
                    .
5118                .         B06
                    .           V
                    .           V
5124                .      RCPB06
                    .           .
                    .           .
5130                .           .          B10
                    .           .           .
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5136            CPB10.......................
                    .
                    .
5139                .         B11
                    .           .
                    .           .
5145            CPB11............
                    V
                    V
5148           RCPB11
                    .
                    .
5154                .         B12
                    .           .
                    .           .
5161           CPB12A...........
                    .
                    .
64          CPB12............
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5167                H02
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                .           .           V
                .           .           V
5173            .           .       RCPH02
                .           .           .
                .           .           .
5179            .           .           .         H01
                .           .           .           .
                .           .           .           .
5185            .           .        CPH01............
                .           .           .
                .           .           .
5191            .           .           .-------->   DVH01
5188            .           .         DH01
                .           .           V
                .           .           V
5194            .           .       RCPH01
                .           .           .
                .           .           .
5200            .           .           .         H24
                .           .           .           .
                .           .           .           .
5206            .           .        CPH24............
                .           .           V
                .           .           V
5209            .           .       RCPH24
                .           .           .
                .           .           .
5215            .           .           .         H55
                .           .           .           .
                .           .           .           .
5221            .           .        CPH55............
                .           .           V
                .           .           V
5224            .           .       RCPH55
                .           .           .
                .           .           .
5230            .           .           .         H56
                .           .           .           .
                .           .           .           .
5236            .           .        CPH56............
                .           .           V
                .           .           V
5239            .           .       RCPH56
                .           .           .
                .           .           .
5245            .           .           .         H57
                .           .           .           .
                .           .           .           .
5251            .           .        CPH57............
                .           .           V
                .           .           V
5254            .           .       RCPH57
                .           .           .
                .           .           .
5260            .           .           .         H68
                .           .           .           .
                .           .           .           .
5266            .           .        CPH68............
                .           .           .
                .           .           .
5269      B12RIV........................
               V
               V
5272      RCPB12
                .
                .
5280            .           .<--------   DVH01
5278            .       DRH01
                .           V
                .           V
5281            .       RDH01
                .           .
                .           .
5287            .           .         H25
                .           .           .
                .           .           .
5293            .       CPH25............
                .           V
                .           V
5296            .      RCPH25
                .           .
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5302            .           .         H58
                .           .           .
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5308            .      CPH58...........
                .          V
                .          V
5311            .     RCPH58
                .          .
                .          .
317             .          .        H26
                .          .          V
                .          .          V
5323            .          .     RCPH26
                .          .          .
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5329            .          .          .        H59
                .          .          .          .
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5335            .      CPH59......................
                .          .
                .          .
5341            .          .------->   DVH59
5338            .       DH59
                .          V
                .          V
5344            .     RCPH59
                .          .
                .          .
5350            .          .        H60
                .          .          .
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5356            .      CPH60...........
                .          V
                .          V
5359            .     RCPH60
                .          .
                .          .
5367            .          .          .<--------   DVH59
5365            .          .     DRH59
                .          .         V
                .          .         V
5368            .          .     RDH59
                .          .          .
                .          .          .
374             .          .          .        H61
                .          .          .          .
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380             .          .     CPH61...........
                .          .         V
                .          .         V
5383            .          .    RCPH61
                .          .          .
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5389            .          .          .        H69
                .          .          .          .
                .          .          .          .
5395            .     CPH69......................
                .          .
                .          .
5398      H69RIV...........
               V
               V
5401      RCPH69
               .
               .
5407            .       H65
                .         V
                .         V
5413            .     RCPH65
                .          .
                .          .
5419            .          .        H67
                .          .          .
                .          .          .
5425            .     CPH67...........
                .          V
                .          V
5428            .     RCPH67
                .          .
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434             .          .        H70
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440             .     CPH70...........
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5443                .           .          B15
                    .           .            .
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5449        B15RIV.......................
                 V
                 V
5453        RCPB15
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5461             .           .<-------   DVB13
5459             .       DRB13
                 .           V
                 .           V
5462             .       RDB13
                 .           .
                 .           .
5468             .           .          B14
                 .           .            .
                 .           .            .
5474             .       CPB14............
                 .           .
                 .           .
5477             .           .          B21
                 .           .            .
                 .           .            .
5483             .       CPB21............
                 .           V
                 .           V
5486             .      RCPB21
                 .           .
                 .           .
5492             .           .          B45
                 .           .            .
                 .           .            .
5499             .       CPB45............
                 .           .
                 .           .
5502        B45RIV............
                 V
                 V
5505        RCPB45
                 .
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5511             .         H22
                 .           V
                 .           V
5517             .      RCPH22
                 .           .
                 .           .
5523             .           .         H03
                 .           .           V
                 .           .           V
5529             .           .      RCPH03
                 .           .           .
                 .           .           .
5535             .           .           .         H21
                 .           .           .           .
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5541             .           .      CPH21............
                 .           .           V
                 .           .           V
5544             .           .      RCPH21
                 .           .           .
                 .           .           .
5550             .           .           .         H23
                 .           .           .           .
                 .           .           .           .
5556             .       CPH23........................
                 .           V
                 .           V
5559             .      RCPH23
                 .           .
                 .           .
5565             .           .         H27
                 .           .           V
                 .           .           V
5571             .           .      RCPH27
                 .           .           .
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5577             .           .           .         H62
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5583             .       CPH62........................
                 .           V
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                 .          V
5586             .     RCPH62
                 .          .
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5592             .          .        H20
                 .          .          V
                 .          .          V
5598             .          .     RCPH20
                 .          .          .
                 .          .          .
5604             .          .          .        H28
                 .          .          .          .
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5610             .          .     CPH28............
                 .          .          V
                 .          .          V
5613             .          .     RCPH28
                 .          .          .
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5619             .          .          .        H63
                 .          .          .          .
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5625             .     CPH63........................
                 .          .
                 .          .
5631             .          .------->   DVH63
5628             .      DH63
                 .          V
                 .          V
5634             .     RCPH63
                 .          .
                 .          .
5640             .          .        H66
                 .          .          .
                 .          .          .
5647             .     CPH66............
                 .          V
                 .          V
5650             .     RCPH66
                 .          .
                 .          .
5656             .          .        H71
                 .          .          .
                 .          .          .
5662             .     CPH71............
                 .          V
                 .          V
5665             .     RCPH71
                 .          .
                 .          .
5671             .          .        H72
                 .          .          .
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5677             .     CPH72............
                 .          .
                 .          .
5680       H72RIV............
                V
                V
5683       RCPH72
                .
                .
5689             .       B20
                 .          V
                 .          V
5695             .     RCPB20
                 .          .
                 .          .
5701             .          .        B44
                 .          .          .
                 .          .          .
5707             .     CPB44............
                 .          V
                 .          V
5710             .     RCPB44
                 .          .
                 .          .
5716             .          .        B42
                 .          .          V
                 .          .          V
5722             .          .     RCPB42
                 .          .          .
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5728             .          .          .        B43
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                .           .           .           .
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5734            .           .       CPB43............
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                .           .           .
5737            .           .           .         B41
                .           .           .           .
                .           .           .           .
5744            .           .       CPB41............
                .           .           V
                .           .           V
5747            .           .      RCPB41
                .           .           .
                .           .           .
5753            .           .           .         B46
                .           .           .           .
                .           .           .           .
5760            .       CPB46........................
                .           .
                .           .
5763      B46RIV............
               V
               V
5766      RCPB46
               .
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5774            .           .<-------   DVH63
5772            .       DRH63
                .           V
                .           V
5775            .       RDH63
                .           .
                .           .
5781            .           .         H53
                .           .           .
                .           .           .
5787            .       CPH53............
                .           .
                .           .
5790            .           .         H18
                .           .           V
                .           .           V
5796            .           .      RCPH18
                .           .           .
                .           .           .
5802            .           .           .         H29
                .           .           .           .
                .           .           .           .
5809            .           .       CPH29............
                .           .           .
                .           .           .
5812            .           .           .         H04
                .           .           .           V
                .           .           .           V
5819            .           .           .      RCPH04
                .           .           .           .
                .           .           .           .
5825            .           .           .           .         H17
                .           .           .           .           .
                .           .           .           .           .
5831            .           .           .       CPH17............
                .           .           .           .
                .           .           .           .
5837            .           .           .           .-------->   DVH17
5834            .           .           .        DH17
                .           .           .           V
                .           .           .           V
5840            .           .           .      RCPH17
                .           .           .           .
                .           .           .           .
5846            .           .           .           .         H30
                .           .           .           .           .
                .           .           .           .           .
5852            .           .           .       CPH30............
                .           .           .           V
                .           .           .           V
5855            .           .           .      RCPH30
                .           .           .           .
                .           .           .           .
5861            .           .           .           .         H51
                .           .           .           .           .
                .           .           .           .           .
5867            .           .           .       CPH51............
                .           .           .           V
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                                          V
5870                                   RCPH51
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                                          .
5876                                      .          H52
                                          .            .
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5882                                   CPH52A............
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                                          .
5885                   CPH52B.......................
                            V
                            V
5888                   RCPH52
                            .
                            .
5894                            H54
                              .
                              .
5900                    CPH54............
                            V
                            V
5903                   RCPH54
                            .
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5909                            H16
                              V
                              V
5915                         RCPH16
                              .
                              .
5921                                         H05
                                              .
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5927                          CPH05............
                              V
                              V
5930                         RCPH05
                              .
                              .
5936                                         H31
                                              .
                                              .
5942                          CPH31............
                              .
                              .
5948                          .-------->   DVH31
5945                           DH31
                              V
                              V
5951                         RCPH31
                              .
                              .
5959                                      .<-------   DVH17
5957                                   DRH17
                                          V
                                          V
5960                                   RDH17
                                          .
                                          .
5966                                      .          H32
                                          .            .
                                          .            .
5972                          CPH32........................
                              .
                              .
5978                          .-------->   DVH32
5975                           DH32
                              V
                              V
5981                         RCPH32
                              .
                              .
5989                                      .<-------   DVH32
5987                                   DRH32
                                          V
                                          V
5990                                   RDH32
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                                          .
5996                                      .          H48
                                          .            .
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6002                                   CPH48............
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                                                  .-------->   DVH48
6008                                         DH48
6005                                            V
                                                V
6011                                       RCPH48
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6017                                              .         H50
                                                  .           .
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6024                                 CPH50........................
                                        V
                                        V
6027                                RCPH50
                                        .
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                                                  .<-------   DVH48
6035                                         DRH48
6033                                            V
                                                V
6036                                        RDH48
                                                  .
                                                  .
6042                                              .         H49
                                                  .           .
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6048                                         CPH49............
                                                V
                                                V
6051                                       RCPH49
                                                  .
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6057                                              .         H73
                                                  .           .
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6063                         CPH73.................................
                                V
                                V
6066                        RCPH73
                                .
                                .
6072                            .         H74
                                .           .
                                .           .
6078                         CPH74............
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                                .
6081                 H74RIV............
                        V
                        V
6084                 RCPH74
                        .
                        .
6090                    .         H15
                        .           V
                        .           V
6096                    .       RCPH15
                        .           .
                        .           .
6104                    .           .<-------   DVH31
6102                    .       DRH31
                        .           V
                        .           V
6105                    .       RDH31
                        .           .
                        .           .
6111                    .           .         H33
                        .           .           .
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6118                    .       CPH33........................
                        .           .
                        .           .
6124                    .           .-------->   DVH33
6121                    .       DH33
                        .           V
                        .           V
6127                    .       RCPH33
                        .           .
                        .           .
6133                    .           .         H47
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6139          .       CPH47............
              .           V
              .           V
6142          .      RCPH47
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6148          .           .         H75
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              .           .           .
6156          .       CPH75............
              .           V
              .           V
6159          .      RCPH75
              .           .
              .           .
6165          .           .         H76
              .           .           .
              .           .           .
6171          .       CPH76............
              .           V
              .           V
6174          .      RCPH76
              .           .
              .           .
6180          .           .         H77
              .           .           .
              .           .           .
6186          .       CPH77............
              .           .
              .           .
6189     H77RIV............
              V
              V
6193     RCPH77
              .
              .
6199          .         B40
              .           V
              .           V
6205          .      RCPB40
              .           .
              .           .
6211          .           .         B49
              .           .           V
              .           .           V
6217          .           .      RCPB49
              .           .           .
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6223          .           .           .         B50
              .           .           .           .
              .           .           .           .
6229          .       CPB50.......................
              .           V
              .           V
6232          .      RCPB50
              .           .
              .           .
6238          .           .         B19
              .           .           V
              .           .           V
6245          .           .      RCPB19
              .           .           .
              .           .           .
6251          .           .           .         B48
              .           .           .           .
              .           .           .           .
6257          .           .       CPB48............
              .           .           V
              .           .           V
6260          .           .      RCPB48
              .           .           .
              .           .           .
6266          .           .           .         B47
              .           .           .           V
              .           .           .           V
6272          .           .           .      RCPB47
              .           .           .           .
              .           .           .           .
6278          .           .           .           .         B61
              .           .           .           .           .
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6288          .       CPB61.....................................
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6291    B61RIV............
             V
             V
6294    RCPB61
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6300         .         B22
             .           V
             .           V
6306         .      RCPB22
             .           .
             .           .
6312         .           .         B23
             .           .           .
             .           .           .
6321         .           .           .-------->   DVB23
6318         .           .        DB23
             .           .           V
             .           .           V
6324         .           .      RCPB23
             .           .           .
             .           .           .
6330         .           .           .         B36
             .           .           .           .
             .           .           .           .
6336         .           .       CPB36............
             .           .           .
             .           .           .
6341         .           .           .           .<-------   DVB23
6339         .           .           .       DRB23
             .           .           .           V
             .           .           .           V
6342         .           .           .       RDB23
             .           .           .           .
             .           .           .           .
6348         .           .           .           .         B24
             .           .           .           .           .
             .           .           .           .           .
6354         .           .           .      CPB24A............
             .           .           .           .
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6357         .           .       CPB24............
             .           .           V
             .           .           V
6360         .           .      RCPB24
             .           .           .
             .           .           .
6366         .           .           .         B37
             .           .           .           .
             .           .           .           .
6372         .       CPB37........................
             .           .
             .           .
6375         .           .         B25
             .           .           .
             .           .           .
6381         .       CPB25............
             .           V
             .           V
6384         .      RCPB25
             .           .
             .           .
6390         .           .         B26
             .           .           .
             .           .           .
6396         .       CPB26............
             .           .
             .           .
6402         .           .-------->   DVB26
6399         .        DB26
             .           V
             .           V
6405         .      RCPB26
             .           .
             .           .
6413         .           .           .<-------  DVB03B
6411         .           .      DRB03B
             .           .           V
             .           .           V
6414         .           .      RDB03B
             .           .           .
             .           .           .
6420         .           .           .         B17
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6429                                  .------->   DVB17
6426                          DB17
                                 V
                                 V
6432                        RCPB17
                                 .
                                 .
 38                                      B18
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6445                  CPB18.......................
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                                 .
6450                             .<-------  DVB03A
6448                        DRB03A
                                 V
                                 V
6451                        RDB03A
                                 .
                                 .
6459                                         .<-------   DVB17
6457                                     DRB17
                                             V
                                             V
6460                                     RDB17
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                                             .
6466                                             .         B16
                                                 .           .
                                                 .           .
6472                         CPB16.......................
                                 V
                                 V
6475                        RCPB16
                                 .
                                 .
6481                                     B39
                                          .
                                          .
6487                        CPB39A............
                                 .
                                 .
 490                   CPB39............
                           V
                           V
6493                  RCPB39
                           .
                           .
6499                          B54
                                .
                                .
6505                  CPB54............
                           V
                           V
6508                  RCPB54
                           .
                           .
6514                          B38
                                .
                                .
6521                  CPB38............
                           V
                           V
6524                  RCPB38
                           .
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6530                          B65
                                .
                                .
6536            CPB65.......................
                   V
                   V
6540            RCPB65
                   .
                   .
6546                  B27
                           V
                           V
 52                   RCPB27
                           .
                           .
6558                          B35
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6564                CPB35A............
                         .
6569                     .<-------   DVB26
6567                 DRB26
                         .
6570                CPB35............
                         V
                         V
6573                RCPB35
                         .
6579                 B28
                         .
6585                                B34
                         .            .
6591                CPB34............
                         V
                         V
6594                RCPB34
                         .
6600                                B33
                         .            .
6606                CPB33A...........
                         .
6609                CPB33............
                         V
                         V
6612                RCPB33
                         .
6618                 B55
                         .
6624                CPB55............
                         V
                         V
6627                RCPB55
                         .
6633                 B31
                         V
                         V
6639                RCPB31
                         .
6645                                B32
                                     V
                                     V
6651                            RCPB32
                                     .
6657                                     B30
                                     .    .
6666                                     .-------->   DVB30
6663                                 DB30
                                     V    V
6669                                RCPB30
                                     .    .
6675                                     .         B29
                                     .    .          .
6681                CPB29.......................................
                         V
                         V
6684                RCPB29
                         .
6692                                .<-------   DVB30
6690                            DRB30
                                     V
                                     V
6693                            RDB30
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6699                                                  B57
                                                       .
6705                                            CPB57............
                                                    V
                                                    V
708                                           RCPB57
                                                       .
6714                                                  B56
                                                       .
6720                                            CPB56............
                                                    V
                                                    V
6723                                          RCPB56
                                                       .
6729                                                  B58
                                                       .
6735                                            CPB58............
                                                    V
                                                    V
6738                                          RCPB58
                                                       .
6744                                                  B59
                                                       .
6750                  CPB59.............................................
                          V
                          V
6753                  RCPB59
                          .
6759                          B52
                                V
                                V
6765                      RCPB52
                                .
771                                     B53
                                          V
                                          V
6777                                  RCPB53
                                          .
6783                                                B60
                                                     .
6794                  CPB60...................................
                          V
                          V
6797                  RCPB60
                          .
6805                          .<-------   DVH33
6803                      DRH33
                                V
                                V
6806                      RDH33
                                .
6812                                    H46
                                          .
6818                      CPH46............
                                V
                                V
6821                     RCPH46
                                .
6827                                    H06
                                          .
6836                                      .-------->   DVH06
833                                     DH06
                                          V
                                          V
839                                   RCPH06
                                          .
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6845                                  H14
                                       .
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6851                            CPH14............
                                    V
                                    V
6854                            RCPH14
                                       .
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6862                                   .<-------   DVH06
6860                                DRH06
                                       V
                                       V
6863                                RDH06
                                       .
                                       .
6869                                   .         H13
                                       .           .
                                       .           .
6875                            CPH13........................
                                    V
                                    V
6878                            RCPH13
                                       .
                                       .
6884                                H12
                                       .
                                       .
6893                                   .-------->   DVH12
6890                                DH12
                                       V
                                       V
6896                               RCPH12
                                       .
                                       .
6902                                   .         H07
                                       .           .
                                       .           .
6908                                CPH07............
                                       .
                                       .
6914                                   .-------->   DVH07
6911                                DH07
                                       V
                                       V
6917                               RCPH07
                                       .
                                       .
6923                                   .         H34
                                       .           .
                                       .           .
6929                            CPH34........................
                                    V
                                    V
6932                            RCPH34
                                       .
                                       .
6938                                H45
                                       .
                                       .
6944                            CPH45............
                                    V
                                    V
6947                            RCPH45
                                       .
                                       .
6955                                   .<-------   DVH07
6953                                DRH07
                                       V
                                       V
6956                                RDH07
                                       .
                                       .
6962                                   .         H36
                                       .           .
                                       .           .
6968                                CPH36............
                                       V
                                       V
6971                               RCPH36
                                       .
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6977                                   .         H44
                                       .           .
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6983                                                  CPH44............
                                                          V
                                                          V
6986                                                  RCPH44
                                                          .
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6992                                                      .          H78
                                                          .            .
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6998                                  CPH78.................................
                                          V
                                          V
7001                                  RCPH78
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                                          .
7007                                      .          H79
                                          .            .
                                          .            .
7013                                  CPH79............
                                          V
                                          V
7016                                  RCPH79
                                          .
                                          .
7022                                      .          H80
                                          .            .
                                          .            .
7029                                  CPH80............
                                          .
                                          .
7032  H80RIV......................
          V
          V
7035  RCPH80
          .
          .
7041      .         B62
          .           .
          .           .
7050  B62RIV............
          V
          V
7053  RCPB62
          .
          .
7059      .         H43
          .           V
          .           V
7065      .      RCPH43
          .           .
          .           .
7071      .           .         H81
          .           .           .
          .           .           .
7077      .      CPH81 ............
          .           V
          .           V
7080      .      RCPH81
          .           .
          .           .
7086      .           .         H08
          .           .           V
          .           .           V
7092      .           .      RCPH08
          .           .           .
          .           .           .
7098      .           .           .         H11
          .           .           .           .
          .           .           .           .
7107      .           .           .           .-------->   DVH11
7104      .           .           .        DH11
          .           .           .           V
          .           .           .           V
7110      .           .           .      RCPH11
          .           .           .           .
          .           .           .           .
7118      .           .           .           .           .<-------   DVH12
7116      .           .           .           .      DRH12
          .           .           .           .           V
          .           .           .           .           V
7119      .           .           .           .      RDH12
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7125                                                                  H35
7131                                CPH35
                                      V
                                      V
7134                               RCPH35
7140                                                        H37
7146                                CPH37
                                      V
                                      V
7149                               RCPH37
7155                                                        H42
7161                                CPH42
                                      V
                                      V
7164                               RCPH42
7170                                                        H82
7176                          CPH82
                                  V
                                  V
7179                          RCPH82
7185                                          H83
7192                          CPH83
7195                                          B63
7203      B63RIV
              V
              V
7207      RCPB63
7213                     B64
7221      B64RIV
              V
              V
7224      RCPB64
7230                     H09
                          V
                          V
7236                     RCPH09
7242                                          H10
7248                     CPH10
                          V
                          V
7251                     RCPH10
7259                                     <-------   DVH11
7257                                DRH11
                                      V
                                      V
7260                                RDH11
7266                                                        H38
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                .          .          .          .
7272            .      CPH38.......................
                .          V
                .          V
7275            .     RCPH38
                .          .
                .          .
7281            .          .        H39
                .          .          .
                .          .          .
7287            .      CPH39............
                .          .
                .          .
7293            .          .-------->   DVH39
7290            .       DH39
                .          V
                .          V
7296            .     RCPH39
                .          .
                .          .
7302            .          .        H41
                .          .          .
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7308            .      CPH41............
                .          V
                .          V
7311            .     RCPH41
                .          .
                .          .
7319            .          .          .<-------   DVH39
7317            .          .      DRH39
                .          .          V
                .          .          V
7320            .          .      RDH39
                .          .          .
                .          .          .
7326            .          .          .        H40
                .          .          .          .
                .          .          .          .
7332            .          .      CPH40............
                .          .          V
                .          .          V
7335            .          .     RCPH40
                .          .          .
                .          .          .
7341            .          .          .        H84
                .          .          .          .
                .          .          .          .
7347            .      CPH84.......................
                .          V
                .          V
7350            .     RCPH84
                .          .
                .          .
7356            .          .        H85
                .          .          .
                .          .          .
7364            .      CPH85............
                .          V
                .          V
7367            .     RCPH85
                .          .
                .          .
7373            .          .        H86
                .          .          .
                .          .          .
7381            .      CPH86............
                .          .
                .          .
7384       H86RIV............
                V
                V
7387       RCPH86
                .
                .
7393            .        I02
                .          .
                .          .
399             .          .        I01
                .          .          .
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7405            .      CPI01............
                .          V
                .          V
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7408          .      RCPI01
              .          .
              .          .
7414          .          .         I03
              .          .           .
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7420          .       CPI03............
              .          .
              .          .
7426          .          .-------->   DVI03
7423          .        DI03
              .          V
              .          V
7429          .      RCPI03
              .          .
              .          .
7435          .          .         I04
              .          .           .
              .          .           .
7441          .       CPI04............
              .          V
              .          V
7444          .      RCPI04
              .          .
              .          .
7450          .          .         I06
              .          .           .
              .          .           .
7456          .       CPI06............
              .          V
              .          V
7459          .      RCPI06
              .          .
              .          .
7465          .          .         I08
              .          .           .
              .          .           .
7471          .       CPI08............
              .          V
              .          V
7474          .      RCPI08
              .          .
              .          .
7480          .          .         I10
              .          .           .
              .          .           .
7486          .       CPI10............
              .          V
              .          V
7489          .      RCPI10
              .          .
              .          .
7497          .          .           .<-------   DVI03
7495          .          .       DRI03
              .          .          V
              .          .          V
7498          .          .       RDI03
              .          .           .
              .          .           .
7504          .          .           .         I05
              .          .           .           .
              .          .           .           .
7510          .          .       CPI05............
              .          .          V
              .          .          V
7513          .          .      RCPI05
              .          .           .
              .          .           .
7519          .          .           .         I07
              .          .           .           .
              .          .           .           .
7525          .          .       CPI07............
              .          .          V
              .          .          V
7528          .          .      RCPI07
              .          .           .
              .          .           .
7534          .          .           .         I09
              .          .           .           .
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7540          .          .       CPI09............
              .          .          V
              .          .          V
7543          .          .      RCPI09
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7549            .           .           .         I11
                .           .           .           .
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7555            .           .       CPI11............
                .           .           V
                .           .           V
[illegible]58   .           .      RCPI11
                .           .           .
                .           .           .
7564            .           .           .         I12
                .           .           .           .
                .           .           .           .
7570            .       CPI12........................
                .           V
                .           V
7573            .      RCPI12
                .           .
                .           .
7579            .           .         I13
                .           .           .
                .           .           .
7585            .       CPI13............
                .           V
                .           V
7588            .      RCPI13
                .           .
                .           .
7594            .           .         I14
                .           .           .
                .           .           .
7600            .       CPI14............
                .           .
                .           .
7603            .           .         A12
                .           .           V
                .           .           V
7610            .           .      RCPA12
                .           .           .
                .           .           .
7616            .           .           .         A41
                .           .           .           .
                .           .           .           .
[illegible]24   .           .       CPA41............
                .           .           .
                .           .           .
7627      A41RIV........................
               V
               V
7631      RCPA41
               .
               .
7637           .         I15
               .           V
               .           V
7643           .      RCPI15
               .           .
               .           .
7649           .           .         I16
               .           .           V
               .           .           V
7655           .           .      RCPI16
               .           .           .
               .           .           .
7661           .           .           .         I17
               .           .           .           V
               .           .           .           V
7667           .           .           .      RCPI17
               .           .           .           .
               .           .           .           .
7673           .           .           .           .         I18
               .           .           .           .           .
               .           .           .           .           .
7679           .       CPI18.......................................
               .           V
               .           V
7682           .      RCPI18
               .           .
               .           .
[illegible]88  .           .         I19
               .           .           .
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7694           .       CPI19............
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                 .          V
                 .          V
7697             .      RCPI19
                 .          .
                 .          .
7703             .          .        I20
                 .          .         .
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7709             .      CPI20............
                 .          V
                 .          V
7712             .      RCPI20
                 .          .
                 .          .
7718             .          .        I21
                 .          .         .
                 .          .         .
7724             .      CPI21............
                 .          V
                 .          V
7727             .      RCPI21
                 .          .
                 .          .
7733             .          .        I22
                 .          .         .
                 .          .         .
7740             .      CPI22............
                 .          .
                 .          .
7743             .          .        A40
                 .          .         V
                 .          .         V
7749             .          .     RCPA40
                 .          .         .
                 .          .         .
7755             .          .         .        A42
                 .          .         .         .
                 .          .         .         .
7764             .          .     CPA42............
                 .          .         .
                 .          .         .
7767     A42RIV.......................
             V
             V
7770     RCPA42
             .
             .
7776         .        A13
             .         V
             .         V
7783         .     RCPA13
             .          .
             .          .
7789         .          .        A39
             .          .         .
             .          .         .
7798         .     CPA39............
             .          V
             .          V
7801         .     RCPA39
             .          .
             .          .
7807         .          .        A43
             .          .         .
             .          .         .
7815         .     CPA43............
             .          V
             .          V
7818         .     RCPA43
             .          .
             .          .
7824         .          .        A44
             .          .         .
             .          .         .
7832         .     CPA44............
             .          .
             .          .
7835     A44RIV............
             V
             V
7839     RCPA44
             .
             .
7845         .        I24
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                .          V
                .          V
 7851           .      RCPI24
                .          .
                .          .
 7857           .          .         I26
                .          .           .
                .          .           .
 [illegible]53  .       CPI26............
                .          V
                .          V
 7866           .      RCPI26
                .          .
                .          .
 7872           .          .         I28
                .          .           .
                .          .           .
 7878           .       CPI28............
                .          V
                .          V
 7881           .      RCPI28
                .          .
                .          .
 7887           .          .         I30
                .          .           .
                .          .           .
 7893           .       CPI30............
                .          V
                .          V
 7896           .      RCPI30
                .          .
                .          .
 7902           .          .         I32
                .          .           .
                .          .           .
 7908           .       CPI32............
                .          V
                .          V
 7911           .      RCPI32
                .          .
                .          .
 7917           .          .         I34
                .          .           .
                .          .           .
 [illegible]24  .       CPI34............
                .          V
                .          V
 7927           .      RCPI34
                .          .
                .          .
 7933           .          .         I36
                .          .           .
                .          .           .
 7939           .       CPI36............
                .          .
                .          .
 7942      I36RIV............
                V
                V
 7945      RCPI36
                .
                .
 7951           .         A01
                .          V
                .          V
 7958           .      RCPA01
                .          .
                .          .
 7964           .          .         A02
                .          .           .
                .          .           .
 7970           .      CPA02............
                .          .
                .          .
 7976           .          .-------> DVA02A
 7973           .      DA02A
                .          .
                .          .
 982            .          .-------> DVA02B
 [illegible]79  .      DA02B
                .          V
                .          V
 7985           .      RCPA02
                .          .
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7991                A11
                     .
                     .
7998        CPA11............
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                     .
8004                 .-------> DVA11
8001         DA11
                V
                V
8007        RCPA11
                     .
                     .
8013                 .         A14
                     .           .
                     .           .
8020        CPA14............
                V
                V
8023        RCPA14
                     .
                     .
8029                 .         A38
                     .           V
                     .           V
8038                 .      RCPA38
                     .           .
                     .           .
8044                 .           .          A37
                     .           .            .
                     .           .            .
8051         CPA37........................
                V
                V
8054        RCPA37
                     .
                     .
8060                 .         A45
                     .           .
                     .           .
8067         CPA45............
                     .
                     .
8070                 .         I23
                     .           V
                     .           V
8076                 .      RCPI23
                     .           .
                     .           .
8082                 .           .          I25
                     .           .            .
                     .           .            .
8088                 .      CPI25............
                     .           V
                     .           V
8091                 .      RCPI25
                     .           .
                     .           .
8097                 .           .          I27
                     .           .            .
                     .           .            .
8103                 .      CPI27............
                     .           V
                     .           V
8106                 .      RCPI27
                     .           .
                     .           .
8112                 .           .          I29
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8118                 .      CPI29............
                     .           V
                     .           V
8121                 .      RCPI29
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                     .           .
8127                 .           .          I31
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8133                 .      CPI31............
                     .           V
                     .           V
8136                 .      RCPI31
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8142            .           .           .          I33
                .           .           .            .
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8148            .           .       CPI33............
                .           .           V
                .           .           V
[illegible]61   .           .      RCPI33
                .           .           .
                .           .           .
8157            .           .           .          I35
                .           .           .            .
                .           .           .            .
8163            .           .       CPI35............
                .           .           V
                .           .           V
8166            .           .      RCPI35
                .           .           .
                .           .           .
8172            .           .           .          I37
                .           .           .            .
                .           .           .            .
8178            .           .       CPI37............
                .           .           .
                .           .           .
8181      I37RIV........................
                V
                V
8184      RCPI37
                .
                .
8190            .         A36
                .           V
                .           V
8196            .      RCPA36
                .           .
                .           .
8202            .           .         A46
                .           .           .
                .           .           .
8210            .       CPA46............
                .           .
                .           .
[illegible]13     A46RIV............
                V
                V
8216      RCPA46
                .
                .
8222            .         I38
                .           V
                .           V
8228            .      RCPI38
                .           .
                .           .
8234            .           .         I39
                .           .           .
                .           .           .
8240            .       CPI39............
                .           V
                .           V
8243            .      RCPI39
                .           .
                .           .
8249            .           .         I40
                .           .           .
                .           .           .
8255            .       CPI40............
                .           V
                .           V
8258            .      RCPI40
                .           .
                .           .
8264            .           .         I41
                .           .           .
                .           .           .
8270            .       CPI41............
                .           V
                .           V
[illegible]73     .      RCPI41
                .           .
                .           .
8279            .           .         I42
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8285          CPI42............
                  V
                  V
8288          RCPI42
                  .
                  .
8294                  I43
                      .
                      .
8300          CPI43............
                  V
                  V
8303          RCPI43
                  .
                  .
8309                  I44
                        V
                        V
8315                RCPI44
                        .
                        .
8321                                I45
                                      .
                                      .
8327                CPI45............
                        V
                        V
8330                RCPI45
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8336                                I46
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8342                CPI46............
                        V
                        V
8345                RCPI46
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8351                                I47
                                      .
                                      .
8357                CPI47............
                        V
                        V
8360                RCPI47
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8366                                I48
                                      .
                                      .
8372                CPI48............
                        V
                        V
8375                RCPI48
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8381                                I49
                                      .
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8387          CPI49........................
                  V
                  V
8390          RCPI49
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                  .
8396                  I61
                        V
                        V
8402                RCPI61
                        .
                        .
8408                                I50
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8414          CPI50........................
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8417      I50RIV............
              V
              V
8420      RCPI50
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8426            .         I62
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8432      I62RIV............
                V
                V
8435      RCPI62
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8443            .           .<-------   DVA11
8441            .       DRA11
                .           V
                .           V
8444            .       RDA11
                .           .
                .           .
8450            .           .         A15
                .           .           .
                .           .           .
8457            .       CPA15............
                .           .
                .           .
8460            .           .         A16
                .           .           .
                .           .           .
8466            .       CPA16............
                .           V
                .           V
8469            .      RCPA16
                .           .
                .           .
8477            .           .           .<-------  DVA02A
8475            .           .      DRA02A
                .           .           V
                .           .           V
8478            .           .      RDA02A
                .           .           .
                .           .           .
8484            .           .           .         A03
                .           .           .           .
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8490            .           .       CPA03............
                .           .           V
                .           .           V
8493            .           .      RCPA03
                .           .           .
                .           .           .
8499            .           .           .         A64
                .           .           .           .
                .           .           .           .
8505            .           .       CPA64............
                .           .           .
                .           .           .
8511            .           .           .-------->   DVA64
8508            .           .        DA64
                .           .           V
                .           .           V
8514            .           .      RCPA64
                .           .           .
                .           .           .
8522            .           .           .           .<-------  DVA02B
8520            .           .           .      DRA02B
                .           .           .           V
                .           .           .           V
8523            .           .           .      RDA02B
                .           .           .           .
                .           .           .           .
8529            .           .           .           .         A10
                .           .           .           .           .
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8536            .           .       CPA10......................
                .           .           .
                .           .           .
8542            .           .           .-------->   DVA10
8539            .           .        DA10
                .           .           V
                .           .           V
8545            .           .      RCPA10
                .           .           .
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8551            .           .           .         A34
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8557                    CPA34............
                            V
                            V
8560                    RCPA34
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8566                        .          A35
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8572            CPA35........................
                    V
                    V
8575            RCPA35
                    .
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8581                .         A47
                    .           .
                    .           .
8590            CPA47............
                    V
                    V
8593            RCPA47
                    .
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8599                .         A48
                    .           V
                    .           V
8606                .       RCPA48
                    .           .
                    .           .
8612                .           .          A49
                    .           .            .
                    .           .            .
8619            CPA49........................
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8622    A49RIV............
            V
            V
8626    RCPA49
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8632            A04
                .
                .
8641            .-------->   DVA04
8638            DA04
                V
                V
8644            RCPA04
                .
                .
8650            .         A07
                .           .
                .           .
8656            CPA07............
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                .
8662            .-------->   DVA07
8659            DA07
                V
                V
8665            RCPA07
                .
                .
8671            .         A09
                .           .
                .           .
8680            .           .-------->   DVA09
8677            .       DA09
                .           V
                .           V
8683            .       RCPA09
                .           .
                .           .
8689            .           .          A08
                .           .            .
                .           .            .
8696            .       CPA08............
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                .           .
8702            .           .-------->   DVA08
8699            .       DA08
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                 .           .           V
                 .           .           V
8705             .           .       RCPA08
                 .           .           .
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8711             .           .           .         A21
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                 .           .           .           .
[illegible]18    .       CPA21.......................
                 .           .
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8724             .           .-------->   DVA21
8721             .        DA21
                 .           V
                 .           V
8727             .      RCPA21
                 .           .
                 .           .
8733             .           .         A20
                 .           .           .
                 .           .           .
8739             .       CPA20............
                 .           .
                 .           .
8745             .           .-------->   DVA20
8742             .        DA20
                 .           V
                 .           V
8748             .      RCPA20
                 .           .
                 .           .
8754             .           .         A51
                 .           .           .
                 .           .           .
8761             .      CPA51A............
                 .           .
                 .           .
8766             .           .           .<-------   DVA09
8764             .           .       DRA09
                 .           .           V
                 .           .           V
8767             .           .       RDA09
                 .           .           .
                 .           .           .
[illegible]75    .           .           .           .<-------   DVA64
[illegible]73    .           .           .       DRA64
                 .           .           .           V
                 .           .           .           V
8776             .           .           .       RDA64
                 .           .           .           .
                 .           .           .           .
8782             .           .           .           .         A18
                 .           .           .           .           .
                 .           .           .           .           .
8789             .           .       CPA18........................
                 .           .           .
                 .           .           .
8795             .           .           .-------->   DVA18
8792             .           .        DA18
                 .           .           V
                 .           .           V
8798             .           .      RCPA18
                 .           .           .
                 .           .           .
8806             .           .           .           .<-------   DVA08
8804             .           .           .       DRA08
                 .           .           .           V
                 .           .           .           V
8807             .           .           .       RDA08
                 .           .           .           .
                 .           .           .           .
8813             .           .           .           .         A19
                 .           .           .           .           .
                 .           .           .           .           .
8819             .           .           .      CPA19A............
                 .           .           .           .
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8822             .           .       CPA19............
                 .           .           V
                 .           .           V
[illegible]25    .           .      RCPA19
                 .           .           .
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8831             .           .           .         A63
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8837                CPA63A............
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8842                     .<-------   DVA10
8840                DRA10
                        V
                        V
8843                RDA10
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8849                     .        A17
                         .         .
8856                CPA17............
                         .
8861                     .<-------   DVA18
8859                     .      DRA18
                         .        V
                         .        V
8862                     .      RDA18
                         .         .
8868                     .         .        A33
                         .         .         .
8874                     .      CPA33A........... .
                         .         .
8877                CPA33............
                        V
                        V
8880                RCPA33
                         .
8886           CPA63............
                   V
                   V
8889           RCPA63
                         .
8895                     .        A50
                         .         .
8901           CPA50............
                   V
                   V
8904           RCPA50
                         .
8910       CPA51............
                 .
8913   A51RIV............
           V
           V
8916   RCPA51
                 .
8922             .   A05
                 .     V
                 .     V
8928             .RCPA05
                 .
8934             .     .   A23
                 .     .     V
                 .     .     V
8940             .     .RCPA23
                 .     .
8946             .     .     .   A25
                 .     .     .     V
                 .     .     .     V
8952             .     .     .RCPA25
                 .     .     .
8958             .     .     .         A26
                 .     .     .          .
8964             .CPA26.....................
                      V
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                 .          V
 8967            .      RCPA26
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                 .          .
 8973            .          .         A27
                 .          .          .
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  980            .      CPA27A............
                 .          .
                 .          .
 8983            .          .         A28
                 .          .           V
                 .          .           V
 8989            .          .      RCPA28
                 .          .          .
                 .          .          .
 8995            .       CPA27............
                 .          V
                 .          V
 8998            .      RCPA27
                 .          .
                 .          .
 9004            .          .         A29
                 .          .          .
                 .          .          .
 9011            .       CPA29............
                 .          .
                 .          .
 9016            .          .           .<-------   DVA04
 9014            .          .      DRA04
                 .          .          V
                 .          .          V
 9017            .          .      RDA04
                 .          .          .
                 .          .          .
 9023            .          .          .         A06
                 .          .          .          .
                 .          .          .          .
 9030            .          .      CPA06............
                 .          .          V
                 .          .          V
 9033            .          .     RCPA06
                 .          .          .
                 .          .          .
 041             .          .          .           .<-------   DVA07
 039             .          .          .       DRA07
                 .          .          .          V
                 .          .          .          V
 9042            .          .          .       RDA07
                 .          .          .          .
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 9048            .          .          .          .         A22
                 .          .          .          .           .
                 .          .          .          .           .
 9055            .          .          .       CPA22............
                 .          .          .          V
                 .          .          .          V
 9058            .          .          .     RCPA22
                 .          .          .          .
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 9064            .          .          .          .         A24
                 .          .          .          .           .
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 9071            .          .     CPA24......................
                 .          .          V
                 .          .          V
 9074            .          .     RCPA24
                 .          .          .
                 .          .          .
 9080            .          .          .         A30
                 .          .          .          .
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 9087            .          .     CPA30A............
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 9090            .      CPA30............
                 .          V
                 .          V
  093            .     RCPA30
                 .          .
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 099             .          .        A52
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9105          .      CPA52A............
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9108          .          .        A31
              .          .         V
              .          .         V
9115          .          .     RCPA31
              .          .          .
              .          .          .
9123          .          .          .<-------   DVA21
9121          .          .          .     DRA21
              .          .          .         V
              .          .          .         V
9124          .          .          .     RDA21
              .          .          .          .
              .          .          .          .
9132          .          .          .          .<-------   DVA20
9130          .          .          .          .     DRA20
              .          .          .          .         V
              .          .          .          .         V
9133          .          .          .          .     RDA20
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9139          .          .          .          .          .        A32
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9146          .          .          .          .     CPA32A.......................
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9149          .          .      CPA32............
              .          .         V
              .          .         V
9152          .          .     RCPA32
              .          .          .
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9158          .      CPA52............
              .          V
              .          V
9161          .     RCPA52
              .          .
              .          .
9167          .          .        A53
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9174          .          .          .        A54
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9180          .          .      CPA54............
              .          .         V
              .          .         V
9183          .          .     RCPA54
              .          .          .
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9189          .          .          .        A55
              .          .          .         .
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9195          .          .     CPA55A............
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              .          .          .
9198          .      CPA55............
              .          V
              .          V
9201          .     RCPA55
              .          .
              .          .
9207          .          .        A56
              .          .          .
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9214          .      CPA56............
              .          .
              .          .
9217     A56RIV............
              V
              V
9220     RCPA56
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9226          .         I51
              .          V
              .          V
9232          .      RCPI51
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              .          .
9238          .          .        I53
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9244            .     CPI53............
                .          V
                .          V
9247            .    RCPI53
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53              .          .        I55
                .          .          .
                .          .          .
9259            .     CPI55............
                .          V
                .          V
9262            .    RCPI55
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                .          .
9268            .          .        I57
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9274            .     CPI57............
                .          V
                .          V
9277            .    RCPI57
                .          .
                .          .
9283            .          .        I72
                .          .          .
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9289            .     CPI72............
                .          V
                .          V
9292            .    RCPI72
                .          .
                .          .
9298            .          .        I60
                .          .          .
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9304            .    CPI60A............
                .          .
                .          .
9307            .          .        I52
                .          .          V
                .          .          V
13              .          .     RCPI52
                .          .          .
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9319            .          .          .        I54
                .          .          .          .
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9325            .          .     CPI54............
                .          .          V
                .          .          V
9328            .          .     RCPI54
                .          .          .
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9334            .          .          .        I56
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9340            .          .     CPI56............
                .          .          V
                .          .          V
9343            .          .     RCPI56
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9349            .          .          .        I58
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9356            .          .     CPI58............
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9360            .          .          .        I59
                .          .          .          .
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9366            .          .          .          .        I64
                .          .          .          .          .
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9372            .          .     CPI64........................
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                .          .          V
75              .          .     RCPI64
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9381            .          .          .        I65
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9387             .          .      CPI65...........
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9390             .      CPI60...........
                 .          V
                 .          V
9393             .     RCPI60
                 .          .
                 .          .
9399             .          .        I66
                 .          .          .
                 .          .          .
9405             .      CPI66...........
                 .          V
                 .          V
9408             .     RCPI66
                 .          .
                 .          .
9414             .          .        I67
                 .          .          .
                 .          .          .
9420             .      CPI67...........
                 .          .
                 .          .
9424             .          .        I68
                 .          .          .
                 .          .          .        I69
9430             .          .          .          .
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9436             .      CPI69......................
                 .          V
                 .          V
9439             .     RCPI69
                 .          .
                 .          .
9445             .          .        I70
                 .          .          .
                 .          .          .
9451             .      CPI70...........
                 .          .
                 .          .
9454             .          .        I71
                 .          .          .
                 .          .          .
9460             .      CPI71...........
                 .          V
                 .          V
9463             .     RCPI71
                 .          .
                 .          .
9469             .          .        I63
                 .          .          .
                 .          .          .
9475             .      CPI63...........
                 .          .
                 .          .
9478        I63RIV...........
                 V
                 V
9481        RCPI63
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9487             .        A57
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                 .          .
9493        A57RIV...........
                 V
                 V
9496        RCPA57
                 .
                 .
9502             .        A58
                 .          .
                 .          .
9509             .          .        A59
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9515             .      CPA59...........
                 .          V
                 .          V
9518             .     RCPA59
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9524            .          .        A60
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9530            .      CPA60............
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533       A60RIV............
                V
                V
9537      RCPA60
                .
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9543            .       A61
                .          .
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9550            .          .        A62
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9556      A62RIV........................
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	MAX TIME OF STAGE
+	HYDROGRAPH AT	C04	274.	12.00	20.	5.	2.	.23		
+	ROUTED TO	RCPC04	182.	12.50	20.	5.	2.	.23		
+	HYDROGRAPH AT	C12	265.	12.17	18.	4.	2.	.20		
	2 COMBINED AT	CPC12	357.	12.17	37.	9.	5.	.44		
+	DIVERSION TO	DVC12	182.	12.17	19.	5.	2.	.44		
+	HYDROGRAPH AT	DC12	175.	12.17	18.	5.	2.	.44		
+	ROUTED TO	RCPC12	134.	12.50	18.	5.	2.	.44		
+	HYDROGRAPH AT	C13	536.	12.33	47.	12.	6.	.52		
+	2 COMBINED AT	CPC13	634.	12.33	65.	16.	8.	.95		
+	DIVERSION TO	DVC13	463.	12.33	55.	14.	7.	.95		
+	HYDROGRAPH AT	DC13	172.	12.33	10.	2.	1.	.95		
+	ROUTED TO	RCPC13	138.	12.33	10.	2.	1.	.95		
+	HYDROGRAPH AT	C11	299.	12.17	26.	6.	3.	.29		
+	DIVERSION TO	DVC11	141.	12.17	12.	3.	1.	.29		
+	HYDROGRAPH AT	DC11	158.	12.17	14.	3.	2.	.29		
	ROUTED TO	RCPC11	110.	12.67	14.	3.	2.	.29		
+	HYDROGRAPH AT	DRC12	182.	12.17	19.	5.	2.	.44		

+	ROUTED TO	RDC12	119.	12.83	19.	5.	2.	.44
+	HYDROGRAPH AT	C31	140.	12.17	9.	2.	1.	.10
+	4 COMBINED AT	CPC31	307.	12.33	51.	13.	6.	1.35
+	DIVERSION TO	DVC31	80.	12.33	18.	4.	2.	1.35
+	HYDROGRAPH AT	DC31	227.	12.33	33.	8.	4.	1.35
+	ROUTED TO	RCPC31	229.	12.50	33.	8.	4.	1.35
+	HYDROGRAPH AT	DRC11	141.	12.17	12.	3.	1.	.29
+	ROUTED TO	RDC11	74.	13.00	12.	3.	1.	.29
+	HYDROGRAPH AT	C14	263.	12.17	20.	5.	2.	.22
+	3 COMBINED AT	CPC14	404.	12.33	64.	16.	8.	1.57
+	DIVERSION TO	DVC14	254.	12.33	47.	12.	6.	1.57
+	HYDROGRAPH AT	DC14	151.	12.33	16.	4.	2.	1.57
+	ROUTED TO	RCPC14	122.	12.50	16.	4.	2.	1.57
+	HYDROGRAPH AT	C05	321.	12.00	20.	5.	2.	.23
+	ROUTED TO	RCPC05	135.	12.83	20.	5.	2.	.23
+	HYDROGRAPH AT	C03	390.	12.17	25.	6.	3.	.29
+	DIVERSION TO	DVC03	210.	12.17	14.	3.	2.	.29
+	HYDROGRAPH AT	DC03	180.	12.17	11.	3.	1.	.29
+	ROUTED TO	RCPC03	99.	12.33	11.	3.	1.	.29
+	HYDROGRAPH AT	C09	177.	12.17	12.	3.	1.	.14
+	2 COMBINED AT	CPC09	224.	12.17	23.	6.	3.	.43
+	DIVERSION TO	DVC09	103.	12.17	11.	3.	1.	.43
+	HYDROGRAPH AT	DC09	120.	12.17	12.	3.	2.	.43
+	ROUTED TO	RCPC09	97.	12.50	12.	3.	2.	.43
+	HYDROGRAPH AT	C15	157.	12.17	12.	3.	1.	.09
+	2 COMBINED AT	CPC15	186.	12.17	24.	6.	3.	.53
+	DIVERSION TO	DVC15	176.	12.17	23.	6.	3.	.53
+	HYDROGRAPH AT	DC15	9.	12.17	1.	0.	0.	.53

+	ROUTED TO	RCPC15	4.	12.67	1.	0.	0.	.53
+	HYDROGRAPH AT	C10	509.	12.33	49.	12.	6.	.55
	4 COMBINED AT	CPC10	611.	12.33	84.	21.	10.	2.87
+	DIVERSION TO	DVC10	126.	12.33	29.	7.	4.	2.87
+	HYDROGRAPH AT	DC10	484.	12.33	55.	14.	7.	2.87
+	ROUTED TO	RCPC10	409.	12.67	55.	14.	7.	2.87
+	HYDROGRAPH AT	DRC03	210.	12.17	14.	3.	2.	.29
+	ROUTED TO	RDC03	127.	12.50	14.	3.	2.	.29
+	HYDROGRAPH AT	C06	415.	12.17	31.	8.	4.	.35
+	2 COMBINED AT	CPC06	442.	12.17	45.	11.	5.	.64
+	DIVERSION TO	DVC06	220.	12.17	22.	6.	3.	.64
+	HYDROGRAPH AT	DC06	221.	12.17	22.	6.	3.	.64
+	ROUTED TO	RCPC06	212.	12.33	22.	6.	3.	.64
+	HYDROGRAPH AT	DRC09	103.	12.17	11.	3.	1.	.43
	ROUTED TO	RDC09	88.	12.33	11.	3.	1.	.43
+	HYDROGRAPH AT	C16	173.	12.17	12.	3.	1.	.13
+	3 COMBINED AT	CPC16	391.	12.17	45.	11.	5.	.91
+	ROUTED TO	RCPC16	264.	12.83	45.	11.	5.	.91
+	HYDROGRAPH AT	DRC06	220.	12.17	22.	6.	3.	.64
+	ROUTED TO	RDC06	193.	12.33	22.	6.	3.	.64
+	HYDROGRAPH AT	C18	156.	12.00	9.	2.	1.	.08
+	2 COMBINED AT	CPC18	199.	12.17	31.	8.	4.	.72
+	DIVERSION TO	DVC18	28.	12.17	3.	1.	0.	.72
+	HYDROGRAPH AT	DC18	171.	12.17	28.	7.	3.	.72
+	ROUTED TO	RCPC18	166.	12.33	28.	7.	3.	.72
+	HYDROGRAPH AT	C17	179.	12.00	12.	3.	1.	.12
	2 COMBINED AT	CPC17	320.	12.17	40.	10.	5.	.84
+	DIVERSION TO	DVC17	291.	12.17	38.	10.	5.	.84

+	HYDROGRAPH AT	DC17	30.	12.17	2.	0.	0.	.84
+	ROUTED TO	RCPC17	15.	12.33	2.	0.	0.	.84
+	HYDROGRAPH AT	DRC15	176.	12.17	23.	6.	3.	.53
+	ROUTED TO	RDC15	131.	12.50	23.	6.	3.	.53
+	HYDROGRAPH AT	C30	386.	12.17	28.	7.	3.	.23
+	5 COMBINED AT	CPC30	765.	12.67	150.	38.	18.	3.78
+	DIVERSION TO	DVC30	253.	12.67	66.	17.	8.	3.78
+	HYDROGRAPH AT	DC30	512.	12.67	84.	21.	10.	3.78
+	ROUTED TO	RCPC30	478.	12.83	84.	21.	10.	3.78
+	HYDROGRAPH AT	C02	180.	12.00	11.	3.	1.	.13
+	ROUTED TO	RCPC02	82.	12.67	11.	3.	1.	.13
+	HYDROGRAPH AT	C01	366.	12.00	19.	5.	2.	.23
+	ROUTED TO	RCPC01	146.	12.50	19.	5.	2.	.23
+	HYDROGRAPH AT	C08	874.	12.33	77.	19.	9.	.87
+	ROUTED TO	RCPC08	739.	12.33	77.	19.	9.	.87
+	HYDROGRAPH AT	C07	1145.	12.33	100.	25.	12.	1.18
+	4 COMBINED AT	CPC07	1952.	12.33	205.	51.	25.	2.41
+	DIVERSION TO	DVC07	740.	12.33	66.	17.	8.	2.41
+	HYDROGRAPH AT	DC07	1213.	12.33	139.	35.	17.	2.41
+	ROUTED TO	RCPC07	1003.	12.50	139.	35.	17.	2.41
+	HYDROGRAPH AT	DRC18	28.	12.17	3.	1.	0.	.72
+	ROUTED TO	RDC18	22.	12.50	3.	1.	0.	.72
+	HYDROGRAPH AT	C19	392.	12.17	27.	7.	3.	.26
+	3 COMBINED AT	CPC19	1038.	12.50	167.	42.	20.	3.39
+	DIVERSION TO	DVC19	548.	12.50	96.	24.	12.	3.39
+	HYDROGRAPH AT	DC19	490.	12.50	72.	18.	9.	3.39
+	ROUTED TO	RCPC19	408.	12.83	72.	18.	9.	3.39
+	HYDROGRAPH AT	DRC17	291.	12.17	38.	10.	5.	.84

+	ROUTED TO	RDC17	210.	12.67	38.	10.	5.	.84
+	HYDROGRAPH AT	C29	518.	12.17	39.	10.	5.	.34
	4 COMBINED AT	CPC29	1055.	12.83	229.	57.	28.	6.79
+	DIVERSION TO	DVC29	138.	12.83	24.	6.	3.	6.79
+	HYDROGRAPH AT	DC29	917.	12.83	205.	51.	25.	6.79
+	ROUTED TO	RCPC29	921.	12.83	205.	51.	25.	6.79
+	HYDROGRAPH AT	C28	120.	12.00	7.	2.	1.	.05
+	2 COMBINED AT	CPC28	921.	12.83	211.	53.	25.	6.84
+	DIVERSION TO	DVC28	513.	12.83	138.	35.	17.	6.84
+	HYDROGRAPH AT	DC28	408.	12.83	73.	18.	9.	6.84
+	ROUTED TO	RCPC28	381.	13.00	73.	18.	9.	6.84
+	HYDROGRAPH AT	DRC19	548.	12.50	96.	24.	12.	3.39
+	ROUTED TO	RDC19	513.	12.67	95.	24.	12.	3.39
+	HYDROGRAPH AT	C27	324.	12.17	23.	6.	3.	.21
	3 COMBINED AT	CPC27	844.	12.83	189.	47.	23.	7.05
+	DIVERSION TO	DVC27	168.	12.83	58.	15.	7.	7.05
+	HYDROGRAPH AT	DC27	676.	12.83	131.	33.	16.	7.05
+	ROUTED TO	RCPC27	666.	12.83	131.	33.	16.	7.05
+	HYDROGRAPH AT	DRC07	740.	12.33	66.	17.	8.	2.41
+	ROUTED TO	RDC07	411.	12.83	66.	17.	8.	2.41
+	HYDROGRAPH AT	C21	703.	12.17	44.	11.	5.	.56
+	DIVERSION TO	DVC21	446.	12.17	30.	8.	4.	.56
+	HYDROGRAPH AT	DC21	257.	12.17	14.	3.	2.	.56
+	ROUTED TO	RCPC21	146.	12.33	14.	3.	2.	.56
+	HYDROGRAPH AT	C20	482.	12.33	43.	11.	5.	.46
+	4 COMBINED AT	CPC20	1158.	12.67	250.	63.	30.	8.08
	DIVERSION TO	DVC20	218.	12.67	72.	18.	9.	8.08
+	HYDROGRAPH AT	DC20	940.	12.67	178.	44.	21.	8.08

+	ROUTED TO	RCPC20	909.	12.83	178.	44.	21.	8.08
+	HYDROGRAPH AT	C26	138.	12.17	9.	2.	1.	.10
+	2 COMBINED AT	CPC26	909.	12.83	187.	47.	22.	8.18
+	DIVERSION TO	DVC26	538.	12.83	137.	34.	17.	8.18
+	HYDROGRAPH AT	DC26	370.	12.83	49.	12.	6.	8.18
+	ROUTED TO	RCPC26	321.	13.00	49.	12.	6.	8.18
+	HYDROGRAPH AT	DRC21	446.	12.17	30.	8.	4.	.56
+	ROUTED TO	RDC21	259.	12.50	30.	8.	4.	.56
+	HYDROGRAPH AT	C23	692.	12.00	43.	11.	5.	.50
+	ROUTED TO	RCPC23	588.	12.17	43.	11.	5.	.50
+	HYDROGRAPH AT	C22	1058.	12.17	72.	18.	9.	.80
+	4 COMBINED AT	CPC22	1631.	12.17	190.	47.	23.	9.48
+	HYDROGRAPH AT	C24	230.	12.17	15.	4.	2.	.16
+	2 COMBINED AT	CPC24	1853.	12.17	204.	51.	25.	9.65
+	ROUTED TO	PNDC01	1382.	12.33	204.	51.	25.	9.65
+	DIVERSION TO	DVC24	1382.	12.33	204.	51.	25.	9.65
+	HYDROGRAPH AT	DC24	0.	.00	0.	0.	0.	9.65
+	ROUTED TO	RCPC24	0.	.00	0.	0.	0.	9.65
+	HYDROGRAPH AT	C25	151.	12.00	7.	2.	1.	.08
+	2 COMBINED AT	CPC25	151.	12.00	7.	2.	1.	.08
+	ROUTED TO	PNDC02	85.	12.17	7.	2.	1.	.08
+	DIVERSION TO	DVC25	85.	12.17	7.	2.	1.	.08
+	HYDROGRAPH AT	DC25	0.	12.17	0.	0.	0.	.08
+	ROUTED TO	RCPC25	0.	12.33	0.	0.	0.	.08
+	HYDROGRAPH AT	D02	685.	12.17	45.	11.	5.	.50
+	DIVERSION TO	DVD02	154.	12.17	7.	2.	1.	.50
+	HYDROGRAPH AT	DD02	531.	12.17	38.	10.	5.	.50
+	ROUTED TO	RCPD02	453.	12.17	38.	10.	5.	.50

+	HYDROGRAPH AT	D03	400.	12.17	29.	7.	3.	.34
+	2 COMBINED AT	CPD03	847.	12.17	66.	17.	8.	.84
	DIVERSION TO	DVD03	509.	12.17	39.	10.	5.	.84
+	HYDROGRAPH AT	DD03	338.	12.17	27.	7.	3.	.84
+	ROUTED TO	RCPD03	251.	12.33	27.	7.	3.	.84
+	HYDROGRAPH AT	D04	219.	12.17	16.	4.	2.	.20
+	2 COMBINED AT	CPD04	392.	12.33	42.	11.	5.	1.03
+	DIVERSION TO	DVD04	219.	12.33	24.	6.	3.	1.03
+	HYDROGRAPH AT	DD04	173.	12.33	18.	5.	2.	1.03
+	ROUTED TO	RCPD04	119.	12.67	18.	5.	2.	1.03
+	HYDROGRAPH AT	DRD02	154.	12.17	7.	2.	1.	.50
+	ROUTED TO	RDD02	38.	13.17	7.	2.	1.	.50
+	HYDROGRAPH AT	DRD03	509.	12.17	39.	10.	5.	.84
+	ROUTED TO	RDD03	283.	12.83	39.	10.	5.	.84
	HYDROGRAPH AT	D01	1990.	12.33	226.	57.	27.	2.65
+	4 COMBINED AT	CPD01	2195.	12.50	289.	72.	35.	3.69
+	DIVERSION TO	DVD01	1288.	12.50	195.	49.	23.	3.69
+	HYDROGRAPH AT	DD01	908.	12.50	94.	23.	11.	3.69
+	ROUTED TO	RCPD01	608.	13.00	94.	23.	11.	3.69
+	HYDROGRAPH AT	D09	600.	12.33	55.	14.	7.	.54
+	3 COMBINED AT	CPD09	619.	13.00	147.	37.	18.	4.30
+	DIVERSION TO	DVD09	405.	13.00	118.	30.	14.	4.30
+	HYDROGRAPH AT	DD09	214.	13.00	29.	7.	4.	4.30
+	ROUTED TO	RCPD09	186.	13.00	29.	7.	4.	4.30
+	HYDROGRAPH AT	D12	184.	12.17	12.	3.	1.	.13
+	2 COMBINED AT	CPD12	233.	12.17	41.	10.	5.	4.43
	DIVERSION TO	DVD12	144.	12.17	31.	8.	4.	4.43
+	HYDROGRAPH AT	DD12	89.	12.17	10.	3.	1.	4.43

+	ROUTED TO	RCPD12	76.	12.33	10.	3.	1.	4.43
+	HYDROGRAPH AT	DRD01	1288.	12.50	195.	49.	23.	3.69
+	ROUTED TO	RDD01	1008.	12.83	194.	49.	23.	3.69
+	HYDROGRAPH AT	DRD04	219.	12.33	24.	6.	3.	1.03
+	ROUTED TO	RDD04	102.	14.17	24.	6.	3.	1.03
+	HYDROGRAPH AT	D05	1197.	12.67	169.	42.	20.	1.93
+	3 COMBINED AT	CPD05	1891.	12.83	383.	96.	46.	5.61
+	DIVERSION TO	DVD05	89.	12.83	14.	4.	2.	5.61
+	HYDROGRAPH AT	DD05	1802.	12.83	368.	93.	45.	5.61
+	ROUTED TO	RCPD05	1611.	13.17	367.	93.	45.	5.61
+	HYDROGRAPH AT	D13	923.	12.17	70.	17.	8.	.56
+	3 COMBINED AT	CPD13	1656.	13.17	443.	112.	54.	6.92
+	DIVERSION TO	DVD13	1168.	13.17	397.	100.	48.	6.92
+	HYDROGRAPH AT	DD13	488.	13.17	46.	12.	6.	6.92
+	ROUTED TO	RCPD13	297.	13.67	46.	12.	6.	6.92
+	HYDROGRAPH AT	D46	119.	12.00	7.	2.	1.	.05
+	2 COMBINED AT	CPD46	297.	13.67	53.	13.	6.	6.97
+	DIVERSION TO	DVD46	262.	13.67	51.	13.	6.	6.97
+	HYDROGRAPH AT	DD46	35.	13.67	2.	1.	0.	6.97
+	ROUTED TO	RCPD46	26.	13.83	2.	1.	0.	6.97
+	HYDROGRAPH AT	D06	840.	12.50	93.	23.	11.	1.22
+	DIVERSION TO	DVD06	527.	12.50	60.	15.	7.	1.22
+	HYDROGRAPH AT	DD06	313.	12.50	33.	8.	4.	1.22
+	ROUTED TO	RCPD06	162.	13.50	33.	8.	4.	1.22
+	HYDROGRAPH AT	DRD06	527.	12.50	60.	15.	7.	1.22
+	ROUTED TO	RDD06	455.	12.67	60.	15.	7.	1.22
+	HYDROGRAPH AT	D08	326.	12.17	25.	6.	3.	.28
+	2 COMBINED AT	CPD08	474.	12.50	84.	21.	10.	1.50

+	ROUTED TO	RCPD08	406.	13.17	83.	21.	10.	1.50
+	HYDROGRAPH AT	DRD05	89.	12.83	14.	4.	2.	5.61
	ROUTED TO	RDD05	76.	13.17	14.	4.	2.	5.61
+	HYDROGRAPH AT	D11	453.	12.33	42.	11.	5.	.40
+	2 COMBINED AT	CPD11	443.	12.33	55.	14.	7.	6.01
+	ROUTED TO	RCPD11	319.	12.67	55.	14.	7.	6.01
+	HYDROGRAPH AT	D10	736.	12.50	93.	23.	11.	.84
+	5 COMBINED AT	CPD10	1031.	12.50	260.	66.	32.	9.71
+	DIVERSION TO	DVD10	468.	12.50	178.	45.	22.	9.71
+	HYDROGRAPH AT	DD10	563.	12.50	82.	20.	10.	9.71
+	ROUTED TO	RCPD10	534.	12.67	82.	20.	10.	9.71
+	HYDROGRAPH AT	D47	68.	12.00	4.	1.	0.	.04
+	2 COMBINED AT	CPD47	534.	12.67	85.	21.	10.	9.75
+	DIVERSION TO	DVD47	200.	12.67	50.	13.	6.	9.75
	HYDROGRAPH AT	DD47	334.	12.67	35.	9.	4.	9.75
+	ROUTED TO	RCPD47	253.	13.00	35.	9.	4.	9.75
+	HYDROGRAPH AT	D07	822.	12.50	97.	24.	12.	1.05
+	DIVERSION TO	DVD07	577.	12.50	75.	19.	9.	1.05
+	HYDROGRAPH AT	DD07	245.	12.50	22.	6.	3.	1.05
+	ROUTED TO	RCPD07	135.	13.17	22.	6.	3.	1.05
+	HYDROGRAPH AT	D15	743.	12.33	81.	20.	10.	.65
+	3 COMBINED AT	CPD15	718.	12.33	131.	33.	16.	11.45
+	DIVERSION TO	DVD15	585.	12.33	123.	31.	15.	11.45
+	HYDROGRAPH AT	DD15	134.	12.33	8.	2.	1.	11.45
+	ROUTED TO	RCPD15	70.	12.67	8.	2.	1.	11.45
+	HYDROGRAPH AT	DRD07	577.	12.50	75.	19.	9.	1.05
	ROUTED TO	RDD07	383.	13.17	74.	19.	9.	1.05
+	HYDROGRAPH AT	D17	678.	12.50	79.	20.	9.	.78

+	3 COMBINED AT	CPD17	710.	12.50	153.	39.	19.	12.23
+	DIVERSION TO	DVD17	572.	12.50	146.	37.	18.	12.23
+	HYDROGRAPH AT	DD17	138.	12.50	7.	2.	1.	12.23
+	ROUTED TO	RCPD17	88.	12.67	7.	2.	1.	12.23
+	HYDROGRAPH AT	D18	430.	12.33	39.	10.	5.	.43
+	2 COMBINED AT	CPD18	416.	12.33	44.	11.	5.	12.66
+	DIVERSION TO	DVD18	286.	12.33	37.	9.	5.	12.66
+	HYDROGRAPH AT	DD18	130.	12.33	7.	2.	1.	12.66
+	ROUTED TO	RCPD18	74.	12.50	7.	2.	1.	12.66
+	HYDROGRAPH AT	D19	310.	12.17	23.	6.	3.	.25
+	2 COMBINED AT	CPD19	302.	12.17	28.	7.	3.	12.90
+	DIVERSION TO	DVD19	115.	12.17	15.	4.	2.	12.90
+	HYDROGRAPH AT	DD19	187.	12.17	12.	3.	1.	12.90
+	ROUTED TO	RCPD19	125.	12.50	12.	3.	1.	12.90
+	HYDROGRAPH AT	D20	153.	12.17	10.	3.	1.	.11
+	2 COMBINED AT	CPD20	191.	12.17	22.	5.	3.	13.02
+	DIVERSION TO	DVD20	191.	12.17	22.	5.	3.	13.02
+	HYDROGRAPH AT	DD20	0.	.00	0.	0.	0.	13.02
+	ROUTED TO	RCPD20	0.	.00	0.	0.	0.	13.02
+	HYDROGRAPH AT	D21	113.	12.00	7.	2.	1.	.08
+	2 COMBINED AT	CPD21	105.	12.00	7.	2.	1.	13.09
+	DIVERSION TO	DVD21	74.	12.00	5.	1.	1.	13.09
+	HYDROGRAPH AT	DD21	31.	12.00	1.	0.	0.	13.09
+	ROUTED TO	RCPD21	15.	12.33	1.	0.	0.	13.09
+	HYDROGRAPH AT	E33	79.	12.00	4.	1.	1.	.05
+	2 COMBINED AT	CPE33	75.	12.00	5.	1.	1.	13.14
+	DIVERSION TO	DVE33	75.	12.00	5.	1.	1.	13.14
+	HYDROGRAPH AT	DE33	0.	.00	0.	0.	0.	13.14

+	ROUTED TO	RCPE33	0.	.00	0.	0.	0.	13.14
+	HYDROGRAPH AT	E17	966.	12.50	132.	33.	16.	1.48
	ROUTED TO	RCPE17	733.	13.00	132.	33.	16.	1.48
+	HYDROGRAPH AT	E32	393.	12.17	30.	7.	4.	.28
+	3 COMBINED AT	CPE32	733.	13.00	161.	40.	19.	14.90
+	DIVERSION TO	DVE32	231.	13.00	91.	23.	11.	14.90
+	HYDROGRAPH AT	DE32	445.	13.00	60.	15.	7.	14.90
+	ROUTED TO	RCPE32	432.	13.17	60.	15.	7.	14.90
+	HYDROGRAPH AT	E53	151.	12.00	10.	3.	1.	.11
+	2 COMBINED AT	CPE53	432.	13.17	70.	17.	8.	15.01
+	DIVERSION TO	DVE53	192.	13.17	46.	12.	6.	15.01
+	HYDROGRAPH AT	DE53	239.	13.17	23.	6.	3.	15.01
+	ROUTED TO	RCPE53	185.	13.50	23.	6.	3.	15.01
+	HYDROGRAPH AT	E18	720.	12.33	70.	18.	8.	.73
	ROUTED TO	RCPE18	431.	13.00	70.	18.	8.	.73
+	HYDROGRAPH AT	E31	433.	12.33	45.	11.	5.	.38
+	3 COMBINED AT	CPE31	448.	12.83	129.	32.	16.	16.12
+	DIVERSION TO	DVE31	229.	12.83	81.	20.	10.	16.12
+	HYDROGRAPH AT	DE31	219.	12.83	47.	12.	6.	16.12
+	ROUTED TO	RCPE31	211.	13.00	47.	12.	6.	16.12
+	HYDROGRAPH AT	E01	2747.	12.33	396.	99.	48.	4.54
+	ROUTED TO	RCPE01	2010.	12.83	395.	99.	48.	4.54
+	HYDROGRAPH AT	E02	4161.	12.50	508.	127.	61.	6.36
+	2 COMBINED AT	CPE02	4827.	12.50	888.	222.	107.	10.91
+	ROUTED TO	RCPE02	3998.	13.00	885.	222.	107.	10.91
+	HYDROGRAPH AT	E03	1851.	12.33	172.	43.	21.	2.03
	2 COMBINED AT	CPE03	3998.	13.00	1036.	260.	125.	12.93
+	ROUTED TO	RCPE03	3611.	13.33	1028.	260.	125.	12.93

+	HYDROGRAPH AT	E16	839.	12.33	76.	19.	9.	.79
+	2 COMBINED AT	CPE16	3608.	13.33	1097.	277.	134.	13.72
+	DIVERSION TO	DVE16	1338.	13.33	317.	79.	38.	13.72
+	HYDROGRAPH AT	DE16	2243.	13.33	773.	196.	95.	13.72
+	ROUTED TO	RCPE16	2147.	13.67	770.	196.	95.	13.72
+	HYDROGRAPH AT	E19	476.	12.33	51.	13.	6.	.47
+	2 COMBINED AT	CPE19	2147.	13.67	816.	208.	100.	14.19
+	DIVERSION TO	DVE19	736.	13.67	221.	55.	27.	14.19
+	HYDROGRAPH AT	DE19	1403.	13.67	592.	152.	73.	14.19
+	ROUTED TO	RCPE19	1335.	14.17	580.	152.	73.	14.19
+	HYDROGRAPH AT	E30	649.	12.33	79.	20.	9.	.64
+	3 COMBINED AT	CPE30	1339.	14.17	682.	182.	88.	30.94
+	DIVERSION TO	DVE30	1023.	14.33	594.	160.	77.	30.94
+	HYDROGRAPH AT	DE30	228.	14.33	45.	11.	5.	30.94
+	ROUTED TO	RCPE30	210.	14.67	45.	11.	5.	30.94
+	HYDROGRAPH AT	E28	296.	12.17	27.	7.	3.	.20
+	DIVERSION TO	DVE28	186.	12.17	17.	4.	2.	.20
+	HYDROGRAPH AT	DE28	110.	12.17	10.	2.	1.	.20
+	ROUTED TO	RCPE28	43.	14.17	10.	2.	1.	.20
+	HYDROGRAPH AT	E21	365.	12.33	32.	8.	4.	.35
+	DIVERSION TO	DVE21	79.	12.33	5.	1.	1.	.35
+	HYDROGRAPH AT	DE21	286.	12.33	27.	7.	3.	.35
+	ROUTED TO	RCPE21	93.	14.83	27.	7.	3.	.35
+	HYDROGRAPH AT	DRE16	1338.	13.33	317.	79.	38.	13.72
+	ROUTED TO	RDE16	1029.	14.67	316.	79.	38.	13.72
+	HYDROGRAPH AT	E20	432.	12.50	60.	15.	7.	.51
+	4 COMBINED AT	CPE20	1099.	14.67	389.	101.	49.	14.78
+	HYDROGRAPH AT	DRE28	186.	12.17	17.	4.	2.	.20

	ROUTED TO						
+		RDE28	97.	13.17	17.	4.	2.	.20
	HYDROGRAPH AT						
+		DRE19	736.	13.67	221.	55.	27.	14.19
	ROUTED TO						
		RDE19	652.	14.67	220.	55.	27.	14.19
	HYDROGRAPH AT						
+		E29	620.	12.33	73.	18.	9.	.56
	3 COMBINED AT						
+		CPE29A	652.	14.67	300.	76.	37.	14.95
	2 COMBINED AT						
+		CPE29	1731.	14.67	682.	176.	85.	15.81
	ROUTED TO						
+		RCPE29	1562.	15.33	673.	176.	85.	15.81
	HYDROGRAPH AT						
+		E07	896.	12.33	88.	22.	11.	1.07
	ROUTED TO						
+		RCPE07	586.	12.83	88.	22.	11.	1.07
	HYDROGRAPH AT						
+		E14	1095.	12.17	71.	18.	8.	.82
	ROUTED TO						
+		RCPE14	625.	12.50	71.	18.	8.	.82
	HYDROGRAPH AT						
+		E15	968.	12.33	88.	22.	11.	.92
	3 COMBINED AT						
+		CPE15	1517.	12.33	243.	61.	29.	2.81
	ROUTED TO						
+		RCPE15	848.	13.83	240.	61.	29.	2.81
	HYDROGRAPH AT						
		E27	195.	12.17	17.	4.	2.	.13
	ROUTED TO						
+		RCPE27	119.	12.67	17.	4.	2.	.13
	HYDROGRAPH AT						
+		DRE21	79.	12.33	5.	1.	1.	.35
	ROUTED TO						
+		RDE21	24.	13.67	5.	1.	1.	.35
	HYDROGRAPH AT						
+		E22	934.	12.50	126.	32.	15.	1.10
	4 COMBINED AT						
+		CPE22	1009.	12.50	375.	97.	47.	4.39
	ROUTED TO						
+		RCPE22	826.	13.00	369.	97.	47.	4.39
	HYDROGRAPH AT						
+		E37	317.	12.17	24.	6.	3.	.18
	2 COMBINED AT						
+		CPE37	826.	13.00	385.	103.	49.	4.57
	ROUTED TO						
+		RCPE37	718.	14.83	380.	103.	49.	4.57
	HYDROGRAPH AT						
+		E04	1747.	12.17	149.	37.	18.	1.77
	ROUTED TO						
+		RCPE04	467.	15.33	146.	37.	18.	1.77
	HYDROGRAPH AT						
		E06	1238.	12.17	89.	22.	11.	1.06
	ROUTED TO						
+		RCPE06	331.	14.50	88.	22.	11.	1.06

+	HYDROGRAPH AT	E11	1744.	12.50	205.	51.	25.	2.27
+	DIVERSION TO	DVE11	711.	12.50	77.	19.	9.	2.27
+	HYDROGRAPH AT	DE11	1033.	12.50	127.	32.	15.	2.27
+	ROUTED TO	RCPE11	622.	13.50	127.	32.	15.	2.27
+	HYDROGRAPH AT	E09	404.	12.17	26.	6.	3.	.30
+	DIVERSION TO	DVE09	182.	12.17	11.	3.	1.	.30
+	HYDROGRAPH AT	DE09	223.	12.17	15.	4.	2.	.30
+	ROUTED TO	RCPE09	125.	12.50	15.	4.	2.	.30
+	HYDROGRAPH AT	E10	149.	12.00	10.	3.	1.	.10
+	2 COMBINED AT	CPE10	189.	12.17	25.	6.	3.	.40
+	DIVERSION TO	DVE10	135.	12.17	18.	4.	2.	.40
+	HYDROGRAPH AT	DE10	55.	12.17	7.	2.	1.	.40
+	ROUTED TO	RCPE10	24.	14.33	7.	2.	1.	.40
+	HYDROGRAPH AT	E05	2294.	12.83	384.	96.	46.	4.18
+	5 COMBINED AT	CPE05	2355.	12.83	731.	186.	90.	9.67
+	DIVERSION TO	DVE05	1377.	12.83	447.	114.	55.	9.67
+	HYDROGRAPH AT	DE05	978.	12.83	283.	72.	35.	9.67
+	ROUTED TO	RCPE05	785.	13.50	281.	72.	35.	9.67
+	HYDROGRAPH AT	DRE09	182.	12.17	11.	3.	1.	.30
+	ROUTED TO	RDE09	39.	14.50	11.	3.	1.	.30
+	HYDROGRAPH AT	DRE10	135.	12.17	18.	4.	2.	.40
+	ROUTED TO	RDE10	60.	15.33	18.	4.	2.	.40
+	HYDROGRAPH AT	E13	1212.	12.50	175.	44.	21.	1.53
+	3 COMBINED AT	CPE13	1209.	12.50	202.	51.	24.	1.93
+	DIVERSION TO	DVE13	630.	12.50	106.	27.	13.	1.93
+	HYDROGRAPH AT	DE13	579.	12.50	97.	24.	12.	1.93
+	ROUTED TO	RCPE13	498.	12.83	96.	24.	12.	1.93
+	HYDROGRAPH AT	E24	289.	12.33	28.	7.	3.	.23

+	3 COMBINED AT	CPE24	1004.	13.33	394.	101.	49.	11.43
+	ROUTED TO	RCPE24	860.	14.33	383.	101.	49.	11.43
	HYDROGRAPH AT	E08	736.	12.50	91.	23.	11.	.96
+	ROUTED TO	RCPE08	502.	13.17	91.	23.	11.	.96
+	HYDROGRAPH AT	DRE13	630.	12.50	106.	27.	13.	1.93
+	ROUTED TO	RDE13	513.	13.00	105.	27.	13.	1.93
+	HYDROGRAPH AT	E23	377.	12.33	43.	11.	5.	.33
+	3 COMBINED AT	CPE23	1007.	13.00	235.	59.	29.	3.22
+	ROUTED TO	RCPE23	830.	13.67	232.	59.	29.	3.22
+	HYDROGRAPH AT	E34	385.	12.33	39.	10.	5.	.30
+	3 COMBINED AT	CPE34	1412.	14.00	619.	166.	80.	13.02
+	ROUTED TO	RCPE34	1391.	14.33	613.	166.	80.	13.02
+	HYDROGRAPH AT	E38	711.	12.17	57.	14.	7.	.48
+	5 COMBINED AT	CPE38	2619.	15.17	1475.	404.	194.	50.28
	DIVERSION TO	DVE38	796.	15.17	666.	200.	96.	50.28
+	HYDROGRAPH AT	DE38	1823.	15.17	809.	203.	98.	50.28
+	ROUTED TO	RCPE38	1772.	15.33	806.	203.	98.	50.28
+	HYDROGRAPH AT	DRE11	711.	12.50	77.	19.	9.	2.27
+	ROUTED TO	RDE11	353.	13.83	77.	19.	9.	2.27
+	HYDROGRAPH AT	E12	971.	12.33	117.	29.	14.	1.05
+	2 COMBINED AT	CPE12	960.	12.50	191.	48.	23.	3.32
+	ROUTED TO	RCPE12	591.	13.33	186.	48.	23.	3.32
+	HYDROGRAPH AT	DRE05	1377.	12.83	447.	114.	55.	9.67
+	ROUTED TO	RDE05	981.	14.17	426.	114.	55.	9.67
+	HYDROGRAPH AT	E25	1144.	12.67	192.	48.	23.	1.64
+	4 COMBINED AT	CPE25	2415.	15.33	1419.	379.	183.	52.97
	DIVERSION TO	DVE25	1365.	15.33	982.	269.	130.	52.97
+	HYDROGRAPH AT	DE25	1050.	15.33	436.	110.	53.	52.97

+	ROUTED TO	RCPE25	1032.	15.33	435.	110.	53.	52.97
+	HYDROGRAPH AT	E26	429.	12.33	42.	11.	5.	.32
+	ROUTED TO	RCPE26	224.	13.17	42.	11.	5.	.32
+	HYDROGRAPH AT	E35	575.	12.17	47.	12.	6.	.37
+	2 COMBINED AT	CPE35	572.	12.17	89.	22.	11.	.69
+	DIVERSION TO	DVE35	286.	12.17	44.	11.	5.	.69
+	HYDROGRAPH AT	DE35	286.	12.17	44.	11.	5.	.69
+	ROUTED TO	RCPE35	137.	13.00	44.	11.	5.	.69
+	HYDROGRAPH AT	E36	259.	12.17	19.	5.	2.	.16
+	3 COMBINED AT	CPE36	1054.	15.33	481.	123.	59.	53.82
+	DIVERSION TO	DVE36	87.	15.33	46.	11.	5.	53.82
+	HYDROGRAPH AT	DE36	967.	15.33	436.	111.	54.	53.82
+	ROUTED TO	RCPE36	959.	15.50	434.	111.	54.	53.82
+	HYDROGRAPH AT	DRE35	286.	12.17	44.	11.	5.	.69
+	ROUTED TO	RDE35	130.	13.17	43.	11.	5.	.69
+	HYDROGRAPH AT	E54	195.	12.17	15.	4.	2.	.12
+	3 COMBINED AT	CPE54	987.	15.50	481.	124.	60.	53.94
+	DIVERSION TO	DVE54	250.	15.50	191.	52.	25.	53.94
+	HYDROGRAPH AT	DE54	738.	15.50	290.	72.	35.	53.94
+	ROUTED TO	RCPE54	723.	15.67	288.	72.	35.	53.94
+	HYDROGRAPH AT	F26	569.	12.33	64.	16.	8.	.50
+	2 COMBINED AT	CPF26	723.	15.67	341.	86.	41.	54.44
+	DIVERSION TO	DVF26	153.	15.67	106.	27.	13.	54.44
+	HYDROGRAPH AT	DF26	566.	15.67	234.	58.	28.	54.44
+	ROUTED TO	RCPF26	555.	15.83	233.	58.	28.	54.44
+	HYDROGRAPH AT	F14	515.	12.17	35.	9.	4.	.39
+	ROUTED TO	RCPF14	181.	13.50	35.	9.	4.	.39
+	HYDROGRAPH AT	F13	351.	12.17	23.	6.	3.	.26

+	DIVERSION TO	DVF13	151.	12.17	11.	3.	1.	.26
+	HYDROGRAPH AT	DF13	199.	12.17	11.	3.	1.	.26
	ROUTED TO	RCPF13	56.	14.00	11.	3.	1.	.26
+	HYDROGRAPH AT	DRF13	151.	12.17	11.	3.	1.	.26
+	ROUTED TO	RDF13	113.	12.33	11.	3.	1.	.26
+	HYDROGRAPH AT	F12	421.	12.17	28.	7.	3.	.31
+	2 COMBINED AT	CPF12	505.	12.17	39.	10.	5.	.57
+	DIVERSION TO	DVF12	229.	12.17	17.	4.	2.	.57
+	HYDROGRAPH AT	DF12	276.	12.17	21.	5.	3.	.57
+	ROUTED TO	RCPF12	103.	13.67	21.	5.	3.	.57
+	HYDROGRAPH AT	F15	858.	12.33	96.	24.	12.	.78
+	4 COMBINED AT	CPF15	852.	12.33	162.	41.	20.	1.75
+	ROUTED TO	RCPF15	376.	15.17	159.	41.	20.	1.75
+	HYDROGRAPH AT	DRF12	229.	12.17	17.	4.	2.	.57
	ROUTED TO	RDF12	94.	13.17	17.	4.	2.	.57
+	HYDROGRAPH AT	F11	1277.	12.33	139.	35.	17.	1.58
+	2 COMBINED AT	CPF11	1280.	12.33	155.	39.	19.	2.15
+	DIVERSION TO	DVF11	498.	12.33	58.	15.	7.	2.15
+	HYDROGRAPH AT	DF11	782.	12.33	97.	24.	12.	2.15
+	ROUTED TO	RCPF11	644.	12.67	97.	24.	12.	2.15
+	HYDROGRAPH AT	F16	173.	12.00	13.	3.	2.	.10
+	2 COMBINED AT	CPF16	644.	12.67	110.	27.	13.	2.26
+	DIVERSION TO	DVF16	248.	12.67	43.	11.	5.	2.26
+	HYDROGRAPH AT	DF16	396.	12.67	67.	17.	8.	2.26
+	ROUTED TO	RCPF16	170.	15.83	66.	17.	8.	2.26
+	HYDROGRAPH AT	F25	2233.	12.67	351.	89.	43.	2.83
	4 COMBINED AT	CPF25	2200.	12.67	691.	178.	86.	60.70
+	HYDROGRAPH AT	DRF11	498.	12.33	58.	15.	7.	2.15

+	ROUTED TO	RDF11	329.	12.83	58.	15.	7.	2.15
+	HYDROGRAPH AT	F17	1175.	12.33	115.	30.	14.	1.15
+	2 COMBINED AT	CPF17	1202.	12.33	171.	44.	21.	3.30
+	ROUTED TO	RCPF17	701.	13.33	170.	44.	21.	3.30
+	HYDROGRAPH AT	DRF16	248.	12.67	43.	11.	5.	2.26
+	ROUTED TO	RDF16	146.	14.00	42.	11.	5.	2.26
+	HYDROGRAPH AT	F24	1091.	12.50	153.	43.	21.	1.03
+	3 COMBINED AT	CPF24	1085.	12.50	358.	97.	47.	4.43
+	ROUTED TO	RCPF24	848.	13.00	355.	96.	47.	4.43
+	HYDROGRAPH AT	F23	622.	12.33	80.	24.	11.	.50
+	ROUTED TO	RCPF23	406.	13.00	80.	24.	11.	.50
+	HYDROGRAPH AT	F27	787.	12.33	83.	22.	10.	.61
+	4 COMBINED AT	CPF27	2961.	12.67	1112.	295.	142.	63.99
+	ROUTED TO	PNDF01	2256.	13.00	1112.	295.	142.	63.99
+	DIVERSION TO	DVF27	1779.	13.00	1061.	282.	136.	63.99
+	HYDROGRAPH AT	DF27	478.	13.00	51.	13.	6.	63.99
+	ROUTED TO	RCPF27	389.	13.33	51.	13.	6.	63.99
+	HYDROGRAPH AT	F10	1864.	12.33	203.	51.	24.	2.26
+	ROUTED TO	RCPF10	1469.	12.67	203.	51.	24.	2.26
+	HYDROGRAPH AT	F18	505.	12.17	48.	14.	7.	.30
+	2 COMBINED AT	CPF18	1498.	12.67	249.	64.	31.	2.56
+	DIVERSION TO	DVF18	521.	12.67	83.	22.	10.	2.56
+	HYDROGRAPH AT	DF18	977.	12.67	165.	43.	21.	2.56
+	ROUTED TO	RCPF18	698.	13.50	165.	43.	21.	2.56
+	HYDROGRAPH AT	F22	484.	12.33	52.	14.	7.	.37
+	2 COMBINED AT	CPF22	702.	13.50	214.	56.	27.	2.93
+	DIVERSION TO	DVF22	453.	13.50	133.	35.	17.	2.93
+	HYDROGRAPH AT	DF22	249.	13.50	82.	22.	10.	2.93

+	ROUTED TO	RCPF22	200.	14.67	80.	22.	10.	2.93
+	HYDROGRAPH AT	F28	638.	12.33	75.	22.	10.	.47
+	3 COMBINED AT	CPF28	547.	12.33	175.	49.	24.	67.39
+	ROUTED TO	PNDF02	330.	12.50	175.	49.	24.	67.39
+	DIVERSION TO	DVF28A	215.	12.50	114.	32.	16.	67.39
+	HYDROGRAPH AT	DF28A	115.	12.50	61.	17.	8.	67.39
+	DIVERSION TO	DVF28B	115.	12.50	61.	17.	8.	67.39
+	HYDROGRAPH AT	DF28B	0.	.00	0.	0.	0.	67.39
+	ROUTED TO	RCPF28	0.	.00	0.	0.	0.	67.39
+	HYDROGRAPH AT	F36	294.	12.17	28.	8.	4.	.17
+	2 COMBINED AT	CPF36	251.	12.17	24.	7.	3.	67.56
+	ROUTED TO	PNDF03	172.	12.33	24.	7.	3.	67.56
+	ROUTED TO	RCPF36	103.	13.33	23.	7.	3.	67.56
+	HYDROGRAPH AT	F02	1001.	12.33	87.	22.	11.	1.02
+	DIVERSION TO	DVF02	547.	12.33	48.	12.	6.	1.02
+	HYDROGRAPH AT	DF02	454.	12.33	39.	10.	5.	1.02
+	ROUTED TO	RCPF02	130.	15.83	38.	10.	5.	1.02
+	HYDROGRAPH AT	F01	1651.	12.50	185.	46.	22.	2.19
+	ROUTED TO	RCPF01	1070.	13.17	184.	46.	22.	2.19
+	HYDROGRAPH AT	F04	1093.	12.83	188.	47.	23.	2.20
+	3 COMBINED AT	CPF04	1868.	13.00	404.	102.	49.	5.41
+	ROUTED TO	RCPF04	1509.	13.67	399.	102.	49.	5.41
+	HYDROGRAPH AT	F03	1218.	12.50	140.	35.	17.	1.63
+	ROUTED TO	RCPF03	961.	12.67	140.	35.	17.	1.63
+	HYDROGRAPH AT	F06	1232.	12.17	85.	21.	10.	1.00
+	2 COMBINED AT	CPF06	1333.	12.17	223.	56.	27.	2.63
+	ROUTED TO	RCPF06	913.	13.00	222.	56.	27.	2.63
+	HYDROGRAPH AT	DRF02	547.	12.33	48.	12.	6.	1.02

+	ROUTED TO	RDF02	187.	15.00	47.	12.	6.	1.02
+	HYDROGRAPH AT	F05	1879.	12.67	277.	69.	33.	2.94
+	4 COMBINED AT	CPF05	2317.	12.67	916.	233.	112.	10.98
+	ROUTED TO	RCPF05	2107.	14.00	895.	233.	112.	10.98
+	HYDROGRAPH AT	F07	2867.	12.50	331.	83.	40.	3.68
+	ROUTED TO	RCPF07	2616.	12.50	331.	83.	40.	3.68
+	HYDROGRAPH AT	F08	913.	12.33	106.	27.	13.	.91
+	3 COMBINED AT	CPF08	3273.	12.50	1239.	328.	158.	15.57
+	ROUTED TO	RCPF08	1948.	14.83	1185.	328.	158.	15.57
+	HYDROGRAPH AT	F09	1669.	12.67	285.	73.	35.	2.65
+	2 COMBINED AT	CPF09	2101.	13.50	1351.	390.	188.	18.23
+	ROUTED TO	RCPF09	1895.	14.17	1313.	390.	188.	18.23
+	HYDROGRAPH AT	F19	905.	12.50	126.	35.	17.	.85
+	2 COMBINED AT	CPF19	1894.	14.17	1318.	419.	203.	19.08
+	DIVERSION TO	DVF19	954.	14.17	664.	212.	103.	19.08
+	HYDROGRAPH AT	DF19	940.	14.17	654.	208.	101.	19.08
+	ROUTED TO	RCPF19	920.	14.67	651.	208.	101.	19.08
+	HYDROGRAPH AT	DRF18	521.	12.67	83.	22.	10.	2.56
+	ROUTED TO	RDF18	287.	14.17	82.	21.	10.	2.56
+	HYDROGRAPH AT	F21	653.	12.33	74.	20.	10.	.53
+	3 COMBINED AT	CPF21	1131.	14.50	729.	242.	117.	22.17
+	ROUTED TO	RCPF21	1073.	15.33	719.	242.	117.	22.17
+	HYDROGRAPH AT	DRF22	453.	13.50	133.	35.	17.	2.93
+	ROUTED TO	RDF22	345.	14.83	129.	35.	17.	2.93
+	HYDROGRAPH AT	F29	714.	12.33	88.	24.	12.	.59
+	3 COMBINED AT	CPF29	1119.	15.33	719.	259.	126.	87.76
+	ROUTED TO	PNDF04	1101.	15.50	712.	258.	126.	87.76
+	DIVERSION TO	DVF29	557.	15.50	337.	149.	73.	87.76

+	HYDROGRAPH AT	DF29	544.	15.50	375.	108.	52.	87.76
+	ROUTED TO	RCPF29	542.	15.67	374.	108.	52.	87.76
	HYDROGRAPH AT	DRF19	954.	14.17	664.	212.	103.	19.08
+	ROUTED TO	RDF19	921.	16.17	658.	212.	103.	19.08
+	HYDROGRAPH AT	F20	839.	12.50	123.	35.	17.	.80
+	3 COMBINED AT	CPF20	1259.	15.67	932.	317.	154.	88.56
+	ROUTED TO	PNDF05	1256.	15.83	897.	317.	154.	88.56
+	ROUTED TO	RCPF20	1249.	16.50	889.	317.	154.	88.56
+	HYDROGRAPH AT	F31	453.	12.17	37.	10.	5.	.27
+	HYDROGRAPH AT	G21	898.	12.33	79.	20.	10.	.91
+	3 COMBINED AT	CPF31	1249.	16.50	889.	340.	165.	89.74
+	ROUTED TO	RCPF31	1245.	16.83	885.	339.	165.	89.74
+	HYDROGRAPH AT	DRF29	557.	15.50	337.	149.	73.	87.76
+	ROUTED TO	RDF29	509.	16.50	335.	149.	73.	87.76
	HYDROGRAPH AT	F32	415.	12.17	37.	9.	4.	.29
+	3 COMBINED AT	CPF32	1741.	16.67	1219.	497.	242.	88.31
+	HYDROGRAPH AT	G20	630.	12.17	46.	12.	6.	.48
+	ROUTED TO	RCPG20	279.	13.17	46.	12.	6.	.48
+	HYDROGRAPH AT	G19	942.	12.17	78.	22.	11.	.67
+	ROUTED TO	RCPG19	444.	12.83	78.	22.	11.	.67
+	HYDROGRAPH AT	G22	1026.	12.33	98.	25.	12.	1.12
+	3 COMBINED AT	CPG22	1120.	12.33	219.	57.	28.	2.28
+	3 COMBINED AT	F32RIV	1741.	16.67	1221.	546.	267.	92.30
+	ROUTED TO	RCPF32	1731.	16.83	1218.	546.	267.	92.30
+	HYDROGRAPH AT	DRF28B	115.	12.50	61.	17.	8.	67.39
+	ROUTED TO	RDF28B	102.	14.67	59.	17.	8.	67.39
	HYDROGRAPH AT	F33	640.	12.33	67.	18.	8.	.49
+	2 COMBINED AT	CPF33	545.	12.33	111.	32.	15.	68.14

+	2 COMBINED AT	F33RIV	1778.	16.83	1243.	576.	281.	92.79
+	ROUTED TO	RCPF33	1770.	17.00	1242.	576.	281.	92.79
+	HYDROGRAPH AT	DRF28A	215.	12.50	114.	32.	16.	67.39
+	ROUTED TO	RDF28A	185.	14.83	111.	32.	16.	67.39
+	HYDROGRAPH AT	DRF27	1779.	13.00	1061.	282.	136.	63.99
+	DIVERSION TO	DVF25	309.	13.00	177.	45.	22.	63.99
+	HYDROGRAPH AT	DF25	1470.	13.00	884.	236.	114.	63.99
+	ROUTED TO	RDF27	1385.	13.67	858.	236.	114.	63.99
+	HYDROGRAPH AT	DRF25	309.	13.00	177.	45.	22.	63.99
+	ROUTED TO	RDF25	288.	14.33	170.	45.	22.	63.99
+	HYDROGRAPH AT	F34	704.	12.33	78.	20.	10.	.60
+	4 COMBINED AT	CPF34	1730.	14.00	1137.	327.	158.	67.99
+	HYDROGRAPH AT	G23	1131.	12.33	99.	25.	12.	1.20
+	3 COMBINED AT	F34RIV	2752.	16.83	2246.	904.	440.	94.59
+	ROUTED TO	RCPF34	2737.	17.17	2241.	904.	440.	94.59
+	HYDROGRAPH AT	DRF26	153.	15.67	106.	27.	13.	54.44
+	ROUTED TO	RDF26	148.	17.50	99.	27.	13.	54.44
+	HYDROGRAPH AT	F35	848.	12.50	105.	27.	13.	.80
+	2 COMBINED AT	CPF35	730.	12.50	152.	50.	24.	55.23
+	HYDROGRAPH AT	G24	341.	12.17	29.	7.	3.	.35
+	ROUTED TO	RCPG24	341.	12.33	29.	7.	3.	.35
+	HYDROGRAPH AT	G25	308.	12.33	29.	7.	4.	.36
+	4 COMBINED AT	F35RIV	2953.	12.50	2367.	960.	467.	96.09
+	ROUTED TO	RCPF35	2848.	17.17	2359.	960.	467.	96.09
+	HYDROGRAPH AT	DRE54	250.	15.50	191.	52.	25.	53.94
+	ROUTED TO	RDE54	249.	15.83	189.	52.	25.	53.94
+	HYDROGRAPH AT	E46	294.	12.17	25.	7.	3.	.17
+	2 COMBINED AT	CPE46	262.	12.17	202.	57.	28.	54.12

+	ROUTED TO	RCPE46	248.	16.17	199.	57.	28.	54.12
+	HYDROGRAPH AT	DRE25	1365.	15.33	982.	269.	130.	52.97
	ROUTED TO	RDE25	1357.	15.50	974.	269.	130.	52.97
+	HYDROGRAPH AT	DRE36	87.	15.33	46.	11.	5.	53.82
+	ROUTED TO	RDE36	85.	15.83	45.	11.	5.	53.82
+	HYDROGRAPH AT	E45	449.	12.17	47.	12.	6.	.32
+	3 COMBINED AT	CPE45	1437.	15.50	1029.	290.	140.	54.14
+	ROUTED TO	RCPE45	1435.	15.67	1024.	290.	140.	54.14
+	HYDROGRAPH AT	E47	635.	12.17	64.	17.	8.	.43
+	3 COMBINED AT	CPE47	1680.	15.67	1238.	361.	174.	54.87
+	ROUTED TO	RCPE47	1669.	16.17	1216.	361.	174.	54.87
+	HYDROGRAPH AT	E48	1146.	12.17	113.	28.	14.	.86
+	2 COMBINED AT	CPE48	1669.	16.17	1216.	385.	186.	55.73
+	HYDROGRAPH AT	G26	1098.	12.33	98.	25.	12.	1.17
	3 COMBINED AT	E48RIV	4233.	17.00	3481.	1341.	651.	99.04
+	ROUTED TO	RCPE48	4230.	17.17	3476.	1341.	651.	99.04
+	HYDROGRAPH AT	DRE38	796.	15.17	666.	200.	96.	50.28
+	ROUTED TO	RDE38	779.	16.00	650.	200.	96.	50.28
+	HYDROGRAPH AT	DRE30	1023.	14.33	594.	160.	77.	30.94
+	ROUTED TO	RDE30	989.	15.17	582.	160.	77.	30.94
+	HYDROGRAPH AT	E44	746.	12.33	73.	18.	9.	.63
+	3 COMBINED AT	CPE44	1712.	15.33	1206.	370.	178.	50.91
+	ROUTED TO	RCPE44	1691.	16.17	1186.	369.	178.	50.91
+	HYDROGRAPH AT	DRE31	229.	12.83	81.	20.	10.	16.12
+	ROUTED TO	RDE31	224.	13.67	79.	20.	10.	16.12
+	HYDROGRAPH AT	E43	568.	12.33	55.	14.	7.	.44
	2 COMBINED AT	CPE43	534.	12.33	129.	33.	16.	16.57
+	ROUTED TO	RCPE43	263.	13.33	124.	33.	16.	16.57

+	HYDROGRAPH AT	E50	1142.	12.33	169.	55.	26.	.70
+	3 COMBINED AT	CPE50	1820.	16.00	1286.	443.	217.	52.06
+	ROUTED TO	RCPE50	1811.	16.33	1282.	443.	217.	52.06
+	HYDROGRAPH AT	E52	404.	12.00	39.	13.	6.	.16
+	ROUTED TO	RCPE52	221.	12.33	39.	12.	6.	.16
+	HYDROGRAPH AT	E49	266.	12.33	26.	7.	3.	.22
+	3 COMBINED AT	CPE49	1818.	16.33	1288.	459.	225.	52.44
+	2 COMBINED AT	E49RIV	5832.	17.00	4592.	1779.	866.	101.20
+	ROUTED TO	RCPE49	5804.	17.17	4589.	1779.	866.	101.20
+	HYDROGRAPH AT	G18	513.	12.17	54.	17.	8.	.32
+	DIVERSION TO	DVG18	265.	12.17	29.	9.	4.	.32
+	HYDROGRAPH AT	DG18	248.	12.17	24.	7.	4.	.32
+	ROUTED TO	RCPG18	106.	13.50	24.	7.	4.	.32
+	HYDROGRAPH AT	G27	1314.	12.33	122.	31.	15.	1.41
+	2 COMBINED AT	CPG27	1319.	12.33	146.	38.	18.	1.73
+	2 COMBINED AT	G27RIV	5804.	17.17	4597.	1808.	880.	102.93
+	ROUTED TO	RCPG27	5750.	17.50	4587.	1805.	879.	102.93
+	HYDROGRAPH AT	G28	411.	12.17	32.	8.	4.	.31
+	2 COMBINED AT	G28RIV	5750.	17.50	4587.	1811.	882.	103.24
+	ROUTED TO	RCPG28	5718.	17.67	4585.	1811.	882.	103.24
+	HYDROGRAPH AT	DRE53	192.	13.17	46.	12.	6.	15.01
+	ROUTED TO	RDE53	162.	14.17	45.	12.	6.	15.01
+	HYDROGRAPH AT	DRE32	231.	13.00	91.	23.	11.	14.90
+	ROUTED TO	RDE32	224.	13.50	91.	23.	11.	14.90
+	HYDROGRAPH AT	E40	109.	12.17	8.	2.	1.	.07
+	2 COMBINED AT	CPE40	224.	13.50	98.	25.	12.	14.97
+	HYDROGRAPH AT	DRE33	75.	12.00	5.	1.	1.	13.14
+	ROUTED TO	RDE33	38.	12.50	5.	1.	1.	13.14

+	HYDROGRAPH AT	E39	159.	12.17	11.	3.	1.	.10
+	2 COMBINED AT	CPE39A	164.	12.17	16.	4.	2.	13.24
	2 COMBINED AT	CPE39	297.	12.17	114.	29.	14.	15.07
+	ROUTED TO	RCPE39	222.	14.33	113.	29.	14.	15.07
+	HYDROGRAPH AT	E42	742.	12.33	70.	18.	8.	.62
+	3 COMBINED AT	CPE42	720.	12.33	222.	56.	27.	15.80
+	ROUTED TO	RCPE42	348.	15.33	207.	56.	27.	15.80
+	HYDROGRAPH AT	E51	1339.	12.50	164.	41.	20.	1.28
+	2 COMBINED AT	CPE51	1265.	12.50	343.	95.	46.	17.08
+	2 COMBINED AT	E51RIV	5814.	17.50	4749.	1889.	920.	105.31
+	ROUTED TO	RCPE51	5786.	17.83	4746.	1889.	920.	105.31
+	HYDROGRAPH AT	E41	758.	12.67	131.	33.	16.	1.05
+	HYDROGRAPH AT	DRG18	265.	12.17	29.	9.	4.	.32
+	ROUTED TO	RDG18	145.	12.83	29.	9.	4.	.32
	HYDROGRAPH AT	G17	837.	12.33	120.	39.	19.	.58
+	2 COMBINED AT	CPG17	869.	12.33	148.	48.	23.	.90
+	ROUTED TO	RCPG17	713.	12.50	148.	48.	23.	.90
+	HYDROGRAPH AT	G16	1473.	12.33	170.	47.	23.	1.33
+	ROUTED TO	RCPG16	1260.	12.50	170.	47.	23.	1.33
+	HYDROGRAPH AT	G29	3263.	12.33	385.	104.	50.	2.90
+	3 COMBINED AT	CPG29	5005.	12.33	697.	197.	95.	5.13
+	3 COMBINED AT	E41RIV	5911.	12.50	4774.	2058.	1006.	111.17
+	ROUTED TO	RCPE41	5746.	18.00	4770.	2058.	1006.	111.17
+	HYDROGRAPH AT	G15	4267.	12.33	463.	128.	62.	3.38
+	ROUTED TO	RCPG15	2880.	12.67	463.	128.	62.	3.38
+	HYDROGRAPH AT	G30	504.	12.17	40.	10.	5.	.32
	2 COMBINED AT	CPG30	2894.	12.67	501.	137.	66.	3.70
+	2 COMBINED AT	G30RIV	7302.	12.67	5046.	2160.	1057.	114.87

+	ROUTED TO	RCPG30	6753.	13.00	5008.	2160.	1057.	114.87
+	HYDROGRAPH AT	G44	674.	12.17	50.	13.	6.	.73
+	ROUTED TO	RCPG44	320.	13.00	50.	13.	6.	.73
+	HYDROGRAPH AT	G06	2652.	12.33	309.	88.	42.	2.15
+	2 COMBINED AT	CPG06	2676.	12.33	357.	100.	48.	2.88
+	DIVERSION TO	DVG06	1449.	12.33	196.	55.	27.	2.88
+	HYDROGRAPH AT	DG06	1227.	12.33	161.	45.	22.	2.88
+	ROUTED TO	RCPG06	703.	13.17	159.	45.	22.	2.88
+	HYDROGRAPH AT	G07	1804.	12.33	228.	68.	33.	1.36
+	2 COMBINED AT	CPG07	1805.	12.33	380.	111.	54.	4.24
+	ROUTED TO	RCPG07	988.	13.83	379.	111.	54.	4.24
+	HYDROGRAPH AT	G08	477.	12.33	45.	11.	5.	.40
+	DIVERSION TO	DVG08	204.	12.33	19.	5.	2.	.40
+	HYDROGRAPH AT	DG08	273.	12.33	27.	7.	3.	.40
+	ROUTED TO	RCPG08	265.	12.33	27.	7.	3.	.40
+	HYDROGRAPH AT	G05	1389.	12.17	114.	29.	14.	1.59
+	DIVERSION TO	DVG05	377.	12.17	26.	7.	3.	1.59
+	HYDROGRAPH AT	DG05	1012.	12.17	87.	22.	11.	1.59
+	ROUTED TO	RCPG05	402.	13.67	87.	22.	11.	1.59
+	HYDROGRAPH AT	G46	1759.	12.33	215.	62.	30.	1.41
+	2 COMBINED AT	CPG46	1750.	12.33	299.	84.	40.	3.00
+	HYDROGRAPH AT	G04	2835.	12.33	369.	110.	53.	2.34
+	2 COMBINED AT	CPG04	4558.	12.33	664.	192.	93.	5.34
+	ROUTED TO	RCPG04	3442.	12.67	664.	192.	93.	5.34
+	HYDROGRAPH AT	DRG06	1449.	12.33	196.	55.	27.	2.88
+	ROUTED TO	RDG06	908.	13.17	196.	55.	27.	2.88
+	HYDROGRAPH AT	DRG05	377.	12.17	26.	7.	3.	1.59
+	ROUTED TO	RDG05	100.	14.00	26.	7.	3.	1.59

+	HYDROGRAPH AT	G45	1660.	12.67	245.	61.	29.	2.00
+	5 COMBINED AT	CPG45	5524.	12.67	1135.	316.	153.	10.62
	ROUTED TO	RCPG45	5039.	12.83	1135.	316.	153.	10.62
+	HYDROGRAPH AT	G31	319.	12.00	21.	5.	3.	.18
+	2 COMBINED AT	CPG31	5039.	12.83	1156.	321.	156.	10.81
+	DIVERSION TO	DVG31	2516.	12.83	577.	161.	78.	10.81
+	HYDROGRAPH AT	DG31	2516.	12.83	577.	161.	78.	10.81
+	ROUTED TO	RCPG31	2356.	13.00	577.	160.	78.	10.81
+	HYDROGRAPH AT	G47	196.	12.17	14.	4.	2.	.12
+	2 COMBINED AT	CPG47	2356.	13.00	590.	164.	79.	10.93
+	DIVERSION TO	DVG47	1177.	13.00	295.	82.	40.	10.93
+	HYDROGRAPH AT	DG47	1177.	13.00	295.	82.	40.	10.93
+	ROUTED TO	RCPG47	828.	14.50	294.	82.	40.	10.93
+	HYDROGRAPH AT	DRG31	2516.	12.83	577.	161.	78.	10.81
	ROUTED TO	RDG31	1733.	14.17	571.	160.	78.	10.81
+	HYDROGRAPH AT	G43	1842.	12.50	249.	62.	30.	2.17
+	4 COMBINED AT	CPG43	3167.	14.33	1414.	403.	195.	14.45
+	HYDROGRAPH AT	DRD17	572.	12.50	146.	37.	18.	12.23
+	ROUTED TO	RDD17	435.	13.33	144.	37.	18.	12.23
+	HYDROGRAPH AT	DRD18	286.	12.33	37.	9.	5.	12.66
+	ROUTED TO	RDD18	121.	14.00	37.	9.	5.	12.66
+	HYDROGRAPH AT	D23	700.	12.33	81.	20.	10.	.71
+	3 COMBINED AT	CPD23	666.	12.33	253.	65.	31.	13.37
+	HYDROGRAPH AT	DRD19	115.	12.17	15.	4.	2.	12.90
+	ROUTED TO	RDD19	73.	13.17	15.	4.	2.	12.90
+	HYDROGRAPH AT	D24	462.	12.33	46.	11.	6.	.43
	2 COMBINED AT	CPD24A	437.	12.33	58.	15.	7.	13.34
+	2 COMBINED AT	CPD24	1099.	12.33	309.	79.	38.	14.05

+	ROUTED TO	RCPD24	950.	12.67	307.	79.	38.	14.05
+	HYDROGRAPH AT	DRD20	191.	12.17	22.	5.	3.	13.02
+	ROUTED TO	RDD20	93.	13.50	21.	5.	3.	13.02
+	HYDROGRAPH AT	DRD21	74.	12.00	5.	1.	1.	13.09
+	ROUTED TO	RDD21	21.	13.83	5.	1.	1.	13.09
+	HYDROGRAPH AT	D25	1109.	12.50	130.	32.	16.	1.34
+	4 COMBINED AT	CPD25	1887.	12.50	449.	115.	55.	15.58
+	ROUTED TO	RCPD25	1047.	13.67	430.	115.	55.	15.58
+	HYDROGRAPH AT	D26	1268.	12.67	187.	47.	22.	1.55
+	2 COMBINED AT	CPD26	1195.	12.67	581.	158.	76.	17.12
+	ROUTED TO	RCPD26	997.	14.17	566.	158.	76.	17.12
+	HYDROGRAPH AT	D27	335.	12.33	35.	9.	4.	.26
+	2 COMBINED AT	CPD27	997.	14.17	584.	166.	80.	17.38
+	3 COMBINED AT	D27RIV	8152.	13.00	6436.	2595.	1270.	133.62
+	ROUTED TO	RCPD27	8092.	13.00	6436.	2595.	1270.	133.62
+	HYDROGRAPH AT	D28	1454.	12.67	217.	54.	26.	1.69
+	2 COMBINED AT	D28RIV	8614.	13.00	6504.	2635.	1289.	135.30
+	ROUTED TO	RCPD28	8536.	13.00	6503.	2635.	1289.	135.30
+	HYDROGRAPH AT	D29	2379.	12.67	338.	85.	41.	3.51
+	2 COMBINED AT	D29RIV	9368.	13.00	6639.	2692.	1316.	138.81
+	ROUTED TO	RCPD29	9289.	13.00	6626.	2692.	1316.	138.81
+	HYDROGRAPH AT	DRG47	1177.	13.00	295.	82.	40.	10.93
+	ROUTED TO	RDG47	950.	14.00	294.	82.	40.	10.93
+	HYDROGRAPH AT	G32	1329.	12.33	135.	34.	16.	1.14
+	2 COMBINED AT	CPG32	1305.	12.33	420.	113.	55.	12.07
+	HYDROGRAPH AT	D30	495.	12.33	48.	12.	6.	.43
+	3 COMBINED AT	D30RIV	9419.	13.00	6888.	2789.	1364.	140.38
+	ROUTED TO	RCPD30	9358.	13.00	6884.	2789.	1364.	140.38

+	HYDROGRAPH AT	D31	607.	12.50	72.	18.	9.	.67
+	2 COMBINED AT	D31RIV	9431.	13.00	6904.	2801.	1369.	141.05
	ROUTED TO	RCPD31	9404.	13.17	6896.	2801.	1369.	141.05
+	HYDROGRAPH AT	G33	897.	12.33	86.	21.	10.	.74
+	2 COMBINED AT	G33RIV	9404.	13.17	6908.	2818.	1377.	141.79
+	ROUTED TO	RCPG33	9435.	13.17	6902.	2816.	1377.	141.79
+	HYDROGRAPH AT	G14	220.	12.17	16.	4.	2.	.14
+	ROUTED TO	RCPG14	137.	12.50	16.	4.	2.	.14
+	HYDROGRAPH AT	G34	323.	12.17	24.	6.	3.	.20
+	2 COMBINED AT	CPG34A	376.	12.17	39.	10.	5.	.34
+	HYDROGRAPH AT	G13	553.	12.33	57.	14.	7.	.50
+	2 COMBINED AT	CPG34	827.	12.33	96.	24.	12.	.84
+	ROUTED TO	RCPG34	597.	12.83	96.	24.	12.	.84
+	HYDROGRAPH AT	G35	629.	12.33	61.	15.	7.	.53
	2 COMBINED AT	CPG35	974.	12.33	156.	39.	19.	1.37
+	HYDROGRAPH AT	D32	617.	12.33	59.	15.	7.	.50
+	3 COMBINED AT	D32RIV	9657.	13.17	6966.	2854.	1395.	143.66
+	ROUTED TO	RCPD32	9474.	13.17	6944.	2854.	1394.	143.66
+	HYDROGRAPH AT	DRD13	1168.	13.17	397.	100.	48.	6.92
+	ROUTED TO	RDD13	1001.	14.83	372.	100.	48.	6.92
+	HYDROGRAPH AT	DRD46	262.	13.67	51.	13.	6.	6.97
+	ROUTED TO	RDD46	120.	16.67	44.	13.	6.	6.97
+	HYDROGRAPH AT	DRD10	468.	12.50	178.	45.	22.	9.71
+	ROUTED TO	RDD10	402.	15.00	161.	45.	22.	9.71
+	HYDROGRAPH AT	DRD47	200.	12.67	50.	13.	6.	9.75
+	ROUTED TO	RDD47	125.	16.00	45.	13.	6.	9.75
	HYDROGRAPH AT	DRD15	585.	12.33	123.	31.	15.	11.45
+	ROUTED TO	RDD15	340.	14.67	113.	31.	15.	11.45

+	HYDROGRAPH AT	D22	3946.	13.17	880.	220.	106.	7.72
+	6 COMBINED AT	CPD22	3727.	13.17	1426.	397.	191.	19.17
+	ROUTED TO	RCPD22	3164.	13.67	1404.	396.	191.	19.17
+	HYDROGRAPH AT	D33	693.	12.33	78.	19.	9.	.65
+	2 COMBINED AT	CPD33	3164.	13.67	1437.	414.	200.	19.82
+	2 COMBINED AT	D33RIV	11267.	13.33	8039.	3176.	1550.	152.03
+	ROUTED TO	RCPD33	11266.	13.33	8040.	3176.	1550.	152.03
+	HYDROGRAPH AT	D45	404.	12.17	32.	8.	4.	.26
+	HYDROGRAPH AT	G36	959.	12.50	115.	29.	14.	1.00
+	3 COMBINED AT	G36RIV	11279.	13.33	8054.	3201.	1562.	153.29
+	ROUTED TO	RCPG36	11054.	13.67	8032.	3201.	1562.	153.29
+	HYDROGRAPH AT	D44	445.	12.17	40.	10.	5.	.33
+	HYDROGRAPH AT	G37	534.	12.17	47.	12.	6.	.41
+	3 COMBINED AT	G37RIV	11054.	13.67	8032.	3218.	1570.	154.03
+	ROUTED TO	RCPG37	10983.	13.67	8014.	3216.	1569.	154.03
+	HYDROGRAPH AT	D43	247.	12.17	18.	4.	2.	.15
+	HYDROGRAPH AT	G12	986.	12.33	119.	30.	14.	1.03
+	DIVERSION TO	DVG12	638.	12.33	75.	19.	9.	1.03
+	HYDROGRAPH AT	DG12	348.	12.33	44.	11.	5.	1.03
+	ROUTED TO	RCPG12	247.	13.00	44.	11.	5.	1.03
+	HYDROGRAPH AT	G38	409.	12.33	39.	10.	5.	.34
+	2 COMBINED AT	CPG38	417.	12.33	83.	21.	10.	1.37
+	3 COMBINED AT	G38RIV	11043.	13.67	8028.	3232.	1577.	155.65
+	ROUTED TO	RCPG38	10846.	13.83	8004.	3232.	1577.	155.65
+	HYDROGRAPH AT	DRG12	638.	12.33	75.	19.	9.	1.03
+	ROUTED TO	RDG12	476.	12.83	75.	19.	9.	1.03
+	HYDROGRAPH AT	G39	612.	12.50	89.	22.	11.	.76
+	2 COMBINED AT	CPG39	1000.	12.67	162.	41.	20.	1.79

+	HYDROGRAPH AT	D34	1432.	12.33	150.	38.	18.	1.20
+	ROUTED TO	RCPD34	1080.	12.67	150.	38.	18.	1.20
	HYDROGRAPH AT	D42	334.	12.17	24.	6.	3.	.21
+	2 COMBINED AT	CPD42	1080.	12.67	174.	43.	21.	1.41
+	3 COMBINED AT	D42RIV	10924.	13.83	8050.	3292.	1605.	157.72
+	ROUTED TO	RCPD42	10825.	14.00	8039.	3292.	1605.	157.72
+	HYDROGRAPH AT	D41	428.	12.17	37.	9.	4.	.29
+	2 COMBINED AT	D41RIV	10825.	14.00	8039.	3299.	1609.	158.01
+	ROUTED TO	RCPD41	10827.	14.00	8038.	3298.	1608.	158.01
+	HYDROGRAPH AT	G02	2401.	12.33	370.	114.	55.	2.06
+	HYDROGRAPH AT	G03	2847.	12.33	469.	147.	71.	2.46
+	2 COMBINED AT	CPG03	5219.	12.33	834.	260.	125.	4.52
+	ROUTED TO	RCPG03	4060.	12.83	834.	259.	125.	4.52
+	HYDROGRAPH AT	DRG08	204.	12.33	19.	5.	2.	.40
	ROUTED TO	RDG08	117.	13.00	19.	5.	2.	.40
+	HYDROGRAPH AT	G09	674.	12.50	81.	20.	10.	.70
+	3 COMBINED AT	CPG09	4393.	12.83	929.	283.	137.	5.63
+	ROUTED TO	RCPG09	3956.	13.17	928.	282.	137.	5.63
+	HYDROGRAPH AT	G48	2724.	12.17	447.	148.	71.	1.91
+	ROUTED TO	RCPG48	1865.	12.67	447.	148.	71.	1.91
+	HYDROGRAPH AT	G01	1314.	12.50	177.	44.	21.	1.58
+	2 COMBINED AT	CPG01	3003.	12.67	621.	191.	92.	3.49
+	HYDROGRAPH AT	G10	522.	12.33	51.	13.	6.	.44
+	2 COMBINED AT	CPG10	3230.	12.50	671.	204.	98.	3.93
+	ROUTED TO	RCPG10	2729.	13.17	670.	203.	98.	3.93
+	HYDROGRAPH AT	G11	731.	12.33	70.	17.	8.	.61
	3 COMBINED AT	CPG11	6630.	13.17	1655.	499.	242.	10.16
+	DIVERSION TO	DVG11	3000.	13.17	692.	201.	97.	10.16

+	HYDROGRAPH AT	DG11	3630.	13.17	964.	298.	144.	10.16
+	ROUTED TO	RCPG11	3052.	13.83	962.	297.	144.	10.16
+	HYDROGRAPH AT	G40	1427.	12.50	175.	44.	21.	1.52
+	2 COMBINED AT	CPG40	3052.	13.83	1133.	340.	165.	11.68
+	2 COMBINED AT	G40RIV	13145.	14.00	8728.	3545.	1734.	169.30
+	ROUTED TO	RCPG40	13001.	14.17	8720.	3545.	1734.	169.30
+	HYDROGRAPH AT	G41	515.	12.33	49.	12.	6.	.42
+	HYDROGRAPH AT	D40	379.	12.17	29.	7.	4.	.23
+	3 COMBINED AT	D40RIV	13001.	14.17	8720.	3560.	1741.	169.95
+	ROUTED TO	RCPD40	12916.	14.17	8703.	3558.	1741.	169.95
+	HYDROGRAPH AT	D36	391.	12.17	32.	8.	4.	.25
+	HYDROGRAPH AT	D35	984.	12.50	137.	34.	17.	1.18
+	2 COMBINED AT	CPD35	1069.	12.50	169.	42.	20.	1.43
+	ROUTED TO	RCPD35	890.	13.00	169.	42.	20.	1.43
+	HYDROGRAPH AT	D37	353.	12.33	35.	9.	4.	.28
+	2 COMBINED AT	CPD37	900.	13.00	203.	51.	24.	1.71
+	HYDROGRAPH AT	D38	472.	12.33	46.	12.	6.	.37
+	2 COMBINED AT	CPD38	907.	13.00	248.	62.	30.	2.07
+	ROUTED TO	RCPD38	834.	13.33	247.	62.	30.	2.07
+	HYDROGRAPH AT	D39	391.	12.33	39.	10.	5.	.29
+	2 COMBINED AT	CPD39	834.	13.33	285.	71.	34.	2.36
+	2 COMBINED AT	D39RIV	13209.	14.17	8817.	3608.	1765.	172.31
+	ROUTED TO	RCPD39	13099.	14.33	8805.	3608.	1765.	172.31
+	HYDROGRAPH AT	DRG11	3000.	13.17	692.	201.	97.	10.16
+	ROUTED TO	RDG11	2380.	14.00	691.	201.	97.	10.16
+	HYDROGRAPH AT	G42	665.	12.33	81.	20.	10.	.69
+	2 COMBINED AT	CPG42	2380.	14.00	769.	220.	107.	10.85
+	2 COMBINED AT	G42RIV	14820.	14.33	9313.	3778.	1850.	173.01

+	ROUTED TO	RCPG42	14785.	14.33	9307.	3778.	1850.	173.01
+	HYDROGRAPH AT	C50	230.	12.50	45.	11.	5.	.32
	ROUTED TO	RCPC50	175.	13.67	45.	11.	5.	.32
+	HYDROGRAPH AT	C51	211.	12.83	52.	13.	6.	.33
+	2 COMBINED AT	CPC51	282.	13.50	96.	24.	12.	.65
+	ROUTED TO	RCPC51	267.	13.83	95.	24.	12.	.65
+	HYDROGRAPH AT	C52	184.	12.83	47.	12.	6.	.29
+	ROUTED TO	RCPC52	171.	13.33	46.	12.	6.	.29
+	HYDROGRAPH AT	C53	188.	12.83	46.	12.	6.	.29
+	ROUTED TO	RCPC53	171.	13.33	46.	12.	6.	.29
+	HYDROGRAPH AT	B07	227.	12.67	53.	13.	6.	.34
+	4 COMBINED AT	CPB07	701.	13.17	237.	60.	29.	1.57
+	ROUTED TO	RCPB07	625.	14.00	232.	60.	29.	1.57
+	HYDROGRAPH AT	B08	243.	12.83	61.	15.	7.	.43
	2 COMBINED AT	CPB08	688.	14.00	287.	75.	36.	2.00
+	2 COMBINED AT	B08RIV	15265.	14.33	9501.	3835.	1877.	175.01
+	ROUTED TO	RCPB08	15263.	14.33	9500.	3835.	1877.	175.01
+	HYDROGRAPH AT	DRC13	463.	12.33	55.	14.	7.	.95
+	ROUTED TO	RDC13	313.	12.83	55.	14.	7.	.95
+	HYDROGRAPH AT	DRC31	80.	12.33	18.	4.	2.	1.35
+	ROUTED TO	RDC31	64.	13.33	18.	4.	2.	1.35
+	HYDROGRAPH AT	DRC14	254.	12.33	47.	12.	6.	1.57
+	ROUTED TO	RDC14	204.	13.00	47.	12.	6.	1.57
+	HYDROGRAPH AT	DRC10	126.	12.33	29.	7.	4.	2.87
+	ROUTED TO	RDC10	113.	13.00	29.	7.	4.	2.87
+	HYDROGRAPH AT	DRC30	253.	12.67	66.	17.	8.	3.78
	ROUTED TO	RDC30	242.	12.83	65.	17.	8.	3.78
+	5 COMBINED AT	CPC33A	859.	13.00	212.	54.	26.	3.78

+	ROUTED TO	RC33A	676.	14.00	203.	54.	26.	3.78
+	HYDROGRAPH AT	DRC29	138.	12.83	24.	6.	3.	6.79
+	ROUTED TO	RDC29	95.	14.00	24.	6.	3.	6.79
+	HYDROGRAPH AT	DRC28	513.	12.83	138.	35.	17.	6.84
+	ROUTED TO	RDC28	445.	14.00	137.	35.	17.	6.84
+	HYDROGRAPH AT	DRC27	168.	12.83	58.	15.	7.	7.05
+	ROUTED TO	RDC27	165.	13.17	57.	15.	7.	7.05
+	HYDROGRAPH AT	DRC20	218.	12.67	72.	18.	9.	8.08
+	ROUTED TO	RDC20	213.	13.17	71.	18.	9.	8.08
+	4 COMBINED AT	CPC33B	810.	13.83	287.	73.	35.	8.08
+	ROUTED TO	RC33B	792.	14.17	285.	73.	35.	8.08
+	HYDROGRAPH AT	DRC24	1382.	12.33	204.	51.	25.	9.65
+	ROUTED TO	RDC24	1101.	12.67	204.	51.	25.	9.65
+	HYDROGRAPH AT	DRC25	85.	12.17	7.	2.	1.	.08
+	ROUTED TO	RDC25	46.	12.83	7.	2.	1.	.08
+	HYDROGRAPH AT	DRC26	538.	12.83	137.	34.	17.	8.18
+	ROUTED TO	RDC26	472.	14.00	137.	34.	17.	8.18
+	HYDROGRAPH AT	DRD09	405.	13.00	118.	30.	14.	4.30
+	ROUTED TO	RDD09	378.	13.33	116.	30.	14.	4.30
+	4 COMBINED AT	CPC33C	1550.	12.83	444.	112.	54.	13.95
+	ROUTED TO	RC33C	1479.	13.00	443.	112.	54.	13.95
+	2 COMBINED AT	CPC33D	1766.	13.83	719.	183.	88.	13.95
+	ROUTED TO	RC33D	1746.	14.00	714.	183.	88.	13.95
+	2 COMBINED AT	CPC33E	2392.	14.00	907.	235.	113.	13.95
+	ROUTED TO	RC33E	2325.	14.33	899.	235.	113.	13.95
+	HYDROGRAPH AT	DRD12	144.	12.17	31.	8.	4.	4.43
+	ROUTED TO	RDD12	91.	14.67	30.	8.	4.	4.43
+	2 COMBINED AT	CPC33F	2393.	14.33	925.	242.	117.	14.08

+	ROUTED TO	RC33F	2358.	14.50	920.	242.	117.	14.08
+	HYDROGRAPH AT	C33	13221.	13.17	2894.	723.	348.	32.50
	2 COMBINED AT	CPC33	12865.	13.17	3556.	910.	438.	46.58
+	ROUTED TO	RCPC33	10409.	13.83	3510.	910.	438.	46.58
+	HYDROGRAPH AT	C34	651.	12.50	87.	22.	11.	.83
+	2 COMBINED AT	CPC34A	10409.	13.83	3554.	927.	446.	47.41
+	HYDROGRAPH AT	C35	4952.	12.50	586.	146.	71.	5.83
+	ROUTED TO	RCPC35	4778.	12.50	586.	146.	71.	5.83
+	2 COMBINED AT	CPC34	10409.	13.83	4012.	1045.	503.	53.24
+	ROUTED TO	RCPC34	9823.	14.17	3961.	1037.	499.	53.24
+	HYDROGRAPH AT	C36	2666.	12.50	338.	85.	41.	3.06
+	2 COMBINED AT	CPC36	9823.	14.17	4225.	1108.	534.	56.30
+	ROUTED TO	RCPC36	9463.	14.33	4189.	1101.	530.	56.30
+	HYDROGRAPH AT	C49	320.	12.17	24.	6.	3.	.19
	2 COMBINED AT	CPC49	9463.	14.33	4201.	1106.	533.	56.49
+	ROUTED TO	RCPC49	9198.	14.50	4193.	1106.	533.	56.49
+	HYDROGRAPH AT	C40	225.	12.17	16.	4.	2.	.17
+	DIVERSION TO	DVC40	40.	12.17	2.	0.	0.	.17
+	HYDROGRAPH AT	DC40	185.	12.17	14.	3.	2.	.17
+	ROUTED TO	RCPC40	143.	12.33	14.	3.	2.	.17
+	HYDROGRAPH AT	C41	112.	12.00	7.	2.	1.	.08
+	DIVERSION TO	DVC41	37.	12.00	2.	1.	0.	.08
+	HYDROGRAPH AT	DC41	74.	12.00	5.	1.	1.	.08
+	ROUTED TO	RCPC41	45.	12.33	5.	1.	1.	.08
+	HYDROGRAPH AT	C42	161.	12.17	11.	3.	1.	.11
+	3 COMBINED AT	CPC42	271.	12.17	29.	7.	4.	.36
	DIVERSION TO	DVC42A	108.	12.17	11.	3.	1.	.36
+	HYDROGRAPH AT	DC42A	163.	12.17	18.	4.	2.	.36

+	DIVERSION TO	DVC42B	82.	12.17	9.	2.	1.	.36
+	HYDROGRAPH AT	DC42B	81.	12.17	9.	2.	1.	.36
+	ROUTED TO	RCPC42	50.	12.83	9.	2.	1.	.36
+	HYDROGRAPH AT	DRC41	37.	12.00	2.	1.	0.	.08
+	ROUTED TO	RDC41	12.	13.33	2.	1.	0.	.08
+	HYDROGRAPH AT	C46	245.	12.50	30.	7.	4.	.25
+	3 COMBINED AT	CPC46	270.	12.50	41.	10.	5.	.60
+	DIVERSION TO	DVC46	71.	12.50	6.	1.	1.	.60
+	HYDROGRAPH AT	DC46	199.	12.50	35.	9.	4.	.60
+	ROUTED TO	RCPC46	163.	12.83	35.	9.	4.	.60
+	HYDROGRAPH AT	C37	1321.	12.67	199.	50.	24.	1.79
+	2 COMBINED AT	CPC37	1450.	12.67	233.	58.	28.	2.40
+	ROUTED TO	RCPC37	1265.	12.83	232.	58.	28.	2.40
+	HYDROGRAPH AT	C48	396.	12.17	32.	8.	4.	.25
+	2 COMBINED AT	CPC48A	1265.	12.83	264.	66.	32.	2.65
+	2 COMBINED AT	CPC48	9198.	14.50	4381.	1156.	557.	59.14
+	ROUTED TO	RCPC48	9182.	14.50	4378.	1156.	557.	59.14
+	HYDROGRAPH AT	C39	168.	12.17	11.	3.	1.	.13
+	DIVERSION TO	DVC39	69.	12.17	4.	1.	1.	.13
+	HYDROGRAPH AT	DC39	98.	12.17	6.	2.	1.	.13
+	ROUTED TO	RCPC39	44.	12.67	6.	2.	1.	.13
+	HYDROGRAPH AT	DRC40	40.	12.17	2.	0.	0.	.17
+	ROUTED TO	RDC40	17.	12.50	2.	0.	0.	.17
+	HYDROGRAPH AT	C43	281.	12.17	18.	5.	2.	.21
+	3 COMBINED AT	CPC43	287.	12.17	26.	7.	3.	.51
+	DIVERSION TO	DVC43	107.	12.17	10.	2.	1.	.51
+	HYDROGRAPH AT	DC43	180.	12.17	17.	4.	2.	.51
+	ROUTED TO	RCPC43	98.	12.50	17.	4.	2.	.51

+	HYDROGRAPH AT	DRC42A	108.	12.17	11.	3.	1.	.36
+	ROUTED TO	RDC42A	79.	12.50	11.	3.	1.	.36
+	HYDROGRAPH AT	C45	214.	12.17	16.	4.	2.	.13
+	2 COMBINED AT	CPC45	241.	12.17	27.	7.	3.	.48
+	DIVERSION TO	DVC45	129.	12.17	14.	4.	2.	.48
+	HYDROGRAPH AT	DC45	112.	12.17	13.	3.	2.	.48
+	ROUTED TO	RCPC45	96.	12.17	13.	3.	2.	.48
+	HYDROGRAPH AT	C44	303.	12.17	24.	6.	3.	.17
+	3 COMBINED AT	CPC44	411.	12.17	53.	13.	6.	.99
+	ROUTED TO	RCPC44	236.	13.00	52.	13.	6.	.99
+	HYDROGRAPH AT	DRC39	69.	12.17	4.	1.	1.	.13
+	ROUTED TO	RDC39	25.	13.17	4.	1.	1.	.13
+	HYDROGRAPH AT	DRC43	107.	12.17	10.	2.	1.	.51
+	ROUTED TO	RDC43	62.	12.50	10.	2.	1.	.51
+	HYDROGRAPH AT	C38	602.	12.50	70.	18.	8.	.69
+	3 COMBINED AT	CPC38	660.	12.50	84.	21.	10.	1.19
+	ROUTED TO	RCPC38	489.	13.17	83.	21.	10.	1.19
+	HYDROGRAPH AT	DRC42B	82.	12.17	9.	2.	1.	.36
+	ROUTED TO	RDC42B	33.	14.17	9.	2.	1.	.36
+	HYDROGRAPH AT	DRC45	129.	12.17	14.	4.	2.	.48
+	ROUTED TO	RDC45	61.	13.17	14.	4.	2.	.48
+	HYDROGRAPH AT	DRC46	71.	12.50	6.	1.	1.	.60
+	ROUTED TO	RDC46	26.	13.67	6.	1.	1.	.60
+	HYDROGRAPH AT	C47	1060.	12.50	132.	33.	16.	1.00
+	6 COMBINED AT	CPC47A	1104.	12.50	290.	73.	35.	2.92
+	2 COMBINED AT	CPC47	9267.	14.50	4588.	1212.	584.	61.46
	ROUTED TO	RCPC47	8651.	15.17	4549.	1212.	584.	61.46
+	HYDROGRAPH AT	B09	245.	12.33	30.	7.	4.	.26

+	2 COMBINED AT	CPB09	8651.	15.17	4554.	1218.	587.	61.72
+	ROUTED TO	RCPB09	8632.	15.17	4551.	1217.	586.	61.72
+	HYDROGRAPH AT	B01	3076.	12.50	405.	101.	49.	5.16
+	ROUTED TO	RCPB01	1552.	14.17	390.	101.	49.	5.16
+	HYDROGRAPH AT	B02	2815.	12.50	341.	85.	41.	3.58
+	ROUTED TO	RCPB02	2130.	12.83	340.	85.	41.	3.58
+	HYDROGRAPH AT	B03	6306.	12.83	1137.	284.	137.	13.22
+	3 COMBINED AT	CPB03	7922.	12.83	1727.	439.	211.	21.96
+	DIVERSION TO	DVB03A	3251.	12.83	585.	147.	71.	21.96
+	HYDROGRAPH AT	DB03A	4672.	12.83	1142.	293.	141.	21.96
+	DIVERSION TO	DVB03B	542.	12.83	78.	20.	9.	21.96
+	HYDROGRAPH AT	DB03B	4129.	12.83	1064.	273.	132.	21.96
+	ROUTED TO	RCPB03	3789.	13.00	1061.	273.	132.	21.96
+	HYDROGRAPH AT	B13	268.	12.00	19.	5.	2.	.16
+	2 COMBINED AT	CPB13	3789.	13.00	1076.	277.	134.	22.11
+	DIVERSION TO	DVB13	3061.	13.00	871.	225.	108.	22.11
+	HYDROGRAPH AT	DB13	725.	13.00	205.	53.	25.	22.11
+	ROUTED TO	RCPB13	657.	13.33	203.	53.	25.	22.11
+	HYDROGRAPH AT	B04	851.	12.33	103.	26.	12.	.85
+	ROUTED TO	RCPB04	716.	12.67	103.	26.	12.	.85
+	HYDROGRAPH AT	B05	651.	12.33	69.	17.	8.	.53
+	3 COMBINED AT	CPB05	1109.	12.67	356.	91.	44.	23.49
+	ROUTED TO	RCPB05	948.	13.67	344.	91.	44.	23.49
+	HYDROGRAPH AT	B06	753.	12.33	74.	19.	9.	.57
+	ROUTED TO	RCPB06	367.	13.33	74.	19.	9.	.57
+	HYDROGRAPH AT	B10	746.	12.33	74.	18.	9.	.55
+	3 COMBINED AT	CPB10	1232.	13.50	463.	125.	60.	24.61
+	HYDROGRAPH AT	B11	327.	12.17	32.	8.	4.	.24

+	2 COMBINED AT	CPB11	1232.	13.50	491.	132.	63.	24.85
+	ROUTED TO	RCPB11	1090.	14.17	483.	132.	63.	24.85
	HYDROGRAPH AT	B12	385.	12.33	43.	11.	5.	.33
+	2 COMBINED AT	CPB12A	1088.	14.17	515.	141.	68.	25.18
+	2 COMBINED AT	CPB12	8864.	15.17	4810.	1301.	627.	86.90
+	HYDROGRAPH AT	H02	2638.	12.17	381.	127.	61.	1.58
+	ROUTED TO	RCPH02	1984.	12.33	381.	126.	61.	1.58
+	HYDROGRAPH AT	H01	2199.	12.17	258.	77.	37.	1.61
+	2 COMBINED AT	CPH01	4064.	12.33	635.	202.	98.	3.20
+	DIVERSION TO	DVH01	1676.	12.33	336.	111.	54.	3.20
+	HYDROGRAPH AT	DH01	2388.	12.33	300.	91.	44.	3.20
+	ROUTED TO	RCPH01	1884.	12.50	299.	91.	44.	3.20
+	HYDROGRAPH AT	H24	663.	12.17	48.	12.	6.	.42
+	2 COMBINED AT	CPH24	1926.	12.50	346.	103.	50.	3.61
	ROUTED TO	RCPH24	1633.	12.83	345.	103.	50.	3.61
+	HYDROGRAPH AT	H55	521.	12.17	39.	10.	5.	.34
+	2 COMBINED AT	CPH55	1633.	12.83	384.	112.	54.	3.95
+	ROUTED TO	RCPH55	1389.	13.33	383.	112.	54.	3.95
+	HYDROGRAPH AT	H56	569.	12.17	46.	11.	5.	.40
+	2 COMBINED AT	CPH56	1388.	13.33	427.	123.	60.	4.35
+	ROUTED TO	RCPH56	1257.	13.67	425.	123.	60.	4.35
+	HYDROGRAPH AT	H57	606.	12.17	49.	12.	6.	.42
+	2 COMBINED AT	CPH57	1257.	13.67	470.	135.	65.	4.77
+	ROUTED TO	RCPH57	1131.	14.17	466.	134.	65.	4.77
+	HYDROGRAPH AT	H68	532.	12.17	39.	10.	5.	.34
+	2 COMBINED AT	CPH68	1131.	14.17	499.	144.	70.	5.11
	3 COMBINED AT	B12RIV	21366.	14.50	13664.	4974.	2427.	262.59
+	ROUTED TO	RCPB12	21301.	14.67	13647.	4974.	2427.	262.59

+	HYDROGRAPH AT	DRH01	1676.	12.33	336.	111.	54.	3.20
+	ROUTED TO	RDH01	1529.	12.50	336.	110.	54.	3.20
+	HYDROGRAPH AT	H25	503.	12.17	36.	9.	4.	.32
+	2 COMBINED AT	CPH25	1562.	12.50	371.	119.	58.	3.51
+	ROUTED TO	RCPH25	1452.	12.83	370.	119.	58.	3.51
+	HYDROGRAPH AT	H58	470.	12.17	35.	9.	4.	.31
+	2 COMBINED AT	CPH58	1452.	12.83	404.	128.	62.	3.82
+	ROUTED TO	RCPH58	1358.	13.00	404.	127.	62.	3.82
+	HYDROGRAPH AT	H26	858.	12.33	86.	22.	10.	.75
+	ROUTED TO	RCPH26	704.	12.50	86.	22.	10.	.75
+	HYDROGRAPH AT	H59	615.	12.17	44.	11.	5.	.39
+	3 COMBINED AT	CPH59	1626.	12.83	531.	159.	77.	4.96
+	DIVERSION TO	DVH59	836.	12.83	280.	86.	42.	4.96
+	HYDROGRAPH AT	DH59	790.	12.83	252.	73.	36.	4.96
+	ROUTED TO	RCPH59	741.	13.33	251.	73.	36.	4.96
+	HYDROGRAPH AT	H60	668.	12.33	63.	16.	8.	.55
+	2 COMBINED AT	CPH60	741.	13.33	312.	89.	43.	5.51
+	ROUTED TO	RCPH60	705.	13.83	308.	88.	43.	5.51
+	HYDROGRAPH AT	DRH59	836.	12.83	280.	86.	42.	4.96
+	ROUTED TO	RDH59	771.	13.33	279.	86.	42.	4.96
+	HYDROGRAPH AT	H61	577.	12.33	55.	14.	7.	.47
+	2 COMBINED AT	CPH61	771.	13.33	333.	99.	48.	5.43
+	ROUTED TO	RCPH61	731.	13.83	330.	99.	48.	5.43
+	HYDROGRAPH AT	H69	758.	12.17	61.	15.	7.	.53
+	3 COMBINED AT	CPH69	1434.	13.83	692.	202.	98.	6.51
+	2 COMBINED AT	H69RIV	22119.	14.50	14080.	5128.	2502.	265.90
+	ROUTED TO	RCPH69	22126.	14.67	14075.	5128.	2502.	265.90
+	HYDROGRAPH AT	H65	507.	12.33	49.	12.	6.	.42

+	ROUTED TO	RCPH65	297.	13.00	48.	12.	6.	.42
+	HYDROGRAPH AT	H67	270.	12.17	22.	5.	3.	.19
	2 COMBINED AT	CPH67	297.	13.00	70.	17.	8.	.60
+	ROUTED TO	RCPH67	232.	13.67	69.	17.	8.	.60
+	HYDROGRAPH AT	H70	599.	12.33	57.	14.	7.	.49
+	2 COMBINED AT	CPH70	598.	12.33	125.	32.	15.	1.10
+	HYDROGRAPH AT	B15	824.	12.33	82.	21.	10.	.64
+	3 COMBINED AT	B15RIV	22193.	14.67	14114.	5163.	2519.	267.64
+	ROUTED TO	RCPB15	22006.	14.83	14097.	5163.	2519.	267.64
+	HYDROGRAPH AT	DRB13	3061.	13.00	871.	225.	108.	22.11
+	ROUTED TO	RDB13	2747.	13.50	861.	225.	108.	22.11
+	HYDROGRAPH AT	B14	500.	12.33	51.	13.	6.	.39
+	2 COMBINED AT	CPB14	2747.	13.50	899.	236.	114.	22.50
+	HYDROGRAPH AT	B21	409.	12.17	38.	10.	5.	.31
	2 COMBINED AT	CPB21	2747.	13.50	932.	245.	118.	22.82
+	ROUTED TO	RCPB21	2583.	14.17	915.	244.	118.	22.82
+	HYDROGRAPH AT	B45	986.	12.50	120.	30.	14.	.96
+	2 COMBINED AT	CPB45	2583.	14.17	999.	271.	131.	23.78
+	2 COMBINED AT	B45RIV	23469.	14.67	14814.	5379.	2623.	269.31
+	ROUTED TO	RCPB45	23460.	14.67	14814.	5379.	2623.	269.31
+	HYDROGRAPH AT	H22	2281.	12.17	232.	68.	33.	1.46
+	ROUTED TO	RCPH22	1623.	12.33	232.	68.	33.	1.46
+	HYDROGRAPH AT	H03	2429.	12.17	342.	114.	55.	1.42
+	ROUTED TO	RCPH03	1972.	12.17	342.	114.	55.	1.42
+	HYDROGRAPH AT	H21	1362.	12.17	145.	45.	22.	.76
+	2 COMBINED AT	CPH21	3317.	12.17	484.	158.	76.	2.19
	ROUTED TO	RCPH21	2494.	12.50	483.	157.	76.	2.19
+	HYDROGRAPH AT	H23	894.	12.17	79.	20.	9.	.71

+	3 COMBINED AT	CPH23	4654.	12.33	788.	244.	118.	4.35
+	ROUTED TO	RCPH23	3790.	12.67	787.	243.	118.	4.35
+	HYDROGRAPH AT	H27	561.	12.17	43.	11.	5.	.38
+	ROUTED TO	RCPH27	331.	12.50	43.	11.	5.	.38
+	HYDROGRAPH AT	H62	757.	12.17	57.	14.	7.	.49
+	3 COMBINED AT	CPH62	4097.	12.67	884.	268.	130.	5.23
+	ROUTED TO	RCPH62	3712.	12.83	883.	267.	130.	5.23
+	HYDROGRAPH AT	H20	750.	12.17	58.	15.	7.	.52
+	ROUTED TO	RCPH20	465.	12.50	58.	15.	7.	.52
+	HYDROGRAPH AT	H28	1025.	12.17	82.	20.	10.	.72
+	2 COMBINED AT	CPH28	1156.	12.17	139.	35.	17.	1.24
+	ROUTED TO	RCPH28	973.	12.50	139.	35.	17.	1.24
+	HYDROGRAPH AT	H63	270.	12.17	20.	5.	2.	.17
+	3 COMBINED AT	CPH63	4228.	12.83	1037.	306.	148.	6.64
+	DIVERSION TO	DVH63	1608.	12.83	328.	82.	40.	6.64
+	HYDROGRAPH AT	DH63	2620.	12.83	709.	224.	109.	6.64
+	ROUTED TO	RCPH63	2320.	13.17	706.	223.	109.	6.64
+	HYDROGRAPH AT	H66	776.	12.33	84.	21.	10.	.72
+	2 COMBINED AT	CPH66	2340.	13.17	786.	244.	118.	7.36
+	ROUTED TO	RCPH66	2174.	13.67	780.	243.	118.	7.36
+	HYDROGRAPH AT	H71	929.	12.17	74.	19.	9.	.65
+	2 COMBINED AT	CPH71	2173.	13.67	844.	262.	127.	8.01
+	ROUTED TO	RCPH71	2111.	13.83	838.	261.	127.	8.01
+	HYDROGRAPH AT	H72	688.	12.17	50.	12.	6.	.42
+	2 COMBINED AT	CPH72	2111.	13.83	880.	273.	133.	8.43
+	2 COMBINED AT	H72RIV	24545.	14.67	15386.	5578.	2723.	277.74
+	ROUTED TO	RCPH72	24209.	15.00	15355.	5577.	2723.	277.74
+	HYDROGRAPH AT	B20	282.	12.17	21.	5.	3.	.18

+	ROUTED TO	RCPB20	109.	13.33	21.	5.	3.	.18
+	HYDROGRAPH AT	B44	469.	12.33	47.	12.	6.	.38
	2 COMBINED AT	CPB44	468.	12.33	68.	17.	8.	.55
+	ROUTED TO	RCPB44	339.	12.83	67.	17.	8.	.55
+	HYDROGRAPH AT	B42	304.	12.17	24.	6.	3.	.20
+	ROUTED TO	RCPB42	154.	12.83	24.	6.	3.	.20
+	HYDROGRAPH AT	B43	270.	12.17	24.	6.	3.	.17
+	2 COMBINED AT	CPB43	270.	12.17	47.	12.	6.	.37
+	HYDROGRAPH AT	B41	467.	12.33	54.	14.	7.	.44
+	2 COMBINED AT	CPB41	687.	12.33	101.	25.	12.	.82
+	ROUTED TO	RCPB41	538.	12.83	100.	25.	12.	.82
+	HYDROGRAPH AT	B46	1022.	12.50	136.	34.	16.	1.06
+	3 COMBINED AT	CPB46	1574.	12.67	299.	75.	36.	2.43
+	2 COMBINED AT	B46RIV	24246.	15.00	15397.	5629.	2748.	280.17
	ROUTED TO	RCPB46	24225.	15.17	15396.	5629.	2748.	280.17
+	HYDROGRAPH AT	DRH63	1608.	12.83	328.	82.	40.	6.64
+	ROUTED TO	RDH63	1416.	13.17	328.	82.	40.	6.64
+	HYDROGRAPH AT	H53	454.	12.33	45.	11.	5.	.39
+	2 COMBINED AT	CPH53	1423.	13.17	371.	93.	45.	7.02
+	HYDROGRAPH AT	H18	669.	12.17	49.	12.	6.	.44
+	ROUTED TO	RCPH18	276.	13.17	49.	12.	6.	.44
+	HYDROGRAPH AT	H29	994.	12.50	120.	30.	15.	1.04
+	2 COMBINED AT	CPH29	1004.	12.50	168.	42.	20.	1.48
+	HYDROGRAPH AT	H04	1444.	12.17	188.	59.	29.	1.06
+	ROUTED TO	RCPH04	1045.	12.33	188.	59.	29.	1.06
+	HYDROGRAPH AT	H17	842.	12.17	66.	17.	8.	.58
	2 COMBINED AT	CPH17	1562.	12.33	253.	76.	37.	1.64
+	DIVERSION TO	DVH17	875.	12.33	138.	41.	20.	1.64

+	HYDROGRAPH AT	DH17	687.	12.33	115.	35.	17.	1.64
+	ROUTED TO	RCPH17	553.	12.67	115.	35.	17.	1.64
+	HYDROGRAPH AT	H30	681.	12.17	54.	14.	7.	.48
+	2 COMBINED AT	CPH30	798.	12.17	168.	48.	23.	2.12
+	ROUTED TO	RCPH30	664.	12.67	168.	48.	23.	2.12
+	HYDROGRAPH AT	H51	489.	12.17	35.	9.	4.	.30
+	2 COMBINED AT	CPH51	703.	12.17	202.	56.	27.	2.42
+	ROUTED TO	RCPH51	647.	12.83	202.	56.	27.	2.42
+	HYDROGRAPH AT	H52	349.	12.17	26.	7.	3.	.22
+	2 COMBINED AT	CPH52A	647.	12.83	228.	63.	30.	2.64
+	3 COMBINED AT	CPH52B	2316.	13.17	752.	194.	94.	11.14
+	ROUTED TO	RCPH52	2243.	13.33	751.	194.	94.	11.14
+	HYDROGRAPH AT	H54	342.	12.17	25.	6.	3.	.21
+	2 COMBINED AT	CPH54	2243.	13.33	774.	200.	97.	11.36
+	ROUTED TO	RCPH54	2160.	13.50	771.	200.	96.	11.36
+	HYDROGRAPH AT	H16	613.	12.17	83.	27.	13.	.37
+	ROUTED TO	RCPH16	618.	12.17	83.	27.	13.	.37
+	HYDROGRAPH AT	H05	1450.	12.33	179.	55.	26.	1.14
+	2 COMBINED AT	CPH05	2009.	12.17	261.	81.	39.	1.51
+	ROUTED TO	RCPH05	1604.	12.50	261.	81.	39.	1.51
+	HYDROGRAPH AT	H31	573.	12.17	42.	10.	5.	.37
+	2 COMBINED AT	CPH31	1658.	12.50	301.	91.	44.	2.09
+	DIVERSION TO	DVH31	872.	12.50	155.	47.	23.	2.09
+	HYDROGRAPH AT	DH31	786.	12.50	146.	44.	21.	2.09
+	ROUTED TO	RCPH31	623.	12.83	146.	44.	21.	2.09
+	HYDROGRAPH AT	DRH17	875.	12.33	138.	41.	20.	1.64
+	ROUTED TO	RDH17	630.	12.83	138.	41.	20.	1.64
+	HYDROGRAPH AT	H32	831.	12.33	82.	21.	10.	.71

+	3 COMBINED AT	CPH32	1333.	12.83	363.	105.	51.	4.23
+	DIVERSION TO	DVH32	609.	12.83	159.	45.	22.	4.23
	HYDROGRAPH AT	DH32	724.	12.83	203.	60.	29.	4.23
+	ROUTED TO	RCPH32	659.	13.33	203.	60.	29.	4.23
+	HYDROGRAPH AT	DRH32	609.	12.83	159.	45.	22.	4.23
+	ROUTED TO	RDH32	568.	13.17	159.	45.	22.	4.23
+	HYDROGRAPH AT	H48	460.	12.17	39.	10.	5.	.33
+	2 COMBINED AT	CPH48	568.	13.17	197.	54.	26.	4.57
+	DIVERSION TO	DVH48	259.	13.17	85.	23.	11.	4.57
+	HYDROGRAPH AT	DH48	308.	13.17	112.	32.	15.	4.57
+	ROUTED TO	RCPH48	294.	13.50	112.	31.	15.	4.57
+	HYDROGRAPH AT	H50	648.	12.33	72.	18.	9.	.63
+	3 COMBINED AT	CPH50	955.	13.33	384.	109.	53.	5.19
+	ROUTED TO	RCPH50	940.	13.50	384.	109.	53.	5.19
	HYDROGRAPH AT	DRH48	259.	13.17	85.	23.	11.	4.57
+	ROUTED TO	RDH48	247.	13.50	85.	23.	11.	4.57
+	HYDROGRAPH AT	H49	579.	12.33	55.	14.	7.	.48
+	2 COMBINED AT	CPH49	621.	12.33	139.	36.	18.	5.04
+	ROUTED TO	RCPH49	518.	12.50	138.	36.	18.	5.04
+	HYDROGRAPH AT	H73	455.	12.17	33.	8.	4.	.29
+	4 COMBINED AT	CPH73	3189.	13.50	1279.	341.	165.	15.68
+	ROUTED TO	RCPH73	3044.	14.00	1262.	341.	165.	15.68
+	HYDROGRAPH AT	H74	1255.	12.17	93.	23.	11.	.80
+	2 COMBINED AT	CPH74	3044.	14.00	1323.	363.	175.	16.48
+	2 COMBINED AT	H74RIV	25740.	15.00	16273.	5893.	2876.	290.02
+	ROUTED TO	RCPH74	25487.	15.17	16251.	5893.	2875.	290.02
	HYDROGRAPH AT	H15	1340.	12.17	140.	43.	21.	.77
+	ROUTED TO	RCPH15	712.	12.83	140.	43.	21.	.77

+	HYDROGRAPH AT	DRH31	872.	12.50	155.	47.	23.	2.09
+	ROUTED TO	RDH31	608.	13.17	154.	47.	23.	2.09
+	HYDROGRAPH AT	H33	1065.	12.33	124.	31.	15.	1.08
+	3 COMBINED AT	CPH33	1506.	12.50	414.	119.	58.	3.74
+	DIVERSION TO	DVH33	810.	12.50	214.	58.	28.	3.74
+	HYDROGRAPH AT	DH33	696.	12.50	200.	61.	30.	3.74
+	ROUTED TO	RCPH33	618.	13.17	200.	61.	30.	3.74
+	HYDROGRAPH AT	H47	613.	12.17	44.	11.	5.	.38
+	2 COMBINED AT	CPH47	643.	12.17	242.	72.	35.	4.12
+	ROUTED TO	RCPH47	587.	13.50	241.	72.	35.	4.12
+	HYDROGRAPH AT	H75	480.	12.67	101.	25.	12.	.75
+	2 COMBINED AT	CPH75	858.	12.50	340.	97.	47.	4.87
+	ROUTED TO	RCPH75	805.	13.00	338.	97.	47.	4.87
+	HYDROGRAPH AT	H76	1116.	12.17	86.	22.	10.	.75
+	2 COMBINED AT	CPH76	1157.	12.17	420.	118.	57.	5.62
+	ROUTED TO	RCPH76	854.	12.50	418.	118.	57.	5.62
+	HYDROGRAPH AT	H77	448.	12.17	33.	8.	4.	.27
+	2 COMBINED AT	CPH77	956.	12.33	448.	125.	61.	5.89
+	2 COMBINED AT	H77RIV	25767.	15.17	16451.	5982.	2919.	294.03
+	ROUTED TO	RCPH77	25476.	15.33	16433.	5982.	2919.	294.03
+	HYDROGRAPH AT	B40	192.	12.33	17.	4.	2.	.18
+	ROUTED TO	RCPB40	99.	13.00	17.	4.	2.	.18
+	HYDROGRAPH AT	B49	377.	12.17	38.	9.	5.	.27
+	ROUTED TO	RCPB49	302.	12.33	38.	9.	5.	.27
+	HYDROGRAPH AT	B50	334.	12.33	35.	9.	4.	.27
+	3 COMBINED AT	CPB50	631.	12.33	89.	22.	11.	.72
+	ROUTED TO	RCPB50	425.	13.17	88.	22.	11.	.72
+	HYDROGRAPH AT	B19	540.	12.50	65.	16.	8.	.54

+	ROUTED TO	RCPB19	381.	13.00	65.	16.	8.	.54
+	HYDROGRAPH AT	B48	758.	12.33	75.	19.	9.	.57
	2 COMBINED AT	CPB48	775.	12.33	139.	35.	17.	1.11
+	ROUTED TO	RCPB48	491.	13.17	137.	35.	17.	1.11
+	HYDROGRAPH AT	B47	455.	12.17	41.	10.	5.	.32
+	ROUTED TO	RCPB47	168.	13.33	41.	10.	5.	.32
+	HYDROGRAPH AT	B61	339.	13.17	113.	28.	14.	.75
+	4 COMBINED AT	CPB61	1372.	13.17	372.	95.	46.	2.90
+	2 COMBINED AT	B61RIV	25619.	15.33	16603.	6049.	2951.	296.93
+	ROUTED TO	RCPB61	25616.	15.33	16602.	6049.	2951.	296.93
+	HYDROGRAPH AT	B22	821.	12.17	59.	15.	7.	.55
+	ROUTED TO	RCPB22	534.	12.50	59.	15.	7.	.55
+	HYDROGRAPH AT	B23	381.	12.00	26.	6.	3.	.30
+	DIVERSION TO	DVB23	221.	12.00	15.	4.	2.	.30
	HYDROGRAPH AT	DB23	160.	12.00	11.	3.	1.	.30
+	ROUTED TO	RCPB23	90.	12.50	11.	3.	1.	.30
+	HYDROGRAPH AT	B36	292.	12.17	24.	6.	3.	.18
+	2 COMBINED AT	CPB36	318.	12.17	35.	9.	4.	.48
+	HYDROGRAPH AT	DRB23	221.	12.00	15.	4.	2.	.30
+	ROUTED TO	RDB23	137.	12.33	15.	4.	2.	.30
+	HYDROGRAPH AT	B24	342.	12.17	23.	6.	3.	.24
+	2 COMBINED AT	CPB24A	425.	12.17	37.	9.	4.	.54
+	2 COMBINED AT	CPB24	740.	12.17	72.	18.	9.	.72
+	ROUTED TO	RCPB24	609.	12.33	71.	18.	9.	.72
+	HYDROGRAPH AT	B37	150.	12.17	11.	3.	1.	.09
+	3 COMBINED AT	CPB37	1114.	12.33	141.	35.	17.	1.35
	HYDROGRAPH AT	B25	374.	12.17	27.	7.	3.	.30
+	2 COMBINED AT	CPB25	1347.	12.33	167.	42.	20.	1.65

+	ROUTED TO	RCPB25	1069.	12.50	167.	42.	20.	1.65
+	HYDROGRAPH AT	B26	370.	12.33	34.	8.	4.	.35
+	2 COMBINED AT	CPB26	1227.	12.50	200.	50.	24.	2.00
+	DIVERSION TO	DVB26	818.	12.50	133.	33.	16.	2.00
+	HYDROGRAPH AT	DB26	409.	12.50	67.	17.	8.	2.00
+	ROUTED TO	RCPB26	320.	12.83	66.	17.	8.	2.00
+	HYDROGRAPH AT	DRB03B	542.	12.83	78.	20.	9.	21.96
+	ROUTED TO	RDB03B	334.	14.00	77.	20.	9.	21.96
+	HYDROGRAPH AT	B17	82.	12.00	5.	1.	1.	.05
+	DIVERSION TO	DVB17	41.	12.00	3.	1.	0.	.05
+	HYDROGRAPH AT	DB17	42.	12.00	3.	1.	0.	.05
+	ROUTED TO	RCPB17	10.	14.33	3.	1.	0.	.05
+	HYDROGRAPH AT	B18	575.	12.50	68.	17.	8.	.62
+	3 COMBINED AT	CPB18	522.	12.50	138.	35.	17.	22.63
+	HYDROGRAPH AT	DRB03A	3251.	12.83	585.	147.	71.	21.96
+	ROUTED TO	RDB03A	2544.	13.33	579.	147.	71.	21.96
+	HYDROGRAPH AT	DRB17	41.	12.00	3.	1.	0.	.05
+	ROUTED TO	RDB17	18.	12.83	3.	1.	0.	.05
+	HYDROGRAPH AT	B16	957.	12.33	90.	23.	11.	.82
+	3 COMBINED AT	CPB16	2544.	13.33	656.	167.	80.	22.83
+	ROUTED TO	RCPB16	2133.	13.67	646.	167.	80.	22.83
+	HYDROGRAPH AT	B39	470.	12.33	44.	11.	5.	.39
+	2 COMBINED AT	CPB39A	2133.	13.67	680.	177.	85.	23.22
+	2 COMBINED AT	CPB39	2328.	13.83	813.	211.	102.	23.84
+	ROUTED TO	RCPB39	2232.	14.00	808.	211.	102.	23.84
+	HYDROGRAPH AT	B54	389.	12.33	38.	10.	5.	.29
+	2 COMBINED AT	CPB54	2232.	14.00	839.	219.	106.	24.14
+	ROUTED TO	RCPB54	2177.	14.17	835.	219.	106.	24.14

	HYDROGRAPH AT						
+		B38	543.	12.33	62.	15.	7.	.46
	2 COMBINED AT						
+		CPB38	2177.	14.17	887.	233.	112.	24.60
	ROUTED TO						
		RCPB38	2151.	14.17	884.	232.	112.	24.60
	HYDROGRAPH AT						
+		B65	292.	12.17	23.	6.	3.	.17
	3 COMBINED AT						
+		CPB65	2189.	14.17	959.	252.	122.	24.76
	ROUTED TO						
+		RCPB65	2017.	14.67	940.	252.	122.	24.76
	HYDROGRAPH AT						
+		B27	1093.	12.17	76.	19.	9.	.86
	ROUTED TO						
+		RCPB27	822.	12.33	76.	19.	9.	.86
	HYDROGRAPH AT						
+		B35	267.	12.33	24.	6.	3.	.25
	2 COMBINED AT						
+		CPB35A	1082.	12.33	99.	25.	12.	1.11
	HYDROGRAPH AT						
+		DRB26	818.	12.50	133.	33.	16.	2.00
	2 COMBINED AT						
+		CPB35	1839.	12.33	230.	58.	28.	3.11
	ROUTED TO						
+		RCPB35	1627.	12.50	230.	58.	28.	3.11
	HYDROGRAPH AT						
+		B28	455.	12.17	34.	9.	4.	.39
	HYDROGRAPH AT						
		B34	147.	12.17	12.	3.	1.	.13
	2 COMBINED AT						
+		CPB34	598.	12.17	46.	11.	6.	.51
	ROUTED TO						
+		RCPB34	442.	12.50	46.	11.	6.	.51
	HYDROGRAPH AT						
+		B33	313.	12.33	29.	7.	3.	.28
	2 COMBINED AT						
+		CPB33A	690.	12.33	74.	19.	9.	.80
	2 COMBINED AT						
+		CPB33	2215.	12.50	302.	76.	36.	3.90
	ROUTED TO						
+		RCPB33	2236.	12.50	302.	76.	36.	3.90
	HYDROGRAPH AT						
+		B55	119.	12.00	8.	2.	1.	.08
	2 COMBINED AT						
+		CPB55	2236.	12.50	310.	78.	37.	3.98
	ROUTED TO						
+		RCPB55	1480.	13.17	307.	78.	37.	3.98
	HYDROGRAPH AT						
+		B31	214.	12.17	14.	3.	2.	.16
	ROUTED TO						
+		RCPB31	85.	12.83	14.	3.	2.	.16
	HYDROGRAPH AT						
		B32	56.	12.00	4.	1.	0.	.04
	ROUTED TO						
+		RCPB32	20.	13.17	4.	1.	0.	.04

+	HYDROGRAPH AT	B30	498.	12.33	43.	11.	5.	.53
+	DIVERSION TO	DVB30	290.	12.33	26.	6.	3.	.53
+	HYDROGRAPH AT	DB30	208.	12.33	17.	4.	2.	.53
+	ROUTED TO	RCPB30	132.	12.83	17.	4.	2.	.53
+	HYDROGRAPH AT	B29	960.	12.33	86.	21.	10.	.91
+	4 COMBINED AT	CPB29	965.	12.33	119.	30.	14.	1.65
+	ROUTED TO	RCPB29	550.	13.17	118.	30.	14.	1.65
+	HYDROGRAPH AT	DRB30	290.	12.33	26.	6.	3.	.53
+	ROUTED TO	RDB30	220.	12.50	26.	6.	3.	.53
+	HYDROGRAPH AT	B57	168.	12.17	12.	3.	2.	.10
+	2 COMBINED AT	CPB57	231.	12.50	38.	10.	5.	.63
+	ROUTED TO	RCPB57	231.	12.50	38.	10.	5.	.63
+	HYDROGRAPH AT	B56	289.	12.33	28.	7.	3.	.22
+	2 COMBINED AT	CPB56	509.	12.33	66.	17.	8.	.85
+	ROUTED TO	RCPB56	489.	12.33	66.	17.	8.	.85
+	HYDROGRAPH AT	B58	401.	12.17	30.	7.	4.	.24
+	2 COMBINED AT	CPB58	741.	12.17	95.	24.	11.	1.10
+	ROUTED TO	RCPB58	485.	12.83	95.	24.	11.	1.10
+	HYDROGRAPH AT	B59	612.	12.33	60.	15.	7.	.50
+	5 COMBINED AT	CPB59	3391.	13.17	1402.	374.	180.	31.46
+	ROUTED TO	RCPB59	2959.	13.67	1378.	374.	180.	31.46
+	HYDROGRAPH AT	B52	686.	12.33	65.	16.	8.	.58
+	ROUTED TO	RCPB52	366.	13.17	65.	16.	8.	.58
+	HYDROGRAPH AT	B53	674.	12.33	66.	17.	8.	.54
+	ROUTED TO	RCPB53	273.	13.83	65.	17.	8.	.54
+	HYDROGRAPH AT	B60	384.	13.33	150.	38.	18.	1.00
+	4 COMBINED AT	CPB60	3608.	13.67	1599.	434.	209.	33.58
+	ROUTED TO	RCPB60	3583.	13.83	1596.	434.	209.	33.58

+	HYDROGRAPH AT	DRH33	810.	12.50	214.	58.	28.	3.74
+	ROUTED TO	RDH33	734.	12.83	214.	58.	28.	3.74
	HYDROGRAPH AT	H46	487.	12.17	37.	9.	4.	.31
+	2 COMBINED AT	CPH46	734.	12.83	249.	67.	32.	4.05
+	ROUTED TO	RCPH46	698.	13.17	248.	67.	32.	4.05
+	HYDROGRAPH AT	H06	1126.	12.33	98.	24.	12.	1.23
+	DIVERSION TO	DVH06	635.	12.33	55.	14.	7.	1.23
+	HYDROGRAPH AT	DH06	491.	12.33	42.	11.	5.	1.23
+	ROUTED TO	RCPH06	363.	12.50	42.	11.	5.	1.23
+	HYDROGRAPH AT	H14	1310.	12.17	130.	35.	17.	1.14
+	2 COMBINED AT	CPH14	1544.	12.33	171.	45.	22.	2.37
+	ROUTED TO	RCPH14	1234.	12.50	171.	45.	22.	2.37
+	HYDROGRAPH AT	DRH06	635.	12.33	55.	14.	7.	1.23
+	ROUTED TO	RDH06	425.	12.67	55.	14.	7.	1.23
	HYDROGRAPH AT	H13	707.	12.17	60.	15.	7.	.52
+	3 COMBINED AT	CPH13	1958.	12.33	284.	73.	35.	2.88
+	ROUTED TO	RCPH13	1718.	12.67	284.	73.	35.	2.88
+	HYDROGRAPH AT	H12	550.	12.17	57.	15.	7.	.44
+	DIVERSION TO	DVH12	171.	12.17	17.	5.	2.	.44
+	HYDROGRAPH AT	DH12	378.	12.17	39.	11.	5.	.44
+	ROUTED TO	RCPH12	318.	12.33	39.	11.	5.	.44
+	HYDROGRAPH AT	H07	1323.	12.33	129.	32.	16.	1.18
+	2 COMBINED AT	CPH07	1634.	12.33	168.	43.	21.	1.62
+	DIVERSION TO	DVH07	817.	12.33	84.	21.	10.	1.62
+	HYDROGRAPH AT	DH07	817.	12.33	84.	21.	10.	1.62
+	ROUTED TO	RCPH07	699.	12.50	84.	21.	10.	1.62
	HYDROGRAPH AT	H34	639.	12.17	47.	12.	6.	.41
+	3 COMBINED AT	CPH34	2330.	12.50	411.	105.	51.	4.91

+	ROUTED TO	RCPH34	1983.	13.00	410.	105.	51.	4.91
+	HYDROGRAPH AT	H45	416.	12.17	32.	8.	4.	.28
+	2 COMBINED AT	CPH45	1982.	13.00	442.	113.	55.	5.19
+	ROUTED TO	RCPH45	1805.	13.17	441.	113.	55.	5.19
+	HYDROGRAPH AT	DRH07	817.	12.33	84.	21.	10.	1.62
+	ROUTED TO	RDH07	614.	12.67	84.	21.	10.	1.62
+	HYDROGRAPH AT	H36	673.	12.17	51.	13.	6.	.44
+	2 COMBINED AT	CPH36	758.	12.17	134.	34.	16.	2.06
+	ROUTED TO	RCPH36	605.	12.67	133.	34.	16.	2.06
+	HYDROGRAPH AT	H44	824.	12.17	64.	16.	8.	.55
+	2 COMBINED AT	CPH44	942.	12.17	196.	50.	24.	2.61
+	ROUTED TO	RCPH44	829.	12.50	196.	50.	24.	2.61
+	HYDROGRAPH AT	H78	781.	12.17	56.	14.	7.	.49
+	4 COMBINED AT	CPH78	3000.	13.17	925.	240.	116.	10.72
+	ROUTED TO	RCPH78	2827.	13.50	923.	240.	116.	10.72
+	HYDROGRAPH AT	H79	774.	12.17	58.	15.	7.	.50
+	2 COMBINED AT	CPH79	2827.	13.50	977.	254.	122.	11.23
+	ROUTED TO	RCPH79	2622.	13.83	963.	253.	122.	11.23
+	HYDROGRAPH AT	H80	447.	12.33	56.	14.	7.	.46
+	2 COMBINED AT	CPH80	2618.	13.83	1007.	265.	128.	11.69
+	3 COMBINED AT	H80RIV	28071.	15.33	18373.	6551.	3194.	316.49
+	ROUTED TO	RCPH80	27910.	15.50	18342.	6551.	3193.	316.49
+	HYDROGRAPH AT	B62	182.	13.00	51.	13.	6.	.33
+	2 COMBINED AT	B62RIV	27913.	15.50	18356.	6560.	3198.	316.83
+	ROUTED TO	RCPB62	27860.	15.50	18349.	6560.	3198.	316.83
+	HYDROGRAPH AT	H43	356.	12.17	26.	6.	3.	.22
+	ROUTED TO	RCPH43	274.	12.33	26.	6.	3.	.22
+	HYDROGRAPH AT	H81	451.	12.00	27.	7.	3.	.24

+	2 COMBINED AT	CPH81	528.	12.00	53.	13.	6.	.46
+	ROUTED TO	RCPH81	372.	12.50	53.	13.	6.	.46
	HYDROGRAPH AT	H08	1880.	12.17	192.	56.	27.	1.39
+	ROUTED TO	RCPH08	1343.	12.50	192.	56.	27.	1.39
+	HYDROGRAPH AT	H11	427.	12.17	31.	8.	4.	.27
+	DIVERSION TO	DVH11	176.	12.17	12.	3.	1.	.27
+	HYDROGRAPH AT	DH11	251.	12.17	20.	5.	2.	.27
+	ROUTED TO	RCPH11	193.	12.33	20.	5.	2.	.27
+	HYDROGRAPH AT	DRH12	171.	12.17	17.	5.	2.	.44
+	ROUTED TO	RDH12	140.	12.50	17.	5.	2.	.44
+	HYDROGRAPH AT	H35	541.	12.17	39.	10.	5.	.34
+	4 COMBINED AT	CPH35	1644.	12.50	266.	75.	36.	2.44
+	ROUTED TO	RCPH35	1477.	12.67	266.	75.	36.	2.44
+	HYDROGRAPH AT	H37	880.	12.17	65.	16.	8.	.56
	2 COMBINED AT	CPH37	1494.	12.67	330.	90.	44.	3.00
+	ROUTED TO	RCPH37	1330.	13.00	329.	90.	44.	3.00
+	HYDROGRAPH AT	H42	579.	12.17	51.	13.	6.	.44
+	2 COMBINED AT	CPH42	1330.	13.00	379.	103.	50.	3.45
+	ROUTED TO	RCPH42	1243.	13.33	379.	103.	50.	3.45
+	HYDROGRAPH AT	H82	748.	12.17	58.	14.	7.	.50
+	3 COMBINED AT	CPH82	1322.	13.17	485.	129.	63.	4.41
+	ROUTED TO	RCPH82	1266.	13.50	484.	129.	63.	4.41
+	HYDROGRAPH AT	H83	671.	12.33	78.	20.	9.	.66
+	2 COMBINED AT	CPH83	1266.	13.50	560.	149.	72.	5.07
+	HYDROGRAPH AT	B63	141.	12.67	33.	8.	4.	.22
+	3 COMBINED AT	B63RIV	28121.	15.50	18598.	6666.	3249.	321.67
	ROUTED TO	RCPB63	28030.	15.67	18588.	6666.	3249.	321.67
+	HYDROGRAPH AT	B64	206.	13.17	47.	12.	6.	.30

+	2 COMBINED AT	B64RIV	28030.	15.67	18598.	6675.	3254.	321.98
+	ROUTED TO	RCPB64	27981.	15.67	18596.	6674.	3253.	321.98
+	HYDROGRAPH AT	H09	1788.	12.17	241.	79.	38.	1.08
+	ROUTED TO	RCPH09	1449.	12.33	241.	79.	38.	1.08
+	HYDROGRAPH AT	H10	893.	12.17	67.	17.	8.	.56
+	2 COMBINED AT	CPH10	2043.	12.17	306.	96.	46.	1.63
+	ROUTED TO	RCPH10	1685.	12.50	306.	95.	46.	1.63
+	HYDROGRAPH AT	DRH11	176.	12.17	12.	3.	1.	.27
+	ROUTED TO	RDH11	97.	12.50	12.	3.	1.	.27
+	HYDROGRAPH AT	H38	768.	12.17	55.	14.	7.	.48
+	3 COMBINED AT	CPH38	1912.	12.33	371.	112.	54.	2.38
+	ROUTED TO	RCPH38	1730.	12.67	370.	111.	54.	2.38
+	HYDROGRAPH AT	H39	611.	12.17	44.	11.	5.	.38
+	2 COMBINED AT	CPH39	1730.	12.67	414.	122.	59.	2.76
+	DIVERSION TO	DVH39	864.	12.67	206.	61.	30.	2.76
+	HYDROGRAPH AT	DH39	864.	12.67	207.	61.	30.	2.76
+	ROUTED TO	RCPH39	806.	12.83	207.	61.	30.	2.76
+	HYDROGRAPH AT	H41	484.	12.17	35.	9.	4.	.30
+	2 COMBINED AT	CPH41	806.	12.83	241.	70.	34.	3.06
+	ROUTED TO	RCPH41	743.	13.17	240.	69.	34.	3.06
+	HYDROGRAPH AT	DRH39	864.	12.67	206.	61.	30.	2.76
+	ROUTED TO	RDH39	761.	13.00	206.	61.	30.	2.76
+	HYDROGRAPH AT	H40	700.	12.17	54.	14.	7.	.47
+	2 COMBINED AT	CPH40	763.	12.17	259.	74.	36.	3.23
+	ROUTED TO	RCPH40	728.	13.17	259.	74.	36.	3.23
+	HYDROGRAPH AT	H84	1184.	12.17	88.	22.	11.	.76
+	3 COMBINED AT	CPH84	1884.	12.17	584.	165.	80.	4.29
+	ROUTED TO	RCPH84	1441.	12.50	583.	165.	80.	4.29

+	HYDROGRAPH AT	H85	619.	12.67	133.	33.	16.	.98
+	2 COMBINED AT	CPH85	2016.	12.67	712.	197.	95.	5.26
	ROUTED TO	RCPH85	1793.	13.17	707.	197.	95.	5.26
+	HYDROGRAPH AT	H86	702.	12.67	144.	36.	17.	1.08
+	2 COMBINED AT	CPH86	2318.	13.00	842.	232.	112.	6.34
+	2 COMBINED AT	H86RIV	28346.	15.67	18982.	6840.	3335.	328.05
+	ROUTED TO	RCPH86	27862.	16.00	18903.	6839.	3334.	328.05
+	HYDROGRAPH AT	I02	815.	12.17	91.	29.	14.	.43
+	HYDROGRAPH AT	I01	1058.	12.17	121.	39.	19.	.58
+	2 COMBINED AT	CPI01	1865.	12.17	211.	68.	33.	1.01
+	ROUTED TO	RCPI01	1834.	12.17	211.	68.	33.	1.01
+	HYDROGRAPH AT	I03	198.	12.00	11.	3.	1.	.09
+	2 COMBINED AT	CPI03	1895.	12.17	222.	70.	34.	1.10
+	DIVERSION TO	DVI03	948.	12.17	111.	35.	17.	1.10
	HYDROGRAPH AT	DI03	947.	12.17	111.	35.	17.	1.10
+	ROUTED TO	RCPI03	716.	12.33	111.	35.	17.	1.10
+	HYDROGRAPH AT	I04	527.	12.17	38.	10.	5.	.33
+	2 COMBINED AT	CPI04	1060.	12.17	148.	44.	21.	1.43
+	ROUTED TO	RCPI04	811.	12.50	148.	44.	21.	1.43
+	HYDROGRAPH AT	I06	799.	12.17	58.	14.	7.	.50
+	2 COMBINED AT	CPI06	1127.	12.17	205.	59.	28.	1.93
+	ROUTED TO	RCPI06	833.	12.83	205.	58.	28.	1.93
+	HYDROGRAPH AT	I08	1213.	12.17	91.	23.	11.	.79
+	2 COMBINED AT	CPI08	1337.	12.17	294.	81.	39.	2.72
+	ROUTED TO	RCPI08	996.	12.50	294.	81.	39.	2.72
+	HYDROGRAPH AT	I10	794.	12.17	57.	14.	7.	.50
	2 COMBINED AT	CPI10	1301.	12.17	349.	95.	46.	3.22
+	ROUTED TO	RCPI10	1173.	12.50	348.	95.	46.	3.22

+	HYDROGRAPH AT	DRI03	948.	12.17	111.	35.	17.	1.10
+	ROUTED TO	RDI03	754.	12.33	111.	35.	17.	1.10
+	HYDROGRAPH AT	I05	335.	12.00	24.	6.	3.	.20
+	2 COMBINED AT	CPI05	960.	12.17	134.	41.	20.	1.31
+	ROUTED TO	RCPI05	752.	12.50	134.	41.	20.	1.31
+	HYDROGRAPH AT	I07	318.	12.00	23.	6.	3.	.19
+	2 COMBINED AT	CPI07	752.	12.50	156.	46.	22.	1.50
+	ROUTED TO	RCPI07	624.	13.00	156.	46.	22.	1.50
+	HYDROGRAPH AT	I09	508.	12.17	37.	9.	4.	.31
+	2 COMBINED AT	CPI09	626.	12.17	191.	55.	27.	1.82
+	ROUTED TO	RCPI09	568.	13.33	191.	55.	27.	1.82
+	HYDROGRAPH AT	I11	430.	12.17	33.	8.	4.	.29
+	2 COMBINED AT	CPI11	568.	13.33	224.	63.	31.	2.11
+	ROUTED TO	RCPI11	528.	14.00	223.	63.	31.	2.11
+	HYDROGRAPH AT	I12	800.	12.17	59.	15.	7.	.51
+	3 COMBINED AT	CPI12	1413.	12.50	626.	172.	83.	4.73
+	ROUTED TO	RCPI12	1357.	12.67	623.	171.	83.	4.73
+	HYDROGRAPH AT	I13	834.	12.17	62.	16.	8.	.52
+	2 COMBINED AT	CPI13	1375.	12.67	682.	187.	90.	5.25
+	ROUTED TO	RCPI13	1354.	12.83	680.	187.	90.	5.25
+	HYDROGRAPH AT	I14	495.	12.00	32.	8.	4.	.24
+	2 COMBINED AT	CPI14	1354.	12.83	710.	194.	94.	5.49
+	HYDROGRAPH AT	A12	1205.	12.33	136.	34.	16.	1.06
+	ROUTED TO	RCPA12	476.	13.83	132.	34.	16.	1.06
+	HYDROGRAPH AT	A41	740.	12.50	136.	37.	18.	.91
+	2 COMBINED AT	CPA41	735.	12.50	262.	70.	34.	1.97
+	3 COMBINED AT	A41RIV	28171.	16.00	19271.	7020.	3424.	335.51
+	ROUTED TO	RCPA41	28115.	16.17	19267.	7020.	3424.	335.51

+	HYDROGRAPH AT	I15	1105.	12.17	97.	27.	13.	.66
+	ROUTED TO	RCPI15	766.	12.33	97.	27.	13.	.66
	HYDROGRAPH AT	I16	833.	12.17	80.	24.	11.	.49
+	ROUTED TO	RCPI16	640.	12.33	80.	24.	11.	.49
+	HYDROGRAPH AT	I17	676.	12.17	69.	21.	10.	.36
+	ROUTED TO	RCPI17	507.	12.33	69.	21.	10.	.36
+	HYDROGRAPH AT	I18	1054.	12.17	76.	19.	9.	.66
+	4 COMBINED AT	CPI18	2360.	12.17	318.	90.	43.	2.18
+	ROUTED TO	RCPI18	2076.	12.50	317.	90.	43.	2.18
+	HYDROGRAPH AT	I19	570.	12.17	41.	10.	5.	.35
+	2 COMBINED AT	CPI19	2100.	12.50	357.	100.	48.	2.53
+	ROUTED TO	RCPI19	1769.	12.83	357.	100.	48.	2.53
+	HYDROGRAPH AT	I20	920.	12.17	71.	18.	9.	.62
+	2 COMBINED AT	CPI20	1769.	12.83	427.	117.	57.	3.15
	ROUTED TO	RCPI20	1601.	13.00	426.	117.	57.	3.15
+	HYDROGRAPH AT	I21	738.	12.17	55.	14.	7.	.47
+	2 COMBINED AT	CPI21	1601.	13.00	480.	130.	63.	3.62
+	ROUTED TO	RCPI21	1495.	13.17	477.	130.	63.	3.62
+	HYDROGRAPH AT	I22	400.	12.33	50.	13.	6.	.38
+	2 COMBINED AT	CPI22	1532.	13.17	526.	142.	69.	4.00
+	HYDROGRAPH AT	A40	730.	12.17	66.	17.	8.	.50
+	ROUTED TO	RCPA40	269.	13.50	65.	17.	8.	.50
+	HYDROGRAPH AT	A42	440.	13.00	132.	33.	16.	.85
+	2 COMBINED AT	CPA42	629.	13.33	195.	49.	24.	1.35
+	3 COMBINED AT	A42RIV	28236.	16.17	19492.	7152.	3489.	340.86
+	ROUTED TO	RCPA42	28158.	16.33	19481.	7152.	3489.	340.86
	HYDROGRAPH AT	A13	723.	12.33	89.	23.	11.	.58
+	ROUTED TO	RCPA13	514.	13.00	89.	23.	11.	.58

+	HYDROGRAPH AT	A39	304.	12.83	78.	20.	9.	.50
+	2 COMBINED AT	CPA39	801.	13.00	166.	42.	20.	1.08
+	ROUTED TO	RCPA39	683.	13.50	165.	42.	20.	1.08
+	HYDROGRAPH AT	A43	385.	12.67	80.	20.	10.	.50
+	2 COMBINED AT	CPA43	803.	13.50	242.	62.	30.	1.58
+	ROUTED TO	RCPA43	721.	14.00	239.	62.	30.	1.58
+	HYDROGRAPH AT	A44	314.	12.50	52.	13.	6.	.37
+	2 COMBINED AT	CPA44	728.	14.00	286.	74.	36.	1.95
+	2 COMBINED AT	A44RIV	28242.	16.33	19627.	7206.	3515.	342.81
+	ROUTED TO	RCPA44	28104.	16.50	19602.	7205.	3515.	342.81
+	HYDROGRAPH AT	I24	542.	12.00	51.	15.	7.	.28
+	ROUTED TO	RCPI24	306.	12.67	51.	15.	7.	.28
+	HYDROGRAPH AT	I26	863.	12.17	63.	16.	8.	.53
+	2 COMBINED AT	CPI26	965.	12.17	113.	31.	15.	.81
+	ROUTED TO	RCPI26	562.	12.67	113.	31.	15.	.81
+	HYDROGRAPH AT	I28	706.	12.17	51.	13.	6.	.44
+	2 COMBINED AT	CPI28	818.	12.17	163.	43.	21.	1.26
+	ROUTED TO	RCPI28	543.	12.83	163.	43.	21.	1.26
+	HYDROGRAPH AT	I30	678.	12.17	49.	12.	6.	.42
+	2 COMBINED AT	CPI30	794.	12.17	211.	55.	27.	1.68
+	ROUTED TO	RCPI30	519.	13.50	211.	55.	27.	1.68
+	HYDROGRAPH AT	I32	795.	12.17	59.	15.	7.	.51
+	2 COMBINED AT	CPI32	865.	12.17	269.	70.	34.	2.18
+	ROUTED TO	RCPI32	509.	13.00	268.	70.	34.	2.18
+	HYDROGRAPH AT	I34	520.	12.50	65.	16.	8.	.51
+	2 COMBINED AT	CPI34	731.	12.50	331.	85.	41.	2.69
+	ROUTED TO	RCPI34	721.	12.83	330.	85.	41.	2.69
+	HYDROGRAPH AT	I36	319.	12.17	24.	6.	3.	.19

+	2 COMBINED AT	CPI36	721.	12.83	353.	91.	44.	2.89
+	2 COMBINED AT	I36RIV	28199.	16.50	19719.	7265.	3544.	345.69
	ROUTED TO	RCPI36	28061.	16.67	19694.	7265.	3544.	345.69
+	HYDROGRAPH AT	A01	4595.	12.67	655.	164.	79.	6.98
+	ROUTED TO	RCPA01	3556.	13.00	655.	164.	79.	6.98
+	HYDROGRAPH AT	A02	2057.	12.33	179.	45.	22.	2.38
+	2 COMBINED AT	CPA02	3587.	13.00	829.	207.	100.	9.36
+	DIVERSION TO	DVA02A	1776.	13.00	414.	103.	50.	9.36
+	HYDROGRAPH AT	DA02A	1811.	13.00	415.	104.	50.	9.36
+	DIVERSION TO	DVA02B	827.	13.00	191.	48.	23.	9.36
+	HYDROGRAPH AT	DA02B	984.	13.00	224.	56.	27.	9.36
+	ROUTED TO	RCPA02	819.	14.00	220.	56.	27.	9.36
+	HYDROGRAPH AT	A11	1400.	12.50	165.	41.	20.	1.80
+	2 COMBINED AT	CPA11	1359.	12.50	374.	95.	46.	11.16
	DIVERSION TO	DVA11	680.	12.50	187.	47.	23.	11.16
+	HYDROGRAPH AT	DA11	679.	12.50	187.	48.	23.	11.16
+	ROUTED TO	RCPA11	492.	13.00	185.	48.	23.	11.16
+	HYDROGRAPH AT	A14	913.	12.50	119.	30.	15.	.86
+	2 COMBINED AT	CPA14	1049.	12.50	296.	76.	37.	12.02
+	ROUTED TO	RCPA14	847.	13.33	292.	76.	37.	12.02
+	HYDROGRAPH AT	A38	291.	12.83	73.	18.	9.	.48
+	ROUTED TO	RCPA38	229.	14.17	71.	18.	9.	.48
+	HYDROGRAPH AT	A37	1425.	12.50	184.	46.	22.	1.35
+	3 COMBINED AT	CPA37	1456.	12.50	525.	137.	66.	13.85
+	ROUTED TO	RCPA37	1220.	13.17	513.	137.	66.	13.85
+	HYDROGRAPH AT	A45	593.	12.33	67.	17.	8.	.53
	2 COMBINED AT	CPA45	1237.	13.17	564.	152.	73.	14.38
+	HYDROGRAPH AT	I23	743.	12.00	98.	32.	15.	.41

+	ROUTED TO	RCPI23	560.	12.33	98.	32.	15.	.41
+	HYDROGRAPH AT	I25	539.	12.17	40.	10.	5.	.32
+	2 COMBINED AT	CPI25	983.	12.17	137.	42.	20.	.73
+	ROUTED TO	RCPI25	768.	12.50	137.	42.	20.	.73
+	HYDROGRAPH AT	I27	662.	12.17	48.	12.	6.	.40
+	2 COMBINED AT	CPI27	1063.	12.17	184.	54.	26.	1.13
+	ROUTED TO	RCPI27	900.	12.33	184.	53.	26.	1.13
+	HYDROGRAPH AT	I29	586.	12.17	43.	11.	5.	.37
+	2 COMBINED AT	CPI29	1239.	12.17	226.	64.	31.	1.51
+	ROUTED TO	RCPI29	1046.	12.33	226.	64.	31.	1.51
+	HYDROGRAPH AT	I31	587.	12.00	41.	10.	5.	.36
+	2 COMBINED AT	CPI31	1340.	12.17	266.	74.	36.	1.87
+	ROUTED TO	RCPI31	1116.	12.50	266.	74.	36.	1.87
+	HYDROGRAPH AT	I33	792.	12.17	59.	15.	7.	.50
+	2 COMBINED AT	CPI33	1370.	12.33	323.	88.	43.	2.37
+	ROUTED TO	RCPI33	1217.	12.50	322.	88.	43.	2.37
+	HYDROGRAPH AT	I35	738.	12.17	67.	17.	8.	.51
+	2 COMBINED AT	CPI35	1508.	12.33	387.	104.	50.	2.88
+	ROUTED TO	RCPI35	1430.	12.67	386.	104.	50.	2.88
+	HYDROGRAPH AT	I37	731.	12.17	56.	14.	7.	.41
+	2 COMBINED AT	CPI37	1430.	12.67	439.	118.	57.	3.29
+	3 COMBINED AT	I37RIV	28197.	16.67	19896.	7423.	3622.	363.37
+	ROUTED TO	RCPI37	28068.	16.83	19875.	7422.	3622.	363.37
+	HYDROGRAPH AT	A36	578.	12.33	60.	15.	7.	.44
+	ROUTED TO	RCPA36	347.	12.83	60.	15.	7.	.44
+	HYDROGRAPH AT	A46	128.	12.67	30.	7.	4.	.20
+	2 COMBINED AT	CPA46	471.	12.83	89.	22.	11.	.63
+	2 COMBINED AT	A46RIV	28068.	16.83	19880.	7438.	3630.	364.00

+	ROUTED TO	RCPA46	27974.	16.83	19864.	7435.	3629.	364.00
+	HYDROGRAPH AT	I38	471.	12.17	51.	16.	8.	.25
	ROUTED TO	RCPI38	314.	12.50	51.	16.	8.	.25
+	HYDROGRAPH AT	I39	366.	12.00	26.	6.	3.	.22
+	2 COMBINED AT	CPI39	521.	12.17	77.	23.	11.	.47
+	ROUTED TO	RCPI39	389.	12.50	77.	23.	11.	.47
+	HYDROGRAPH AT	I40	668.	12.17	48.	12.	6.	.41
+	2 COMBINED AT	CPI40	907.	12.17	125.	34.	17.	.87
+	ROUTED TO	RCPI40	668.	12.33	125.	34.	17.	.87
+	HYDROGRAPH AT	I41	765.	12.17	55.	14.	7.	.48
+	2 COMBINED AT	CPI41	1150.	12.17	179.	48.	23.	1.35
+	ROUTED TO	RCPI41	745.	12.83	178.	48.	23.	1.35
+	HYDROGRAPH AT	I42	543.	12.33	57.	15.	7.	.42
+	2 COMBINED AT	CPI42	832.	12.67	234.	62.	30.	1.77
	ROUTED TO	RCPI42	802.	12.83	234.	62.	30.	1.77
+	HYDROGRAPH AT	I43	717.	12.17	54.	14.	7.	.43
+	2 COMBINED AT	CPI43	838.	12.17	287.	76.	37.	2.20
+	ROUTED TO	RCPI43	788.	13.00	286.	76.	37.	2.20
+	HYDROGRAPH AT	I44	1211.	12.17	113.	33.	16.	.71
+	ROUTED TO	RCPI44	898.	12.33	113.	33.	16.	.71
+	HYDROGRAPH AT	I45	591.	12.17	44.	11.	5.	.35
+	2 COMBINED AT	CPI45	1162.	12.17	156.	44.	21.	1.06
+	ROUTED TO	RCPI45	976.	12.50	156.	43.	21.	1.06
+	HYDROGRAPH AT	I46	736.	12.17	53.	13.	6.	.46
+	2 COMBINED AT	CPI46	1082.	12.17	208.	57.	27.	1.52
+	ROUTED TO	RCPI46	1021.	12.50	208.	56.	27.	1.52
	HYDROGRAPH AT	I47	447.	12.33	48.	13.	6.	.35
+	2 COMBINED AT	CPI47	1305.	12.50	254.	69.	33.	1.87

+	ROUTED TO	RCPI47	1127.	12.83	254.	69.	33.	1.87
+	HYDROGRAPH AT	I48	554.	12.17	40.	10.	5.	.34
+	2 COMBINED AT	CPI48	1125.	12.83	293.	79.	38.	2.21
+	ROUTED TO	RCPI48	1085.	12.83	293.	79.	38.	2.21
+	HYDROGRAPH AT	I49	676.	12.00	49.	12.	6.	.38
+	3 COMBINED AT	CPI49	1829.	13.00	623.	165.	80.	4.79
+	ROUTED TO	RCPI49	1788.	13.17	621.	165.	80.	4.79
+	HYDROGRAPH AT	I61	573.	12.00	37.	10.	5.	.25
+	ROUTED TO	RCPI61	265.	12.50	37.	10.	5.	.25
+	HYDROGRAPH AT	I50	1011.	12.17	75.	19.	9.	.60
+	3 COMBINED AT	CPI50	1826.	12.17	728.	193.	93.	5.64
+	2 COMBINED AT	I50RIV	27995.	16.83	19970.	7560.	3691.	369.64
+	ROUTED TO	RCPI50	27944.	17.00	19960.	7559.	3691.	369.64
+	HYDROGRAPH AT	I62	760.	12.17	70.	20.	10.	.42
+	2 COMBINED AT	I62RIV	27944.	17.00	19962.	7570.	3698.	370.07
+	ROUTED TO	RCPI62	27756.	17.33	19933.	7567.	3697.	370.07
+	HYDROGRAPH AT	DRA11	680.	12.50	187.	47.	23.	11.16
+	ROUTED TO	RDA11	417.	13.17	183.	47.	23.	11.16
+	HYDROGRAPH AT	A15	938.	12.50	130.	32.	16.	.94
+	2 COMBINED AT	CPA15	910.	12.50	302.	78.	38.	12.10
+	HYDROGRAPH AT	A16	467.	12.33	49.	12.	6.	.33
+	2 COMBINED AT	CPA16	1205.	12.50	347.	90.	43.	12.44
+	ROUTED TO	RCPA16	1031.	12.83	341.	90.	43.	12.44
+	HYDROGRAPH AT	DRA02A	1776.	13.00	414.	103.	50.	9.36
+	ROUTED TO	RDA02A	1751.	13.17	413.	103.	50.	9.36
+	HYDROGRAPH AT	A03	825.	12.33	81.	20.	10.	1.06
+	2 COMBINED AT	CPA03	1943.	12.50	490.	123.	59.	10.42
+	ROUTED TO	RCPA03	1674.	13.50	487.	123.	59.	10.42

+	HYDROGRAPH AT	A64	789.	12.33	80.	20.	10.	.78
+	2 COMBINED AT	CPA64	1674.	13.50	564.	142.	68.	11.20
	DIVERSION TO	DVA64	584.	13.50	188.	47.	23.	11.20
+	HYDROGRAPH AT	DA64	1077.	13.50	371.	94.	45.	11.20
+	ROUTED TO	RCPA64	1024.	14.00	369.	94.	45.	11.20
+	HYDROGRAPH AT	DRA02B	827.	13.00	191.	48.	23.	9.36
+	ROUTED TO	RDA02B	714.	13.83	188.	48.	23.	9.36
+	HYDROGRAPH AT	A10	916.	12.50	122.	31.	15.	.93
+	3 COMBINED AT	CPA10	1703.	13.83	664.	169.	81.	12.13
+	DIVERSION TO	DVA10	811.	13.83	309.	78.	38.	12.13
+	HYDROGRAPH AT	DA10	892.	13.83	355.	90.	44.	12.13
+	ROUTED TO	RCPA10	831.	14.33	351.	90.	44.	12.13
+	HYDROGRAPH AT	A34	571.	12.17	55.	14.	7.	.38
+	2 COMBINED AT	CPA34	830.	14.33	397.	104.	50.	12.52
	ROUTED TO	RCPA34	805.	14.67	392.	103.	50.	12.52
+	HYDROGRAPH AT	A35	1111.	12.33	113.	28.	14.	.85
+	3 COMBINED AT	CPA35	1727.	12.50	813.	214.	103.	16.44
+	ROUTED TO	RCPA35	1527.	13.00	797.	214.	103.	16.44
+	HYDROGRAPH AT	A47	473.	12.83	114.	29.	14.	.79
+	2 COMBINED AT	CPA47	1952.	12.83	894.	240.	116.	17.23
+	ROUTED TO	RCPA47	1784.	13.50	864.	240.	116.	17.23
+	HYDROGRAPH AT	A48	822.	12.83	153.	41.	20.	1.06
+	ROUTED TO	RCPA48	738.	13.00	153.	41.	20.	1.06
+	HYDROGRAPH AT	A49	796.	12.33	93.	23.	11.	.75
+	3 COMBINED AT	CPA49	2169.	13.50	1035.	296.	143.	19.04
+	2 COMBINED AT	A49RIV	28181.	17.17	20323.	7773.	3798.	377.94
	ROUTED TO	RCPA49	28096.	17.50	20314.	7770.	3797.	377.94
+	HYDROGRAPH AT	A04	758.	12.17	51.	13.	6.	.74

+	DIVERSION TO	DVA04	410.	12.17	28.	7.	3.	.74
+	HYDROGRAPH AT	DA04	348.	12.17	23.	6.	3.	.74
+	ROUTED TO	RCPA04	185.	12.83	23.	6.	3.	.74
+	HYDROGRAPH AT	A07	463.	12.17	40.	10.	5.	.52
+	2 COMBINED AT	CPA07	459.	12.17	62.	16.	7.	1.27
+	DIVERSION TO	DVA07	227.	12.17	29.	7.	4.	1.27
+	HYDROGRAPH AT	DA07	232.	12.17	33.	8.	4.	1.27
+	ROUTED TO	RCPA07	126.	13.50	33.	8.	4.	1.27
+	HYDROGRAPH AT	A09	666.	12.33	63.	16.	8.	.78
+	DIVERSION TO	DVA09	117.	12.33	11.	3.	1.	.78
+	HYDROGRAPH AT	DA09	548.	12.33	52.	13.	6.	.78
+	ROUTED TO	RCPA09	376.	12.67	52.	13.	6.	.78
+	HYDROGRAPH AT	A08	1272.	12.67	179.	45.	22.	2.12
+	2 COMBINED AT	CPA08	1636.	12.67	230.	57.	28.	2.90
+	DIVERSION TO	DVA08	690.	12.67	100.	25.	12.	2.90
+	HYDROGRAPH AT	DA08	946.	12.67	130.	33.	16.	2.90
+	ROUTED TO	RCPA08	851.	12.83	130.	33.	16.	2.90
+	HYDROGRAPH AT	A21	1095.	12.50	134.	33.	16.	1.06
+	3 COMBINED AT	CPA21	1529.	12.50	292.	73.	35.	5.22
+	DIVERSION TO	DVA21	682.	12.50	130.	33.	16.	5.22
+	HYDROGRAPH AT	DA21	847.	12.50	163.	41.	20.	5.22
+	ROUTED TO	RCPA21	693.	13.17	162.	41.	20.	5.22
+	HYDROGRAPH AT	A20	457.	12.17	45.	11.	5.	.34
+	2 COMBINED AT	CPA20	693.	13.17	205.	52.	25.	5.56
+	DIVERSION TO	DVA20	285.	13.17	78.	20.	10.	5.56
+	HYDROGRAPH AT	DA20	407.	13.17	127.	32.	15.	5.56
+	ROUTED TO	RCPA20	302.	16.00	120.	32.	15.	5.56
+	HYDROGRAPH AT	A51	1146.	12.67	199.	50.	24.	1.53

+	2 COMBINED AT	CPA51A	1130.	12.67	300.	81.	39.	7.09
+	HYDROGRAPH AT	DRA09	117.	12.33	11.	3.	1.	.78
	ROUTED TO	RDA09	48.	13.83	11.	3.	1.	.78
+	HYDROGRAPH AT	DRA64	584.	13.50	188.	47.	23.	11.20
+	ROUTED TO	RDA64	550.	14.17	187.	47.	23.	11.20
+	HYDROGRAPH AT	A18	832.	12.33	100.	25.	12.	.69
+	3 COMBINED AT	CPA18	801.	12.33	288.	73.	35.	12.68
+	DIVERSION TO	DVA18	428.	12.33	154.	39.	19.	12.68
+	HYDROGRAPH AT	DA18	373.	12.33	134.	34.	16.	12.68
+	ROUTED TO	RCPA18	344.	12.50	133.	34.	16.	12.68
+	HYDROGRAPH AT	DRA08	690.	12.67	100.	25.	12.	2.90
+	ROUTED TO	RDA08	528.	13.17	99.	25.	12.	2.90
+	HYDROGRAPH AT	A19	646.	12.33	65.	16.	8.	.46
+	2 COMBINED AT	CPA19A	637.	12.33	162.	41.	20.	3.36
	2 COMBINED AT	CPA19	886.	12.33	284.	72.	35.	15.26
+	ROUTED TO	RCPA19	659.	12.83	281.	72.	35.	15.26
+	HYDROGRAPH AT	A63	841.	12.17	84.	21.	10.	.61
+	2 COMBINED AT	CPA63A	912.	12.33	355.	92.	44.	15.86
+	HYDROGRAPH AT	DRA10	811.	13.83	309.	78.	38.	12.13
+	ROUTED TO	RDA10	737.	14.50	304.	78.	38.	12.13
+	HYDROGRAPH AT	A17	662.	12.50	83.	21.	10.	.57
+	2 COMBINED AT	CPA17	737.	14.50	379.	98.	47.	12.70
+	HYDROGRAPH AT	DRA18	428.	12.33	154.	39.	19.	12.68
+	ROUTED TO	RDA18	310.	13.00	151.	39.	19.	12.68
+	HYDROGRAPH AT	A33	427.	12.17	41.	10.	5.	.28
+	2 COMBINED AT	CPA33A	409.	12.17	187.	49.	23.	12.96
	2 COMBINED AT	CPA33	987.	14.50	556.	145.	70.	14.46
+	ROUTED TO	RCPA33	947.	15.00	547.	145.	70.	14.46

+	2 COMBINED AT	CPA63	1421.	12.83	876.	233.	112.	17.65
+	ROUTED TO	RCPA63	1285.	13.83	846.	233.	112.	17.65
+	HYDROGRAPH AT	A50	1301.	12.33	154.	43.	21.	.99
+	2 COMBINED AT	CPA50	1297.	13.83	925.	270.	131.	18.64
+	ROUTED TO	RCPA50	1275.	14.17	912.	270.	131.	18.64
+	2 COMBINED AT	CPA51	1936.	12.67	1161.	340.	165.	22.83
+	2 COMBINED AT	A51RIV	28642.	17.33	20821.	8000.	3911.	388.64
+	ROUTED TO	RCPA51	28633.	17.33	20820.	8000.	3911.	388.64
+	HYDROGRAPH AT	A05	1848.	12.33	176.	44.	21.	2.14
+	ROUTED TO	RCPA05	1066.	13.00	176.	44.	21.	2.14
+	HYDROGRAPH AT	A23	219.	12.33	20.	5.	2.	.23
+	ROUTED TO	RCPA23	122.	13.00	20.	5.	2.	.23
+	HYDROGRAPH AT	A25	218.	12.33	19.	5.	2.	.22
+	ROUTED TO	RCPA25	159.	12.50	19.	5.	2.	.22
+	HYDROGRAPH AT	A26	570.	12.33	55.	14.	7.	.50
+	4 COMBINED AT	CPA26	1249.	13.00	267.	67.	32.	3.09
+	ROUTED TO	RCPA26	1075.	13.50	266.	67.	32.	3.09
+	HYDROGRAPH AT	A27	981.	12.50	115.	29.	14.	1.11
+	2 COMBINED AT	CPA27A	1089.	13.50	379.	95.	46.	4.19
+	HYDROGRAPH AT	A28	653.	12.17	54.	13.	6.	.55
+	ROUTED TO	RCPA28	524.	12.33	54.	13.	6.	.55
+	2 COMBINED AT	CPA27	1452.	12.50	430.	108.	52.	4.74
+	ROUTED TO	RCPA27	1308.	12.67	429.	108.	52.	4.74
+	HYDROGRAPH AT	A29	896.	12.33	97.	24.	12.	1.19
+	2 COMBINED AT	CPA29	2016.	12.50	523.	131.	63.	5.93
+	HYDROGRAPH AT	DRA04	410.	12.17	28.	7.	3.	.74
+	ROUTED TO	RDA04	159.	13.50	28.	7.	3.	.74
+	HYDROGRAPH AT	A06	798.	12.33	87.	22.	10.	1.11

+	2 COMBINED AT	CPA06	793.	12.33	114.	28.	14.	1.85
+	ROUTED TO	RCPA06	479.	13.33	113.	28.	14.	1.85
	HYDROGRAPH AT	DRA07	227.	12.17	29.	7.	4.	1.27
+	ROUTED TO	RDA07	111.	14.50	29.	7.	4.	1.27
+	HYDROGRAPH AT	A22	437.	12.50	63.	16.	8.	.58
+	2 COMBINED AT	CPA22	432.	12.50	90.	23.	11.	1.84
+	ROUTED TO	RCPA22	413.	12.67	90.	23.	11.	1.84
+	HYDROGRAPH AT	A24	996.	12.50	119.	30.	14.	1.36
+	3 COMBINED AT	CPA24	1332.	12.50	317.	80.	39.	4.31
+	ROUTED TO	RCPA24	1084.	13.17	315.	80.	39.	4.31
+	HYDROGRAPH AT	A30	600.	12.50	76.	19.	9.	.68
+	2 COMBINED AT	CPA30A	1237.	13.00	387.	99.	48.	4.98
+	2 COMBINED AT	CPA30	2901.	12.50	896.	227.	109.	10.91
+	ROUTED TO	RCPA30	2766.	12.67	893.	227.	109.	10.91
	HYDROGRAPH AT	A52	350.	12.17	28.	7.	3.	.22
+	2 COMBINED AT	CPA52A	2772.	12.67	917.	233.	112.	11.13
+	HYDROGRAPH AT	A31	602.	12.50	76.	19.	9.	.54
+	ROUTED TO	RCPA31	429.	13.00	75.	19.	9.	.54
+	HYDROGRAPH AT	DRA21	682.	12.50	130.	33.	16.	5.22
+	ROUTED TO	RDA21	425.	14.50	127.	33.	16.	5.22
+	HYDROGRAPH AT	DRA20	285.	13.17	78.	20.	10.	5.56
+	ROUTED TO	RDA20	221.	14.50	77.	20.	10.	5.56
+	HYDROGRAPH AT	A32	1271.	12.50	172.	43.	21.	1.21
+	3 COMBINED AT	CPA32A	1252.	12.50	368.	94.	45.	6.77
+	2 COMBINED AT	CPA32	1354.	12.50	441.	113.	54.	7.31
+	ROUTED TO	RCPA32	1318.	12.67	440.	113.	54.	7.31
	2 COMBINED AT	CPA52	3898.	12.67	1293.	330.	159.	17.17
+	ROUTED TO	RCPA52	3726.	12.83	1291.	330.	159.	17.17

Appendix D.6.2

HEC-1 MODEL WITHOUT RAILROAD LEVEE IN PLACE

```
1****************************************
****************************************
 *                                      *                                                          *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                          *    U.S. ARMY CORPS OF
ENGINEERS      *
                JUN   1998               *                                                          *    HYDROLOGIC
 INEERING CENTER    *
            VERSION 4.1                  *                                                          *          609 SECOND
ET          *
 *                                      *                                                          *       DAVIS, CALIFORNIA
95616       *
 *  RUN DATE   23FEB05  TIME  07:51:31  *                                                          *           (916) 756-1104
*
 *                                      *                                                          *
*
 ****************************************
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X               X
XXXXXXX  XXXX     X       XXXXX   X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT PAGE 1

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID   FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
  2           ID   WATERMAN WASH - Contract # FCD 2002C024
  3           ID
  4           ID   Prepared by:
  5           ID   Engineering and Environmental Consultants
  6           ID   3003 N. Central, Suite 600
  7           ID   Phoenix, Arizona   85012
  8           ID   Phone: 602-248-7702  FAX: 602-248-7851
  9           ID
 10           ID   01/12/04  Filename:  WW no Railroad.IH1
 11           ID                 Last Revised: 01/03/05
 12           ID
 13           ID   1. The following model is modeled without the Union Pacific railroad
 14           ID      embankment located adjacent to SR-238.  This model assumes the embankment
 15           ID      is washed out.
 16           ID   2. The storm used was 100-year, 24-hour.
 17           ID   3. S-graph was the unit hydrograph.
 18           ID   4. Time step of 10 minutes.
 19           ID   5. A point rainfall of 4.4 inches from NOAA 2 with Maricopa County Areal
 20           ID      reduction.
 21           ID   6. Green-Ampt loss methods were used. Normal depth Channel routing.
 22           ID   7. The sub-basin parameters were generated using FCDMC's DDMSW software.
 23           ID   8. 100 % of contributing area carried with each branch of every split on the
 24           ID      HC cards.
              *DIAGRAM
 25           IT      10                    300
 26           IO       3
 27           IN      15
              *
 28           JD     4.4    0.001
 29           PC   0.000    0.002    0.005    0.008    0.011    0.014    0.017    0.020    0.023    0.026
 30           PC   0.029    0.032    0.035    0.038    0.041    0.044    0.048    0.052    0.056    0.060
 31           PC   0.064    0.068    0.072    0.076    0.080    0.085    0.090    0.095    0.100    0.105
 32           PC   0.110    0.115    0.120    0.126    0.133    0.140    0.147    0.155    0.163    0.172
 33           PC   0.181    0.191    0.203    0.218    0.236    0.257    0.283    0.387    0.663    0.707
```

```
34          PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
35          PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
36          PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
37          PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
38          PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
39          JD   4.180      10
40          JD   4.039      20
41          JD   3.903      40
42          JD   3.771      80
43          JD   3.700     120
44          JD   3.608     200
45          JD   3.524     350
46          JD   3.445     500
            * ******************************************************************************
            * Begin Watershed F
            * ******************************************************************************
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

47          KK     F02
48          KM        Runoff from F02
49          BA   1.023
50          LG    0.35    0.35    2.92    0.90       0
51          UI     302     879    1466     845     307     100      43       0       0       0
52          UI       0       0       0       0       0       0       0       0       0       0
            *

53          KK    DF02
54          KM           Divert flow into F05
55          KM        Natural divergence of flow due to a braided channel network.
56          DT   DVF02
57          DI       0      15      72     171     373     668    1245    2417    4142    5875
58          DQ       0       8      40      99     211     372     675    1285    2190    3085
            *

59          KK  RCPF02
60          KM        Route remainder flow from CP F02 to CP F04
61          RS      30    FLOW      -1
62          RC   0.050   0.045   0.050   18300  0.0079
63          RX       0     200     400     430     445     475     700     900
64          RY    1625    1624    1624    1623    1623    1624    1624    1625
            *

65          KK     F01
66          KM        Runoff from F01
67          BA   2.187
68          LG    0.35    0.35    2.92    0.90       0
69          UI     306    1011    1614    2376    1524     913     379     187      65      64
70          UI       0       0       0       0       0       0       0       0       0       0
71          UI       0       0       0       0       0       0       0       0       0       0
            *

72          KK  RCPF01
73          KM        Route flow from CP F01 to CP F04
74          RS       6    FLOW      -1
75          RC   0.050   0.045   0.050   10320  0.0053
76          RX       0       9      35      90     130     185     235     244
77          RY    1580 1578.25    1578    1577    1577    1578 1578.25    1580
            *

78          KK     F04
79          KM        Runoff from F04
80          BA   2.198
81          LG    0.35    0.35    2.94    0.89       0
82          UI     121     297     571     734     948    1440    1251     956     740     554
83          UI     306     205     140      90      38      37      38      37       0       0
84          UI       0       0       0       0       0       0       0       0       0       0
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

85          KK   CPF04
86          KM        Combine F02, F01 with F04
87          HC       3   5.408
            *

88          KK  RCPF04
89          KM        Route flow from CP F04 to CP F05
90          RS       5    FLOW      -1
91          RC   0.050   0.045   0.050    8220  0.0050
```

```
 92          RX       0      10     160     220     230     290     440     450
 93          RY    1546    1544    1544    1543    1543    1544    1544    1546
             *

 94          KK     F03
 95          KM        Runoff from F03
 96          BA   1.629
 97          LG    0.35    0.35    2.94    0.89       0
 98          UI     199     679    1056    1697    1197     777     347     188      74      46
 99          UI      45       0       0       0       0       0       0       0       0       0
100          UI       0       0       0       0       0       0       0       0       0       0
             *

101          KK  RCPF03
102          KM        Route flow from CP F03 to CP F06
103          RS       2    FLOW      -1
104          RC   0.050   0.045   0.050    4460  0.0087
105          RX       0       6      80     100     110     130     215     221
106          RY    1580 1578.75    1578    1577    1577    1578 1578.75    1580
             *

107          KK     F06
108          KM        Runoff from F06
109          BA   1.001
110          LG    0.35    0.35    2.91    0.91       0
111          UI     575    1751    1172     296      60       0       0       0       0       0
112          UI       0       0       0       0       0       0       0       0       0       0
             *

113          KK   CPF06
114          KM        Combine F03 with F06
115          HC       2   2.629
             *

116          KK  RCPF06
117          KM        Route flow from CP F06 to CP F05
118          RS       5    FLOW      -1
119          RC   0.050   0.045   0.050    8100  0.0051
120          RX       0       9      85     105     115     135     250     259
121          RY  1550.5 1548.75    1548    1547    1547    1548 1548.75  1550.5
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

122          KK   DRF02
123          KM        Return diverted flow from CP F02
124          DR   DVF02
             *

125          KK   RDF02
126          KM        Route flow from CP F02 to CP F05
127          RS      24    FLOW      -1
128          RC   0.050   0.045   0.050   24410  0.0075
129          RX       0     125     250     270     280     300     425     550
130          RY    1595    1594    1593    1592    1592    1593    1594    1595
             *

131          KK     F05
132          KM        Runoff from F05
133          BA   2.944
134          LG    0.35    0.35    3.21    0.74       0
135          UI     198     665    1086    1461    2290    1922    1409    1014     554     334
136          UI     202      86      61      60       0       0       0       0       0       0
137          UI       0       0       0       0       0       0       0       0       0       0
             *

138          KK   CPF05
139          KM        Combine F04, F06, DRF02 with F05
140          HC       4  10.981
             *

141          KK  RCPF05
142          KM        Route flow from CP F05 to CP F08
143          RS       6    FLOW      -1
144          RC   0.050   0.045   0.050    9240  0.0054
145          RX       0      10     260     380     390     510     760     770
146          RY    1506    1504    1504    1503    1503    1504    1504    1506
             *

147          KK     F07
148          KM        Runoff from F07
149          BA   3.678
```

```
150          LG    0.35    0.35    3.09    0.80       0
151          UI     451    1532    2384    3832    2702    1754     785     424     167     103
152          UI     102       0       0       0       0       0       0       0       0       0
153          UI       0       0       0       0       0       0       0       0       0       0
             *

154          KK  RCPF07
155          KM        Route flow from CP F07 to CP F08
156          RS       1    FLOW      -1
157          RC   0.050   0.045   0.050    1290  0.0050
158          RX       0       8     260     330     340     410     670     678
159          RY    1466  1464.5    1464  1462.5  1462.5    1464  1464.5    1466
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

160          KK     F08
161          KM        Runoff from F08
162          BA   0.913
163          LG    0.35    0.35    3.85    0.47       0
164          UI     145     470     793     987     599     303     132      53      29       0
165          UI       0       0       0       0       0       0       0       0       0       0
166          UI       0       0       0       0       0       0       0       0       0       0
             *

167          KK   CPF08
168          KM        Combine F05, F07 with F08
169          HC       3  15.572
             *

170          KK  RCPF08
171          KM        Route flow from CP F08 to CP F09
172          RS       8    FLOW      -1
173          RC   0.050   0.045   0.050   14420  0.0049
174          RX       0       8     180     225     235     280     450     458
175          RY    1411    1409    1408    1407    1407    1408    1409    1411
             *

176          KK     F09
177          KM        Runoff from F09
178          BA   2.655
179          LG    0.35    0.35    3.50    0.62       2
180          UI     166     492     858    1126    1637    1898    1364    1010     730     361
181          UI     255     166      59      50      51      51       0       0       0       0
182          UI       0       0       0       0       0       0       0       0       0       0
             *

183          KK   CPF09
184          KM        Combine F08 with F09
185          HC       2  18.227
             *

186          KK  RCPF09
187          KM        Route flow from CP F09 to CP F19
188          RS       6    FLOW      -1
189          RC   0.050   0.045   0.050    9900  0.0051
190          RX       0       9      60     255     265     460     510     519
191          RY    1350 1348.25    1348    1347    1347    1348 1348.25    1350
             *

192          KK     F19
193          KM        Runoff from F19
194          BA   0.849
195          LG    0.35    0.35    4.30    0.41      14
196          UI     111     372     588     905     608     383     160      91      27      24
197          UI       0       0       0       0       0       0       0       0       0       0
198          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

199          KK   CPF19
200          KM        Combine F09 with F19
201          HC       2  19.076
             *

202          KK    DF19
203          KM           Divert flow into F21
204          KM        Natural divergence of flow due to a braided channel network.
205          DT   DVF19
```

```
206          DI       0      10      39     620    1930    3994    6565    9621   13123
207          DQ       0       5      18     307     958    1984    3264    4786    6531
             *

208          KK  RCPF19
209          KM        Route remainder flow from CP F19 to CP F20
210          RS       3    FLOW      -1
211          RC   0.050   0.045   0.050   10680  0.0048
212          RX       0       9      35     130     140     235     260     269
213          RY    1328 1326.25    1326    1325    1325    1326 1326.25    1328
             *

214          KK     F20
215          KM        Runoff from F20
216          BA   0.797
217          LG    0.34    0.33    4.25    0.41      16
218          UI      85     303     463     771     612     410     223     108      55      21
219          UI      21       0       0       0       0       0       0       0       0       0
220          UI       0       0       0       0       0       0       0       0       0       0
             *

221          KK   CPF20
222          KM        Combine F19 with F20
223          HC       2  19.873
             *

224          KK  RCPF20
225          KM        Route flow from CP F20 to CP F31
226          KM        Crossing at SR-238
227          RS       5    FLOW      -1
228          RC   0.050   0.045   0.050    3980  0.0028
229          RX       0     200     400     495     505     600     800    1000
230          RY    1296    1294    1294    1293    1293    1294    1294    1296
             *

231          KK     F31
232          KM        Runoff from F31
233          BA   0.272
234          LG    0.35    0.35    4.55    0.35       4
235          UI     156     476     319      80      16       0       0       0       0       0
236          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

237          KK     G21
238          KM        Runoff from G21
239          BA   0.910
240          LG    0.35    0.35    3.15    0.84       0
241          UI     247     724    1265     784     320     120      36       0       0       0
242          UI       0       0       0       0       0       0       0       0       0       0
             *

243          KK  CPF31
244          KM        Combine CPF20, F31 with G21
245          HC       3  21.055
             *

246          KK  RCPF31
247          KM        Route flow from CP F31 to CP F32RIV (WATERMAN WASH)
248          RS       2    FLOW      -1
249          RC   0.050   0.035   0.050    2940  0.0029
250          RX       0    1100    2400    2625    2675    2900    3700    4500
251          RY    1295    1290    1287    1285    1285    1287    1290    1295
             *

252          KK     F10
253          KM        Runoff from F10
254          BA   2.261
255          LG    0.35    0.35    3.15    0.80       0
256          UI     388    1225    2152    2396    1422     658     301      99      73       0
257          UI       0       0       0       0       0       0       0       0       0       0
258          UI       0       0       0       0       0       0       0       0       0       0
             *

259          KK  RCPF10
260          KM        Route flow from CP F10 to CP F18
261          RS       2    FLOW      -1
262          RC   0.050   0.045   0.050    4010  0.0050
263          RX       0       8     110     205     215     310     390     398
264          RY    1380  1378.5    1378    1377    1377    1378  1378.5    1380
             *
```

```
265          KK     F18
266          KM        Runoff from F18
267          BA   0.302
268          LG    0.35    0.35    4.10    0.46      20
269          UI     174     528     353      90      18       0       0       0       0       0
270          UI       0       0       0       0       0       0       0       0       0       0
             *

271          KK   CPF18
272          KM        Combine F10 with F18
273          HC       2   2.564
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

274          KK    DF18
275          KM           Divert flow into F21
276          KM        Natural divergence of flow due to a braided channel network.
277          DT   DVF18
278          DI       0      43     174     377    1053    2479    4606    7953   11679
279          DQ       0      14      53     116     360     876    1770    3014    4524
             *

280          KK  RCPF18
281          KM        Route remainder flow from CP F18 to CP F22
282          RS       7    FLOW      -1
283          RC   0.050   0.045   0.050    7370  0.0047
284          RX       0     100     200     295     305     400     500     600
285          RY    1370    1369    1369    1368    1368    1369    1369    1370
             *

286          KK     F22
287          KM        Runoff from F22
288          BA   0.366
289          LG    0.35    0.35    4.45    0.37       8
290          UI     118     341     538     283      90      29      15       0       0       0
291          UI       0       0       0       0       0       0       0       0       0       0
             *

292          KK   CPF22
293          KM        Combine F18 with F22
294          HC       2   2.930
             *

295          KK    DF22
296          KM           Divert flow into F28
297          KM        Natural divergence of flow due to a braided channel network.
298          DT   DVF22
299          DI       0      61     238     612    1780    4433    7775   11770
300          DQ       0      26     100     216     644    1917    3608    5618
             *

301          KK  RCPF22
302          KM        Route remainder flow from CP F22 to CP F29
303          RS      10    FLOW      -1
304          RC   0.050   0.045   0.050    8900  0.0040
305          RX       0     250     500     695     705     900    1150    1400
306          RY    1315    1314    1313    1312    1312    1313    1314    1315
             *

307          KK   DRF19
308          KM        Return diverted flow from CP F19
309          DR   DVF19
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

310          KK   RDF19
311          KM        Route flow from CP F19 to CP F21
312          RS       6    FLOW      -1
313          RC   0.050   0.045   0.050    4510  0.0044
314          RX       0       9      35     130     140     235     260     269
315          RY    1330 1328.25    1328    1327    1327    1328 1328.25    1330
             *

316          KK   DRF18
317          KM        Return diverted flow from CP F18
318          DR   DVF18
             *
```

```
 319          KK   RDF18
 320          KM        Route flow from CP F18 to CP F21
 321          RS      11    FLOW      -1
 322          RC   0.050   0.045   0.050   10380  0.0049
 323          RX       0     150     300     495     505     700     950    1200
 324          RY    1330    1329    1328    1327    1327    1328    1329    1330
              *

 325          KK     F21
 326          KM        Runoff from F21
 327          BA   0.533
 328          LG    0.35    0.35    4.45    0.37       8
 329          UI     106     324     602     526     304     117      48      19       0       0
 330          UI       0       0       0       0       0       0       0       0       0       0
              *

 331          KK   CPF21
 332          KM        Combine DRF19, DRF18 with F21
 333          HC       3  22.173
              *

 334          KK  RCPF21
 335          KM        Route flow from CP F21 to CP F29
 336          RS       6    FLOW      -1
 337          RC   0.050   0.045   0.050    5930  0.0034
 338          RX       0     250     500     695     705     900    1150    1400
 339          RY    1315    1314    1313    1312    1312    1313    1314    1315
              *

 340          KK     F29
 341          KM        Runoff from F29
 342          BA   0.594
 343          LG    0.34    0.34    4.35    0.39      12
 344          UI     110     340     618     611     357     149      70      20      20       0
 345          UI       0       0       0       0       0       0       0       0       0       0
 346          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 347          KK   CPF29
 348          KM        Combine F21, F22 with F29
 349          HC       3  23.133
              *

 350          KK  RCPF29
 351          KM        Route flow from CP F29 to CP F32
 352          KM        Crossing at SR-238
 353          RS       2    FLOW      -1
 354          RC   0.050   0.045   0.050    5810  0.0038
 355          RX       0     200     400     495     505     600     800    1000
 356          RY  1295.5    1294    1294    1293    1293    1294    1294  1295.5
              *

 357          KK     F36
 358          KM        Runoff from F36
 359          BA   0.167
 360          LG    0.35    0.35    3.92    0.49      25
 361          UI     136     352     132      21       0       0       0       0       0       0
 362          UI       0       0       0       0       0       0       0       0       0       0
              *

 363          KK  RCPF36
 364          KM        Route flow from CP F36 to CP F32
 365          KM        Crossing at SR-238
 366          RS       7    FLOW      -1
 367          RC   0.050   0.045   0.050    5660  0.0038
 368          RX       0     200     400     495     505     600     800    1000
 369          RY    1295    1294    1294    1293    1293    1294    1294    1295
              *

 370          KK     F32
 371          KM        Runoff from F32
 372          BA   0.287
 373          LG    0.35    0.35    4.65    0.32       0
 374          UI     110     332     417     178      53      13       0       0       0       0
 375          UI       0       0       0       0       0       0       0       0       0       0
              *

 376          KK   CPF32
 377          KM        Combine F36, F29 with F32
```

```
378          HC       3  23.586
             * ******************************************************************************
             * Begin Watershed G
             * ******************************************************************************

379          KK     G20
380          KM        Runoff from G20
381          BA   0.481
382          LG    0.35     0.35     3.29     0.72        0
383          UI     249      773      605      177       40        0        0        0        0        0
384          UI       0        0        0        0        0        0        0        0        0        0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

385          KK  RCPG20
386          KM        Route flow from CP G20 to CP G22
387          RS       8    FLOW       -1
388          RC   0.050    0.045    0.050     8950   0.0077
389          RX       0      200      330      340      360      370      525      700
390          RY    1328     1327     1326     1325     1325     1326     1327     1328
             *

391          KK     G19
392          KM        Runoff from G19
393          BA   0.670
394          LG    0.35     0.35     3.05     0.86       12
395          UI     429     1257      712      152       41        0        0        0        0        0
396          UI       0        0        0        0        0        0        0        0        0        0
             *

397          KK  RCPG19
398          KM        Route flow from CP G19 to CP G22
399          RS       5    FLOW       -1
400          RC   0.050    0.045    0.050    10270   0.0068
401          RX       0        9       40       50       70       80      110      119
402          RY  1328.5  1326.25     1326     1325     1325     1326  1326.25   1328.5
             *

403          KK     G22
404          KM        Runoff from G22
405          BA   1.124
406          LG    0.35     0.35     3.15     0.84        0
407          UI     240      729     1355     1076      591      211       84       40        0        0
408          UI       0        0        0        0        0        0        0        0        0        0
             *

409          KK   CPG22
410          KM        Combine G20, G19 with G22
411          HC       3   2.276
             *

412          KK  F32RIV
413          KM        Combine F31RIV, G22 with F32
414          KM        83rd Avenue crossing at F32RIV
415          HC       3  27.841
             *

416          KK  RCPF32
417          KM        Route flow from CP F32RIV to CP F33RIV (WATERMAN WASH)
418          RS       2    FLOW       -1
419          RC   0.050    0.035    0.050     2810   0.0033
420          RX       0     1000     2100     2280     2320     2500     2900     3700
421          RY    1285     1280     1277     1275     1275     1277     1280     1285
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

422          KK   DRF22
423          KM        Return diverted flow from CP F22
424          DR   DVF22
             *

425          KK   RDF22
426          KM        Route flow from CP F22 to CP F28
427          RS      12    FLOW       -1
428          RC   0.050    0.045    0.050     7880   0.0036
429          RX       0      200      400      495      505      600      800     1000
430          RY    1328     1327     1326     1325     1325     1326     1327     1328
             *
```

```
431          KK     F28
432          KM        Runoff from F28
433          BA   0.474
434          LG    0.35     0.34     4.15     0.44       19
435          UI     140      408      678      392      142       47       19        0        0        0
436          UI       0        0        0        0        0        0        0        0        0        0
             *

437          KK   CPF28
438          KM        Combine DRF22 with F28
439          HC       2   3.404
             *

440          KK    DF28
441          KM           Divert flow into F34
442          KM        Natural divergence of flow due to a braided channel network.
443          DT   DVF28
444          DI       0       50      100      300      600     1200     3000
445          DQ       0       25       50      150      300      600     1500
             *

446          KK  RCPF28
447          KM        Route remainder flow from CP F28 to CP F33
448          KM        Crossing at SR-238
449          RS       3     FLOW       -1
450          RC   0.050    0.045    0.050     7410   0.0043
451          RX       0      200      400      495      505      600      800     1000
452          RY    1295     1294     1293     1292     1292     1293     1294     1295
             *

453          KK     F33
454          KM        Runoff from F33
455          BA   0.492
456          LG    0.35     0.35     4.55     0.35        5
457          UI     122      365      656      442      201       79       20       19        0        0
458          UI       0        0        0        0        0        0        0        0        0        0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

459          KK   CPF33
460          KM        Combine F28 with F33
461          HC       2   3.897
             *

462          KK  F33RIV
463          KM        Combine F32RIV with F33
464          HC       2  28.807
             *

465          KK  RCPF33
466          KM        Route flow from CP F33RIV to CP F34RIV (WATERMAN WASH)
467          RS       1     FLOW       -1
468          RC   0.050    0.035    0.050     2280   0.0028
469          RX       0        9      110      290      330      510      610      619
470          RY    1274  1272.25     1272     1270     1270     1272  1272.25     1274
             *

471          KK     F13
472          KM        Runoff from F13
473          BA   0.260
474          LG    0.35     0.35     2.97     0.89        0
475          UI     242      569      167       26        0        0        0        0        0        0
476          UI       0        0        0        0        0        0        0        0        0        0
             *

477          KK    DF13
478          KM           Divert flow into F15
479          KM        Natural divergence of flow due to a braided channel network.
480          DT   DVF13
481          DI       0       23       96      371     1090     2412     4125     6119     8417
482          DQ       0        6       28      213      643     1265     2047     2971     4025
             *

483          KK  RCPF13
484          KM        Route remainder flow from CP F13 to CP F12
485          RS      13     FLOW       -1
486          RC   0.050    0.045    0.050     1730   0.0059
487          RX       0      100      200      210      215      225      325      425
488          RY    1435     1434     1433     1432     1432     1433     1434     1435
             *
```

```
489          KK     F12
490          KM        Runoff from F12
491          BA   0.312
492          LG    0.35    0.35    3.05    0.85       0
493          UI     223     626     288      56       0       0       0       0       0       0
494          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                          HEC-1 INPUT                                          PAGE
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

495          KK   CPF12
496          KM        Combine F13 with F12
497          HC       2   0.573
             *

498          KK    DF12
499          KM            Divert flow into F15
500          KM        Natural divergence of flow due to a braided channel network.
501          DT   DVF12
502          DI       0      38     157     346     945    2436    4311    6488.   9017
503          DQ       0      21      89     190     513    1325    2326    3491    4844
             *

504          KK  RCPF12
505          KM        Route remainder flow from CP F12 to CP F11
506          RS      12    FLOW      -1
507          RC   0.050   0.045   0.050    5570  0.0071
508          RX       0     100     200     210     215     225     325     425
509          RY    1408    1407    1407    1406    1406    1407    1407    1408
             *

510          KK     F11
511          KM        Runoff from F11
512          BA   1.581
513          LG    0.35    0.35    3.07    0.84       0
514          UI     272     856    1505    1675     995     459     211      69      51       0
515          UI       0       0       0       0       0       0       0       0       0       0
516          UI       0       0       0       0       0       0       0       0       0       0
             *

517          KK   CPF11
518          KM        Combine F12 with F11
519          HC       2   2.154
             *

520          KK    DF11
521          KM            Divert flow into F17
522          KM        Natural divergence of flow due to a braided channel network.
523          DT   DVF11
524          DI       0      43     182     752    2114    4095    6527    9401   12681
525          DQ       0      13      59     288     829    1573    2498    3588    4828
             *

526          KK  RCPF11
527          KM        Route remainder flow from CP F11 to CP F16
528          RS       2    FLOW      -1
529          RC   0.050   0.045   0.050    3240  0.0056
530          RX       0       6     100     112     120     130     230     236
531          RY  1384.8 1383.25    1383    1382    1382    1383 1383.25  1384.8
             *
1                                          HEC-1 INPUT                                          PAGE 15
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

532          KK     F16
533          KM        Runoff from F16
534          BA   0.103
535          LG    0.35    0.35    4.60    0.34       0
536          UI     111     230      51       0       0       0       0       0       0       0
537          UI       0       0       0       0       0       0       0       0       0       0
             *

538          KK   CPF16
539          KM        Combine F11 with F16
540          HC       2   2.257
             *

541          KK    DF16
542          KM            Divert flow into F25
543          KM        Natural divergence of flow due to a braided channel network.
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```
544          DT   DVF16
545          DI       0      21      90     219     746    2056    3816    5880    8292
546          DQ       0      11      52     134     459    1233    2350    3624    5114
             *

547          KK  RCPF16
548          KM        Route remainder flow from CP F16 to CP F24
549          RS      24    FLOW      -1
550          RC   0.050   0.045   0.050    8930  0.0048
551          RX       0     200     400     495     505     600     800    1000
552          RY    1367    1366    1365    1364    1364    1365    1366    1367
             *

553          KK   DRF11
554          KM        Return diverted flow from CP F11
555          DR   DVF11
             *

556          KK   RDF11
557          KM        Route flow from CP F11 to CP F17
558          RS       4    FLOW      -1
559          RC   0.050   0.045   0.050    3880  0.0051
560          RX       0     100     200     210     220     230     330     430
561          RY    1395    1394    1394    1393    1393    1394    1394    1395
             *

562          KK     F17
563          KM        Runoff from F17
564          BA   1.146
565          LG    0.35    0.35    3.33    0.72       2
566          UI     263     796    1458    1066     533     197      67      42       0       0
567          UI       0       0       0       0       0       0       0       0       0       0
             *
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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

568          KK   CPF17
569          KM        Combine DRF11 with F17
570          HC       2   3.300
             *

571          KK  RCPF17
572          KM        Route flow from CP F17 to CP F24
573          RS       8    FLOW      -1
574          RC   0.050   0.045   0.050    8910  0.0048
575          RX       0     200     400     495     505     600     800    1000
576          RY    1367    1366    1365    1364    1364    1365    1366    1367
             *

577          KK     F24
578          KM        Runoff from F24
579          BA   1.030
580          LG    0.35    0.35    4.30    0.41      14
581          UI     127     428     668    1073     757     491     220     118      47      29
582          UI      29       0       0       0       0       0       0       0       0       0
583          UI       0       0       0       0       0       0       0       0       0       0
             *

584          KK   CPF24
585          KM        Combine F17, F16 with F24
586          HC       3   4.433
             *

587          KK  RCPF24
588          KM        Route flow from CP F24 to CP F27
589          RS       4    FLOW      -1
590          RC   0.050   0.045   0.050    6170  0.0046
591          RX       0       9      35     130     140     235     260     269
592          RY    1315 1313.25    1313    1312    1312    1313 1313.25    1315
             *

593          KK     F23
594          KM        Runoff from F23
595          BA   0.499
596          LG    0.35    0.35    4.00    0.47      22
597          UI      99     303     564     493     285     109      45      17       0       0
598          UI       0       0       0       0       0       0       0       0       0       0
             *

599          KK  RCPF23
600          KM        Route flow from CP F23 to CP F27
601          RS       6    FLOW      -1
```

```
602          RC   0.050   0.045   0.050    6010  0.0046
603          RX       0     200     400     495     505     600     800    1000
604          RY    1315    1314    1313    1312    1312    1313    1314    1315
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

605          KK     F27
606          KM         Runoff from F27
607          BA   0.610
608          LG    0.35    0.35    4.50    0.36       5
609          UI     152     452     813     548     249      98      25      23       0       0
610          UI       0       0       0       0       0       0       0       0       0       0
             *

611          KK   CPF27
612          KM         Combine F24, F23 with F27
613          HC       3   5.542
             *

614          KK  RCPF27
615          KM         Route flow from CP F27 to CP F34
616          KM         Crossing at SR-238
617          RS       1    FLOW      -1
618          RC   0.050   0.045   0.050    9250  0.0036
619          RX       0       9      35     130     140     235     260     269
620          RY  1295.5 1293.25    1293    1292    1292    1293 1293.25  1295.5
             *

621          KK   DRF12
622          KM         Return diverted flow from CP F12
623          DR   DVF12
             *

624          KK   RDF12
625          KM         Route flow from CP F12 to CP F15
626          RS       8    FLOW      -1
627          RC   0.050   0.045   0.050    7740  0.0064
628          RX       0     100     200     215     225     240     365     490
629          RY    1390    1389    1389    1388    1388    1389    1389    1390
             *

630          KK   DRF13
631          KM         Return diverted flow from CP F13
632          DR   DVF13
             *

633          KK   RDF13
634          KM         Route flow from CP F13 to CP F15
635          RS       2    FLOW      -1
636          RC   0.050   0.045   0.050    9300  0.0064
637          RX       0     100     200     215     225     240     365     490
638          RY    1390    1389    1389    1388    1388    1389    1389    1390
             *

639          KK     F14
640          KM         Runoff from F14
641          BA   0.388
642          LG    0.35    0.35    3.09    0.83       0
643          UI     248     729     411      89      23       0       0       0       0       0
644          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

645          KK  RCPF14
646          KM         Route flow from CP F14 to CP F15
647          RS      11    FLOW      -1
648          RC   0.050   0.045   0.050    8350  0.0066
649          RX       0     100     200     215     225     240     365     490
650          RY    1390    1389    1389    1388    1388    1389    1389    1390
             *

651          KK     F15
652          KM         Runoff from F15
653          BA   0.784
654          LG    0.35    0.35    4.40    0.38       0
655          UI     134     425     747     830     493     228     105      34      26       0
656          UI       0       0       0       0       0       0       0       0       0       0
657          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

 658            KK   CPF15
 659            KM        Combine DRF13, DRF12, F14 with F15
 660            HC       4   1.745
                *

 661            KK  RCPF15
 662            KM        Route flow from CP F15 to CP F25
 663            RS      22    FLOW      -1
 664            RC   0.050   0.045   0.050   14250  0.0050
 665            RX       0     300     600     695     705     800    1100    1400
 666            RY    1375    1374    1374    1373    1373    1374    1374    1375
                *

 667            KK   DRF16
 668            KM        Return diverted flow from CP F16
 669            DR   DVF16
                *

 670            KK   RDF16
 671            KM        Route flow from CP F16 to CP F25
 672            RS      11    FLOW      -1
 673            RC   0.050   0.045   0.050   14790  0.0045
 674            RX       0     150     325     345     355     375     550     700
 675            RY    1358    1357    1357    1356    1356    1357    1357    1358
                *

 676            KK     F25
 677            KM        Runoff from F25
 678            BA   2.833
 679            LG    0.35    0.35    4.40    0.38       1
 680            UI     187     609    1008    1344    2102    1894    1390     997     609     321
 681            UI     213     110      57      58      57       0       0       0       0       0
 682            UI       0       0       0       0       0       0       0       0       0       0
                *
1                                          HEC-1 INPUT                                          PAGE 19

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 683            KK   CPF25
 684            KM        Combine F15, DRF16 with F25
 685            HC       3   6.262
                *

 686            KK  RCPF25
 687            KM        Route flow from CP F25 to CP F34
 688            KM        Crossing at SR-238
 689            RS       1    FLOW      -1
 690            RC   0.050   0.045   0.050    9280  0.0036
 691            RX       0       9      35     130     140     235     260     269
 692            RY  1295.5 1293.25    1293    1292    1292    1293 1293.25  1295.5
                *

 693            KK   DRF28
 694            KM        Return diverted flow from CP F28A
 695            DR   DVF28
                *

 696            KK   RDF28
 697            KM        Route flow from CP F28 to CP F34
 698            KM        Crossing at SR-238
 699            RS      12    FLOW      -1
 700            RC   0.050   0.045   0.050    9420  0.0036
 701            RX       0     200     400     495     505     600     800    1000
 702            RY    1295    1294    1293    1292    1292    1293    1294    1295
                *

 703            KK     F34
 704            KM        Runoff from F34
 705            BA   0.597
 706            LG    0.35    0.35    4.60    0.34       2
 707            UI     110     342     621     615     358     150      70      21      20       0
 708            UI       0       0       0       0       0       0       0       0       0       0
 709            UI       0       0       0       0       0       0       0       0       0       0
                *

 710            KK   CPF34
 711            KM        Combine DRF28, F27, F25 with F34
 712            HC       4  13.548
                *

 713            KK     G23
```

```
714          KM        Runoff from G23
715          BA   1.197
716          LG    0.35     0.35     3.01     0.92        0
717          UI     325      952     1664     1031      422      157       48        0        0        0
718          UI       0        0        0        0        0        0        0        0        0        0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

719          KK  F34RIV
720          KM        Combine F33RIV, G23 with F34
721          HC       3  40.147
             *

722          KK  RCPF34
723          KM        Route flow from CP F34RIV to CP F35RIV (WATERMAN WASH)
724          RS       2    FLOW      -1
725          RC   0.050   0.035   0.050     2250  0.0025
726          RX       0      20    1510     1690    1730    1910    3410    3430
727          RY  1272.5    1268    1261     1259    1259    1261    1268  1272.5
             *

728          KK     F26
729          KM        Runoff from F26
730          BA   0.495
731          LG    0.35     0.35     4.65     0.32        0
732          UI      85      268      471      525      311      145       65       22       16        0
733          UI       0        0        0        0        0        0        0        0        0        0
734          UI       0        0        0        0        0        0        0        0        0        0
             *

735          KK  RCPF26
736          KM        Route flow from CP F26 to CP F35
737          KM        Crossing at SR-238
738          RS       2    FLOW      -1
739          RC   0.050   0.045   0.050    10950  0.0044
740          RX       0     200     400      595      605      800     1000     1200
741          RY    1280    1279    1278     1277     1277     1278     1279     1280
             *

742          KK     F35
743          KM        Runoff from F35
744          BA   0.795
745          LG    0.34     0.34     4.65     0.32        1
746          UI     104      349      550      848      569      358      150       85       25       23
747          UI       0        0        0        0        0        0        0        0        0        0
748          UI       0        0        0        0        0        0        0        0        0        0
             *

749          KK   CPF35
750          KM        Combine F26 with F35
751          HC       2   1.290
             *

752          KK     G24
753          KM        Runoff from G24
754          BA   0.349
755          LG    0.35     0.35     2.99     0.94        0
756          UI     134      404      506      216       65       17        0        0        0        0
757          UI       0        0        0        0        0        0        0        0        0        0
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

758          KK  RCPG24
759          KM        Route flow from CP G24 to CP F35RIV
760          RS       1    FLOW      -1
761          RC   0.050   0.035   0.050      750  0.0027
762          RX       0       9     110      140      190      220      300      309
763          RY    1262 1260.25    1260     1257     1257     1260 1260.25     1262
             *

764          KK     G25
765          KM        Runoff from G25
766          BA   0.358
767          LG    0.35     0.35     2.94     0.97        0
768          UI      76      233      432      342      188       67       27       12        0        0
769          UI       0        0        0        0        0        0        0        0        0        0
             *
```

```
770          KK  F35RIV
771          KM        Combine F34RIV, G24, G25 with F35
772          HC       4  42.145
             *

773          KK  RCPF35
774          KM        Route flow from CP F35RIV to CP E48RIV (WATERMAN WASH)
775          RS       1    FLOW      -1
776          RC   0.050   0.035   0.050    1660  0.0025
777          RX       0      10    1200    1380    1420    1600    1800    1810
778          RY    1272    1270    1262    1260    1260    1262    1270    1272
             * ******************************************************************************
             * End Watershed F
             * Begin Watershed E
             * ******************************************************************************

779          KK     E09
780          KM        Runoff from E09
781          BA   0.303
782          LG    0.35    0.35    2.92    0.91       0
783          UI     247     639     239      38       0       0       0       0       0       0
784          UI       0       0       0       0       0       0       0       0       0       0
             *

785          KK    DE09
786          KM            Divert flow into E13
787          KM        Natural divergence of flow due to a braided channel network.
788          DT   DVE09
789          DI       0      22      90     197     422     756    1421    2780    4781    6794
790          DQ       0       8      37      85     190     349     673    1336    2304    3291
             *

791          KK  RCPE09
792          KM        Route remainder flow from CP E09 to CP E10
793          RS       3    FLOW      -1
794          RC   0.050   0.045   0.050    2830  0.0110
795          RX       0     100     185     195     200     210     300     400
796          RY    1530    1529    1529    1528    1528    1529    1529    1530
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

797          KK     E10
798          KM        Runoff from E10
799          BA   0.098
800          LG    0.35    0.35    3.55    0.62       0
801          UI     124     219      31       0       0       0       0       0       0       0
802          UI       0       0       0       0       0       0       0       0       0       0
             *

803          KK   CPE10
804          KM        Combine E09 with E10
805          HC       2   0.401
             *

806          KK    DE10
807          KM            Divert flow into E13
808          KM        Natural divergence of flow due to a braided channel network.
809          DT   DVE10
810          DI       0      34     132     283     683    1405    2576    4977    7479   10398
811          DQ       0      25      95     199     453     917    1597    2901    4193    5679
             *

812          KK  RCPE10
813          KM        Route remainder flow from CP E10 to CP E05
814          RS      14    FLOW      -1
815          RC   0.050   0.045   0.050   11570  0.0071
816          RX       0     100     200     240     250     290     410     530
817          RY    1470    1469    1469    1468    1468    1469    1469    1470
             *

818          KK     E06
819          KM        Runoff from E06
820          BA   1.056
821          LG    0.35    0.35    2.89    0.92       0
822          UI     547    1696    1328     390      89       0       0       0       0       0
823          UI       0       0       0       0       0       0       0       0       0       0
             *

824          KK  RCPE06
825          KM        Route flow from CP E06 to CP E05
826          RS      19    FLOW      -1
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```
827          RC   0.050   0.045   0.050   19520  0.0080
828          RX       0     100     200     240     250     290     410     530
829          RY  1470.5    1469    1469    1468    1468    1469    1469  1470.5
             *

830          KK     E04
831          KM         Runoff from E04
832          BA   1.771
833          LG    0.35    0.35    2.91    0.91       0
834          UI     678    2048    2570    1100     330      84       0       0       0       0
835          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

836          KK  RCPE04
837          KM         Route flow from CP E04 to CP E05
838          RS      27    FLOW      -1
839          RC   0.050   0.045   0.050   31530  0.0090
840          RX       0     100     200     240     250     290     410     530
841          RY    1471    1469    1469    1468    1468    1469    1469    1471
             *

842          KK     E11
843          KM         Runoff from E11
844          BA   2.267
845          LG    0.35    0.35    3.11    0.80       0
846          UI     260     901    1390    2290    1697    1126     555     284     130      62
847          UI      62       0       0       0       0       0       0       0       0       0
848          UI       0       0       0       0       0       0       0       0       0       0
             *

849          KK    DE11
850          KM            Divert flow into E12
851          KM         Natural divergence of flow due to a braided channel network.
852          DT   DVE11
853          DI       0      32     130     326     648     922    1642    2906    4664    7677
854          DQ       0      10      42     111     233     330     659    1302    2172    3568
             *

855          KK  RCPE11
856          KM         Route remainder flow from CP E11 to CP E05
857          RS       8    FLOW      -1
858          RC   0.050   0.045   0.050    8860  0.0058
859          RX       0     100     200     240     250     290     410     530
860          RY  1470.5    1469    1469    1468    1468    1469    1469  1470.5
             *

861          KK     E05
862          KM         Runoff from E05
863          BA   4.177
864          LG    0.35    0.35    3.21    0.76       0
865          UI     239     616    1151    1483    1968    2905    2300    1759    1348     946
866          UI     483     367     239     105      73      73      73       0       0       0
867          UI       0       0       0       0       0       0       0       0       0       0
             *

868          KK   CPE05
869          KM         Combine E04, E06, E11, E10 with E05
870          HC       5   9.671
             *

871          KK    DE05
872          KM            Divert flow into E24
873          KM         Natural divergence of flow due to a braided channel network.
874          DT   DVE05
875          DI       0      31     131     286     648    1257    2230    4256    6528    9009
876          DQ       0       8      41      97     242     501     922    1831    2518    3908
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

877          KK  RCPE05
878          KM         Route remainder flow from CP E05 to CP E25
879          RS       5    FLOW      -1
880          RC   0.050   0.045   0.050   21390  0.0063
881          RX       0       8      60      80     100     120     170     178
882          RY  1355.5  1353.5    1353    1352    1352    1353  1353.5  1355.5
             *
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883          KK   DRE11
884          KM        Return diverted flow from CP E11
885          DR   DVE11
             *

886          KK   RDE11
887          KM        Route flow from CP E11 to CP E12
888          RS      12    FLOW      -1
889          RC   0.050   0.045   0.050   13860  0.0065
890          RX       0     125     250     280     310     340     490     640
891          RY    1490    1489    1488    1487    1487    1488    1489    1490
             *

892          KK     E12
893          KM        Runoff from E12
894          BA   1.048
895          LG    0.35    0.35    3.78    0.52       0
896          UI     156     508     846    1136     708     397     164      75      31      32
897          UI       0       0       0       0       0       0       0       0       0       0
898          UI       0       0       0       0       0       0       0       0       0       0
             *

899          KK   CPE12
900          KM        Combine DRE11 with E12
901          HC       2   3.315
             *

902          KK  RCPE12
903          KM        Route flow from CP E12 to CP E25
904          RS       8    FLOW      -1
905          RC   0.050   0.045   0.050   15780  0.0060
906          RX       0       9      30      50      70      90     110     119
907          RY  1355.5 1353.25    1353    1352    1352    1353 1353.25  1355.5
             *

908          KK     E25
909          KM        Runoff from E25
910          BA   1.638
911          LG    0.35    0.35    4.15    0.44       0
912          UI     102     304     529     695    1010    1171     841     624     450     223
913          UI     157     102      36      31      32      31       0       0       0       0
914          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

915          KK   CPE25
916          KM        Combine E12, E05 with E25
917          HC       3  12.358
             *

918          KK  RCPE25
919          KM        Route flow from CP E25 to CP E45
920          KM        Crossing at SR-238
921          RS       1    FLOW      -1
922          RC   0.050   0.045   0.050    3300  0.0060
923          RX       0     163     326     490     510     674     837    1000
924          RY    1310    1309    1308    1307    1307    1308    1309    1310
             *

925          KK     E26
926          KM        Runoff from E26
927          BA   0.324
928          LG    0.35    0.35    4.65    0.32       0
929          UI      88     257     451     279     114      42      14       0       0       0
930          UI       0       0       0       0       0       0       0       0       0       0
             *

931          KK  RCPE26
932          KM        Route flow from CP E26 to CP E35
933          RS       7    FLOW      -1
934          RC   0.050   0.045   0.050    6090  0.0049
935          RX       0     163     327     490     510     674     837    1000
936          RY    1360    1359    1358    1357    1357    1358    1359    1360
             *

937          KK     E35
938          KM        Runoff from E35
939          BA   0.366
940          LG    0.35    0.35    4.65    0.32       0
941          UI     170     539     481     169      40       0       0       0       0       0
942          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

943             KK   CPE35
944             KM        Combine E26 with E35
945             HC       2   0.690
                *

946             KK    DE35
947             KM           Divert flow into E54
948             KM        Natural divergence of flow due to a braided channel network.
949             DT   DVE35
950             DI       0      20      50     100     200     400     800    1600    3200    6400
951             DQ       0      10      25      50     100     200     400     800    1600    3200
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

952             KK  RCPE35
953             KM        Route remainder flow from CP E35 to CP E36
954             RS       6    FLOW      -1
955             RC   0.050   0.045   0.050    5070  0.0056
956             RX       0     163     327     490     510     674     837    1000
957             RY    1330    1329    1328    1327    1327    1328    1329    1330
                *

958             KK     E36
959             KM        Runoff from E36
960             BA   0.163
961             LG    0.35    0.35    4.10    0.46       0
962             UI     105     306     173      37       9       0       0       0       0       0
963             UI       0       0       0       0       0       0       0       0       0       0
                *

964             KK   CPE36
965             KM        Combine E35 with E36
966             HC       2   0.853
                *

967             KK  RCPE36
968             KM        Route flow from CP E36 to CP E45
969             KM        Crossing at SR-238
970             RS       2    FLOW      -1
971             RC   0.050   0.045   0.050    3250  0.0060
972             RX       0     163     326     490     510     674     837    1000
973             RY    1310    1309    1308    1307    1307    1308    1309    1310
                *

974             KK     E45
975             KM        Runoff from E45
976             BA   0.320
977             LG    0.30    0.25    4.55    0.35       5
978             UI     103     299     469     248      78      26      14       0       0       0
979             UI       0       0       0       0       0       0       0       0       0       0
                *

980             KK   CPE45
981             KM        Combine E25, E36 with E45
982             HC       3  13.531
                *

983             KK  RCPE45
984             KM        Route flow from CP E45 to CP E47
985             RS       2    FLOW      -1
986             RC   0.050   0.045   0.050    2960  0.0058
987             RX       0       9      35     199     219     383     410     419
988             RY    1295 1293.25    1293    1292    1292    1293 1293.25    1295
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

989             KK   DRE35
990             KM        Return diverted flow from CP E35
991             DR   DVE35
                *

992             KK   RDE35
993             KM        Route flow from CP E35 to CP E54
994             RS       1    FLOW      -1
995             RC   0.050   0.045   0.050    5710  0.0056
996             RX       0     163     327     490     510     674     837    1000
```

```
 997          RY    1330    1329    1328    1327    1327    1328    1329    1330
              *

 998          KK     E54
 999          KM        Runoff from E54
1000          BA   0.122
1001          LG    0.35    0.35    4.50    0.36       0
1002          UI      63     196     154      44      11       0       0       0       0       0
1003          UI       0       0       0       0       0       0       0       0       0       0
              *

1004          KK   CPE54
1005          KM        Combine DRE35 with E54
1006          HC       2   0.812
              *

1007          KK  RCPE54
1008          KM        Route flow from CP E54 to CP E46
1009          KM        Crossing at SR-238
1010          RS       2    FLOW      -1
1011          RC   0.050   0.045   0.050    2630  0.0055
1012          RX       0     163     327     490     510     674     837    1000
1013          RY    1310    1309    1308    1307    1307    1308    1309    1310
              *

1014          KK     E46
1015          KM        Runoff from E46
1016          BA   0.175
1017          LG    0.30    0.26    4.45    0.37       5
1018          UI      91     281     220      64      15       0       0       0       0       0
1019          UI       0       0       0       0       0       0       0       0       0       0
              *

1020          KK   CPE46
1021          KM        Combine E54 with E46
1022          HC       2   0.986
              *

1023          KK  RCPE46
1024          KM        Route flow from CP E46 to CP E47
1025          RS       3    FLOW      -1
1026          RC   0.050   0.045   0.050    2750  0.0058
1027          RX       0     163     327     490     510     674     837    1000
1028          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1029          KK     E47
1030          KM        Runoff from E47
1031          BA   0.428
1032          LG    0.30    0.25    4.65    0.32       5
1033          UI     151     442     630     303      89      25       0       0       0       0
1034          UI       0       0       0       0       0       0       0       0       0       0
              *

1035          KK   CPE47
1036          KM        Combine E45, E46 with E47
1037          HC       3  14.256
              *

1038          KK  RCPE47
1039          KM        Route flow from CP E47 to CP E48
1040          RS       6    FLOW      -1
1041          RC   0.050   0.045   0.050    7130  0.0039
1042          RX       0       8     260     295     300     335     585     593
1043          RY    1281  1279.5    1279    1278    1278    1279  1279.5    1281
              *

1044          KK     E48
1045          KM        Runoff from E48
1046          BA   0.861
1047          LG    0.35    0.35    4.60    0.31       0
1048          UI     277     805    1263     665     213      68      37       0       0       0
1049          UI       0       0       0       0       0       0       0       0       0       0
              *

1050          KK   CPE48
1051          KM        Combine E47 with E48
1052          HC       2  15.117
              *
```

```
1053          KK     G26
1054          KM        Runoff from G26
1055          BA   1.167
1056          LG    0.35    0.35    2.95    0.95       1
1057          UI     316     928    1623    1006     410     154      46       0       0       0
1058          UI       0       0       0       0       0       0       0       0       0       0
              *

1059          KK  E48RIV
1060          KM        Combine F35RIV, G26 with E48
1061          HC       3  58.429
              *

1062          KK  RCPE48
1063          KM        Route flow from CP E48RIV to CP E49RIV (WATERMAN WASH)
1064          RS       1    FLOW      -1
1065          RC   0.050   0.035   0.050    1620  0.0033
1066          RX       0      10     110     290     330     510     610     620
1067          RY  1254.5    1252    1252    1250    1250    1252    1252  1254.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1068          KK   DRE09
1069          KM        Return diverted flow from CP E09
1070          DR   DVE09
              *

1071          KK   RDE09
1072          KM        Route flow from CP E09 to CP E13
1073          RS      16    FLOW      -1
1074          RC   0.050   0.045   0.050   17190  0.0076
1075          RX       0     100     200     220     225     245     345     445
1076          RY  1480.5    1479    1479    1478    1478    1479    1479  1480.5
              *

1077          KK   DRE10
1078          KM        Return diverted flow from CP E10
1079          DR   DVE10
              *

1080          KK   RDE10
1081          KM        Route flow from CP E10 to CP E13
1082          RS      26    FLOW      -1
1083          RC   0.050   0.045   0.050   14450  0.0069
1084          RX       0     100     200     220     225     245     345     445
1085          RY    1480    1479    1479    1478    1478    1479    1479    1480
              *

1086          KK     E13
1087          KM        Runoff from E13
1088          BA   1.531
1089          LG    0.35    0.35    3.95    0.48       0
1090          UI     118     468     708    1069    1318     899     627     322     182     104
1091          UI      36      36      36       0       0       0       0       0       0       0
1092          UI       0       0       0       0       0       0       0       0       0       0
              *

1093          KK   CPE13
1094          KM        Combine DRE09, DRE10 with E13
1095          HC       3   1.932
              *

1096          KK    DE13
1097          KM           Divert flow into E23
1098          KM        Natural divergence of flow due to a braided channel network.
1099          DT   DVE13
1100          DI       0      64     299    1184    3258    6048    9514   13590   18229
1101          DQ       0      33     159     617    1685    3115    4890    6975    9347
              *

1102          KK  RCPE13
1103          KM        Route remainder flow from CP E13 to CP E24
1104          RS       3    FLOW      -1
1105          RC   0.050   0.045   0.050    2710  0.0058
1106          RX       0     120     255     270     275     290     420     520
1107          RY    1415    1414    1414    1412    1412    1414    1414    1415
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
1108          KK   DRE05
1109          KM        Return diverted flow from CP E05
1110          DR   DVE05
              *

1111          KK   RDE05
1112          KM        Route flow from CP E05 to CP E24
1113          RS      11    FLOW      -1
1114          RC   0.050   0.045   0.050    6090  0.0058
1115          RX       0     120     255     270     275     290     420     520
1116          RY    1416    1414    1414    1412    1412    1414    1414    1416
              *

1117          KK     E24
1118          KM        Runoff from E24
1119          BA   0.228
1120          LG    0.35    0.35    4.35    0.40       0
1121          UI      68     195     327     188      68      23      10       0       0       0
1122          UI       0       0       0       0       0       0       0       0       0       0
              *

1123          KK   CPE24
1124          KM        Combine DRE05, E13 with E24
1125          HC       3  11.430
              *

1126          KK  RCPE24
1127          KM        Route flow from CP E24 to CP E34
1128          RS       8    FLOW      -1
1129          RC   0.050   0.045   0.050    9820  0.0062
1130          RX       0     100     200     210     310     320     430     640
1131          RY    1360    1359    1359    1358    1358    1359    1359    1360
              *

1132          KK     E08
1133          KM        Runoff from E08
1134          BA   0.959
1135          LG    0.35    0.35    3.29    0.73       0
1136          UI      96     350     530     881     753     511     304     137      78      25
1137          UI      25       0       0       0       0       0       0       0       0       0
1138          UI       0       0       0       0       0       0       0       0       0       0
              *

1139          KK  RCPE08
1140          KM        Route flow from CP E08 to CP E23
1141          RS       5    FLOW      -1
1142          RC   0.050   0.045   0.050   10260  0.0058
1143          RX       0       6      30      45      50      65      90      96
1144          RY  1401.5 1399.25    1399    1397    1397    1399 1399.25  1401.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1145          KK   DRE13
1146          KM        Return diverted flow from CP E13
1147          DR   DVE13
              *

1148          KK   RDE13
1149          KM        Route flow from CP E13 to CP E23
1150          RS       3    FLOW      -1
1151          RC   0.050   0.045   0.050    6350  0.0055
1152          RX       0       9      35      50      55      70      95     104
1153          RY    1401 1399.25    1399    1397    1397    1399 1399.25    1401
              *

1154          KK     E23
1155          KM        Runoff from E23
1156          BA   0.327
1157          LG    0.35    0.35    4.65    0.32       0
1158          UI      56     177     312     346     206      95      44      14      10       0
1159          UI       0       0       0       0       0       0       0       0       0       0
1160          UI       0       0       0       0       0       0       0       0       0       0
              *

1161          KK   CPE23
1162          KM        Combine E08, DRE13 with E23
1163          HC       3   3.218
              *

1164          KK  RCPE23
```

```
1165        KM        Route flow from CP E23 to CP E34
1166        RS       5    FLOW      -1
1167        RC   0.050   0.045   0.050    6170  0.0056
1168        RX       0     100     200     210     310     320     430     640
1169        RY    1360    1359    1359    1358    1358    1359    1359    1360
            *

1170        KK     E34
1171        KM        Runoff from E34
1172        BA   0.299
1173        LG    0.35    0.35    4.65    0.32       0
1174        UI      68     208     380     278     140      51      18      11       0       0
1175        UI       0       0       0       0       0       0       0       0       0       0
            *

1176        KK   CPE34
1177        KM        Combine E24, E23 with E34
1178        HC       3  13.015
            *

1179        KK  RCPE34
1180        KM        Route flow from CP E34 to CP E38
1181        RS       3    FLOW      -1
1182        RC   0.050   0.045   0.050    4360  0.0053
1183        RX       0       9     110     120     250     260     350     359
1184        RY    1341 1339.25    1339    1338    1338    1339 1339.25    1341
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1185        KK     E07
1186        KM        Runoff from E07
1187        BA   1.070
1188        LG    0.35    0.35    2.86    0.95       0
1189        UI     213     650    1209    1057     610     234      98      37       0       0
1190        UI       0       0       0       0       0       0       0       0       0       0
            *

1191        KK  RCPE07
1192        KM        Route flow from CP E07 to CP E15
1193        RS       4    FLOW      -1
1194        RC   0.050   0.045   0.050    9640  0.0074
1195        RX       0       9      30      40      50      70      90      99
1196        RY  1490.5 1488.25    1488    1486    1486    1488 1488.25  1490.5
            *

1197        KK     E14
1198        KM        Runoff from E14
1199        BA   0.816
1200        LG    0.35    0.35    2.99    0.88       0
1201        UI     758    1789     523      79       0       0       0       0       0       0
1202        UI       0       0       0       0       0       0       0       0       0       0
            *

1203        KK  RCPE14
1204        KM        Route flow from CP E14 to CP E15
1205        RS       3    FLOW      -1
1206        RC   0.050   0.045   0.050    5980  0.0051
1207        RX       0       9      40      50      60      80     110     119
1208        RY  1490.5 1488.25    1488    1486    1486    1488 1488.25  1490.5
            *

1209        KK     E15
1210        KM        Runoff from E15
1211        BA   0.922
1212        LG    0.35    0.35    3.35    0.72       0
1213        UI     325     951    1360     651     192      55       0       0       0       0
1214        UI       0       0       0       0       0       0       0       0       0       0
            *

1215        KK   CPE15
1216        KM        Combine E07, E14 with E15
1217        HC       3   2.808
            *

1218        KK  RCPE15
1219        KM        Route flow from CP E15 to CP E22
1220        RS      10    FLOW      -1
1221        RC   0.050   0.045   0.050   15510  0.0065
1222        RX       0       8     160     170     175     185     335     343
1223        RY    1389    1387    1387    1386    1386    1387    1387    1389
            *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1224          KK     E27
1225          KM        Runoff from E27
1226          BA   0.128
1227          LG    0.35    0.35    4.65    0.32       0
1228          UI      54     167     179      69      19       6       0       0       0       0
1229          UI       0       0       0       0       0       0       0       0       0       0
              *

1230          KK  RCPE27
1231          KM        Route flow from CP E27 to CP E22
1232          RS       4    FLOW      -1
1233          RC   0.050   0.045   0.050    2520  0.0065
1234          RX       0     150     300     310     315     325     475     625
1235          RY    1388    1387    1387    1386    1386    1387    1387    1388
              *

1236          KK     E21
1237          KM        Runoff from E21
1238          BA   0.349
1239          LG    0.35    0.35    3.25    0.78       0
1240          UI     112     326     513     269      86      28      15       0       0       0
1241          UI       0       0       0       0       0       0       0       0       0       0
              *

1242          KK    DE21
1243          KM           Divert flow into E20
1244          KM        Natural divergence of flow due to a braided channel network.
1245          DT   DVE21
1246          DI       0      41      91     216     462    1043    2287    3975    5841    7990
1247          DQ       0      41      84     188     350     680    1358    2345    3358    4515
              *

1248          KK  RCPE21
1249          KM        Route remainder flow from CP E21 to CP E22
1250          RS      11    FLOW      -1
1251          RC   0.050   0.045   0.050    9430  0.0065
1252          RX       0     150     300     310     315     325     475     625
1253          RY    1388    1387    1387    1386    1386    1387    1387    1388
              *

1254          KK     E22
1255          KM        Runoff from E22
1256          BA   1.103
1257          LG    0.35    0.35    3.95    0.48       0
1258          UI      96     368     557     894     908     621     412     182     113      51
1259          UI      27      27       0       0       0       0       0       0       0       0
1260          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1261          KK   CPE22
1262          KM        Combine E15, E27, E21 with E22
1263          HC       4   4.388
              *

1264          KK  RCPE22
1265          KM        Route flow from CP E22 to CP E37
1266          RS       4    FLOW      -1
1267          RC   0.050   0.045   0.050    4270  0.0060
1268          RX       0     125     250     450     550     600     650     700
1269          RY    1370    1369    1369    1368    1368    1369    1369    1370
              *

1270          KK     E37
1271          KM        Runoff from E37
1272          BA   0.182
1273          LG    0.35    0.35    4.65    0.32       0
1274          UI     148     384     144      23       0       0       0       0       0       0
1275          UI       0       0       0       0       0       0       0       0       0       0
              *

1276          KK   CPE37
1277          KM        Combine E22 with E37
1278          HC       2   4.570
              *
```

```
1279          KK  RCPE37
1280          KM        Route flow from CP E37 to CP E38
1281          RS       4    FLOW      -1
1282          RC   0.050   0.045   0.050    4260  0.0053
1283          RX       0     200     400     410     540     550     700     860
1284          RY    1340  1339.5    1339    1338    1338    1339  1339.5    1340
              *

1285          KK     E01
1286          KM        Runoff from E01
1287          BA   4.541
1288          LG    0.35    0.35    3.03    0.84       0
1289          UI     499    1886    3218    3724    2254    1726    1210     906     614     462
1290          UI     315     221     196      77      78      77      77       0       0       0
1291          UI       0       0       0       0       0       0       0       0       0       0
              *

1292          KK  RCPE01
1293          KM        Route flow from CP E01 to CP E02
1294          RS       4    FLOW      -1
1295          RC   0.050   0.045   0.050   12040  0.0118
1296          RX       0       8      60     100     130     160     230     238
1297          RY  1630.5  1628.5    1628    1626    1626    1628  1628.5  1630.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1298          KK     E02
1299          KM        Runoff from E02
1300          BA   6.365
1301          LG    0.35    0.35    2.85    0.97       0
1302          UI     640    2317    3525    5841    5003    3391    2014     907     523     165
1303          UI     163       0       0       0       0       0       0       0       0       0
1304          UI       0       0       0       0       0       0       0       0       0       0
              *

1305          KK   CPE02
1306          KM        Combine E01 with E02
1307          HC       2  10.907
              *

1308          KK  RCPE02
1309          KM        Route flow from CP E02 to CP E03
1310          RS       3    FLOW      -1
1311          RC   0.050   0.045   0.050    8490  0.0083
1312          RX       0       8     240     260     290     310     500     508
1313          RY    1551  1549.5    1548    1545    1545    1548  1549.5    1551
              *

1314          KK     E03
1315          KM        Runoff from E03
1316          BA   2.027
1317          LG    0.35    0.35    2.94    0.90       0
1318          UI     465    1408    2579    1885     943     349     119      74       0       0
1319          UI       0       0       0       0       0       0       0       0       0       0
              *

1320          KK   CPE03
1321          KM        Combine E02 with E03
1322          HC       2  12.934
              *

1323          KK  RCPE03
1324          KM        Route flow from CP E03 to CP E16
1325          RS       3    FLOW      -1
1326          RC   0.050   0.045   0.050    8400  0.0084
1327          RX       0       8     100     170     205     270     370     378
1328          RY  1510.5    1509    1508    1505    1505    1508    1509  1510.5
              *

1329          KK     E16
1330          KM        Runoff from E16
1331          BA   0.785
1332          LG    0.35    0.35    3.35    0.72       0
1333          UI     253     733    1152     607     194      62      34       0       0       0
1334          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
1335          KK   CPE16
1336          KM        Combine E03 with E16
1337          HC       2  13.719
              *

1338          KK    DE16
1339          KM            Divert flow into E19
1340          KM        Natural divergence of flow due to a braided channel network.
1341          DT   DVE16
1342          DI       0     104     236     439     719    1082    1357    1881    3316    7597
1343          DQ       0     104     221     383     596     863    1086    1408    2086    4621
              *

1344          KK  RCPE16
1345          KM        Route remainder flow from CP E16 to CP E20
1346          RS       4    FLOW      -1
1347          RC   0.050   0.045   0.050   15930  0.0063
1348          RX       0       9     180     190     195     205     405     414
1349          RY  1396.5 1394.75    1394    1393    1393    1394 1394.75  1396.5
              *

1350          KK     E28
1351          KM        Runoff from E28
1352          BA   0.204
1353          LG    0.35    0.35    4.65    0.32       0
1354          UI      78     236     296     127      38       9       0       0       0       0
1355          UI       0       0       0       0       0       0       0       0       0       0
              *

1356          KK    DE28
1357          KM            Divert flow into E29
1358          KM        Natural divergence of flow due to a braided channel network.
1359          DT   DVE28
1360          DI       0      49     192    1113    2913    5350    8364   11900   15918
1361          DQ       0      36     118     718    1764    3137    4819    6781    9003
              *

1362          KK  RCPE28
1363          KM        Route remainder flow from CP E28 to CP E20
1364          RS      17    FLOW      -1
1365          RC   0.050   0.045   0.050    7060  0.0057
1366          RX       0     125     250     260     265     275     425     575
1367          RY    1395    1394    1394    1393    1393    1394    1394    1395
              *

1368          KK   DRE21
1369          KM        Return diverted flow from CP E21
1370          DR   DVE21
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1371          KK   RDE21
1372          KM        Route flow from CP E21 to CP E20
1373          RS      17    FLOW      -1
1374          RC   0.050   0.045   0.050   11950  0.0058
1375          RX       0     125     250     260     265     275     425     575
1376          RY    1395    1394    1394    1393    1393    1394    1394    1395
              *

1377          KK     E20
1378          KM        Runoff from E20
1379          BA   0.508
1380          LG    0.35    0.35    4.20    0.43       0
1381          UI      41     163     245     380     432     292     199      95      56      30
1382          UI      12      12       0       0       0       0       0       0       0       0
1383          UI       0       0       0       0       0       0       0       0       0       0
              *

1384          KK   CPE20
1385          KM        Combine E28, DRE21, DRE16 with E20
1386          HC       4  14.781
              *

1387          KK   DRE16
1388          KM        Return diverted flow from CP E16
1389          DR   DVE16
              *

1390          KK   RDE16
1391          KM        Route flow from CP E16 to CP E19
1392          RS       8    FLOW      -1
```

```
1393          RC   0.050   0.045   0.050    4900  0.0061
1394          RX       0       5     205     225     235     255     455     460
1395          RY    1445    1443    1442    1440    1440    1442    1443    1445
              *

1396          KK     E19
1397          KM         Runoff from E19
1398          BA   0.466
1399          LG    0.35    0.35    3.71    0.56       0
1400          UI      86     267     485     479     280     117      55      16      15       0
1401          UI       0       0       0       0       0       0       0       0       0       0
1402          UI       0       0       0       0       0       0       0       0       0       0
              *

1403          KK   CPE19
1404          KM         Combine DRE16 with E19
1405          HC       2  14.185
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1406          KK    DE19
1407          KM            Divert flow into E30
1408          KM         Natural divergence of flow due to a braided channel network.
1409          DT   DVE19
1410          DI       0      89     198     366     600     910    1172    2468    4244    8601
1411          DQ       0      89     188     327     508     735     818    1602    2557    4986
              *

1412          KK  RCPE19
1413          KM         Route remainder flow from CP E19 to CP E29
1414          RS       6    FLOW      -1
1415          RC   0.050   0.045   0.050   10970  0.0065
1416          RX       0       8     160     175     180     195     280     288
1417          RY  1390.5    1389    1388    1387    1387    1388    1389  1390.5
              *

1418          KK   DRE28
1419          KM         Return diverted flow from CP E28
1420          DR   DVE28
              *

1421          KK   RDE28
1422          KM         Route flow from CP E28 to CP E29
1423          RS       9    FLOW      -1
1424          RC   0.050   0.045   0.050    7170  0.0056
1425          RX       0     175     325     340     345     360     450     540
1426          RY    1390    1389    1388    1387    1387    1388    1389    1390
              *

1427          KK     E29
1428          KM         Runoff from E29
1429          BA   0.561
1430          LG    0.35    0.35    4.65    0.32       0
1431          UI      90     288     487     607     368     186      81      33      17       0
1432          UI       0       0       0       0       0       0       0       0       0       0
1433          UI       0       0       0       0       0       0       0       0       0       0
              *

1434          KK  CPE29A
1435          KM         Combine DRE28, DRE19 with E29
1436          HC       3  14.949
              *

1437          KK   CPE29
1438          KM         Combine E20 with E29
1439          HC       2  15.807
              *

1440          KK  RCPE29
1441          KM         Route flow from CP E29 to CP E38
1442          RS       4    FLOW      -1
1443          RC   0.050   0.045   0.050    5910  0.0064
1444          RX       0     200     370     390     490     510     650     800
1445          RY    1349    1347    1347    1346    1346    1347    1347    1349
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1446          KK     E38
```

```
KM        Runoff from E38
BA   0.480
LG    0.35    0.35    4.30    0.41       0
UI     223     706     632     221      52       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPE38
KM        Combine E29, E37, E34 with E38
HC       4  33.522
*

KK  RCPE38
KM        Route flow from CP E38 to CP E44
KM        Crossing at SR-238
RS       2    FLOW      -1
RC   0.050   0.045   0.050    7020  0.0059
RX       0     250     500     510     515     525     775    1025
RY    1310    1307    1307    1306    1306    1307    1307    1310
*

KK   DRE19
KM        Return diverted flow from CP E19
DR   DVE19
*

KK   RDE19
KM        Route flow from CP E19 to CP E30
RS       6    FLOW      -1
RC   0.050   0.045   0.050   13440  0.0065
RX       0       9      35      55      65      85     110     119
RY  1391.5 1388.25    1388    1387    1387    1388 1388.25  1391.5
*

KK     E30
KM        Runoff from E30
BA   0.637
LG    0.35    0.35    4.40    0.38       0
UI      95     309     513     691     431     241      99      46      19      19
UI       0       0       0       0       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPE30
KM        Combine DRE19 with E30
HC       2  14.822
*
```



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LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  RCPE30
KM        Route flow from CP E30 to CP E44
KM        Crossing at SR-238
RS       2    FLOW      -1
RC   0.050   0.045   0.050    9020  0.0058
RX       0     200     400     410     540     550     750     950
RY  1308.5    1307    1307    1306    1306    1307    1307  1308.5
*

KK     E44
KM        Runoff from E44
BA   0.629
LG    0.35    0.35    3.95    0.48       0
UI     157     466     838     565     257     101      26      23       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPE44
KM        Combine E38, E30 with E44
HC       3  34.789
*

KK  RCPE44
KM        Route flow from CP E44 to CP E50
RS       5    FLOW      -1
RC   0.050   0.045   0.050   12210  0.0048
RX       0      10      40     204     224     388     420     430
RY  1276.5    1274    1273    1272    1272    1273    1274  1276.5
*

KK     E18
KM        Runoff from E18
```

```
1505          BA   0.730
1506          LG    0.35     0.35     3.35     0.72        0
1507          UI     156      473      880      699      383      137       56       26        0        0
1508          UI       0        0        0        0        0        0        0        0        0        0
              *

1509          KK  RCPE18
1510          KM        Route flow from CP E18 to CP E31
1511          RS       5    FLOW       -1
1512          RC   0.050    0.045    0.050     9290   0.0065
1513          RX       0        9       30       50       60       80      100      109
1514          RY    1390  1388.25     1388     1387     1387     1388  1388.25     1390
              *

1515          KK     E31
1516          KM        Runoff from E31
1517          BA   0.380
1518          LG    0.35     0.35     4.15     0.44        0
1519          UI      75      231      430      375      217       83       35       13        0        0
1520          UI       0        0        0        0        0        0        0        0        0        0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1521          KK   CPE31
1522          KM        Combine E18 with E31
1523          HC       2   1.110
              *

1524          KK  RCPE31
1525          KM        Route flow from CP E31 to CP E43
1526          KM        Crossing at SR-238
1527          RS       2    FLOW       -1
1528          RC   0.050    0.045    0.050     8520   0.0053
1529          RX       0      170      340      350      450      460      630      900
1530          RY    1345     1344     1344     1343     1343     1344     1344     1345
              *

1531          KK     E43
1532          KM        Runoff from E43
1533          BA   0.445
1534          LG    0.35     0.35     4.40     0.38        0
1535          UI     131      383      638      367      133       44       19        0        0        0
1536          UI       0        0        0        0        0        0        0        0        0        0
              *

1537          KK   CPE43
1538          KM        Combine E31 with E43
1539          HC       2   1.554
              *

1540          KK  RCPE43
1541          KM        Route flow from CP E43 to CP E50
1542          RS       8    FLOW       -1
1543          RC   0.050    0.045    0.050     6960   0.0043
1544          RX       0      163      326      490      510      674      837     1000
1545          RY    1275     1274     1273     1272     1272     1273     1274     1275
              *

1546          KK     E50
1547          KM        Runoff from E50
1548          BA   0.699
1549          LG    0.16     0.25     4.60     0.28       54
1550          UI     190      556      971      603      246       91       29        0        0        0
1551          UI       0        0        0        0        0        0        0        0        0        0
              *

1552          KK   CPE50
1553          KM        Combine E44, E43 with E50
1554          HC       3  37.042
              *

1555          KK  RCPE50
1556          KM        Route flow from CP E50 to CP E49
1557          RS       2    FLOW       -1
1558          RC   0.050    0.045    0.050     3300   0.0031
1559          RX       0       15      115      165      215      265      365      380
1560          RY  1266.5     1263     1262     1260     1260     1262     1263   1266.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
1561          KK     E52
1562          KM        Runoff from E52
1563          BA   0.164
1564          LG    0.16    0.26    4.65    0.27      52
1565          UI     381     240       0       0       0       0       0       0       0       0
1566          UI       0       0       0       0       0       0       0       0       0       0
              *

1567          KK  RCPE52
1568          KM        Route flow from CP E52 to CP E49
1569          RS       3    FLOW      -1
1570          RC   0.050   0.045   0.050    3500  0.0031
1571          RX       0     100     200     300     350     400     500     600
1572          RY    1264    1263    1262    1260    1260    1262    1263    1264
              *

1573          KK     E49
1574          KM        Runoff from E49
1575          BA   0.224
1576          LG    0.34    0.34    3.48    0.60       4
1577          UI      72     210     328     174      55      17       9       0       0       0
1578          UI       0       0       0       0       0       0       0       0       0       0
              *

1579          KK   CPE49
1580          KM        Combine E50, E52 with E49
1581          HC       3  37.430
              *

1582          KK  E49RIV
1583          KM        Combine E48RIV with E49
1584          HC       2  86.188
              *

1585          KK  RCPE49
1586          KM        Route flow from CP E49RIV to CP G27RIV (WATERMAN WASH)
1587          RS       1    FLOW      -1
1588          RC   0.050   0.035   0.050    2650  0.0027
1589          RX       0      15     310     390     430     510     760     775
1590          RY    1246    1243    1242    1240    1240    1242    1243    1246
              *

1591          KK     G18
1592          KM        Runoff from G18
1593          BA   0.322
1594          LG    0.35    0.35    3.48    0.63      29
1595          UI     167     517     405     119      27       0       0       0       0       0
1596          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1597          KK    DG18
1598          KM            Divert flow into G17
1599          KM        Natural divergence of flow due to a braided channel network.
1600          DT   DVG18
1601          DI       0      18      75     485    1455    2842    4580    6633    8975
1602          DQ       0      11      44     251     750    1454    2335    3375    4560
              *

1603          KK  RCPG18
1604          KM        Route remainder flow from CP G18 to CP G27
1605          RS      13    FLOW      -1
1606          RC   0.050   0.045   0.050    8180  0.0077
1607          RX       0     250     370     390     410     430     590     800
1608          RY    1282    1281    1281    1280    1280    1281    1281    1282
              *

1609          KK     G27
1610          KM        Runoff from G27
1611          BA   1.408
1612          LG    0.35    0.35    3.13    0.85       0
1613          UI     323     977    1793    1308     656     242      83      51       0       0
1614          UI       0       0       0       0       0       0       0       0       0       0
              *

1615          KK   CPG27
1616          KM        Combine G18 with G27
1617          HC       2   1.730
              *
```

```
1618          KK  G27RIV
1619          KM        Combine F35RIV with G27
1620          HC       2  87.918
              *

1621          KK  RCPG27
1622          KM        Route flow from CP G27RIV to CP G28RIV (WATERMAN WASH)
1623          RS       2    FLOW      -1
1624          RC   0.050   0.035   0.050    3180  0.0025
1625          RX       0       8    2500    2540    2590    2630    3010    3018
1626          RY    1249  1247.5    1237    1234    1234    1237  1247.5    1249
              *

1627          KK     G28
1628          KM        Runoff from G28
1629          BA   0.308
1630          LG    0.35    0.35    3.58    0.61       0
1631          UI     143     453     406     142      33       0       0       0       0       0
1632          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1633          KK  G28RIV
1634          KM        Combine G27RIV with G28
1635          HC       2  88.226
              *

1636          KK  RCPG28
1637          KM        Route flow from CP G28RIV to CP E51RIV (WATERMAN WASH)
1638          RS       1    FLOW      -1
1639          RC   0.050   0.035   0.050    1930  0.0027
1640          RX       0      10    2010    2090    2130    2210    4260    4270
1641          RY  1245.5    1243    1232    1230    1230    1232    1243  1245.5
              *

1642          KK     E53
1643          KM        Runoff from E53
1644          BA   0.110
1645          LG    0.35    0.35    3.23    0.79       0
1646          UI     140     244      36       0       0       0       0       0       0       0
1647          UI       0       0       0       0       0       0       0       0       0       0
              *

1648          KK  RCPE53
1649          KM        Route flow from CP E53 to CP E42
1650          KM        Crossing at SR-238
1651          RS       3    FLOW      -1
1652          RC   0.050   0.045   0.050    8810  0.0053
1653          RX       0     170     340     350     450     460     630     900
1654          RY    1345    1344    1344    1343    1343    1344    1344    1345
              *

1655          KK     E17
1656          KM        Runoff from E17
1657          BA   1.478
1658          LG    0.35    0.35    3.21    0.80       0
1659          UI     119     472     715    1108    1255     850     579     276     163      85
1660          UI      35      36       0       0       0       0       0       0       0       0
1661          UI       0       0       0       0       0       0       0       0       0       0
              *

1662          KK  RCPE17
1663          KM        Route flow from CP E17 to CP E32
1664          RS       4    FLOW      -1
1665          RC   0.050   0.045   0.050    5190  0.0068
1666          RX       0     140     280     300     310     330     450     570
1667          RY  1383.5    1382    1382    1381    1381    1382    1382  1383.5
              *

1668          KK     E32
1669          KM        Runoff from E32
1670          BA   0.284
1671          LG    0.35    0.35    3.55    0.62       0
1672          UI     147     456     358     105      24       0       0       0       0       0
1673          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
1674          KK   CPE32
1675          KM        Combine E17 with E32
1676          HC       2   1.761
              *

1677          KK  RCPE32
1678          KM        Route flow from CP E32 to CP E40
1679          KM        Crossing at SR-238
1680          RS       1    FLOW      -1
1681          RC   0.050   0.045   0.050    2750  0.0055
1682          RX       0     125     250     260     265     275     400     525
1683          RY    1355    1353    1353    1352    1352    1353    1353    1355
              *

1684          KK     E40
1685          KM        Runoff from E40
1686          BA   0.066
1687          LG    0.35    0.35    4.40    0.38       0
1688          UI      71     148      32       0       0       0       0       0       0       0
1689          UI       0       0       0       0       0       0       0       0       0       0
              *

1690          KK   CPE40
1691          KM        Combine E32 with E40
1692          HC       2   1.827
              *

1693          KK     E33
1694          KM        Runoff from E33
1695          BA   0.049
1696          LG    0.35    0.35    3.21    0.80       0
1697          UI      95      87       0       0       0       0       0       0       0       0
1698          UI       0       0       0       0       0       0       0       0       0       0
              *

1699          KK  RCPE33
1700          KM        Route flow from CP E33 to CP E39
1701          KM        Crossing at SR-238
1702          RS       1    FLOW      -1
1703          RC   0.050   0.045   0.050    3740  0.0056
1704          RX       0     135     270     290     300     320     450     590
1705          RY    1360    1359    1358    1356    1356    1358    1359    1360
              *

1706          KK     E39
1707          KM        Runoff from E39
1708          BA   0.102
1709          LG    0.35    0.35    3.74    0.55       0
1710          UI      73     204      94      19       0       0       0       0       0       0
1711          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1712          KK  CPE39A
1713          KM        Combine E33 with E39
1714          HC       2   0.151
              *

1715          KK   CPE39
1716          KM        COMBINE E40 WITH E39
1717          HC       2   1.979
              *

1718          KK  RCPE39
1719          KM        Route flow from CP E39 to CP E42
1720          RS       6    FLOW      -1
1721          RC   0.050   0.045   0.050    6600  0.0061
1722          RX       0      90     180     200     210     230     370     620
1723          RY    1320    1319    1318    1317    1317    1318    1319    1320
              *

1724          KK     E42
1725          KM        Runoff from E42
1726          BA   0.616
1727          LG    0.35    0.35    3.92    0.49       0
1728          UI     182     530     882     509     185      59      26       0       0       0
1729          UI       0       0       0       0       0       0       0       0       0       0
              *

1730          KK   CPE42
```

```
1731          KM        Combine E53, E39 with E42
1732          HC       3   2.704
              *

1733          KK  RCPE42
1734          KM        Route flow from CP E42 to CP E51
1735          RS      12    FLOW      -1
1736          RC   0.050   0.045   0.050   13700  0.0051
1737          RX       0     250     500     525     675     700     900    1100
1738          RY    1260    1259    1258    1257    1257    1258    1259    1260
              *

1739          KK     E51
1740          KM        Runoff from E51
1741          BA   1.284
1742          LG    0.35    0.35    4.60    0.33       0
1743          UI     179     594     948    1394     895     536     223     110      38      38
1744          UI       0       0       0       0       0       0       0       0       0       0
1745          UI       0       0       0       0       0       0       0       0       0       0
              *

1746          KK   CPE51
1747          KM        Combine E42 with E51
1748          HC       2   3.988
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1749          KK  E51RIV
1750          KM        Combine G28RIV with E51
1751          HC       2  92.214
              *

1752          KK  RCPE51
1753          KM        Route flow from CP E51RIV to CP E41RIV (WATERMAN WASH)
1754          RS       2    FLOW      -1
1755          RC   0.050   0.035   0.050    2940  0.0038
1756          RX       0    1200    2400    2480    2520    2600    3400    4200
1757          RY    1230    1225    1222    1220    1220    1222    1225    1230
              *

1758          KK     E41
1759          KM        Runoff from E41
1760          BA   1.051
1761          LG    0.35    0.35    4.50    0.36       0
1762          UI      64     185     330     430     610     756     549     411     301     159
1763          UI     108      66      33      19      20      20       0       0       0       0
1764          UI       0       0       0       0       0       0       0       0       0       0
              *

1765          KK   DRG18
1766          KM        Return diverted flow from CP G18
1767          DR   DVG18
              *

1768          KK   RDG18
1769          KM        Route flow from CP G18 to CP G17
1770          RS       5    FLOW      -1
1771          RC   0.050   0.045   0.050   10240  0.0078
1772          RX       0      20      40      60      80     100     250     600
1773          RY    1266    1265    1264    1261    1261    1264    1265    1266
              *

1774          KK     G17
1775          KM        Runoff from G17
1776          BA   0.579
1777          LG    0.18    0.28    3.38    0.71      47
1778          UI     157     461     805     498     204      76      23       0       0       0
1779          UI       0       0       0       0       0       0       0       0       0       0
              *

1780          KK   CPG17
1781          KM        COMBINE DRG18 WITH G17
1782          HC       2   0.901
              *

1783          KK  RCPG17
1784          KM        Route flow from CP G17 to CP G29
1785          RS       1    FLOW      -1
1786          RC   0.050   0.045   0.050    1970  0.0056
1787          RX       0       6     130     140     170     180     320     326
1788          RY    1232 1230.75    1230    1228    1228    1230 1230.75    1232
```

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                *
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1789            KK     G16
1790            KM        Runoff from G16
1791            BA   1.334
1792            LG    0.34     0.35     3.64     0.58       10
1793            UI     265      810     1508     1319      760      293      120       46        0        0
1794            UI       0        0        0        0        0        0        0        0        0        0
                *

1795            KK  RCPG16
1796            KM        Route flow from CP G16 to CP G29
1797            RS       1     FLOW       -1
1798            RC   0.050    0.045    0.050     1940   0.0056
1799            RX       0        6      130      140      170      180      320      326
1800            RY    1232  1230.75     1230     1228     1228     1230  1230.75     1232
                *

1801            KK     G29
1802            KM        Runoff from G29
1803            BA   2.898
1804            LG    0.35     0.35     4.15     0.44        8
1805            UI     536     1658     3018     2980     1740      728      344       96       96        0
1806            UI       0        0        0        0        0        0        0        0        0        0
1807            UI       0        0        0        0        0        0        0        0        0        0
                *

1808            KK   CPG29
1809            KM        Combine G17, G16 with G29
1810            HC       3   5.133
                *

1811            KK  E41RIV
1812            KM        Combine G28RIV, G29 with E41
1813            HC       3  98.075
                *

1814            KK  RCPE41
1815            KM        Route flow from CP E41RIV to CP G30RIV (WATERMAN WASH)
1816            RS       1     FLOW       -1
1817            RC   0.050    0.035    0.050     3070   0.0025
1818            RX       0       20      280      290      330      340      635      655
1819            RY    1216     1212     1210     1207     1207     1210     1212     1216
                * ******************************************************************************
                * End Watershed E
                * Begin watershed D and continue with Watershed G.
                * ******************************************************************************

1820            KK     G15
1821            KM        Runoff from G15
1822            BA   3.381
1823            LG    0.35     0.35     4.00     0.46       11
1824            UI     916     2690     4701     2912     1192      443      135        0        0        0
1825            UI       0        0        0        0        0        0        0        0        0        0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1826            KK  RCPG15
1827            KM        Route flow from CP G15 to CP G30
1828            RS       3     FLOW       -1
1829            RC   0.050    0.045    0.050     6150   0.0059
1830            RX       0        6      350      390      430      470      770      776
1831            RY  1233.5  1231.25     1231     1230     1230     1231  1231.25   1233.5
                *

1832            KK     G30
1833            KM        Runoff from G30
1834            BA   0.322
1835            LG    0.35     0.35     4.40     0.38        0
1836            UI     167      517      405      119       27        0        0        0        0        0
1837            UI       0        0        0        0        0        0        0        0        0        0
                *

1838            KK   CPG30
1839            KM        Combine G15 with G30
1840            HC       2   3.704
                *
```

```
1841          KK  G30RIV
1842          KM        Combine E41RIV with G30
1843          HC       2 101.779
              *

1844          KK  RCPG30
1845          KM        Route flow from CP G30RIV to CP D27RIV (WATERMAN WASH)
1846          RS       2    FLOW      -1
1847          RC   0.050   0.035   0.050    4340  0.0020
1848          RX       0       9      40     440     480     530     780     789
1849          RY    1210 1208.25    1207    1204    1204    1207 1208.25    1210
              *

1850          KK     D21
1851          KM        Runoff from D21
1852          BA   0.077
1853          LG    0.35    0.35    3.21    0.80       0
1854          UI     119     159      18       0       0       0       0       0       0       0
1855          UI       0       0       0       0       0       0       0       0       0       0
              *

1856          KK  RCPD21
1857          KM        Route flow from CP D21 to CP D25
1858          KM        Crossing at SR-238
1859          RS       2    FLOW      -1
1860          RC   0.050   0.045   0.050   13340  0.0063
1861          RX       0     175     335     355     365     390     540     710
1862          RY    1344    1343    1342    1340    1340    1342    1343    1344
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1863          KK     D20
1864          KM        Runoff from D20
1865          BA   0.110
1866          LG    0.35    0.35    3.21    0.80       0
1867          UI     118     246      54       0       0       0       0       0       0       0
1868          UI       0       0       0       0       0       0       0       0       0       0
              *

1869          KK  RCPD20
1870          KM        Route flow from CP D20 to CP D25
1871          KM        Crossing at SR-238
1872          RS       1    FLOW      -1
1873          RC   0.050   0.045   0.050   13680  0.0063
1874          RX       0     175     335     355     365     390     540     710
1875          RY    1344    1343    1342    1340    1340    1342    1343    1344
              *

1876          KK     D19
1877          KM        Runoff from D19
1878          BA   0.247
1879          LG    0.35    0.35    3.21    0.80       0
1880          UI     128     397     310      91      21       0       0       0       0       0
1881          UI       0       0       0       0       0       0       0       0       0       0
              *

1882          KK  RCPD19
1883          KM        Route flow from CP D19 to CP D24
1884          KM        Crossing at SR-238
1885          RS       1    FLOW      -1
1886          RC   0.050   0.045   0.050   10380  0.0073
1887          RX       0     210     430     445     455     470     790     975
1888          RY    1343    1342    1342    1340    1340    1342    1342    1343
              *

1889          KK     D24
1890          KM        Runoff from D24
1891          BA   0.431
1892          LG    0.35    0.35    3.64    0.59       0
1893          UI      92     280     519     413     226      81      32      16       0       0
1894          UI       0       0       0       0       0       0       0       0       0       0
              *

1895          KK  CPD24A
1896          KM        Combine D19 with D24
1897          HC       2   0.678
              *

1898          KK     D18
1899          KM        Runoff from D18
```

```
1900          BA   0.432
1901          LG    0.35     0.35     3.21     0.80        0
1902          UI     107      321      576      388      176       69       18       17        0        0
1903          UI       0        0        0        0        0        0        0        0        0        0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1904          KK  RCPD18
1905          KM        Route flow from CP D18 to CP D23
1906          KM        Crossing at SR-238
1907          RS       1    FLOW      -1
1908          RC   0.050   0.045   0.050   11500  0.0061
1909          RX     270     290     320     330     340     350     380     400
1910          RY    1343    1342    1341    1340    1340    1341    1342    1343
              *

1911          KK     D07
1912          KM        Runoff from D07
1913          BA   1.050
1914          LG    0.35     0.35     3.27     0.77        0
1915          UI     120      418      643     1061      786      522      257      131       61       28
1916          UI      29        0        0        0        0        0        0        0        0        0
1917          UI       0        0        0        0        0        0        0        0        0        0
              *

1918          KK    DD07
1919          KM            Divert flow into D15
1920          KM        Natural divergence of flow due to a braided channel network.
1921          DT   DVD07
1922          DI       0       53      127      249      354      652     1157     2011     3786     5850
1923          DQ       0        0        6       29       66      178      378      758     1608     2546
              *

1924          KK  RCPD07
1925          KM        Route remainder flow from CP D07 to CP D17
1926          RS       5    FLOW      -1
1927          RC   0.050   0.045   0.050    9970  0.0066
1928          RX     330     340     360     405     425     480     500     510
1929          RY    1425    1424    1423    1422    1422    1423    1424    1425
              *

1930          KK     D17
1931          KM        Runoff from D17
1932          BA   0.778
1933          LG    0.35     0.35     3.50     0.65        0
1934          UI     108      360      574      846      542      324      136       66       23       23
1935          UI       0        0        0        0        0        0        0        0        0        0
1936          UI       0        0        0        0        0        0        0        0        0        0
              *

1937          KK   CPD17
1938          KM        Combine D07 with D17
1939          HC       2   1.827
              *

1940          KK  RCPD17
1941          KM        Route flow from CP D17 to CP D23
1942          KM        Crossing at SR-238
1943          RS       1    FLOW      -1
1944          RC   0.050   0.045   0.050   12320  0.0061
1945          RX     280     300     320     330     340     350     370     390
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1946          RY    1344    1342    1341    1340    1340    1341    1342    1344
              *

1947          KK     D23
1948          KM        Runoff from D23
1949          BA   0.709
1950          LG    0.35     0.35     3.95     0.48        0
1951          UI     113      365      615      767      465      236      102       41       22        0
1952          UI       0        0        0        0        0        0        0        0        0        0
1953          UI       0        0        0        0        0        0        0        0        0        0
              *

1954          KK   CPD23
1955          KM        Combine D17, D18 with D23
1956          HC       3   2.968
              *
```

```
1957          KK   CPD24
1958          KM        Combine D23 with D24
1959          HC       2   3.647
              *

1960          KK  RCPD24
1961          KM        Route flow from CP D24 to CP D25
1962          RS       2    FLOW      -1
1963          RC   0.050   0.045   0.050    4350  0.0058
1964          RX     280     300     340     350     365     375     440     460
1965          RY    1305    1303    1302    1300    1300    1302    1303    1305
              *

1966          KK     D25
1967          KM        Runoff from D25
1968          BA   1.343
1969          LG    0.35    0.35    3.35    0.71       0
1970          UI     164     560     871    1399     986     641     286     155      61      38
1971          UI      37       0       0       0       0       0       0       0       0       0
1972          UI       0       0       0       0       0       0       0       0       0       0
              *

1973          KK   CPD25
1974          KM        Combine D24, D20, D21 with D25
1975          HC       4   5.177
              *

1976          KK  RCPD25
1977          KM        Route flow from CP D25 to CP D26
1978          RS       8    FLOW      -1
1979          RC   0.050   0.045   0.050   13920  0.0050
1980          RX     340     360     400     475     525     600     640     660
1981          RY    1253    1251    1251    1250    1250    1251    1251    1253
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1982          KK     D26
1983          KM        Runoff from D26
1984          BA   1.546
1985          LG    0.35    0.35    4.35    0.40       0
1986          UI     111     407     632     892    1310     963     689     452     213     141
1987          UI      73      34      34      34       0       0       0       0       0       0
1988          UI       0       0       0       0       0       0       0       0       0       0
              *

1989          KK   CPD26
1990          KM        Combine D25 with D26
1991          HC       2   6.723
              *

1992          KK  RCPD26
1993          KM        Route flow from CP D26 to CP D27
1994          RS       3    FLOW      -1
1995          RC   0.050   0.045   0.050    4590  0.0040
1996          RX     130     150     300     310     330     340     490     510
1997          RY    1215    1213    1213    1212    1212    1213    1213    1215
              *

1998          KK     D27
1999          KM        Runoff from D27
2000          BA   0.259
2001          LG    0.35    0.36    5.00    0.28       0
2002          UI      55     169     312     247     137      48      20       9       0       0
2003          UI       0       0       0       0       0       0       0       0       0       0
              *

2004          KK   CPD27
2005          KM        Combine D26 with D27
2006          HC       2   6.982
              *

2007          KK     G44
2008          KM        Runoff from G44
2009          BA   0.728
2010          LG    0.35    0.35    2.52    1.25       0
2011          UI     634    1240     543     236      98      39       0       0       0       0
2012          UI       0       0       0       0       0       0       0       0       0       0
              *

2013          KK  RCPG44
```

```
2014          KM        Route flow from CP G44 to CP G06
2015          RS        7    FLOW      -1
2016          RC    0.050    0.045    0.050    11790  0.0162
2017          RX        0       95      190      200     220     230     350     420
2018          RY     1583     1582     1581     1580    1580    1581    1582    1583
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2019          KK     G06
2020          KM        Runoff from G06
2021          BA    2.152
2022          LG     0.35     0.35     3.85     0.50      15
2023          UI      494     1494     2739     2001    1001     370     126      79       0       0
2024          UI        0        0        0        0       0       0       0       0       0       0
              *

2025          KK    CPG06
2026          KM        Combine G44 with G06
2027          HC        2   2.880
              *

2028          KK    DG06
2029          KM            Divert flow into G45
2030          KM        Natural divergence of flow due to a braided channel network.
2031          DT    DVG06
2032          DI        0       54      193      422     754     932    1564    2638    4228    7126
2033          DQ        0       30      107      234     419     526     864    1429    2256    3771
              *

2034          KK   RCPG06
2035          KM        Route remainder flow from CP G06 to CP G07
2036          RS        6    FLOW      -1
2037          RC    0.050    0.045    0.050    14760  0.0110
2038          RX        0      170      350      410     480     540     700     920
2039          RY     1482     1481     1480     1478    1478    1480    1481    1482
              *

2040          KK     G07
2041          KM        Runoff from G07
2042          BA    1.357
2043          LG     0.35     0.35     4.20     0.42      24
2044          UI      311      943     1726     1262     632     233      79      50       0       0
2045          UI        0        0        0        0       0       0       0       0       0       0
              *

2046          KK    CPG07
2047          KM        Combine G06 with G07
2048          HC        2   4.237
              *

2049          KK   RCPG07
2050          KM        Route flow from CP G07 to CP G43
2051          RS       13    FLOW      -1
2052          RC    0.050    0.045    0.050    19180  0.0127
2053          RX        0      180      300      340     360     400     590     700
2054          RY   1362.5     1361     1361     1360    1360    1361    1361  1362.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2055          KK     G08
2056          KM        Runoff from G08
2057          BA    0.401
2058          LG     0.35     0.35     3.95     0.50       0
2059          UI      109      319      558      344     142      53      16       0       0       0
2060          UI        0        0        0        0       0       0       0       0       0       0
              *

2061          KK    DG08
2062          KM            Divert flow into G09
2063          KM        Natural divergence of flow due to a braided channel network.
2064          DT    DVG08
2065          DI        0       32      126      260     679    1440    2784    5724    8912   12669
2066          DQ        0       13       50      105     296     652    1298    2693    4240    6067
              *

2067          KK   RCPG08
2068          KM        Route remainder flow from CP G08 to CP G45
2069          RS        1    FLOW      -1
```

```
2070          RC   0.050   0.045   0.050    1480  0.0100
2071          RX       0     110     240     250     270     280     360     475
2072          RY    1382    1381    1380    1378    1378    1380    1381    1382
              *

2073          KK     G05
2074          KM         Runoff from G05
2075          BA   1.587
2076          LG    0.35    0.35    2.53    1.24       1
2077          UI     838    2419    1394     742     372     188      96      54       0       0
2078          UI       0       0       0       0       0       0       0       0       0       0
              *

2079          KK    DG05
2080          KM            Divert flow into G45
2081          KM         Natural divergence of flow due to a braided channel network.
2082          DT   DVG05
2083          DI       0     120     442     972    1928    2929    5112    9714   15260
2084          DQ       0      21      94     216     585    1276    2369    4563    6880
              *

2085          KK  RCPG05
2086          KM         Route remainder flow from CP G05 to CP G46
2087          RS      14    FLOW      -1
2088          RC   0.050   0.045   0.050   16750  0.0178
2089          RX       0     250     480     490     510     520     720     900
2090          RY    1491    1490    1490    1488    1488    1490    1490    1491
              *

2091          KK     G46
2092          KM         Runoff from G46
2093          BA   1.413
2094          LG    0.35    0.35    3.95    0.47      18
2095          UI     302     917    1702    1352     743     266     106      50       0       0
2096          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2097          KK   CPG46
2098          KM         Combine G05 with G46
2099          HC       2   2.999
              *

2100          KK     G04
2101          KM         Runoff from G04
2102          BA   2.343
2103          LG    0.35    0.35    3.85    0.52      23
2104          UI     466    1423    2647    2316    1336     513     214      80       0       0
2105          UI       0       0       0       0       0       0       0       0       0       0
              *

2106          KK   CPG04
2107          KM         Combine G46 with G04
2108          HC       2   5.342
              *

2109          KK  RCPG04
2110          KM         Route flow from CP G04 to CP G45
2111          RS       2    FLOW      -1
2112          RC   0.050   0.045   0.050    5640  0.0086
2113          RX       0      10     190     210     240     260     500     510
2114          RY    1406    1404    1403    1400    1400    1403    1404    1406
              *

2115          KK   DRG06
2116          KM         Return diverted flow from CP G06
2117          DR   DVG06
              *

2118          KK   RDG06
2119          KM         Route flow from CP G06 to CP G45
2120          RS       7    FLOW      -1
2121          RC   0.050   0.045   0.050   16220  0.0103
2122          RX       0       6      50      70     100     120     165     171
2123          RY  1530.5 1529.25    1529    1527    1527    1529 1529.25  1530.5
              *

2124          KK   DRG05
2125          KM         Return diverted flow from CP G05
2126          DR   DVG05
              *
```

```
2127          KK   RDG05
2128          KM        Route flow from CP G05 to CP G45
2129          RS      14    FLOW      -1
2130          RC   0.050   0.045   0.050   25220  0.0135
2131          RX       0     160     310     330     360     380     570     780
2132          RY    1531    1530    1529    1527    1527    1529    1530    1531
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2133          KK     G45
2134          KM        Runoff from G45
2135          BA   2.000
2136          LG    0.35    0.35    4.40    0.38       0
2137          UI     144     526     818    1154    1695    1245     891     585     275     183
2138          UI      94      44      45      43       0       0       0       0       0       0
2139          UI       0       0       0       0       0       0       0       0       0       0
              *

2140          KK   CPG45
2141          KM        Combine G08, G04, DRG06, DRG05 with G45
2142          HC       5  10.624
              *

2143          KK  RCPG45
2144          KM        Route flow from CP G45 to CP G31
2145          RS       1    FLOW      -1
2146          RC   0.050   0.045   0.050    3140  0.0106
2147          RX       0       8     270     290     330     350     610     618
2148          RY  1354.5    1353    1352    1350    1350    1352    1353  1354.5
              *

2149          KK     G31
2150          KM        Runoff from G31
2151          BA   0.182
2152          LG    0.35    0.35    4.10    0.46       0
2153          UI     282     375      43       0       0       0       0       0       0       0
2154          UI       0       0       0       0       0       0       0       0       0       0
              *

2155          KK   CPG31
2156          KM        Combine G45 with G31
2157          HC       2  10.806
              *

2158          KK    DG31
2159          KM           Divert flow from CP G31 into basin G43
2160          KM        Natural divergence of flow due to a braided channel network.
2161          DT   DVG31
2162          DI       0      48     158     570    1098    1902    3318    5264    7166    9300
2163          DQ       0      24      79     285     549     951    1659    2632    3583    4650
              *

2164          KK  RCPG31
2165          KM        Route remainder flow from CP G31 to CP G47
2166          RS       2    FLOW      -1
2167          RC   0.050   0.045   0.050    4120  0.0103
2168          RX       0     100     200     215     230     245     345     445
2169          RY  1325.5    1324    1323    1321    1321    1323    1324  1325.5
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2170          KK     G47
2171          KM        RUNOFF FROM G47
2172          BA   0.121
2173          LG    0.35    0.35    3.95    0.48       0
2174          UI      99     255      95      16       0       0       0       0       0       0
2175          UI       0       0       0       0       0       0       0       0       0       0
              *

2176          KK   CPG47
2177          KM        COMBINE G31 WITH G47
2178          HC       2  10.927
              *

2179          KK    DG47
2180          KM           Divert flow from CP G47 into basin G32
2181          KM        Natural divergence of flow due to a braided channel network.
```

```
2182          DT   DVG47
2183          DI       0      48     168     312     678    1314    2276    6288   11128
2184          DQ       0      24      84     156     339     657    1138    3144    5564
              *

2185          KK  RCPG47
2186          KM        ROUTE REMAINDER FLOW FROM CP G47 TO CP G43
2187          RS      11    FLOW      -1
2188          RC   0.050   0.045   0.050   12980  0.0073
2189          RX       0      10     330     345     375     390     710     720
2190          RY  1251.5    1249    1249    1248    1248    1249    1249  1251.5
              *

2191          KK   DRG31
2192          KM        RETURN DIVERTED FLOW FROM CP G31
2193          DR   DVG31
              *

2194          KK   RDG31
2195          KM        Return diverted flow from CP G31 to CP G43
2196          RS      11    FLOW      -1
2197          RC   0.050   0.045   0.050   16700  0.0073
2198          RX       0      10     330     345     375     390     710     720
2199          RY  1251.5    1249    1249    1248    1248    1249    1249  1251.5
              *

2200          KK     G43
2201          KM        Runoff from G43
2202          BA   2.170
2203          LG    0.35    0.35    4.10    0.46       0
2204          UI     189     724    1096    1758    1787    1222     810     358     222     101
2205          UI      53      53       0       0       0       0       0       0       0       0
2206          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2207          KK   CPG43
2208          KM        Combine G07, DRG31, G47 with G43
2209          HC       4  14.454
              *

2210          KK  D27RIV
2211          KM        Combine G30RIV, G43 with D27
2212          HC       3 123.216
              *

2213          KK  RCPD27
2214          KM        Route flow from CP D27RIV to CP D28RIV (WATERMAN WASH)
2215          RS       1    FLOW      -1
2216          RC   0.050   0.035   0.050     830  0.0066
2217          RX       0     600    1300    1500    1520    1800    2300    2800
2218          RY    1208    1205    1203    1200    1200    1203    1205    1208
              *

2219          KK     D28
2220          KM        Runoff from D28
2221          BA   1.687
2222          LG    0.35    0.35    4.65    0.32       0
2223          UI     126     490     748    1109    1446    1015     709     407     215     128
2224          UI      44      39      39       0       0       0       0       0       0       0
2225          UI       0       0       0       0       0       0       0       0       0       0
              *

2226          KK  D28RIV
2227          KM        Combine D27RIV with D28
2228          HC       2 124.903
              *

2229          KK  RCPD28
2230          KM        Route flow from CP D28RIV to CP D29RIV (WATERMAN WASH)
2231          RS       1    FLOW      -1
2232          RC   0.050   0.035   0.050     670  0.0044
2233          RX       0     900    1500    1685    1705    1900    2500    3200
2234          RY    1205    1200    1198    1195    1195    1198    1200    1205
              *

2235          KK     D29
2236          KM        Runoff from D29
2237          BA   3.506
2238          LG    0.35    0.35    3.33    0.70       0
2239          UI     263    1017    1555    2305    3005    2109    1472     849     444     269
```

```
2240          UI      91      80      81       0       0       0       0       0       0       0
2241          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2242          KK  D29RIV
2243          KM        Combine D28RIV with D29
2244          HC       2 128.409
              *

2245          KK  RCPD29
2246          KM        Route flow from CP D29RIV to CP D30RIV (WATERMAN WASH)
2247          RS       1    FLOW      -1
2248          RC   0.050   0.035   0.050    1640  0.0026
2249          RX     730     750    1000    1100    1120    1300    1500    1520
2250          RY    1200    1195    1193    1190    1190    1193    1195    1200
              *

2251          KK     D30
2252          KM        Runoff from D30
2253          BA   0.426
2254          LG    0.35    0.35    3.85    0.52       0
2255          UI     106     316     568     383     173      68      18      16       0       0
2256          UI       0       0       0       0       0       0       0       0       0       0
              *

2257          KK   DRG47
2258          KM        Return diverted flow from CP G47
2259          DR   DVG47
              *

2260          KK   RDG47
2261          KM        Route flow from CP G47 to CP G32
2262          RS       7    FLOW      -1
2263          RC   0.050   0.045   0.050   13400  0.0077
2264          RX       0      10     100     120     140     160     260     270
2265          RY  1233.5  1231.5    1231    1230    1230    1231  1231.5  1233.5
              *

2266          KK     G32
2267          KM        Runoff from G32
2268          BA   1.142
2269          LG    0.35    0.35    4.20    0.43       0
2270          UI     244     741    1376    1093     600     215      85      41       0       0
2271          UI       0       0       0       0       0       0       0       0       0       0
              *

2272          KK   CPG32
2273          KM        Combine DRG47 with G32
2274          HC       2  12.069
              *

2275          KK  D30RIV
2276          KM        Combine D29RIV, G32 with D30
2277          HC       3 129.978
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2278          KK  RCPD30
2279          KM        Route flow from CP D30RIV to CP D31RIV (WATERMAN WASH)
2280          RS       1    FLOW      -1
2281          RC   0.050   0.035   0.050     960  0.0027
2282          RX     730     750    1000    1100    1120    1300    1600    1620
2283          RY    1199    1194    1192    1189    1189    1192    1194    1199
              *

2284          KK     D31
2285          KM        Runoff from D31
2286          BA   0.670
2287          LG    0.35    0.35    3.64    0.58       0
2288          UI      88     293     464     715     479     303     126      71      21      20
2289          UI       0       0       0       0       0       0       0       0       0       0
2290          UI       0       0       0       0       0       0       0       0       0       0
              *

2291          KK  D31RIV
2292          KM        Combine D30RIV with D31
2293          HC       2 130.647
```

```
                *

2294            KK  RCPD31
2295            KM        Route flow from CP D31RIV to CP G33RIV (WATERMAN WASH)
2296            RS       1    FLOW      -1
2297            RC   0.050   0.035   0.050    1330  0.0034
2298            RX    1210    1230    1400    1480    1500    1600    1820    1840
2299            RY    1195    1190    1188    1185    1185    1188    1190    1195
                *

2300            KK     G33
2301            KM        Runoff from G33
2302            BA   0.744
2303            LG    0.35    0.35    4.00    0.47       0
2304            UI     202     592    1034     640     263      98      29       0       0       0
2305            UI       0       0       0       0       0       0       0       0       0       0
                *

2306            KK  G33RIV
2307            KM        Combine D31RIV with G33
2308            HC       2 131.391
                *

2309            KK  RCPG33
2310            KM        Route flow from CP G33RIV to CP D32RIV (WATERMAN WASH)
2311            RS       1    FLOW      -1
2312            RC   0.050   0.035   0.050     340  0.0030
2313            RX       0      10    2020    2040    2080    2100    4180    4190
2314            RY    1198    1196    1184    1180    1180    1184    1196    1198
                *
```



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1                                   HEC-1 INPUT

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2315            KK     D32
2316            KM        Runoff from D32
2317            BA   0.501
2318            LG    0.35    0.35    4.15    0.44       0
2319            UI     161     469     735     387     123      40      21       0       0       0
2320            UI       0       0       0       0       0       0       0       0       0       0
                *

2321            KK     G14
2322            KM        Runoff from G14
2323            BA   0.136
2324            LG    0.35    0.35    3.95    0.48       0
2325            UI     111     287     107      17       0       0       0       0       0       0
2326            UI       0       0       0       0       0       0       0       0       0       0
                *

2327            KK  RCPG14
2328            KM        Route flow from CP G14 to CP G34
2329            RS       3    FLOW      -1
2330            RC   0.050   0.045   0.050    5440  0.0081
2331            RX       0       5     185     195     215     225     415     420
2332            RY    1252    1251    1250    1248    1248    1250    1251    1252
                *

2333            KK     G34
2334            KM        Runoff from G34
2335            BA   0.205
2336            LG    0.35    0.35    3.95    0.48       0
2337            UI     131     385     217      47      13       0       0       0       0       0
2338            UI       0       0       0       0       0       0       0       0       0       0
                *

2339            KK  CPG34A
2340            KM        Combine G14 with G34
2341            HC       2   0.341
                *

2342            KK     G13
2343            KM        Runoff from G13
2344            BA   0.498
2345            LG    0.35    0.35    3.95    0.48       0
2346            UI      99     303     562     492     284     109      46      17       0       0
2347            UI       0       0       0       0       0       0       0       0       0       0
                *

2348            KK   CPG34
2349            KM        Combine G13 with G34
2350            HC       2   0.840
                *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2351          KK  RCPG34
2352          KM        Route flow from CP G34 to CP G35
2353          RS       5    FLOW      -1
2354          RC   0.050   0.045   0.050    5340  0.0085
2355          RX       0     150     320     350     380     400     580     790
2356          RY    1202    1201    1201    1199    1199    1201    1201    1202
              *

2357          KK     G35
2358          KM        Runoff from G35
2359          BA   0.527
2360          LG    0.35    0.35    4.00    0.47       0
2361          UI     131     391     702     474     215      85      22      20       0       0
2362          UI       0       0       0       0       0       0       0       0       0       0
              *

2363          KK   CPG35
2364          KM        Combine G34 with G35
2365          HC       2   1.367
              *

2366          KK  D32RIV
2367          KM        Combine G33RIV, G35 with D32
2368          HC       3 133.259
              *

2369          KK  RCPD32
2370          KM        Route flow from CP D32RIV to CP D33RIV (WATERMAN WASH)
2371          RS       1    FLOW      -1
2372          RC   0.050   0.035   0.050    2800  0.0027
2373          RX    1080    1100    1400    1480    1500    1600    1800    1820
2374          RY    1188    1183    1180    1178    1178    1181    1183    1188
              *

2375          KK   DRD07
2376          KM        Return diverted flow from CP D07
2377          DR   DVD07
              *

2378          KK   RDD07
2379          KM        Route flow from CP D07 to CP D15
2380          RS       8    FLOW      -1
2381          RC   0.050   0.045   0.050    8710  0.0071
2382          RX     440     455     485     495     510     537     567     582
2383          RY    1425    1424    1423    1422    1422    1423    1424    1425
              *

2384          KK     D15
2385          KM        Runoff from D15
2386          BA   0.653
2387          LG    0.35    0.35    4.40    0.38       0
2388          UI     121     374     679     672     392     164      78      21      21       0
2389          UI       0       0       0       0       0       0       0       0       0       0
2390          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2391          KK   CPD15
2392          KM        Combine DRD07 with D15
2393          HC       2   1.702
              *

2394          KK  RCPD15
2395          KM        Route flow from CP D15 to CP D22
2396          KM        Crossing at SR-238
2397          RS       1    FLOW      -1
2398          RC   0.050   0.045   0.050   29860  0.0050
2399          RX       0     300     500     520     570     590     700     940
2400          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *

2401          KK     D47
2402          KM        Runoff from D47
2403          BA   0.040
2404          LG    0.35    0.35    3.40    0.70       0
2405          UI      77      72       0       0       0       0       0       0       0       0
```

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2406          UI       0       0       0       0       0       0       0       0       0       0
              *

2407          KK  RCPD47
2408          KM        Route flow from CP D47 to CP D22
2409          KM        Crossing at SR-238
2410          RS       1    FLOW      -1
2411          RC   0.050   0.045   0.050   31080  0.0050
2412          RX       0     300     500     520     570     590     700     940
2413          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *

2414          KK     D02
2415          KM        Runoff from D02
2416          BA   0.496
2417          LG    0.35    0.35    3.15    0.79       0
2418          UI     354     995     458      89       0       0       0       0       0       0
2419          UI       0       0       0       0       0       0       0       0       0       0
              *

2420          KK    DD02
2421          KM           Divert flow into D01
2422          KM        Natural divergence of flow due to a braided channel network.
2423          DT   DVD02
2424          DI       0     113     266     523     752    1330    2297    3723    6492    9369
2425          DQ       0       0      20      83     183     425     847    1490    2820    4139
              *

2426          KK  RCPD02
2427          KM        Route remainder flow from CP D02 to CP D03
2428          RS       1    FLOW      -1
2429          RC   0.050   0.045   0.050    2200  0.0190
2430          RX     175     185     210     215     225     230     255     265
2431          RY    1685    1684    1683    1682    1682    1683    1684    1685
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2432          KK     D03
2433          KM        Runoff from D03
2434          BA   0.340
2435          LG    0.35    0.35    2.99    0.92       0
2436          UI     176     546     427     126      29       0       0       0       0       0
2437          UI       0       0       0       0       0       0       0       0       0       0
              *

2438          KK   CPD03
2439          KM        Combine D02 with D03
2440          HC       2   0.836
              *

2441          KK    DD03
2442          KM           Divert flow into D01
2443          KM        Natural divergence of flow due to a braided channel network.
2444          DT   DVD03
2445          DI       0      75     252     555    1005    1218    2090    3899    6173    9828
2446          DQ       0      44     145     327     608     733    1309    2622    4116    6233
              *

2447          KK  RCPD03
2448          KM        Route remainder flow from CP D03 to CP D04
2449          RS       1    FLOW      -1
2450          RC   0.050   0.045   0.050    4290  0.0133
2451          RX       0      70     153     165     185     195     250     340
2452          RY    1643    1642    1641    1638    1638    1641    1642    1643
              *

2453          KK     D04
2454          KM        Runoff from D04
2455          BA   0.198
2456          LG    0.35    0.35    2.85    1.04       0
2457          UI     102     318     250      73      16       0       0       0       0       0
2458          UI       0       0       0       0       0       0       0       0       0       0
              *

2459          KK   CPD04
2460          KM        Combine D03 with D04
2461          HC       2   1.034
              *

2462          KK    DD04
2463          KM           Divert flow into D05
```

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2464          KM        Natural divergence of flow due to a braided channel network.
2465          DT   DVD04
2466          DI       0      34     123     274     496    1091    1962    3285    5668    8777
2467          DQ       0      20      71     155     276     598    1098    1864    3244    5216
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2468          KK  RCPD04
2469          KM        Route remainder flow from CP D04 to CP D01
2470          RS       4    FLOW      -1
2471          RC   0.050   0.045   0.050    7990  0.0120
2472          RX       0     220     360     370     385     395     510     710
2473          RY    1577    1576    1575    1573    1573    1575    1576    1577
              *

2474          KK   DRD02
2475          KM        Return diverted flow from CP D02
2476          DR   DVD02
              *

2477          KK   RDD02
2478          KM        Route flow from CP D02 to CP D01
2479          RS       9    FLOW      -1
2480          RC   0.050   0.045   0.050   14130  0.0120
2481          RX       0     160     295     305     320     330     420     575
2482          RY    1588    1587    1586    1584    1584    1586    1587    1588
              *

2483          KK   DRD03
2484          KM        Return diverted flow from CP D03
2485          DR   DVD03
              *

2486          KK   RDD03
2487          KM        Route flow from CP D03 to CP D01
2488          RS       5    FLOW      -1
2489          RC   0.050   0.045   0.050   12100  0.0120
2490          RX     310     330     360     370     385     395     425     445
2491          RY    1577    1576    1575    1573    1573    1575    1576    1577
              *

2492          KK     D01
2493          KM        Runoff from D01
2494          BA   2.652
2495          LG    0.35    0.35    3.09    0.86       0
2496          UI     423    1364    2301    2869    1740     880     384     153      83       0
2497          UI       0       0       0       0       0       0       0       0       0       0
2498          UI       0       0       0       0       0       0       0       0       0       0
              *

2499          KK   CPD01
2500          KM        Combine DRD02, DRD03, D04 with D01
2501          HC       4   3.686
              *

2502          KK    DD01
2503          KM           Divert flow into D09
2504          KM        Natural divergence of flow due to a braided channel network.
2505          DT   DVD01
2506          DI       0      83     190     360     603     930    1599    2843    4760    8253
2507          DQ       0       0      14      55     130     244     620    1220    2132    3779
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2508          KK  RCPD01
2509          KM        Route remainder flow from CP D01 to CP D05
2510          RS       7    FLOW      -1
2511          RC   0.050   0.045   0.050    7540  0.0092
2512          RX      80      90     192     197     207     212     325     335
2513          RY  1489.5    1488    1487    1486    1486    1487    1488  1489.5
              *

2514          KK   DRD04
2515          KM        Return diverted flow from CP D04
2516          DR   DVD04
              *

2517          KK   RDD04
```

```
2518          KM        Route flow from CP D04 to CP D05
2519          RS      15    FLOW      -1
2520          RC   0.050   0.045   0.050   15200  0.0092
2521          RX       0      90     192     197     207     212     325     590
2522          RY    1489    1488    1487    1486    1486    1487    1488    1489
              *

2523          KK     D05
2524          KM        Runoff from D05
2525          BA   1.927
2526          LG    0.35    0.35    3.17    0.83       0
2527          UI     135     482     758    1054    1600    1219     883     603     289     190
2528          UI     110      41      42      41       0       0       0       0       0       0
2529          UI       0       0       0       0       0       0       0       0       0       0
              *

2530          KK   CPD05
2531          KM        Combine D01, DRD04 with D05
2532          HC       3   5.613
              *

2533          KK    DD05
2534          KM           Divert flow into D13
2535          KM        Natural divergence of flow due to a braided channel network.
2536          DT   DVD05
2537          DI       0      60     202     425     738    1146    1656    2421    4086
2538          DQ       0      60     198     413     712    1101    1586    2289    3838
              *

2539          KK  RCPD05
2540          KM        Route remainder flow from CP D05 to CP D11
2541          RS       4    FLOW      -1
2542          RC   0.050   0.045   0.050    6030  0.0084
2543          RX       0      25      52      56      60      64      90     115
2544          RY    1465    1464    1463  1460.5  1460.5    1463    1464    1465
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2545          KK     D11
2546          KM        Runoff from D11
2547          BA   0.395
2548          LG    0.35    0.35    3.64    0.59       0
2549          UI     127     369     580     305      97      32      16       0       0       0
2550          UI       0       0       0       0       0       0       0       0       0       0
              *

2551          KK   CPD11
2552          KM        Combine D05 with D11
2553          HC       2   6.008
              *

2554          KK  RCPD11
2555          KM        Route flow from CP D11 to CP D10
2556          RS       3    FLOW      -1
2557          RC   0.050   0.045   0.050    3640  0.0073
2558          RX     140     150     200     250     300     350     400     410
2559          RY    1416    1415    1415    1414    1414    1415    1415    1416
              *

2560          KK     D06
2561          KM        Runoff from D06
2562          BA   1.216
2563          LG    0.35    0.35    2.82    1.06       0
2564          UI     170     562     898    1320     848     508     211     103      36      36
2565          UI       0       0       0       0       0       0       0       0       0       0
2566          UI       0       0       0       0       0       0       0       0       0       0
              *

2567          KK    DD06
2568          KM           Divert flow into D08
2569          KM        Natural divergence of flow due to a braided channel network.
2570          DT   DVD06
2571          DI       0      34     133     276     658    1341    2396    4365    6763    9307
2572          DQ       0      23      89     184     418     826    1445    2534    4013    5489
              *

2573          KK  RCPD06
2574          KM        Route flow from CP D06 to CP D10
2575          RS       8    FLOW      -1
2576          RC   0.050   0.045   0.050   16830  0.0078
2577          RX       0     140     310     320     340     350     540     835
```

```
2578          RY    1459    1458    1457    1455    1455    1457    1458    1459
              *

2579          KK   DRD06
2580          KM        Return diverted flow from CP D06
2581          DR   DVD06
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2582          KK   RDD06
2583          KM        Route flow from CP D06 to CP D08
2584          RS       2    FLOW      -1
2585          RC   0.050   0.045   0.050    3320  0.0081
2586          RX     290     310     340     350     360     370     390     410
2587          RY    1523    1522    1521    1520    1520    1521    1522    1523
              *

2588          KK     D08
2589          KM        Runoff from D08
2590          BA   0.280
2591          LG    0.35    0.35    3.13    0.85       0
2592          UI     130     412     369     129      30       0       0       0       0       0
2593          UI       0       0       0       0       0       0       0       0       0       0
              *

2594          KK   CPD08
2595          KM        Combine DRD06 with D08
2596          HC       2   1.496
              *

2597          KK  RCPD08
2598          KM        Route flow from CP D08 to CP D10
2599          RS       6    FLOW      -1
2600          RC   0.050   0.045   0.050   13880  0.0078
2601          RX     280     290     310     320     340     350     370     380
2602          RY    1459    1458    1457    1455    1455    1457    1458    1459
              *

2603          KK     D10
2604          KM        Runoff from D10
2605          BA   0.841
2606          LG    0.35    0.35    3.85    0.52       0
2607          UI      84     307     466     771     661     448     266     120      69      22
2608          UI      21       0       0       0       0       0       0       0       0       0
2609          UI       0       0       0       0       0       0       0       0       0       0
              *

2610          KK   CPD10
2611          KM        Combine D06, D08, D11 with D10
2612          HC       4   8.345
              *

2613          KK  RCPD10
2614          KM        Route diverted flow from CP D10 to CP D22
2615          KM        Crossing at SR-238
2616          RS       1    FLOW      -1
2617          RC   0.050   0.045   0.050   30930  0.0050
2618          RX       0     300     500     520     570     590     700     940
2619          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2620          KK     D46
2621          KM        Runoff from D46
2622          BA   0.055
2623          LG    0.35    0.35    4.65    0.31       0
2624          UI     128      81       0       0       0       0       0       0       0       0
2625          UI       0       0       0       0       0       0       0       0       0       0
              *

2626          KK  RCPD46
2627          KM        Route diverted flow from CP D46 to CP D22
2628          KM        Crossing at SR-238
2629          RS       3    FLOW      -1
2630          RC   0.050   0.045   0.050   31100  0.0050
2631          RX       0     300     500     520     570     590     700     940
2632          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *
```

```
2633          KK   DRD05
2634          KM        Return diverted flow from CP D05
2635          DR   DVD05
              *

2636          KK   RDD05
2637          KM        Route flow from CP D05 to CP D13
2638          RS       2    FLOW      -1
2639          RC   0.050   0.045   0.050    5890  0.0080
2640          RX      90     100     200     210     240     250     375     385
2641          RY  1457.5    1456    1455    1453    1453    1455    1456  1457.5
              *

2642          KK     D13
2643          KM        Runoff from D13
2644          BA   0.559
2645          LG    0.35    0.35    4.40    0.37       0
2646          UI     358    1049     594     127      33       0       0       0       0       0
2647          UI       0       0       0       0       0       0       0       0       0       0
              *

2648          KK   CPD13
2649          KM        Combine DRD05 with D13
2650          HC       2   6.172
              *

2651          KK  RCPD13
2652          KM        Route diverted flow from CP D13 to CP D22
2653          KM        Crossing at SR-238
2654          RS       2    FLOW      -1
2655          RC   0.050   0.045   0.050   34330  0.0050
2656          RX     430     450     500     520     570     590     620     640
2657          RY    1295    1294    1293    1290    1290    1293    1294    1295
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2658          KK     D22
2659          KM        Runoff from D22
2660          BA   7.722
2661          LG    0.35    0.35    3.88    0.47       0
2662          UI     339     511    1299    1727    2051    2533    3456    4164    3227    2673
2663          UI    2139    1744    1290     730     573     435     335     156     104     103
2664          UI     104     103       0       0       0       0       0       0       0       0
2665          UI       0       0       0       0       0       0       0       0       0       0
              *

2666          KK   CPD22
2667          KM        Combine D13, D46, D10, D47, D15 with D22
2668          HC       6  18.424
              *

2669          KK  RCPD22
2670          KM        Route flow from CP D22 to CP D33
2671          RS       4    FLOW      -1
2672          RC   0.050   0.045   0.050   11330  0.0055
2673          RX     230     250     330     360     410     440     590     610
2674          RY    1214    1212    1211    1208    1208    1211    1212    1214
              *

2675          KK     D33
2676          KM        Runoff from D33
2677          BA   0.650
2678          LG    0.35    0.35    4.25    0.42       0
2679          UI     112     352     618     689     409     189      86      29      21       0
2680          UI       0       0       0       0       0       0       0       0       0       0
2681          UI       0       0       0       0       0       0       0       0       0       0
              *

2682          KK   CPD33
2683          KM        Combine D22 with D33
2684          HC       2  19.073
              *

2685          KK  D33RIV
2686          KM        Combine D32RIV with D33
2687          HC       2 151.283
              *

2688          KK  RCPD33
2689          KM        Route flow from CP D33RIV to CP G36RIV (WATERMAN WASH)
```

```
2690          RS       1    FLOW      -1
2691          RC   0.050   0.035   0.050     520  0.0030
2692          RX     680     700    1000    1050    1070    1120    1400    1420
2693          RY    1185    1180    1178    1175    1175    1178    1180    1185
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2694          KK     D45
2695          KM        Runoff from D45
2696          BA   0.262
2697          LG    0.35    0.35    4.30    0.41       0
2698          UI     136     421     329      97      22       0       0       0       0       0
2699          UI       0       0       0       0       0       0       0       0       0       0
              *

2700          KK     G36
2701          KM        Runoff from G36
2702          BA   0.997
2703          LG    0.35    0.35    4.00    0.47       0
2704          UI     139     461     737    1082     695     416     173      85      29      30
2705          UI       0       0       0       0       0       0       0       0       0       0
2706          UI       0       0       0       0       0       0       0       0       0       0
              *

2707          KK  G36RIV
2708          KM        Combine D33RIV, D45 with G36
2709          HC       3 152.542
              *

2710          KK  RCPG36
2711          KM        Route flow from CP G36RIV to CP G37RIV (WATERMAN WASH)
2712          RS       2    FLOW      -1
2713          RC   0.050   0.035   0.050    2960  0.0020
2714          RX       0      10    1540    1570    1610    1640    3190    3200
2715          RY  1192.5  1190.5    1178    1175    1175    1178  1190.5  1192.5
              *

2716          KK     D44
2717          KM        Runoff from D44
2718          BA   0.332
2719          LG    0.35    0.35    4.20    0.43       0
2720          UI     128     383     482     206      62      15       0       0       0       0
2721          UI       0       0       0       0       0       0       0       0       0       0
              *

2722          KK     G37
2723          KM        Runoff from G37
2724          BA   0.408
2725          LG    0.35    0.35    4.00    0.47       0
2726          UI     156     472     592     253      77      19       0       0       0       0
2727          UI       0       0       0       0       0       0       0       0       0       0
              *

2728          KK  G37RIV
2729          KM        Combine G36RIV, D44 with G37
2730          HC       3 153.281
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2731          KK  RCPG37
2732          KM        Route flow from CP G37RIV to CP G38RIV (WATERMAN WASH)
2733          RS       1    FLOW      -1
2734          RC   0.050   0.035   0.050    1450  0.0020
2735          RX       0      10    1590    1615    1670    1700    3260    3270
2736          RY  1185.5  1183.5    1170    1166    1166    1170  1183.5  1185.5
              *

2737          KK     D43
2738          KM        Runoff from D43
2739          BA   0.151
2740          LG    0.35    0.35    4.15    0.44       0
2741          UI     108     303     140      26       0       0       0       0       0       0
2742          UI       0       0       0       0       0       0       0       0       0       0
              *

2743          KK     G12
2744          KM        Runoff from G12
2745          BA   1.032
```

```
2746        LG    0.35    0.35    4.00    0.47       0
2747        UI     154     500     832    1119     699     390     160      74      32      31
2748        UI       0       0       0       0       0       0       0       0       0       0
2749        UI       0       0       0       0       0       0       0       0       0       0
            *

2750        KK    DG12
2751        KM            Divert flow into G39
2752        KM        Natural divergence of flow due to a braided channel network.
2753        DT   DVG12
2754        DI       0      29     104     450    1353    3063    5126    7611   10481
2755        DQ       0      15      40     295     873    1727    2783    4037    5472
            *

2756        KK  RCPG12
2757        KM        Route remainder flow from CP G12 to CP G38
2758        RS       4    FLOW      -1
2759        RC   0.050   0.045   0.050    9230  0.0084
2760        RX       0     215     445     460     490     505     710     950
2761        RY    1204    1203    1202    1200    1200    1202    1203    1204
            *

2762        KK     G38
2763        KM        Runoff from G38
2764        BA   0.336
2765        LG    0.35    0.35    4.10    0.46       0
2766        UI      91     267     468     289     118      44      14       0       0       0
2767        UI       0       0       0       0       0       0       0       0       0       0
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2768        KK   CPG38
2769        KM        Combine G12 with G38
2770        HC       2   1.368
            *

2771        KK  G38RIV
2772        KM        Combine G37RIV, D43 with G38
2773        HC       3 154.800
            *

2774        KK  RCPG38
2775        KM        Route flow from CP G38RIV to CP D42RIV (WATERMAN WASH)
2776        RS       1    FLOW      -1
2777        RC   0.050   0.035   0.050    1820  0.0020
2778        RX       0      10    1710    1720    1760    1770    3400    3410
2779        RY    1172    1170    1160    1156    1156    1160    1170    1172
            *

2780        KK     D34
2781        KM        Runoff from D34
2782        BA   1.202
2783        LG    0.35    0.35    4.55    0.35       0
2784        UI     239     730    1358    1188     686     263     109      41       0       0
2785        UI       0       0       0       0       0       0       0       0       0       0
            *

2786        KK  RCPD34
2787        KM        Route flow from CP D34 to CP D42
2788        RS       3    FLOW      -1
2789        RC   0.050   0.045   0.050    4770  0.0051
2790        RX     280     290     410     420     440     450     530     540
2791        RY    1173    1172    1171    1168    1168    1171    1172    1173
            *

2792        KK     D42
2793        KM        Runoff from D42
2794        BA   0.208
2795        LG    0.35    0.35    4.00    0.47       0
2796        UI     149     417     192      37       0       0       0       0       0       0
2797        UI       0       0       0       0       0       0       0       0       0       0
            *

2798        KK   CPD42
2799        KM        Combine D34 with D42
2800        HC       2   1.410
            *

2801        KK   DRG12
2802        KM        Return diverted flow from CP G12
2803        DR   DVG12
```

```
                *
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2804            KK   RDG12
2805            KM        Route flow from CP G12 to CP G39
2806            RS      10    FLOW      -1
2807            RC   0.050   0.045   0.050   10210  0.0080
2808            RX       0     200     430     440     470     480     625     900
2809            RY    1204    1203    1203    1200    1200    1203    1203    1204
                *

2810            KK     G39
2811            KM        Runoff from G39
2812            BA   0.763
2813            LG    0.35    0.35    4.00    0.47       0
2814            UI      58     234     353     533     657     447     313     160      91      52
2815            UI      18      18      18       0       0       0       0       0       0       0
2816            UI       0       0       0       0       0       0       0       0       0       0
                *

2817            KK   CPG39
2818            KM        Combine DRG12 with G39
2819            HC       2   1.795
                *

2820            KK  D42RIV
2821            KM        Combine G38RIV, G39 with D42
2822            HC       3 156.973
                *

2823            KK  RCPD42
2824            KM        Route flow from CP D42RIV to CP D41RIV (WATERMAN WASH)
2825            RS       1    FLOW      -1
2826            RC   0.050   0.035   0.050    3000  0.0047
2827            RX       0     900    1300    1350    1370    1420    1750    1770
2828            RY    1165    1160    1154    1150    1150    1154    1160    1165
                *

2829            KK     D41
2830            KM        Runoff from D41
2831            BA   0.295
2832            LG    0.35    0.35    4.40    0.38       0
2833            UI     125     385     412     159      42      15       0       0       0       0
2834            UI       0       0       0       0       0       0       0       0       0       0
                *

2835            KK  D41RIV
2836            KM        Combine D42RIV with D41
2837            HC       2 157.267
                *

2838            KK  RCPD41
2839            KM        Route flow from CP D41RIV to CP G40RIV (WATERMAN WASH)
2840            RS       1    FLOW      -1
2841            RC   0.050   0.035   0.050     220  0.0020
2842            RX     780     800    1400    1450    1475    1525    1880    1900
2843            RY    1160    1155    1153    1150    1150    1153    1155    1160
                *
```



```
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2844            KK     G02
2845            KM        Runoff from G02
2846            BA   2.061
2847            LG    0.35    0.35    3.95    0.48      32
2848            UI     329    1059    1789    2230    1351     685     299     119      64       0
2849            UI       0       0       0       0       0       0       0       0       0       0
2850            UI       0       0       0       0       0       0       0       0       0       0
                *

2851            KK     G03
2852            KM        Runoff from G03
2853            BA   2.460
2854            LG    0.35    0.35    3.92    0.48      37
2855            UI     367    1193    1984    2667    1663     931     383     177      74      75
2856            UI       0       0       0       0       0       0       0       0       0       0
2857            UI       0       0       0       0       0       0       0       0       0       0
                *
```

```
2858          KK   CPG03
2859          KM        COMBINE G02 WITH G03
2860          HC       2   4.521
              *

2861          KK  RCPG03
2862          KM        Route flow from CP G03 to CP G09
2863          RS       4    FLOW      -1
2864          RC   0.050   0.045   0.050   10960  0.0094
2865          RX       0     150     260     275     305     320     420     560
2866          RY    1346  1343.5    1343    1340    1340    1343  1343.5    1346
              *

2867          KK   DRG08
2868          KM        Return diverted flow from CP G08
2869          DR   DVG08
              *

2870          KK   RDG08
2871          KM        Route flow from CP G08 to CP G09
2872          RS       6    FLOW      -1
2873          RC   0.050   0.045   0.050   10230  0.0092
2874          RX       0     270     570     585     615     630     900    1200
2875          RY    1345    1344    1343    1340    1340    1343    1344    1345
              *

2876          KK     G09
2877          KM        Runoff from G09
2878          BA   0.702
2879          LG    0.35    0.35    3.95    0.48       0
2880          UI      92     308     485     750     502     316     132      75      23      20
2881          UI       0       0       0       0       0       0       0       0       0       0
2882          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2883          KK   CPG09
2884          KM        Combine G03, DRG08 with G09
2885          HC       3   5.625
              *

2886          KK  RCPG09
2887          KM        Route flow from CP G09 to CP G11
2888          RS       3    FLOW      -1
2889          RC   0.050   0.045   0.050    6830  0.0083
2890          RX       0       8     210     270     290     300     530     538
2891          RY  1283.5    1282    1281    1280    1280    1281    1282  1283.5
              *

2892          KK     G48
2893          KM        Runoff from G48
2894          BA   1.909
2895          LG    0.35    0.35    3.95    0.48      58
2896          UI     584    2077    1992    1137     665     387     238     136      69      51
2897          UI      51       0       0       0       0       0       0       0       0       0
2898          UI       0       0       0       0       0       0       0       0       0       0
              *

2899          KK  RCPG48
2900          KM        Route flow from CP G48 to CP G01
2901          RS       3    FLOW      -1
2902          RC   0.050   0.045   0.050    7310  0.0078
2903          RX       0       8     240     250     270     280     400     408
2904          RY  1373.5    1372    1371    1368    1368    1371    1372  1373.5
              *

2905          KK     G01
2906          KM        Runoff from G01
2907          BA   1.584
2908          LG    0.35    0.35    3.95    0.50       0
2909          UI     138     528     800    1284    1304     892     592     261     162      74
2910          UI      38      39       0       0       0       0       0       0       0       0
2911          UI       0       0       0       0       0       0       0       0       0       0
              *

2912          KK   CPG01
2913          KM        Combine G48 with G01
2914          HC       2   3.493
              *

2915          KK     G10
```

```
2916          KM        Runoff from G10
2917          BA   0.439
2918          LG    0.35     0.35     3.95     0.48        0
2919          UI     109      326      585      394      180       70       18       17        0        0
2920          UI       0        0        0        0        0        0        0        0        0        0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2921          KK   CPG10
2922          KM        Combine G01 with G10
2923          HC       2   3.932
              *

2924          KK  RCPG10
2925          KM        Route flow from CP G10 to CP G11
2926          RS       6    FLOW      -1
2927          RC   0.050   0.045   0.050    7310  0.0078
2928          RX       0     200     430     440     460     470     590     900
2929          RY    1273    1272    1271    1268    1268    1271    1272    1273
              *

2930          KK     G11
2931          KM        Runoff from G11
2932          BA   0.605
2933          LG    0.35     0.35     3.95     0.48        0
2934          UI     194      566      888      467      150       48       26        0        0        0
2935          UI       0        0        0        0        0        0        0        0        0        0
              *

2936          KK   CPG11
2937          KM        Combine G09, G10 with G11
2938          HC       3  10.161
              *

2939          KK    DG11
2940          KM            Divert flow into G42
2941          KM        Natural divergence of flow due to a braided channel network.
2942          DT   DVG11
2943          DI       0       46      162      355      635      712     1601     3684     6689    10322
2944          DQ       0       15       54      118      211      235      628     1563     3029     4544
              *

2945          KK  RCPG11
2946          KM        Route remainder flow from CP G11 to CP G40
2947          RS       4    FLOW      -1
2948          RC   0.050   0.045   0.050   11460  0.0069
2949          RX       0       9     110     170     220     280     370     379
2950          RY    1195 1193.25    1193    1190    1190    1193 1193.25    1195
              *

2951          KK     G40
2952          KM        Runoff from G40
2953          BA   1.521
2954          LG    0.35     0.35     4.00     0.47        0
2955          UI     174      605      932     1536     1139      756      373      189       88       41
2956          UI      42        0        0        0        0        0        0        0        0        0
2957          UI       0        0        0        0        0        0        0        0        0        0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2958          KK   CPG40
2959          KM        Combine G11 with G40
2960          HC       2  11.682
              *

2961          KK  G40RIV
2962          KM        Combine D41RIV with G40
2963          HC       2 168.548
              *

2964          KK  RCPG40
2965          KM        Route flow from CP G40RIV to CP D40RIV (WATERMAN WASH)
2966          RS       1    FLOW      -1
2967          RC   0.050   0.035   0.050    1350  0.0017
2968          RX       0      10     750     770     820     870    1590    1600
2969          RY    1160    1158    1150    1146    1146    1150    1156    1158
              *
```

```
2970          KK     D40
2971          KM        Runoff from D40
2972          BA   0.232
2973          LG    0.35    0.35    4.50    0.36       0
2974          UI     134     405     271      69      14       0       0       0       0       0
2975          UI       0       0       0       0       0       0       0       0       0       0
              *

2976          KK     G41
2977          KM        Runoff from G41
2978          BA   0.423
2979          LG    0.35    0.35    4.00    0.47       0
2980          UI     136     395     621     327     104      34      18       0       0       0
2981          UI       0       0       0       0       0       0       0       0       0       0
              *

2982          KK  D40RIV
2983          KM        Combine G40RIV, G41 with D40
2984          HC       3 169.203
              *

2985          KK  RCPD40
2986          KM        Route flow from CP D40RIV to CP D39RIV (WATERMAN WASH)
2987          RS       1    FLOW      -1
2988          RC   0.050   0.035   0.050    2270  0.0032
2989          RX    1455    1480    2150    2200    2225    2275    2700    2725
2990          RY    1150    1147    1145    1142    1142    1145    1147    1150
              *

2991          KK     D36
2992          KM        Runoff from D36
2993          BA   0.248
2994          LG    0.35    0.35    4.65    0.32       0
2995          UI     115     365     327     114      27       0       0       0       0       0
2996          UI       0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2997          KK     D35
2998          KM        Runoff from D35
2999          BA   1.178
3000          LG    0.35    0.35    3.92    0.46       0
3001          UI      95     376     570     883    1000     678     461     221     129      68
3002          UI      28      28       0       0       0       0       0       0       0       0
3003          UI       0       0       0       0       0       0       0       0       0       0
              *

3004          KK   CPD35
3005          KM        Combine D36 with D35
3006          HC       2   1.426
              *

3007          KK  RCPD35
3008          KM        Route flow from CP D35 to CP D37
3009          RS       5    FLOW      -1
3010          RC   0.050   0.045   0.050    6560  0.0056
3011          RX     180     200     400     410     420     430     500     800
3012          RY  1202.5    1201    1201    1200    1200    1201    1202    1203
              *

3013          KK     D37
3014          KM        Runoff from D37
3015          BA   0.279
3016          LG    0.35    0.35    4.45    0.37       0
3017          UI      70     206     372     251     114      45      11      10       0       0
3018          UI       0       0       0       0       0       0       0       0       0       0
              *

3019          KK   CPD37
3020          KM        Combine D35 with D37
3021          HC       2   1.705
              *

3022          KK     D38
3023          KM        Runoff from D38
3024          BA   0.365
3025          LG    0.35    0.35    4.55    0.35       0
3026          UI      99     290     507     315     129      48      14       0       0       0
3027          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
3028          KK   CPD38
3029          KM        COMBINE D37 WITH D38
3030          HC       2   2.071
              *

3031          KK  RCPD38
3032          KM        Route flow from CP D38 to CP D39
3033          RS       3    FLOW      -1
3034          RC   0.050   0.045   0.050    5660  0.0040
3035          RX     230     250     280     290     310     320     350     370
3036          RY  1166.5    1165    1164    1163    1163    1164    1165  1166.5
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3037          KK     D39
3038          KM        Runoff from D39
3039          BA   0.292
3040          LG    0.35    0.35    4.80    0.30       0
3041          UI      79     233     406     251     103      38      12       0       0       0
3042          UI       0       0       0       0       0       0       0       0       0       0
              *

3043          KK   CPD39
3044          KM        Combine D38 with D39
3045          HC       2   2.363
              *

3046          KK  D39RIV
3047          KM        Combine D40RIV with D39
3048          HC       2 171.566
              *

3049          KK  RCPD39
3050          KM        Route flow from CP D39RIV to CP G42RIV (WATERMAN WASH)
3051          RS       1    FLOW      -1
3052          RC   0.050   0.035   0.050    1730  0.0027
3053          RX       0      10     740     750     800     810    1500    1510
3054          RY    1152    1150    1144    1140    1140    1144    1150    1152
              *

3055          KK   DRG11
3056          KM        Return diverted flow from CP G11
3057          DR   DVG11
              *

3058          KK   RDG11
3059          KM        Route flow from CP G11 to CP G42
3060          RS       7    FLOW      -1
3061          RC   0.050   0.045   0.050   13900  0.0069
3062          RX       0       8     200     210     230     240     400     408
3063          RY  1211.5    1210    1209    1206    1206    1209    1210  1211.5
              *

3064          KK     G42
3065          KM        Runoff from G42
3066          BA   0.694
3067          LG    0.35    0.35    4.00    0.47       0
3068          UI     103     337     559     753     469     263     108      49      22      21
3069          UI       0       0       0       0       0       0       0       0       0       0
3070          UI       0       0       0       0       0       0       0       0       0       0
              *

3071          KK   CPG42
3072          KM        Combine DRG11 with G42
3073          HC       2  10.854
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3074          KK  G42RIV
3075          KM        Combine D39RIV with G42
3076          HC       2 172.259
              *

3077          KK  RCPG42
3078          KM        Route flow from CP G42RIV to CP B08RIV (WATERMAN WASH)
3079          RS       1    FLOW      -1
3080          RC   0.050   0.035   0.050    2400  0.0050
3081          RX       0    1800    2200    2350    2430    2580    3400    5200
```

```
3082          RY    1155    1145    1135    1130    1130    1135    1145    1155
              * ******************************************************************************
              * COMPLETED WATERSHEDS D AND G
              * BEGINNING OF WATERSHED B, C, AND H
              * FLOW FROM WATERSHED C ROUTED THROUGH WATERSHED B
              * ALL FLOW FROM C ROUTED THROUGH B07 OR B09
              * ******************************************************************************

3083          KK     C50
3084          KM        Runoff from C50
3085          BA   0.316
3086          LG    0.45    0.11    4.70    0.41       0
3087          UI      22      55     124     171     184     164     143     109      71      55
3088          UI      34      25      19      13      10       3       3       3       3       2
3089          UI       3       3       3       0       0       0       0       0       0       0
3090          UI       0       0       0       0       0       0       0       0       0       0
              *

3091          KK  RCPC50
3092          KM        Route flow from CP C50 to CP C51
3093          RS       8    FLOW      -1
3094          RC   0.050   0.045   0.050    6120  0.0049
3095          RX       0     163     326     490     510     674     837    1000
3096          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

3097          KK     C51
3098          KM        Runoff from C51
3099          BA   0.334
3100          LG    0.50    0.00    4.70    0.47       0
3101          UI      18      29      72     105     137     150     148     126     116      97
3102          UI      67      53      42      30      22      17      15      10      10       5
3103          UI       2       2       2       2       3       2       2       2       3       2
3104          UI       0       0       0       0       0       0       0       0       0       0
3105          UI       0       0       0       0       0       0       0       0       0       0
              *

3106          KK   CPC51
3107          KM        Combine C50 with C51
3108          HC       2   0.650
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3109          KK  RCPC51
3110          KM        Route flow from CP C51 to CP B07
3111          RS       3    FLOW      -1
3112          RC   0.050   0.045   0.050    2630  0.0045
3113          RX       0     163     326     490     510     674     837    1000
3114          RY    1170    1169    1168    1167    1167    1168    1169    1170
              *

3115          KK     C52
3116          KM        Runoff from C52
3117          BA   0.293
3118          LG    0.50    0.00    4.80    0.45       0
3119          UI      16      24      61      90     117     129     130     108     105      86
3120          UI      61      46      39      27      20      16      14       9       9       6
3121          UI       2       1       2       2       2       2       2       2       2       1
3122          UI       2       0       0       0       0       0       0       0       0       0
3123          UI       0       0       0       0       0       0       0       0       0       0
              *

3124          KK  RCPC52
3125          KM        Route flow from CP C52 to CP B07
3126          RS       4    FLOW      -1
3127          RC   0.050   0.045   0.050    2590  0.0045
3128          RX       0     163     326     490     510     674     837    1000
3129          RY    1170    1169    1168    1167    1167    1168    1169    1170
              *

3130          KK     C53
3131          KM        Runoff from C53
3132          BA   0.290
3133          LG    0.50    0.00    4.80    0.45       0
3134          UI      15      26      66      94     122     133     128     113      96      83
3135          UI      57      46      34      24      20      14      11       9       9       2
3136          UI       2       2       2       2       2       2       2       2       2       2
3137          UI       0       0       0       0       0       0       0       0       0       0
3138          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
3139          KK  RCPC53
3140          KM        Route flow from CP C53 to CP B07
3141          RS       4    FLOW      -1
3142          RC   0.050   0.045   0.050    2920  0.0045
3143          RX       0     163     326     490     510     674     837    1000
3144          RY    1170    1169    1168    1167    1167    1168    1169    1170
              *

3145          KK     B07
3146          KM        Runoff from B07
3147          BA   0.340
3148          LG    0.50    0.00    4.70    0.47       0
3149          UI      19      35      94     122     157     166     147     142     108      82
3150          UI      58      49      32      24      19      15      11      10       3       2
3151          UI       2       3       2       3       2       3       2       2       0       0
3152          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3153          KK   CPB07
3154          KM        Combine C51, C52, C53 with B07
3155          HC       4   1.574
              *

3156          KK  RCPB07
3157          KM        Route flow from CP B07 to CP B08
3158          RS       4    FLOW      -1
3159          RC   0.050   0.045   0.050    5940  0.0036
3160          RX       0     163     326     490     510     674     837    1000
3161          RY    1050    1049    1048    1047    1047    1048    1049    1050
              *

3162          KK     B08
3163          KM        Runoff from B08
3164          BA   0.430
3165          LG    0.49    0.03    4.45    0.54       0
3166          UI      22      35      86     127     169     187     188     159     157     124
3167          UI      92      71      60      40      31      25      20      15      13      11
3168          UI       3       3       3       2       3       3       3       2       3       3
3169          UI       3       0       0       0       0       0       0       0       0       0
3170          UI       0       0       0       0       0       0       0       0       0       0
              *

3171          KK   CPB08
3172          KM        Combine B07 with B08
3173          HC       2   2.004
              *

3174          KK  B08RIV
3175          KM        Combine G42RIV with B08
3176          HC       2 174.263
              *

3177          KK  RCPB08
3178          KM        Route flow from CP B08RIV to CP B12RIV (WATERMAN WASH)
3179          RS       1    FLOW      -1
3180          RC   0.050   0.035   0.050     230  0.0050
3181          RX       0    1800    2200    2350    2430    2580    3400    5200
3182          RY    1150    1140    1130    1125    1125    1130    1140    1150
              * ******************************************************************************
              * ALL FLOWS SOUTH OF SR-238 GO TO C33
              * ONCE WATERSHED C IS COMPLETE, ALL FLOW FROM C IS ROUTED THROUGH B12
              * ******************************************************************************

3183          KK     C04
3184          KM        Runoff from C04
3185          BA   0.234
3186          LG    0.35    0.35    2.88    0.94       0
3187          UI     331     378     130      46      14       0       0       0       0       0
3188          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3189          KK  RCPC04
3190          KM        Route flow from CP C04 to CP C12
3191          RS       4    FLOW      -1
3192          RC   0.050   0.045   0.050    7890  0.0232
3193          RX       0      85     170     175     180     190     280     375
```

```
3194          RY    1667    1666    1665    1663    1663    1665    1666    1667
              *

3195          KK     C12
3196          KM        Runoff from C12
3197          BA   0.201
3198          LG    0.35    0.35    3.09    0.85       0
3199          UI     129     377     213      46      12       0       0       0       0       0
3200          UI       0       0       0       0       0       0       0       0       0       0
              *

3201          KK   CPC12
3202          KM        Combine C04 with C12
3203          HC       2   0.435
              *

3204          KK    DC12
3205          KM           Divert flow into C31
3206          KM        Natural divergence of flow due to a braided channel network.
3207          DT   DVC12
3208          DI       0      39     144     291     788    1940    3606    5426    7538
3209          DQ       0      20      72     150     391     941    1739    2610    3620
              *

3210          KK  RCPC12
3211          KM        Route remainder flow from CP C12 to CP C13
3212          RS       2    FLOW      -1
3213          RC   0.050   0.045   0.050    5110  0.0119
3214          RX       0      80     130     135     155     160     230     280
3215          RY    1529    1528    1527    1525    1525    1527    1528    1529
              *

3216          KK     C13
3217          KM        Runoff from C13
3218          BA   0.520
3219          LG    0.35    0.35    3.21    0.80       0
3220          UI     167     486     763     402     128      41      22       0       0       0
3221          UI       0       0       0       0       0       0       0       0       0       0
              *

3222          KK   CPC13
3223          KM        Combine C12 with C13
3224          HC       2   0.955
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3225          KK  RCPC13
3226          KM        Route flow from CP C13 to CP C33A
3227          KM        Crossing at SR-238
3228          RS       1    FLOW      -1
3229          RC   0.050   0.045   0.050    9170  0.0054
3230          RX       0     230     360     370     405     415     525     780
3231          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *

3232          KK     C11
3233          KM        Runoff from C11
3234          BA   0.289
3235          LG    0.35    0.35    3.11    0.85       0
3236          UI     111     334     419     180      54      13       0       0       0       0
3237          UI       0       0       0       0       0       0       0       0       0       0
              *

3238          KK    DC11
3239          KM           Divert flow into C14
3240          KM        Natural divergence of flow due to a braided channel network.
3241          DT   DVC11
3242          DI       0      22      92     211     667    1801    3293    5031    7054
3243          DQ       0       9      38      96     330     943    1686    2597    3659
              *

3244          KK  RCPC11
3245          KM        Route remainder flow from CP C11 to CP C31
3246          RS       4    FLOW      -1
3247          RC   0.050   0.045   0.050    4490  0.0116
3248          RX       0     100     190     195     205     210     300     420
3249          RY    1537    1536    1535    1534    1534    1535    1536    1537
              *

3250          KK   DRC12
3251          KM        Return diverted flow from CP C12
```

```
3252          DR   DVC12
              *

3253          KK   RDC12
3254          KM        Route flow from CP C12 to CP C31
3255          RS       4    FLOW      -1
3256          RC   0.050   0.045   0.050    5320  0.0118
3257          RX       0     100     190     195     205     210     300     420
3258          RY    1537    1536    1535    1534    1534    1535    1536    1537
              *

3259          KK     C31
3260          KM        Runoff from C31
3261          BA   0.101
3262          LG    0.35    0.35    3.15    0.84       0
3263          UI      82     213      80      13       0       0       0       0       0       0
3264          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3265          KK   CPC31
3266          KM        Combine C11, DRC12 with C31
3267          HC       3   0.825
              *

3268          KK  RCPC31
3269          KM        Route flow from CP C31 to CP C33A
3270          KM        Crossing at SR-238
3271          RS       1    FLOW      -1
3272          RC   0.050   0.045   0.050    8840  0.0055
3273          RX       0     230     360     370     405     415     525     780
3274          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *

3275          KK   DRC11
3276          KM        Return diverted flow from CP C11
3277          DR   DVC11
              *

3278          KK   RDC11
3279          KM        Route flow from CP C11 to CP C14
3280          RS       7    FLOW      -1
3281          RC   0.050   0.045   0.050    4960  0.0103
3282          RX       0      90     210     215     230     235     350     430
3283          RY    1537    1536    1536    1535    1535    1536    1536    1537
              *

3284          KK     C14
3285          KM        Runoff from C14
3286          BA   0.224
3287          LG    0.35    0.35    3.15    0.84       0
3288          UI     104     330     295     103      24       0       0       0       0       0
3289          UI       0       0       0       0       0       0       0       0       0       0
              *

3290          KK   CPC14
3291          KM        Combine DRC11 with C14
3292          HC       2   0.513
              *

3293          KK  RCPC14
3294          KM        Route flow from CP C14 to CP C33A
3295          KM        Crossing at SR-238
3296          RS       1    FLOW      -1
3297          RC   0.050   0.045   0.050    8160  0.0056
3298          RX       0     230     360     370     405     415     525     780
3299          RY    1485    1484    1483    1480    1480    1483    1484    1485
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3300          KK     C05
3301          KM        Runoff from C05
3302          BA   0.228
3303          LG    0.35    0.35    2.95    0.88       0
3304          UI     353     470      54       0       0       0       0       0       0       0
3305          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
3306          KK  RCPC05
3307          KM        Route flow from CP C05 to CP C10
3308          RS       6    FLOW      -1
3309          RC   0.050   0.045   0.050   13200  0.0153
3310          RX       0      60     120     135     150     165     250     320
3311          RY    1616    1615    1615    1613    1613    1615    1615    1616
              *

3312          KK     C03
3313          KM        Runoff from C03
3314          BA   0.295
3315          LG    0.35    0.35    2.94    0.90       0
3316          UI     211     592     272      52       0       0       0       0       0       0
3317          UI       0       0       0       0       0       0       0       0       0       0
              *

3318          KK    DC03
3319          KM           Divert flow into C06
3320          KM        Natural divergence of flow due to a braided channel network.
3321          DT   DVC03
3322          DI       0      43     176     373    1014    2415    4457    6668    9228
3323          DQ       0      25      98     201     545    1265    2332    3481    4810
              *

3324          KK  RCPC03
3325          KM        Route remainder flow from CP C03 to CP C09
3326          RS       2    FLOW      -1
3327          RC   0.050   0.045   0.050    6060  0.0167
3328          RX       0      90     210     220     230     240     350     450
3329          RY    1615    1614    1614    1612    1612    1614    1614    1615
              *

3330          KK     C09
3331          KM        Runoff from C09
3332          BA   0.138
3333          LG    0.35    0.35    3.13    0.85       0
3334          UI      79     242     161      41       8       0       0       0       0       0
3335          UI       0       0       0       0       0       0       0       0       0       0
              *

3336          KK   CPC09
3337          KM        Combine C03 with C09
3338          HC       2   0.433
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3339          KK    DC09
3340          KM           Divert flow into C16
3341          KM        Natural divergence of flow due to a braided channel network.
3342          DT   DVC09
3343          DI       0      31     111     249     519    1155    2695    4796    7315    9984
3344          DQ       0      15      52     115     227     540    1299    2444    3606    4952
              *

3345          KK  RCPC09
3346          KM        Route remainder flow from CP C09 to CP C15
3347          RS       2    FLOW      -1
3348          RC   0.050   0.045   0.050    3650  0.0139
3349          RX       0      40     120     130     155     165     245     300
3350          RY    1553    1552    1552    1550    1550    1552    1552    1553
              *

3351          KK     C15
3352          KM        Runoff from C15
3353          BA   0.095
3354          LG    0.35    0.35    4.20    0.43       0
3355          UI      88     208      61      10       0       0       0       0       0       0
3356          UI       0       0       0       0       0       0       0       0       0       0
              *

3357          KK   CPC15
3358          KM        Combine C09 with C15
3359          HC       2   0.528
              *

3360          KK    DC15
3361          KM           Divert flow into C30
3362          KM        Natural divergence of flow due to a braided channel network.
3363          DT   DVC15
3364          DI       0      22      83     202     409     591    1269    2894    5081    7600
3365          DQ       0      22      83     191     355     456     852    1738    3056    4514
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                *

3366            KK  RCPC15
3367            KM        Route remainder flow from CP C15 to CP C10
3368            RS       4    FLOW      -1
3369            RC   0.050   0.045   0.050    3210  0.0095
3370            RX       0      50     150     160     170     180     280     350
3371            RY    1617    1616    1616    1614    1614    1616    1616    1617
                *

3372            KK     C10
3373            KM        Runoff from C10
3374            BA   0.548
3375            LG    0.35    0.35    3.19    0.82       0
3376            UI     117     356     660     524     289     102      41      20       0       0
3377            UI       0       0       0       0       0       0       0       0       0       0
                *
1                                          HEC-1 INPUT                                                PAGE 90

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3378            KK   CPC10
3379            KM        Combine C05, C15 with C10
3380            HC       3   1.304
                *

3381            KK  RCPC10
3382            KM        Route flow from CP C10 to CP C33A
3383            KM        Crossing at SR-238
3384            RS       1    FLOW      -1
3385            RC   0.050   0.045   0.050    6920  0.0055
3386            RX       0     230     360     370     405     415     525     780
3387            RY    1485    1484    1483    1480    1480    1483    1484    1485
                *

3388            KK   DRC03
3389            KM        Return diverted flow from CP C03
3390            DR   DVC03
                *

3391            KK   RDC03
3392            KM        Route flow from CP C03 to CP C06
3393            RS       3    FLOW      -1
3394            RC   0.050   0.045   0.050    6650  0.0161
3395            RX       0      55     150     160     180     190     300     350
3396            RY    1629    1628    1628    1626    1626    1628    1628    1629
                *

3397            KK     C06
3398            KM        Runoff from C06
3399            BA   0.349
3400            LG    0.35    0.35    3.19    0.81       0
3401            UI     162     514     459     161      38       0       0       0       0       0
3402            UI       0       0       0       0       0       0       0       0       0       0
                *

3403            KK   CPC06
3404            KM        Combine DRC03 with C06
3405            HC       2   0.644
                *

3406            KK    DC06
3407            KM           Divert flow into C18
3408            KM        Natural divergence of flow due to a braided channel network.
3409            DT   DVC06
3410            DI       0      16      68     167     324     409     941    2213    4100    6021
3411            DQ       0       8      34      83     162     204     470    1106    2050    3010
                *

3412            KK  RCPC06
3413            KM        Route remainder flow from CP C06 to CP C16
3414            RS       1    FLOW      -1
3415            RC   0.050   0.045   0.050    1800  0.0127
3416            RX       0     120     240     250     270     280     400     500
3417            RY    1568    1567    1567    1564    1564    1567    1567    1568
                *
1                                          HEC-1 INPUT                                                PAGE 91

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3418            KK   DRC09
3419            KM        Return diverted flow from CP C09
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3420          DR   DVC09
              *

3421          KK   RDC09
3422          KM        Route flow from CP C09 to CP C16
3423          RS       1    FLOW      -1
3424          RC   0.050   0.045   0.050    2380  0.0132
3425          RX       0     120     240     250     270     280     400     500
3426          RY    1568    1567    1567    1564    1564    1567    1567    1568
              *

3427          KK     C16
3428          KM        Runoff from C16
3429          BA   0.127
3430          LG    0.35    0.35    3.23    0.79       0
3431          UI      82     238     134      30       7       0       0       0       0       0
3432          UI       0       0       0       0       0       0       0       0       0       0
              *

3433          KK   CPC16
3434          KM        Combine C06, DRC09 with C16
3435          HC       3   0.909
              *

3436          KK  RCPC16
3437          KM        Route flow from CP C16 to CP C30
3438          RS       5    FLOW      -1
3439          RC   0.050   0.045   0.050    5730  0.0106
3440          RX       0      70     200     210     225     235     360     450
3441          RY    1517    1516    1516    1514    1514    1516    1516    1517
              *

3442          KK   DRC06
3443          KM        Return diverted flow from CP C06
3444          DR   DVC06
              *

3445          KK   RDC06
3446          KM        Route flow from CP C06 to CP C18
3447          RS       1    FLOW      -1
3448          RC   0.050   0.045   0.050    2640  0.0117
3449          RX       0     200     240     247     272     280     330     450
3450          RY    1597    1596    1595    1593    1593    1595    1596    1597
              *

3451          KK     C18
3452          KM        Runoff from C18
3453          BA   0.078
3454          LG    0.35    0.35    4.00    0.47       0
3455          UI     181     115       0       0       0       0       0       0       0       0
3456          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3457          KK   CPC18
3458          KM        Combine DRC06 with C18
3459          HC       2   0.722
              *

3460          KK    DC18
3461          KM           Divert flow into C19
3462          KM        Natural divergence of flow due to a braided channel network.
3463          DT   DVC18
3464          DI       0      69     169     349     503    1348    3477    6348    9552
3465          DQ       0       0      18      79     205     641    1775    3142    4817
              *

3466          KK  RCPC18
3467          KM        Route remainder flow from CP C18 to CP C17
3468          RS       1    FLOW      -1
3469          RC   0.050   0.045   0.050    2210  0.0103
3470          RX       0      60     170     180     200     210     300     350
3471          RY    1527    1526    1526    1524    1524    1526    1526    1527
              *

3472          KK     C17
3473          KM        Runoff from C17
3474          BA   0.121
3475          LG    0.35    0.35    3.48    0.66       0
3476          UI     154     269      40       0       0       0       0       0       0       0
3477          UI       0       0       0       0       0       0       0       0       0       0
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                *

3478            KK   CPC17
3479            KM        Combine C18 with C17
3480            HC       2   0.843
                *

3481            KK    DC17
3482            KM           Divert flow into C29
3483            KM        Natural divergence of flow due to a braided channel network.
3484            DT   DVC17
3485            DI       0      23      83     189     360     459    1038    2490    4238    6610
3486            DQ       0      23      83     181     324     369     727    1601    2650    4163
                *

3487            KK  RCPC17
3488            KM        Route remainder flow from CP C17 to CP C30
3489            RS       2    FLOW      -1
3490            RC   0.050   0.045   0.050    2920  0.0106
3491            RX       0      40     120     150     160     170     250     300
3492            RY    1510    1509    1509    1506    1506    1509    1509    1510
                *
1                                          HEC-1 INPUT                                          PAGE 93

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3493            KK   DRC15
3494            KM        Return diverted flow from CP C15
3495            DR   DVC15
                *

3496            KK   RDC15
3497            KM        Route flow from CP C15 to CP C30
3498            RS       2    FLOW      -1
3499            RC   0.050   0.045   0.050    4430  0.0092
3500            RX       0      70     200     210     225     235     360     450
3501            RY    1517    1516    1516    1514    1514    1516    1516    1517
                *

3502            KK     C30
3503            KM        Runoff from C30
3504            BA   0.235
3505            LG    0.35    0.35    4.20    0.43       0
3506            UI     191     496     186      29       0       0       0       0       0       0
3507            UI       0       0       0       0       0       0       0       0       0       0
                *

3508            KK   CPC30
3509            KM        Combine C16, C17, DRC15 with C30
3510            HC       4   1.439
                *

3511            KK  RCPC30
3512            KM        Route flow from CP C30 to CP C33A
3513            KM        Crossing at SR-238
3514            RS       1    FLOW      -1
3515            RC   0.050   0.045   0.050    5210  0.0055
3516            RX       0     230     360     370     405     415     525     780
3517            RY    1485    1484    1483    1480    1480    1483    1484    1485
                *

3518            KK  CPC33A
3519            KM        Temporary combine to reduce hydrographs
3520            KM        Combine DRC13, DRC31, DRC14, DRC10 with DRC30
3521            HC       5   3.784
                *

3522            KK  RC33A
3523            KM        Route flow from CP C33A to CP C33E
3524            RS       6    FLOW      -1
3525            RC   0.050   0.045   0.050   18680  0.0059
3526            RX       0       8      50      75     110     135     180     188
3527            RY    1378  1376.5    1376    1372    1372    1376  1376.5    1378
                *
1                                          HEC-1 INPUT                                          PAGE 94

LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3528            KK     C02
3529            KM        Runoff from C02
3530            BA   0.129
3531            LG    0.35    0.35    2.91    0.91       0
```

```
3532          UI     200     266      30       0       0       0       0       0       0       0
3533          UI       0       0       0       0       0       0       0       0       0       0
              *

3534          KK  RCPC02
3535          KM        Route flow from CP C02 to CP C07
3536          RS       5    FLOW      -1
3537          RC   0.050   0.045   0.050   11040  0.0220
3538          RX       0     200     250     265     285     300     350     550
3539          RY    1628    1627    1626    1624    1624    1626    1627    1628
              *

3540          KK     C01
3541          KM        Runoff from C01
3542          BA   0.226
3543          LG    0.35    0.35    2.92    0.90       0
3544          UI     552     258      53       0       0       0       0       0       0       0
3545          UI       0       0       0       0       0       0       0       0       0       0
              *

3546          KK  RCPC01
3547          KM        Route flow from CP C01 to CP C07
3548          RS       5    FLOW      -1
3549          RC   0.050   0.045   0.050   12650  0.0210
3550          RX       0     200     270     280     300     310     380     580
3551          RY    1619    1618    1617    1615    1615    1617    1618    1619
              *

3552          KK     C08
3553          KM        Runoff from C08
3554          BA   0.873
3555          LG    0.35    0.35    3.13    0.84       0
3556          UI     257     751    1251     721     261      87      35       0       0       0
3557          UI       0       0       0       0       0       0       0       0       0       0
              *

3558          KK  RCPC08
3559          KM        Route flow from CP C08 to CP C07
3560          RS       1    FLOW      -1
3561          RC   0.050   0.045   0.050    3060  0.0099
3562          RX       0     300     514     530     570     590     612     806
3563          RY    1573    1570    1569    1566    1566    1569    1570    1580
              *

3564          KK     C07
3565          KM        Runoff from C07
3566          BA   1.183
3567          LG    0.35    0.35    3.07    0.88       0
3568          UI     417    1221    1744     836     246      71       0       0       0       0
3569          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3570          KK   CPC07
3571          KM        Combine C02, C01, C08 with C07
3572          HC       4   2.411
              *

3573          KK    DC07
3574          KM           Divert flow into C20
3575          KM        Natural divergence of flow due to a braided channel network.
3576          DT   DVC07
3577          DI       0      88     310     730    1418    1808    4633   11215
3578          DQ       0      23      79     209     453     669    2050    5243
              *

3579          KK  RCPC07
3580          KM        Route remainder flow from CP C07 to CP C19
3581          RS       1    FLOW      -1
3582          RC   0.050   0.045   0.050    3830  0.0106
3583          RX       0       8      60      70      85      95     135     143
3584          RY    1558  1556.5    1555    1553    1553    1555  1556.5    1558
              *

3585          KK   DRC18
3586          KM        Return diverted flow from CP C18
3587          DR   DVC18
              *

3588          KK   RDC18
3589          KM        Route flow from CP C18 to CP C19
```

```
3590          RS       2    FLOW      -1
3591          RC   0.050   0.045   0.050    3080  0.0130
3592          RX       0     100     210     220     245     255     320     450
3593          RY    1528    1527    1526    1523    1523    1526    1527    1528
              *

3594          KK     C19
3595          KM         Runoff from C19
3596          BA   0.257
3597          LG    0.35    0.35    3.60    0.60       0
3598          UI     209     542     203      32       0       0       0       0       0       0
3599          UI       0       0       0       0       0       0       0       0       0       0
              *

3600          KK   CPC19
3601          KM         Combine C07, DRC18 with C19
3602          HC       3   3.390
              *

3603          KK    DC19
3604          KM            Divert flow into C27
3605          KM         Natural divergence of flow due to a braided channel network.
3606          DT   DVC19
3607          DI       0      35     126     336     751    1155    2993    7167   12787
3608          DQ       0      24      84     211     432     595    1357    3021    5467
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3609          KK  RCPC19
3610          KM         Route remainder flow from CP C19 to CP C29
3611          RS       3    FLOW      -1
3612          RC   0.050   0.045   0.050    3370  0.0091
3613          RX       0      50     250     260     275     285     400     450
3614          RY    1497    1496    1496    1494    1494    1496    1496    1497
              *

3615          KK   DRC17
3616          KM         Return diverted flow from CP C17
3617          DR   DVC17
              *

3618          KK   RDC17
3619          KM         Route flow from CP C17 to CP C29
3620          RS       4    FLOW      -1
3621          RC   0.050   0.045   0.050    4890  0.0083
3622          RX       0     100     195     200     210     215     260     335
3623          RY    1512    1511    1510    1508    1508    1510    1511    1512
              *

3624          KK     C29
3625          KM         Runoff from C29
3626          BA   0.339
3627          LG    0.35    0.35    3.92    0.49       0
3628          UI     195     593     396     100      21       0       0       0       0       0
3629          UI       0       0       0       0       0       0       0       0       0       0
              *

3630          KK   CPC29
3631          KM         Combine C19, DRC17 with C29
3632          HC       3   3.850
              *

3633          KK  RCPC29
3634          KM         Route flow from CP C29 to CP C33B
3635          KM         Crossing at SR-238
3636          RS       1    FLOW      -1
3637          RC   0.050   0.045   0.050   11170  0.0057
3638          RX       0       9      35      55      65      85     110     119
3639          RY    1446 1444.25    1444    1443    1443    1444 1444.25    1446
              *

3640          KK     C28
3641          KM         Runoff from C28
3642          BA   0.050
3643          LG    0.35    0.35    4.65    0.32       0
3644          UI     157      36       0       0       0       0       0       0       0       0
3645          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
3646          KK  RCPC28
3647          KM        Route flow from CP C28 to CP C33B
3648          KM        Crossing at SR-238
3649          RS       3    FLOW      -1
3650          RC   0.050   0.045   0.050   10700  0.0059
3651          RX       0     240     420     440     450     470     600     750
3652          RY    1446    1445    1444    1443    1443    1444    1445    1446
              *

3653          KK   DRC19
3654          KM        Return diverted flow from CP C19
3655          DR   DVC19
              *

3656          KK   RDC19
3657          KM        Route flow from CP C19 to CP C27
3658          RS       2    FLOW      -1
3659          RC   0.050   0.045   0.050    5130  0.0081
3660          RX       0     100     220     240     270     290     390     480
3661          RY    1499    1498    1497    1494    1494    1497    1498    1499
              *

3662          KK     C27
3663          KM        Runoff from C27
3664          BA   0.214
3665          LG    0.35    0.35    3.60    0.60       0
3666          UI     153     429     198      38       0       0       0       0       0       0
3667          UI       0       0       0       0       0       0       0       0       0       0
              *

3668          KK   CPC27
3669          KM        Combine DRC19 with C27
3670          HC       2   3.604
              *

3671          KK  RCPC27
3672          KM        Route flow from CP C27 to CP C33B
3673          KM        Crossing at SR-238
3674          RS       1    FLOW      -1
3675          RC   0.050   0.045   0.050    8740  0.0059
3676          RX       0     215     465     470     485     490     700     965
3677          RY    1420    1419    1418    1415    1415    1418    1419    1420
              *

3678          KK   DRC07
3679          KM        Return diverted flow from CP C07
3680          DR   DVC07
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3681          KK   RDC07
3682          KM        Route flow from CP C07 to CP C20
3683          RS       3    FLOW      -1
3684          RC   0.050   0.045   0.050    9400  0.0096
3685          RX       0     110     200     220     250     270     350     450
3686          RY    1494    1493    1493    1490    1490    1493    1493    1494
              *

3687          KK     C21
3688          KM        Runoff from C21
3689          BA   0.563
3690          LG    0.35    0.35    2.83    1.02       0
3691          UI     603    1263     274       0       0       0       0       0       0       0
3692          UI       0       0       0       0       0       0       0       0       0       0
              *

3693          KK    DC21
3694          KM           Divert flow into C22
3695          KM        Natural divergence of flow due to a braided channel network.
3696          DT   DVC21
3697          DI       0      59     141     365     858    2108    3600    5595    7685
3698          DQ       0      59     129     260     531    1191    1992    3142    4249
              *

3699          KK  RCPC21
3700          KM        Route remainder flow from CP C21 to CP C20
3701          RS       2    FLOW      -1
3702          RC   0.050   0.045   0.050    4340  0.0093
3703          RX       0     110     200     220     250     270     350     450
```

```
3704          RY    1494    1493    1493    1490    1490    1493    1493    1494
              *

3705          KK     C20
3706          KM        Runoff from C20
3707          BA   0.464
3708          LG    0.35    0.35    3.25    0.78       0
3709          UI     137     399     665     383     139      46      19       0       0       0
3710          UI       0       0       0       0       0       0       0       0       0       0
              *

3711          KK   CPC20
3712          KM        Combine DRC07, C21 with C20
3713          HC       3   3.438
              *

3714          KK  RCPC20
3715          KM        Route flow from CP C20 to CP C33B
3716          KM        Crossing at SR-238
3717          RS       1    FLOW      -1
3718          RC   0.050   0.045   0.050    7860  0.0056
3719          RX       0       9      35      40      55      60      85      94
3720          RY    1420 1418.25    1418    1415    1415    1418 1418.25    1420
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3721          KK  CPC33B
3722          KM        Combine C29, C28, C27, with C20
3723          HC       4   5.142
              *

3724          KK  RC33B
3725          KM        Route flow from CP C33B to CP C33D
3726          RS       2    FLOW      -1
3727          RC   0.050   0.045   0.050    5650  0.0058
3728          RX       0      10      50      75     110     135     180     188
3729          RY    1378  1376.5    1376    1372    1372    1376  1376.5    1378
              *

3730          KK     C26
3731          KM        Runoff from C26
3732          BA   0.101
3733          LG    0.35    0.35    3.15    0.83       0
3734          UI     109     225      50       0       0       0       0       0       0       0
3735          UI       0       0       0       0       0       0       0       0       0       0
              *

3736          KK  RCPC26
3737          KM        Route flow from CP C26 to CP C33C
3738          KM        Crossing at SR-238
3739          RS       2    FLOW      -1
3740          RC   0.050   0.045   0.050    8370  0.0056
3741          RX       0     230     420     430     440     450     610     880
3742          RY    1414    1413    1412    1410    1410    1412    1413    1414
              *

3743          KK   DRC21
3744          KM        Return diverted flow from CP C21
3745          DR   DVC21
              *

3746          KK   RDC21
3747          KM        Route flow from CP C21 to CP C22
3748          RS       4    FLOW      -1
3749          RC   0.050   0.045   0.050    8780  0.0092
3750          RX       0      30     170     190     210     230     280     320
3751          RY    1445    1444    1444    1440    1440    1444    1444    1445
              *

3752          KK     C23
3753          KM        Runoff from C23
3754          BA   0.496
3755          LG    0.35    0.35    3.03    0.87       0
3756          UI     768    1023     117       0       0       0       0       0       0       0
3757          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
3758          KK  RCPC23
3759          KM        Route flow from CP C23 to CP C22
3760          RS       1    FLOW      -1
3761          RC   0.050   0.045   0.050    2310  0.0044
3762          RX       0       8      35      50      70      85     110     118
3763          RY    1431  1429.5    1429    1425    1425    1429  1429.5    1431
              *

3764          KK     C22
3765          KM        Runoff from C22
3766          BA   0.804
3767          LG    0.35    0.35    3.11    0.83       0
3768          UI     515    1509     853     184      48       0       0       0       0       0
3769          UI       0       0       0       0       0       0       0       0       0       0
              *

3770          KK   CPC22
3771          KM        Combine DRC21, C23 with C22
3772          HC       3   1.863
              *

3773          KK  RCPC22
3774          KM        Route flow from CP C22 to CP C33C
3775          KM        Crossing at SR-238
3776          RS       1    FLOW      -1
3777          RC   0.050   0.045   0.050    5920  0.0048
3778          RX       0     275     490     550     575     620     810    1110
3779          RY    1405    1404    1403    1400    1400    1403    1404    1405
              *

3780          KK     C24
3781          KM        Runoff from C24
3782          BA   0.162
3783          LG    0.35    0.35    3.19    0.75       0
3784          UI     174     363      79       0       0       0       0       0       0       0
3785          UI       0       0       0       0       0       0       0       0       0       0
              *

3786          KK  RCPC24
3787          KM        Route flow from CP C24 to CP C33C
3788          KM        Crossing at SR-238
3789          RS       1    FLOW      -1
3790          RC   0.050   0.045   0.050    5920  0.0048
3791          RX       0     275     490     550     575     620     810    1110
3792          RY    1405    1404    1403    1400    1400    1403    1404    1405
              *

3793          KK     C25
3794          KM        Runoff from C25
3795          BA   0.076
3796          LG    0.35    0.35    3.15    0.77       0
3797          UI     237      56       0       0       0       0       0       0       0       0
3798          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3799          KK  RCPC25
3800          KM        Route flow from CP C25 to CP C33C
3801          KM        Crossing at SR-238
3802          RS       1    FLOW      -1
3803          RC   0.050   0.045   0.050    4950  0.0048
3804          RX       0     275     490     550     575     620     810    1110
3805          RY    1405    1404    1403    1400    1400    1403    1404    1405
              *

3806          KK   DRD01
3807          KM        Return diverted flow from CP D01 in basin D09
3808          DR   DVD01
              *

3809          KK   RDD01
3810          KM        Route diverted flow from CP D01 to CP D09
3811          RS       4    FLOW      -1
3812          RC   0.050   0.045   0.050   12290  0.0088
3813          RX       0     150     280     290     330     340     500     650
3814          RY    1487    1486    1485    1482    1482    1485    1486    1487
              *

3815          KK     D09
3816          KM        Runoff from D09
3817          BA   0.544
```

```
3818          LG    0.35    0.35    3.40    0.67       0
3819          UI     176     507     798     422     133      43      23       0       0       0
3820          UI       0       0       0       0       0       0       0       0       0       0
              *

3821          KK   CPD09
3822          KM        Combine DRD01 with D09
3823          HC       2   4.229
              *

3824          KK  RCPD09
3825          KM        Route flow from CP D09 to CP C33C
3826          KM        Crossing at SR-238
3827          RS       2    FLOW      -1
3828          RC   0.050   0.045   0.050    4890  0.0048
3829          RX       0     275     490     550     575     620     810    1110
3830          RY    1405    1404    1403    1400    1400    1403    1404    1405
              *

3831          KK  CPC33C
3832          KM        Temporary combine to reduce hydrographs
3833          KM        Combine C22, C24, C25, C26 WITH D09
3834          HC       5   6.431
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3835          KK  RC33C
3836          KM        Route flow from CP C33C to CP C33D
3837          RS       2    FLOW      -1
3838          RC   0.050   0.045   0.050    3420  0.0050
3839          RX       0     100     300     330     370     400     550     650
3840          RY    1380    1378    1375    1372    1372    1375    1378    1380
              *

3841          KK  CPC33D
3842          KM        Temporary combine to reduce hydrographs
3843          KM        Combine CPC33B WITH CPC33C
3844          HC       2  11.010
              *

3845          KK  RC33D
3846          KM        Route flow from CP C33D to CP C33E
3847          RS       2    FLOW      -1
3848          RC   0.050   0.045   0.050    4530  0.0050
3849          RX       0      20     180     230     290     340     430     450
3850          RY    1350    1348    1345    1340    1340    1345    1348    1350
              *

3851          KK  CPC33E
3852          KM        Temporary combine to reduce hydrographs
3853          KM        Combine CPC33A WITH CPC33D
3854          HC       2  13.951
              *

3855          KK  RC33E
3856          KM        Route flow from CP C33E to CP C33F
3857          RS       3    FLOW      -1
3858          RC   0.050   0.045   0.050    6050  0.0045
3859          RX       0    1400    2000    2045    2125    2170    2770    4170
3860          RY    1340    1328    1325    1320    1320    1325    1328    1340
              *

3861          KK     D12
3862          KM        Runoff from D12
3863          BA   0.128
3864          LG    0.35    0.35    3.17    0.76       0
3865          UI     119     280      83      12       0       0       0       0       0       0
3866          UI       0       0       0       0       0       0       0       0       0       0
              *

3867          KK  RCPD12
3868          KM        Route flow from CP D12 to CP C33F
3869          KM        Crossing at SR-238
3870          RS       1    FLOW      -1
3871          RC   0.050   0.045   0.050   16830  0.0048
3872          RX       0     275     490     550     575     620     810    1110
3873          RY    1405    1404    1403    1400    1400    1403    1404    1405
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
3874          KK  CPC33F
3875          KM        Temporary combine to reduce hydrographs
3876          KM        Combine CPC33E WITH D12
3877          HC       2  14.079
              *

3878          KK  RC33F
3879          KM        Route flow from CP C33F to CP CP C33
3880          RS       2    FLOW      -1
3881          RC   0.050   0.045   0.050    2940  0.0045
3882          RX       0    1400    2000    2045    2125    2170    2770    4170
3883          RY    1320    1308    1305    1300    1300    1305    1308    1320
              *

3884          KK     C33
3885          KM        Runoff from C33
3886          BA  32.501
3887          LG    0.35    0.35    3.48    0.63       0
3888          UI    1444    2261    5603    7439    8842   10980   15191   17500   13427   11081
3889          UI    8930    7179    5102    2841    2406    1673    1430     442     443     439
3890          UI     443     442       0       0       0       0       0       0       0       0
3891          UI       0       0       0       0       0       0       0       0       0       0
              *

3892          KK   CPC33
3893          KM        Combine sum of all routed flows C33F with C33
3894          HC       2  46.580
              *

3895          KK  RCPC33
3896          KM        Route flow from CP C33 to CP C34
3897          RS       6    FLOW      -1
3898          RC   0.050   0.045   0.050   15840  0.0057
3899          RX       0      10     430     500     560     630    1060    1070
3900          RY    1262  1259.5    1258    1255    1255    1258  1259.5    1262
              *

3901          KK     C34
3902          KM        Runoff from C34
3903          BA   0.834
3904          LG    0.35    0.35    3.45    0.62       0
3905          UI      73     278     421     676     686     470     311     138      86      38
3906          UI      21      20       0       0       0       0       0       0       0       0
3907          UI       0       0       0       0       0       0       0       0       0       0
              *

3908          KK  CPC34A
3909          KM        Combine C33 with C34
3910          HC       2  47.414
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3911          KK     C35
3912          KM        Runoff from C35
3913          BA   5.831
3914          LG    0.35    0.35    3.38    0.65       0
3915          UI     714    2430    3780    6074    4284    2781    1244     673     264     164
3916          UI     162       0       0       0       0       0       0       0       0       0
3917          UI       0       0       0       0       0       0       0       0       0       0
              *

3918          KK  RCPC35
3919          KM        Route flow from CP C35 to CP C34
3920          RS       1    FLOW      -1
3921          RC   0.050   0.045   0.050    1280  0.0049
3922          RX       0       8      50     220     280     450     495     503
3923          RY  1219.5 1218.25    1218    1214    1214    1218 1218.25  1219.5
              *

3924          KK   CPC34
3925          KM        COMBINE C35 WITH C34
3926          HC       2  53.245
              *

3927          KK  RCPC34
3928          KM        Route flow from CP C34 to CP C36
3929          RS       2    FLOW      -1
3930          RC   0.050   0.045   0.050    4070  0.0049
3931          RX       0      10     410     580     640     810    1210    1220
```

```
3932          RY    1221    1219    1218    1214    1214    1218    1219    1221
              *

3933          KK     C36
3934          KM         Runoff from C36
3935          BA   3.059
3936          LG    0.35    0.35    3.71    0.52       0
3937          UI     308    1113    1694    2807    2405    1629     968     437     250      79
3938          UI      79       0       0       0       0       0       0       0       0       0
3939          UI       0       0       0       0       0       0       0       0       0       0
              *

3940          KK   CPC36
3941          KM         Combine C34 with C36
3942          HC       2  56.304
              *

3943          KK  RCPC36
3944          KM         Route flow from CP C36 to CP C49
3945          RS       1    FLOW      -1
3946          RC   0.050   0.045   0.050    2380  0.0043
3947          RX       0      15     440     510     570     640    1075    1090
3948          RY    1198    1195    1194    1190    1190    1194    1195    1198
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3949          KK     C49
3950          KM         Runoff from C49
3951          BA   0.186
3952          LG    0.35    0.35    4.45    0.34       0
3953          UI     133     373     172      33       0       0       0       0       0       0
3954          UI       0       0       0       0       0       0       0       0       0       0
              *

3955          KK   CPC49
3956          KM         Combine C36 with C49
3957          HC       2  56.409
              *

3958          KK  RCPC49
3959          KM         Route flow from CP C49 to CP C48
3960          RS       1    FLOW      -1
3961          RC   0.050   0.045   0.050    2300  0.0045
3962          RX       0      10     430     500     560     630    1060    1070
3963          RY  1188.5  1186.5    1185    1180    1180    1185  1186.5  1188.5
              *

3964          KK     C40
3965          KM         Runoff from C40
3966          BA   0.170
3967          LG    0.35    0.35    3.07    0.81       0
3968          UI      97     298     199      50      10       0       0       0       0       0
3969          UI       0       0       0       0       0       0       0       0       0       0
              *

3970          KK    DC40
3971          KM            Divert flow into C43
3972          KM         Natural divergence of flow due to a braided channel network.
3973          DT   DVC40
3974          DI       0      51     126     264     376    1016    2615    4789    7190
3975          DQ       0       0      11      51     127     396    1097    1920    2926
              *

3976          KK  RCPC40
3977          KM         Route remainder flow from CP C40 to CP C42
3978          RS       2    FLOW      -1
3979          RC   0.050   0.045   0.050    3270  0.0125
3980          RX       0      95     190     220     230     260     330     400
3981          RY    1310    1309    1308    1305    1305    1308    1309    1310
              *

3982          KK     C41
3983          KM         Runoff from C41
3984          BA   0.078
3985          LG    0.35    0.35    2.97    0.87       0
3986          UI     121     161      18       0       0       0       0       0       0       0
3987          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
3988          KK    DC41
3989          KM            Divert flow into C46
3990          KM        Natural divergence of flow due to a braided channel network.
3991          DT   DVC41
3992          DI       0      25     111     291     888    2325    4280    6549    9192
3993          DQ       0       8      37     106     385    1111    2018    3136    4444
              *

3994          KK  RCPC41
3995          KM        Route remainder flow from CP C41 to CP C42
3996          RS       3    FLOW      -1
3997          RC   0.050   0.045   0.050    3750  0.0111
3998          RX       0     100     200     225     235     260     315     370
3999          RY    1320    1319    1318    1316    1316    1318    1319    1320
              *

4000          KK     C42
4001          KM        Runoff from C42
4002          BA   0.109
4003          LG    0.35    0.35    3.35    0.66       0
4004          UI     117     244      54       0       0       0       0       0       0       0
4005          UI       0       0       0       0       0       0       0       0       0       0
              *

4006          KK   CPC42
4007          KM        Combine C40, C41 with C42
4008          HC       3   0.357
              *

4009          KK   DC42A
4010          KM            Divert flow from C42 into C45
4011          KM        Natural divergence of flow due to a braided channel network.
4012          DT  DVC42A
4013          DI       0      38     139     312     569     662    1453    3247    5517    8688
4014          DQ       0      14      53     125     235     289     597    1335    2232    3504
              *

4015          KK   DC42B
4016          KM            Divert flow from C42 into C47
4017          KM        Natural divergence of flow due to a braided channel network.
4018          DT  DVC42B
4019          DI       0      24      86     187     334     372     856    1912    3285    7066
4020          DQ       0      12      43      94     167     187     423     934    1615    3461
              *

4021          KK  RCPC42
4022          KM        Route remainder flow from CP C42 to CP C46
4023          RS       4    FLOW      -1
4024          RC   0.050   0.045   0.050    6390  0.0087
4025          RX       0     100     175     195     205     225     300     400
4026          RY    1285    1284    1282    1280    1280    1282    1284    1285
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4027          KK   DRC41
4028          KM        Return diverted flow from CP C41
4029          DR   DVC41
              *

4030          KK   RDC41
4031          KM        Route flow from CP C41 to CP C46
4032          RS      10    FLOW      -1
4033          RC   0.050   0.045   0.050    9810  0.0097
4034          RX       0     100     200     230     240     250     350     450
4035          RY    1295    1294    1292    1290    1290    1292    1294    1295
              *

4036          KK     C46
4037          KM        Runoff from C46
4038          BA   0.245
4039          LG    0.35    0.35    4.10    0.42       0
4040          UI      30     102     159     255     180     117      53      28      11       7
4041          UI       7       0       0       0       0       0       0       0       0       0
4042          UI       0       0       0       0       0       0       0       0       0       0
              *

4043          KK   CPC46
4044          KM        Combine C42, DRC41 with C46
4045          HC       3  0.602
```

```
                *

4046            KK    DC46
4047            KM            Divert flow into C47
4048            KM        Natural divergence of flow due to a braided channel network.
4049            DT   DVC46
4050            DI       0       42      104      211      297      862     2275     4234     8970
4051            DQ       0        0        7       33       89      328      956     1732     3807
                *

4052            KK  RCPC46
4053            KM        Route remainder flow from CP C46 to CP C37
4054            RS       3     FLOW       -1
4055            RC   0.050    0.045    0.050     5190   0.0070
4056            RX       0      100      165      195      205      235      300      400
4057            RY    1230   1229.5     1229     1227     1227     1229   1229.5     1230
                *

4058            KK     C37
4059            KM        Runoff from C37
4060            BA   1.795
4061            LG    0.35     0.35     3.67     0.53        0
4062            UI     121      405      662      891     1396     1172      859      618      338      204
4063            UI     123       52       38       37        0        0        0        0        0        0
4064            UI       0        0        0        0        0        0        0        0        0        0
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4065            KK   CPC37
4066            KM        Combine C46 with C37
4067            HC       2   2.398
                *

4068            KK  RCPC37
4069            KM        Route flow from CP C37 to CP C48
4070            RS       2     FLOW       -1
4071            RC   0.050    0.045    0.050     3410   0.0061
4072            RX       0        8      100      125      135      160      285      293
4073            RY    1191   1189.5     1189     1187     1187     1189   1189.5     1191
                *

4074            KK     C48
4075            KM        Runoff from C48
4076            BA   0.255
4077            LG    0.35     0.35     4.40     0.35        0
4078            UI     118      376      335      118       28        0        0        0        0        0
4079            UI       0        0        0        0        0        0        0        0        0        0
                *

4080            KK  CPC48A
4081            KM        Combine C37 with C48
4082            HC       2   2.652
                *

4083            KK   CPC48
4084            KM        Combine C49 with C48
4085            HC       2  59.142
                *

4086            KK  RCPC48
4087            KM        Route flow from CP C48 to CP C47
4088            RS       1     FLOW       -1
4089            RC   0.050    0.045    0.050     1420   0.0072
4090            RX       0       10      250      320      380      450      700      710
4091            RY  1178.5     1176     1175     1170     1170     1175     1176   1178.5
                *

4092            KK     C39
4093            KM        Runoff from C39
4094            BA   0.129
4095            LG    0.35     0.35     2.85     0.96        0
4096            UI      92      259      120       22        0        0        0        0        0        0
4097            UI       0        0        0        0        0        0        0        0        0        0
                *

4098            KK    DC39
4099            KM            Divert flow into C38
4100            KM        Natural divergence of flow due to a braided channel network.
4101            DT   DVC39
4102            DI       0       39      162      364     1092     3015     5246     7971    11144
4103            DQ       0       16       67      153      471     1308     2286     3482     4874
```

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                *
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4104            KK  RCPC39
4105            KM        Route remainder flow from CP C39 to CP C43
4106            RS       4    FLOW      -1
4107            RC   0.050   0.045   0.050    5730  0.0124
4108            RX       0      50      95     120     130     155     225     300
4109            RY    1356    1355    1354    1353    1353    1354    1355    1356
                *

4110            KK   DRC40
4111            KM        Return diverted flow from CP C40
4112            DR   DVC40
                *

4113            KK   RDC40
4114            KM        Route flow from CP C40 to CP C43
4115            RS       2    FLOW      -1
4116            RC   0.050   0.045   0.050    2750  0.0111
4117            RX       0     100     175     195     205     225     300     400
4118            RY    1328    1327    1326    1324    1324    1326    1326    1327
                *

4119            KK     C43
4120            KM        Runoff from C43
4121            BA   0.209
4122            LG    0.35    0.35    2.97    0.87       0
4123            UI     150     418     194      37       0       0       0       0       0       0
4124            UI       0       0       0       0       0       0       0       0       0       0
                *

4125            KK   CPC43
4126            KM        Combine C39, DRC40 with C43
4127            HC       3   0.508
                *

4128            KK    DC43
4129            KM            Divert flow into C38
4130            KM        Natural divergence of flow due to a braided channel network.
4131            DT   DVC43
4132            DI       0      21      83     197     626     961    1739    3835    6345    9647
4133            DQ       0       7      30      73     236     364     727    1693    2894    4640
                *

4134            KK  RCPC43
4135            KM        Route remainder flow from CP C43 to CP C44
4136            RS       3    FLOW      -1
4137            RC   0.050   0.045   0.050    5190  0.0100
4138            RX       0     100     155     190     210     245     300     400
4139            RY    1268    1267    1266    1264    1264    1266    1267    1268
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4140            KK  DRC42A
4141            KM        Return diverted flow from CP C42
4142            DR  DVC42A
                *

4143            KK  RDC42A
4144            KM        Route flow from CP C42 to CP C45
4145            RS       2    FLOW      -1
4146            RC   0.050   0.045   0.050    3540  0.0087
4147            RX       0     100     200     230     245     275     350     450
4148            RY    1275    1274    1273    1270    1270    1273    1274    1275
                *

4149            KK     C45
4150            KM        Runoff from C45
4151            BA   0.125
4152            LG    0.35    0.35    4.35    0.36       0
4153            UI     102     264      98      16       0       0       0       0       0       0
4154            UI       0       0       0       0       0       0       0       0       0       0
                *

4155            KK   CPC45
4156            KM        Combine DRC42A with C45
4157            HC       2   0.482
```

```
                *
4158            KK    DC45
4159            KM           Divert flow into C47
4160            KM        Natural divergence of flow due to a braided channel network.
4161            DT   DVC45
4162            DI       0      23      89     207     386     979    2098    3473    5427    7320
4163            DQ       0      12      47     110     208     548    1140    1879    2926    3943
                *

4164            KK  RCPC45
4165            KM        Route remainder flow from CP C45 to CP C44
4166            RS       1    FLOW      -1
4167            RC   0.050   0.045   0.050    1060  0.0097
4168            RX       0      80     160     170     180     190     270     350
4169            RY    1253    1252    1251    1250    1250    1251    1252    1253
                *

4170            KK     C44
4171            KM        Runoff from C44
4172            BA   0.170
4173            LG    0.35    0.35    4.90    0.26       0
4174            UI     109     319     181      38      10       0       0       0       0       0
4175            UI       0       0       0       0       0       0       0       0       0       0
                *
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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4176            KK   CPC44
4177            KM        Combine C43, C45 with C44
4178            HC       3   0.990
                *

4179            KK  RCPC44
4180            KM        Route flow from CP C44 to CP C47
4181            RS       6    FLOW      -1
4182            RC   0.050   0.045   0.050   11370  0.0070
4183            RX       0      75     150     180     190     220     295     370
4184            RY    1220  1219.5    1219    1216    1216    1219  1219.5    1220
                *

4185            KK   DRC39
4186            KM        Return diverted flow from CP C39
4187            DR   DVC39
                *

4188            KK   RDC39
4189            KM        Route flow from CP C39 to CP C38
4190            RS       8    FLOW      -1
4191            RC   0.050   0.045   0.050    9860  0.0107
4192            RX       0      50     105     125     135     155     210     260
4193            RY    1350    1349    1348    1346    1346    1348    1349    1350
                *

4194            KK   DRC43
4195            KM        Return diverted flow from CP C43
4196            DR   DVC43
                *

4197            KK   RDC43
4198            KM        Route flow from CP C43 to CP C38
4199            RS       3    FLOW      -1
4200            RC   0.050   0.045   0.050    3900  0.0092
4201            RX       0     100     190     230     240     280     330     380
4202            RY    1280    1279    1278    1276    1276    1278    1279    1280
                *

4203            KK     C38
4204            KM        Runoff from C38
4205            BA   0.687
4206            LG    0.35    0.35    3.38    0.65       0
4207            UI      90     301     475     734     491     310     129      74      22      19
4208            UI       0       0       0       0       0       0       0       0       0       0
4209            UI       0       0       0       0       0       0       0       0       0       0
                *

4210            KK   CPC38
4211            KM        Combine DRC39, DRC43 with C38
4212            HC       3   1.194
                *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4213          KK  RCPC38
4214          KM        Route flow from CP C38 to CP C47
4215          RS       9    FLOW      -1
4216          RC   0.050   0.045   0.050   12750  0.0074
4217          RX       0      75     150     180     190     220     295     370
4218          RY    1220  1219.5    1219    1216    1216    1219  1219.5    1220
              *

4219          KK  DRC42B
4220          KM        Return diverted flow from CP C42
4221          DR  DVC42B
              *

4222          KK  RDC42B
4223          KM        Route flow from CP C42 to CP C47
4224          RS      14    FLOW      -1
4225          RC   0.050   0.045   0.050   15450  0.0078
4226          RX       0      50     125     170     180     225     300     350
4227          RY    1205  1204.5    1204    1201    1201    1204  1204.5    1205
              *

4228          KK   DRC45
4229          KM        Return diverted flow from CP C45
4230          DR   DVC45
              *

4231          KK   RDC45
4232          KM        Route flow from CP C45 to CP C47
4233          RS       7    FLOW      -1
4234          RC   0.050   0.045   0.050    9610  0.0073
4235          RX       0      50     125     170     180     225     300     350
4236          RY    1205  1204.5    1204    1201    1201    1204  1204.5    1205
              *

4237          KK   DRC46
4238          KM        Return diverted flow from CP C46
4239          DR   DVC46
              *

4240          KK   RDC46
4241          KM        Route flow from CP C46 to CP C47
4242          RS      10    FLOW      -1
4243          RC   0.050   0.045   0.050    9620  0.0067
4244          RX       0      50     125     170     180     225     300     350
4245          RY    1205  1204.5    1204    1201    1201    1204  1204.5    1205
              *

4246          KK     C47
4247          KM        Runoff from C47
4248          BA   1.000
4249          LG    0.35    0.35    4.60    0.31       0
4250          UI     122     417     649    1041     735     477     213     116      45      28
4251          UI      28       0       0       0       0       0       0       0       0       0
4252          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4253          KK  CPC47A
4254          KM        Combine C44, C38, DRC42B, DRC45, DRC46 with C47
4255          HC       6   2.922
              *

4256          KK   CPC47
4257          KM        Combine C48 with C47
4258          HC       2  61.462
              *

4259          KK  RCPC47
4260          KM        Route flow from CP C47A to CP B09
4261          RS       4    FLOW      -1
4262          RC   0.050   0.045   0.050    7940  0.0038
4263          RX       0    1100    2250    2410    2525    2600    4300    5300
4264          RY    1160    1155    1150    1147    1147    1150    1155    1160
              * ******************************************************************************
              * WATERSHED C COMPLETED, FLOW ROUTED TO B09
              * BEGIN WATERSHED B
              * ******************************************************************************
```

```
4265          KK     B09
4266          KM        Runoff from B09
4267          BA   0.263
4268          LG    0.38    0.29    3.71    0.58       0
4269          UI      39     128     212     285     178      99      42      18       8       8
4270          UI       0       0       0       0       0       0       0       0       0       0
4271          UI       0       0       0       0       0       0       0       0       0       0
              *

4272          KK   CPB09
4273          KM        Combine C47 with B09
4274          HC       2  61.725
              *

4275          KK  RCPB09
4276          KM        Route flow from CP B09 to CP B12
4277          RS       1    FLOW      -1
4278          RC   0.050   0.045   0.050    1070  0.0111
4279          RX       0    1100    2250    2410    2525    2600    4300    5300
4280          RY    1150    1145    1140    1137    1137    1140    1145    1150
              *

4281          KK     B01
4282          KM        Runoff from B01
4283          BA   5.157
4284          LG    0.35    0.35    2.86    1.00       0
4285          UI     448    1722    2603    4179    4248    2903    1925     852     527     239
4286          UI     126     127       0       0       0       0       0       0       0       0
4287          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4288          KK  RCPB01
4289          KM        Route flow from CP B01 to CP B03
4290          RS      14    FLOW      -1
4291          RC   0.050   0.045   0.050   23370  0.0091
4292          RX    2490    2500    2750    2900    3100    3250    3500    3510
4293          RY    1400    1399    1398    1397    1397    1398    1399    1400
              *

4294          KK     B02
4295          KM        Runoff from B02
4296          BA   3.584
4297          LG    0.35    0.35    3.27    0.72       0
4298          UI     383    1364    2080    3468    2750    1844    1006     481     251      94
4299          UI      95       0       0       0       0       0       0       0       0       0
4300          UI       0       0       0       0       0       0       0       0       0       0
              *

4301          KK  RCPB02
4302          KM        Route flow from CP B02 to CP B03
4303          RS       2    FLOW      -1
4304          RC   0.050   0.045   0.050    4490  0.0063
4305          RX       0     250     500     775     825    1100    1350    1600
4306          RY    1280    1279    1278    1275    1275    1278    1279    1280
              *

4307          KK     B03
4308          KM        Runoff from B03
4309          BA  13.216
4310          LG    0.35    0.35    3.19    0.79       0
4311          UI     706    1633    3233    4164    5287    7891    7828    5910    4627    3578
4312          UI    2296    1234     996     703     261     217     215     218       0       0
4313          UI       0       0       0       0       0       0       0       0       0       0
              *

4314          KK   CPB03
4315          KM        Combine B01, B02 with B03
4316          HC       3  21.957
              *

4317          KK   DB03A
4318          KM           Divert flow from CP B03 into basin B16
4319          KM        Natural divergence of flow due to a braided channel network.
4320          DT  DVB03A
4321          DI       0      31     102     245     482     830    1308    1934    3488    5241
4322          DQ       0       0      18      65     142     253     404     596     926    1845
              *

4323          KK   DB03B
4324          KM           Divert flow from CP B03 into basin B18
```

```
4325          KM        Natural divergence of flow due to a braided channel network.
4326          DT   DVB03B
4327          DI        0      577      904     1337     1886     2562     3396     6655    10813    15784
4328          DQ        0        0       10       36       82      151      367      815     1356     2128
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4329          KK   RCPB03
4330          KM        Route remainder flow from CP B03 to CP B13
4331          RS        1    FLOW      -1
4332          RC    0.050   0.045   0.050    3000  0.0079
4333          RX      590     600     830     880     920     970    1210    1220
4334          RY     1240  1238.5    1237    1234    1234    1237  1238.5    1240
              *

4335          KK     B13
4336          KM        Runoff from B13
4337          BA    0.155
4338          LG     0.35    0.35    4.25    0.39       0
4339          UI      197     345      50       0       0       0       0       0       0       0
4340          UI        0       0       0       0       0       0       0       0       0       0
              *

4341          KK    CPB13
4342          KM        Combine B03 with B13
4343          HC        2  22.112
              *

4344          KK     DB13
4345          KM            Divert flow from CP B13 into basin B14
4346          KM        Natural divergence of flow due to a braided channel network.
4347          DT    DVB13
4348          DI        0       57      206     463     847    1376    2068    3470    7043   11410
4349          DQ        0       47      167     375     687    1117    1680    2797    5778    9405
              *

4350          KK   RCPB13
4351          KM        Route remainder flow from CP B13 to CP B05
4352          RS        2    FLOW      -1
4353          RC    0.050   0.045   0.050    4040  0.0054
4354          RX        0     200     400     530     570     700     950    1200
4355          RY     1220    1219    1218    1215    1215    1218    1219    1220
              *

4356          KK     B04
4357          KM        Runoff from B04
4358          BA    0.845
4359          LG     0.35    0.35    4.20    0.40       0
4360          UI      126     410     681     916     572     319     132      60      26      26
4361          UI        0       0       0       0       0       0       0       0       0       0
4362          UI        0       0       0       0       0       0       0       0       0       0
              *

4363          KK   RCPB04
4364          KM        Route flow from CP B04 to CP B05
4365          RS        2    FLOW      -1
4366          RC    0.050   0.045   0.050    3540  0.0054
4367          RX        0     200     400     530     570     700     950    1200
4368          RY     1220    1219    1218    1215    1215    1218    1219    1220
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4369          KK     B05
4370          KM        Runoff from B05
4371          BA    0.532
4372          LG     0.35    0.35    4.50    0.33       0
4373          UI      106     323     601     526     303     116      49      19       0       0
4374          UI        0       0       0       0       0       0       0       0       0       0
              *

4375          KK    CPB05
4376          KM        Combine B13, B04 with B05
4377          HC        3  23.489
              *

4378          KK   RCPB05
4379          KM        Route flow from CP B05 to CP B10
4380          RS        7    FLOW      -1
```

```
4381          RC   0.050   0.045   0.050    8260  0.0049
4382          RX    1140    1150    1200    1450    1550    1800    1850    1860
4383          RY    1181  1180.5    1180    1179    1179    1180  1180.5    1181
              *

4384          KK     B06
4385          KM        Runoff from B06
4386          BA   0.566
4387          LG    0.35    0.35    4.60    0.31       0
4388          UI     153     451     787     487     200      74      23       0       0       0
4389          UI       0       0       0       0       0       0       0       0       0       0
              *

4390          KK  RCPB06
4391          KM        Route flow from CP B06 to CP B10
4392          RS       8    FLOW      -1
4393          RC   0.050   0.045   0.050    6960  0.0045
4394          RX       0     600    1200    1450    1550    1800    2400    3000
4395          RY    1181  1180.5    1180    1179    1179    1180  1180.5    1181
              *

4396          KK     B10
4397          KM        Runoff from B10
4398          BA   0.552
4399          LG    0.35    0.35    4.70    0.29       0
4400          UI     150     438     768     476     194      73      22       0       0       0
4401          UI       0       0       0       0       0       0       0       0       0       0
              *

4402          KK   CPB10
4403          KM        Combine B05, B06 with B10
4404          HC       3  24.607
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4405          KK     B11
4406          KM        Runoff from B11
4407          BA   0.239
4408          LG    0.35    0.35    4.70    0.29       0
4409          UI      77     223     351     185      58      19      10       0       0       0
4410          UI       0       0       0       0       0       0       0       0       0       0
              *

4411          KK   CPB11
4412          KM        Combine B10 with B11
4413          HC       2  24.846
              *

4414          KK  RCPB11
4415          KM        Route flow from CP B11 to CP B12
4416          RS       5    FLOW      -1
4417          RC   0.050   0.045   0.050    4880  0.0062
4418          RX       0     900    1900    2000    2100    2200    3400    4000
4419          RY    1160    1155    1150    1149    1149    1150    1151    1152
              *

4420          KK     B12
4421          KM        Runoff from B12
4422          BA   0.332
4423          LG    0.35    0.35    4.55    0.32       0
4424          UI      57     179     317     352     209      96      45      14      10       0
4425          UI       0       0       0       0       0       0       0       0       0       0
4426          UI       0       0       0       0       0       0       0       0       0       0
              *

4427          KK  CPB12A
4428          KM        Combine B11 with B12
4429          HC       2  25.179
              *

4430          KK   CPB12
4431          KM        Combine B09 with B12
4432          HC       2  86.903
              *

4433          KK     H02
4434          KM        Runoff from H02
4435          BA   1.584
4436          LG    0.35    0.35    3.95    0.45      61
4437          UI     837    2414    1391     741     371     188      96      53       0       0
4438          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *
4439            KK  RCPH02
4440            KM        Route flow from CP H02 to CP H01
4441            RS       2    FLOW      -1
4442            RC   0.050   0.045   0.050    8320  0.0250
4443            RX     165     185     250     275     300     325     385     405
4444            RY    1499    1498    1497    1495    1495    1497    1498    1499
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4445            KK     H01
4446            KM        Runoff from H01
4447            BA   1.613
4448            LG    0.35    0.35    3.95    0.49      23
4449            UI     569    1663    2380    1139     336      96       0       0       0       0
4450            UI       0       0       0       0       0       0       0       0       0       0
                *

4451            KK   CPH01
4452            KM        Combine H02 with H01
4453            HC       2   3.197
                *

4454            KK    DH01
4455            KM           Divert flow into H25
4456            KM        Natural divergence of flow due to a braided channel network.
4457            DT   DVH01
4458            DI       0     103     365     838    1526    2436    4637   10385   17349
4459            DQ       0      64     228     521     978    1287    1813    4589    8300
                *

4460            KK  RCPH01
4461            KM        Route remainder flow from CP H01 to CP H24
4462            RS       2    FLOW      -1
4463            RC   0.050   0.045   0.050    5720  0.0125
4464            RX     180     200     300     315     325     340     440     460
4465            RY    1361    1359    1358    1357    1357    1358    1359    1361
                *

4466            KK     H24
4467            KM        Runoff from H24
4468            BA   0.416
4469            LG    0.35    0.35    3.95    0.48       0
4470            UI     297     835     384      74       0       0       0       0       0       0
4471            UI       0       0       0       0       0       0       0       0       0       0
                *

4472            KK   CPH24
4473            KM        Combine H01 with H24
4474            HC       2   3.613
                *

4475            KK  RCPH24
4476            KM        Route flow from CP H24 to CP H55
4477            RS       3    FLOW      -1
4478            RC   0.050   0.045   0.050    6120  0.0089
4479            RX     160     180     300     310     315     325     460     480
4480            RY  1310.5    1309    1308    1307    1307    1308    1309  1310.5
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4481            KK     H55
4482            KM        Runoff from H55
4483            BA   0.339
4484            LG    0.35    0.35    3.95    0.48       0
4485            UI     195     593     396     100      21       0       0       0       0       0
4486            UI       0       0       0       0       0       0       0       0       0       0
                *

4487            KK   CPH55
4488            KM        Combine H24 with H55
4489            HC       2   3.956
                *

4490            KK  RCPH55
4491            KM        Route flow from CP H55 to CP H56
4492            RS       4    FLOW      -1
```

```
4493          RC   0.050   0.045   0.050    7220  0.0077
4494          RX     200     220     360     375     380     395     520     540
4495          RY    1231    1229    1228    1227    1227    1228    1229    1231
              *

4496          KK     H56
4497          KM        Runoff from H56
4498          BA   0.395
4499          LG    0.35    0.35    4.00    0.47       0
4500          UI     184     581     520     182      43       0       0       0       0       0
4501          UI       0       0       0       0       0       0       0       0       0       0
              *

4502          KK   CPH56
4503          KM        Combine H55 with H56
4504          HC       2   4.347
              *

4505          KK  RCPH56
4506          KM        Route flow from CP H56 to CP H57
4507          RS       4    FLOW      -1
4508          RC   0.050   0.045   0.050    7020  0.0071
4509          RX     200     220     325     340     345     360     480     500
4510          RY    1181    1179    1178    1177    1177    1178    1179    1181
              *

4511          KK     H57
4512          KM        Runoff from H57
4513          BA   0.421
4514          LG    0.35    0.35    4.00    0.47       0
4515          UI     196     619     554     195      45       0       0       0       0       0
4516          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4517          KK   CPH57
4518          KM        Combine H56 with H57
4519          HC       2   4.768
              *

4520          KK  RCPH57
4521          KM        Route flow from CP H57 to CP H68
4522          RS       3    FLOW      -1
4523          RC   0.050   0.045   0.050    5190  0.0056
4524          RX     190     210     300     330     350     380     470     490
4525          RY    1143    1142    1141    1140    1140    1141    1142    1143
              *

4526          KK     H68
4527          KM        Runoff from H68
4528          BA   0.339
4529          LG    0.35    0.35    3.95    0.48       0
4530          UI     217     636     361      76      21       0       0       0       0       0
4531          UI       0       0       0       0       0       0       0       0       0       0
              *

4532          KK   CPH68
4533          KM        Combine H57 with H68
4534          HC       2   5.107
              *

4535          KK  B12RIV
4536          KM        Combine B08RIV, H68 with B12
4537          HC       3 262.589
              *

4538          KK  RCPB12
4539          KM        Route flow from CP B12RIV to CP H69RIV (WATERMAN WASH)
4540          RS       1    FLOW      -1
4541          RC   0.050   0.035   0.050    1510  0.0026
4542          RX       0     800    1600    1665    1735    1800    2600    3400
4543          RY    1140    1136    1134    1130    1130    1134    1136    1140
              *

4544          KK   DRH01
4545          KM        Return diverted flow from CP H01
4546          DR   DVH01
              *

4547          KK   RDH01
4548          KM        Route flow from CP H01 to CP H25
```

```
4549          RS       2    FLOW      -1
4550          RC   0.050   0.045   0.050    5620  0.0125
4551          RX     260     280     325     350     375     400     440     460
4552          RY    1345 1343.25    1343    1341    1341    1343 1343.25    1345
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4553          KK     H25
4554          KM        Runoff from H25
4555          BA   0.317
4556          LG    0.35    0.35    3.95    0.49       0
4557          UI     226     636     293      57       0       0       0       0       0       0
4558          UI       0       0       0       0       0       0       0       0       0       0
              *

4559          KK   CPH25
4560          KM        Combine DRH01 with H25
4561          HC       2   3.514
              *

4562          KK  RCPH25
4563          KM        Route flow from CP H25 to CP H58
4564          RS       3    FLOW      -1
4565          RC   0.050   0.045   0.050    6160  0.0089
4566          RX     160     180     260     270     275     285     390     410
4567          RY  1320.5    1319    1318    1317    1317    1318    1319  1320.5
              *

4568          KK     H58
4569          KM        Runoff from H58
4570          BA   0.305
4571          LG    0.35    0.35    3.95    0.48       0
4572          UI     175     534     357      90      18       0       0       0       0       0
4573          UI       0       0       0       0       0       0       0       0       0       0
              *

4574          KK   CPH58
4575          KM        Combine H25 with H58
4576          HC       2   3.819
              *

4577          KK  RCPH58
4578          KM        Route flow from CP H58 to CP H59
4579          RS       2    FLOW      -1
4580          RC   0.050   0.045   0.050    5200  0.0078
4581          RX     300     320     400     420     430     450     530     550
4582          RY    1256    1254    1253    1252    1252    1253    1254    1256
              *

4583          KK     H26
4584          KM        Runoff from H26
4585          BA   0.754
4586          LG    0.35    0.35    3.95    0.48       0
4587          UI     161     489     909     721     397     142      56      26       0       0
4588          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4589          KK  RCPH26
4590          KM        Route flow from CP H26 to CP H59
4591          RS       2    FLOW      -1
4592          RC   0.050   0.045   0.050    3880  0.0079
4593          RX     350     370     400     420     430     450     480     500
4594          RY    1255    1254    1253    1252    1252    1253    1254    1255
              *

4595          KK     H59
4596          KM        Runoff from H59
4597          BA   0.386
4598          LG    0.35    0.35    3.95    0.48       0
4599          UI     276     774     357      69       0       0       0       0       0       0
4600          UI       0       0       0       0       0       0       0       0       0       0
              *

4601          KK   CPH59
4602          KM        Combine H58, H26 with H59
4603          HC       3   4.959
              *
```

```
4604          KK    DH59
4605          KM           Divert flow into H61
4606          KM        Natural divergence of flow due to a braided channel network.
4607          DT   DVH59
4608          DI       0      28     111    1458    4419    8675   14085
4609          DQ       0      17      67     751    2254    4409    7155
              *

4610          KK  RCPH59
4611          KM        Route remainder flow from CP H59 to CP H60
4612          RS       5    FLOW      -1
4613          RC   0.050   0.045   0.050    9190  0.0071
4614          RX     350     370     400     430     470     500     530     550
4615          RY    1183    1182    1181    1180    1180    1181    1182    1183
              *

4616          KK     H60
4617          KM        Runoff from H60
4618          BA   0.551
4619          LG    0.35    0.35    3.95    0.48       0
4620          UI     163     473     790     454     166      54      23       0       0       0
4621          UI       0       0       0       0       0       0       0       0       0       0
              *

4622          KK   CPH60
4623          KM        Combine H59 with H60
4624          HC       2   5.510
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4625          KK  RCPH60
4626          KM        Route flow from CP H60 to CP H69
4627          RS       3    FLOW      -1
4628          RC   0.050   0.045   0.050    6110  0.0068
4629          RX     300     320     350     400     415     465     495     515
4630          RY    1145    1144    1143    1142    1142    1143    1144    1145
              *

4631          KK   DRH59
4632          KM        Return diverted flow from CP H59
4633          DR   DVH59
              *

4634          KK   RDH59
4635          KM        Route flow from CP H59 to CP H61
4636          RS       4    FLOW      -1
4637          RC   0.050   0.045   0.050    9090  0.0072
4638          RX     330     350     400     410     420     430     480     500
4639          RY    1184  1182.2    1182    1180    1180    1182  1182.2    1184
              *

4640          KK     H61
4641          KM        Runoff from H61
4642          BA   0.473
4643          LG    0.35    0.35    4.00    0.47       0
4644          UI     140     406     678     391     141      47      19       0       0       0
4645          UI       0       0       0       0       0       0       0       0       0       0
              *

4646          KK   CPH61
4647          KM        Combine DRH59 with H61
4648          HC       2   5.431
              *

4649          KK  RCPH61
4650          KM        Route flow from CP H61 to CP H69
4651          RS       3    FLOW      -1
4652          RC   0.050   0.045   0.050    6470  0.0065
4653          RX     300     320     350     400     415     465     495     515
4654          RY    1145    1144    1143    1142    1142    1143    1144    1145
              *

4655          KK     H69
4656          KM        Runoff from H69
4657          BA   0.530
4658          LG    0.35    0.35    3.95    0.48       0
4659          UI     246     780     698     244      57       0       0       0       0       0
4660          UI       0       0       0       0       0       0       0       0       0       0
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4661          KK   CPH69
4662          KM        Combine H60, H61 with H69
4663          HC       3   6.513
              *

4664          KK  H69RIV
4665          KM        Combine B12RIV with H69
4666          HC       2 265.904
              *

4667          KK  RCPH69
4668          KM        Route flow from CP H69RIV to CP B15RIV (WATERMAN WASH)
4669          RS       1    FLOW      -1
4670          RC   0.050   0.035   0.050    1210  0.0033
4671          RX     680     700    1400    1465    1535    1600    2300    2320
4672          RY    1134    1130    1124    1120    1120    1124    1130    1134
              *

4673          KK     H65
4674          KM        Runoff from H65
4675          BA   0.416
4676          LG    0.35    0.35    4.00    0.47       0
4677          UI     134     388     611     322     102      33      18       0       0       0
4678          UI       0       0       0       0       0       0       0       0       0       0
              *

4679          KK  RCPH65
4680          KM        Route flow from CP H65 to CP H67
4681          RS       6    FLOW      -1
4682          RC   0.050   0.045   0.050    5890  0.0071
4683          RX       0     163     326     490     510     674     837    1000
4684          RY    1180    1179    1178    1177    1177    1178    1179    1180
              *

4685          KK     H67
4686          KM        Runoff from H67
4687          BA   0.186
4688          LG    0.35    0.35    4.00    0.47       0
4689          UI      86     274     245      85      21       0       0       0       0       0
4690          UI       0       0       0       0       0       0       0       0       0       0
              *

4691          KK   CPH67
4692          KM        Combine H65 with H67
4693          HC       2   0.602
              *

4694          KK  RCPH67
4695          KM        Route flow from CP H67 to CP H70
4696          RS       6    FLOW      -1
4697          RC   0.050   0.045   0.050    5410  0.0062
4698          RX       0     163     326     490     510     674     837    1000
4699          RY    1140    1139    1138    1137    1137    1138    1139    1140
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4700          KK     H70
4701          KM        Runoff from H70
4702          BA   0.493
4703          LG    0.35    0.35    4.00    0.47       0
4704          UI     159     460     723     382     122      38      22       0       0       0
4705          UI       0       0       0       0       0       0       0       0       0       0
              *

4706          KK   CPH70
4707          KM        Combine H67 with H70
4708          HC       2   1.095
              *

4709          KK     B15
4710          KM        Runoff from B15
4711          BA   0.644
4712          LG    0.35    0.35    4.40    0.35       0
4713          UI     161     476     859     579     263     103      27      24       0       0
4714          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
4715          KK  B15RIV
4716          KM        Combine H69RIV, H70 with B15
4717          KM        Bullard Avenue crossing at B15RIV
4718          HC       3 267.644
              *

4719          KK  RCPB15
4720          KM        Route flow from CP B15RIV to CP B45RIV (WATERMAN WASH)
4721          RS       1    FLOW      -1
4722          RC   0.050   0.035   0.050    4500  0.0049
4723          RX       0    1700    3420    3570    3650    3800    4900    6900
4724          RY    1140    1130    1120    1115    1115    1120    1130    1140
              *

4725          KK   DRB13
4726          KM        Return diverted flow from CP B13
4727          DR   DVB13
              *

4728          KK   RDB13
4729          KM        Route diverted flow from CP B13 to CP B14
4730          RS       4    FLOW      -1
4731          RC   0.050   0.045   0.050    8410  0.0054
4732          RX     690     710     830     880     920     970    1070    1090
4733          RY    1210  1208.5    1207    1204    1204    1207  1208.5    1210
              *

4734          KK     B14
4735          KM        Runoff from B14
4736          BA   0.393
4737          LG    0.35    0.35    4.45    0.34       0
4738          UI      90     273     500     365     183      68      23      15       0       0
4739          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4740          KK   CPB14
4741          KM        Combine DRB13 with B14
4742          HC       2  22.505
              *

4743          KK     B21
4744          KM        Runoff from B21
4745          BA   0.313
4746          LG    0.35    0.35    4.15    0.41       0
4747          UI     110     323     462     221      65      19       0       0       0       0
4748          UI       0       0       0       0       0       0       0       0       0       0
              *

4749          KK   CPB21
4750          KM        Combine B14 with B21
4751          HC       2  22.818
              *

4752          KK  RCPB21
4753          KM        Route flow from CP B21 to CP B45
4754          RS       9    FLOW      -1
4755          RC   0.050   0.045   0.050   10600  0.0057
4756          RX     180     210     340     440     460     560     670     700
4757          RY    1169  1167.5    1167    1165    1165    1167  1167.5    1169
              *

4758          KK     B45
4759          KM        Runoff from B45
4760          BA   0.963
4761          LG    0.35    0.35    4.30    0.37       0
4762          UI     135     445     711    1046     671     402     167      82      29      28
4763          UI       0       0       0       0       0       0       0       0       0       0
4764          UI       0       0       0       0       0       0       0       0       0       0
              *

4765          KK   CPB45
4766          KM        Combine B21 with B45
4767          HC       2  23.780
              *

4768          KK  B45RIV
4769          KM        Combine B15RIV with B45
4770          HC       2 269.312
              *
```

```
4771          KK  RCPB45
4772          KM        Route flow from CP B45RIV to CP H72RIV (WATERMAN WASH)
4773          RS       1    FLOW      -1
4774          RC   0.050   0.035   0.050     210  0.0038
4775          RX       0    1700    2700    2765    2835    2900    3700    5400
4776          RY    1130    1120    1115    1110    1110    1115    1120    1130
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4777          KK     H22
4778          KM        Runoff from H22
4779          BA   1.461
4780          LG    0.35    0.35    4.15    0.46      22
4781          UI     679    2149    1924     674     158       0       0       0       0       0
4782          UI       0       0       0       0       0       0       0       0       0       0
              *

4783          KK  RCPH22
4784          KM        Route flow from CP H22 to CP H23
4785          RS       2    FLOW      -1
4786          RC   0.050   0.045   0.050    5100  0.0088
4787          RX       0     150     300     350     380     430     580     730
4788          RY    1336    1334    1332    1330    1330    1332    1334    1336
              *

4789          KK     H03
4790          KM        Runoff from H03
4791          BA   1.423
4792          LG    0.35    0.35    3.88    0.46      61
4793          UI     955    2321    1176     565     268     125      54       0       0       0
4794          UI       0       0       0       0       0       0       0       0       0       0
              *

4795          KK  RCPH03
4796          KM        Route flow from CP H03 to CP H21
4797          RS       1    FLOW      -1
4798          RC   0.050   0.045   0.050    6650  0.0358
4799          RX       0     125     225     265     285     325     425     550
4800          RY    1520    1518    1515    1512    1512    1515    1518    1520
              *

4801          KK     H21
4802          KM        Runoff from H21
4803          BA   0.763
4804          LG    0.35    0.35    3.95    0.48      36
4805          UI     489    1432     810     173      46       0       0       0       0       0
4806          UI       0       0       0       0       0       0       0       0       0       0
              *

4807          KK   CPH21
4808          KM        Combine H03 with H21
4809          HC       2   2.186
              *

4810          KK  RCPH21
4811          KM        Route flow from CP H21 to CP H23
4812          RS       2    FLOW      -1
4813          RC   0.050   0.045   0.050    9450  0.0142
4814          RX     250     270     300     350     380     430     460     480
4815          RY    1336    1334    1332    1330    1330    1332    1334    1336
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4816          KK     H23
4817          KM        Runoff from H23
4818          BA   0.707
4819          LG    0.35    0.35    3.95    0.51       0
4820          UI     271     817    1026     439     133      32       0       0       0       0
4821          UI       0       0       0       0       0       0       0       0       0       0
              *

4822          KK   CPH23
4823          KM        Combine H22, H21 with H23
4824          HC       3   4.354
              *

4825          KK  RCPH23
4826          KM        Route flow from CP H23 to CP H62
```

```
4827          RS       2    FLOW      -1
4828          RC   0.050   0.045   0.050    6290  0.0089
4829          RX     120     140     300     350     380     430     600     620
4830          RY  1285.3    1284    1283    1281    1281    1283    1284  1285.3
              *

4831          KK     H27
4832          KM         Runoff from H27
4833          BA   0.383
4834          LG    0.35    0.35    3.95    0.50       0
4835          UI     199     614     482     142      32       0       0       0       0       0
4836          UI       0       0       0       0       0       0       0       0       0       0
              *

4837          KK  RCPH27
4838          KM         Route flow from CP H27 to CP H62
4839          RS       3    FLOW      -1
4840          RC   0.050   0.045   0.050    6110  0.0097
4841          RX       0     150     300     350     380     430     580     730
4842          RY    1285    1284    1283    1281    1281    1283    1284    1285
              *

4843          KK     H62
4844          KM         Runoff from H62
4845          BA   0.494
4846          LG    0.35    0.35    3.95    0.48       0
4847          UI     284     864     578     147      29       0       0       0       0       0
4848          UI       0       0       0       0       0       0       0       0       0       0
              *

4849          KK   CPH62
4850          KM         Combine H23, H27 with H62
4851          HC       3   5.231
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4852          KK  RCPH62
4853          KM         Route flow from CP H62 to CP H63
4854          RS       2    FLOW      -1
4855          RC   0.050   0.045   0.050    3970  0.0079
4856          RX      80     100     400     420     430     450     750     770
4857          RY    1251    1249    1248    1247    1247    1248    1249    1251
              *

4858          KK     H20
4859          KM         Runoff from H20
4860          BA   0.518
4861          LG    0.35    0.35    3.95    0.52       1
4862          UI     269     831     652     191      44       0       0       0       0       0
4863          UI       0       0       0       0       0       0       0       0       0       0
              *

4864          KK  RCPH20
4865          KM         Route flow from CP H20 to CP H28
4866          RS       3    FLOW      -1
4867          RC   0.050   0.045   0.050    7390  0.0125
4868          RX     230     250     280     290     295     305     335     355
4869          RY  1300.5    1299    1298    1297    1297    1298    1299  1300.5
              *

4870          KK     H28
4871          KM         Runoff from H28
4872          BA   0.719
4873          LG    0.35    0.35    3.95    0.48       0
4874          UI     334    1058     947     332      77       0       0       0       0       0
4875          UI       0       0       0       0       0       0       0       0       0       0
              *

4876          KK   CPH28
4877          KM         Combine H20 with H28
4878          HC       2   1.237
              *

4879          KK  RCPH28
4880          KM         Route flow from CP H28 to CP H63
4881          RS       2    FLOW      -1
4882          RC   0.050   0.045   0.050    3920  0.0079
4883          RX     340     360     400     420     430     450     490     510
4884          RY    1251    1249    1248    1247    1247    1248    1249    1251
              *
```

```
4885          KK     H63
4886          KM        Runoff from H63
4887          BA   0.167
4888          LG    0.35    0.35    4.00    0.47       0
4889          UI     155     366     108      16       0       0       0       0       0       0
4890          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4891          KK   CPH63
4892          KM        Combine H62, H28 with H63
4893          HC       3   6.635
              *

4894          KK    DH63
4895          KM           Divert flow into H53
4896          KM        Natural divergence of flow due to a braided channel network.
4897          DT   DVH63
4898          DI       0      73     166     315     405     847    1669    2987    5490    8738
4899          DQ       0       0       7      31      75     233     541    1071    2154    3371
              *

4900          KK  RCPH63
4901          KM        Route remainder flow from CP H63 to CP H66
4902          RS       3    FLOW      -1
4903          RC   0.050   0.045   0.050    7290  0.0074
4904          RX     260     280     450     470     475     495     640     660
4905          RY  1201.5    1199    1198    1197    1197    1198    1199  1201.5
              *

4906          KK     H66
4907          KM        Runoff from H66
4908          BA   0.722
4909          LG    0.35    0.35    4.00    0.47       0
4910          UI     134     413     751     743     433     182      86      24      24       0
4911          UI       0       0       0       0       0       0       0       0       0       0
4912          UI       0       0       0       0       0       0       0       0       0       0
              *

4913          KK   CPH66
4914          KM        Combine H63 with H66
4915          HC       2   7.357
              *

4916          KK  RCPH66
4917          KM        Route flow from CP H66 to CP H71
4918          RS       3    FLOW      -1
4919          RC   0.050   0.045   0.050    6460  0.0068
4920          RX     180     200     300     320     330     350     575     595
4921          RY    1171    1169    1168    1167    1167    1168    1169    1171
              *

4922          KK     H71
4923          KM        Runoff from H71
4924          BA   0.648
4925          LG    0.35    0.35    4.00    0.47       0
4926          UI     301     954     853     299      70       0       0       0       0       0
4927          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4928          KK   CPH71
4929          KM        Combine H66 with H71
4930          HC       2   8.005
              *

4931          KK  RCPH71
4932          KM        Route flow from CP H71 to CP H72
4933          RS       2    FLOW      -1
4934          RC   0.050   0.045   0.050    3330  0.0060
4935          RX     180     200     400     420     430     450     650     670
4936          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

4937          KK     H72
4938          KM        Runoff from H72
4939          BA   0.422
4940          LG    0.35    0.35    4.15    0.44       0
```

```
4941          UI     343     891     333      53       0       0       0       0       0       0
4942          UI       0       0       0       0       0       0       0       0       0       0
              *

4943          KK   CPH72
4944          KM        Combine H71 with H72
4945          HC       2   8.427
              *

4946          KK  H72RIV
4947          KM        Combine H70RIV with H72
4948          HC       2 277.739
              *

4949          KK  RCPH72
4950          KM        Route flow from CP H72RIV to CP B46RIV (WATERMAN WASH)
4951          RS       3    FLOW      -1
4952          RC   0.050   0.035   0.050    6010  0.0031
4953          RX       0    1600    2850    2925    3025    3100    4200    6200
4954          RY    1120    1110    1105    1100    1100    1105    1110    1120
              *

4955          KK     B20
4956          KM        Runoff from B20
4957          BA   0.177
4958          LG    0.35    0.35    4.00    0.43       0
4959          UI     102     309     208      52      10       0       0       0       0       0
4960          UI       0       0       0       0       0       0       0       0       0       0
              *

4961          KK  RCPB20
4962          KM        Route flow from CP B20 to CP B44
4963          RS       9    FLOW      -1
4964          RC   0.050   0.045   0.050   10890  0.0065
4965          RX       0     100     200     250     280     330     430     530
4966          RY    1130  1129.5    1129    1127    1127    1129  1129.5    1130
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4967          KK     B44
4968          KM        Runoff from B44
4969          BA   0.375
4970          LG    0.35    0.35    4.30    0.37       0
4971          UI      86     260     478     349     174      64      22      14       0       0
4972          UI       0       0       0       0       0       0       0       0       0       0
              *

4973          KK   CPB44
4974          KM        Combine B20 with B44
4975          HC       2   0.553
              *

4976          KK  RCPB44
4977          KM        Route flow from CP B44 to CP B46
4978          RS       6    FLOW      -1
4979          RC   0.050   0.045   0.050    7420  0.0038
4980          RX       0     100     200     220     230     250     350     450
4981          RY    1123    1122    1120    1117    1117    1120    1122    1123
              *

4982          KK     B42
4983          KM        Runoff from B42
4984          BA   0.197
4985          LG    0.35    0.35    4.00    0.43       0
4986          UI     102     316     248      73      17       0       0       0       0       0
4987          UI       0       0       0       0       0       0       0       0       0       0
              *

4988          KK  RCPB42
4989          KM        Route flow from CP B42 to CP B43
4990          RS       5    FLOW      -1
4991          RC   0.050   0.045   0.050    5600  0.0072
4992          RX     290     300     325     375     425     475     500     510
4993          RY    1161  1159.5    1159  1158.5  1158.5    1159  1159.5    1161
              *

4994          KK     B43
4995          KM        Runoff from B43
4996          BA   0.174
4997          LG    0.35    0.35    4.70    0.29       0
4998          UI      74     227     243      93      26       9       0       0       0       0
```

```
4999          UI       0       0       0       0       0       0       0       0       0       0
              *

5000          KK   CPB43
5001          KM        Combine B42 with B43
5002          HC       2   0.371
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5003          KK     B41
5004          KM        Runoff from B41
5005          BA   0.445
5006          LG    0.35    0.35    4.20    0.40       0
5007          UI      71     229     386     482     291     148      65      26      13       0
5008          UI       0       0       0       0       0       0       0       0       0       0
5009          UI       0       0       0       0       0       0       0       0       0       0
              *

5010          KK   CPB41
5011          KM        Combine B43 with B41
5012          HC       2   0.816
              *

5013          KK  RCPB41
5014          KM        Route flow from CP B41 to CP B46
5015          RS       4    FLOW      -1
5016          RC   0.050   0.045   0.050    5910  0.0057
5017          RX       0     200     400     475     525     600     800    1000
5018          RY    1125    1124    1123    1121    1121    1123    1124    1125
              *

5019          KK     B46
5020          KM        Runoff from B46
5021          BA   1.063
5022          LG    0.35    0.35    4.45    0.34       0
5023          UI      99     370     562     924     852     584     367     161     100      37
5024          UI      27      27       0       0       0       0       0       0       0       0
5025          UI       0       0       0       0       0       0       0       0       0       0
              *

5026          KK   CPB46
5027          KM        Combine B44, B41 with B46
5028          HC       3   2.432
              *

5029          KK  B46RIV
5030          KM        Combine H72RIV with B46
5031          HC       2 280.171
              *

5032          KK  RCPB46
5033          KM        Route flow from CP B46RIV to CP H74RIV (WATERMAN WASH)
5034          RS       1    FLOW      -1
5035          RC   0.050   0.035   0.050     450  0.0050
5036          RX       0     950    1900    2110    2190    2400    3900    5400
5037          RY    1110    1105    1100    1095    1095    1100    1105    1110
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5038          KK   DRH63
5039          KM        Return diverted flow from CP H63
5040          DR   DVH63
              *

5041          KK   RDH63
5042          KM        Route flow from CP H63 to CP H53
5043          RS       3    FLOW      -1
5044          RC   0.050   0.045   0.050    5920  0.0075
5045          RX     120     140     250     265     270     285     420     440
5046          RY  1210.5    1209    1208    1207    1207    1208    1209  1210.5
              *

5047          KK     H53
5048          KM        Runoff from H53
5049          BA   0.386
5050          LG    0.35    0.35    4.00    0.47       0
5051          UI      89     268     491     359     179      67      23      14       0       0
5052          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *

5053            KK   CPH53
5054            KM        Combine DRH63 with H53
5055            HC       2   7.021
                *

5056            KK     H18
5057            KM        Runoff from H18
5058            BA   0.438
5059            LG    0.35    0.35    3.95    0.52       0
5060            UI     280     822     465     100      27       0       0       0       0       0
5061            UI       0       0       0       0       0       0       0       0       0       0
                *

5062            KK  RCPH18
5063            KM        Route flow from CP H18 to CP H29
5064            RS       8    FLOW      -1
5065            RC   0.050   0.045   0.050   15830  0.0108
5066            RX     350     370     400     415     420     435     465     485
5067            RY    1300    1299    1298    1297    1297    1298    1299    1300
                *

5068            KK     H29
5069            KM        Runoff from H29
5070            BA   1.041
5071            LG    0.35    0.35    4.00    0.47       0
5072            UI     128     433     675    1085     764     497     222     120      47      29
5073            UI      30       0       0       0       0       0       0       0       0       0
5074            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5075            KK   CPH29
5076            KM        Combine H18 with H29
5077            HC       2   1.479
                *

5078            KK     H04
5079            KM        Runoff from H04
5080            BA   1.059
5081            LG    0.35    0.35    3.38    0.66      35
5082            UI     448    1475     964     552     306     165      93      42      32       0
5083            UI       0       0       0       0       0       0       0       0       0       0
5084            UI       0       0       0       0       0       0       0       0       0       0
                *

5085            KK  RCPH04
5086            KM        Route flow from CP H04 to CP H17
5087            RS       2    FLOW      -1
5088            RC   0.050   0.045   0.050    7950  0.0214
5089            RX     250     270     300     335     365     400     430     450
5090            RY    1460    1459    1458    1456    1456    1458    1459    1460
                *

5091            KK     H17
5092            KM        Runoff from H17
5093            BA   0.579
5094            LG    0.35    0.35    3.95    0.52       2
5095            UI     300     930     728     214      49       0       0       0       0       0
5096            UI       0       0       0       0       0       0       0       0       0       0
                *

5097            KK   CPH17
5098            KM        Combine H04 with H17
5099            HC       2   1.639
                *

5100            KK    DH17
5101            KM           Divert flow into H32
5102            KM        Natural divergence of flow due to a braided channel network.
5103            DT   DVH17
5104            DI       0      69     253     565    1027    1251    2264    4109    6938   12244
5105            DQ       0      36     133     304     560     708    1252    2234    3703    6445
                *

5106            KK  RCPH17
5107            KM        Route remainder flow from CP H17 to CP H30
5108            RS       3    FLOW      -1
5109            RC   0.050   0.045   0.050    7900  0.0151
5110            RX     200     220     250     270     285     305     335     355
```

```
5111          RY    1300    1299    1298    1297    1297    1298    1299    1300
              *
1                                        HEC-1 INPUT                                                    PAGE136

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5112          KK     H30
5113          KM        Runoff from H30
5114          BA   0.477
5115          LG    0.35    0.34    3.95    0.49       0
5116          UI     222     701     628     220      52       0       0       0       0       0
5117          UI       0       0       0       0       0       0       0       0       0       0
              *

5118          KK   CPH30
5119          KM        Combine H17 with H30
5120          HC       2   2.115
              *

5121          KK  RCPH30
5122          KM        Route flow from CP H30 to CP H51
5123          RS       2    FLOW      -1
5124          RC   0.050   0.045   0.050    5110  0.0100
5125          RX     330     350     400     408     412     420     470     490
5126          RY  1250.5    1249    1248    1247    1247    1248    1249  1250.5
              *

5127          KK     H51
5128          KM        Runoff from H51
5129          BA   0.303
5130          LG    0.35    0.35    4.00    0.47       0
5131          UI     247     639     239      38       0       0       0       0       0       0
5132          UI       0       0       0       0       0       0       0       0       0       0
              *

5133          KK   CPH51
5134          KM        Combine H30 with H51
5135          HC       2   2.419
              *

5136          KK  RCPH51
5137          KM        Route flow from CP H51 to CP H52
5138          RS       2    FLOW      -1
5139          RC   0.050   0.045   0.050    5500  0.0082
5140          RX     320     340     370     385     390     405     435     455
5141          RY    1211    1209    1208    1207    1207    1208    1209    1211
              *

5142          KK     H52
5143          KM        Runoff from H52
5144          BA   0.225
5145          LG    0.35    0.35    4.00    0.47       0
5146          UI     129     394     263      67      13       0       0       0       0       0
5147          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                        HEC-1 INPUT                                                    PAGE137

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5148          KK  CPH52A
5149          KM        Combine H51 with H52
5150          HC       2   2.643
              *

5151          KK  CPH52B
5152          KM        Combine CP H53 and CP H29 with CP H52A
5153          HC       3  11.144
              *

5154          KK  RCPH52
5155          KM        Route flow from CP H52B to CP H54
5156          RS       2    FLOW      -1
5157          RC   0.050   0.045   0.050    4210  0.0060
5158          RX     340     370     400     420     430     450     480     510
5159          RY    1172    1169    1168    1167    1167    1168    1169    1172
              *

5160          KK     H54
5161          KM        Runoff from H54
5162          BA   0.213
5163          LG    0.35    0.35    4.00    0.47       0
5164          UI     152     427     197      38       0       0       0       0       0       0
```

```
5165          UI       0       0       0       0       0       0       0       0       0       0
              *

5166          KK   CPH54
5167          KM        Combine H53, H29, H52 with H54
5168          HC       2  11.357
              *

5169          KK  RCPH54
5170          KM        Route flow from CP H54 to CP H73
5171          RS       1    FLOW      -1
5172          RC   0.050   0.045   0.050    2610  0.0058
5173          RX     180     200     400     420     430     450     680     700
5174          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

5175          KK     H16
5176          KM        Runoff from H16
5177          BA   0.366
5178          LG    0.35    0.35    3.74    0.51      54
5179          UI     319     623     274     117      51      19       0       0       0       0
5180          UI       0       0       0       0       0       0       0       0       0       0
              *

5181          KK  RCPH16
5182          KM        Route flow from CP H16 to CP H05
5183          RS       1    FLOW      -1
5184          RC   0.050   0.045   0.050    1940  0.0553
5185          RX     180     200     230     245     255     270     300     320
5186          RY    1525    1524    1523    1522    1522    1523    1524    1525
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5187          KK     H05
5188          KM        Runoff from H05
5189          BA   1.141
5190          LG    0.35    0.35    3.38    0.68      26
5191          UI     367    1067    1674     882     281      90      49       0       0       0
5192          UI       0       0       0       0       0       0       0       0       0       0
              *

5193          KK   CPH05
5194          KM        Combine H16 with H05
5195          HC       2   1.507
              *

5196          KK  RCPH05
5197          KM        Route flow from CP H05 to CP H31
5198          RS       2    FLOW      -1
5199          RC   0.050   0.045   0.050    6610  0.0158
5200          RX     310     330     400     420     430     450     530     550
5201          RY  1360.5    1359    1358    1357    1357    1358    1359  1360.5
              *

5202          KK     H31
5203          KM        Runoff from H31
5204          BA   0.372
5205          LG    0.35    0.35    3.95    0.51       0
5206          UI     238     699     394      85      22       0       0       0       0       0
5207          UI       0       0       0       0       0       0       0       0       0       0
              *

5208          KK   CPH31
5209          KM        Combine H05 with H31
5210          HC       2   2.092
              *

5211          KK    DH31
5212          KM           Divert flow into H33
5213          KM        Natural divergence of flow due to a braided channel network.
5214          DT   DVH31
5215          DI       0      45     160     350     626     694    1563    3546    6117   10465
5216          DQ       0      23      80     175     313     345     820    1912    3340    5691
              *

5217          KK  RCPH31
5218          KM        Route remainder flow from CP H31 to CP H32
5219          RS       3    FLOW      -1
5220          RC   0.050   0.045   0.050    6980  0.0098
5221          RX     155     175     250     260     280     290     370     390
5222          RY    1276    1274    1273    1272    1272    1273    1274    1276
```

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                *
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5223            KK   DRH17
5224            KM        Return diverted flow from CP H17
5225            DR   DVH17
                *

5226            KK   RDH17
5227            KM        Route flow from CP H17 to CP H32
5228            RS       4    FLOW      -1
5229            RC   0.050   0.045   0.050   11540  0.0164
5230            RX     350     370     400     420     430     450     480     500
5231            RY    1360  1358.2    1358    1357    1357    1358  1358.2    1360
                *

5232            KK     H32
5233            KM        Runoff from H32
5234            BA   0.714
5235            LG    0.35    0.35    3.95    0.48       0
5236            UI     164     496     908     664     332     123      42      26       0       0
5237            UI       0       0       0       0       0       0       0       0       0       0
                *

5238            KK   CPH32
5239            KM        Combine H31, DRH17 with H32
5240            HC       3   4.231
                *

5241            KK    DH32
5242            KM           Divert flow into H48
5243            KM        Natural divergence of flow due to a braided channel network.
5244            DT   DVH32
5245            DI       0      22      94     222     688    1608    3220    6028    9254   13026
5246            DQ       0       8      35      88     303     740    1577    2846    4413    6248
                *

5247            KK  RCPH32
5248            KM        Route remainder flow from CP H32 to CP H50
5249            RS       6    FLOW      -1
5250            RC   0.050   0.045   0.050   11430  0.0080
5251            RX     350     370     400     420     430     450     480     500
5252            RY    1190    1189    1188    1187    1187    1188    1189    1190
                *

5253            KK   DRH32
5254            KM        Return diverted flow from CP H32
5255            DR   DVH32
                *

5256            KK   RDH32
5257            KM        Route flow from CP H32 to CP H48
5258            RS       3    FLOW      -1
5259            RC   0.050   0.045   0.050    5580  0.0085
5260            RX     330     350     400     410     420     430     480     500
5261            RY    1230    1229    1228    1227    1227    1228    1229    1230
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5262            KK     H48
5263            KM        Runoff from H48
5264            BA   0.334
5265            LG    0.35    0.35    4.00    0.47       0
5266            UI     141     437     466     179      49      17       0       0       0       0
5267            UI       0       0       0       0       0       0       0       0       0       0
                *

5268            KK   CPH48
5269            KM        Combine DRH32 with H48
5270            HC       2   4.565
                *

5271            KK    DH48
5272            KM           Divert flow into H49
5273            KM        Natural divergence of flow due to a braided channel network.
5274            DT   DVH48
5275            DI       0      19      79    1206    3710    7474   12280   17905
5276            DQ       0       6      23     568    1783    3618    5952    8701
```

```
                *

5277            KK  RCPH48
5278            KM        Route remainder flow from CP H48 to CP H50
5279            RS       4    FLOW      -1
5280            RC   0.050   0.045   0.050    6020  0.0069
5281            RX     350     370     400     420     430     450     480     500
5282            RY    1190    1189    1188    1187    1187    1188    1189    1190
                *

5283            KK     H50
5284            KM        Runoff from H50
5285            BA   0.625
5286            LG    0.35    0.35    4.00    0.47       0
5287            UI     108     338     595     662     393     182      84      27      20       0
5288            UI       0       0       0       0       0       0       0       0       0       0
5289            UI       0       0       0       0       0       0       0       0       0       0
                *

5290            KK   CPH50
5291            KM        Combine H32, H48 with H50
5292            HC       3   5.190
                *

5293            KK  RCPH50
5294            KM        Route flow from CP H50 to CP H73
5295            RS       2    FLOW      -1
5296            RC   0.050   0.045   0.050    2970  0.0058
5297            RX     340     360     400     420     430     450     490     510
5298            RY    1151    1149    1148    1147    1147    1148    1149    1151
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5299            KK   DRH48
5300            KM        Return diverted flow from CP H48
5301            DR   DVH48
                *

5302            KK   RDH48
5303            KM        Route flow from CP H48 to CP H49
5304            RS       4    FLOW      -1
5305            RC   0.050   0.045   0.050    5410  0.0074
5306            RX     350     370     400     420     430     450     480     500
5307            RY    1190  1188.2    1188    1187    1187    1188  1188.2    1190
                *

5308            KK     H49
5309            KM        Runoff from H49
5310            BA   0.478
5311            LG    0.35    0.35    4.00    0.47       0
5312            UI     130     379     666     411     169      63      19       0       0       0
5313            UI       0       0       0       0       0       0       0       0       0       0
                *

5314            KK   CPH49
5315            KM        Combine DRH48 with H49
5316            HC       2   5.043
                *

5317            KK  RCPH49
5318            KM        Route flow from CP H49 to CP H73
5319            RS       2    FLOW      -1
5320            RC   0.050   0.045   0.050    3540  0.0078
5321            RX     350     370     400     420     430     450     480     500
5322            RY    1150    1149    1148    1147    1147    1148    1149    1150
                *

5323            KK     H73
5324            KM        Runoff from H73
5325            BA   0.290
5326            LG    0.35    0.35    3.95    0.48       0
5327            UI     310     651     141       0       0       0       0       0       0       0
5328            UI       0       0       0       0       0       0       0       0       0       0
                *

5329            KK   CPH73
5330            KM        Combine H54, H50, H49 with H73
5331            HC       4  15.677
                *

5332            KK  RCPH73
```

```
5333          KM        Route flow from CP H73 to CP H74
5334          RS       5    FLOW      -1
5335          RC   0.050   0.045   0.050    8820  0.0055
5336          RX      80     100     400     420     430     450     750     770
5337          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5338          KK     H74
5339          KM        Runoff from H74
5340          BA   0.802
5341          LG    0.35    0.35    4.00    0.47       0
5342          UI     514    1505     851     183      48       0       0       0       0       0
5343          UI       0       0       0       0       0       0       0       0       0       0
              *

5344          KK   CPH74
5345          KM        Combine H73 with H74
5346          HC       2  16.479
              *

5347          KK  H74RIV
5348          KM        Combine B46RIV with H74
5349          HC       2 290.015
              *

5350          KK  RCPH74
5351          KM        Route flow from CP H74RIV to CP H77RIV (WATERMAN WASH)
5352          RS       1    FLOW      -1
5353          RC   0.050   0.035   0.050    4040  0.0031
5354          RX    3050    3100    3500    3565    3635    3700    4200    4250
5355          RY    1103    1100    1095    1090    1090    1095    1100    1103
              *

5356          KK     H15
5357          KM        Runoff from H15
5358          BA   0.775
5359          LG    0.35    0.35    3.95    0.48      32
5360          UI     445    1355     909     229      46       0       0       0       0       0
5361          UI       0       0       0       0       0       0       0       0       0       0
              *

5362          KK  RCPH15
5363          KM        Route flow from CP H15 to CP H33
5364          RS       5    FLOW      -1
5365          RC   0.050   0.045   0.050   12510  0.0097
5366          RX     350     370     400     420     430     450     480     500
5367          RY    1260  1258.2    1258    1257    1257    1258  1258.2    1260
              *

5368          KK   DRH31
5369          KM        Return diverted flow from CP H31
5370          DR   DVH31
              *

5371          KK   RDH31
5372          KM        Route flow from CP H31 to CP H33
5373          RS       5    FLOW      -1
5374          RC   0.050   0.045   0.050   10890  0.0094
5375          RX     330     350     400     420     430     450     550     570
5376          RY  1260.2    1258    1258    1257    1257    1258    1258  1260.2
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5377          KK     H33
5378          KM        Runoff from H33
5379          BA   1.083
5380          LG    0.35    0.35    3.95    0.48       0
5381          UI     173     557     939    1172     710     360     157      62      34       0
5382          UI       0       0       0       0       0       0       0       0       0       0
5383          UI       0       0       0       0       0       0       0       0       0       0
              *

5384          KK   CPH33
5385          KM        Combine H15, DRH31 with H33
5386          HC       3   3.737
              *
```

```
5387          KK    DH33
5388          KM           Divert flow into H46
5389          KM        Natural divergence of flow due to a braided channel network.
5390          DT   DVH33
5391          DI       0      28      89    1367    4215    8728   14496
5392          DQ       0       8      35     733    2312    4799    7957
              *

5393          KK  RCPH33
5394          KM        Route remainder flow from CP H33 to CP H47
5395          RS       4    FLOW      -1
5396          RC   0.050   0.045   0.050    5480  0.0087
5397          RX       0     163     326     490     510     674     837    1000
5398          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

5399          KK     H47
5400          KM        Runoff from H47
5401          BA   0.383
5402          LG    0.35    0.35    4.00    0.47       0
5403          UI     274     768     354      68       0       0       0       0       0       0
5404          UI       0       0       0       0       0       0       0       0       0       0
              *

5405          KK   CPH47
5406          KM        Combine H33 with H47
5407          HC       2   4.120
              *

5408          KK  RCPH47
5409          KM        Route flow from CP H47 to CP H75
5410          RS       3    FLOW      -1
5411          RC   0.050   0.045   0.050    5620  0.0075
5412          RX     350     370     400     420     430     450     480     500
5413          RY    1150    1149    1148    1147    1147    1148    1149    1150
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5414          KK     H75
5415          KM        Runoff from H75
5416          BA   0.747
5417          LG    0.50    0.00    3.95    0.72       0
5418          UI      47      97     245     312     391     387     337     275     223     150
5419          UI     120      78      58      42      33      26      17       6       5       6
5420          UI       6       6       5       6       6       6       0       0       0       0
5421          UI       0       0       0       0       0       0       0       0       0       0
              *

5422          KK   CPH75
5423          KM        Combine H47 with H75
5424          HC       2   4.867
              *

5425          KK  RCPH75
5426          KM        Route flow from CP H75 to CP H76
5427          RS       3    FLOW      -1
5428          RC   0.050   0.045   0.050    5360  0.0066
5429          RX     340     360     400     420     430     450     490     510
5430          RY  1120.5    1119    1118    1117    1117    1118    1119  1120.5
              *

5431          KK     H76
5432          KM        Runoff from H76
5433          BA   0.752
5434          LG    0.35    0.35    4.00    0.47       0
5435          UI     390    1207     946     277      64       0       0       0       0       0
5436          UI       0       0       0       0       0       0       0       0       0       0
              *

5437          KK   CPH76
5438          KM        Combine H75 with H76
5439          HC       2   5.620
              *

5440          KK  RCPH76
5441          KM        Route flow from CP H76 to CP H77
5442          RS       2    FLOW      -1
5443          RC   0.050   0.045   0.050    3560  0.0047
5444          RX     330     350     400     420     430     450     500     520
5445          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *
```

```
5446          KK     H77
5447          KM        Runoff from H77
5448          BA   0.273
5449          LG    0.35     0.35     4.25     0.42        0
5450          UI     254      598      175       26        0        0        0        0        0        0
5451          UI       0        0        0        0        0        0        0        0        0        0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5452          KK   CPH77
5453          KM        Combine H76 with H77
5454          HC       2   5.893
              *

5455          KK  H77RIV
5456          KM        Combine H74RIV with H77
5457          KM        Riggs Road crossing at H77RIV
5458          HC       2 294.029
              *

5459          KK  RCPH77
5460          KM        Route flow from CP H77RIV to CP B61RIV (WATERMAN WASH)
5461          RS       1    FLOW      -1
5462          RC   0.050    0.035    0.050     3680   0.0028
5463          RX    2575     2600     3450     3525     3625     3700     4500     4525
5464          RY    1082     1080     1073     1068     1068     1073     1080     1082
              *

5465          KK     B40
5466          KM        Runoff from B40
5467          BA   0.182
5468          LG    0.35     0.35     3.19     0.75        0
5469          UI      64      188      268      129       38       11        0        0        0        0
5470          UI       0        0        0        0        0        0        0        0        0        0
              *

5471          KK  RCPB40
5472          KM        Route flow from CP B40 to CP B50
5473          RS       6    FLOW      -1
5474          RC   0.050    0.045    0.050     8170   0.0065
5475          RX       0      100      150      190      210      250      300      400
5476          RY    1150     1149     1148     1146     1146     1148     1149     1150
              *

5477          KK     B49
5478          KM        Runoff from B49
5479          BA   0.269
5480          LG    0.35     0.36     5.00     0.25        0
5481          UI      86      252      395      207       67       21       12        0        0        0
5482          UI       0        0        0        0        0        0        0        0        0        0
              *

5483          KK  RCPB49
5484          KM        Route flow from CP B49 to CP B50
5485          RS       1    FLOW      -1
5486          RC   0.050    0.045    0.050     2680   0.0068
5487          RX       0      100      150      190      210      250      300      400
5488          RY    1120     1119     1118     1116     1116     1118     1119     1120
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5489          KK     B50
5490          KM        Runoff from B50
5491          BA   0.273
5492          LG    0.35     0.35     4.45     0.34        0
5493          UI      54      166      309      269      156       60       25        9        0        0
5494          UI       0        0        0        0        0        0        0        0        0        0
              *

5495          KK   CPB50
5496          KM        Combine B40, B49 with B50
5497          HC       3   0.724
              *

5498          KK  RCPB50
5499          KM        ROUTE FLOW FROM CP B50 TO CP B61
5500          RS       8    FLOW      -1
```

```
5501          RC   0.050   0.045   0.050    6660  0.0054
5502          RX       0     163     326     490     510     674     837    1000
5503          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

5504          KK     B19
5505          KM        Runoff from B19
5506          BA   0.538
5507          LG    0.35    0.35    4.15    0.41       0
5508          UI      70     236     373     574     385     242     102      56      18      15
5509          UI       0       0       0       0       0       0       0       0       0       0
5510          UI       0       0       0       0       0       0       0       0       0       0
              *

5511          KK  RCPB19
5512          KM        Route flow from CP B19 to CP B48
5513          RS       4    FLOW      -1
5514          RC   0.050   0.045   0.050    6720  0.0050
5515          RX       0     100     170     220     250     300     400     500
5516          RY    1140  1139.5    1139    1136    1136    1138    1139    1140
              *

5517          KK     B48
5518          KM        Runoff from B48
5519          BA   0.574
5520          LG    0.35    0.35    4.55    0.32       0
5521          UI     156     456     798     494     203      75      23       0       0       0
5522          UI       0       0       0       0       0       0       0       0       0       0
              *

5523          KK   CPB48
5524          KM        Combine B19 with B48
5525          HC       2   1.112
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5526          KK  RCPB48
5527          KM        Route flow from CP B48 to CP B61
5528          RS       7    FLOW      -1
5529          RC   0.050   0.045   0.050    7720  0.0054
5530          RX       0     163     326     490     510     674     837    1000
5531          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

5532          KK     B47
5533          KM        Runoff from B47
5534          BA   0.316
5535          LG    0.35    0.35    4.50    0.33       0
5536          UI     121     365     459     196      59      15       0       0       0       0
5537          UI       0       0       0       0       0       0       0       0       0       0
              *

5538          KK  RCPB47
5539          KM        Route flow from CP B47 to CP B61
5540          RS       7    FLOW      -1
5541          RC   0.050   0.045   0.050    8100  0.0054
5542          RX       0     163     326     490     510     674     837    1000
5543          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

5544          KK     B61
5545          KM        Runoff from B61
5546          BA   0.746
5547          LG    0.50    0.00    4.60    0.50       0
5548          UI      29      29      63     126     166     198     226     242     244     223
5549          UI     205     203     155     147     112      85      88      56      47      39
5550          UI      35      26      27      17      17      16      11       4       4       3
5551          UI       4       3       4       3       4       4       3       4       3       4
5552          UI       3       4       0       0       0       0       0       0       0       0
5553          UI       0       0       0       0       0       0       0       0       0       0
              *

5554          KK   CPB61
5555          KM        Combine B50, B48, B47 with B61
5556          HC       4   2.898
              *

5557          KK  B61RIV
5558          KM        Combine H77RIV with B61
5559          HC       2 296.927
              *
```

```
5560          KK  RCPB61
5561          KM        Route flow from CP B61RIV to CP H80RIV (WATERMAN WASH)
5562          RS       1    FLOW      -1
5563          RC   0.050   0.035   0.050     100  0.0050
5564          RX       0    1450    2900    3110    3190    3400    4150    4900
5565          RY    1080    1075    1070    1065    1065    1070    1075    1080
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5566          KK     B22
5567          KM        Runoff from B22
5568          BA   0.548
5569          LG    0.35    0.35    3.53    0.58       0
5570          UI     351    1028     582     125      33       0       0       0       0       0
5571          UI       0       0       0       0       0       0       0       0       0       0
              *

5572          KK  RCPB22
5573          KM        Route flow from CP B22 to CP B37
5574          RS       3    FLOW      -1
5575          RC   0.050   0.045   0.050    5160  0.0063
5576          RX     170     180     200     240     260     300     320     330
5577          RY    1160  1159.5    1159    1157    1157    1159  1159.5    1160
              *

5578          KK     B23
5579          KM        Runoff from B23
5580          BA   0.299
5581          LG    0.35    0.35    2.91    0.91       0
5582          UI     380     665      98       0       0       0       0       0       0       0
5583          UI       0       0       0       0       0       0       0       0       0       0
              *

5584          KK    DB23
5585          KM           Divert flow into B24
5586          KM        Natural divergence of flow due to a braided channel network.
5587          DT   DVB23
5588          DI       0      18      68     153     281     333     693    1509    2514    5327
5589          DQ       0      10      37      85     159     197     380     821    1343    2804
              *

5590          KK  RCPB23
5591          KM        Route remainder flow from CP B23 to CP B36
5592          RS       3    FLOW      -1
5593          RC   0.050   0.045   0.050    3440  0.0059
5594          RX       0     100     225     265     285     325     450     550
5595          RY    1170    1168    1167    1166    1166    1167    1168    1170
              *

5596          KK     B36
5597          KM        Runoff from B36
5598          BA   0.184
5599          LG    0.35    0.35    4.55    0.32       0
5600          UI      85     271     242      85      20       0       0       0       0       0
5601          UI       0       0       0       0       0       0       0       0       0       0
              *

5602          KK   CPB36
5603          KM        Combine B23 with B36
5604          HC       2    0.482
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5605          KK   DRB23
5606          KM        Return divert from CP B23 in basin B24
5607          DR   DVB23
              *

5608          KK   RDB23
5609          KM        Route diverted flow from CP B23 to CP B24
5610          RS       2    FLOW      -1
5611          RC   0.050   0.045   0.050    3380  0.0061
5612          RX       0      75     150     190     210     250     350     450
5613          RY    1160    1159    1158    1156    1156    1158    1159    1160
              *

5614          KK     B24
```

```
5615          KM        Runoff from B24
5616          BA   0.238
5617          LG    0.35     0.35     3.19     0.75        0
5618          UI     194      502      188       30        0        0        0        0        0        0
5619          UI       0        0        0        0        0        0        0        0        0        0
              *

5620          KK  CPB24A
5621          KM        Combine DRB23 with B24
5622          HC       2   0.537
              *

5623          KK   CPB24
5624          KM        Combine B36 with B24
5625          HC       2   0.720
              *

5626          KK  RCPB24
5627          KM        Route flow from CP B24 to CP B37
5628          RS       1    FLOW      -1
5629          RC   0.050   0.045   0.050    2000  0.0052
5630          RX       0     100     195     235     265     305     400     500
5631          RY    1145  1144.5    1144    1141    1141    1144  1144.5    1145
              *

5632          KK     B37
5633          KM        Runoff from B37
5634          BA   0.086
5635          LG    0.35     0.35     4.55     0.32        0
5636          UI      62      172       79       15        0        0        0        0        0        0
5637          UI       0        0        0        0        0        0        0        0        0        0
              *

5638          KK   CPB37
5639          KM        Combine B22, B24 with B37
5640          HC       3   1.354
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5641          KK     B25
5642          KM        Runoff from B25
5643          BA   0.298
5644          LG    0.35     0.35     3.07     0.81        0
5645          UI     155      478      374      111       25        0        0        0        0        0
5646          UI       0        0        0        0        0        0        0        0        0        0
              *

5647          KK   CPB25
5648          KM        COMBINE B37 WITH B25
5649          HC       2   1.652
              *

5650          KK  RCPB25
5651          KM        Route flow from CP B25 to CP B26
5652          RS       2    FLOW      -1
5653          RC   0.050   0.045   0.050    3350  0.0063
5654          RX       0     175     350     395     410     445     625     800
5655          RY    1130  1129.5    1129    1126    1126    1128    1129    1130
              *

5656          KK     B26
5657          KM        Runoff from B26
5658          BA   0.353
5659          LG    0.35     0.35     3.19     0.75        0
5660          UI     125      364      520      249       74       21        0        0        0        0
5661          UI       0        0        0        0        0        0        0        0        0        0
              *

5662          KK   CPB26
5663          KM        Combine B25 with B26
5664          HC       2   2.004
              *

5665          KK    DB26
5666          KM           Divert flow into B33
5667          KM        Natural divergence of flow due to a braided channel network.
5668          DT   DVB26
5669          DI       0       60      120      360      720     1500     3000     3900     4800
5670          DQ       0       40       80      240      480     1000     2000     2600     3200
              *
```

```
5671          KK  RCPB26
5672          KM        Route remainder flow from CP B26 to CP B65
5673          RS       1    FLOW      -1
5674          RC   0.050   0.045   0.050    3100  0.0105
5675          RX       0     110     220     345     375     500     650     800
5676          RY  1105.2  1104.5    1104    1103    1103    1104    1105 1106.25
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5677          KK  DRB03B
5678          KM        Return diverted flow from B03
5679          DR  DVB03B
              *

5680          KK  RDB03B
5681          KM        Route diverted flow from CP B03 to CP B18
5682          RS      10    FLOW      -1
5683          RC   0.050   0.045   0.050   15260  0.0067
5684          RX     360     375     400     450     470     520     545     560
5685          RY    1190    1189    1187    1186    1186    1187    1189    1190
              *

5686          KK     B17
5687          KM        Runoff from B17
5688          BA   0.048
5689          LG    0.35    0.35    3.60    0.55       0
5690          UI      74     100      11       0       0       0       0       0       0       0
5691          UI       0       0       0       0       0       0       0       0       0       0
              *

5692          KK    DB17
5693          KM           Divert flow into B16
5694          KM        Natural divergence of flow due to a braided channel network.
5695          DT   DVB17
5696          DI       0      21      83     172     478    1122    2076    3105    4297
5697          DQ       0      11      41      86     239     561    1038    1553    2148
              *

5698          KK  RCPB17
5699          KM        Route remainder flow from CP B17 to CP B18
5700          RS      18    FLOW      -1
5701          RC   0.050   0.045   0.050   10530  0.0068
5702          RX       0     200     400     450     470     520     720    1000
5703          RY    1190    1189    1187    1186    1186    1187    1189    1190
              *

5704          KK     B18
5705          KM        Runoff from B18
5706          BA   0.623
5707          LG    0.35    0.35    3.58    0.56       0
5708          UI      81     274     431     664     447     280     118      66      20      18
5709          UI       0       0       0       0       0       0       0       0       0       0
5710          UI       0       0       0       0       0       0       0       0       0       0
              *

5711          KK   CPB18
5712          KM        Combine DRB03, B17 with B18
5713          HC       3  22.629
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5714          KK  DRB03A
5715          KM        Return diverted flow from B03
5716          DR  DVB03A
              *

5717          KK  RDB03A
5718          KM        Route diverted flow from CP B03 to CP B16
5719          RS       4    FLOW      -1
5720          RC   0.050   0.045   0.050    9150  0.0071
5721          RX       0     125     250     350     370     430     540     560
5722          RY    1210    1209    1207    1205    1205    1207    1209    1210
              *

5723          KK   DRB17
5724          KM        Return diverted flow from B17
5725          DR   DVB17
              *
```

```
5726          KK   RDB17
5727          KM        Route flow from CP B17 to CP B16
5728          RS        6    FLOW      -1
5729          RC    0.050   0.045   0.050    4640  0.0067
5730          RX        0     450     900     960     975    1035    1550    2000
5731          RY     1200    1199    1198    1195    1195    1198    1199    1200
              *

5732          KK     B16
5733          KM        Runoff from B16
5734          BA    0.821
5735          LG     0.35    0.35    3.58    0.56       0
5736          UI      264     767    1205     635     202      65      35       0       0       0
5737          UI        0       0       0       0       0       0       0       0       0       0
              *

5738          KK   CPB16
5739          KM        Combine DRB03A, DRB17 with B16
5740          HC        3  22.827
              *

5741          KK  RCPB16
5742          KM        Route flow from CP B16 to CP B39
5743          RS        3    FLOW      -1
5744          RC    0.050   0.045   0.050    6430  0.0065
5745          RX      170     200     300     425     450     575     710     740
5746          RY     1171  1169.5    1169    1167    1167    1169  1169.5    1171
              *

5747          KK     B39
5748          KM        Runoff from B39
5749          BA    0.390
5750          LG     0.35    0.35    3.74    0.51       0
5751          UI      115     335     560     321     117      39      16       0       0       0
5752          UI        0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5753          KK  CPB39A
5754          KM        Combine B16 with B39
5755          HC        2  23.217
              *

5756          KK   CPB39
5757          KM        Combine B18 with B39
5758          HC        2  23.840
              *

5759          KK  RCPB39
5760          KM        Route flow from CP B39 to CP B54
5761          RS        2    FLOW      -1
5762          RC    0.050   0.045   0.050    3340  0.0061
5763          RX      220     240     385     435     465     515     660     680
5764          RY     1126    1124    1123    1121    1121    1123    1124    1126
              *

5765          KK     B54
5766          KM        Runoff from B54
5767          BA    0.295
5768          LG     0.35    0.35    4.50    0.33       0
5769          UI       80     235     410     254     104      38      12       0       0       0
5770          UI        0       0       0       0       0       0       0       0       0       0
              *

5771          KK   CPB54
5772          KM        Combine B39 with B54
5773          HC        2  24.136
              *

5774          KK  RCPB54
5775          KM        Route flow from CP B54 to CP B38
5776          RS        1    FLOW      -1
5777          RC    0.050   0.045   0.050    1870  0.0061
5778          RX      130     150     300     350     370     420     570     590
5779          RY   1116.5  1114.5    1114    1112    1112    1114  1114.5  1116.5
              *

5780          KK     B38
5781          KM        Runoff from B38
5782          BA    0.463
```

```
5783          LG    0.35    0.35    4.65    0.30       0
5784          UI      80     251     440     491     291     134      62      21      15       0
5785          UI       0       0       0       0       0       0       0       0       0       0
5786          UI       0       0       0       0       0       0       0       0       0       0
              *

5787          KK   CPB38
5788          KM        Combine B54 with B38
5789          HC       2  24.598
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5790          KK  RCPB38
5791          KM        Route flow from CP B38 to CP B65
5792          RS       1    FLOW      -1
5793          RC   0.050   0.045   0.050    1000  0.0105
5794          RX       0     110     220     345     375     500     650     800
5795          RY  1105.2  1104.5    1104    1103    1103    1104    1105 1106.25
              *

5796          KK     B65
5797          KM        RUNOFF FROM B65
5798          BA   0.168
5799          LG    0.34    0.33    4.55    0.32       1
5800          UI     108     315     178      38      10       0       0       0       0       0
5801          UI       0       0       0       0       0       0       0       0       0       0
              *

5802          KK   CPB65
5803          KM        COMBINE B26, B38 WITH B65
5804          KM        NEED NEW AREA
5805          HC       3  24.764
              *

5806          KK  RCPB65
5807          KM        ROUTE FLOW FROM B65 TO B59
5808          RS       3    FLOW      -1
5809          RC   0.050   0.045   0.050    5650  0.0055
5810          RX     205     225     326     490     510     674     775     795
5811          RY    1096    1094    1093    1092    1092    1093    1094    1096
              *

5812          KK     B27
5813          KM        Runoff from B27
5814          BA   0.856
5815          LG    0.35    0.35    3.03    0.84       0
5816          UI     492    1497    1002     253      52       0       0       0       0       0
5817          UI       0       0       0       0       0       0       0       0       0       0
              *

5818          KK  RCPB27
5819          KM        Route flow from CP B27 to CP B35
5820          RS       2    FLOW      -1
5821          RC   0.050   0.045   0.050    3100  0.0068
5822          RX     340     360     400     425     435     460     520     540
5823          RY    1130    1129    1128    1126    1126    1128    1129    1130
              *

5824          KK     B35
5825          KM        Runoff from B35
5826          BA   0.249
5827          LG    0.35    0.35    3.19    0.75       0
5828          UI      80     233     365     193      61      20      10       0       0       0
5829          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5830          KK  CPB35A
5831          KM        Combine B27 with B35
5832          HC       2   1.105
              *

5833          KK   DRB26
5834          KM        Return diverted flow from B26
5835          DR   DVB26
              *

5836          KK   CPB35
```

```
5837          KM        COMBINE DRB26 WITH B35
5838          HC       2   3.109
              *

5839          KK  RCPB35
5840          KM        Route flow from CP B35 to CP B33
5841          RS       1    FLOW      -1
5842          RC   0.050   0.045   0.050    2190  0.0058
5843          RX       0      50     115     145     155     185     250     300
5844          RY  1120.5    1119    1118    1116    1116    1118    1119  1120.5
              *

5845          KK     B28
5846          KM        Runoff from B28
5847          BA   0.386
5848          LG    0.35    0.35    3.03    0.84       0
5849          UI     179     568     508     179      42       0       0       0       0       0
5850          UI       0       0       0       0       0       0       0       0       0       0
              *

5851          KK     B34
5852          KM        Runoff from B34
5853          BA   0.125
5854          LG    0.35    0.35    3.15    0.77       0
5855          UI      53     163     175      67      18       6       0       0       0       0
5856          UI       0       0       0       0       0       0       0       0       0       0
              *

5857          KK   CPB34
5858          KM        Combine B28 with B34
5859          HC       2   0.511
              *

5860          KK  RCPB34
5861          KM        Route flow from CP B34 to CP B33
5862          RS       3    FLOW      -1
5863          RC   0.050   0.045   0.050    3970  0.0077
5864          RX       0      50     115     145     155     185     250     300
5865          RY    1130    1129    1128    1126    1126    1128  1128.5    1129
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5866          KK     B33
5867          KM        Runoff from B33
5868          BA   0.283
5869          LG    0.35    0.35    3.31    0.68       0
5870          UI      84     243     405     234      85      28      12       0       0       0
5871          UI       0       0       0       0       0       0       0       0       0       0
              *

5872          KK  CPB33A
5873          KM        Combine B34 with B33
5874          HC       2   0.796
              *

5875          KK   CPB33
5876          KM        Combine B35 with B33
5877          HC       2   3.905
              *

5878          KK  RCPB33
5879          KM        Route flow from CP B33 to CP B55
5880          RS       1    FLOW      -1
5881          RC   0.050   0.045   0.050     490  0.0055
5882          RX     205     225     326     490     510     674     775     795
5883          RY    1096    1094    1093    1092    1092    1093    1094    1096
              *

5884          KK     B55
5885          KM        Runoff from B55
5886          BA   0.079
5887          LG    0.35    0.35    3.38    0.65       0
5888          UI     100     176      26       0       0       0       0       0       0       0
5889          UI       0       0       0       0       0       0       0       0       0       0
              *

5890          KK   CPB55
5891          KM        COMBINE B33 WITH B55
5892          HC       2   3.983
              *
```

```
5893          KK  RCPB55
5894          KM        Route flow from CP B55 to CP B59
5895          RS       4    FLOW      -1
5896          RC   0.050   0.045   0.050    6850  0.0044
5897          RX       0     163     326     490     510     674     837    1000
5898          RY    1095    1094    1093    1092    1092    1093    1094    1095
              *

5899          KK     B31
5900          KM        Runoff from B31
5901          BA   0.160
5902          LG    0.35    0.35    3.01    0.89       0
5903          UI     171     359      78       0       0       0       0       0       0       0
5904          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                          HEC-1 INPUT                                                PAGE157

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5905          KK  RCPB31
5906          KM        Route flow from CP B31 to CP B29
5907          RS       6    FLOW      -1
5908          RC   0.050   0.045   0.050    9120  0.0081
5909          RX       0      50     115     145     155     185     250     300
5910          RY    1170  1169.5    1169    1167    1167    1169  1169.5    1170
              *

5911          KK     B32
5912          KM        Runoff from B32
5913          BA   0.043
5914          LG    0.35    0.35    2.97    0.91       0
5915          UI      55      95      14       0       0       0       0       0       0       0
5916          UI       0       0       0       0       0       0       0       0       0       0
              *

5917          KK  RCPB32
5918          KM        Route flow from CP B32 to CP B29
5919          RS       8    FLOW      -1
5920          RC   0.050   0.045   0.050    8130  0.0081
5921          RX       0      50     115     145     155     185     250     300
5922          RY    1170  1169.5    1169    1167    1167    1169  1169.5    1170
              *

5923          KK     B30
5924          KM        Runoff from B30
5925          BA   0.534
5926          LG    0.35    0.35    2.88    0.98       0
5927          UI     188     551     788     377     111      32       0       0       0       0
5928          UI       0       0       0       0       0       0       0       0       0       0
              *

5929          KK    DB30
5930          KM           Divert flow into B57
5931          KM        Natural divergence of flow due to a braided channel network.
5932          DT   DVB30
5933          DI       0      29     118     254     682    1667    2936    4387    6065
5934          DQ       0      18      74     160     388     844    1492    2184    2980
              *

5935          KK  RCPB30
5936          KM        Route remainder flow from CP B30 to CP B29
5937          RS       6    FLOW      -1
5938          RC   0.050   0.045   0.050    5630  0.0075
5939          RX       0      50     115     145     155     185     250     300
5940          RY    1140  1139.5    1139    1138    1138    1139  1139.5    1140
              *

5941          KK     B29
5942          KM        Runoff from B29
5943          BA   0.914
5944          LG    0.35    0.35    3.17    0.76       0
5945          UI     269     787    1310     754     273      90      38       0       0       0
5946          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                          HEC-1 INPUT                                                PAGE158

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5947          KK   CPB29
5948          KM        Combine B31, B32, B30 with B29
5949          HC       4   1.651
              *
```

```
5950          KK  RCPB29
5951          KM        Route flow from CP B29 to CP B59
5952          RS       7    FLOW      -1
5953          RC   0.050   0.045   0.050    6990  0.0043
5954          RX       0     163     326     490     510     674     837    1000
5955          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

5956          KK   DRB30
5957          KM        Return diverted flow from B30
5958          DR   DVB30
              *

5959          KK   RDB30
5960          KM        Route diverted flow from CP B30 to CP B57
5961          RS       2    FLOW      -1
5962          RC   0.050   0.045   0.050    4290  0.0111
5963          RX     190     200     225     245     255     275     300     310
5964          RY    1135    1134    1133    1132    1132    1133  1133.5    1134
              *

5965          KK     B57
5966          KM        Runoff from B57
5967          BA   0.099
5968          LG    0.35    0.35    4.30    0.37       0
5969          UI      71     198      91      18       0       0       0       0       0       0
5970          UI       0       0       0       0       0       0       0       0       0       0
              *

5971          KK   CPB57
5972          KM        Combine DRB30 with B57
5973          HC       2   0.633
              *

5974          KK  RCPB57
5975          KM        Route flow from CP B57 to CP B56
5976          RS       1    FLOW      -1
5977          RC   0.050   0.045   0.050    1420  0.0144
5978          RX       0     200     400     475     495     570     620     670
5979          RY    1110    1109    1108    1106    1106    1108  1109.5    1110
              *

5980          KK     B56
5981          KM        Runoff from B56
5982          BA   0.222
5983          LG    0.35    0.35    4.40    0.35       0
5984          UI      61     176     308     191      79      29       9       0       0       0
5985          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5986          KK   CPB56
5987          KM        Combine B57 with B56
5988          HC       2   0.854
              *

5989          KK  RCPB56
5990          KM        Route flow from CP B56 to CP B58
5991          RS       1    FLOW      -1
5992          RC   0.050   0.045   0.050    1060  0.0144
5993          RX       0     200     400     475     495     570     620     670
5994          RY    1110    1109    1108    1106    1106    1108  1109.5    1110
              *

5995          KK     B58
5996          KM        Runoff from B58
5997          BA   0.243
5998          LG    0.34    0.32    3.92    0.46       1
5999          UI     173     488     224      44       0       0       0       0       0       0
6000          UI       0       0       0       0       0       0       0       0       0       0
              *

6001          KK   CPB58
6002          KM        Combine B56 with B58
6003          HC       2   1.097
              *

6004          KK  RCPB58
6005          KM        Route flow from CP B58 to CP B59
6006          RS       5    FLOW      -1
```

```
6007          RC   0.050   0.045   0.050    5030  0.0040
6008          RX       0     163     326     490     510     674     837    1000
6009          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

6010          KK     B59
6011          KM        Runoff from B59
6012          BA   0.497
6013          LG    0.35    0.35    4.30    0.41       0
6014          UI     123     369     663     446     203      80      20      19       0       0
6015          UI       0       0       0       0       0       0       0       0       0       0
              *

6016          KK   CPB59
6017          KM        Combine B65, B55, B29, B58 with B59
6018          HC       5  31.458
              *

6019          KK  RCPB59
6020          KM        Route flow from CP B59 to CP B60
6021          RS       4    FLOW      -1
6022          RC   0.050   0.045   0.050    5300  0.0019
6023          RX     100     120     326     490     510     674     875     895
6024          RY  1089.5    1087    1086    1085    1085    1086    1087  1089.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6025          KK     B52
6026          KM        Runoff from B52
6027          BA   0.576
6028          LG    0.35    0.35    3.74    0.51       0
6029          UI     156     458     801     496     203      76      23       0       0       0
6030          UI       0       0       0       0       0       0       0       0       0       0
              *

6031          KK  RCPB52
6032          KM        Route flow from CP B52 to CP B60
6033          RS       8    FLOW      -1
6034          RC   0.050   0.045   0.050    6980  0.0044
6035          RX       0     163     326     490     510     674     837    1000
6036          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

6037          KK     B53
6038          KM        Runoff from B53
6039          BA   0.537
6040          LG    0.34    0.34    4.00    0.43       1
6041          UI     146     427     747     462     189      71      21       0       0       0
6042          UI       0       0       0       0       0       0       0       0       0       0
              *

6043          KK  RCPB53
6044          KM        Route flow from CP B53 to CP B60
6045          RS      13    FLOW      -1
6046          RC   0.050   0.045   0.050    9830  0.0031
6047          RX       0     163     326     490     510     674     837    1000
6048          RY    1090    1089    1088    1087    1087    1088    1089    1090
              *

6049          KK     B60
6050          KM        Runoff from B60
6051          BA   1.003
6052          LG    0.50    0.00    4.60    0.50       0
6053          UI      33      32      54      89     158     190     206     253     272     273
6054          UI     272     246     227     251     174     185     144     125      95      96
6055          UI      79      59      52      43      40      30      29      27      18      18
6056          UI      19      17       4       4       5       4       4       4       4       4
6057          UI       4       4       4       4       4       4       4       4       5       4
6058          UI       4       0       0       0       0       0       0       0       0       0
6059          UI       0       0       0       0       0       0       0       0       0       0
              *

6060          KK   CPB60
6061          KM        Combine B52, B53, B59 with B60
6062          HC       4  33.575
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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6063          KK  RCPB60
6064          KM       Route flow from CP B60 to CP H80RIV
6065          RS       1    FLOW      -1
6066          RC   0.050   0.045   0.050    1500  0.0067
6067          RX     220     240     326     490     510     674     760     780
6068          RY    1081    1079    1078    1077    1077    1078    1079    1081
              *

6069          KK   DRH33
6070          KM       Return diverted flow from CP H33
6071          DR   DVH33
              *

6072          KK   RDH33
6073          KM       Route flow from CP H33 to CP H46
6074          RS       2    FLOW      -1
6075          RC   0.050   0.045   0.050    4900  0.0094
6076          RX     340     360     400     420     430     450     490     510
6077          RY    1190  1188.2    1188    1187    1187    1188  1188.2    1190
              *

6078          KK     H46
6079          KM       Runoff from H46
6080          BA   0.315
6081          LG    0.35    0.35    4.00    0.47       0
6082          UI     181     551     369      93      19       0       0       0       0       0
6083          UI       0       0       0       0       0       0       0       0       0       0
              *

6084          KK   CPH46
6085          KM       Combine DRH33 with H46
6086          HC       2   4.053
              *

6087          KK  RCPH46
6088          KM       Route flow from CP H46 to CP H78
6089          RS       2    FLOW      -1
6090          RC   0.050   0.045   0.050    5300  0.0075
6091          RX     350     370     400     420     430     450     480     500
6092          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

6093          KK     H06
6094          KM       Runoff from H06
6095          BA   1.228
6096          LG    0.35    0.35    2.83    1.00       0
6097          UI     433    1267    1811     867     256      73       0       0       0       0
6098          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6099          KK    DH06
6100          KM           Divert flow into H13
6101          KM       Natural divergence of flow due to a braided channel network.
6102          DT   DVH06
6103          DI       0      53     189     414     739     830    1733    3436    6123   11407
6104          DQ       0      30     108     236     422     479     956    1842    3226    5710
              *

6105          KK  RCPH06
6106          KM       Route remainder flow from CP H06 to CP H14
6107          RS       2    FLOW      -1
6108          RC   0.050   0.045   0.050    5890  0.0175
6109          RX     350     370     400     420     430     450     480     500
6110          RY    1345    1344    1343    1342    1342    1343    1344    1345
              *

6111          KK     H14
6112          KM       Runoff from H14
6113          BA   1.138
6114          LG    0.35    0.35    3.50    0.64       6
6115          UI     402    1173    1679     804     236      68       0       0       0       0
6116          UI       0       0       0       0       0       0       0       0       0       0
              *

6117          KK   CPH14
6118          KM       Combine H06 with H14
6119          HC       2   2.365
              *

6120          KK  RCPH14
```

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6121          KM        Route flow from CP H14 to CP H13
6122          RS       1    FLOW      -1
6123          RC   0.050   0.045   0.050    2930  0.0115
6124          RX     280     300     400     420     430     450     570     590
6125          RY    1290    1289    1288    1287    1287    1288    1289    1290
              *

6126          KK   DRH06
6127          KM        Return diverted flow from CP H06
6128          DR   DVH06
              *

6129          KK   RDH06
6130          KM        Route flow from CP H06 to CP H13
6131          RS       3    FLOW      -1
6132          RC   0.050   0.045   0.050    8020  0.0169
6133          RX     250     270     300     315     335     350     380     400
6134          RY    1345  1343.5    1343    1342    1342    1343  1343.5    1345
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6135          KK     H13
6136          KM        Runoff from H13
6137          BA   0.519
6138          LG    0.35    0.35    3.95    0.48       0
6139          UI     220     677     725     278      77      26       0       0       0       0
6140          UI       0       0       0       0       0       0       0       0       0       0
              *

6141          KK   CPH13
6142          KM        Combine H14, DRH06 with H13
6143          HC       3   2.885
              *

6144          KK  RCPH13
6145          KM        Route flow from CP H13 to CP H34
6146          RS       2    FLOW      -1
6147          RC   0.050   0.045   0.050    4030  0.0096
6148          RX     180     200     325     335     340     350     485     505
6149          RY    1241    1239    1238    1237    1237    1238    1239    1241
              *

6150          KK     H12
6151          KM        Runoff from H12
6152          BA   0.438
6153          LG    0.35    0.35    3.74    0.54       9
6154          UI     155     452     645     309      92      26       0       0       0       0
6155          UI       0       0       0       0       0       0       0       0       0       0
              *

6156          KK    DH12
6157          KM           Divert flow into H35
6158          KM        Natural divergence of flow due to a braided channel network.
6159          DT   DVH12
6160          DI       0      55     226     500    1373    3030    5874   10943   16576
6161          DQ       0      17      67     151     508    1235    2636    4751    7364
              *

6162          KK  RCPH12
6163          KM        Route remainder flow from CP H12 to CP H07
6164          RS       1    FLOW      -1
6165          RC   0.050   0.045   0.050    3300  0.0175
6166          RX     300     320     350     360     365     375     405     425
6167          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

6168          KK     H07
6169          KM        Runoff from H07
6170          BA   1.183
6171          LG    0.35    0.35    3.78    0.54       0
6172          UI     272     821    1505    1100     551     203      70      43       0       0
6173          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6174          KK   CPH07
6175          KM        Combine H12 with H07
6176          HC       2   1.621
```

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                *

6177            KK    DH07
6178            KM            Divert flow into H36
6179            KM        Natural divergence of flow due to a braided channel network.
6180            DT   DVH07
6181            DI       0      34     133    2252    6948   13897   22635
6182            DQ       0      17      67    1126    3474    6949   11318
                *

6183            KK  RCPH07
6184            KM        Route remainder flow from CP H07 to CP H34
6185            RS       2    FLOW      -1
6186            RC   0.050   0.045   0.050    3720  0.0108
6187            RX     350     370     400     420     430     450     480     500
6188            RY    1250    1249    1248    1247    1247    1248    1249    1250
                *

6189            KK     H34
6190            KM        Runoff from H34
6191            BA   0.407
6192            LG    0.35    0.35    4.00    0.47       0
6193            UI     436     913     198       0       0       0       0       0       0       0
6194            UI       0       0       0       0       0       0       0       0       0       0
                *

6195            KK   CPH34
6196            KM        Combine H13, H07 with H34
6197            HC       3   4.912
                *

6198            KK  RCPH34
6199            KM        Route flow from CP H34 to CP H45
6200            RS       3    FLOW      -1
6201            RC   0.050   0.045   0.050    5950  0.0086
6202            RX     200     220     400     420     430     450     640     660
6203            RY    1211    1209    1208    1207    1207    1208    1209    1211
                *

6204            KK     H45
6205            KM        Runoff from H45
6206            BA   0.278
6207            LG    0.35    0.35    4.00    0.47       0
6208            UI     144     446     350     103      23       0       0       0       0       0
6209            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6210            KK   CPH45
6211            KM        Combine H34 with H45
6212            HC       2   5.191
                *

6213            KK  RCPH45
6214            KM        Route flow from CP H45 to CP H78
6215            RS       3    FLOW      -1
6216            RC   0.050   0.045   0.050    5270  0.0075
6217            RX     230     250     400     420     430     450     600     620
6218            RY    1151    1149    1148    1147    1147    1148    1149    1151
                *

6219            KK   DRH07
6220            KM        Return diverted flow from CP H07
6221            DR   DVH07
                *

6222            KK   RDH07
6223            KM        Route flow from CP H07 to CP H36
6224            RS       3    FLOW      -1
6225            RC   0.050   0.045   0.050    5180  0.0102
6226            RX     310     330     400     420     430     450     510     530
6227            RY    1250  1248.5    1248    1247    1247    1248  1248.5    1250
                *

6228            KK     H36
6229            KM        Runoff from H36
6230            BA   0.437
6231            LG    0.35    0.35    4.00    0.47       0
6232            UI     251     764     512     129      26       0       0       0       0       0
6233            UI       0       0       0       0       0       0       0       0       0       0
                *
```

```
6234          KK   CPH36
6235          KM        Combine DRH07 with H36
6236          HC       2   2.058
              *

6237          KK  RCPH36
6238          KM        Route flow from CP H36 to CP H44
6239          RS       3    FLOW      -1
6240          RC   0.050   0.045   0.050    6550  0.0094
6241          RX     350     370     400     420     430     450     480     500
6242          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

6243          KK     H44
6244          KM        Runoff from H44
6245          BA   0.554
6246          LG    0.35    0.35    4.00    0.47       0
6247          UI     287     889     698     204      47       0       0       0       0       0
6248          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6249          KK   CPH44
6250          KM        Combine H36 with H44
6251          HC       2   2.612
              *

6252          KK  RCPH44
6253          KM        Route flow from CP H44 to CP H78
6254          RS       2    FLOW      -1
6255          RC   0.050   0.045   0.050    3090  0.0058
6256          RX     340     360     400     420     430     450     490     510
6257          RY    1151    1149    1148    1147    1147    1148    1149    1151
              *

6258          KK     H78
6259          KM        Runoff from H78
6260          BA   0.489
6261          LG    0.35    0.35    4.00    0.47       0
6262          UI     349     981     452      87       0       0       0       0       0       0
6263          UI       0       0       0       0       0       0       0       0       0       0
              *

6264          KK   CPH78
6265          KM        Combine H44, H45, H46 with H78
6266          HC       4  10.723
              *

6267          KK  RCPH78
6268          KM        Route flow from CP H78 to CP H79
6269          RS       3    FLOW      -1
6270          RC   0.050   0.045   0.050    5400  0.0066
6271          RX     150     170     400     420     430     450     680     700
6272          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

6273          KK     H79
6274          KM        Runoff from H79
6275          BA   0.503
6276          LG    0.35    0.35    4.00    0.47       0
6277          UI     289     880     589     149      30       0       0       0       0       0
6278          UI       0       0       0       0       0       0       0       0       0       0
              *

6279          KK   CPH79
6280          KM        Combine H78 with H79
6281          HC       2  11.227
              *

6282          KK  RCPH79
6283          KM        Route flow from CP H79 to CP H80
6284          RS       3    FLOW      -1
6285          RC   0.050   0.045   0.050    5340  0.0054
6286          RX      80     100     400     420     430     450     750     770
6287          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
6288          KK     H80
6289          KM        Runoff from H80
6290          BA   0.458
6291          LG    0.44    0.15    4.10    0.59       0
6292          UI      68     269     421     387     267     158      80      51      30      12
6293          UI       6       6       7       6       0       0       0       0       0       0
6294          UI       0       0       0       0       0       0       0       0       0       0
              *

6295          KK   CPH80
6296          KM        Combine H79 with H80
6297          HC       2  11.685
              *

6298          KK  H80RIV
6299          KM        Combine B61RIV, B60 with H80
6300          HC       3 316.491
              *

6301          KK  RCPH80
6302          KM        Route flow from CP H80RIV to CP B62RIV (WATERMAN WASH)
6303          RS       1    FLOW      -1
6304          RC   0.050   0.035   0.050    4370  0.0023
6305          RX    2280    2300    2500    2710    2790    3000    3200    3220
6306          RY    1070    1065    1060    1055    1055    1060    1065    1070
              *

6307          KK     B62
6308          KM        Runoff from B62
6309          BA   0.334
6310          LG    0.50    0.00    4.60    0.50       0
6311          UI      16      22      49      90     109     122     133     127     112     107
6312          UI      88      66      51      47      30      24      20      15      14       9
6313          UI       9       7       2       2       2       2       2       2       2       2
6314          UI       2       2       2       2       0       0       0       0       0       0
6315          UI       0       0       0       0       0       0       0       0       0       0
              *

6316          KK  B62RIV
6317          KM        Combine H80RIV with B62
6318          HC       2 316.826
              *

6319          KK  RCPB62
6320          KM        Route flow from CP B62RIV to CP B63RIV (WATERMAN WASH)
6321          RS       1    FLOW      -1
6322          RC   0.050   0.035   0.050    1310  0.0036
6323          RX       0    1300    2600    2810    2890    3100    4700    6300
6324          RY    1070    1065    1060    1055    1055    1060    1065    1070
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6325          KK     H43
6326          KM        Runoff from H43
6327          BA   0.220
6328          LG    0.35    0.35    4.00    0.47       0
6329          UI     179     464     174      28       0       0       0       0       0       0
6330          UI       0       0       0       0       0       0       0       0       0       0
              *

6331          KK  RCPH43
6332          KM        Route flow from CP H43 to CP H81
6333          RS       2    FLOW      -1
6334          RC   0.050   0.045   0.050    2820  0.0077
6335          RX     350     370     400     420     430     450     480     500
6336          RY    1150    1149    1148    1147    1147    1148    1149    1150
              *

6337          KK     H81
6338          KM        Runoff from H81
6339          BA   0.243
6340          LG    0.35    0.35    4.00    0.47       0
6341          UI     470     432       0       0       0       0       0       0       0       0
6342          UI       0       0       0       0       0       0       0       0       0       0
              *

6343          KK  CPH81
6344          KM        Combine H43 with H81
6345          HC       2   0.463
              *
```

```
6346          KK  RCPH81
6347          KM        Route flow from CP H81 to CP H82
6348          RS       3    FLOW      -1
6349          RC   0.050   0.045   0.050    5450  0.0075
6350          RX     350     370     400     420     430     450     480     500
6351          RY    1120    1119    1118    1117    1117    1118    1119    1120
              *

6352          KK     H08
6353          KM        Runoff from H08
6354          BA   1.392
6355          LG    0.35    0.35    3.38    0.66      17
6356          UI     589    1819    1943     746     206      68       0       0       0       0
6357          UI       0       0       0       0       0       0       0       0       0       0
              *

6358          KK  RCPH08
6359          KM        Route flow from CP H08 to CP H35
6360          RS       2    FLOW      -1
6361          RC   0.050   0.045   0.050    6270  0.0143
6362          RX     130     150     250     260     265     275     350     370
6363          RY    1341    1339    1338    1337    1337    1338    1339    1341
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6364          KK     H11
6365          KM        Runoff from H11
6366          BA   0.273
6367          LG    0.35    0.35    3.95    0.49       0
6368          UI     175     513     289      62      17       0       0       0       0       0
6369          UI       0       0       0       0       0       0       0       0       0       0
              *

6370          KK    DH11
6371          KM           Divert flow into H38
6372          KM        Natural divergence of flow due to a braided channel network.
6373          DT   DVH11
6374          DI       0      42     175    1485    4409    8936   14464
6375          DQ       0      11      54     689    2095    4271    6958
              *

6376          KK  RCPH11
6377          KM        Route remainder flow from CP H11 to CP H35
6378          RS       2    FLOW      -1
6379          RC   0.050   0.045   0.050    3390  0.0143
6380          RX       0     180     250     270     285     305     375     555
6381          RY    1295    1294    1293    1292    1292    1293    1294    1295
              *

6382          KK   DRH12
6383          KM        Return diverted flow from CP H12
6384          DR   DVH12
              *

6385          KK   RDH12
6386          KM        Route flow from CP H12 to CP H35
6387          RS       2    FLOW      -1
6388          RC   0.050   0.045   0.050    3230  0.0125
6389          RX       0     180     250     265     280     295     375     550
6390          RY    1290    1289    1288    1287    1287    1288    1289    1290
              *

6391          KK     H35
6392          KM        Runoff from H35
6393          BA   0.338
6394          LG    0.35    0.35    3.95    0.48       0
6395          UI     314     741     217      33       0       0       0       0       0       0
6396          UI       0       0       0       0       0       0       0       0       0       0
              *

6397          KK   CPH35
6398          KM        Combine H08, H11, DRH12 with H35
6399          HC       4   2.441
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6400          KK  RCPH35
```

```
6401          KM        Route flow from CP H35 to CP H37
6402          RS       2    FLOW      -1
6403          RC   0.050   0.045   0.050    5230  0.0102
6404          RX     210     230     300     310     320     330     420     440
6405          RY  1250.8    1249    1248    1247    1247    1248    1249  1250.8
              *

6406          KK     H37
6407          KM        Runoff from H37
6408          BA   0.563
6409          LG    0.35    0.35    3.95    0.48       0
6410          UI     361    1056     598     128      34       0       0       0       0       0
6411          UI       0       0       0       0       0       0       0       0       0       0
              *

6412          KK   CPH37
6413          KM        Combine H35 with H37
6414          HC       2   3.004
              *

6415          KK  RCPH37
6416          KM        Route flow from CP H37 to CP H42
6417          RS       3    FLOW      -1
6418          RC   0.050   0.045   0.050    7690  0.0084
6419          RX     240     260     330     345     355     370     440     460
6420          RY    1186    1184    1183    1182    1182    1183    1184    1186
              *

6421          KK     H42
6422          KM        Runoff from H42
6423          BA   0.442
6424          LG    0.35    0.35    4.00    0.47       0
6425          UI     169     512     641     275      82      20       0       0       0       0
6426          UI       0       0       0       0       0       0       0       0       0       0
              *

6427          KK   CPH42
6428          KM        Combine H37 with H42
6429          HC       2   3.446
              *

6430          KK  RCPH42
6431          KM        Route flow from CP H42 to CP H82
6432          RS       3    FLOW      -1
6433          RC   0.050   0.045   0.050    5960  0.0075
6434          RX     300     320     400     420     430     450     530     550
6435          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6436          KK     H82
6437          KM        Runoff from H82
6438          BA   0.502
6439          LG    0.35    0.35    4.00    0.47       0
6440          UI     260     806     631     186      42       0       0       0       0       0
6441          UI       0       0       0       0       0       0       0       0       0       0
              *

6442          KK   CPH82
6443          KM        Combine H81, H42 with H82
6444          HC       3   4.411
              *

6445          KK  RCPH82
6446          KM        Route flow from CP H82 to CP H83
6447          RS       3    FLOW      -1
6448          RC   0.050   0.045   0.050    5750  0.0053
6449          RX     300     320     400     420     430     450     560     580
6450          RY    1081    1079    1078    1077    1077    1078    1079    1081
              *

6451          KK     H83
6452          KM        Runoff from H83
6453          BA   0.660
6454          LG    0.41    0.21    4.10    0.55       0
6455          UI     105     340     572     715     433     218      96      38      21       0
6456          UI       0       0       0       0       0       0       0       0       0       0
6457          UI       0       0       0       0       0       0       0       0       0       0
              *

6458          KK   CPH83
```

```
6459          KM        Combine H82 with H83
6460          HC       2   5.071
              *

6461          KK     B63
6462          KM        Runoff from B63
6463          BA   0.217
6464          LG    0.50    0.00    4.50    0.54       0
6465          UI      13      23      63      82     100     107      94      89      71      49
6466          UI      37      29      19      16      11       9       7       5       1       2
6467          UI       1       2       2       1       2       1       2       2       0       0
6468          UI       0       0       0       0       0       0       0       0       0       0
              *

6469          KK  B63RIV
6470          KM        Combine B62RIV, H83 with B63
6471          KM        Buenos Aires Road crossing at B63RIV
6472          HC       3 321.675
              *
1                                   HEC-1 INPUT                                                    PAGE172

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6473          KK  RCPB63
6474          KM        Route flow from CP B63RIV to CP B64RIV (WATERMAN WASH)
6475          RS       1    FLOW      -1
6476          RC   0.050   0.035   0.050    2290  0.0040
6477          RX       0    1900    3100    3310    3390    3600    4700    5800
6478          RY    1070    1060    1055    1050    1050    1055  1057.5    1060
              *

6479          KK     B64
6480          KM        Runoff from B64
6481          BA   0.304
6482          LG    0.50    0.00    4.70    0.47       0
6483          UI      14      20      51      68      80     100     136     164     127     105
6484          UI      85      68      51      28      23      18      13       6       4       4
6485          UI       4       4       0       0       0       0       0       0       0       0
6486          UI       0       0       0       0       0       0       0       0       0       0
              *

6487          KK  B64RIV
6488          KM        Combine B63RIV with B64
6489          HC       2 321.980
              *

6490          KK  RCPB64
6491          KM        Route flow from CP B64RIV to CP H86RIV (WATERMAN WASH)
6492          RS       1    FLOW      -1
6493          RC   0.050   0.035   0.050    1230  0.0033
6494          RX    2475    2500    3700    3765    3835    3900    4500    4525
6495          RY    1054    1052    1045    1040    1040    1045    1052    1054
              *

6496          KK     H09
6497          KM        Runoff from H09
6498          BA   1.076
6499          LG    0.35    0.35    3.81    0.49      53
6500          UI     823    1798     849     387     174      75      43       0       0       0
6501          UI       0       0       0       0       0       0       0       0       0       0
              *

6502          KK  RCPH09
6503          KM        Route flow from CP H09 to CP H10
6504          RS       2    FLOW      -1
6505          RC   0.050   0.045   0.050    7010  0.0239
6506          RX     220     240     280     300     330     350     390     410
6507          RY    1415    1414    1413    1412    1412    1413    1414    1415
              *

6508          KK     H10
6509          KM        Runoff from H10
6510          BA   0.555
6511          LG    0.35    0.35    3.95    0.49       3
6512          UI     452    1170     439      70       0       0       0       0       0       0
6513          UI       0       0       0       0       0       0       0       0       0       0
              *
1                                   HEC-1 INPUT                                                    PAG

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6514          KK   CPH10
```

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6515          KM        Combine H09 with H10
6516          HC       2   1.630
              *

6517          KK  RCPH10
6518          KM        Route flow from CP H10 to CP H38
6519          RS       2    FLOW      -1
6520          RC   0.050   0.045   0.050    5200  0.0143
6521          RX     300     320     400     420     430     450     530     550
6522          RY    1291    1289    1288    1287    1287    1288    1289    1291
              *

6523          KK   DRH11
6524          KM        Return diverted flow from CP H11
6525          DR   DVH11
              *

6526          KK   RDH11
6527          KM        Route flow from CP H11 to CP H38
6528          RS       4    FLOW      -1
6529          RC   0.050   0.045   0.050    5430  0.0132
6530          RX       0     250     325     340     345     360     460     650
6531          RY    1290    1289    1288    1287    1287    1288    1289    1290
              *

6532          KK     H38
6533          KM        Runoff from H38
6534          BA   0.480
6535          LG    0.35    0.35    3.95    0.48       0
6536          UI     391    1012     379      61       0       0       0       0       0       0
6537          UI       0       0       0       0       0       0       0       0       0       0
              *

6538          KK   CPH38
6539          KM        Combine H10, DRH11 with H38
6540          HC       3   2.384
              *

6541          KK  RCPH38
6542          KM        Route flow from CP H38 to CP H39
6543          RS       2    FLOW      -1
6544          RC   0.050   0.045   0.050    5100  0.0100
6545          RX     125     145     225     235     240     250     365     385
6546          RY  1230.8    1229    1228    1227    1227    1228    1229  1230.8
              *

6547          KK     H39
6548          KM        Runoff from H39
6549          BA   0.379
6550          LG    0.35    0.35    4.00    0.47       0
6551          UI     308     800     299      48       0       0       0       0       0       0
6552          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6553          KK   CPH39
6554          KM        Combine H38 with H39
6555          HC       2   2.763
              *

6556          KK    DH39
6557          KM           Divert flow into H40
6558          KM        Natural divergence of flow due to a braided channel network.
6559          DT   DVH39
6560          DI       0      26     101    1515    4658    9338   15308
6561          DQ       0      13      50     758    2329    4669    7654
              *

6562          KK  RCPH39
6563          KM        Route remainder flow from CP H39 to CP H41
6564          RS       2    FLOW      -1
6565          RC   0.050   0.045   0.050    4970  0.0094
6566          RX     190     210     250     260     265     275     315     335
6567          RY    1176    1174    1173    1172    1172    1173    1174    1176
              *

6568          KK     H41
6569          KM        Runoff from H41
6570          BA   0.300
6571          LG    0.35    0.35    4.00    0.47       0
6572          UI     244     633     237      38       0       0       0       0       0       0
```

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6573          UI       0       0       0       0       0       0       0       0       0       0
              *

6574          KK   CPH41
6575          KM        Combine H39 with H41
6576          HC       2   3.063
              *

6577          KK  RCPH41
6578          KM        Route flow from CP H41 to CP H84
6579          RS       2    FLOW      -1
6580          RC   0.050   0.045   0.050    5390  0.0075
6581          RX     350     370     400     420     430     450     480     500
6582          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

6583          KK   DRH39
6584          KM        Return diverted flow from CP H39
6585          DR   DVH39
              *

6586          KK   RDH39
6587          KM        Route flow from CP H39 to CP H40
6588          RS       3    FLOW      -1
6589          RC   0.050   0.045   0.050    7040  0.0093
6590          RX     130     150     200     210     215     225     300     320
6591          RY    1170    1169    1168    1167    1167    1168  1168.5    1170
              *
1                                          HEC-1 INPUT                                          PAGE175

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6592          KK     H40
6593          KM        Runoff from H40
6594          BA   0.470
6595          LG    0.35    0.35    4.00    0.47       0
6596          UI     244     754     591     174      39       0       0       0       0       0
6597          UI       0       0       0       0       0       0       0       0       0       0
              *

6598          KK   CPH40
6599          KM        Combine DRH39 with H40
6600          HC       2   3.233
              *

6601          KK  RCPH40
6602          KM        Route flow from CP H40 to CP H84
6603          RS       1    FLOW      -1
6604          RC   0.050   0.045   0.050    2780  0.0074
6605          RX     350     370     400     420     430     450     480     500
6606          RY    1121    1119    1118    1117    1117    1118    1119    1121
              *

6607          KK     H84
6608          KM        Runoff from H84
6609          BA   0.756
6610          LG    0.35    0.35    4.00    0.47       0
6611          UI     484    1419     803     172      45       0       0       0       0       0
6612          UI       0       0       0       0       0       0       0       0       0       0
              *

6613          KK   CPH84
6614          KM        Combine H41, H40 with H84
6615          HC       3   4.289
              *

6616          KK  RCPH84
6617          KM        Route flow from CP H84 to CP H85
6618          RS       3    FLOW      -1
6619          RC   0.050   0.045   0.050    5270  0.0067
6620          RX     280     300     400     420     430     450     570     590
6621          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *

6622          KK     H85
6623          KM        Runoff from H85
6624          BA   0.976
6625          LG    0.50    0.00    4.00    0.70       0
6626          UI      60     120     311     399     494     506     429     370     300     202
6627          UI     164     104      78      59      46      34      28       8       8       7
6628          UI       8       7       8       7       8       7       0       0       0       0
6629          UI       0       0       0       0       0       0       0       0       0       0
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6630          KK   CPH85
6631          KM        Combine H84 with H85
6632          HC       2   5.265
              *

6633          KK  RCPH85
6634          KM        Route flow from CP H85 to CP H86
6635          RS       3    FLOW      -1
6636          RC   0.050   0.045   0.050    6440  0.0056
6637          RX     270     290     400     420     430     450     560     580
6638          RY    1061 1058.45    1058    1057    1057    1058 1058.45    1061
              *

6639          KK     H86
6640          KM        Runoff from H86
6641          BA   1.077
6642          LG    0.48    0.05    4.25    0.60       0
6643          UI      69     153     375     494     584     556     514     383     290     206
6644          UI     148     102      75      60      40      38       9       9       8       9
6645          UI       9       8       9       9       8       0       0       0       0       0
6646          UI       0       0       0       0       0       0       0       0       0       0
              *

6647          KK   CPH86
6648          KM        Combine H85 with H86
6649          HC       2   6.343
              *

6650          KK  H86RIV
6651          KM        Combine B64RIV with H86
6652          HC       2 328.049
              *

6653          KK  RCPH86
6654          KM        Route flow from CP H86RIV to CP A41RIV (WATERMAN WASH)
6655          RS       1    FLOW      -1
6656          RC   0.050   0.035   0.050    4670  0.0033
6657          RX    2175    2200    3700    3765    3835    3900    5400    5425
6658          RY    1034    1032    1025    1020    1020    1025    1032    1034
              * ******************************************************************************
              * COMPLETED WATERSHEDS B, C, AND H
              * BEGINNING OF WATERSHEDS A AND I
              * ROUTES DIFFER FROM INDIVIDUAL MODELS
              * ******************************************************************************

6659          KK     I02
6660          KM        Runoff subbasin I02
6661          BA   0.431
6662          LG    0.35    0.35    3.95    0.45      46
6663          UI     308     864     399      76       0       0       0       0       0       0
6664          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6665          KK     I01
6666          KM        Runoff subbasin I01
6667          BA   0.580
6668          LG    0.35    0.35    3.95    0.46      45
6669          UI     333    1014     680     171      35       0       0       0       0       0
6670          UI       0       0       0       0       0       0       0       0       0       0
              *

6671          KK   CPI01
6672          KM        Combine I02 with I01
6673          HC       2   1.011
              *

6674          KK  RCPI01
6675          KM        Route flow from CP I01 to CP I03
6676          RS       1    FLOW      -1
6677          RC   0.050   0.045   0.050     930  0.0171
6678          RX       0     100     175     300     315     440     515     615
6679          RY    1360    1359    1358    1355    1355    1358    1359    1360
              *

6680          KK     I03
```

```
6681          KM        Runoff subbasin I03
6682          BA   0.094
6683          LG    0.35    0.35    3.95    0.48       0
6684          UI     257     102       0       0       0       0       0       0       0       0
6685          UI       0       0       0       0       0       0       0       0       0       0
              *

6686          KK   CPI03
6687          KM        Combine I01 with I03
6688          HC       2   1.104
              *

6689          KK    DI03
6690          KM           Divert flow from CP I03 into I05
6691          KM        Natural divergence of flow due to a braided channel network.
6692          DT   DVI03
6693          DI       0      60     214     467     835    1330    1965    2571    3578    8419
6694          DQ       0      30     107     234     418     665     982    1376    1853    3947
              *

6695          KK  RCPI03
6696          KM        Route remainder flow from CP I03 to CP I04
6697          RS       2    FLOW      -1
6698          RC   0.050   0.045   0.050    5060  0.0153
6699          RX       0     100     200     230     240     270     360     450
6700          RY    1310    1309    1308    1306    1306    1308    1309    1310
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6701          KK     I04
6702          KM        Runoff subbasin I04
6703          BA   0.329
6704          LG    0.35    0.35    3.95    0.48       0
6705          UI     306     721     211      32       0       0       0       0       0       0
6706          UI       0       0       0       0       0       0       0       0       0       0
              *

6707          KK   CPI04
6708          KM        Combine I03 with I04
6709          HC       2   1.433
              *

6710          KK  RCPI04
6711          KM        Route flow from CP I04 to CP I06
6712          RS       2    FLOW      -1
6713          RC   0.050   0.045   0.050    4360  0.0126
6714          RX       0     100     200     350     370     520     620     720
6715          RY    1260    1259    1258    1257    1257    1258    1259    1260
              *

6716          KK     I06
6717          KM        Runoff subbasin I06
6718          BA   0.499
6719          LG    0.35    0.35    4.00    0.47       0
6720          UI     464    1093     321      47       0       0       0       0       0       0
6721          UI       0       0       0       0       0       0       0       0       0       0
              *

6722          KK   CPI06
6723          KM        Combine I04 with I06
6724          HC       2   1.932
              *

6725          KK  RCPI06
6726          KM        Route flow from CP I06 to CP I08
6727          RS       5    FLOW      -1
6728          RC   0.050   0.045   0.050    6090  0.0101
6729          RX       0      50     350     400     410     460     760     810
6730          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

6731          KK     I08
6732          KM        Runoff subbasin I08
6733          BA   0.791
6734          LG    0.35    0.35    4.00    0.47       0
6735          UI     454    1384     926     233      49       0       0       0       0       0
6736          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
6737          KK   CPI08
6738          KM        Combine I06 with I08
6739          HC       2   2.723
              *

6740          KK  RCPI08
6741          KM        Route flow from CP I08 to CP I10
6742          RS       2    FLOW      -1
6743          RC   0.050   0.045   0.050    5220  0.0086
6744          RX       0       9      40      60      70      90     120     129
6745          RY    1141 1138.25    1138    1137    1137    1138 1138.25    1141
              *

6746          KK     I10
6747          KM        Runoff subbasin I10
6748          BA   0.497
6749          LG    0.35    0.35    4.00    0.47       0
6750          UI     355     997     459      88       0       0       0       0       0       0
6751          UI       0       0       0       0       0       0       0       0       0       0
              *

6752          KK   CPI10
6753          KM        Combine I08 with I10
6754          HC       2   3.220
              *

6755          KK  RCPI10
6756          KM        Route flow from CP I10 to CP I12
6757          RS       2    FLOW      -1
6758          RC   0.050   0.045   0.050    5260  0.0078
6759          RX       0       9      40      60      70      90     120     129
6760          RY    1101 1098.25    1098    1097    1097    1098 1098.25    1101
              *

6761          KK   DRI03
6762          KM            Return Diverted flow from CP I03 in basin I05
6763          DR   DVI03
              *

6764          KK   RDI03
6765          KM        Route diverted flow from CP I03 CP I05
6766          RS       1    FLOW      -1
6767          RC   0.050   0.045   0.050    4450  0.0171
6768          RX       0       9      35      45      50      60      85      94
6769          RY    1300 1298.25    1298    1297    1297    1298 1298.25    1300
              *

6770          KK     I05
6771          KM        Runoff subbasin I05
6772          BA   0.205
6773          LG    0.35    0.35    3.95    0.48       0
6774          UI     260     456      68       0       0       0       0       0       0       0
6775          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6776          KK   CPI05
6777          KM        Combine I03 with I05
6778          HC       2   1.310
              *

6779          KK  RCPI05
6780          KM        Route flow from CP I05 to CP I07
6781          RS       2    FLOW      -1
6782          RC   0.050   0.045   0.050    3990  0.0138
6783          RX       0     100     200     350     370     520     620     720
6784          RY    1260    1259    1258    1257    1257    1258    1259    1260
              *

6785          KK     I07
6786          KM        Runoff subbasin I07
6787          BA   0.194
6788          LG    0.35    0.35    4.00    0.47       0
6789          UI     246     432      63       0       0       0       0       0       0       0
6790          UI       0       0       0       0       0       0       0       0       0       0
              *

6791          KK   CPI07
6792          KM        Combine I05 with I07
```

```
6793          HC       2   1.503
              *

6794          KK  RCPI07
6795          KM        Route flow from CP I07 to CP I09
6796          RS       4    FLOW      -1
6797          RC   0.050   0.045   0.050    5390  0.0112
6798          RX       0      50     350     400     410     460     760     810
6799          RY    1190    1189    1188    1187    1187    1188    1189    1190
              *

6800          KK     I09
6801          KM        Runoff subbasin I09
6802          BA   0.315
6803          LG    0.35    0.35    4.00    0.47       0
6804          UI     256     665     249      39       0       0       0       0       0       0
6805          UI       0       0       0       0       0       0       0       0       0       0
              *

6806          KK   CPI09
6807          KM        Combine I07 with I09
6808          HC       2   1.819
              *

6809          KK  RCPI09
6810          KM        Route flow from CP I09 to CP I11
6811          RS       4    FLOW      -1
6812          RC   0.050   0.045   0.050    4470  0.0102
6813          RX       0     100     400     420     430     450     750     850
6814          RY    1140    1139    1138    1137    1137    1138    1139    1140
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6815          KK     I11
6816          KM        Runoff subbasin I11
6817          BA   0.289
6818          LG    0.35    0.35    3.95    0.48       0
6819          UI     150     464     363     107      25       0       0       0       0       0
6820          UI       0       0       0       0       0       0       0       0       0       0
              *

6821          KK   CPI11
6822          KM        Combine I09 with I11
6823          HC       2   2.107
              *

6824          KK  RCPI11
6825          KM        Route flow from CP I11 to CP I12
6826          RS       5    FLOW      -1
6827          RC   0.050   0.045   0.050    5400  0.0075
6828          RX       0     100     400     420     430     450     750     850
6829          RY    1100    1099    1098    1097    1097    1098    1099    1100
              *

6830          KK     I12
6831          KM        Runoff subbasin I12
6832          BA   0.509
6833          LG    0.35    0.35    4.00    0.47       0
6834          UI     326     955     541     115      32       0       0       0       0       0
6835          UI       0       0       0       0       0       0       0       0       0       0
              *

6836          KK   CPI12
6837          KM        Combine I10, I11 with I12
6838          HC       3   4.732
              *

6839          KK  RCPI12
6840          KM        Route flow from CP I12 to CP I13
6841          RS       2    FLOW      -1
6842          RC   0.050   0.045   0.050    5220  0.0067
6843          RX       0      11      50      70      80     100     140     151
6844          RY  1061.5 1058.25    1058    1057    1057    1058 1058.25  1061.5
              *

6845          KK     I13
6846          KM        Runoff subbasin I13
6847          BA   0.519
6848          LG    0.35    0.35    4.25    0.42       0
6849          UI     333     973     552     117      32       0       0       0       0       0
6850          UI       0       0       0       0       0       0       0       0       0       0
```

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                *
LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6851            KK   CPI13
6852            KM        Combine I12 with I13
6853            HC       2   5.251
                *

6854            KK  RCPI13
6855            KM        Route flow from CP I13 to CP I14
6856            RS       1    FLOW      -1
6857            RC   0.050   0.045   0.050    2560  0.0065
6858            RX       0      10      60      80      90     110     160     170
6859            RY    1041  1038.5    1038    1037    1037    1038  1038.5    1041
                *

6860            KK     I14
6861            KM        Runoff subbasin I14
6862            BA   0.240
6863            LG    0.35    0.36    5.20    0.25       0
6864            UI     465     426       0       0       0       0       0       0       0       0
6865            UI       0       0       0       0       0       0       0       0       0       0
                *

6866            KK   CPI14
6867            KM        Combine I13 with I14
6868            HC       2   5.491
                *

6869            KK     A12
6870            KM        Runoff from A12
6871            BA   1.064
6872            LG    0.35    0.34    4.50    0.34       0
6873            UI     183     576    1013    1127     669     310     142      46      35       0
6874            UI       0       0       0       0       0       0       0       0       0       0
6875            UI       0       0       0       0       0       0       0       0       0       0
                *

6876            KK  RCPA12
6877            KM        Route flow from CP A12 to CP A41
6878            RS       9    FLOW      -1
6879            RC   0.050   0.045   0.050   13850  0.0049
6880            RX       0     163     326     490     510     674     837    1000
6881            RY    1070    1069    1068    1067    1067    1068    1069    1070
                *

6882            KK     A41
6883            KM        Runoff from A41
6884            BA   0.907
6885            LG    0.39    0.15    4.55    0.45       9
6886            UI      75     249     472     594     568     491     358     227     157      99
6887            UI      69      46      38       9       9       9       9       9       9       9
6888            UI       0       0       0       0       0       0       0       0       0       0
6889            UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6890            KK   CPA41
6891            KM        Combine A12 with A41
6892            HC       2   1.971
                *

6893            KK  A41RIV
6894            KM        Combine H86RIV, I14 with A41
6895            KM        Rainbow Boulevard crossing at A41RIV
6896            HC       3 335.511
                *

6897            KK  RCPA41
6898            KM        Route flow in Waterman Wash from CP A41RIV to CP A42RIV (WATERMAN WASH)
6899            RS       3    FLOW      -1
6900            RC   0.050   0.035   0.050    2560  0.0032
6901            RX       0    1500    3700    3920    4000    4100    6000    8300
6902            RY    1060    1050    1045    1040    1040    1046    1050    1060
                *

6903            KK     I15
6904            KM        Runoff subbasin I15
```

```
6905          BA   0.663
6906          LG    0.35     0.35     4.10     0.45       14
6907          UI     425     1244      704      151       40        0        0        0        0        0
6908          UI       0        0        0        0        0        0        0        0        0        0
              *

6909          KK  RCPI15
6910          KM        Route flow from CP I15 to CP I18
6911          RS       2     FLOW       -1
6912          RC   0.050    0.045    0.050     5330   0.0115
6913          RX       0        9       60       70       75       85      135      144
6914          RY    1210 1208.25     1208     1207     1207     1208 1208.25     1210
              *

6915          KK     I16
6916          KM        Runoff subbasin I16
6917          BA   0.487
6918          LG    0.35     0.35     3.95     0.47       24
6919          UI     522     1092      238        0        0        0        0        0        0        0
6920          UI       0        0        0        0        0        0        0        0        0        0
              *

6921          KK  RCPI16
6922          KM        Route flow from CP I16 to CP I18
6923          RS       2     FLOW       -1
6924          RC   0.050    0.045    0.050     5420   0.0115
6925          RX       0        9       40       50       55       65       95      104
6926          RY  1210.5 1208.25     1208     1207     1207     1208 1208.25   1210.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6927          KK     I17
6928          KM        Runoff subbasin I17
6929          BA   0.363
6930          LG    0.35     0.35     4.40     0.37       33
6931          UI     295      766      286       47        0        0        0        0        0        0
6932          UI       0        0        0        0        0        0        0        0        0        0
              *

6933          KK  RCPI17
6934          KM        Route flow from CP I17 to CP I18
6935          RS       2     FLOW       -1
6936          RC   0.050    0.045    0.050     5190   0.0115
6937          RX       0        9       35       45       50       60       85       94
6938          RY    1210 1208.25     1208     1207     1207     1208 1208.25     1210
              *

6939          KK     I18
6940          KM        Runoff subbasin I18
6941          BA   0.664
6942          LG    0.35     0.35     3.95     0.48        0
6943          UI     474     1332      614      118        0        0        0        0        0        0
6944          UI       0        0        0        0        0        0        0        0        0        0
              *

6945          KK   CPI18
6946          KM        Combine I15, I16, I17 with I18
6947          HC       4    2.176
              *

6948          KK  RCPI18
6949          KM        Route flow from CP I18 to CP I19
6950          RS       2     FLOW       -1
6951          RC   0.050    0.045    0.050     5000   0.0098
6952          RX       0        9      110      120      125      135      235      244
6953          RY    1161 1158.75     1158     1157     1157     1158 1158.75     1161
              *

6954          KK     I19
6955          KM        Runoff subbasin I19
6956          BA   0.354
6957          LG    0.35     0.35     4.00     0.47        0
6958          UI     288      747      279       45        0        0        0        0        0        0
6959          UI       0        0        0        0        0        0        0        0        0        0
              *

6960          KK   CPI19
6961          KM        Combine I18 with I19
6962          HC       2    2.530
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6963          KK  RCPI19
6964          KM        Route flow from CP I19 to CP I20
6965          RS       3    FLOW      -1
6966          RC   0.050   0.045   0.050    6800  0.0082
6967          RX       0      10     110     120     125     135     235     245
6968          RY    1111    1109    1108    1107    1107    1108    1109    1111
              *

6969          KK     I20
6970          KM        Runoff subbasin I20
6971          BA   0.619
6972          LG    0.35    0.35    4.00    0.47       0
6973          UI     321     994     778     229      52       0       0       0       0       0
6974          UI       0       0       0       0       0       0       0       0       0       0
              *

6975          KK   CPI20
6976          KM        Combine I19 with I20
6977          HC       2   3.150
              *

6978          KK  RCPI20
6979          KM        Route flow from CP I20 to CP I21
6980          RS       2    FLOW      -1
6981          RC   0.050   0.045   0.050    5250  0.0067
6982          RX       0       9      80      90     110     120     190     199
6983          RY    1061 1058.25    1058    1057    1057    1058 1058.25    1061
              *

6984          KK     I21
6985          KM        Runoff subbasin I21
6986          BA   0.469
6987          LG    0.35    0.35    4.00    0.47       0
6988          UI     301     880     498     107      28       0       0       0       0       0
6989          UI       0       0       0       0       0       0       0       0       0       0
              *

6990          KK   CPI21
6991          KM        Combine I20 with I21
6992          HC       2   3.619
              *

6993          KK  RCPI21
6994          KM        Route flow from CP I21 to CP I22
6995          RS       1    FLOW      -1
6996          RC   0.050   0.045   0.050    3860  0.0065
6997          RX       0       9      60      80      90     110     160     169
6998          RY    1041 1038.25    1038    1037    1037    1038 1038.25    1041
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6999          KK     I22
7000          KM        Runoff subbasin I22
7001          BA   0.385
7002          LG    0.44    0.13    4.40    0.50       0
7003          UI      58     225     354     326     224     133      67      43      25      10
7004          UI       6       5       5       6       0       0       0       0       0       0
7005          UI       0       0       0       0       0       0       0       0       0       0
              *

7006          KK   CPI22
7007          KM        Combine I21 with I22
7008          HC       2   4.004
              *

7009          KK     A40
7010          KM        Runoff from A40
7011          BA   0.498
7012          LG    0.35    0.35    4.90    0.29       0
7013          UI     191     575     723     310      93      23       0       0       0       0
7014          UI       0       0       0       0       0       0       0       0       0       0
              *

7015          KK  RCPA40
7016          KM        Route flow from CP A40 to CP A42
7017          RS       8    FLOW      -1
7018          RC   0.050   0.045   0.050   10130  0.0054
```

```
7019          RX       0     163     326     490     510     674     837    1000
7020          RY    1051    1049    1048    1047    1047    1048    1049    1051
              *

7021          KK     A42
7022          KM        Runoff from A42
7023          BA   0.852
7024          LG    0.50    0.00    4.70    0.47       0
7025          UI      37      45      97     197     213     284     311     310     284     270
7026          UI     234     209     154     123     109      81      62      49      42      34
7027          UI      29      21      21      18       5       4       5       4       5       5
7028          UI       4       5       5       4       5       4       5       5       0       0
7029          UI       0       0       0       0       0       0       0       0       0       0
              *

7030          KK   CPA42
7031          KM        Combine A40 with A42
7032          HC       2   1.350
              *

7033          KK  A42RIV
7034          KM        Combine A41RIV, I22 with A42
7035          HC       3 340.865
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7036          KK  RCPA42
7037          KM        Route flow in Waterman Wash from CP A42RIV to CP A44RIV (WATERMAN WASH)
7038          RS       2    FLOW      -1
7039          RC   0.050   0.035   0.050    2250  0.0024
7040          RX       0    1500    3300    3500    3580    3700    5000    7200
7041          RY    1040    1030    1025    1020    1020    1026    1030    1040
              *

7042          KK     A13
7043          KM        Runoff from A13
7044          BA   0.580
7045          LG    0.33    0.33    5.80    0.19       2
7046          UI      93     298     503     627     381     193      84      33      18       0
7047          UI       0       0       0       0       0       0       0       0       0       0
7048          UI       0       0       0       0       0       0       0       0       0       0
              *

7049          KK  RCPA13
7050          KM        Route flow from CP A13 to CP A39
7051          RS       6    FLOW      -1
7052          RC   0.050   0.045   0.050    6080  0.0053
7053          RX       0     163     326     490     510     674     837    1000
7054          RY    1091    1089    1088    1087    1087    1088    1089    1091
              *

7055          KK     A39
7056          KM        Runoff from A39
7057          BA   0.495
7058          LG    0.50    0.00    4.80    0.45       0
7059          UI      25      39      96     143     186     214     213     184     184     138
7060          UI     113      83      74      46      37      31      23      18      14      15
7061          UI       5       3       3       3       4       3       3       3       3       4
7062          UI       3       3       0       0       0       0       0       0       0       0
7063          UI       0       0       0       0       0       0       0       0       0       0
              *

7064          KK   CPA39
7065          KM        Combine A13 with A39
7066          HC       2   1.075
              *

7067          KK  RCPA39
7068          KM        Route flow from CP A39 to CP A43
7069          RS       4    FLOW      -1
7070          RC   0.050   0.045   0.050    5310  0.0077
7071          RX       0     163     326     490     510     674     837    1000
7072          RY    1060    1059    1058    1057    1057    1058    1059    1060
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7073          KK     A43
7074          KM        Runoff from A43
```

```
7075          BA   0.505
7076          LG    0.50    0.00    4.80    0.45       0
7077          UI      33      71     176     231     274     261     242     179     135      98
7078          UI      69      47      36      28      18      18       4       4       4       4
7079          UI       5       4       4       4       4       0       0       0       0       0
7080          UI       0       0       0       0       0       0       0       0       0       0
              *

7081          KK   CPA43
7082          KM        Combine A39 with A43
7083          HC       2   1.580
              *

7084          KK  RCPA43
7085          KM        Route flow from CP A43 to CP A44
7086          RS       5    FLOW      -1
7087          RC   0.050   0.045   0.050    5230  0.0039
7088          RX       0     163     326     490     510     674     837    1000
7089          RY    1030    1029    1028    1027    1027    1028    1029    1030
              *

7090          KK     A44
7091          KM        Runoff from A44
7092          BA   0.366
7093          LG    0.45    0.12    4.70    0.41       0
7094          UI      33     113     202     258     231     194     135      88      52      35
7095          UI      24      18       9       3       4       4       4       4       3       0
7096          UI       0       0       0       0       0       0       0       0       0       0
7097          UI       0       0       0       0       0       0       0       0       0       0
              *

7098          KK   CPA44
7099          KM        Combine A43 with A44
7100          HC       2   1.945
              *

7101          KK  A44RIV
7102          KM        Combine A42RIV with A44
7103          KM        Queen Creek Road crossing A44RIV
7104          HC       2 342.810
              *

7105          KK  RCPA44
7106          KM        Route flow in Waterman Wash from CP A44RIV to CP I36RIV (WATERMAN WASH)
7107          RS       2    FLOW      -1
7108          RC   0.050   0.035   0.050    3510  0.0033
7109          RX       0    1700    3500    3700    3780    3900    7800   10200
7110          RY    1030    1020    1014    1010    1010    1015    1020    1030
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7111          KK     I24
7112          KM        Runoff subbasin I24
7113          BA   0.282
7114          LG    0.35    0.35    4.65    0.32      26
7115          UI     358     628      92       0       0       0       0       0       0       0
7116          UI       0       0       0       0       0       0       0       0       0       0
              *

7117          KK  RCPI24
7118          KM        Route flow from CP I24 to CP I26
7119          RS       6    FLOW      -1
7120          RC   0.050   0.045   0.050    6360  0.0138
7121          RX       0     100     400     420     430     450     750     850
7122          RY    1210    1209    1208    1207    1207    1208    1209    1210
              *

7123          KK     I26
7124          KM        Runoff subbasin I26
7125          BA   0.532
7126          LG    0.35    0.35    4.15    0.44       1
7127          UI     380    1067     491      96       0       0       0       0       0       0
7128          UI       0       0       0       0       0       0       0       0       0       0
              *

7129          KK   CPI26
7130          KM        Combine I24 with I26
7131          HC       2   0.814
              *

7132          KK  RCPI26
```

```
7133          KM        Route flow from CP I26 to CP I28
7134          RS       5    FLOW      -1
7135          RC   0.050   0.045   0.050    5180  0.0096
7136          RX       0     100     400     420     430     450     750     850
7137          RY    1160    1159    1158    1157    1157    1158    1159    1160
              *

7138          KK     I28
7139          KM        Runoff subbasin I28
7140          BA   0.442
7141          LG    0.35    0.35    4.00    0.47       0
7142          UI     316     886     409      78       0       0       0       0       0       0
7143          UI       0       0       0       0       0       0       0       0       0       0
              *

7144          KK   CPI28
7145          KM        Combine I26 with I28
7146          HC       2   1.256
              *
1                                        HEC-1 INPUT                                                    PAGE190

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7147          KK  RCPI28
7148          KM        Route flow from CP I28 to CP I30
7149          RS       4    FLOW      -1
7150          RC   0.050   0.045   0.050    4590  0.0089
7151          RX       0     100     400     420     430     450     750     850
7152          RY    1110    1109    1108    1107    1107    1108    1109    1110
              *

7153          KK     I30
7154          KM        Runoff subbasin I30
7155          BA   0.423
7156          LG    0.35    0.35    4.00    0.47       0
7157          UI     393     927     272      40       0       0       0       0       0       0
7158          UI       0       0       0       0       0       0       0       0       0       0
              *

7159          KK   CPI30
7160          KM        Combine I28 with I30
7161          HC       2   1.678
              *

7162          KK  RCPI30
7163          KM        Route flow from CP I30 to CP I32
7164          RS       5    FLOW      -1
7165          RC   0.050   0.045   0.050    5280  0.0077
7166          RX       0     100     400     420     430     450     750     850
7167          RY    1070    1069    1068    1067    1067    1068    1069    1070
              *

7168          KK     I32
7169          KM        Runoff subbasin I32
7170          BA   0.506
7171          LG    0.35    0.35    4.00    0.47       0
7172          UI     324     950     537     115      31       0       0       0       0       0
7173          UI       0       0       0       0       0       0       0       0       0       0
              *

7174          KK   CPI32
7175          KM        Combine I30 with I32
7176          HC       2   2.184
              *

7177          KK  RCPI32
7178          KM        Route flow from CP I32 to CP I34
7179          RS       6    FLOW      -1
7180          RC   0.050   0.045   0.050    5290  0.0062
7181          RX       0     100     400     420     430     450     750     850
7182          RY    1030    1029    1028    1027    1027    1028    1029    1030
              *
1                                        HEC-1 INPUT                                                    PAGE191

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7183          KK     I34
7184          KM        Runoff subbasin I34
7185          BA   0.510
7186          LG    0.42    0.18    4.40    0.48       0
7187          UI      58     203     313     515     382     253     125      64      29      14
7188          UI      14       0       0       0       0       0       0       0       0       0
```

```
7189          UI       0       0       0       0       0       0       0       0       0       0
              *

7190          KK   CPI34
7191          KM        Combine I32 with I34
7192          HC       2   2.694
              *

7193          KK  RCPI34
7194          KM        Route flow from CP I34 to CP I36
7195          RS       2    FLOW      -1
7196          RC   0.050   0.045   0.050    3130  0.0044
7197          RX       0       9      35      55      65      85     110     119
7198          RY    1016 1013.25    1013    1012    1012    1013 1013.25    1016
              *

7199          KK     I36
7200          KM        Runoff subbasin I36
7201          BA   0.194
7202          LG    0.35    0.35    4.45    0.37       0
7203          UI     208     435      94       0       0       0       0       0       0       0
7204          UI       0       0       0       0       0       0       0       0       0       0
              *

7205          KK   CPI36
7206          KM        Combine I34 with I36
7207          HC       2   2.888
              *

7208          KK  I36RIV
7209          KM        Combine A44RIV with flow from I36
7210          HC       2 345.689
              *

7211          KK  RCPI36
7212          KM        Route flow from CP I36RIV to CP I37RIV (WATERMAN WASH)
7213          RS       1    FLOW      -1
7214          RC   0.050   0.035   0.050    2270  0.0030
7215          RX       0    1700    3080    3155    3225    3300    5400    7400
7216          RY    1010    1000     995     990     990     995    1000    1010
              *

7217          KK     A01
7218          KM        Runoff from A01
7219          BA   6.980
7220          LG    0.35    0.35    3.33    0.72       0
7221          UI     491    1742    2748    3817    5796    4414    3200    2184    1047     688
7222          UI     399     150     150     150       0       0       0       0       0       0
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7223          UI       0       0       0       0       0       0       0       0       0       0
              *

7224          KK  RCPA01
7225          KM        Route flow from CP A01 to CP A02
7226          RS       3    FLOW      -1
7227          RC   0.050   0.045   0.050    7330  0.0054
7228          RX       0      15     200     245     290     335     485     500
7229          RY    1300    1297    1296    1292    1292    1296    1297    1300
              *

7230          KK     A02
7231          KM        Runoff from A02
7232          BA   2.379
7233          LG    0.35    0.35    2.76    1.08       0
7234          UI     645    1892    3308    2049     839     312      94       0       0       0
7235          UI       0       0       0       0       0       0       0       0       0       0
              *

7236          KK   CPA02
7237          KM        Combine A01 with A02
7238          HC       2   9.359
              *

7239          KK   DA02A
7240          KM            Divert flow from A02 into A03
7241          KM        Natural divergence of flow due to a braided channel network.
7242          DT  DVA02A
7243          DI       0      47     155     315     528     935    1662    2704    4570    6736
7244          DQ       0      24      77     158     264     466     844    1353    2247    3303
              *
```

```
7245          KK   DA02B
7246          KM           Divert flow from A02 into A10
7247          KM        Natural divergence of flow due to a braided channel network.
7248          DT  DVA02B
7249          DI       0      24      83     161     521    1492    2650    4072    5732    7611
7250          DQ       0      12      42      78     241     684    1204    1842    2586    3426
              *

7251          KK  RCPA02
7252          KM        Route remainder flow from CP A02 to CP A11
7253          RS      10    FLOW      -1
7254          RC   0.050   0.045   0.050   15310  0.0079
7255          RX       0       5     105     185     225     305     405     410
7256          RY    1219    1218    1218    1216    1216    1218    1218    1219
              *

7257          KK     A11
7258          KM        Runoff from A11
7259          BA   1.804
7260          LG    0.35    0.35    3.21    0.78       0
7261          UI     206     718    1106    1822    1350     897     442     225     104      49
7262          UI      49       0       0       0       0       0       0       0       0       0
7263          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7264          KK   CPA11
7265          KM        Combine A02 with A11
7266          HC       2  11.163
              *

7267          KK    DA11
7268          KM           Divert flow from A11 into A15
7269          KM        Natural divergence of flow due to a braided channel network.
7270          DT   DVA11
7271          DI       0      14      62     159     545    1557    2782    4286    6039
7272          DQ       0       7      31      79     272     779    1391    2143    3020
              *

7273          KK  RCPA11
7274          KM        Route remainder flow from CP A11 to CP A14
7275          RS       4    FLOW      -1
7276          RC   0.050   0.045   0.050    6510  0.0080
7277          RX       0       5      50      80      90     120     165     170
7278          RY    1120    1119    1118    1117    1117    1118    1119    1120
              *

7279          KK     A14
7280          KM        Runoff from A14
7281          BA   0.856
7282          LG    0.33    0.30    4.70    0.31       2
7283          UI      91     327     496     828     657     440     241     115      59      23
7284          UI      22       0       0       0       0       0       0       0       0       0
7285          UI       0       0       0       0       0       0       0       0       0       0
              *

7286          KK   CPA14
7287          KM        Combine A11 with A14
7288          HC       2  12.019
              *

7289          KK  RCPA14
7290          KM        Route flow from CP A14 to CP A37
7291          RS       5    FLOW      -1
7292          RC   0.050   0.045   0.050   10430  0.0072
7293          RX       0       5      55      90     100     135     195     200
7294          RY    1060    1059    1058    1056    1056    1058    1059    1060
              *

7295          KK     A38
7296          KM        Runoff from A38
7297          BA   0.482
7298          LG    0.50    0.00    4.55    0.52       0
7299          UI      25      41     101     147     192     213     214     177     173     142
7300          UI      99      76      65      43      34      26      24      14      14      10
7301          UI       3       4       3       3       3       3       3       3       4       3
7302          UI       3       0       0       0       0       0       0       0       0       0
7303          UI       0       0       0       0       0       0       0       0       0       0
              *
```

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7304          KK  RCPA38
7305          KM        Route flow from CP A38 to CP A37
7306          RS      10    FLOW      -1
7307          RC   0.050   0.045   0.050    9320  0.0065
7308          RX       0     163     326     490     510     674     837    1000
7309          RY    1060    1059    1058    1057    1057    1058    1059    1060
              *

7310          KK     A37
7311          KM        Runoff from A37
7312          BA   1.346
7313          LG    0.34    0.32    4.90    0.29       1
7314          UI     143     513     781    1303    1032     693     378     180      94      36
7315          UI      36       0       0       0       0       0       0       0       0       0
7316          UI       0       0       0       0       0       0       0       0       0       0
              *

7317          KK   CPA37
7318          KM        Combine A14, A38 with A37
7319          HC       3  13.848
              *

7320          KK  RCPA37
7321          KM        Route flow from CP A37 to CP A45
7322          RS       5    FLOW      -1
7323          RC   0.050   0.045   0.050    7020  0.0071
7324          RX       0     163     326     490     510     674     837    1000
7325          RY    1015    1014    1013    1012    1012    1013    1014    1015
              *

7326          KK     A45
7327          KM        Runoff from A45
7328          BA   0.533
7329          LG    0.37    0.30    4.50    0.39       0
7330          UI      92     288     508     565     335     155      70      24      17       0
7331          UI       0       0       0       0       0       0       0       0       0       0
7332          UI       0       0       0       0       0       0       0       0       0       0
              *

7333          KK   CPA45
7334          KM        Combine A37 with A45
7335          HC       2  14.381
              *

7336          KK     I23
7337          KM        Runoff subbasin I23
7338          BA   0.414
7339          LG    0.35    0.35    4.15    0.41      56
7340          UI     487     704     260      97      34      21       0       0       0       0
7341          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7342          KK  RCPI23
7343          KM        Route flow from CP I23 to CP I25
7344          RS       3    FLOW      -1
7345          RC   0.050   0.045   0.050    5260  0.0212
7346          RX       0     100     230     245     255     260     400     500
7347          RY    1300    1299    1298    1296    1296    1298    1299    1300
              *

7348          KK     I25
7349          KM        Runoff subbasin I25
7350          BA   0.318
7351          LG    0.35    0.35    4.55    0.35       0
7352          UI     227     638     293      58       0       0       0       0       0       0
7353          UI       0       0       0       0       0       0       0       0       0       0
              *

7354          KK   CPI25
7355          KM        Combine I23 with I25
7356          HC       2   0.732
              *

7357          KK  RCPI25
7358          KM        Route flow from CP I25 to CP I27
7359          RS       2    FLOW      -1
7360          RC   0.050   0.045   0.050    5160  0.0118
```

```
7361          RX       0       8      60      70      75      85     145     153
7362          RY    1200  1198.5    1198    1197    1197    1198  1198.5    1200
              *

7363          KK     I27
7364          KM        Runoff subbasin I27
7365          BA   0.403
7366          LG    0.35    0.35    4.25    0.42       0
7367          UI     328     850     318      51       0       0       0       0       0       0
7368          UI       0       0       0       0       0       0       0       0       0       0
              *

7369          KK   CPI27
7370          KM        Combine I25 with I27
7371          HC       2   1.135
              *

7372          KK  RCPI27
7373          KM        Route flow from CP I27 to CP I29
7374          RS       1    FLOW      -1
7375          RC   0.050   0.045   0.050    3890  0.0100
7376          RX       0      11      35      45      50      60      85      96
7377          RY  1150.5 1148.25    1148    1147    1147    1148 1148.25  1150.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7378          KK     I29
7379          KM        Runoff subbasin I29
7380          BA   0.373
7381          LG    0.35    0.35    4.00    0.47       0
7382          UI     399     837     182       0       0       0       0       0       0       0
7383          UI       0       0       0       0       0       0       0       0       0       0
              *

7384          KK   CPI29
7385          KM        Combine I27 with I29
7386          HC       2   1.508
              *

7387          KK  RCPI29
7388          KM        Route flow from CP I29 to CP I31
7389          RS       1    FLOW      -1
7390          RC   0.050   0.045   0.050    3780  0.0090
7391          RX       0      11      35      45      50      60      85      96
7392          RY  1121.5 1118.25    1118    1117    1117    1118 1118.25  1121.5
              *

7393          KK     I31
7394          KM        Runoff subbasin I31
7395          BA   0.361
7396          LG    0.35    0.35    3.95    0.48       0
7397          UI     458     804     118       0       0       0       0       0       0       0
7398          UI       0       0       0       0       0       0       0       0       0       0
              *

7399          KK   CPI31
7400          KM        Combine I29 with I31
7401          HC       2   1.869
              *

7402          KK  RCPI31
7403          KM        Route flow from CP I31 to CP I33
7404          RS       2    FLOW      -1
7405          RC   0.050   0.045   0.050    5320  0.0077
7406          RX       0       9      35      55      65      85     110     119
7407          RY    1071 1068.25    1068    1067    1067    1068 1068.25    1071
              *

7408          KK     I33
7409          KM        Runoff subbasin I33
7410          BA   0.504
7411          LG    0.35    0.35    4.00    0.47       0
7412          UI     323     946     534     115      31       0       0       0       0       0
7413          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7414          KK   CPI33
```

```
7415          KM        Combine I31 with I33
7416          HC       2   2.373
              *

7417          KK  RCPI33
7418          KM        Route flow from CP I33 to CP I35
7419          RS       2    FLOW      -1
7420          RC   0.050   0.045   0.050    5310  0.0062
7421          RX       0       9      35      55      65      85     110     119
7422          RY    1031 1028.25    1028    1027    1027    1028 1028.25    1031
              *

7423          KK     I35
7424          KM        Runoff subbasin I35
7425          BA   0.507
7426          LG    0.37    0.30    4.70    0.33       0
7427          UI     194     586     736     315      95      24       0       0       0       0
7428          UI       0       0       0       0       0       0       0       0       0       0
              *

7429          KK   CPI35
7430          KM        Combine I33 with I35
7431          HC       2   2.880
              *

7432          KK  RCPI35
7433          KM        Route flow from CP I35 to CP I37
7434          RS       2    FLOW      -1
7435          RC   0.050   0.045   0.050    4060  0.0048
7436          RX       0       9      35      55      65      85     110     119
7437          RY    1017 1013.25    1013    1012    1012    1013 1013.25    1017
              *

7438          KK     I37
7439          KM        Runoff subbasin I37
7440          BA   0.409
7441          LG    0.35    0.37    5.20    0.25       0
7442          UI     333     863     322      52       0       0       0       0       0       0
7443          UI       0       0       0       0       0       0       0       0       0       0
              *

7444          KK   CPI37
7445          KM        Combine I35 with I37
7446          HC       2   3.289
              *

7447          KK  I37RIV
7448          KM        Combine I36RIV, A45 with I37
7449          HC       3 363.368
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7450          KK  RCPI37
7451          KM        Route flow from CP I37RIV to CP A46RIV (WATERMAN WASH)
7452          RS       1    FLOW      -1
7453          RC   0.050   0.035   0.050    2050  0.0031
7454          RX       0    2500    5060    5140    5220    5300    7500    8600
7455          RY    1000     990     985     980     980     985     990    1000
              *

7456          KK     A36
7457          KM        Runoff from A36
7458          BA   0.435
7459          LG    0.34    0.33    4.90    0.29       1
7460          UI     100     302     553     405     202      75      26      15       0       0
7461          UI       0       0       0       0       0       0       0       0       0       0
              *

7462          KK  RCPA36
7463          KM        Route flow from CP A36 to CP A46
7464          RS       5    FLOW      -1
7465          RC   0.050   0.045   0.050    5270  0.0058
7466          RX       0     163     326     490     510     674     837    1000
7467          RY    1010    1009    1008    1007    1007    1008    1009    1010
              *

7468          KK     A46
7469          KM        Runoff from A46
7470          BA   0.198
7471          LG    0.49    0.03    4.65    0.47       0
7472          UI      11      20      55      71      92      96      86      82      64      47
```

```
7473          UI      34      29      18      15      10       9       6       6       2       1
7474          UI       2       1       2       1       2       1       2       1       0       0
7475          UI       0       0       0       0       0       0       0       0       0       0
              *

7476          KK   CPA46
7477          KM        Combine A36 with A46
7478          HC       2   0.633
              *

7479          KK  A46RIV
7480          KM        Combine A45RIV with A46
7481          HC       2 364.001
              *

7482          KK  RCPA46
7483          KM        Route flow in Waterman Wash from CP A46RIV to CP I50RIV (WATERMAN WASH)
7484          RS       1    FLOW      -1
7485          RC   0.050   0.035   0.050    2250  0.0029
7486          RX       0    3700    3900    4050    4200    4550    4900    6200
7487          RY     990     980     979     975     975     979     980     990
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7488          KK     I38
7489          KM        Runoff subbasin I38
7490          BA   0.248
7491          LG    0.35    0.35    4.40    0.37      41
7492          UI     230     544     159      24       0       0       0       0       0       0
7493          UI       0       0       0       0       0       0       0       0       0       0
              *

7494          KK  RCPI38
7495          KM        Route flow from CP I38 to CP I39
7496          RS       3    FLOW      -1
7497          RC   0.050   0.045   0.050    4510  0.0156
7498          RX       0     100     225     235     240     250     375     500
7499          RY    1220    1219    1218    1217    1217    1218    1219    1220
              *

7500          KK     I39
7501          KM        Runoff subbasin I39
7502          BA   0.217
7503          LG    0.35    0.35    4.25    0.42       0
7504          UI     276     482      71       0       0       0       0       0       0       0
7505          UI       0       0       0       0       0       0       0       0       0       0
              *

7506          KK   CPI39
7507          KM        Combine I38 with I39
7508          HC       2   0.465
              *

7509          KK  RCPI39
7510          KM        Route flow from CP I39 to CP I40
7511          RS       2    FLOW      -1
7512          RC   0.050   0.045   0.050    5140  0.0115
7513          RX       0       9      35      50      55      70      95     104
7514          RY    1190 1188.25    1188    1187    1187    1188 1188.25    1190
              *

7515          KK     I40
7516          KM        Runoff subbasin I40
7517          BA   0.408
7518          LG    0.35    0.35    4.20    0.43       0
7519          UI     332     861     322      51       0       0       0       0       0       0
7520          UI       0       0       0       0       0       0       0       0       0       0
              *

7521          KK   CPI40
7522          KM        Combine I39 with I40
7523          HC       2   0.873
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7524          KK  RCPI40
7525          KM        Route flow from CP I40 to CP I41
7526          RS       2    FLOW      -1
```

```
7527          RC   0.050   0.045   0.050    5160  0.0096
7528          RX       0      10      35      45      55      65      90     100
7529          RY  1130.5  1128.5    1128    1127    1127    1128  1128.5  1130.5
              *

7530          KK     I41
7531          KM        Runoff subbasin I41
7532          BA   0.476
7533          LG    0.35    0.35    4.00    0.47       0
7534          UI     387    1005     375      60       0       0       0       0       0       0
7535          UI       0       0       0       0       0       0       0       0       0       0
              *

7536          KK   CPI41
7537          KM        Combine I40 with I41
7538          HC       2  1.350
              *

7539          KK  RCPI41
7540          KM        Route flow from CP I41 to CP I42
7541          RS       4    FLOW      -1
7542          RC   0.050   0.045   0.050    5250  0.0087
7543          RX       0     100     400     420     430     450     750     850
7544          RY    1080    1079    1078    1077    1077    1078    1079    1080
              *

7545          KK     I42
7546          KM        Runoff subbasin I42
7547          BA   0.422
7548          LG    0.30    0.25    3.95    0.48       5
7549          UI     105     313     562     380     172      67      18      16       0       0
7550          UI       0       0       0       0       0       0       0       0       0       0
              *

7551          KK   CPI42
7552          KM        Combine I41 with I42
7553          HC       2   1.771
              *

7554          KK  RCPI42
7555          KM        Route flow from CP I42 to CP I43
7556          RS       2    FLOW      -1
7557          RC   0.050   0.045   0.050    5330  0.0075
7558          RX       0      10      35      55      65      85     110     120
7559          RY  1040.5  1038.5    1038    1037    1037    1038  1038.5  1040.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7560          KK     I43
7561          KM        Runoff subbasin I43
7562          BA   0.432
7563          LG    0.35    0.35    4.50    0.36       0
7564          UI     277     811     458      98      27       0       0       0       0       0
7565          UI       0       0       0       0       0       0       0       0       0       0
              *

7566          KK   CPI43
7567          KM        Combine I42 with I43
7568          HC       2   2.203
              *

7569          KK  RCPI43
7570          KM        Route flow from CP I43 to CP I49
7571          RS       1    FLOW      -1
7572          RC   0.050   0.045   0.050    2760  0.0077
7573          RX       0       9      35      55      65      85     110     119
7574          RY    1010 1008.25    1008    1007    1007    1008 1008.25    1010
              *

7575          KK     I44
7576          KM        Runoff subbasin I44
7577          BA   0.709
7578          LG    0.35    0.35    4.15    0.44      20
7579          UI     454    1331     753     161      43       0       0       0       0       0
7580          UI       0       0       0       0       0       0       0       0       0       0
              *

7581          KK  RCPI44
7582          KM        Route flow from CP I44 to CP I45
7583          RS       2    FLOW      -1
7584          RC   0.050   0.045   0.050    5170  0.0113
```

```
7585          RX       0       9      60      70      75      80     130     139
7586          RY  1200.5 1198.25    1198    1197    1197    1198 1198.25  1200.5
              *

7587          KK     I45
7588          KM        Runoff subbasin I45
7589          BA   0.351
7590          LG    0.35    0.35    4.45    0.37       0
7591          UI     286     740     277      45       0       0       0       0       0       0
7592          UI       0       0       0       0       0       0       0       0       0       0
              *

7593          KK   CPI45
7594          KM        Combine I44 with I45
7595          HC       2   1.060
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7596          KK  RCPI45
7597          KM        Route flow from CP I45 to CP I46
7598          RS       2    FLOW      -1
7599          RC   0.050   0.045   0.050    5390  0.0111
7600          RX       0       8      60      70      75      85     135     143
7601          RY  1140.5  1138.5    1138    1137    1137    1138  1138.5  1140.5
              *

7602          KK     I46
7603          KM        Runoff subbasin I46
7604          BA   0.460
7605          LG    0.35    0.35    4.10    0.46       0
7606          UI     329     922     425      82       0       0       0       0       0       0
7607          UI       0       0       0       0       0       0       0       0       0       0
              *

7608          KK   CPI46
7609          KM        Combine I45 with I46
7610          HC       2   1.520
              *

7611          KK  RCPI46
7612          KM        Route flow from CP I46 to CP I47
7613          RS       2    FLOW      -1
7614          RC   0.050   0.045   0.050    5230  0.0087
7615          RX       0       9      35      55      65      85     110     119
7616          RY    1081 1078.25    1078    1077    1077    1078 1078.25    1081
              *

7617          KK     I47
7618          KM        Runoff subbasin I47
7619          BA   0.349
7620          LG    0.30    0.25    4.00    0.47       6
7621          UI      80     242     445     324     162      60      21      12       0       0
7622          UI       0       0       0       0       0       0       0       0       0       0
              *

7623          KK   CPI47
7624          KM        Combine I46 with I47
7625          HC       2   1.868
              *

7626          KK  RCPI47
7627          KM        Route flow from CP I47 to CP I48
7628          RS       2    FLOW      -1
7629          RC   0.050   0.045   0.050    5360  0.0065
7630          RX       0       9      50      70      80     100     140     149
7631          RY    1026 1023.25    1023    1022    1022    1023 1023.25    1026
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7632          KK     I48
7633          KM        Runoff subbasin I48
7634          BA   0.337
7635          LG    0.35    0.35    4.30    0.41       0
7636          UI     241     675     312      60       0       0       0       0       0       0
7637          UI       0       0       0       0       0       0       0       0       0       0
              *

7638          KK   CPI48
```

```
7639          KM        Combine I47 with I48
7640          HC       2   2.206
              *

7641          KK  RCPI48
7642          KM        Route flow from CP I48 to CP I49
7643          RS       1    FLOW      -1
7644          RC   0.050   0.045   0.050    2920  0.0077
7645          RX       0       9      35      55      65      85     110     119
7646          RY    1011 1008.25    1008    1007    1007    1008 1008.25    1011
              *

7647          KK     I49
7648          KM        Runoff subbasin I49
7649          BA   0.383
7650          LG    0.35    0.35    4.60    0.34       1
7651          UI     487     852     125       0       0       0       0       0       0       0
7652          UI       0       0       0       0       0       0       0       0       0       0
              *

7653          KK   CPI49
7654          KM        Combine I43, I48 with I49
7655          HC       3   4.792
              *

7656          KK  RCPI49
7657          KM        Route flow from CP I49 to CP I50
7658          RS       2    FLOW      -1
7659          RC   0.050   0.045   0.050    4260  0.0060
7660          RX       0      10      60      80      90     110     160     170
7661          RY   991.5   988.5     988     987     987     988   988.5   991.5
              *

7662          KK     I61
7663          KM        Runoff subbasin I61
7664          BA   0.250
7665          LG    0.35    0.35    4.65    0.32       9
7666          UI     683     273       0       0       0       0       0       0       0       0
7667          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7668          KK  RCPI61
7669          KM        Route flow from CP I61 to CP I50
7670          RS       4    FLOW      -1
7671          RC   0.050   0.045   0.050    4060  0.0083
7672          RX       0     100     400     420     430     450     750     850
7673          RY     990     989     988     987     987     988     989     990
              *

7674          KK     I50
7675          KM        Runoff subbasin I50
7676          BA   0.600
7677          LG    0.35    0.35    4.50    0.36       0
7678          UI     488    1266     473      76       0       0       0       0       0       0
7679          UI       0       0       0       0       0       0       0       0       0       0
              *

7680          KK   CPI50
7681          KM        Combine I49, I61 with I50
7682          HC       3   5.642
              *

7683          KK  I50RIV
7684          KM        Combine A46RIV with I50
7685          HC       2 369.644
              *

7686          KK  RCPI50
7687          KM        Route flow from CP I50RIV to CP I62RIV (WATERMAN WASH)
7688          RS       1    FLOW      -1
7689          RC   0.050   0.035   0.050    2920  0.0047
7690          RX       0      40    1300    1375    1445    1520    2120    2160
7691          RY     984     981     973     968     968     973     981     984
              *

7692          KK     I62
7693          KM        Runoff subbasin I62
7694          BA   0.422
7695          LG    0.35    0.35    4.60    0.34      20
7696          UI     392     925     271      40       0       0       0       0       0       0
```

```
7697        UI       0       0       0       0       0       0       0       0       0       0
            *

7698        KK  I62RIV
7699        KM        Combine I50RIV with I62
7700        HC       2 370.066
            *

7701        KK  RCPI62
7702        KM        Route flow from CP I62RIV to CP A49RIV (WATERMAN WASH)
7703        RS       2    FLOW      -1
7704        RC   0.050   0.035   0.050    5100  0.0032
7705        RX       0      20    1010    1085    1160    1235    2235    2255
7706        RY     955     953     945     940     940     945     953     955
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7707        KK   DRA11
7708        KM            Return diverted flow from CP A11 in basin A15
7709        DR   DVA11
            *

7710        KK   RDA11
7711        KM        Route diverted flow from CP A11 to CP A15
7712        RS       6    FLOW      -1
7713        RC   0.050   0.045   0.050   11540  0.0080
7714        RX       0       5      35      65      70     100     135     140
7715        RY    1098    1097    1096    1095    1095    1096    1097    1098
            *

7716        KK     A15
7717        KM        Runoff from A15
7718        BA   0.941
7719        LG    0.35    0.37    5.30    0.24       0
7720        UI      82     314     475     762     776     529     351     156      97      43
7721        UI      23      23       0       0       0       0       0       0       0       0
7722        UI       0       0       0       0       0       0       0       0       0       0
            *

7723        KK   CPA15
7724        KM        Combine DRA11 with A15
7725        HC       2  12.104
            *

7726        KK     A16
7727        KM        Runoff from A16
7728        BA   0.333
7729        LG    0.35    0.40    6.00    0.18       0
7730        UI      76     231     424     310     155      58      19      12       0       0
7731        UI       0       0       0       0       0       0       0       0       0       0
            *

7732        KK   CPA16
7733        KM        Combine A15 with A16
7734        HC       2  12.437
            *

7735        KK  RCPA16
7736        KM        Route flow from CP A16 to CP A35
7737        RS       3    FLOW      -1
7738        RC   0.050   0.045   0.050    5320  0.0061
7739        RX       0     110     220     295     310     385     495     605
7740        RY    1045  1043.5    1042    1041    1041    1042  1043.5    1045
            *

7741        KK  DRA02A
7742        KM            Return diverted flow from CP A02A in basin A03
7743        DR  DVA02A
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7744        KK  RDA02A
7745        KM        Route diverted flow from CP A02 to CP A03
7746        RS       5    FLOW      -1
7747        RC   0.050   0.045   0.050    3101  0.0090
7748        RX       0       8      95     115     130     150     250     258
7749        RY  1260.5    1259    1258    1257    1257    1258    1259  1260.5
            *
```

```
KK     A03
KM        Runoff from A03
BA   1.064
LG    0.35    0.35    2.80    1.07       0
UI     211     647    1202    1052     606     233      97      37       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPA03
KM        Combine DRA02A with A03
HC       2  10.424
*

KK  RCPA03
KM        Route flow from CP A03 to CP A64
RS       4    FLOW      -1
RC   0.050   0.045   0.050    9580  0.0069
RX       0      10     155     170     185     200     320     330
RY  1190.5    1189    1188    1187    1187    1188    1189  1190.5
*

KK     A64
KM        Runoff from A64
BA   0.778
LG    0.35    0.35    3.58    0.62       0
UI     155     472     879     769     444     170      71      26       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPA64
KM        Combine flow from CP A03 with A64
HC       2  11.202
*

KK    DA64
KM           Divert flow from CP A64 into basin A18
KM        Natural divergence of flow due to a braided channel network.
DT   DVA64
DI       0      39     162     372     867    2048    3598    5317    7301
DQ       0      12      48     107     295     725    1360    2055    2861
*
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

KK  RCPA64
KM        Route remainder flow from CP A64 to CP A10
RS       4    FLOW      -1
RC   0.050   0.045   0.050    6760  0.0069
RX       0       5     155     170     185     200     320     325
RY    1150    1149    1148    1147    1147    1148    1149    1150
*

KK  DRA02B
KM           Return Diverted flow from CP A02 in basin A10
DR  DVA02B
*

KK  RDA02B
KM        Route diverted flow from CP A02 to CP A10
RS       8    FLOW      -1
RC   0.050   0.045   0.050   18990  0.0085
RX       0      10      30      45      60      75      95     105
RY  1190.5  1188.5    1188    1187    1187    1188  1188.5  1190.5
*

KK     A10
KM        Runoff from A10
BA   0.928
LG    0.35    0.35    4.80    0.30       0
UI      87     322     491     807     743     510     321     140      87      33
UI      23      23       0       0       0       0       0       0       0       0
UI       0       0       0       0       0       0       0       0       0       0
*

KK   CPA10
KM        Combine A64, DR02B with A10
HC       3  12.130
*

KK    DA10
KM           Divert flow from CP A10 into A17
```

```
7807          KM        Natural divergence of flow due to a braided channel network.
7808          DT   DVA10
7809          DI       0       16       74      175      456     1045     1896     2810     5041
7810          DQ       0        7       32       74      202      492      905     1353     2452
              *

7811          KK  RCPA10
7812          KM        Route remainder flow from CP A10 to CP A34
7813          RS       4     FLOW       -1
7814          RC   0.050    0.045    0.050     8920   0.0082
7815          RX       0        5       55       75       85      105      155      160
7816          RY  1090.5     1089     1088     1087     1087     1088     1089   1090.5
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7817          KK     A34
7818          KM        Runoff from A34
7819          BA   0.385
7820          LG    0.35     0.39     5.70     0.20        0
7821          UI     136      397      568      271       81       23        0        0        0        0
7822          UI       0        0        0        0        0        0        0        0        0        0
              *

7823          KK   CPA34
7824          KM        Combine A10 with A34
7825          HC       2   12.515
              *

7826          KK  RCPA34
7827          KM        Route flow from CP A34 to CP A35
7828          RS       2     FLOW       -1
7829          RC   0.050    0.045    0.050     3080   0.0061
7830          RX       0      110      220      295      310      385      495      605
7831          RY    1045   1043.5     1042     1041     1041     1042   1043.5     1045
              *

7832          KK     A35
7833          KM        Runoff from A35
7834          BA   0.847
7835          LG    0.35     0.35     5.00     0.28        0
7836          UI     195      587     1079      787      394      145       50       32        0        0
7837          UI       0        0        0        0        0        0        0        0        0        0
              *

7838          KK   CPA35
7839          KM        Combine A16, A34 with A35
7840          HC       3   16.440
              *

7841          KK  RCPA35
7842          KM        Route flow from CP A35 to CP A47
7843          RS       3     FLOW       -1
7844          RC   0.050    0.045    0.050     5260   0.0078
7845          RX       0      163      326      490      510      674      837     1000
7846          RY    1010     1009     1008     1007     1007     1008     1009     1010
              *

7847          KK     A47
7848          KM        Runoff from A47
7849          BA   0.791
7850          LG    0.48     0.05     4.60     0.48        0
7851          UI      43       73      186      264      342      367      349      313      257      220
7852          UI     151      130       80       64       50       40       29       24       20        6
7853          UI       5        6        5        6        5        6        5        6        5        6
7854          UI       0        0        0        0        0        0        0        0        0        0
7855          UI       0        0        0        0        0        0        0        0        0        0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7856          KK   CPA47
7857          KM        Combine A35 with A47
7858          HC       2   17.231
              *

7859          KK  RCPA47
7860          KM        Route flow from CP A47 to CP A49
7861          RS       5     FLOW       -1
7862          RC   0.050    0.045    0.050     7640   0.0042
```

```
7863          RX       0       8      38     202     222     386     416     424
7864          RY     980   978.5     978     977     977     978   978.5     980
              *

7865          KK     A48
7866          KM         Runoff from A48
7867          BA   1.059
7868          LG    0.38    0.22    4.65    0.39       7
7869          UI      61     156     291     377     498     737     583     446     341     240
7870          UI     123      93      60      27      18      19      19       0       0       0
7871          UI       0       0       0       0       0       0       0       0       0       0
              *

7872          KK  RCPA48
7873          KM         Route flow from CP A48 to CP A49
7874          RS       2    FLOW      -1
7875          RC   0.050   0.045   0.050    2240  0.0043
7876          RX       0     163     326     490     510     674     837    1000
7877          RY     970     969     968     967     967     968     969     970
              *

7878          KK     A49
7879          KM         Runoff from A49
7880          BA   0.751
7881          LG    0.35    0.35    4.45    0.37       0
7882          UI     120     386     652     812     493     249     109      44      23       0
7883          UI       0       0       0       0       0       0       0       0       0       0
7884          UI       0       0       0       0       0       0       0       0       0       0
              *

7885          KK   CPA49
7886          KM         Combine A47, A48 with A49
7887          HC       3  19.041
              *

7888          KK  A49RIV
7889          KM         Combine CP I62RIV with CP A49
7890          KM         Tuthill Road crossing at A49RIV
7891          HC       2 377.944
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7892          KK  RCPA49
7893          KM         Route flow in Waterman Wash from CP A49RIV TO CP A51RIV (WATERMAN WASH)
7894          RS       2    FLOW      -1
7895          RC   0.050   0.035   0.050    3330  0.0030
7896          RX       0     600    2800    3000    3150    3300    6400    8500
7897          RY     970     960     950     945     945     950     960     970
              *

7898          KK     A04
7899          KM         Runoff from A04
7900          BA   0.743
7901          LG    0.35    0.35    2.57    1.25       0
7902          UI     427    1299     870     220      45       0       0       0       0       0
7903          UI       0       0       0       0       0       0       0       0       0       0
              *

7904          KK    DA04
7905          KM             Divert flow from CP A04 into basin A06
7906          KM         Natural divergence of flow due to a braided channel network.
7907          DT   DVA04
7908          DI       0      64     221     405    1007    2383    4403    6549    9034   11830
7909          DQ       0      38     129     222     543    1283    2351    3478    4782    6249
              *

7910          KK  RCPA04
7911          KM         Route remainder flow from CP A04 to CP A07
7912          RS       7    FLOW      -1
7913          RC   0.050   0.045   0.050    8740  0.0128
7914          RX       0     150     300     310     340     360     510     680
7915          RY    1296    1295    1294    1293    1293    1294    1295    1297
              *

7916          KK     A07
7917          KM         Runoff from A07
7918          BA   0.523
7919          LG    0.35    0.35    2.79    1.09       0
7920          UI     201     604     759     325      98      24       0       0       0       0
7921          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
7922          KK   CPA07
7923          KM        Combine A04 with A07
7924          HC       2   1.266
              *

7925          KK    DA07
7926          KM           Divert flow from CP A07 into basin A22
7927          KM        Natural divergence of flow due to a braided channel network.
7928          DT   DVA07
7929          DI       0      56     236     765    2075    4754    8362   12780   17930
7930          DQ       0      25     108     390    1171    2848    5135    7952   11249
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7931          KK  RCPA07
7932          KM        Route remainder flow from CP A07 to CP A21
7933          RS       9    FLOW      -1
7934          RC   0.050   0.045   0.050   12400  0.0108
7935          RX       0     110     243     280     300     350     550     780
7936          RY    1110    1108    1107    1106    1106    1107    1108    1109
              *

7937          KK     A09
7938          KM        Runoff from A09
7939          BA   0.784
7940          LG    0.35    0.35    2.92    0.98       0
7941          UI     167     509     945     750     413     146      59      28       0       0
7942          UI       0       0       0       0       0       0       0       0       0       0
              *

7943          KK    DA09
7944          KM           Divert flow from CP A09 into basin A18
7945          KM        Natural divergence of flow due to a braided channel network.
7946          DT   DVA09
7947          DI       0      49     188     395     993    2255    3956    5853    8045
7948          DQ       0       7      30      69     176     413     749    1108    1521
              *

7949          KK  RCPA09
7950          KM        Route remainder flow from CP A09 to CP A08
7951          RS       3    FLOW      -1
7952          RC   0.050   0.045   0.050    4350  0.0074
7953          RX       0       8      80     110     120     150     210     218
7954          RY    1181  1179.5    1179    1178    1178    1179  1179.5    1181
              *

7955          KK     A08
7956          KM        Runoff from A08
7957          BA   2.117
7958          LG    0.35    0.35    3.05    0.89       0
7959          UI     149     529     832    1159    1757    1339     971     662     317     209
7960          UI     121      46      45      46       0       0       0       0       0       0
7961          UI       0       0       0       0       0       0       0       0       0       0
              *

7962          KK   CPA08
7963          KM        Combine A09 with A08
7964          HC       2   2.901
              *

7965          KK    DA08
7966          KM           Divert flow from CP A08 into basin A19
7967          KM        Natural divergence of flow due to a braided channel network.
7968          DT   DVA08
7969          DI       0      40     161     363    1052    2811    4967    7543   10543
7970          DQ       0      18      74     164     456    1162    2073    3122    4341
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7971          KK  RCPA08
7972          KM        Route remainder flow from CP A08 to CP A21
7973          RS       2    FLOW      -1
7974          RC   0.050   0.045   0.050    4210  0.0292
7975          RX       0     180     300     336     400     460     590     850
7976          RY    1151    1150    1149    1148    1148    1149    1150    1152
              *
```

```
7977          KK     A21
7978          KM        Runoff from A21
7979          BA   1.056
7980          LG    0.35    0.35    4.60    0.34       0
7981          UI     148     487     780    1147     736     441     183      90      32      31
7982          UI       0       0       0       0       0       0       0       0       0       0
7983          UI       0       0       0       0       0       0       0       0       0       0
              *

7984          KK   CPA21
7985          KM        Combine A08, A07 with A21
7986          HC       3   5.222
              *

7987          KK    DA21
7988          KM            Divert flow from CP A21 into basin A32
7989          KM        Natural divergence of flow due to a braided channel network.
7990          DT   DVA21
7991          DI       0      50     204     464    1363    3710    6453    9805   13711
7992          DQ       0      22      89     204     608    1654    2882    4384    6133
              *

7993          KK  RCPA21
7994          KM        Route remainder flow from CP A21 to CP A20
7995          RS       5    FLOW      -1
7996          RC   0.050   0.045   0.050    5780  0.0089
7997          RX       0     125     240     290     310     350     500     790
7998          RY    1110    1108    1107    1106    1106    1107    1107    1108
              *

7999          KK     A20
8000          KM        Runoff from A20
8001          BA   0.337
8002          LG    0.35    0.36    5.00    0.28       0
8003          UI     108     316     493     261      84      26      15       0       0       0
8004          UI       0       0       0       0       0       0       0       0       0       0
              *

8005          KK   CPA20
8006          KM        Combine A21 with A20
8007          HC       2   5.559
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8008          KK    DA20
8009          KM            Divert flow from CP A20 into basin A32
8010          KM        Natural divergence of flow due to a braided channel network.
8011          DT   DVA20
8012          DI       0      33     120     266     481    1142    3085    5827    9003   12726
8013          DQ       0      11      43      98     180     509    1486    2719    4250    6049
              *

8014          KK  RCPA20
8015          KM        Route remainder flow from CP A20 to CP A51
8016          RS      25    FLOW      -1
8017          RC   0.050   0.045   0.050   23360  0.0058
8018          RX       0     200     420     455     485     521     750     900
8019          RY    1050    1049    1048    1047    1047    1048    1049    1050
              *

8020          KK     A51
8021          KM        Runoff from A51
8022          BA   1.527
8023          LG    0.35    0.35    4.70    0.31       0
8024          UI      93     270     478     624     888    1098     798     596     437     233
8025          UI     155      96      48      29      29      29       0       0       0       0
8026          UI       0       0       0       0       0       0       0       0       0       0
              *

8027          KK  CPA51A
8028          KM        Combine A20 with A51
8029          HC       2   7.087
              *

8030          KK   DRA09
8031          KM            Return diverted flow A09
8032          DR   DVA09
              *

8033          KK   RDA09
8034          KM        Route diverted flow from CP A09 to CP A18
```

```
8035          RS      11    FLOW      -1
8036          RC   0.050   0.045   0.050   11950  0.0075
8037          RX       0     100     200     245     255     300     400     500
8038          RY    1140    1139    1138    1136    1136    1138    1139    1140
              *

8039          KK   DRA64
8040          KM            Return diverted flow A64
8041          DR   DVA64
              *

8042          KK   RDA64
8043          KM        Route diverted flow from CP A64 to CP A18
8044          RS       6    FLOW      -1
8045          RC   0.050   0.045   0.050    8360  0.0070
8046          RX       0     100     200     245     255     300     400     500
8047          RY    1140    1139    1138    1136    1136    1138    1139    1140
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8048          KK     A18
8049          KM        Runoff from A18
8050          BA   0.691
8051          LG    0.35    0.39    5.80    0.19       0
8052          UI     110     356     599     747     454     229     101      40      21       0
8053          UI       0       0       0       0       0       0       0       0       0       0
8054          UI       0       0       0       0       0       0       0       0       0       0
              *

8055          KK   CPA18
8056          KM        Combine DRA09, DRA64 with A18
8057          HC       3  12.677
              *

8058          KK    DA18
8059          KM            Divert flow from CP A18 into basin A33
8060          KM        Natural divergence of flow due to a braided channel network.
8061          DT   DVA18
8062          DI       0      20      71     157     283     455     678    1114    2777    5471
8063          DQ       0      10      37      82     151     244     366     585    1440    2822
              *

8064          KK  RCPA18
8065          KM        Route remainder flow from CP A18 to CPA19
8066          RS       1    FLOW      -1
8067          RC   0.050   0.045   0.050    2190  0.0071
8068          RX       0      80     115     145     160     190     225     305
8069          RY    1095    1094    1093    1091    1091    1093    1094    1095
              *

8070          KK   DRA08
8071          KM            Return diverted flow from CP A08
8072          DR   DVA08
              *

8073          KK   RDA08
8074          KM        Route diverted flow from CP A08 to CP A19
8075          RS       5    FLOW      -1
8076          RC   0.050   0.045   0.050    9690  0.0076
8077          RX       0      80     115     145     160     190     225     305
8078          RY    1095    1094    1093    1091    1091    1093    1094    1095
              *

8079          KK     A19
8080          KM        Runoff from A19
8081          BA   0.464
8082          LG    0.35    0.38    5.40    0.23       0
8083          UI     137     399     665     383     139      46      19       0       0       0
8084          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8085          KK  CPA19A
8086          KM        Combine DRA08 with A19
8087          HC       2   3.364
              *

8088          KK   CPA19
```

```
8089          KM        Combine CPA19A with routed flow from A18
8090          HC       2  15.257
              *

8091          KK  RCPA19
8092          KM        ROUTE FLOW FROM A19 TO A63
8093          RS       4    FLOW      -1
8094          RC   0.050   0.045   0.050    8410  0.0071
8095          RX       0      80     115     145     160     190     225     305
8096          RY    1050    1049    1048    1046    1046    1048    1049    1050
              *

8097          KK     A63
8098          KM        RUNOFF FROM A63
8099          BA   0.607
8100          LG    0.35    0.37    5.30    0.24       0
8101          UI     195     567     891     469     150      48      26       0       0       0
8102          UI       0       0       0       0       0       0       0       0       0       0
              *

8103          KK  CPA63A
8104          KM        COMBINE A19 WITH A63
8105          HC       2  15.864
              *

8106          KK   DRA10
8107          KM            Return diverted flow from CP A10
8108          DR   DVA10
              *

8109          KK   RDA10
8110          KM        Route diverted flow from CP A10 to CP A17
8111          RS       4    FLOW      -1
8112          RC   0.050   0.045   0.050    9190  0.0079
8113          RX       0      45      90     120     135     165     210     255
8114          RY  1059.5  1058.5    1058    1057    1057    1059    1060    1061
              *

8115          KK     A17
8116          KM        Runoff from A17
8117          BA   0.573
8118          LG    0.35    0.39    5.80    0.19       0
8119          UI      75     251     397     611     410     259     108      60      19      17
8120          UI       0       0       0       0       0       0       0       0       0       0
8121          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8122          KK   CPA17
8123          KM        Combine DRA10 with A17
8124          HC       2  12.703
              *

8125          KK   DRA18
8126          KM            Return diverted flow from CP A18
8127          DR   DVA18
              *

8128          KK   RDA18
8129          KM        Route diverted flow from CP A18 to CP A33
8130          RS       6    FLOW      -1
8131          RC   0.050   0.045   0.050    7360  0.0090
8132          RX       0      65     130     180     200     250     315     380
8133          RY    1068    1067    1067    1066    1066    1067    1069    1070
              *

8134          KK     A33
8135          KM        Runoff from A33
8136          BA   0.284
8137          LG    0.35    0.40    6.00    0.18       0
8138          UI     100     293     419     201      59      17       0       0       0       0
8139          UI       0       0       0       0       0       0       0       0       0       0
              *

8140          KK  CPA33A
8141          KM        Combine DRA18 with A33
8142          HC       2  12.960
              *

8143          KK   CPA33
8144          KM        COMBINE A17 WITH A33
```

```
8145          HC       2  14.462
              *

8146          KK  RCPA33
8147          KM        Route flow from CP A33 to CP A63
8148          RS       4    FLOW      -1
8149          RC   0.050   0.045   0.050    4200  0.0024
8150          RX       0      90     180     230     255     305     405     500
8151          RY    1040    1039    1038    1037    1037    1038    1038    1039
              *

8152          KK   CPA63
8153          KM        COMBINE A33 WITH CPA63A
8154          HC       2  17.649
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8155          KK  RCPA63
8156          KM        Route flow from CP A63 to CP A50
8157          RS       7    FLOW      -1
8158          RC   0.050   0.045   0.050   10560  0.0067
8159          RX       0     163     326     490     510     674     837    1000
8160          RY    1000     999     998     997     997     998     999    1000
              *

8161          KK     A50
8162          KM        Runoff from A50
8163          BA   0.994
8164          LG    0.30    0.33    4.65    0.35      14
8165          UI     212     645    1198     951     523     187      74      36       0       0
8166          UI       0       0       0       0       0       0       0       0       0       0
              *

8167          KK   CPA50
8168          KM        Combine A63 with A50
8169          HC       2  18.643
              *

8170          KK  RCPA50
8171          KM        Route flow from CP A50 to CP A51
8172          RS       2    FLOW      -1
8173          RC   0.050   0.045   0.050    3870  0.0048
8174          RX       0       9      40     115     165     255     285     294
8175          RY     959  957.25     957     956     956     957  957.25     959
              *

8176          KK   CPA51
8177          KM        Combine A50 with CPA51A
8178          HC       2  22.829
              *

8179          KK  A51RIV
8180          KM        Combine A49RIV with A51
8181          HC       2 388.643
              *

8182          KK  RCPA51
8183          KM        Route flow in Waterman Wash from CP A51RIV to CP A56RIV (WATERMAN WASH)
8184          RS       1    FLOW      -1
8185          RC   0.050   0.035   0.050     270  0.0057
8186          RX       0      10    1500    1660    1800    1900    3400    3410
8187          RY     952     950     943     940     940     943     950     952
              *

8188          KK     A05
8189          KM        Runoff from A05
8190          BA   2.141
8191          LG    0.35    0.35    2.99    0.93       0
8192          UI     457    1389    2581    2048    1126     402     160      77       0       0
8193          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8194          KK  RCPA05
8195          KM        Route flow from CP A05 to CP A26
8196          RS       6    FLOW      -1
8197          RC   0.050   0.045   0.050    9390  0.0087
8198          RX       0       5     155     170     180     200     400     405
```

```
8199          RY    1137    1136    1135    1133    1133    1135    1136    1137
              *

8200          KK     A23
8201          KM        Runoff from A23
8202          BA   0.233
8203          LG    0.35    0.35    3.09    0.87       0
8204          UI      53     163     296     217     108      40      13       9       0       0
8205          UI       0       0       0       0       0       0       0       0       0       0
              *

8206          KK  RCPA23
8207          KM        Route flow from CP A23 to CP A26
8208          RS       5    FLOW      -1
8209          RC   0.050   0.045   0.050    9070  0.0079
8210          RX       0     175     335     350     370     390     590     790
8211          RY    1138    1136    1135    1133    1133    1135    1136    1137
              *

8212          KK     A25
8213          KM        Runoff from A25
8214          BA   0.215
8215          LG    0.35    0.35    3.19    0.82       0
8216          UI      76     222     317     152      44      13       0       0       0       0
8217          UI       0       0       0       0       0       0       0       0       0       0
              *

8218          KK  RCPA25
8219          KM        Route flow from CP A25 to CP A26
8220          RS       2    FLOW      -1
8221          RC   0.050   0.045   0.050    3340  0.0092
8222          RX       0      70     140     175     205     250     360     700
8223          RY    1108    1107    1105    1104    1104    1105    1107    1108
              *

8224          KK     A26
8225          KM        Runoff from A26
8226          BA   0.499
8227          LG    0.35    0.35    3.74    0.55       0
8228          UI     124     370     665     448     204      80      21      19       0       0
8229          UI       0       0       0       0       0       0       0       0       0       0
              *

8230          KK   CPA26
8231          KM        Combine A05, A23, A25 with A26
8232          HC       4   3.088
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8233          KK  RCPA26
8234          KM        Route flow from CP A26 to CP A27
8235          RS       5    FLOW      -1
8236          RC   0.050   0.045   0.050    7990  0.0073
8237          RX       0       5     150     155     170     185     335     340
8238          RY    1048    1047    1046    1045    1045    1046    1047    1048
              *

8239          KK     A27
8240          KM        Runoff from A27
8241          BA   1.105
8242          LG    0.35    0.35    3.58    0.61       0
8243          UI     154     511     816    1200     770     461     192      95      32      33
8244          UI       0       0       0       0       0       0       0       0       0       0
8245          UI       0       0       0       0       0       0       0       0       0       0
              *

8246          KK  CPA27A
8247          KM        Combine A26 with A27
8248          HC       2   4.194
              *

8249          KK     A28
8250          KM        Runoff from A28
8251          BA   0.551
8252          LG    0.35    0.35    3.38    0.71       0
8253          UI     233     720     769     295      82      27       0       0       0       0
8254          UI       0       0       0       0       0       0       0       0       0       0
              *

8255          KK  RCPA28
8256          KM        Route flow from CP A28 to CP A27
```

```
8257          RS       1    FLOW      -1
8258          RC   0.050   0.045   0.050    2220  0.0041
8259          RX       0     480     560     620     650     670     900    1500
8260          RY    1045    1040    1037    1034    1034    1037    1040    1043
              *

8261          KK   CPA27
8262          KM        Combine A28 with A27
8263          HC       2   4.745
              *

8264          KK  RCPA27
8265          KM        Route flow from CP A27 to CP A29
8266          RS       2    FLOW      -1
8267          RC   0.050   0.045   0.050    4120  0.0052
8268          RX       0      10      35      50      75     110     160     170
8269          RY    1017    1015    1014    1011    1011    1014    1015    1017
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8270          KK     A29
8271          KM        Runoff from A29
8272          BA   1.188
8273          LG    0.35    0.35    2.97    0.95       0
8274          UI     204     643    1131    1259     747     346     159      51      39       0
8275          UI       0       0       0       0       0       0       0       0       0       0
8276          UI       0       0       0       0       0       0       0       0       0       0
              *

8277          KK   CPA29
8278          KM        Combine A27 with A29
8279          HC       2   5.933
              *

8280          KK   DRA04
8281          KM             Return diverted flow from CP A04
8282          DR   DVA04
              *

8283          KK   RDA04
8284          KM        Route diverted flow from CP A04 to CP A06
8285          RS      13    FLOW      -1
8286          RC   0.050   0.045   0.050   15250  0.0130
8287          RX       0     100     210     220     240     255     550     830
8288          RY    1298    1297    1296    1295    1295    1296    1297    1300
              *

8289          KK     A06
8290          KM        Runoff from A06
8291          BA   1.108
8292          LG    0.35    0.35    2.85    1.03       0
8293          UI     191     599    1055    1174     697     323     147      48      36       0
8294          UI       0       0       0       0       0       0       0       0       0       0
8295          UI       0       0       0       0       0       0       0       0       0       0
              *

8296          KK   CPA06
8297          KM        Combine DRA04 with A06
8298          HC       2   1.850
              *

8299          KK  RCPA06
8300          KM        Route flow from CP A06 to CP A24
8301          RS       7    FLOW      -1
8302          RC   0.050   0.045   0.050   10750  0.0087
8303          RX       0     100     210     237     260     300     400     510
8304          RY    1120    1119    1118    1117    1117    1118    1119    1120
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8305          KK   DRA07
8306          KM             Return diverted flow from CP A07
8307          DR   DVA07
              *

8308          KK   RDA07
8309          KM        Route diverted flow from CP A07 to CP A22
8310          RS      19    FLOW      -1
```

```
8311          RC   0.050   0.045   0.050   16610  0.0103
8312          RX       0     190     390     400     410     424     700    1000
8313          RY    1200    1199    1198    1197    1197    1198    1199    1200
              *

8314          KK     A22
8315          KM         Runoff from A22
8316          BA   0.578
8317          LG    0.35    0.35    3.71    0.56       0
8318          UI      44     177     267     404     498     339     236     122      69      39
8319          UI      14      13      14       0       0       0       0       0       0       0
8320          UI       0       0       0       0       0       0       0       0       0       0
              *

8321          KK   CPA22
8322          KM         Combine DRA07 with A22
8323          HC       2   1.844
              *

8324          KK  RCPA22
8325          KM         Route flow from CP A22 to CP A24
8326          RS       1    FLOW      -1
8327          RC   0.050   0.045   0.050    1520  0.0074
8328          RX       0       5      35      45      60      70     180     185
8329          RY    1080    1079    1078    1077    1077    1078    1079    1080
              *

8330          KK     A24
8331          KM         Runoff from A24
8332          BA   1.355
8333          LG    0.35    0.35    3.17    0.83       0
8334          UI     145     516     786    1311    1040     697     380     182      95      36
8335          UI      36       0       0       0       0       0       0       0       0       0
8336          UI       0       0       0       0       0       0       0       0       0       0
              *

8337          KK   CPA24
8338          KM         Combine A06, A22 with A24
8339          HC       3   4.307
              *
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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8340          KK  RCPA24
8341          KM         Route flow from CP A24 to CP A30
8342          RS       4    FLOW      -1
8343          RC   0.050   0.045   0.050    8420  0.0072
8344          RX       0       8      50      65      85      95     182     190
8345          RY    1048  1046.5    1045    1043    1043    1045  1046.5    1048
              *

8346          KK     A30
8347          KM         Runoff from A30
8348          BA   0.675
8349          LG    0.35    0.35    3.88    0.50       0
8350          UI      68     246     374     619     531     359     214      96      55      18
8351          UI      17       0       0       0       0       0       0       0       0       0
8352          UI       0       0       0       0       0       0       0       0       0       0
              *

8353          KK  CPA30A
8354          KM         Combine A24 with A30
8355          HC       2   4.982
              *

8356          KK   CPA30
8357          KM         Combine A29 with A30
8358          HC       2  10.915
              *

8359          KK  RCPA30
8360          KM         Route flow from CP A30 to CP A52
8361          RS       1    FLOW      -1
8362          RC   0.050   0.045   0.050    3020  0.0063
8363          RX       0     150     270     320     400     445     600     750
8364          RY    1005    1003    1001   997.5   997.5    1001    1003    1005
              *

8365          KK     A52
8366          KM         Runoff from A52
8367          BA   0.218
8368          LG    0.35    0.35    4.60    0.34       0
```

```
8369          UI     113     350     274      80      19       0       0       0       0       0
8370          UI       0       0       0       0       0       0       0       0       0       0
              *

8371          KK  CPA52A
8372          KM        Combine A30 with A52
8373          HC       2  11.132
              *

8374          KK     A31
8375          KM        Runoff from A31
8376          BA   0.538
8377          LG    0.35    0.38    5.60    0.22       0
8378          UI      66     224     349     560     395     257     115      62      24      15
8379          UI      15       0       0       0       0       0       0       0       0       0
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8380          UI       0       0       0       0       0       0       0       0       0       0
              *

8381          KK  RCPA31
8382          KM        Route flow from CP A31 to CP A32
8383          RS       4    FLOW      -1
8384          RC   0.050   0.045   0.050    7790  0.0067
8385          RX       0       9      60      65      80      90     115     124
8386          RY    1039 1037.25    1037    1036    1036    1037 1037.25    1039
              *

8387          KK   DRA21
8388          KM            Return diverted flow from CP A21
8389          DR   DVA21
              *

8390          KK   RDA21
8391          KM        Route diverted flow from CP A21 to CP A32
8392          RS      14    FLOW      -1
8393          RC   0.050   0.045   0.050   17400  0.0077
8394          RX       0     180     360     385     405     430     570     700
8395          RY    1100    1098    1097    1096    1096    1097    1098    1099
              *

8396          KK   DRA20
8397          KM            Return diverted flow from CP A20
8398          DR   DVA20
              *

8399          KK   RDA20
8400          KM        Route diverted flow from CP A20 to CP A32
8401          RS      11    FLOW      -1
8402          RC   0.050   0.045   0.050   11660  0.0075
8403          RX       0     180     360     385     405     430     570     700
8404          RY    1100    1098    1097    1096    1096    1097    1098    1099
              *

8405          KK     A32
8406          KM        Runoff from A32
8407          BA   1.208
8408          LG    0.35    0.39    5.70    0.20       0
8409          UI     113     420     639    1050     968     664     416     183     114      42
8410          UI      30      31       0       0       0       0       0       0       0       0
8411          UI       0       0       0       0       0       0       0       0       0       0
              *

8412          KK  CPA32A
8413          KM        Combine DRA21, DRA20 with A32
8414          HC       3   6.768
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8415          KK   CPA32
8416          KM        Combine A31 with A32
8417          HC       2   7.306
              *

8418          KK  RCPA32
8419          KM        Route flow from CP A32 to CP A52
8420          RS       1    FLOW      -1
8421          RC   0.050   0.045   0.050    1510  0.0071
8422          RX       0       8      40      52      93     111     152     160
```

```
8423          RY    1002  1000.5    1000     997     997    1000  1000.5    1002
              *

8424          KK   CPA52
8425          KM        Combine A32 with A52
8426          HC       2  17.173
              *

8427          KK  RCPA52
8428          KM        Route flow from CP A52 to CP A55
8429          RS       1    FLOW      -1
8430          RC   0.050   0.045   0.050    1960  0.0042
8431          RX       0       8     150     175     215     255     435     443
8432          RY     994   992.5     990   987.5   987.5     990   992.5     994
              *

8433          KK     A53
8434          KM        Runoff from A53
8435          BA   1.746
8436          LG    0.35    0.35    2.86    1.02       0
8437          UI     300     945    1662    1851    1098     508     232      76      57       0
8438          UI       0       0       0       0       0       0       0       0       0       0
8439          UI       0       0       0       0       0       0       0       0       0       0
              *

8440          KK     A54
8441          KM        Runoff from A54
8442          BA   0.507
8443          LG    0.35    0.35    3.27    0.71      19
8444          UI     179     523     748     358     105      30       0       0       0       0
8445          UI       0       0       0       0       0       0       0       0       0       0
              *

8446          KK   CPA54
8447          KM        COMBINE A53 WITH A54
8448          HC       2   2.253
              *

8449          KK  RCPA54
8450          KM        Route flow from CP A54 to CP A55
8451          RS       1    FLOW      -1
8452          RC   0.050   0.045   0.050    3860  0.0066
8453          RX       0     245     270     290     310     330     360     620
8454          RY    1005    1000     998     995     995     998    1000    1004
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8455          KK     A55
8456          KM        Runoff from A55
8457          BA   0.613
8458          LG    0.35    0.35    3.64    0.59       1
8459          UI     234     709     890     381     114      29       0       0       0       0
8460          UI       0       0       0       0       0       0       0       0       0       0
              *

8461          KK  CPA55A
8462          KM        Combine A54 with A55
8463          HC       2   2.865
              *

8464          KK   CPA55
8465          KM        Combine A52 with A55
8466          HC       2  20.038
              *

8467          KK  RCPA55
8468          KM        Route flow from CP A55 to CP A56
8469          RS       4    FLOW      -1
8470          RC   0.050   0.045   0.050    9140  0.0048
8471          RX       0      10     160     175     255     325     455     465
8472          RY   963.5   961.5     960     958     958     960   961.5   963.5
              *

8473          KK     A56
8474          KM        Runoff from A56
8475          BA   1.839
8476          LG    0.35    0.35    4.40    0.37      13
8477          UI     294     945    1596    1989    1207     610     267     106      58       0
8478          UI       0       0       0       0       0       0       0       0       0       0
8479          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
8480          KK   CPA56
8481          KM        Combine A55 with A56
8482          HC       2  21.877
              *

8483          KK  A56RIV
8484          KM        Combine A51RIV with A56
8485          HC       2 404.960
              *

8486          KK  RCPA56
8487          KM        Route flow in Waterman Wash from CP A56RIV TO CP I63RIV (WATERMAN WASH)
8488          RS       1    FLOW      -1
8489          RC   0.050   0.035   0.050    1890  0.0046
8490          RX       0      10    1000    1100    1280    1400    2400    2410
8491          RY     942     940     932     930     930     932     940     942
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8492          KK     I51
8493          KM        Runoff subbasin I51
8494          BA   0.287
8495          LG    0.35    0.35    4.25    0.42       0
8496          UI     445     591      67       0       0       0       0       0       0       0
8497          UI       0       0       0       0       0       0       0       0       0       0
              *

8498          KK  RCPI51
8499          KM        Route flow from CP I51 to CP I53
8500          RS       4    FLOW      -1
8501          RC   0.050   0.045   0.050    5390  0.0160
8502          RX       0     100     400     420     430     450     750     850
8503          RY    1200    1199    1198    1197    1197    1198    1199    1200
              *

8504          KK     I53
8505          KM        Runoff subbasin I53
8506          BA   0.372
8507          LG    0.35    0.35    4.25    0.42       0
8508          UI     303     785     293      47       0       0       0       0       0       0
8509          UI       0       0       0       0       0       0       0       0       0       0
              *

8510          KK   CPI53
8511          KM        Combine I51 with I53
8512          HC       2   0.659
              *

8513          KK  RCPI53
8514          KM        Route flow from CP I53 to CP I55
8515          RS       2    FLOW      -1
8516          RC   0.050   0.045   0.050    5590  0.0105
8517          RX       0       9      35      45      50      60      85      94
8518          RY    1130 1128.25    1128    1127    1127    1128 1128.25    1130
              *

8519          KK     I55
8520          KM        Runoff subbasin I55
8521          BA   0.249
8522          LG    0.35    0.35    4.10    0.46       0
8523          UI     178     499     230      45       0       0       0       0       0       0
8524          UI       0       0       0       0       0       0       0       0       0       0
              *

8525          KK   CPI55
8526          KM        Combine I53 with I55
8527          HC       2   0.908
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8528          KK  RCPI55
8529          KM        Route flow from CP I55 to CP I57
8530          RS       1    FLOW      -1
8531          RC   0.050   0.045   0.050    3210  0.0091
8532          RX       0       9      35      45      50      60      85      94
8533          RY    1095 1093.25    1093    1092    1092    1093 1093.25    1095
              *
```

```
8534          KK     I57
8535          KM        Runoff subbasin I57
8536          BA   0.190
8537          LG    0.34    0.34    4.70    0.31      23
8538          UI     241     423      62       0       0       0       0       0       0       0
8539          UI       0       0       0       0       0       0       0       0       0       0
              *

8540          KK   CPI57
8541          KM        Combine I55 with I57
8542          HC       2   1.098
              *

8543          KK  RCPI57
8544          KM        Route flow from CP I57 to CP I72
8545          RS       3    FLOW      -1
8546          RC   0.050   0.045   0.050    2910  0.0079
8547          RX       0     100     400     420     430     450     750     850
8548          RY    1080    1079    1078    1077    1077    1078    1079    1080
              *

8549          KK     I72
8550          KM        Runoff subbasin I72
8551          BA   0.206
8552          LG    0.31    0.27    4.50    0.36      12
8553          UI      79     238     299     128      39       9       0       0       0       0
8554          UI       0       0       0       0       0       0       0       0       0       0
              *

8555          KK   CPI72
8556          KM        Combine I57 with I72
8557          HC       2   1.304
              *

8558          KK  RCPI72
8559          KM        Route flow from CP I72 to CP I60
8560          RS       4    FLOW      -1
8561          RC   0.050   0.045   0.050    8520  0.0087
8562          RX       0       9      35      55      65      85     110     119
8563          RY    1025 1023.25    1023    1022    1022    1023 1023.25    1025
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8564          KK     I60
8565          KM        Runoff subbasin I60
8566          BA   1.025
8567          LG    0.35    0.35    4.70    0.31       9
8568          UI     330     958    1503     793     253      80      45       0       0       0
8569          UI       0       0       0       0       0       0       0       0       0       0
              *

8570          KK  CPI60A
8571          KM        Combine I72 with I60
8572          HC       2   2.329
              *

8573          KK     I52
8574          KM        Runoff subbasin I52
8575          BA   0.261
8576          LG    0.35    0.35    4.10    0.46       3
8577          UI     331     582      84       0       0       0       0       0       0       0
8578          UI       0       0       0       0       0       0       0       0       0       0
              *

8579          KK  RCPI52
8580          KM        Route flow from CP I52 to CP I54
8581          RS       4    FLOW      -1
8582          RC   0.050   0.045   0.050    5120  0.0160
8583          RX       0     100     400     420     430     450     750     850
8584          RY    1200    1199    1198    1197    1197    1198    1199    1200
              *

8585          KK     I54
8586          KM        Runoff subbasin I54
8587          BA   0.352
8588          LG    0.35    0.35    4.00    0.47       0
8589          UI     327     771     227      33       0       0       0       0       0       0
8590          UI       0       0       0       0       0       0       0       0       0       0
              *
```

```
8591          KK   CPI54
8592          KM        Combine I52 with I54
8593          HC       2   0.613
              *

8594          KK  RCPI54
8595          KM        Route flow from CP I54 to CP I56
8596          RS       4    FLOW      -1
8597          RC   0.050   0.045   0.050    5370  0.0109
8598          RX       0     160     320     330     335     350     530     710
8599          RY    1130    1129    1128    1127    1127    1128    1129    1130
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8600          KK     I56
8601          KM        Runoff subbasin I56
8602          BA   0.432
8603          LG    0.35    0.35    4.10    0.46       0
8604          UI     352     911     341      55       0       0       0       0       0       0
8605          UI       0       0       0       0       0       0       0       0       0       0
              *

8606          KK   CPI56
8607          KM        Combine I54 with I56
8608          HC       2   1.045
              *

8609          KK  RCPI56
8610          KM        Route flow from CP I56 to CP I58
8611          RS       9    FLOW      -1
8612          RC   0.050   0.045   0.050   11740  0.0080
8613          RX       0     100     230     250     265     285     450     620
8614          RY    1070    1069    1068    1067    1067    1068    1069    1070
              *

8615          KK     I58
8616          KM        Runoff subbasin I58
8617          BA   0.745
8618          LG    0.35    0.35    4.60    0.34      11
8619          UI     119     383     647     806     488     248     107      44      23       0
8620          UI       0       0       0       0       0       0       0       0       0       0
8621          UI       0       0       0       0       0       0       0       0       0       0
              *

8622          KK   CPI58
8623          KM        Combine I56 with I58
8624          KM        Route length to CPI64 is insignificant
8625          HC       2   1.790
              *

8626          KK     I59
8627          KM        Runoff subbasin I59
8628          BA   0.392
8629          LG    0.35    0.38    5.60    0.22      23
8630          UI     251     736     416      89      24       0       0       0       0       0
8631          UI       0       0       0       0       0       0       0       0       0       0
              *

8632          KK     I64
8633          KM        Runoff subbasin I64
8634          BA   0.272
8635          LG    0.35    0.37    6.60    0.14      32
8636          UI     253     596     174      26       0       0       0       0       0       0
8637          UI       0       0       0       0       0       0       0       0       0       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8638          KK   CPI64
8639          KM        Combine I58, I59 with I64
8640          HC       3   2.454
              *

8641          KK  RCPI64
8642          KM        Route flow from CP I64 to CP I65
8643          RS       3    FLOW      -1
8644          RC   0.050   0.045   0.050    3560  0.0045
8645          RX       0     200     600     690     710     800    1200    1400
8646          RY    1010    1009    1008    1007    1007    1008    1009    1010
```

```
                *

8647            KK     I65
8648            KM        Runoff subbasin I65
8649            BA   0.338
8650            LG    0.35    0.36    5.10    0.26       7
8651            UI     216     635     359      77      20       0       0       0       0       0
8652            UI       0       0       0       0       0       0       0       0       0       0
                *

8653            KK   CPI65
8654            KM        Combine I64 with I65
8655            HC       2   2.792
                *

8656            KK   CPI60
8657            KM        COMBINE I65 WITH I60
8658            HC       2   5.120
                *

8659            KK  RCPI60
8660            KM        Route flow from CP I60 to CP I66
8661            RS       1    FLOW      -1
8662            RC   0.050   0.045   0.050    2250  0.0044
8663            RX       0      13     110     130     145     165     305     318
8664            RY     995   993.5     992     990     990     992   993.5     995
                *

8665            KK     I66
8666            KM        Runoff subbasin I66
8667            BA   0.906
8668            LG    0.35    0.39    5.70    0.20      25
8669            UI     580    1700     962     207      55       0       0       0       0       0
8670            UI       0       0       0       0       0       0       0       0       0       0
                *

8671            KK   CPI66
8672            KM        Combine I60 with I66
8673            HC       2   6.027
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8674            KK  RCPI66
8675            KM        Route flow from CP I66 to CP I67
8676            RS       3    FLOW      -1
8677            RC   0.050   0.045   0.050    5610  0.0044
8678            RX       0       6     200     220     240     260     460     466
8679            RY     975  973.75     972     970     970     972  973.75     975
                *

8680            KK     I67
8681            KM        Runoff subbasin I67
8682            BA   0.970
8683            LG    0.35    0.36    5.10    0.26      14
8684            UI     503    1557    1220     359      81       0       0       0       0       0
8685            UI       0       0       0       0       0       0       0       0       0       0
                *

8686            KK   CPI67
8687            KM        Combine I66 with I67
8688            KM        Route length to CPI69 is insignificant
8689            HC       2   6.997
                *

8690            KK     I68
8691            KM        Runoff subbasin I68
8692            BA   0.292
8693            LG    0.35    0.35    4.55    0.35      17
8694            UI     238     616     230      37       0       0       0       0       0       0
8695            UI       0       0       0       0       0       0       0       0       0       0
                *

8696            KK     I69
8697            KM        Runoff subbasin I69
8698            BA   0.173
8699            LG    0.35    0.35    4.40    0.38      17
8700            UI     268     357      40       0       0       0       0       0       0       0
8701            UI       0       0       0       0       0       0       0       0       0       0
                *

8702            KK   CPI69
```

```
8703          KM        COMBINE I67, I68 WITH I69
8704          HC       3   7.461
              *

8705          KK  RCPI69
8706          KM        Route flow from CP I69 to CP I70
8707          RS       3    FLOW      -1
8708          RC   0.050   0.045   0.050    5330  0.0046
8709          RX       0     450     900     925     950     975    1350    1700
8710          RY     970     965     962     960     960     962     965     970
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8711          KK     I70
8712          KM        Runoff subbasin I70
8713          BA   0.368
8714          LG    0.35    0.35    4.90    0.29      12
8715          UI     211     644     431     108      23       0       0       0       0       0
8716          UI       0       0       0       0       0       0       0       0       0       0
              *

8717          KK   CPI70
8718          KM        Combine I69 with I70
8719          HC       2   7.829
              *

8720          KK     I71
8721          KM        Runoff subbasin I71
8722          BA   0.421
8723          LG    0.35    0.35    4.50    0.36      16
8724          UI     391     923     271      40       0       0       0       0       0       0
8725          UI       0       0       0       0       0       0       0       0       0       0
              *

8726          KK   CPI71
8727          KM        Combine I70 with I71
8728          HC       2   8.250
              *

8729          KK  RCPI71
8730          KM        Route flow from CP I71 to CP I63
8731          RS       1    FLOW      -1
8732          RC   0.050   0.045   0.050    1250  0.0045
8733          RX       0      10     210     235     260     285     460     470
8734          RY     945     943     942     940     940     942     943     945
              *

8735          KK     I63
8736          KM        Runoff subbasin I63
8737          BA   0.293
8738          LG    0.35    0.35    4.60    0.34       6
8739          UI     209     588     270      53       0       0       0       0       0       0
8740          UI       0       0       0       0       0       0       0       0       0       0
              *

8741          KK   CPI63
8742          KM        Combine I71 with I63
8743          HC       2   8.543
              *

8744          KK  I63RIV
8745          KM        Combine A56RIV with I63
8746          HC       2 413.504
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8747          KK  RCPI63
8748          KM        Route flow in Waterman Wash from CP I63RIV TO CP A57RIV (WATERMAN WASH)
8749          RS       1    FLOW      -1
8750          RC   0.050   0.035   0.050    4640  0.0046
8751          RX       0      10    1000    1100    1280    1400    2400    2410
8752          RY     940     938     930     928     928     930     938     940
              *

8753          KK     A57
8754          KM        Runoff from A57
8755          BA   1.469
8756          LG    0.28    0.32    4.50    0.39      33
```

```
8757          UI     761    2359    1847     543     124       0       0       0       0       0
8758          UI       0       0       0       0       0       0       0       0       0       0
              *

8759          KK  A57RIV
8760          KM        Combine I63RIV with A57
8761          HC       2 414.972
              *

8762          KK  RCPA57
8763          KM        Route flow in Waterman Wash from CP A57RIV TO CP A60RIV (WATERMAN WASH)
8764          RS       3    FLOW      -1
8765          RC   0.050   0.035   0.050    7520  0.0019
8766          RX       0     400     600     700     900    1000    2300    3500
8767          RY     920     910     900     894     894     900     910     915
              *

8768          KK     A58
8769          KM        Runoff from A58
8770          BA   2.131
8771          LG    0.35    0.35    4.00    0.43      23
8772          UI     214     776    1180    1956    1675    1135     674     304     175      55
8773          UI      55       0       0       0       0       0       0       0       0       0
8774          UI       0       0       0       0       0       0       0       0       0       0
              *

8775          KK     A59
8776          KM        Runoff from A59
8777          BA   1.255
8778          LG    0.35    0.35    4.35    0.37      26
8779          UI     341     997    1746    1080     443     164      50       0       0       0
8780          UI       0       0       0       0       0       0       0       0       0       0
              *

8781          KK   CPA59
8782          KM        COMBINE A58 WITH A59
8783          HC       2   3.387
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

8784          KK  RCPA59
8785          KM        Route flow from CP A59 to CP A60
8786          RS       2    FLOW      -1
8787          RC   0.050   0.045   0.050    6400  0.0080
8788          RX       0      10      30      45      80      95     115     125
8789          RY   930.5   928.5   927.5     924     924   927.5   928.5   930.5
              *

8790          KK     A60
8791          KM        Runoff from A60
8792          BA   1.667
8793          LG    0.34    0.34    4.45    0.36      17
8794          UI     382    1158    2122    1550     775     286      98      62       0       0
8795          UI       0       0       0       0       0       0       0       0       0       0
              *

8796          KK   CPA60
8797          KM        Combine A59 with A60
8798          HC       2   5.054
              *

8799          KK  A60RIV
8800          KM        Combine A57RIV with A60
8801          KM        Approxmately 2500 feet upstream of Eagle Mt. Rd. and 125th Av. intersect
8802          HC       2 420.026
              *

8803          KK  RCPA60
8804          KM        Route flow in Waterman Wash from CP A60RIV to CP A62RIV (WATERMAN WASH)
8805          RS       1    FLOW      -1
8806          RC   0.050   0.035   0.050    5140  0.0055
8807          RX       0     600    1000    1200    1380    2100    2600    4300
8808          RY     895     890     884     879     878     883     890     895
              *

8809          KK     A61
8810          KM        Runoff from A61
8811          BA   1.880
8812          LG    0.31    0.28    4.45    0.38      10
8813          UI     141     545     834    1236    1612    1131     789     455     238     145
8814          UI      48      43      43       0       0       0       0       0       0       0
```

```
8815          UI       0       0       0       0       0       0       0       0       0       0
              *

8816          KK     A62
8817          KM        Runoff from A62
8818          BA   0.288
8819          LG    0.30    0.26    4.10    0.46       5
8820          UI      85     248     412     238      87      28      12       0       0       0
8821          UI       0       0       0       0       0       0       0       0       0       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


8822          KK  A62RIV
8823          KM        Combine A61, A62 with A60RIV
8824          HC       3 422.194
              *
8825          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   47         F02
              .
              .
   56         .-------->   DVF02
   53       DF02
              V
              V
   59     RCPF02
              .
              .
   65         .         F01
              .           V
              .           V
   72         .      RCPF01
              .           .
              .           .
   78         .           .         F04
              .           .           .
              .           .           .
   85      CPF04.......................
              V
              V
   88     RCPF04
              .
              .
   94         .         F03
              .           V
              .           V
  101         .      RCPF03
              .           .
              .           .
  107         .           .         F06
              .           .           .
              .           .           .
  113         .       CPF06............
              .           V
              .           V
  116         .      RCPF06
              .           .
              .           .
  124         .           .           .<-------   DVF02
  122         .           .       DRF02
              .           .           V
              .           .           V
  125         .           .       RDF02
              .           .           .
              .           .           .
  131         .           .           .         F05
              .           .           .           .
              .           .           .           .
  138      CPF05.................................
              V
              V
  141     RCPF05
              .
              .
  147         .         F07
```

```
              .           V
              .           V
154           .      RCPF07
              .           .
              .           .
160           .           .         F08
              .           .           .
              .           .           .
167       CPF08.......................
              V
              V
170      RCPF08
              .
              .
176           .         F09
              .           .
              .           .
183       CPF09............
              V
              V
186      RCPF09
              .
              .
192           .         F19
              .           .
              .           .
199       CPF19............
              .
              .
205           .-------->   DVF19
202        DF19
              V
              V
208      RCPF19
              .
              .
214           .         F20
              .           .
              .           .
221       CPF20............
              V
              V
224      RCPF20
              .
              .
231           .         F31
              .           .
              .           .
237           .           .         G21
              .           .           .
              .           .           .
243      CPF31 .......................
              V
              V
246      RCPF31
              .
              .
252           .         F10
              .           V
              .           V
259           .      RCPF10
              .           .
              .           .
265           .           .         F18
              .           .           .
              .           .           .
271           .       CPF18............
              .           .
              .           .
277           .           .-------->   DVF18
274           .        DF18
              .           V
              .           V
280           .      RCPF18
              .           .
              .           .
286           .           .         F22
              .           .           .
              .           .           .
292           .       CPF22............
              .           .
              .           .
298           .           .-------->   DVF22
295           .        DF22
```

```
                 .          V
                 .          V
301              .      RCPF22
                 .          .
                 .          .
309              .          .<-------   DVF19
307              .          .      DRF19
                 .          .          V
                 .          .          V
310              .          .      RDF19
                 .          .          .
                 .          .          .
318              .          .          .<-------   DVF18
316              .          .          .      DRF18
                 .          .          .          V
                 .          .          .          V
319              .          .          .      RDF18
                 .          .          .          .
                 .          .          .          .
325              .          .          .          .         F21
                 .          .          .          .           .
                 .          .          .          .           .
331              .          .      CPF21.......................
                 .          .          V
                 .          .          V
334              .          .     RCPF21
                 .          .          .
                 .          .          .
340              .          .          .         F29
                 .          .          .          .
                 .          .          .          .
347              .      CPF29.......................
                 .          V
                 .          V
350              .      RCPF29
                 .          .
                 .          .
357              .          .        F36
                 .          .          V
                 .          .          V
363              .          .     RCPF36
                 .          .          .
                 .          .          .
370              .          .          .         F32
                 .          .          .          .
                 .          .          .          .
376              .      CPF32.......................
                 .          .
                 .          .
379              .          .        G20
                 .          .          V
                 .          .          V
385              .          .     RCPG20
                 .          .          .
                 .          .          .
391              .          .          .         G19
                 .          .          .          V
                 .          .          .          V
397              .          .          .     RCPG19
                 .          .          .          .
                 .          .          .          .
403              .          .          .          .         G22
                 .          .          .          .           .
                 .          .          .          .           .
409              .          .      CPG22.......................
                 .          .          .
                 .          .          .
412          F32RIV.........................
                 V
                 V
416          RCPF32
                 .
                 .
424              .          .<-------   DVF22
422              .      DRF22
                 .          V
                 .          V
425              .      RDF22
                 .          .
                 .          .
431              .          .        F28
                 .          .          .
                 .          .          .
437              .      CPF28............
```

```
                .           .
                .           .
443             .           .-------->   DVF28
440             .        DF28
                .           V
                .           V
146             .      RCPF28
                .           .
                .           .
453             .           .         F33
                .           .           .
                .           .           .
459             .       CPF33............
                .           .
                .           .
462       F33RIV............
               V
               V
465       RCPF33
                .
                .
471             .         F13
                .           .
                .           .
480             .           .-------->   DVF13
477             .        DF13
                .           V
                .           V
483             .      RCPF13
                .           .
                .           .
489             .           .         F12
                .           .           .
                .           .           .
495             .       CPF12............
                .           .
                .           .
501             .           .-------->   DVF12
498             .        DF12
                .           V
                .           V
504             .      RCPF12
                .           .
                .           .
510             .           .         F11
                .           .           .
                .           .           .
517             .       CPF11............
                .           .
                .           .
523             .           .-------->   DVF11
520             .        DF11
                .           V
                .           V
526             .      RCPF11
                .           .
                .           .
532             .           .         F16
                .           .           .
                .           .           .
538             .       CPF16............
                .           .
                .           .
544             .           .-------->   DVF16
541             .        DF16
                .           V
                .           V
547             .      RCPF16
                .           .
                .           .
555             .           .           .<--------   DVF11
553             .           .       DRF11
                .           .           V
                .           .           V
556             .           .       RDF11
                .           .           .
                .           .           .
562             .           .           .         F17
                .           .           .           .
                .           .           .           .
568             .           .       CPF17............
                .           .           V
                .           .           V
571             .           .      RCPF17
```

```
577                                F24
                                     .
                                     .
584          CPF24.......................
                 V
                 V
587         RCPF24
                 .
                 .
593                 F23
                      V
                      V
599               RCPF23
                      .
                      .
605                                F27
                                     .
                                     .
611          CPF27.......................
                 V
                 V
614         RCPF27
                 .
                 .
623                      .<-------   DVF12
621               DRF12
                      V
                      V
624               RDF12
                      .
                      .
632                                  .<-------   DVF13
630                            DRF13
                                   V
                                   V
633                            RDF13
                                   .
                                   .
639                                   .         F14
                                      V          V
                                      V
645                                   .      RCPF14
                                      .           .
                                      .           .
651                                   .           .         F15
                                      .           .           .
                                      .           .           .
658               CPF15.................................
                      V
                      V
661               RCPF15
                      .
                      .
669                                  .<-------   DVF16
667                            DRF16
                                   V
                                   V
670                            RDF16
                                   .
                                   .
676                                   .         F25
                                      .           .
                                      .           .
683               CPF25......................
                      V
                      V
686               RCPF25
                      .
                      .
695                                  .<-------   DVF28
693                            DRF28
                                   V
                                   V
696                            RDF28
                                   .
                                   .
703                                   .         F34
                                      .           .
                                      .           .
710          CPF34.................................
                 .
                 .
```

```
713          .           .         G23
             .           .           .
             .           .           .
719     F34RIV.......................
             V
             V
722     RCPF34
             .
             .
728          .         F26
             .           V
             .           V
735          .      RCPF26
             .           .
             .           .
742          .           .         F35
             .           .           .
             .           .           .
749          .       CPF35............
             .           .
             .           .
752          .           .         G24
             .           .           V
             .           .           V
758          .           .      RCPG24
             .           .           .
             .           .           .
764          .           .           .         G25
             .           .           .           .
             .           .           .           .
770     F35RIV.................................
             V
             V
773     RCPF35
             .
             .
779          .         E09
             .           .
             .           .
788          .           .-------->   DVE09
785          .        DE09
             .           V
             .           V
791          .      RCPE09
             .           .
             .           .
797          .           .         E10
             .           .           .
             .           .           .
803          .       CPE10............
             .           .
             .           .
809          .           .-------->   DVE10
806          .        DE10
             .           V
             .           V
812          .      RCPE10
             .           .
             .           .
818          .           .         E06
             .           .           V
             .           .           V
824          .           .      RCPE06
             .           .           .
             .           .           .
830          .           .           .         E04
             .           .           .           V
             .           .           .           V
836          .           .           .      RCPE04
             .           .           .           .
             .           .           .           .
842          .           .           .           .         E11
             .           .           .           .           .
             .           .           .           .           .
852          .           .           .           .           .-------->   DVE11
849          .           .           .           .        DE11
             .           .           .           .           V
             .           .           .           .           V
855          .           .           .           .      RCPE11
             .           .           .           .           .
             .           .           .           .           .
861          .           .           .           .           .         E05
             .           .           .           .           .           .
             .           .           .           .           .           .
```

```
868          .      CPE05.............................................
             .         .
             .         .
874          .         .-------->   DVE05
871          .      DE05
             .         V
             .         V
877          .     RCPE05
             .         .
             .         .
885          .         .            .<-------   DVE11
883          .         .       DRE11
             .         .           V
             .         .           V
886          .         .       RDE11
             .         .           .
             .         .           .
892          .         .           .         E12
             .         .           .           .
             .         .           .           .
899          .         .       CPE12............
             .         .           V
             .         .           V
902          .         .      RCPE12
             .         .           .
             .         .           .
908          .         .           .         E25
             .         .           .           .
             .         .           .           .
915          .      CPE25........................
             .         V
             .         V
918          .     RCPE25
             .         .
             .         .
925          .         .         E26
             .         .           V
             .         .           V
931          .         .      RCPE26
             .         .           .
             .         .           .
937          .         .           .         E35
             .         .           .           .
             .         .           .           .
943          .         .       CPE35............
             .         .           .
             .         .           .
949          .         .           .-------->   DVE35
946          .         .        DE35
             .         .           V
             .         .           V
952          .         .      RCPE35
             .         .           .
             .         .           .
958          .         .           .         E36
             .         .           .           .
             .         .           .           .
964          .         .       CPE36............
             .         .           V
             .         .           V
967          .         .      RCPE36
             .         .           .
             .         .           .
974          .         .           .         E45
             .         .           .           .
             .         .           .           .
980          .      CPE45........................
             .         V
             .         V
983          .     RCPE45
             .         .
             .         .
991          .         .            .<-------   DVE35
989          .         .       DRE35
             .         .           V
             .         .           V
992          .         .       RDE35
             .         .           .
             .         .           .
998          .         .           .         E54
             .         .           .           .
             .         .           .           .
1004         .         .       CPE54............
             .         .           V
```

```
                .           .          V
1007            .           .     RCPE54
                .           .          .
                .           .          .
1014            .           .          .        E46
                .           .          .          .
                .           .          .          .
[illegible]0    .           .     CPE46............
                .           .          V
                .           .          V
1023            .           .     RCPE46
                .           .          .
                .           .          .
1029            .           .          .        E47
                .           .          .          .
                .           .          .          .
1035            .      CPE47........................
                .          V
                .          V
1038            .     RCPE47
                .           .
                .           .
1044            .           .        E48
                .           .          .
                .           .          .
1050            .      CPE48............
                .           .
                .           .
1053            .           .        G26
                .           .          .
                .           .          .
1059      E48RIV........................
               V
               V
1062      RCPE48
               .
               .
1070           .           .<-------   DVE09
1068           .      DRE09
               .          V
               .          V
1071           .      RDE09
               .           .
               .           .
1079           .           .          .<-------   DVE10
1077           .           .     DRE10
               .           .          V
               .           .          V
1080           .           .     RDE10
               .           .          .
               .           .          .
1086           .           .          .        E13
               .           .          .          .
               .           .          .          .
1093           .      CPE13........................
               .           .
               .           .
1099           .           .------->   DVE13
1096           .       DE13
               .          V
               .          V
1102           .     RCPE13
               .           .
               .           .
1110           .           .          .<-------   DVE05
1108           .           .     DRE05
               .           .          V
               .           .          V
1111           .           .     RDE05
               .           .          .
               .           .          .
1117           .           .          .        E24
               .           .          .          .
               .           .          .          .
1123           .      CPE24........................
               .          V
               .          V
[illegible]126 .     RCPE24
               .           .
               .           .
[illegible]132 .           .        E08
               .           .          V
               .           .          V
1139           .           .     RCPE08
```

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1147                                  .<-------   DVE13
1145                            DRE13
                                    V
                                    V
1148                            RDE13
                                    .
                                    .
1154                                .          E23
                                    .            .
                                    .            .
1161                  CPE23.......................
                          V
                          V
1164                RCPE23
                          .
                          .
1170                      .        E34
                          .          .
                          .          .
1176          CPE34......................
                  V
                  V
1179        RCPE34
                  .
                  .
1185                 E07
                       V
                       V
1191                RCPE07
                          .
                          .
1197                      .        E14
                          .          V
                          .          V
1203                      .      RCPE14
                          .          .
                          .          .
1209                      .          .          E15
                          .          .            .
                          .          .            .
1215                  CPE15.......................
                          V
                          V
1218                RCPE15
                          .
                          .
1224                      .        E27
                          .          V
                          .          V
1230                      .      RCPE27
                          .          .
                          .          .
1236                      .          .          E21
                          .          .            .
                          .          .            .
1245                      .          .            .-------->   DVE21
1242                      .          .        DE21
                          .          .          V
                          .          .          V
1248                      .          .      RCPE21
                          .          .            .
                          .          .            .
1254                      .          .            .          E22
                          .          .            .            .
                          .          .            .            .
1261                  CPE22.....................................
                          V
                          V
1264                RCPE22
                          .
                          .
1270                      .        E37
                          .          .
                          .          .
1276                  CPE37............
                          V
                          V
1279                RCPE37
                          .
                          .
1285                      .        E01
                                     V
```

```
                                  V
1292                            RCPE01
                                   .
                                   .
1298                               .          E02
                                   .            .
                                   .            .
                                CPE02............
                                   V
                                   V
1308                            RCPE02
                                   .
                                   .
1314                               .          E03
                                   .            .
                                   .            .
1320                            CPE03............
                                   V
                                   V
1323                            RCPE03
                                   .
                                   .
1329                               .          E16
                                   .            .
                                   .            .
1335                            CPE16............
                                   .
                                   .
1341                               .-------->   DVE16
1338                             DE16
                                   V
                                   V
1344                            RCPE16
                                   .
                                   .
1350                               .          E28
                                   .            .
                                   .            .
1359                               .            .-------->   DVE28
1356                               .        DE28
                                   .          V
                                   .          V
                                   .      RCPE28
                                   .            .
                                   .            .
1370                               .            .          .<-------   DVE21
1368                               .            .      DRE21
                                   .            .        V
                                   .            .        V
1371                               .            .      RDE21
                                   .            .        .
                                   .            .        .
1377                               .            .        .         E20
                                   .            .        .           .
                                   .            .        .           .
1384                            CPE20.................................
                                   .
                                   .
1389                               .            .<-------   DVE16
1387                               .       DRE16
                                   .          V
                                   .          V
1390                               .       RDE16
                                   .            .
                                   .            .
1396                               .            .         E19
                                   .            .          .
                                   .            .          .
1403                               .       CPE19............
                                   .            .
                                   .            .
1409                               .            .-------->   DVE19
1406                               .        DE19
                                   .          V
                                   .          V
1412                               .      RCPE19
                                   .            .
                                   .            .
                                   .            .          .<-------   DVE28
                                   .            .      DRE28
                                   .            .        V
                                   .            .        V
1421                               .            .      RDE28
                                   .            .        .
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1427                                                                  E29
1434                                                  CPE29A.....................
1437                                          CPE29............
1440                                          RCPE29
1446                                                          E38
1452                  CPE38.................................
                          V
                          V
1455                  RCPE38
1464                                  .<-------   DVE19
1462                          DRE19
                                  V
                                  V
1465                          RDE19
1471                                          E30
1478                          CPE30............
                                  V
                                  V
1481                          RCPE30
1488                                          E44
1494                  CPE44......................
                          V
                          V
1497                  RCPE44
1503                                  E18
                                  V
                                  V
1509                          RCPE18
1515                                          E31
1521                          CPE31............
                                  V
                                  V
1524                          RCPE31
1531                                          E43
1537                          CPE43............
                                  V
                                  V
1540                          RCPE43
1546                                          E50
1552                  CPE50......................
                          V
                          V
1555                  RCPE50
1561                                  E52
                                  V
                                  V
1567                          RCPE52
```

```
                .           .           .
                .           .           .
1573            .           .           .         E49
                .           .           .           .
                .           .           .           .
1579            .       CPE49.......................
                .           .
                .           .
82        E49RIV............
               V
               V
1585      RCPE49
                .
                .
1591            .         G18
                .           .
                .           .
1600            .           .-------->   DVG18
1597            .        DG18
                .           V
                .           V
1603            .      RCPG18
                .           .
                .           .
1609            .           .         G27
                .           .           .
                .           .           .
1615            .       CPG27............
                .           .
                .           .
1618      G27RIV............
               V
               V
1621      RCPG27
                .
                .
1627            .         G28
                .           .
                .           .
1633      G28RIV............
               V
               V
636       RCPG28
                .
                .
1642            .         E53
                .           V
                .           V
1648            .      RCPE53
                .           .
                .           .
1655            .           .         E17
                .           .           V
                .           .           V
1662            .           .      RCPE17
                .           .           .
                .           .           .
1668            .           .           .         E32
                .           .           .           .
                .           .           .           .
1674            .           .       CPE32............
                .           .           V
                .           .           V
1677            .           .      RCPE32
                .           .           .
                .           .           .
1684            .           .           .         E40
                .           .           .           .
                .           .           .           .
1690            .           .       CPE40............
                .           .           .
                .           .           .
1693            .           .           .         E33
                .           .           .           V
                .           .           .           V
1699            .           .           .      RCPE33
                .           .           .           .
                .           .           .           .
706             .           .           .           .         E39
                .           .           .           .           .
                .           .           .           .           .
1712            .           .           .      CPE39A............
                .           .           .           .
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1715                CPE39............
                      V
                      V
1718              RCPE39
                      .
                      .
1724                  .         E42
                      .           .
                      .           .
1730          CPE42.......................
                V
                V
1733        RCPE42
                .
                .
1739            .         E51
                .           .
                .           .
1746          CPE51............
                .
                .
1749    E51RIV............
            V
            V
1752    RCPE51
            .
            .
1758            E41
                .
                .
1767            .           .<-------   DVG18
1765            .       DRG18
                .           V
                .           V
1768            .       RDG18
                .           .
                .           .
1774            .           .         G17
                .           .           .
                .           .           .
1780            .       CPG17............
                .           V
                .           V
1783            .      RCPG17
                .           .
                .           .
1789            .           .         G16
                .           .           V
                .           .           V
1795            .           .      RCPG16
                .           .           .
                .           .           .
1801            .           .           .         G29
                .           .           .           .
                .           .           .           .
1808            .       CPG29.......................
                .           .
                .           .
1811    E41RIV.......................
            V
            V
1814    RCPE41
            .
            .
1820            .         G15
                .           V
                .           V
1826            .      RCPG15
                .           .
                .           .
1832            .           .         G30
                .           .           .
                .           .           .
1838            .       CPG30............
                .           .
                .           .
1841    G30RIV............
            V
            V
1844    RCPG30
            .
            .
1850            .         D21
                .           V
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                 .          V
1856             .      RCPD21
                 .          .
                 .          .
1863             .          .         D20
                 .          .           V
                 .          .           V
1869             .          .      RCPD20
                 .          .           .
                 .          .           .
1876             .          .           .         D19
                 .          .           .           V
                 .          .           .           V
1882             .          .           .      RCPD19
                 .          .           .           .
                 .          .           .           .
1889             .          .           .           .         D24
                 .          .           .           .           .
                 .          .           .           .           .
1895             .          .           .      CPD24A............
                 .          .           .           .
                 .          .           .           .
1898             .          .           .           .         D18
                 .          .           .           .           V
                 .          .           .           .           V
1904             .          .           .           .      RCPD18
                 .          .           .           .           .
                 .          .           .           .           .
1911             .          .           .           .           .         D07
                 .          .           .           .           .           .
                 .          .           .           .           .           .
1921             .          .           .           .           .           .-------->   DVD07
1918             .          .           .           .           .        DD07
                 .          .           .           .           .           V
                 .          .           .           .           .           V
1924             .          .           .           .           .      RCPD07
                 .          .           .           .           .           .
                 .          .           .           .           .           .
1930             .          .           .           .           .           .         D17
                 .          .           .           .           .           .           .
                 .          .           .           .           .           .           .
1937             .          .           .           .           .       CPD17............
                 .          .           .           .           .           V
                 .          .           .           .           .           V
1940             .          .           .           .           .      RCPD17
                 .          .           .           .           .           .
                 .          .           .           .           .           .
1947             .          .           .           .           .           .         D23
                 .          .           .           .           .           .           .
                 .          .           .           .           .           .           .
1954             .          .           .           .       CPD23........................
                 .          .           .           .           .
                 .          .           .           .           .
1957             .          .           .      CPD24............
                 .          .           .           V
                 .          .           .           V
1960             .          .           .      RCPD24
                 .          .           .           .
                 .          .           .           .
1966             .          .           .           .         D25
                 .          .           .           .           .
                 .          .           .           .           .
1973             .      CPD25.......................................
                 .          V
                 .          V
1976             .      RCPD25
                 .          .
                 .          .
1982             .          .         D26
                 .          .           .
                 .          .           .
1989             .      CPD26............
                 .          V
                 .          V
1992             .      RCPD26
                 .          .
                 .          .
1998             .          .         D27
                 .          .           .
                 .          .           .
2004             .      CPD27............
                 .          .
                 .          .
2007             .          .         G44
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                 .          .          V
                 .          .          V
2013             .          .     RCPG44
                 .          .          .
                 .          .          .
2019             .          .          .          G06
                 .          .          .            .
                 .          .          .            .
2025             .          .      CPG06............
                 .          .          .
                 .          .          .
2031             .          .          .------->   DVG06
2028             .          .       DG06
                 .          .          V
                 .          .          V
2034             .          .     RCPG06
                 .          .          .
                 .          .          .
2040             .          .          .          G07
                 .          .          .            .
                 .          .          .            .
2046             .          .      CPG07............
                 .          .          V
                 .          .          V
2049             .          .     RCPG07
                 .          .          .
                 .          .          .
2055             .          .          .          G08
                 .          .          .            .
                 .          .          .            .
2064             .          .          .            .------->   DVG08
2061             .          .          .        DG08
                 .          .          .          V
                 .          .          .          V
2067             .          .          .      RCPG08
                 .          .          .            .
                 .          .          .            .
2073             .          .          .            .        G05
                 .          .          .            .          .
                 .          .          .            .          .
2082             .          .          .            .          .------->   DVG05
2079             .          .          .            .      DG05
                 .          .          .            .        V
                 .          .          .            .        V
2085             .          .          .            .    RCPG05
                 .          .          .            .          .
                 .          .          .            .          .
2091             .          .          .            .          .         G46
                 .          .          .            .          .           .
                 .          .          .            .          .           .
2097             .          .          .            .     CPG46............
                 .          .          .            .          .
                 .          .          .            .          .
2100             .          .          .            .          .         G04
                 .          .          .            .          .           .
                 .          .          .            .          .           .
2106             .          .          .            .     CPG04............
                 .          .          .            .        V
                 .          .          .            .        V
2109             .          .          .            .    RCPG04
                 .          .          .            .          .
                 .          .          .            .          .
2117             .          .          .            .          .         .<-------   DVG06
2115             .          .          .            .      DRG06
                 .          .          .            .        V
                 .          .          .            .        V
2118             .          .          .            .      RDG06
                 .          .          .            .          .
                 .          .          .            .          .
2126             .          .          .            .          .             .<-------   DVG05
2124             .          .          .            .          .         DRG05
                 .          .          .            .          .           V
                 .          .          .            .          .           V
2127             .          .          .            .          .         RDG05
                 .          .          .            .          .           .
                 .          .          .            .          .           .
2133             .          .          .            .          .           .         G45
                 .          .          .            .          .           .           .
                 .          .          .            .          .           .           .
2140             .          .       CPG45...........................................
                 .          .          V
                 .          .          V
2143             .          .     RCPG45
                 .          .          .
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2149                                                G31
                                                     .
2155                                        CPG31............
                                                     .
2161                                                 .-------->   DVG31
2158                                         DG31
                                                 V
                                                 V
2164                                       RCPG31
                                                     .
2170                                                 .         G47
                                                     .           .
2176                                        CPG47............
                                                     .
2182                                                 .-------->   DVG47
2179                                         DG47
                                                 V
                                                 V
2185                                       RCPG47
                                                     .
2193                                                 .           .<-------   DVG31
2191                                                 .       DRG31
                                                     .           V
                                                     .           V
2194                                                 .       RDG31
                                                     .           .
2200                                                 .           .         G43
                                                     .           .           .
2207                                       CPG43.....................................
                                                     .
2210                                                 .
     D27RIV.......................
         V
         V
2213 RCPD27
         .
         .
2219     .         D28
         .           .
         .           .
2226 D28RIV............
         V
         V
2229 RCPD28
         .
         .
2235     .         D29
         .           .
         .           .
2242 D29RIV............
         V
         V
2245 RCPD29
         .
         .
2251     .         D30
         .           .
         .           .
2259     .           .           .<-------   DVG47
2257     .           .       DRG47
         .           .           V
         .           .           V
2260     .           .       RDG47
         .           .           .
         .           .           .
2266     .           .           .         G32
         .           .           .           .
         .           .           .           .
2272     .           .       CPG32............
         .           .           .
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2275 D30RIV.......................
         V
         V
2278 RCPD30
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2284            .          D31
                .            .
                .            .
2291      D31RIV............
                V
                V
2294      RCPD31
                .
                .
2300            .          G33
                .            .
                .            .
2306      G33RIV............
                V
                V
2309      RCPG33
                .
                .
2315            .          D32
                .            .
                .            .
2321            .            .        G14
                .            .          V
                .            .          V
2327            .            .      RCPG14
                .            .            .
                .            .            .
2333            .            .            .          G34
                .            .            .            .
                .            .            .            .
2339            .            .      CPG34A............
                .            .            .
                .            .            .
2342            .            .            .          G13
                .            .            .            .
                .            .            .            .
2348            .            .       CPG34............
                .            .          V
                .            .          V
2351            .            .      RCPG34
                .            .            .
                .            .            .
2357            .            .            .          G35
                .            .            .            .
                .            .            .            .
2363            .            .       CPG35............
                .            .            .
                .            .            .
2366      D32RIV........................
                V
                V
2369      RCPD32
                .
                .
2377            .            .<-------   DVD07
2375            .        DRD07
                .            V
                .            V
2378            .        RDD07
                .            .
                .            .
2384            .            .         D15
                .            .           .
                .            .           .
2391            .        CPD15............
                .            V
                .            V
2394            .       RCPD15
                .            .
                .            .
2401            .            .         D47
                .            .           V
                .            .           V
2407            .            .       RCPD47
                .            .            .
                .            .            .
2414            .            .            .          D02
                .            .            .            .
                .            .            .            .
2423            .            .            .            .-------->   DVD02
2420            .            .            .          DD02
                .            .            .            V
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                                  V
2426                            RCPD02
                                  .
                                  .
2432                              .          D03
                                  .           .
                                  .           .
2438                            CPD03............
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                                  .
2444                              .-------->   DVD03
2441                             DD03
                                  V
                                  V
2447                            RCPD03
                                  .
                                  .
2453                              .          D04
                                  .           .
                                  .           .
2459                            CPD04............
                                  .
                                  .
2465                              .-------->   DVD04
2462                             DD04
                                  V
                                  V
2468                            RCPD04
                                  .
                                  .
2476                              .            .<-------   DVD02
2474                              .        DRD02
                                  .            V
                                  .            V
2477                              .        RDD02
                                  .            .
                                  .            .
2485                              .            .            .<-------   DVD03
2483                              .            .        DRD03
                                  .            .            V
                                  .            .            V
2486                              .            .        RDD03
                                  .            .            .
                                  .            .            .
2492                              .            .            .          D01
                                  .            .            .            .
                                  .            .            .            .
2499                            CPD01.................................
                                  .
                                  .
2505                              .-------->   DVD01
2502                             DD01
                                  V
                                  V
2508                            RCPD01
                                  .
                                  .
2516                              .            .<-------   DVD04
2514                              .        DRD04
                                  .            V
                                  .            V
2517                              .        RDD04
                                  .            .
                                  .            .
2523                              .            .          D05
                                  .            .            .
                                  .            .            .
2530                            CPD05......................
                                  .
                                  .
2536                              .-------->   DVD05
2533                             DD05
                                  V
                                  V
2539                            RCPD05
                                  .
                                  .
2545                              .          D11
                                  .           .
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2551                            CPD11............
                                  V
                                  V
2554                            RCPD11
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2560                                  D06
                                       .
2570                                   .-------> DVD06
2567                                 DD06
                                       V
                                       V
2573                                RCPD06
                                       .
2581                                   .<-------  DVD06
2579                                   .      DRD06
                                       .        V
                                       .        V
2582                                   .      RDD06
                                       .        .
2588                                   .        .        D08
                                       .        .         .
                                       .        .         .
2594                                   .      CPD08.........
                                       .        V
                                       .        V
2597                                   .     RCPD08
                                       .        .
2603                                   .        .        D10
                                       .        .         .
                                       .        .         .
2610                                CPD10.................................
                                       V
                                       V
2613                                RCPD10
                                       .
2620                                  D46
                                       V
                                       V
2626                                RCPD46
                                       .
2635                                   .<-------  DVD05
2633                                   .      DRD05
                                       .        V
                                       .        V
2636                                   .      RDD05
                                       .        .
2642                                   .        .        D13
                                       .        .         .
                                       .        .         .
2648                                   .      CPD13.........
                                       .        V
                                       .        V
2651                                   .     RCPD13
                                       .        .
2658                                   .        .        D22
                                       .        .         .
                                       .        .         .
2666                          CPD22.......................................
                                 V
                                 V
2669                          RCPD22
                                 .
2675                                 .     D33
                                 .       .
                                 .       .
2682                          CPD33........
                                 .
                                 .
2685                     D33RIV........
                              V
                              V
2688                     RCPD33
                                 .
                                 .
2694                            D45
                                 .
                                 .
2700                                 .     G36
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                .           .           .
                .           .           .
2707      G36RIV.......................
               V
               V
2710      RCPG36
                .
                .
2716            .         D44
                .           .
                .           .
2722            .           .         G37
                .           .           .
                .           .           .
2728      G37RIV.......................
               V
               V
2731      RCPG37
                .
                .
2737            .         D43
                .           .
                .           .
2743            .           .         G12
                .           .           .
                .           .           .
2753            .           .           .-------->   DVG12
2750            .           .        DG12
                .           .           V
                .           .           V
2756            .           .      RCPG12
                .           .           .
                .           .           .
2762            .           .           .         G38
                .           .           .           .
                .           .           .           .
2768            .           .       CPG38............
                .           .           .
                .           .           .
2771      G38RIV.......................
               V
               V
2774      RCPG38
                .
                .
2780            .         D34
                .           V
                .           V
2786            .      RCPD34
                .           .
                .           .
2792            .           .         D42
                .           .           .
                .           .           .
2798            .       CPD42............
                .           .
                .           .
2803            .           .           .<-------   DVG12
2801            .           .       DRG12
                .           .           V
                .           .           V
2804            .           .       RDG12
                .           .           .
                .           .           .
2810            .           .           .         G39
                .           .           .           .
                .           .           .           .
2817            .           .       CPG39............
                .           .           .
                .           .           .
2820      D42RIV.......................
               V
               V
2823      RCPD42
                .
                .
2829            .         D41
                .           .
                .           .
2835      D41RIV............
               V
               V
2838      RCPD41
                .
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2844          G02
2851                  G03
2858       CPG03............
               V
               V
2861      RCPG03
2869                      .<-------   DVG08
2867                DRG08
                        V
                        V
2870                RDG08
2876                              G09
2883       CPG09........................
               V
               V
2886      RCPG09
2892                  G48
                        V
                        V
2899                RCPG48
2905                              G01
2912                CPG01............
2915                              G10
2921                CPG10............
                        V
                        V
2924                RCPG10
2930                              G11
2936       CPG11........................
2942                  .------->   DVG11
2939          DG11
               V
               V
2945      RCPG11
2951                  G40
2958       CPG40............
2961  G40RIV............
          V
          V
2964  RCPG40
2970          D40
2976                  G41
2982  D40RIV........................
          V
          V
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2985      RCPD40
               .
               .
2991           .         D36
               .           .
               .           .
097            .           .         D35
               .           .           .
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3004           .       CPD35............
               .           V
               .           V
3007           .      RCPD35
               .           .
               .           .
3013           .           .         D37
               .           .           .
               .           .           .
3019           .       CPD37............
               .           .
               .           .
3022           .           .         D38
               .           .           .
               .           .           .
3028           .       CPD38............
               .           V
               .           V
3031           .      RCPD38
               .           .
               .           .
3037           .           .         D39
               .           .           .
               .           .           .
3043           .       CPD39............
               .           .
               .           .
3046      D39RIV............
               V
               V
3049      RCPD39
               .
               .
057            .           .<-------   DVG11
5              .       DRG11
               .           V
               .           V
3058           .       RDG11
               .           .
               .           .
3064           .           .         G42
               .           .           .
               .           .           .
3071           .       CPG42............
               .           .
               .           .
3074      G42RIV............
               V
               V
3077      RCPG42
               .
               .
3083           .         C50
               .           V
               .           V
3091           .      RCPC50
               .           .
               .           .
3097           .           .         C51
               .           .           .
               .           .           .
3106           .       CPC51............
               .           V
               .           V
3109           .      RCPC51
               .           .
               .           .
3115           .           .         C52
               .           .           V
               .           .           V
24             .           .      RCPC52
               .           .           .
               .           .           .
3130           .           .           .         C53
               .           .           .           V
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                                                V
3139                                        RCPC53
                                                .
                                                .
3145                                            .          B07
                                                .           .
                                                .           .
3153                CPB07.......................................
                      V
                      V
3156              RCPB07
                      .
                      .
3162                  .          B08
                      .            .
                      .            .
3171                CPB08............
                      .
                      .
3174        B08RIV............
                V
                V
3177        RCPB08
                .
                .
3183                .         C04
                      V
                      V
3189              RCPC04
                      .
                      .
3195                  .         C12
                      .            .
                      .            .
3201                CPC12............
                      .
                      .
3207                  .-------->   DVC12
3204                DC12
                      V
                      V
3210              RCPC12
                      .
                      .
3216                  .         C13
                      .            .
                      .            .
3222                CPC13............
                      V
                      V
3225              RCPC13
                      .
                      .
3232                  .         C11
                      .            .
                      .            .
3241                  .            .-------->   DVC11
3238                  .        DC11
                      .           V
                      .           V
3244                  .      RCPC11
                      .            .
                      .            .
3252                  .            .           .<-------   DVC12
3250                  .            .       DRC12
                      .            .           V
                      .            .           V
3253                  .            .       RDC12
                      .            .           .
                      .            .           .
3259                  .            .           .          C31
                      .            .           .           .
                      .            .           .           .
3265                  .       CPC31........................
                      .           V
                      .           V
3268                  .      RCPC31
                      .            .
                      .            .
3277                  .            .           .<-------   DVC11
3275                  .            .       DRC11
                      .            .           V
                      .            .           V
3278                  .            .       RDC11
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3284                                  C14
                                       .
                                       .
3290                            CPC14............
                                    V
                                    V
3293                            RCPC14
                                       .
                                       .
3300                                  C05
                                       V
                                       V
3306                                RCPC05
                                       .
                                       .
3312                                                  C03
                                                       .
                                                       .
3321                                                   .-------->   DVC03
3318                                                 DC03
                                                       V
                                                       V
3324                                               RCPC03
                                                       .
                                                       .
3330                                                   .         C09
                                                       .           .
                                                       .           .
3336                                               CPC09............
                                                       .
                                                       .
3342                                                   .-------->   DVC09
3339                                                 DC09
                                                       V
                                                       V
3345                                               RCPC09
                                                       .
                                                       .
3351                                                   .         C15
                                                       .           .
                                                       .           .
3357                                               CPC15............
                                                       .
                                                       .
3363                                                   .-------->   DVC15
3360                                                 DC15
                                                       V
                                                       V
3366                                               RCPC15
                                                       .
                                                       .
3372                                                   .         C10
                                                       .           .
                                                       .           .
3378                                         CPC10......................
                                                 V
                                                 V
3381                                         RCPC10
                                                       .
                                                       .
3390                                                   .<--------   DVC03
3388                                               DRC03
                                                       V
                                                       V
3391                                               RDC03
                                                       .
                                                       .
3397                                                   .         C06
                                                       .           .
                                                       .           .
3403                                               CPC06............
                                                       .
                                                       .
3409                                                   .-------->   DVC06
3406                                                 DC06
                                                       V
                                                       V
3412                                               RCPC06
                                                       .
                                                       .
3420                                                   .           .<--------   DVC09
3418                                                   .       DRC09
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                                                                  V
                                                                  V
3421                                                            RDC09
                                                                  .
                                                                  .
3427                                                                .          C16
                                                                  .            .
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3433                                                      CPC16.......................
                                                              V
                                                              V
3436                                                      RCPC16
                                                                  .
                                                                  .<-------   DVC06
3444                                                            DRC06
3442                                                                V
                                                                    V
3445                                                            RDC06
                                                                  .
                                                                  .
3451                                                                .          C18
                                                                  .            .
                                                                  .            .
3457                                                            CPC18............
                                                                  .
                                                                  .
                                                                  .------->   DVC18
3463                                                             DC18
3460                                                                V
                                                                    V
3466                                                           RCPC18
                                                                  .
                                                                  .
3472                                                                .          C17
                                                                  .            .
                                                                  .            .
3478                                                            CPC17............
                                                                  .
                                                                  .
                                                                  .------->   DVC17
3484                                                             DC17
3481                                                                V
                                                                    V
3487                                                           RCPC17
                                                                  .
                                                                  .
                                                                  .<-------   DVC15
3495                                                                      DRC15
3493                                                                          V
                                                                              V
3496                                                                      RDC15
                                                                  .            .
                                                                  .            .
3502                                                                .            .          C30
                                                                  .            .            .
                                                                  .            .            .
3508                                                      CPC30.....................................
                                                              V
                                                              V
3511                                                      RCPC30
                                                                  .
                                                                  .
3518                                  CPC33A.......................................
                                          V
                                          V
3522                                  RC33A
                                          .
                                          .
3528                                          C02
                                                V
                                                V
3534                                          RCPC02
                                                  .
                                                  .
3540                                                  C01
                                                        V
                                                        V
3546                                                RCPC01
                                                        .
                                                        .
3552                                                        C08
                                                              V
                                                              V
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3558                                                RCPC08
                                                       .
                                                       .
3564                                                   .        C07
                                                       .         .
                                                       .         .
3570                                  CPC07.......................
                                                       .
                                                       .
3576                                  .-------->   DVC07
3573                                DC07
                                      V
                                      V
3579                                RCPC07
                                      .
                                      .
3587                                  .           .<-------   DVC18
3585                                  .       DRC18
                                      .           V
                                      .           V
3588                                  .       RDC18
                                      .           .
                                      .           .
3594                                  .           .         C19
                                      .           .           .
                                      .           .           .
3600                                  CPC19.......................
                                      .
                                      .
3606                                  .------->   DVC19
3603                                DC19
                                      V
                                      V
3609                                RCPC19
                                      .
                                      .
3617                                  .           .<-------   DVC17
3615                                  .       DRC17
                                      .           V
                                      .           V
3618                                  .       RDC17
                                      .           .
                                      .           .
3624                                  .           .         C29
                                      .           .           .
                                      .           .           .
3630                                  CPC29.......................
                                      V
                                      V
3633                                RCPC29
                                      .
                                      .
3640                                  .         C28
                                      .           V
                                      .           V
3646                                  .      RCPC28
                                      .           .
                                      .           .
3655                                  .           .           .<-------   DVC19
3653                                  .           .       DRC19
                                      .           .           V
                                      .           .           V
3656                                  .           .       RDC19
                                      .           .           .
                                      .           .           .
3662                                  .           .           .         C27
                                      .           .           .           .
                                      .           .           .           .
3668                                  .           .       CPC27............
                                      .           .           V
                                      .           .           V
3671                                  .           .      RCPC27
                                      .           .           .
                                      .           .           .
3680                                  .           .           .           .<-------   DVC07
3678                                  .           .           .       DRC07
                                      .           .           .           V
                                      .           .           .           V
3681                                  .           .           .       RDC07
                                      .           .           .           .
                                      .           .           .           .
3687                                  .           .           .           .         C21
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3696                                                                  .------->  DVC21
3693                                                              DC21
                                                                     V
                                                                     V
3699                                                           RCPC21

3705                                                                                C20

3711                                                       CPC20.......................
                                                              V
                                                              V
3714                                                       RCPC20

3721                                  CPC33B.................................
                                           V
                                           V
3724                                  RC33B

3730                                            C26
                                                  V
                                                  V
3736                                            RCPC26

3745                                                     .<-------   DVC21
3743                                                 DRC21
                                                        V
                                                        V
3746                                                 RDC21

3752                                                            C23
                                                                  V
                                                                  V
3758                                                         RCPC23

3764                                                                        C22

3770                                                 CPC22......................
                                                        V
                                                        V
3773                                                RCPC22

3780                                                            C24
                                                                  V
                                                                  V
3786                                                         RCPC24

3793                                                                        C25
                                                                              V
                                                                              V
3799                                                                   RCPC25

3808                                                                                .<-------   DVD01
3806                                                                          DRD01
                                                                                 V
                                                                                 V
3809                                                                          RDD01

3815                                                                                                D09

3821                                                                          CPD09............
                                                                                 V
                                                                                 V
3824                                                                          RCPD09

3831                                            CPC33C.............................................
                                                  V
                                                  V
3835                                            RC33C
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3841          .           .      CPC33D............
              .           .           V
              .           .           V
3845          .           .      RC33D
              .           .           .
              .           .           .
3851          .      CPC33E............
              .           V
              .           V
3855          .      RC33E
              .           .
              .           .
3861          .           .         D12
              .           .           V
              .           .           V
3867          .           .      RCPD12
              .           .           .
              .           .           .
3874          .      CPC33F............
              .           V
              .           V
3878          .      RC33F
              .           .
              .           .
3884          .           .         C33
              .           .           .
              .           .           .
3892          .       CPC33............
              .           V
              .           V
3895          .      RCPC33
              .           .
              .           .
3901          .           .         C34
              .           .           .
              .           .           .
3908          .      CPC34A............
              .           .
              .           .
3911          .           .         C35
              .           .           V
              .           .           V
3918          .           .      RCPC35
              .           .           .
              .           .           .
3924          .       CPC34............
              .           V
              .           V
3927          .      RCPC34
              .           .
              .           .
3933          .           .         C36
              .           .           .
              .           .           .
3940          .       CPC36............
              .           V
              .           V
3943          .      RCPC36
              .           .
              .           .
3949          .           .         C49
              .           .           .
              .           .           .
3955          .       CPC49............
              .           V
              .           V
3958          .      RCPC49
              .           .
              .           .
3964          .           .         C40
              .           .           .
              .           .           .
3973          .           .           .-------->   DVC40
3970          .           .        DC40
              .           .           V
              .           .           V
3976          .           .      RCPC40
              .           .           .
              .           .           .
3982          .           .           .         C41
              .           .           .           .
              .           .           .           .
3991          .           .           .           .-------->   DVC41
3988          .           .           .        DC41
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                                  V
                                  V
3994                           RCPC41
                                  .
                                  .
4000                              .          C42
                                  .           .
                                  .           .
4006                        CPC42.......................
                                  .
                                  .
4012                              .-------->  DVC42A
4009                        DC42A
                                  .
                                  .
4018                              .-------->  DVC42B
4015                        DC42B
                                  V
                                  V
4021                       RCPC42
                                  .
                                  .
4029                              .           .<--------   DVC41
4027                           DRC41
                                  V
                                  V
4030                           RDC41
                                  .
                                  .
4036                              .          C46
                                  .           .
                                  .           .
4043                        CPC46.......................
                                  .
                                  .
4049                              .-------->   DVC46
4046                         DC46
                                  V
                                  V
4052                       RCPC46
                                  .
                                  .
4058                              .         C37
                                  .           .
                                  .           .
4065                        CPC37............
                                  V
                                  V
4068                       RCPC37
                                  .
                                  .
4074                              .         C48
                                  .           .
                                  .           .
4080                       CPC48A............
                                  .
                                  .
4083                    CPC48............
                           V
                           V
4086                    RCPC48
                           .
                           .
4092                          C39
                                  .
                                  .
4101                              .-------->   DVC39
4098                          DC39
                                  V
                                  V
4104                       RCPC39
                                  .
                                  .
4112                              .           .<--------   DVC40
4110                           DRC40
                                  V
                                  V
4113                           RDC40
                                  .
                                  .
4119                              .          C43
                                  .           .
                                  .           .
4125                        CPC43.......................
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4131                    .------->   DVC43
4128                DC43
                        V
                        V
134                 RCPC43

4142                            .<-------  DVC42A
4140                        DRC42A
                                V
                                V
4143                        RDC42A

4149                                    C45

4155                        CPC45............

4161                            .------->   DVC45
4158                          DC45
                                V
                                V
4164                        RCPC45

4170                                    C44

4176                    CPC44........................
                        V
                        V
4179                RCPC44

4187                            .<-------   DVC39
4185                        DRC39
                                V
                                V
188                         RDC39

4196                                        .<-------   DVC43
4194                                    DRC43
                                            V
                                            V
4197                                    RDC43

4203                                            C38

4210                        CPC38........................
                                V
                                V
4213                        RCPC38

4221                                        .<-------  DVC42B
4219                                    DRC42B
                                            V
                                            V
4222                                    RDC42B

4230                                            .<-------   DVC45
4228                                        DRC45
                                                V
                                                V
4231                                        RDC45

4239                                                .<-------   DVC46
4237                                            DRC46
                                                    V
                                                    V
40                                              RDC46

4246                                                        C47
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4253                    CPC47A.....................................................
                                 .
                                 .
4256            CPC47............
                    V
                    V
4259            RCPC47
                    .
                    .
4265                        B09
                                 .
                                 .
4272            CPB09............
                    V
                    V
4275            RCPB09
                    .
                    .
4281                        B01
                                 V
                                 V
4288                    RCPB01
                                 .
                                 .
4294                             .          B02
                                 .            V
                                 .            V
4301                             .       RCPB02
                                 .            .
                                 .            .
4307                             .            .          B03
                                 .            .            .
                                 .            .            .
4314                     CPB03.......................
                                 .
                                 .
4320                             .-------->  DVB03A
4317                     DB03A
                                 .
                                 .
4326                             .-------->  DVB03B
4323                     DB03B
                                 V
                                 V
4329                    RCPB03
                                 .
                                 .
4335                             .          B13
                                 .            .
                                 .            .
4341                     CPB13............
                                 .
                                 .
4347                             .-------->   DVB13
4344                      DB13
                                 V
                                 V
4350                    RCPB13
                                 .
                                 .
4356                             .          B04
                                 .            V
                                 .            V
4363                             .       RCPB04
                                 .            .
                                 .            .
4369                             .            .          B05
                                 .            .            .
                                 .            .            .
4375                     CPB05.......................
                                 V
                                 V
4378                    RCPB05
                                 .
                                 .
4384                             .          B06
                                 .            V
                                 .            V
4390                             .       RCPB06
                                 .            .
                                 .            .
4396                             .            .          B10
                                 .            .            .
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4402                CPB10.......................
                        .
4405                    .          B11
                        .            .
4411                CPB11............
                        V
                        V
4414                RCPB11
                        .
4420                    .          B12
                        .            .
4427                CPB12A...........
                        .
4430          CPB12............
                        .
4433                  H02
                        V
                        V
4439                RCPH02
                        .
4445                    .          H01
                        .            .
4451                CPH01............
                        .
4457                    .-------->   DVH01
4454                 DH01
                        V
                        V
4460                RCPH01
                        .
4466                    .          H24
                        .            .
4472                CPH24............
                        V
                        V
4475                RCPH24
                        .
4481                    .          H55
                        .            .
4487                CPH55............
                        V
                        V
4490                RCPH55
                        .
4496                    .          H56
                        .            .
4502                CPH56............
                        V
                        V
4505                RCPH56
                        .
4511                    .          H57
                        .            .
4517                CPH57............
                        V
                        V
4520                RCPH57
                        .
4526                    .          H68
                        .            .
4532                CPH68............
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                        .
4535      B12RIV........................
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                V
                V
4538        RCPB12
                .
                .
4546            .          .<-------   DVH01
4544            .      DRH01
                .          V
                .          V
4547            .      RDH01
                .          .
                .          .
4553            .          .        H25
                .          .          .
                .          .          .
4559            .      CPH25............
                .          V
                .          V
4562            .     RCPH25
                .          .
                .          .
4568            .          .        H58
                .          .          .
                .          .          .
4574            .      CPH58............
                .          V
                .          V
4577            .     RCPH58
                .          .
                .          .
4583            .          .        H26
                .          .          V
                .          .          V
4589            .          .     RCPH26
                .          .          .
                .          .          .
4595            .          .          .        H59
                .          .          .          .
                .          .          .          .
4601            .      CPH59........................
                .          .
                .          .
4607            .          .-------->  DVH59
4604            .       DH59
                .          V
                .          V
4610            .     RCPH59
                .          .
                .          .
4616            .          .        H60
                .          .          .
                .          .          .
4622            .      CPH60............
                .          V
                .          V
4625            .     RCPH60
                .          .
                .          .
4633            .          .          .<-------   DVH59
4631            .          .     DRH59
                .          .          V
                .          .          V
4634            .          .     RDH59
                .          .          .
                .          .          .
4640            .          .          .        H61
                .          .          .          .
                .          .          .          .
4646            .          .     CPH61............
                .          .          V
                .          .          V
4649            .          .     RCPH61
                .          .          .
                .          .          .
4655            .          .          .        H69
                .          .          .          .
                .          .          .          .
4661            .      CPH69........................
                .          .
                .          .
4664        H69RIV............
                V
                V
4667        RCPH69
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                .
                .
4673            .         H65
                .           V
                .           V
4679            .      RCPH65
                .           .
                .           .
85              .           .         H67
                .           .           .
                .           .           .
4691            .       CPH67............
                .           V
                .           V
4694            .      RCPH67
                .           .
                .           .
4700            .           .         H70
                .           .           .
                .           .           .
4706            .       CPH70............
                .           .
                .           .
4709            .           .         B15
                .           .           .
                .           .           .
4715       B15RIV........................
                V
                V
4719       RCPB15
                .
                .
4727            .           .<-------   DVB13
4725            .       DRB13
                .           V
                .           V
4728            .       RDB13
                .           .
                .           .
4734            .           .         B14
                .           .           .
                .           .           .
740             .       CPB14............
                .           .
                .           .
4743            .           .         B21
                .           .           .
                .           .           .
4749            .       CPB21............
                .           V
                .           V
4752            .      RCPB21
                .           .
                .           .
4758            .           .         B45
                .           .           .
                .           .           .
4765            .       CPB45............
                .           .
                .           .
4768       B45RIV............
                V
                V
4771       RCPB45
                .
                .
4777            .         H22
                .           V
                .           V
4783            .      RCPH22
                .           .
                .           .
4789            .           .         H03
                .           .           V
                .           .           V
4795            .           .      RCPH03
                .           .           .
                .           .           .
301             .           .           .         H21
                .           .           .           .
                .           .           .           .
4807            .           .      CPH21............
                .           .           V
                .           .           V
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4810                RCPH21
                      .
                      .
4816                  .          H23
                      .            .
                      .            .
4822            CPH23.....................
                    V
                    V
4825            RCPH23
                      .
                      .
4831                  .        H27
                      .          V
                      .          V
4837                  .      RCPH27
                      .            .
                      .            .
4843                  .            .          H62
                      .            .            .
                      .            .            .
4849            CPH62.....................
                    V
                    V
4852            RCPH62
                      .
                      .
4858                  .        H20
                      .          V
                      .          V
4864                  .      RCPH20
                      .            .
                      .            .
4870                  .            .          H28
                      .            .            .
                      .            .            .
4876                  .       CPH28............
                      .          V
                      .          V
4879                  .      RCPH28
                      .            .
                      .            .
4885                  .            .          H63
                      .            .            .
                      .            .            .
4891            CPH63.....................
                      .
                      .
4897                  .-------->   DVH63
4894            DH63
                    V
                    V
4900            RCPH63
                      .
                      .
4906                  .        H66
                      .          .
                      .          .
4913            CPH66............
                    V
                    V
4916            RCPH66
                      .
                      .
4922                  .        H71
                      .          .
                      .          .
4928            CPH71............
                    V
                    V
4931            RCPH71
                      .
                      .
4937                  .        H72
                      .          .
                      .          .
4943            CPH72............
                      .
                      .
4946        H72RIV............
                V
                V
4949        RCPH72
                .
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                .
4955            .         B20
                .          V
                .          V
4961            .      RCPB20
                .          .
                .          .
967             .          .         B44
                .          .           .
                .          .           .
4973            .      CPB44............
                .          V
                .          V
4976            .      RCPB44
                .          .
                .          .
4982            .          .         B42
                .          .           V
                .          .           V
4988            .          .      RCPB42
                .          .           .
                .          .           .
4994            .          .           .         B43
                .          .           .           .
                .          .           .           .
5000            .          .      CPB43............
                .          .           .
                .          .           .
5003            .          .           .         B41
                .          .           .           .
                .          .           .           .
5010            .          .      CPB41............
                .          .           V
                .          .           V
5013            .          .      RCPB41
                .          .           .
                .          .           .
5019            .          .           .         B46
                .          .           .           .
                .          .           .           .
5026            .      CPB46........................
                .          .
                .          .
29          B46RIV............
                V
                V
5032        RCPB46
                .
                .
5040            .          .<-------   DVH63
5038            .      DRH63
                .          V
                .          V
5041            .      RDH63
                .          .
                .          .
5047            .          .         H53
                .          .           .
                .          .           .
5053            .      CPH53............
                .          .
                .          .
5056            .          .         H18
                .          .           V
                .          .           V
5062            .          .      RCPH18
                .          .           .
                .          .           .
5068            .          .           .         H29
                .          .           .           .
                .          .           .           .
5075            .          .      CPH29............
                .          .           .
                .          .           .
5078            .          .           .         H04
                .          .           .           V
                .          .           .           V
5085            .          .           .      RCPH04
                .          .           .           .
                .          .           .           .
91              .          .           .           .         H17
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5097            .          .           .      CPH17............
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5103             .          .          .          .-------->   DVH17
5100             .          .          .       DH17
                 .          .          .          V
                 .          .          .          V
5106             .          .          .      RCPH17
                 .          .          .          .
                 .          .          .          .
5112             .          .          .          .         H30
                 .          .          .          .           .
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5118             .          .          .      CPH30............
                 .          .          .          V
                 .          .          .          V
5121             .          .          .      RCPH30
                 .          .          .          .
                 .          .          .          .
5127             .          .          .          .         H51
                 .          .          .          .           .
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5133             .          .          .      CPH51............
                 .          .          .          V
                 .          .          .          V
5136             .          .          .      RCPH51
                 .          .          .          .
                 .          .          .          .
5142             .          .          .          .         H52
                 .          .          .          .           .
                 .          .          .          .           .
5148             .          .          .      CPH52A...........
                 .          .          .          .
                 .          .          .          .
5151             .     CPH52B........................
                 .          V
                 .          V
5154             .     RCPH52
                 .          .
                 .          .
5160             .          .        H54
                 .          .          .
                 .          .          .
5166             .      CPH54............
                 .          V
                 .          V
5169             .     RCPH54
                 .          .
                 .          .
5175             .          .        H16
                 .          .          V
                 .          .          V
5181             .          .      RCPH16
                 .          .          .
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5187             .          .          .        H05
                 .          .          .          .
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5193             .          .      CPH05............
                 .          .          V
                 .          .          V
5196             .          .      RCPH05
                 .          .          .
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5202             .          .          .        H31
                 .          .          .          .
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5208             .          .      CPH31............
                 .          .          .
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5214             .          .          .-------->   DVH31
5211             .          .        DH31
                 .          .          V
                 .          .          V
5217             .          .      RCPH31
                 .          .          .
                 .          .          .
5225             .          .          .          .<-------   DVH17
5223             .          .          .       DRH17
                 .          .          .          V
                 .          .          .          V
5226             .          .          .       RDH17
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5232             .          .          .          .         H32
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5238            .          .      CPH32.......................
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5244            .          .          .-------->   DVH32
5241            .          .       DH32
                .          .          V
                .          .          V
5247            .          .     RCPH32
                .          .          .
                .          .          .
5255            .          .          .          .<-------   DVH32
5253            .          .          .      DRH32
                .          .          .          V
                .          .          .          V
5256            .          .          .      RDH32
                .          .          .          .
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5262            .          .          .          .         H48
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5268            .          .          .      CPH48............
                .          .          .          .
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5274            .          .          .          .-------->   DVH48
5271            .          .          .       DH48
                .          .          .          V
                .          .          .          V
5277            .          .          .     RCPH48
                .          .          .          .
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5283            .          .          .          .         H50
                .          .          .          .           .
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5290            .          .      CPH50.......................
                .          .          V
                .          .          V
5293            .          .     RCPH50
                .          .          .
                .          .          .
5301            .          .          .          .<-------   DVH48
5299            .          .          .      DRH48
                .          .          .          V
                .          .          .          V
5302            .          .          .      RDH48
                .          .          .          .
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5308            .          .          .          .         H49
                .          .          .          .           .
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5314            .          .          .      CPH49............
                .          .          .          V
                .          .          .          V
5317            .          .          .     RCPH49
                .          .          .          .
                .          .          .          .
5323            .          .          .          .         H73
                .          .          .          .           .
                .          .          .          .           .
5329            .      CPH73.................................
                .          V
                .          V
5332            .     RCPH73
                .          .
                .          .
5338            .          .        H74
                .          .          .
                .          .          .
5344            .      CPH74............
                .          .
                .          .
5347      H74RIV............
                V
                V
5350      RCPH74
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5356            .        H15
                .          V
                .          V
5362            .     RCPH15
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5370          .           .           .<-------   DVH31
5368          .           .       DRH31
              .           .           V
              .           .           V
5371          .           .       RDH31
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              .           .           .
5377          .           .           .         H33
              .           .           .           .
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5384          .       CPH33.......................
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              .           .
5390          .           .------->   DVH33
5387          .        DH33
              .           V
              .           V
5393          .      RCPH33
              .           .
              .           .
5399          .           .         H47
              .           .           .
              .           .           .
5405          .       CPH47............
              .           V
              .           V
5408          .      RCPH47
              .           .
              .           .
5414          .           .         H75
              .           .           .
              .           .           .
5422          .       CPH75............
              .           V
              .           V
5425          .      RCPH75
              .           .
              .           .
5431          .           .         H76
              .           .           .
              .           .           .
5437          .       CPH76............
              .           V
              .           V
5440          .      RCPH76
              .           .
              .           .
5446          .           .         H77
              .           .           .
              .           .           .
5452          .       CPH77............
              .           .
              .           .
5455      H77RIV............
              V
              V
5459      RCPH77
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5465          .         B40
              .           V
              .           V
5471          .      RCPB40
              .           .
              .           .
5477          .           .         B49
              .           .           V
              .           .           V
5483          .           .      RCPB49
              .           .           .
              .           .           .
5489          .           .           .         B50
              .           .           .           .
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5495          .       CPB50.......................
              .           V
              .           V
5498          .      RCPB50
              .           .
              .           .
5504          .           .         B19
              .           .           V
              .           .           V
5511          .           .      RCPB19
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5517            .           .           .         B48
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5523            .           .       CPB48............
                .           .           V
                .           .           V
26              .           .      RCPB48
                .           .           .
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5532            .           .           .         B47
                .           .           .           V
                .           .           .           V
5538            .           .           .      RCPB47
                .           .           .           .
                .           .           .           .
5544            .           .           .           .         B61
                .           .           .           .           .
                .           .           .           .           .
5554            .       CPB61.................................
                .           .
                .           .
5557      B61RIV............
                V
                V
5560      RCPB61
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5566            .         B22
                .           V
                .           V
5572            .      RCPB22
                .           .
                .           .
5578            .           .         B23
                .           .           .
                .           .           .
5587            .           .           .-------->   DVB23
5584            .           .        DB23
                .           .           V
                .           .           V
90              .           .      RCPB23
                .           .           .
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5596            .           .           .         B36
                .           .           .           .
                .           .           .           .
5602            .           .       CPB36............
                .           .           .
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5607            .           .           .           .<-------   DVB23
5605            .           .           .      DRB23
                .           .           .           V
                .           .           .           V
5608            .           .           .      RDB23
                .           .           .           .
                .           .           .           .
5614            .           .           .           .         B24
                .           .           .           .           .
                .           .           .           .           .
5620            .           .           .      CPB24A............
                .           .           .           .
                .           .           .           .
5623            .           .       CPB24............
                .           .           V
                .           .           V
5626            .           .      RCPB24
                .           .           .
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5632            .           .           .         B37
                .           .           .           .
                .           .           .           .
5638            .       CPB37........................
                .           .
                .           .
5641            .           .         B25
                .           .           .
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17              .       CPB25............
                .           V
                .           V
5650            .      RCPB25
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5656                B26
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5662          CPB26............
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5668                 .-------->   DVB26
5665          DB26
                 V
                 V
5671         RCPB26
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5679                 .<-------  DVB03B
5677             DRB03B
                     V
                     V
5680             RDB03B
                     .
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5686                 .         B17
                     .           .
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5695                 .           .-------->   DVB17
5692                 .        DB17
                     .           V
                     .           V
5698                 .      RCPB17
                     .           .
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5704                 .           .         B18
                     .           .           .
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5711             CPB18........................
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5716                 .           .<-------  DVB03A
5714                 .      DRB03A
                     .           V
                     .           V
5717                 .      RDB03A
                     .           .
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5725                 .           .           .<-------   DVB17
5723                 .           .       DRB17
                     .           .           V
                     .           .           V
5726                 .           .       RDB17
                     .           .           .
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5732                 .           .           .         B16
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5738                 .       CPB16........................
                     .           V
                     .           V
5741                 .      RCPB16
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5747                 .           .         B39
                     .           .           .
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5753                 .      CPB39A............
                     .           .
                     .           .
5756             CPB39............
                     V
                     V
5759             RCPB39
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5765                 .         B54
                     .           .
                     .           .
5771             CPB54............
                     V
                     V
5774             RCPB54
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5780                 .         B38
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5787                CPB38............
                      V
                      V
5790              RCPB38
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 796                  .         B65
                      .           .
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5802          CPB65.......................
                V
                V
5806          RCPB65
                .
                .
5812                B27
                      V
                      V
5818              RCPB27
                      .
                      .
5824                  .         B35
                      .           .
                      .           .
5830              CPB35A...........
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5835                  .           .<-------   DVB26
5833                  .       DRB26
                      .           .
                      .           .
5836               CPB35............
                      V
                      V
5839              RCPB35
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                      .
5845                  .         B28
                      .           .
                      .           .
5851                  .           .         B34
                      .           .           .
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57                    .       CPB34............
                      .           V
                      .           V
5860                  .      RCPB34
                      .           .
                      .           .
5866                  .           .         B33
                      .           .           .
                      .           .           .
5872                  .      CPB33A...........
                      .           .
                      .           .
5875               CPB33............
                      V
                      V
5878              RCPB33
                      .
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5884                  .         B55
                      .           .
                      .           .
5890               CPB55............
                      V
                      V
5893              RCPB55
                      .
                      .
5899                  .         B31
                      .           V
                      .           V
5905                  .      RCPB31
                      .           .
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5911                  .           .         B32
                      .           .           V
                      .           .           V
17                    .           .      RCPB32
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5923                  .           .           .         B30
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5932                                                  .------->  DVB30
5929                                            DB30
                                                   V
                                                   V
5935                                         RCPB30
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5941                                                .          B29
                                                   .            .
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5947                                 CPB29.......................................
                                        V
                                        V
5950                                 RCPB29
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5958                                        .<-------   DVB30
5956                                   DRB30
                                          V
                                          V
5959                                   RDB30
                                          .
                                          .
5965                                        .          B57
                                          .            .
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5971                                   CPB57............
                                          V
                                          V
5974                                  RCPB57
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5980                                        .          B56
                                          .            .
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5986                                   CPB56............
                                          V
                                          V
5989                                  RCPB56
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                                          .
5995                                        .          B58
                                          .            .
                                          .            .
6001                                   CPB58............
                                          V
                                          V
6004                                  RCPB58
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                                          .
6010                                        .          B59
                                          .            .
                                          .            .
6016                        CPB59.............................................
                               V
                               V
6019                        RCPB59
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6025                               B52
                                    V
                                    V
6031                            RCPB52
                                    .
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6037                                    B53
                                      V
                                      V
6043                                RCPB53
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6049                                      .         B60
                                      .            .
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6060                        CPB60.....................................
                               V
                               V
6063                        RCPB60
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6071                               .<-------   DVH33
6069                            DRH33
                                    V
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                    .         .         V
6072                .         .      RDH33
                    .         .         .
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6078                .         .         .        H46
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 84                 .         .      CPH46............
                    .         .         V
                    .         .         V
6087                .         .     RCPH46
                    .         .         .
                    .         .         .
6093                .         .         .        H06
                    .         .         .         .
                    .         .         .         .
6102                .         .         .         .-------->   DVH06
6099                .         .         .       DH06
                    .         .         .         V
                    .         .         .         V
6105                .         .         .     RCPH06
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6111                .         .         .         .         H14
                    .         .         .         .           .
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6117                .         .         .      CPH14............
                    .         .         .         V
                    .         .         .         V
6120                .         .         .     RCPH14
                    .         .         .         .
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6128                .         .         .         .           .<--------   DVH06
6126                .         .         .         .       DRH06
                    .         .         .         .           V
                    .         .         .         .           V
6129                .         .         .         .       RDH06
                    .         .         .         .           .
                    .         .         .         .           .
6135                .         .         .         .           .         H13
                    .         .         .         .           .           .
                    .         .         .         .           .           .
 141                .         .         .      CPH13........................
                    .         .         .         V
                    .         .         .         V
6144                .         .         .     RCPH13
                    .         .         .         .
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6150                .         .         .         .         H12
                    .         .         .         .           .
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6159                .         .         .         .           .-------->   DVH12
6156                .         .         .         .        DH12
                    .         .         .         .           V
                    .         .         .         .           V
6162                .         .         .         .      RCPH12
                    .         .         .         .           .
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6168                .         .         .         .           .         H07
                    .         .         .         .           .           .
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6174                .         .         .         .       CPH07............
                    .         .         .         .           .
                    .         .         .         .           .
6180                .         .         .         .           .-------->   DVH07
6177                .         .         .         .        DH07
                    .         .         .         .           V
                    .         .         .         .           V
6183                .         .         .         .      RCPH07
                    .         .         .         .           .
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6189                .         .         .         .           .         H34
                    .         .         .         .           .           .
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6195                .         .         .      CPH34........................
                    .         .         .         V
                    .         .         .         V
 198                .         .         .     RCPH34
                    .         .         .         .
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 204                .         .         .         .         H45
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6210                .         .         .      CPH45............
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                                          V
                                          V
6213                                   RCPH45
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6221                                      .<-------   DVH07
6219                                   DRH07
                                          V
                                          V
6222                                   RDH07
                                          .
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6228                                      .         H36
                                          .           .
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6234                                   CPH36............
                                          V
                                          V
6237                                  RCPH36
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6243                                      .         H44
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6249                                   CPH44............
                                          V
                                          V
6252                                  RCPH44
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6258                                      .         H78
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6264                          CPH78.......................................
                                 V
                                 V
6267                          RCPH78
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6273                                 .         H79
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6279                          CPH79............
                                 V
                                 V
6282                          RCPH79
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                                 .
6288                                 .         H80
                                 .           .
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6295                          CPH80............
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                                 .
6298                 H80RIV........................
                        V
                        V
6301                 RCPH80
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6307                    .         B62
                        .           .
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6316                 B62RIV............
                        V
                        V
6319                 RCPB62
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6325                    .         H43
                        .           V
                        .           V
6331                    .       RCPH43
                        .           .
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6337                    .           .         H81
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6343                    .       CPH81 ............
                        .           V
                        .           V
6346                    .       RCPH81
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6352          .           .         H08
              .           .          V
              .           .          V
6358          .           .      RCPH08
              .           .           .
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364           .           .           .         H11
              .           .           .           .
              .           .           .           .
6373          .           .           .           .-------->   DVH11
6370          .           .           .        DH11
              .           .           .           V
              .           .           .           V
6376          .           .           .      RCPH11
              .           .           .           .
              .           .           .           .
6384          .           .           .           .           .<-------   DVH12
6382          .           .           .           .       DRH12
              .           .           .           .           V
              .           .           .           .           V
6385          .           .           .           .       RDH12
              .           .           .           .           .
              .           .           .           .           .
6391          .           .           .           .           .         H35
              .           .           .           .           .           .
              .           .           .           .           .           .
6397          .           .       CPH35.................................
              .           .           V
              .           .           V
6400          .           .      RCPH35
              .           .           .
              .           .           .
6406          .           .           .         H37
              .           .           .           .
              .           .           .           .
6412          .           .       CPH37............
              .           .           V
              .           .           V
6415          .           .      RCPH37
              .           .           .
              .           .           .
421           .           .           .         H42
              .           .           .           .
              .           .           .           .
27            .           .       CPH42............
              .           .           V
              .           .           V
6430          .           .      RCPH42
              .           .           .
              .           .           .
6436          .           .           .         H82
              .           .           .           .
              .           .           .           .
6442          .       CPH82........................
              .           V
              .           V
6445          .      RCPH82
              .           .
              .           .
6451          .           .         H83
              .           .           .
              .           .           .
6458          .       CPH83............
              .           .
              .           .
6461          .           .         B63
              .           .           .
              .           .           .
6469      B63RIV........................
              V
              V
6473      RCPB63
              .
              .
6479          .         B64
              .           .
              .           .
487       B64RIV............
              V
              V
90        RCPB64
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6496          .         H09
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                 .          V
                 .          V
6502             .     RCPH09
                 .          .
                 .          .
6508             .          .          H10
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6514             .     CPH10............
                 .          V
                 .          V
6517             .     RCPH10
                 .          .
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6525             .          .            .<-------   DVH11
6523             .          .       DRH11
                 .          .           V
                 .          .           V
6526             .          .       RDH11
                 .          .            .
                 .          .            .
6532             .          .            .         H38
                 .          .            .           .
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6538             .     CPH38........................
                 .          V
                 .          V
6541             .     RCPH38
                 .          .
                 .          .
6547             .          .          H39
                 .          .            .
                 .          .            .
6553             .     CPH39............
                 .          .
                 .          .
6559             .          .-------->   DVH39
6556             .       DH39
                 .          V
                 .          V
6562             .     RCPH39
                 .          .
                 .          .
6568             .          .          H41
                 .          .            .
                 .          .            .
6574             .     CPH41............
                 .          V
                 .          V
6577             .     RCPH41
                 .          .
                 .          .
6585             .          .            .<-------   DVH39
6583             .          .       DRH39
                 .          .           V
                 .          .           V
6586             .          .       RDH39
                 .          .            .
                 .          .            .
6592             .          .            .         H40
                 .          .            .           .
                 .          .            .           .
6598             .          .       CPH40............
                 .          .           V
                 .          .           V
6601             .          .      RCPH40
                 .          .            .
                 .          .            .
6607             .          .            .         H84
                 .          .            .           .
                 .          .            .           .
6613             .     CPH84........................
                 .          V
                 .          V
6616             .     RCPH84
                 .          .
                 .          .
6622             .          .          H85
                 .          .            .
                 .          .            .
6630             .     CPH85............
                 .          V
                 .          V
6633             .     RCPH85
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                .           .
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6639            .           .         H86
                .           .           .
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6647            .       CPH86............
                .           .
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6650      H86RIV............
                V
                V
6653      RCPH86
                .
                .
6659            .         I02
                .           .
                .           .
6665            .           .         I01
                .           .           .
                .           .           .
6671            .       CPI01............
                .           V
                .           V
6674            .      RCPI01
                .           .
                .           .
6680            .           .         I03
                .           .           .
                .           .           .
6686            .       CPI03............
                .           .
                .           .
6692            .           .-------->   DVI03
6689            .        DI03
                .           V
                .           V
6695            .      RCPI03
                .           .
                .           .
6701            .           .         I04
                .           .           .
                .           .           .
6707            .       CPI04............
                .           V
                .           V
6710            .      RCPI04
                .           .
                .           .
6716            .           .         I06
                .           .           .
                .           .           .
6722            .       CPI06............
                .           V
                .           V
6725            .      RCPI06
                .           .
                .           .
6731            .           .         I08
                .           .           .
                .           .           .
6737            .       CPI08............
                .           V
                .           V
6740            .      RCPI08
                .           .
                .           .
6746            .           .         I10
                .           .           .
                .           .           .
6752            .       CPI10............
                .           V
                .           V
6755            .      RCPI10
                .           .
                .           .
6763            .           .           .<--------   DVI03
6761            .           .       DRI03
                .           .           V
                .           .           V
6764            .           .       RDI03
                .           .           .
                .           .           .
6770            .           .           .         I05
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                .         .         .         .
6776            .         .      CPI05.........
                .         .         V
                .         .         V
6779            .         .     RCPI05
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6785            .         .         .        I07
                .         .         .         .
                .         .         .         .
6791            .         .      CPI07.........
                .         .         V
                .         .         V
6794            .         .     RCPI07
                .         .         .
                .         .         .
6800            .         .         .        I09
                .         .         .         .
                .         .         .         .
6806            .         .      CPI09.........
                .         .         V
                .         .         V
6809            .         .     RCPI09
                .         .         .
                .         .         .
6815            .         .         .        I11
                .         .         .         .
                .         .         .         .
6821            .         .      CPI11.........
                .         .         V
                .         .         V
6824            .         .     RCPI11
                .         .         .
                .         .         .
6830            .         .         .        I12
                .         .         .         .
                .         .         .         .
6836            .      CPI12......................
                .         V
                .         V
6839            .     RCPI12
                .         .
                .         .
6845            .         .        I13
                .         .         .
                .         .         .
6851            .      CPI13.........
                .         V
                .         V
6854            .     RCPI13
                .         .
                .         .
6860            .         .        I14
                .         .         .
                .         .         .
6866            .      CPI14.........
                .         .
                .         .
6869            .         .        A12
                .         .         V
                .         .         V
6876            .         .     RCPA12
                .         .         .
                .         .         .
6882            .         .         .        A41
                .         .         .         .
                .         .         .         .
6890            .         .      CPA41.........
                .         .         .
                .         .         .
6893       A41RIV......................
                V
                V
6897       RCPA41
                .
                .
6903            .        I15
                .         V
                .         V
6909            .     RCPI15
                .         .
                .         .
6915            .         .        I16
                .         .         V
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                 .           .           V
6921             .           .      RCPI16
                 .           .           .
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6927             .           .           .        I17
                 .           .           .          V
                 .           .           .          V
[illegible]33    .           .           .      RCPI17
                 .           .           .           .
                 .           .           .           .
6939             .           .           .           .         I18
                 .           .           .           .           .
                 .           .           .           .           .
6945             .       CPI18.......................................
                 .           V
                 .           V
6948             .      RCPI18
                 .           .
                 .           .
6954             .           .         I19
                 .           .           .
                 .           .           .
6960             .       CPI19............
                 .           V
                 .           V
6963             .      RCPI19
                 .           .
                 .           .
6969             .           .         I20
                 .           .           .
                 .           .           .
6975             .       CPI20............
                 .           V
                 .           V
6978             .      RCPI20
                 .           .
                 .           .
6984             .           .         I21
                 .           .           .
                 .           .           .
6990             .       CPI21............
                 .           V
                 .           V
[illegible]93    .      RCPI21
                 .           .
                 .           .
6999             .           .         I22
                 .           .           .
                 .           .           .
7006             .       CPI22............
                 .           .
                 .           .
7009             .           .         A40
                 .           .           V
                 .           .           V
7015             .           .      RCPA40
                 .           .           .
                 .           .           .
7021             .           .           .        A42
                 .           .           .           .
                 .           .           .           .
7030             .           .       CPA42............
                 .           .           .
                 .           .           .
7033     A42RIV.......................
             V
             V
7036     RCPA42
             .
             .
7042         .         A13
             .           V
             .           V
7049         .      RCPA13
             .           .
             .           .
7055         .           .         A39
             .           .           .
             .           .           .
[illegible]54    .       CPA39............
             .           V
             .           V
7067         .      RCPA39
             .           .
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7073            .           .
                .           .         A43
                .           .           .
                .           .           .
7081            .       CPA43............
                .           V
                .           V
7084            .      RCPA43
                .           .
                .           .
7090            .           .         A44
                .           .           .
                .           .           .
7098            .       CPA44............
                .           .
                .           .
7101       A44RIV............
                V
                V
7105       RCPA44
                .
                .
7111            .         I24
                .           V
                .           V
7117            .      RCPI24
                .           .
                .           .
7123            .           .         I26
                .           .           .
                .           .           .
7129            .       CPI26............
                .           V
                .           V
7132            .      RCPI26
                .           .
                .           .
7138            .           .         I28
                .           .           .
                .           .           .
7144            .       CPI28............
                .           V
                .           V
7147            .      RCPI28
                .           .
                .           .
7153            .           .         I30
                .           .           .
                .           .           .
7159            .       CPI30............
                .           V
                .           V
7162            .      RCPI30
                .           .
                .           .
7168            .           .         I32
                .           .           .
                .           .           .
7174            .       CPI32............
                .           V
                .           V
7177            .      RCPI32
                .           .
                .           .
7183            .           .         I34
                .           .           .
                .           .           .
7190            .       CPI34............
                .           V
                .           V
7193            .      RCPI34
                .           .
                .           .
7199            .           .         I36
                .           .           .
                .           .           .
7205            .       CPI36............
                .           .
                .           .
7208       I36RIV............
                V
                V
7211       RCPI36
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7217          .        A01
              .         V
              .         V
7224          .     RCPA01
              .         .
              .         .
[illegible]0  .         .        A02
              .         .          .
              .         .          .
7236          .     CPA02...........
              .         .
              .         .
7242          .         .------->  DVA02A
7239          .     DA02A
              .         .
              .         .
7248          .         .------->  DVA02B
7245          .     DA02B
              .         V
              .         V
7251          .     RCPA02
              .         .
              .         .
7257          .         .        A11
              .         .          .
              .         .          .
7264          .     CPA11...........
              .         .
              .         .
7270          .         .------->   DVA11
7267          .      DA11
              .         V
              .         V
7273          .     RCPA11
              .         .
              .         .
7279          .         .        A14
              .         .          .
              .         .          .
7286          .     CPA14...........
              .         V
              .         V
[illegible]9  .     RCPA14
              .         .
              .         .
7295          .         .        A38
              .         .         V
              .         .         V
7304          .         .     RCPA38
              .         .          .
              .         .          .
7310          .         .          .        A37
              .         .          .          .
              .         .          .          .
7317          .     CPA37......................
              .         V
              .         V
7320          .     RCPA37
              .         .
              .         .
7326          .         .        A45
              .         .          .
              .         .          .
7333          .     CPA45...........
              .         .
              .         .
7336          .         .        I23
              .         .         V
              .         .         V
7342          .         .     RCPI23
              .         .          .
              .         .          .
7348          .         .          .        I25
              .         .          .          .
              .         .          .          .
7354          .         .      CPI25...........
              .         .          V
              .         .          V
[illegible]7  .         .     RCPI25
              .         .          .
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7363          .         .          .        I27
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7369                    CPI27............
                            V
                            V
7372                  RCPI27
                            .
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7378                        .         I29
                            .           .
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7384                    CPI29............
                            V
                            V
7387                  RCPI29
                            .
                            .
7393                        .         I31
                            .           .
                            .           .
7399                    CPI31............
                            V
                            V
7402                  RCPI31
                            .
                            .
7408                        .         I33
                            .           .
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7414                    CPI33............
                            V
                            V
7417                  RCPI33
                            .
                            .
7423                        .         I35
                            .           .
                            .           .
7429                    CPI35............
                            V
                            V
7432                  RCPI35
                            .
                            .
7438                        .         I37
                            .           .
                            .           .
7444                    CPI37............
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                            .
7447      I37RIV........................
                V
                V
7450      RCPI37
                .
                .
7456            .         A36
                .           V
                .           V
7462            .      RCPA36
                .           .
                .           .
7468            .           .         A46
                .           .           .
                .           .           .
7476            .       CPA46............
                .           .
                .           .
7479      A46RIV............
                V
                V
7482      RCPA46
                .
                .
7488            .         I38
                .           V
                .           V
7494            .      RCPI38
                .           .
                .           .
7500            .           .         I39
                .           .           .
                .           .           .
7506            .       CPI39............
                .           V
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                 .          V
7509             .      RCPI39
                 .          .
                 .          .
7515             .          .         I40
                 .          .           .
                 .          .           .
[illegible]21    .       CPI40............
                 .          V
                 .          V
7524             .      RCPI40
                 .          .
                 .          .
7530             .          .         I41
                 .          .           .
                 .          .           .
7536             .       CPI41............
                 .          V
                 .          V
7539             .      RCPI41
                 .          .
                 .          .
7545             .          .         I42
                 .          .           .
                 .          .           .
7551             .       CPI42............
                 .          V
                 .          V
7554             .      RCPI42
                 .          .
                 .          .
7560             .          .         I43
                 .          .           .
                 .          .           .
7566             .       CPI43............
                 .          V
                 .          V
7569             .      RCPI43
                 .          .
                 .          .
7575             .          .         I44
                 .          .           V
                 .          .           V
[illegible]81    .          .      RCPI44
                 .          .           .
                 .          .           .
7587             .          .           .         I45
                 .          .           .           .
                 .          .           .           .
7593             .          .       CPI45............
                 .          .           V
                 .          .           V
7596             .          .      RCPI45
                 .          .           .
                 .          .           .
7602             .          .           .         I46
                 .          .           .           .
                 .          .           .           .
7608             .          .       CPI46............
                 .          .           V
                 .          .           V
7611             .          .      RCPI46
                 .          .           .
                 .          .           .
7617             .          .           .         I47
                 .          .           .           .
                 .          .           .           .
7623             .          .       CPI47............
                 .          .           V
                 .          .           V
7626             .          .      RCPI47
                 .          .           .
                 .          .           .
7632             .          .           .         I48
                 .          .           .           .
                 .          .           .           .
7638             .          .       CPI48............
                 .          .           V
                 .          .           V
[illegible]41    .          .      RCPI48
                 .          .           .
                 .          .           .
7647             .          .           .         I49
                 .          .           .           .
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                .         .         .
7653            .      CPI49.......................
                .         V
                .         V
7656            .     RCPI49
                .         .
                .         .
7662            .         .        I61
                .         .         V
                .         .         V
7668            .         .     RCPI61
                .         .         .
                .         .         .
7674            .         .         .        I50
                .         .         .          .
                .         .         .          .
7680            .      CPI50.......................
                .         .
                .         .
7683       I50RIV............
                V
                V
7686       RCPI50
                .
                .
7692            .        I62
                .         .
                .         .
7698       I62RIV............
                V
                V
7701       RCPI62
                .
                .
7709            .         .<-------   DVA11
7707            .      DRA11
                .         V
                .         V
7710            .      RDA11
                .         .
                .         .
7716            .         .        A15
                .         .         .
                .         .         .
7723            .      CPA15............
                .         .
                .         .
7726            .         .        A16
                .         .         .
                .         .         .
7732            .      CPA16............
                .         V
                .         V
7735            .     RCPA16
                .         .
                .         .
7743            .         .         .<-------  DVA02A
7741            .         .     DRA02A
                .         .         V
                .         .         V
7744            .         .     RDA02A
                .         .         .
                .         .         .
7750            .         .         .        A03
                .         .         .          .
                .         .         .          .
7756            .         .      CPA03............
                .         .         V
                .         .         V
7759            .         .     RCPA03
                .         .         .
                .         .         .
7765            .         .         .        A64
                .         .         .          .
                .         .         .          .
7771            .         .      CPA64............
                .         .         .
                .         .         .
7777            .         .         .-------->  DVA64
7774            .         .       DA64
                .         .         V
                .         .         V
7780            .         .     RCPA64
                .         .         .
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7788          .           .           .           .<-------  DVA02B
7786          .           .           .     DRA02B
              .           .           .          V
              .           .           .          V
7789          .           .           .     RDA02B
              .           .           .          .
              .           .           .          .
 95           .           .           .          .         A10
              .           .           .          .           .
              .           .           .          .           .
7802          .           .      CPA10.......................
              .           .           .
              .           .           .
7808          .           .           .------->   DVA10
7805          .           .       DA10
              .           .          V
              .           .          V
7811          .           .     RCPA10
              .           .           .
              .           .           .
7817          .           .           .         A34
              .           .           .          .
              .           .           .          .
7823          .           .      CPA34............
              .           .          V
              .           .          V
7826          .           .     RCPA34
              .           .           .
              .           .           .
7832          .           .           .         A35
              .           .           .          .
              .           .           .          .
7838          .       CPA35........................
              .           V
              .           V
7841          .      RCPA35
              .           .
              .           .
7847          .           .         A47
              .           .           .
              .           .           .
 856          .       CPA47............
              .           V
              .           V
7859          .      RCPA47
              .           .
              .           .
7865          .           .         A48
              .           .           V
              .           .           V
7872          .           .     RCPA48
              .           .           .
              .           .           .
7878          .           .           .         A49
              .           .           .          .
              .           .           .          .
7885          .       CPA49........................
              .           .
              .           .
7888     A49RIV............
              V
              V
7892     RCPA49
              .
              .
7898          .         A04
              .           .
              .           .
7907          .           .------->   DVA04
7904          .        DA04
              .           V
              .           V
7910          .      RCPA04
              .           .
              .           .
7916          .           .         A07
              .           .           .
              .           .           .
 22           .       CPA07............
              .           .
              .           .
7928          .           .------->   DVA07
7925          .        DA07
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                 .          V
                 .          V
7931             .     RCPA07
                 .          .
                 .          .
7937             .          .        A09
                 .          .          .
                 .          .          .
7946             .          .          .-------->   DVA09
7943             .          .       DA09
                 .          .          V
                 .          .          V
7949             .          .     RCPA09
                 .          .          .
                 .          .          .
7955             .          .          .         A08
                 .          .          .           .
                 .          .          .           .
7962             .          .      CPA08............
                 .          .          .
                 .          .          .
7968             .          .          .-------->   DVA08
7965             .          .       DA08
                 .          .          V
                 .          .          V
7971             .          .     RCPA08
                 .          .          .
                 .          .          .
7977             .          .          .         A21
                 .          .          .           .
                 .          .          .           .
7984             .      CPA21........................
                 .          .
                 .          .
7990             .          .-------->   DVA21
7987             .       DA21
                 .          V
                 .          V
7993             .     RCPA21
                 .          .
                 .          .
7999             .          .        A20
                 .          .          .
                 .          .          .
8005             .      CPA20............
                 .          .
                 .          .
8011             .          .-------->   DVA20
8008             .       DA20
                 .          V
                 .          V
8014             .     RCPA20
                 .          .
                 .          .
8020             .          .        A51
                 .          .          .
                 .          .          .
8027             .     CPA51A............
                 .          .
                 .          .
8032             .          .          .<--------   DVA09
8030             .          .      DRA09
                 .          .          V
                 .          .          V
8033             .          .      RDA09
                 .          .          .
                 .          .          .
8041             .          .          .          .<--------   DVA64
8039             .          .          .       DRA64
                 .          .          .          V
                 .          .          .          V
8042             .          .          .       RDA64
                 .          .          .          .
                 .          .          .          .
8048             .          .          .          .         A18
                 .          .          .          .           .
                 .          .          .          .           .
8055             .          .      CPA18........................
                 .          .          .
                 .          .          .
8061             .          .          .-------->   DVA18
8058             .          .       DA18
                 .          .          V
                 .          .          V
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8064                RCPA18
                      .
                      .
8072                  .<-------   DVA08
8070                DRA08
                      V
                      V
[illegible]3        RDA08
                      .
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8079                  .         A19
                      .           .
                      .           .
8085                CPA19A............
                      .
                      .
8088             CPA19............
                    V
                    V
8091            RCPA19
                      .
                      .
8097                  A63
                      .
                      .
8103            CPA63A............
                      .
                      .
8108                  .<-------   DVA10
8106                DRA10
                      V
                      V
8109                RDA10
                      .
                      .
8115                  .         A17
                      .           .
                      .           .
8122                CPA17............
                      .
                      .
8127                  .           .<-------   DVA18
[illegible]25         .       DRA18
                      .           V
                      .           V
8128                  .       RDA18
                      .           .
                      .           .
8134                  .           .         A33
                      .           .           .
                      .           .           .
8140                  .       CPA33A............
                      .           .
                      .           .
8143                CPA33............
                      V
                      V
8146                RCPA33
                      .
                      .
8152             CPA63............
                    V
                    V
8155            RCPA63
                      .
                      .
8161                  A50
                      .
                      .
8167             CPA50............
                    V
                    V
8170            RCPA50
                      .
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8176         CPA51............
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[illegible]79   A51RIV............
                V
                V
8182            RCPA51
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8188          .        A05
              .         V
              .         V
8194          .     RCPA05
              .         .
              .         .
8200          .         .        A23
              .         .         V
              .         .         V
8206          .         .     RCPA23
              .         .         .
              .         .         .
8212          .         .         .        A25
              .         .         .         V
              .         .         .         V
8218          .         .         .     RCPA25
              .         .         .         .
              .         .         .         .
8224          .         .         .         .        A26
              .         .         .         .         .
              .         .         .         .         .
8230          .     CPA26.................................
              .         V
              .         V
8233          .     RCPA26
              .         .
              .         .
8239          .         .        A27
              .         .         .
              .         .         .
8246          .     CPA27A............
              .         .
              .         .
8249          .         .        A28
              .         .         V
              .         .         V
8255          .         .     RCPA28
              .         .         .
              .         .         .
8261          .     CPA27............
              .         V
              .         V
8264          .     RCPA27
              .         .
              .         .
8270          .         .        A29
              .         .         .
              .         .         .
8277          .     CPA29............
              .         .
              .         .
8282          .         .         .<-------   DVA04
8280          .         .     DRA04
              .         .         V
              .         .         V
8283          .         .     RDA04
              .         .         .
              .         .         .
8289          .         .         .        A06
              .         .         .         .
              .         .         .         .
8296          .         .     CPA06............
              .         .         V
              .         .         V
8299          .         .     RCPA06
              .         .         .
              .         .         .
8307          .         .         .         .<-------   DVA07
8305          .         .         .     DRA07
              .         .         .         V
              .         .         .         V
8308          .         .         .     RDA07
              .         .         .         .
              .         .         .         .
8314          .         .         .         .        A22
              .         .         .         .         .
              .         .         .         .         .
8321          .         .         .     CPA22............
              .         .         .         V
              .         .         .         V
8324          .         .         .     RCPA22
              .         .         .         .
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8330          .         .         .         .        A24
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8337             .          .     CPA24.......................
                 .          .         V
                 .          .         V
8340             .          .    RCPA24
                 .          .         .
                 .          .         .
[illegible]46    .          .         .         A30
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8353             .          .    CPA30A............
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                 .          .         .
8356             .     CPA30............
                 .         V
                 .         V
8359             .    RCPA30
                 .         .
                 .         .
8365             .          .     A52
                 .          .       .
                 .          .       .
8371             .     CPA52A............
                 .         .
                 .         .
8374             .          .     A31
                 .          .       V
                 .          .       V
8381             .          .    RCPA31
                 .          .       .
                 .          .       .
8389             .          .       .          .<-------   DVA21
8387             .          .       .      DRA21
                 .          .       .          V
                 .          .       .          V
8390             .          .       .      RDA21
                 .          .       .          .
                 .          .       .          .
8398             .          .       .          .          .<-------   DVA20
8396             .          .       .          .      DRA20
                 .          .       .          .          V
                 .          .       .          .          V
[illegible]99    .          .       .          .      RDA20
                 .          .       .          .          .
                 .          .       .          .          .
8405             .          .       .          .          .         A32
                 .          .       .          .          .          .
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8412             .          .       .      CPA32A.......................
                 .          .       .          .
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8415             .          .    CPA32............
                 .          .       V
                 .          .       V
8418             .          .    RCPA32
                 .          .       .
                 .          .       .
8424             .     CPA52............
                 .         V
                 .         V
8427             .    RCPA52
                 .         .
                 .         .
8433             .          .     A53
                 .          .       .
                 .          .       .
8440             .          .       .         A54
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8446             .          .    CPA54............
                 .          .       V
                 .          .       V
8449             .          .    RCPA54
                 .          .       .
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8455             .          .       .         A55
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[illegible]61    .          .    CPA55A............
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8464             .     CPA55............
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                 .          V
8467             .      RCPA55
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                 .          .
8473             .          .         A56
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8480             .      CPA56............
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                 .          .
8483        A56RIV............
                 V
                 V
8486        RCPA56
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8492             .        I51
                 .          V
                 .          V
8498             .      RCPI51
                 .          .
                 .          .
8504             .          .         I53
                 .          .           .
                 .          .           .
8510             .      CPI53............
                 .          V
                 .          V
8513             .      RCPI53
                 .          .
                 .          .
8519             .          .         I55
                 .          .           .
                 .          .           .
8525             .      CPI55............
                 .          V
                 .          V
8528             .      RCPI55
                 .          .
                 .          .
8534             .          .         I57
                 .          .           .
                 .          .           .
8540             .      CPI57............
                 .          V
                 .          V
8543             .      RCPI57
                 .          .
                 .          .
8549             .          .         I72
                 .          .           .
                 .          .           .
8555             .      CPI72............
                 .          V
                 .          V
8558             .      RCPI72
                 .          .
                 .          .
8564             .          .         I60
                 .          .           .
                 .          .           .
8570             .      CPI60A...........
                 .          .
                 .          .
8573             .          .         I52
                 .          .           V
                 .          .           V
8579             .          .       RCPI52
                 .          .           .
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8585             .          .           .         I54
                 .          .           .           .
                 .          .           .           .
8591             .          .      CPI54............
                 .          .           V
                 .          .           V
8594             .          .       RCPI54
                 .          .           .
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8600             .          .           .         I56
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8606             .          .      CPI56............
                 .          .           V
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8609             .          .     RCPI56
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8615             .          .          .        I58
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[illegible]22    .          .     CPI58............
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8626             .          .          .        I59
                 .          .          .          .
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8632             .          .          .          .        I64
                 .          .          .          .          .
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8638             .          .     CPI64......................
                 .          .          V
                 .          .          V
8641             .          .     RCPI64
                 .          .          .
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8647             .          .          .        I65
                 .          .          .          .
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8653             .          .     CPI65............
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                 .          .          .
8656             .     CPI60............
                 .          V
                 .          V
8659             .     RCPI60
                 .          .
                 .          .
8665             .          .        I66
                 .          .          .
                 .          .          .
8671             .     CPI66............
                 .          V
                 .          V
8674             .     RCPI66
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                 .          .
[illegible]80    .          .        I67
                 .          .          .
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8686             .     CPI67............
                 .          .
                 .          .
8690             .          .        I68
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                 .          .          .
8696             .          .          .        I69
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8702             .     CPI69......................
                 .          V
                 .          V
8705             .     RCPI69
                 .          .
                 .          .
8711             .          .        I70
                 .          .          .
                 .          .          .
8717             .     CPI70............
                 .          .
                 .          .
8720             .          .        I71
                 .          .          .
                 .          .          .
8726             .     CPI71............
                 .          V
                 .          V
8729             .     RCPI71
                 .          .
                 .          .
8735             .          .        I63
                 .          .          .
                 .          .          .
[illegible]41    .     CPI63............
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8744        I63RIV...........
                 V
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                V
8747      RCPI63
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8753            .         A57
                .           .
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8759      A57RIV............
                V
                V
8762      RCPA57
                .
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8768            .         A58
                .           .
                .           .
8775            .           .         A59
                .           .           .
                .           .           .
8781            .       CPA59............
                .           V
                .           V
8784            .      RCPA59
                .           .
                .           .
8790            .           .         A60
                .           .           .
                .           .           .
8796            .       CPA60............
                .           .
                .           .
8799      A60RIV............
                V
                V
8803      RCPA60
                .
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8809            .         A61
                .           .
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8816            .           .         A62
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8822      A62RIV........................
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

TIME OF STAGE +	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	MAX
+	HYDROGRAPH AT	F02	1001.	12.33	87.	22.	11.	1.02		
+	DIVERSION TO	DVF02	547.	12.33	48.	12.	6.	1.02		
+	HYDROGRAPH AT	DF02	454.	12.33	39.	10.	5.	1.02		
+	ROUTED TO	RCPF02	130.	15.83	38.	10.	5.	1.02		
+	HYDROGRAPH AT	F01	1651.	12.50	185.	46.	22.	2.19		
+	ROUTED TO	RCPF01	1070.	13.17	184.	46.	22.	2.19		
+	HYDROGRAPH AT	F04	1093.	12.83	188.	47.	23.	2.20		
+	3 COMBINED AT	CPF04	1868.	13.00	404.	102.	49.	5.41		
+	ROUTED TO	RCPF04	1509.	13.67	399.	102.	49.	5.41		
	HYDROGRAPH AT									

+	F03	1218.	12.50	140.	35.	17.	1.63
+ ROUTED TO	RCPF03	961.	12.67	140.	35.	17.	1.63
+ HYDROGRAPH AT	F06	1232.	12.17	85.	21.	10.	1.00
+ 2 COMBINED AT	CPF06	1333.	12.17	223.	56.	27.	2.63
+ ROUTED TO	RCPF06	913.	13.00	222.	56.	27.	2.63
+ HYDROGRAPH AT	DRF02	547.	12.33	48.	12.	6.	1.02
+ ROUTED TO	RDF02	187.	15.00	47.	12.	6.	1.02
+ HYDROGRAPH AT	F05	1879.	12.67	277.	69.	33.	2.94
+ 4 COMBINED AT	CPF05	2317.	12.67	916.	233.	112.	10.98
+ ROUTED TO	RCPF05	2107.	14.00	895.	233.	112.	10.98
+ HYDROGRAPH AT	F07	2867.	12.50	331.	83.	40.	3.68
+ ROUTED TO	RCPF07	2616.	12.50	331.	83.	40.	3.68
+ HYDROGRAPH AT	F08	913.	12.33	106.	27.	13.	.91
+ 3 COMBINED AT	CPF08	3273.	12.50	1239.	328.	158.	15.57
+ ROUTED TO	RCPF08	1948.	14.83	1185.	328.	158.	15.57
+ HYDROGRAPH AT	F09	1669.	12.67	285.	73.	35.	2.65
+ 2 COMBINED AT	CPF09	2101.	13.50	1351.	390.	188.	18.23
+ ROUTED TO	RCPF09	1895.	14.17	1313.	390.	188.	18.23
+ HYDROGRAPH AT	F19	905.	12.50	126.	35.	17.	.85
+ 2 COMBINED AT	CPF19	1894.	14.17	1318.	419.	203.	19.08
+ DIVERSION TO	DVF19	940.	14.17	654.	208.	101.	19.08
+ HYDROGRAPH AT	DF19	954.	14.17	664.	212.	103.	19.08
+ ROUTED TO	RCPF19	916.	16.00	652.	212.	103.	19.08
+ HYDROGRAPH AT	F20	839.	12.50	123.	35.	17.	.80
+ 2 COMBINED AT	CPF20	918.	16.00	658.	241.	118.	19.87
+ ROUTED TO	RCPF20	912.	16.50	653.	241.	118.	19.87
+ HYDROGRAPH AT	F31	453.	12.17	37.	10.	5.	.27
+ HYDROGRAPH AT	G21	898.	12.33	79.	20.	10.	.91
3 COMBINED AT							

+	CPF31	1114.	12.17	666.	267.	130.	21.06
ROUTED TO +	RCPF31	902.	16.67	655.	267.	130.	21.06
HYDROGRAPH AT +	F10	1864.	12.33	203.	51.	24.	2.26
ROUTED TO +	RCPF10	1467.	12.67	203.	51.	24.	2.26
HYDROGRAPH AT +	F18	505.	12.17	48.	14.	7.	.30
2 COMBINED AT +	CPF18	1496.	12.67	249.	64.	31.	2.56
DIVERSION TO +	DVF18	520.	12.67	83.	22.	10.	2.56
HYDROGRAPH AT +	DF18	976.	12.67	165.	43.	21.	2.56
ROUTED TO +	RCPF18	698.	13.50	165.	43.	21.	2.56
HYDROGRAPH AT +	F22	484.	12.33	52.	14.	7.	.37
2 COMBINED AT +	CPF22	701.	13.50	214.	56.	27.	2.93
DIVERSION TO +	DVF22	249.	13.50	82.	22.	10.	2.93
HYDROGRAPH AT +	DF22	453.	13.50	133.	35.	17.	2.93
ROUTED TO +	RCPF22	339.	14.83	129.	35.	17.	2.93
HYDROGRAPH AT +	DRF19	940.	14.17	654.	208.	101.	19.08
ROUTED TO +	RDF19	931.	14.50	651.	208.	101.	19.08
HYDROGRAPH AT +	DRF18	520.	12.67	83.	22.	10.	2.56
ROUTED TO +	RDF18	287.	14.17	82.	21.	10.	2.56
HYDROGRAPH AT +	F21	653.	12.33	74.	20.	10.	.53
3 COMBINED AT +	CPF21	1142.	14.50	730.	242.	117.	22.17
ROUTED TO +	RCPF21	1079.	15.33	721.	242.	117.	22.17
HYDROGRAPH AT +	F29	714.	12.33	88.	24.	12.	.59
3 COMBINED AT +	CPF29	1348.	15.17	840.	294.	143.	23.13
ROUTED TO +	RCPF29	1214.	16.00	831.	293.	143.	23.13
HYDROGRAPH AT +	F36	294.	12.17	28.	8.	4.	.17
ROUTED TO +	RCPF36	124.	13.17	28.	8.	4.	.17
HYDROGRAPH AT +	F32	415.	12.17	37.	9.	4.	.29
3 COMBINED AT +	CPF32	1216.	16.00	835.	309.	150.	23.59
HYDROGRAPH AT							

+		G20	630.	12.17	46.	12.	6.	.48
+	ROUTED TO	RCPG20	279.	13.17	46.	12.	6.	.48
	HYDROGRAPH AT	G19	942.	12.17	78.	22.	11.	.67
+	ROUTED TO	RCPG19	444.	12.83	78.	22.	11.	.67
+	HYDROGRAPH AT	G22	1026.	12.33	98.	25.	12.	1.12
+	3 COMBINED AT	CPG22	1120.	12.33	219.	57.	28.	2.28
+	3 COMBINED AT	F32RIV	2048.	12.33	1551.	614.	300.	27.84
+	ROUTED TO	RCPF32	2025.	16.50	1540.	614.	299.	27.84
+	HYDROGRAPH AT	DRF22	249.	13.50	82.	22.	10.	2.93
+	ROUTED TO	RDF22	205.	14.67	80.	22.	10.	2.93
+	HYDROGRAPH AT	F28	638.	12.33	75.	22.	10.	.47
+	2 COMBINED AT	CPF28	630.	12.33	148.	43.	21.	3.40
+	DIVERSION TO	DVF28	315.	12.33	74.	21.	10.	3.40
+	HYDROGRAPH AT	DF28	315.	12.33	74.	21.	10.	3.40
	ROUTED TO	RCPF28	108.	13.17	69.	21.	10.	3.40
+	HYDROGRAPH AT	F33	640.	12.33	67.	18.	8.	.49
+	2 COMBINED AT	CPF33	645.	12.33	131.	38.	19.	3.90
+	2 COMBINED AT	F33RIV	2140.	12.67	1620.	647.	316.	28.81
+	ROUTED TO	RCPF33	2074.	16.67	1608.	647.	316.	28.81
+	HYDROGRAPH AT	F13	351.	12.17	23.	6.	3.	.26
+	DIVERSION TO	DVF13	199.	12.17	11.	3.	1.	.26
+	HYDROGRAPH AT	DF13	151.	12.17	11.	3.	1.	.26
+	ROUTED TO	RCPF13	133.	12.33	12.	3.	1.	.26
+	HYDROGRAPH AT	F12	421.	12.17	28.	7.	3.	.31
+	2 COMBINED AT	CPF12	496.	12.17	39.	10.	5.	.57
+	DIVERSION TO	DVF12	271.	12.17	21.	5.	3.	.57
	HYDROGRAPH AT	DF12	225.	12.17	17.	4.	2.	.57
+	ROUTED TO	RCPF12	112.	13.17	17.	4.	2.	.57
	HYDROGRAPH AT							

+	F11	1277.	12.33	139.	35.	17.	1.58
+ 2 COMBINED AT	CPF11	1275.	12.33	155.	39.	19.	2.15
+ DIVERSION TO	DVF11	496.	12.33	58.	15.	7.	2.15
+ HYDROGRAPH AT	DF11	780.	12.33	97.	24.	12.	2.15
+ ROUTED TO	RCPF11	641.	12.67	97.	24.	12.	2.15
+ HYDROGRAPH AT	F16	173.	12.00	13.	3.	2.	.10
+ 2 COMBINED AT	CPF16	641.	12.67	110.	28.	13.	2.26
+ DIVERSION TO	DVF16	394.	12.67	67.	17.	8.	2.26
+ HYDROGRAPH AT	DF16	247.	12.67	43.	11.	5.	2.26
+ ROUTED TO	RCPF16	189.	14.00	43.	11.	5.	2.26
+ HYDROGRAPH AT	DRF11	496.	12.33	58.	15.	7.	2.15
+ ROUTED TO	RDF11	328.	12.83	58.	15.	7.	2.15
+ HYDROGRAPH AT	F17	1175.	12.33	115.	30.	14.	1.15
+ 2 COMBINED AT	CPF17	1202.	12.33	171.	44.	21.	3.30
+ ROUTED TO	RCPF17	701.	13.33	170.	44.	21.	3.30
+ HYDROGRAPH AT	F24	1091.	12.50	153.	43.	21.	1.03
+ 3 COMBINED AT	CPF24	1085.	12.50	359.	97.	47.	4.43
+ ROUTED TO	RCPF24	848.	13.00	356.	96.	47.	4.43
+ HYDROGRAPH AT	F23	622.	12.33	80.	24.	11.	.50
+ ROUTED TO	RCPF23	406.	13.00	80.	24.	11.	.50
+ HYDROGRAPH AT	F27	787.	12.33	83.	22.	10.	.61
+ 3 COMBINED AT	CPF27	1277.	13.00	511.	140.	68.	5.54
+ ROUTED TO	RCPF27	886.	13.67	480.	140.	68.	5.54
+ HYDROGRAPH AT	DRF12	271.	12.17	21.	5.	3.	.57
+ ROUTED TO	RDF12	88.	13.67	21.	5.	3.	.57
+ HYDROGRAPH AT	DRF13	199.	12.17	11.	3.	1.	.26
+ ROUTED TO	RDF13	34.	12.83	11.	3.	1.	.26
+ HYDROGRAPH AT	F14	515.	12.17	35.	9.	4.	.39
ROUTED TO							

+		RCPF14	181.	13.50	35.	9.	4.	.39
+	HYDROGRAPH AT	F15	858.	12.33	96.	24.	12.	.78
+	4 COMBINED AT	CPF15	868.	12.33	161.	41.	20.	1.75
+	ROUTED TO	RCPF15	391.	15.17	158.	41.	20.	1.75
+	HYDROGRAPH AT	DRF16	394.	12.67	67.	17.	8.	2.26
+	ROUTED TO	RDF16	126.	16.00	65.	17.	8.	2.26
+	HYDROGRAPH AT	F25	2233.	12.67	351.	89.	43.	2.83
+	3 COMBINED AT	CPF25	2217.	12.67	552.	144.	70.	6.26
+	ROUTED TO	RCPF25	1176.	13.00	500.	144.	70.	6.26
+	HYDROGRAPH AT	DRF28	315.	12.33	74.	21.	10.	3.40
+	ROUTED TO	RDF28	141.	13.83	70.	21.	10.	3.40
+	HYDROGRAPH AT	F34	704.	12.33	78.	20.	10.	.60
+	4 COMBINED AT	CPF34	1903.	13.17	1069.	314.	153.	13.55
+	HYDROGRAPH AT	G23	1131.	12.33	99.	25.	12.	1.20
+	3 COMBINED AT	F34RIV	3469.	13.00	2524.	933.	455.	40.15
+	ROUTED TO	RCPF34	3433.	13.17	2513.	933.	455.	40.15
+	HYDROGRAPH AT	F26	569.	12.33	64.	16.	8.	.50
+	ROUTED TO	RCPF26	108.	13.67	56.	16.	8.	.50
+	HYDROGRAPH AT	F35	848.	12.50	105.	27.	13.	.80
+	2 COMBINED AT	CPF35	865.	12.50	158.	42.	20.	1.29
+	HYDROGRAPH AT	G24	341.	12.17	29.	7.	3.	.35
+	ROUTED TO	RCPG24	341.	12.33	29.	7.	3.	.35
+	HYDROGRAPH AT	G25	308.	12.33	29.	7.	4.	.36
+	4 COMBINED AT	F35RIV	3651.	12.67	2632.	978.	476.	42.15
+	ROUTED TO	RCPF35	3616.	12.83	2625.	978.	476.	42.15
+	HYDROGRAPH AT	E09	404.	12.17	26.	6.	3.	.30
+	DIVERSION TO	DVE09	182.	12.17	11.	3.	1.	.30
+	HYDROGRAPH AT	DE09	223.	12.17	15.	4.	2.	.30
+	ROUTED TO							

+	RCPE09	125.	12.50	15.	4.	2.	.30
+ HYDROGRAPH AT	E10	149.	12.00	10.	3.	1.	.10
+ 2 COMBINED AT	CPE10	189.	12.17	25.	6.	3.	.40
+ DIVERSION TO	DVE10	135.	12.17	18.	4.	2.	.40
+ HYDROGRAPH AT	DE10	55.	12.17	7.	2.	1.	.40
+ ROUTED TO	RCPE10	24.	14.33	7.	2.	1.	.40
+ HYDROGRAPH AT	E06	1238.	12.17	89.	22.	11.	1.06
+ ROUTED TO	RCPE06	340.	14.33	88.	22.	11.	1.06
+ HYDROGRAPH AT	E04	1747.	12.17	149.	37.	18.	1.77
+ ROUTED TO	RCPE04	467.	15.33	146.	37.	18.	1.77
+ HYDROGRAPH AT	E11	1744.	12.50	205.	51.	25.	2.27
+ DIVERSION TO	DVE11	711.	12.50	77.	19.	9.	2.27
+ HYDROGRAPH AT	DE11	1033.	12.50	127.	32.	15.	2.27
+ ROUTED TO	RCPE11	622.	13.50	127.	32.	15.	2.27
+ HYDROGRAPH AT	E05	2294.	12.83	384.	96.	46.	4.18
+ 5 COMBINED AT	CPE05	2355.	12.83	731.	186.	90.	9.67
+ DIVERSION TO	DVE05	978.	12.83	283.	72.	35.	9.67
+ HYDROGRAPH AT	DE05	1377.	12.83	447.	114.	55.	9.67
+ ROUTED TO	RCPE05	800.	14.33	416.	114.	55.	9.67
+ HYDROGRAPH AT	DRE11	711.	12.50	77.	19.	9.	2.27
+ ROUTED TO	RDE11	363.	13.83	77.	19.	9.	2.27
+ HYDROGRAPH AT	E12	971.	12.33	117.	29.	14.	1.05
+ 2 COMBINED AT	CPE12	960.	12.50	191.	48.	23.	3.32
+ ROUTED TO	RCPE12	590.	13.33	186.	48.	23.	3.32
+ HYDROGRAPH AT	E25	1144.	12.67	192.	48.	23.	1.64
+ 3 COMBINED AT	CPE25	1113.	12.83	727.	205.	99.	12.36
+ ROUTED TO	RCPE25	1041.	14.33	714.	205.	99.	12.36
+ HYDROGRAPH AT	E26	429.	12.33	42.	11.	5.	.32
ROUTED TO							

+		RCPE26	225.	13.17	42.	11.	5.	.32
+	HYDROGRAPH AT	E35	575.	12.17	47.	12.	6.	.37
+	2 COMBINED AT	CPE35	572.	12.17	89.	22.	11.	.69
+	DIVERSION TO	DVE35	286.	12.17	44.	11.	5.	.69
+	HYDROGRAPH AT	DE35	286.	12.17	44.	11.	5.	.69
+	ROUTED TO	RCPE35	137.	13.00	44.	11.	5.	.69
+	HYDROGRAPH AT	E36	259.	12.17	19.	5.	2.	.16
+	2 COMBINED AT	CPE36	256.	12.17	62.	16.	8.	.85
+	ROUTED TO	RCPE36	115.	13.33	61.	16.	8.	.85
+	HYDROGRAPH AT	E45	449.	12.17	47.	12.	6.	.32
+	3 COMBINED AT	CPE45	1118.	13.50	792.	229.	111.	13.53
+	ROUTED TO	RCPE45	1111.	14.50	784.	229.	111.	13.53
+	HYDROGRAPH AT	DRE35	286.	12.17	44.	11.	5.	.69
+	ROUTED TO	RDE35	82.	13.50	41.	11.	5.	.69
+	HYDROGRAPH AT	E54	195.	12.17	15.	4.	2.	.12
+	2 COMBINED AT	CPE54	233.	12.17	56.	15.	7.	.81
+	ROUTED TO	RCPE54	138.	12.67	55.	15.	7.	.81
+	HYDROGRAPH AT	E46	294.	12.17	25.	7.	3.	.17
+	2 COMBINED AT	CPE46	331.	12.17	78.	21.	10.	.99
+	ROUTED TO	RCPE46	238.	12.67	77.	21.	10.	.99
+	HYDROGRAPH AT	E47	635.	12.17	64.	17.	8.	.43
+	3 COMBINED AT	CPE47	1200.	13.50	890.	264.	128.	14.26
+	ROUTED TO	RCPE47	1183.	14.33	860.	264.	128.	14.26
+	HYDROGRAPH AT	E48	1146.	12.17	113.	28.	14.	.86
+	2 COMBINED AT	CPE48	1183.	14.33	889.	290.	140.	15.12
+	HYDROGRAPH AT	G26	1098.	12.33	98.	25.	12.	1.17
+	3 COMBINED AT	E48RIV	4148.	13.50	3315.	1223.	595.	58.43
+	ROUTED TO	RCPE48	4124.	13.67	3305.	1223.	595.	58.43
	HYDROGRAPH AT							

+		DRE09	182.	12.17	11.	3.	1.	.30
+	ROUTED TO	RDE09	40.	14.67	11.	3.	1.	.30
+	HYDROGRAPH AT	DRE10	135.	12.17	18.	4.	2.	.40
+	ROUTED TO	RDE10	60.	15.33	18.	4.	2.	.40
+	HYDROGRAPH AT	E13	1212.	12.50	175.	44.	21.	1.53
+	3 COMBINED AT	CPE13	1209.	12.50	202.	51.	24.	1.93
+	DIVERSION TO	DVE13	630.	12.50	106.	27.	13.	1.93
+	HYDROGRAPH AT	DE13	579.	12.50	97.	24.	12.	1.93
+	ROUTED TO	RCPE13	498.	12.83	96.	24.	12.	1.93
+	HYDROGRAPH AT	DRE05	978.	12.83	283.	72.	35.	9.67
+	ROUTED TO	RDE05	860.	13.50	282.	72.	35.	9.67
+	HYDROGRAPH AT	E24	289.	12.33	28.	7.	3.	.23
+	3 COMBINED AT	CPE24	1102.	13.33	394.	101.	49.	11.43
+	ROUTED TO	RCPE24	891.	14.33	384.	101.	49.	11.43
+	HYDROGRAPH AT	E08	736.	12.50	91.	23.	11.	.96
+	ROUTED TO	RCPE08	502.	13.17	91.	23.	11.	.96
+	HYDROGRAPH AT	DRE13	630.	12.50	106.	27.	13.	1.93
+	ROUTED TO	RDE13	513.	13.00	105.	27.	13.	1.93
+	HYDROGRAPH AT	E23	377.	12.33	43.	11.	5.	.33
+	3 COMBINED AT	CPE23	1008.	13.00	236.	59.	29.	3.22
+	ROUTED TO	RCPE23	830.	13.67	232.	59.	29.	3.22
+	HYDROGRAPH AT	E34	385.	12.33	39.	10.	5.	.30
+	3 COMBINED AT	CPE34	1417.	14.17	620.	166.	80.	13.02
+	ROUTED TO	RCPE34	1394.	14.33	614.	166.	80.	13.02
+	HYDROGRAPH AT	E07	896.	12.33	88.	22.	11.	1.07
+	ROUTED TO	RCPE07	586.	12.83	88.	22.	11.	1.07
+	HYDROGRAPH AT	E14	1095.	12.17	71.	18.	8.	.82
+	ROUTED TO	RCPE14	625.	12.50	71.	18.	8.	.82
	HYDROGRAPH AT							

+		E15	968.	12.33	88.	22.	11.	.92
+	3 COMBINED AT	CPE15	1517.	12.33	243.	61.	29.	2.81
	ROUTED TO	RCPE15	848.	13.83	240.	61.	29.	2.81
+	HYDROGRAPH AT	E27	195.	12.17	17.	4.	2.	.13
+	ROUTED TO	RCPE27	119.	12.67	17.	4.	2.	.13
+	HYDROGRAPH AT	E21	365.	12.33	32.	8.	4.	.35
+	DIVERSION TO	DVE21	286.	12.33	27.	7.	3.	.35
+	HYDROGRAPH AT	DE21	79.	12.33	5.	1.	1.	.35
+	ROUTED TO	RCPE21	25.	13.67	5.	1.	1.	.35
+	HYDROGRAPH AT	E22	934.	12.50	126.	32.	15.	1.10
+	4 COMBINED AT	CPE22	1009.	12.50	375.	97.	47.	4.39
+	ROUTED TO	RCPE22	826.	13.00	369.	97.	47.	4.39
+	HYDROGRAPH AT	E37	317.	12.17	24.	6.	3.	.18
+	2 COMBINED AT	CPE37	826.	13.00	385.	103.	49.	4.57
	ROUTED TO	RCPE37	719.	14.83	380.	103.	49.	4.57
+	HYDROGRAPH AT	E01	2747.	12.33	396.	99.	48.	4.54
+	ROUTED TO	RCPE01	2010.	12.83	395.	99.	48.	4.54
+	HYDROGRAPH AT	E02	4161.	12.50	508.	127.	61.	6.36
+	2 COMBINED AT	CPE02	4827.	12.50	888.	222.	107.	10.91
+	ROUTED TO	RCPE02	3998.	13.00	885.	222.	107.	10.91
+	HYDROGRAPH AT	E03	1851.	12.33	172.	43.	21.	2.03
+	2 COMBINED AT	CPE03	3998.	13.00	1036.	260.	125.	12.93
+	ROUTED TO	RCPE03	3611.	13.33	1028.	260.	125.	12.93
+	HYDROGRAPH AT	E16	839.	12.33	76.	19.	9.	.79
+	2 COMBINED AT	CPE16	3608.	13.33	1097.	277.	134.	13.72
+	DIVERSION TO	DVE16	2243.	13.33	773.	196.	95.	13.72
+	HYDROGRAPH AT	DE16	1338.	13.33	317.	79.	38.	13.72
+	ROUTED TO	RCPE16	761.	14.67	308.	79.	38.	13.72
	HYDROGRAPH AT							

+		E28	296.	12.17	27.	7.	3.	.20
+	DIVERSION TO	DVE28	186.	12.17	17.	4.	2.	.20
+	HYDROGRAPH AT	DE28	110.	12.17	10.	2.	1.	.20
+	ROUTED TO	RCPE28	43.	14.17	10.	2.	1.	.20
+	HYDROGRAPH AT	DRE21	286.	12.33	27.	7.	3.	.35
+	ROUTED TO	RDE21	84.	15.00	27.	7.	3.	.35
+	HYDROGRAPH AT	E20	432.	12.50	60.	15.	7.	.51
+	4 COMBINED AT	CPE20	828.	14.67	376.	101.	49.	14.78
+	HYDROGRAPH AT	DRE16	2243.	13.33	773.	196.	95.	13.72
+	ROUTED TO	RDE16	2222.	13.67	771.	196.	95.	13.72
+	HYDROGRAPH AT	E19	476.	12.33	51.	13.	6.	.47
+	2 COMBINED AT	CPE19	2222.	13.67	816.	208.	100.	14.19
+	DIVERSION TO	DVE19	1447.	13.67	589.	152.	73.	14.19
+	HYDROGRAPH AT	DE19	765.	13.67	225.	56.	27.	14.19
+	ROUTED TO	RCPE19	659.	14.67	224.	56.	27.	14.19
+	HYDROGRAPH AT	DRE28	186.	12.17	17.	4.	2.	.20
+	ROUTED TO	RDE28	97.	13.17	17.	4.	2.	.20
+	HYDROGRAPH AT	E29	620.	12.33	73.	18.	9.	.56
+	3 COMBINED AT	CPE29A	659.	14.67	304.	77.	37.	14.95
+	2 COMBINED AT	CPE29	1470.	14.67	672.	177.	85.	15.81
+	ROUTED TO	RCPE29	1374.	15.17	663.	177.	85.	15.81
+	HYDROGRAPH AT	E38	711.	12.17	57.	14.	7.	.48
+	4 COMBINED AT	CPE38	2633.	15.00	1502.	414.	199.	33.52
+	ROUTED TO	RCPE38	2472.	15.50	1460.	414.	199.	33.52
+	HYDROGRAPH AT	DRE19	1447.	13.67	589.	152.	73.	14.19
+	ROUTED TO	RDE19	1383.	14.17	578.	152.	73.	14.19
+	HYDROGRAPH AT	E30	649.	12.33	79.	20.	9.	.64
+	2 COMBINED AT	CPE30	1383.	14.17	635.	170.	82.	14.82
	ROUTED TO							

+	RCPE30	1088.	15.17	609.	170.	82.	14.82
HYDROGRAPH AT +	E44	746.	12.33	73.	18.	9.	.63
3 COMBINED AT	CPE44	3448.	15.50	2021.	587.	283.	34.79
ROUTED TO +	RCPE44	3367.	16.00	1999.	586.	283.	34.79
HYDROGRAPH AT +	E18	720.	12.33	70.	18.	8.	.73
ROUTED TO +	RCPE18	431.	13.00	70.	18.	8.	.73
HYDROGRAPH AT +	E31	433.	12.33	45.	11.	5.	.38
2 COMBINED AT +	CPE31	492.	12.83	114.	29.	14.	1.11
ROUTED TO +	RCPE31	293.	13.67	109.	29.	14.	1.11
HYDROGRAPH AT +	E43	568.	12.33	55.	14.	7.	.44
2 COMBINED AT +	CPE43	582.	12.33	162.	42.	20.	1.55
ROUTED TO +	RCPE43	335.	13.33	157.	42.	20.	1.55
HYDROGRAPH AT +	E50	1142.	12.33	169.	55.	26.	.70
3 COMBINED AT +	CPE50	3475.	16.00	2109.	663.	323.	37.04
ROUTED TO	RCPE50	3457.	16.17	2105.	663.	323.	37.04
HYDROGRAPH AT +	E52	404.	12.00	39.	13.	6.	.16
ROUTED TO +	RCPE52	221.	12.33	39.	12.	6.	.16
HYDROGRAPH AT +	E49	266.	12.33	26.	7.	3.	.22
3 COMBINED AT +	CPE49	3459.	16.17	2109.	679.	331.	37.43
2 COMBINED AT +	E49RIV	6086.	16.50	4923.	1802.	878.	86.19
ROUTED TO +	RCPE49	6058.	16.67	4896.	1802.	878.	86.19
HYDROGRAPH AT +	G18	513.	12.17	54.	17.	8.	.32
DIVERSION TO +	DVG18	265.	12.17	29.	9.	4.	.32
HYDROGRAPH AT +	DG18	248.	12.17	24.	7.	4.	.32
ROUTED TO +	RCPG18	106.	13.50	24.	7.	4.	.32
HYDROGRAPH AT +	G27	1314.	12.33	122.	31.	15.	1.41
2 COMBINED AT	CPG27	1319.	12.33	146.	38.	18.	1.73
2 COMBINED AT +	G27RIV	6058.	16.67	4929.	1831.	892.	87.92
ROUTED TO							

+		RCPG27	6015.	16.83	4905.	1828.	891.	87.92
+	HYDROGRAPH AT	G28	411.	12.17	32.	8.	4.	.31
+	2 COMBINED AT	G28RIV	6015.	16.83	4905.	1834.	894.	88.23
+	ROUTED TO	RCPG28	5989.	17.00	4892.	1834.	894.	88.23
+	HYDROGRAPH AT	E53	151.	12.00	10.	3.	1.	.11
+	ROUTED TO	RCPE53	19.	13.33	9.	3.	1.	.11
+	HYDROGRAPH AT	E17	966.	12.50	132.	33.	16.	1.48
+	ROUTED TO	RCPE17	733.	13.00	132.	33.	16.	1.48
+	HYDROGRAPH AT	E32	393.	12.17	30.	7.	4.	.28
+	2 COMBINED AT	CPE32	733.	13.00	161.	40.	19.	1.76
+	ROUTED TO	RCPE32	607.	13.33	161.	40.	19.	1.76
+	HYDROGRAPH AT	E40	109.	12.17	8.	2.	1.	.07
+	2 COMBINED AT	CPE40	607.	13.33	169.	42.	20.	1.83
+	HYDROGRAPH AT	E33	79.	12.00	4.	1.	1.	.05
+	ROUTED TO	RCPE33	29.	12.17	4.	1.	1.	.05
+	HYDROGRAPH AT	E39	159.	12.17	11.	3.	1.	.10
+	2 COMBINED AT	CPE39A	187.	12.17	16.	4.	2.	.15
+	2 COMBINED AT	CPE39	610.	13.33	184.	46.	22.	1.98
+	ROUTED TO	RCPE39	517.	14.00	182.	46.	22.	1.98
+	HYDROGRAPH AT	E42	742.	12.33	70.	18.	8.	.62
+	3 COMBINED AT	CPE42	765.	12.33	258.	66.	32.	2.70
+	ROUTED TO	RCPE42	471.	15.17	243.	66.	32.	2.70
+	HYDROGRAPH AT	E51	1339.	12.50	164.	41.	20.	1.28
+	2 COMBINED AT	CPE51	1326.	12.50	388.	106.	51.	3.99
+	2 COMBINED AT	E51RIV	6106.	17.00	5060.	1911.	931.	92.21
+	ROUTED TO	RCPE51	6078.	17.17	5051.	1911.	931.	92.21
+	HYDROGRAPH AT	E41	758.	12.67	131.	33.	16.	1.05
+	HYDROGRAPH AT	DRG18	265.	12.17	29.	9.	4.	.32
	ROUTED TO							

+	RDG18	145.	12.83	29.	9.	4.	.32
HYDROGRAPH AT +	G17	837.	12.33	120.	39.	19.	.58
2 COMBINED AT	CPG17	869.	12.33	148.	48.	23.	.90
ROUTED TO +	RCPG17	713.	12.50	148.	48.	23.	.90
HYDROGRAPH AT +	G16	1473.	12.33	170.	47.	23.	1.33
ROUTED TO +	RCPG16	1260.	12.50	170.	47.	23.	1.33
HYDROGRAPH AT +	G29	3263.	12.33	385.	104.	50.	2.90
3 COMBINED AT +	CPG29	5005.	12.33	697.	197.	95.	5.13
3 COMBINED AT +	E41RIV	6078.	17.17	5184.	2083.	1019.	98.07
ROUTED TO +	RCPE41	6042.	17.33	5141.	2081.	1017.	98.07
HYDROGRAPH AT +	G15	4267.	12.33	463.	128.	62.	3.38
ROUTED TO +	RCPG15	2880.	12.67	463.	128.	62.	3.38
HYDROGRAPH AT +	G30	504.	12.17	40.	10.	5.	.32
2 COMBINED AT +	CPG30	2894.	12.67	501.	137.	66.	3.70
2 COMBINED AT	G30RIV	7399.	12.67	5447.	2183.	1069.	101.78
ROUTED TO +	RCPG30	6860.	13.00	5409.	2183.	1069.	101.78
HYDROGRAPH AT +	D21	113.	12.00	7.	2.	1.	.08
ROUTED TO +	RCPD21	13.	13.17	6.	2.	1.	.08
HYDROGRAPH AT +	D20	153.	12.17	10.	3.	1.	.11
ROUTED TO +	RCPD20	23.	12.33	8.	3.	1.	.11
HYDROGRAPH AT +	D19	310.	12.17	23.	6.	3.	.25
ROUTED TO +	RCPD19	94.	12.50	22.	6.	3.	.25
HYDROGRAPH AT +	D24	462.	12.33	46.	11.	6.	.43
2 COMBINED AT +	CPD24A	544.	12.33	67.	17.	8.	.68
HYDROGRAPH AT +	D18	430.	12.33	39.	10.	5.	.43
ROUTED TO +	RCPD18	74.	12.83	32.	10.	5.	.43
HYDROGRAPH AT	D07	822.	12.50	97.	24.	12.	1.05
DIVERSION TO +	DVD07	245.	12.50	22.	6.	3.	1.05
HYDROGRAPH AT							

+	DD07	577.	12.50	75.	19.	9.	1.05
+ ROUTED TO	RCPD07	360.	13.17	74.	19.	9.	1.05
+ HYDROGRAPH AT	D17	678.	12.50	79.	20.	9.	.78
+ 2 COMBINED AT	CPD17	678.	12.50	151.	38.	18.	1.83
+ ROUTED TO	RCPD17	336.	13.33	145.	38.	18.	1.83
+ HYDROGRAPH AT	D23	700.	12.33	81.	20.	10.	.71
+ 3 COMBINED AT	CPD23	914.	12.50	253.	67.	33.	2.97
+ 2 COMBINED AT	CPD24	1374.	12.33	318.	84.	40.	3.65
+ ROUTED TO	RCPD24	1201.	12.67	316.	84.	40.	3.65
+ HYDROGRAPH AT	D25	1109.	12.50	130.	32.	16.	1.34
+ 4 COMBINED AT	CPD25	2162.	12.50	455.	120.	58.	5.18
+ ROUTED TO	RCPD25	1443.	13.50	433.	119.	58.	5.18
+ HYDROGRAPH AT	D26	1268.	12.67	187.	47.	22.	1.55
+ 2 COMBINED AT	CPD26	1556.	13.50	597.	165.	80.	6.72
+ ROUTED TO	RCPD26	1378.	13.83	583.	165.	80.	6.72
+ HYDROGRAPH AT	D27	335.	12.33	35.	9.	4.	.26
+ 2 COMBINED AT	CPD27	1378.	13.83	605.	173.	84.	6.98
+ HYDROGRAPH AT	G44	674.	12.17	50.	13.	6.	.73
+ ROUTED TO	RCPG44	320.	13.00	50.	13.	6.	.73
+ HYDROGRAPH AT	G06	2652.	12.33	309.	88.	42.	2.15
+ 2 COMBINED AT	CPG06	2676.	12.33	357.	100.	48.	2.88
+ DIVERSION TO	DVG06	1449.	12.33	196.	55.	27.	2.88
+ HYDROGRAPH AT	DG06	1227.	12.33	161.	45.	22.	2.88
+ ROUTED TO	RCPG06	703.	13.17	159.	45.	22.	2.88
+ HYDROGRAPH AT	G07	1804.	12.33	228.	68.	33.	1.36
+ 2 COMBINED AT	CPG07	1805.	12.33	380.	111.	54.	4.24
+ ROUTED TO	RCPG07	988.	13.83	379.	111.	54.	4.24
+ HYDROGRAPH AT	G08	477.	12.33	45.	11.	5.	.40
DIVERSION TO							

+		DVG08	204.	12.33	19.	5.	2.	.40
+	HYDROGRAPH AT	DG08	273.	12.33	27.	7.	3.	.40
	ROUTED TO	RCPG08	265.	12.33	27.	7.	3.	.40
+	HYDROGRAPH AT	G05	1389.	12.17	114.	29.	14.	1.59
+	DIVERSION TO	DVG05	377.	12.17	26.	7.	3.	1.59
+	HYDROGRAPH AT	DG05	1012.	12.17	87.	22.	11.	1.59
+	ROUTED TO	RCPG05	402.	13.67	87.	22.	11.	1.59
+	HYDROGRAPH AT	G46	1759.	12.33	215.	62.	30.	1.41
+	2 COMBINED AT	CPG46	1750.	12.33	299.	84.	40.	3.00
+	HYDROGRAPH AT	G04	2835.	12.33	369.	110.	53.	2.34
+	2 COMBINED AT	CPG04	4558.	12.33	664.	192.	93.	5.34
+	ROUTED TO	RCPG04	3442.	12.67	664.	192.	93.	5.34
+	HYDROGRAPH AT	DRG06	1449.	12.33	196.	55.	27.	2.88
+	ROUTED TO	RDG06	908.	13.17	196.	55.	27.	2.88
	HYDROGRAPH AT	DRG05	377.	12.17	26.	7.	3.	1.59
+	ROUTED TO	RDG05	100.	14.00	26.	7.	3.	1.59
+	HYDROGRAPH AT	G45	1660.	12.67	245.	61.	29.	2.00
+	5 COMBINED AT	CPG45	5524.	12.67	1135.	316.	153.	10.62
+	ROUTED TO	RCPG45	5039.	12.83	1135.	316.	153.	10.62
+	HYDROGRAPH AT	G31	319.	12.00	21.	5.	3.	.18
+	2 COMBINED AT	CPG31	5039.	12.83	1156.	321.	156.	10.81
+	DIVERSION TO	DVG31	2516.	12.83	577.	161.	78.	10.81
+	HYDROGRAPH AT	DG31	2516.	12.83	577.	161.	78.	10.81
+	ROUTED TO	RCPG31	2356.	13.00	577.	160.	78.	10.81
+	HYDROGRAPH AT	G47	196.	12.17	14.	4.	2.	.12
+	2 COMBINED AT	CPG47	2356.	13.00	590.	164.	79.	10.93
	DIVERSION TO	DVG47	1177.	13.00	295.	82.	40.	10.93
+	HYDROGRAPH AT	DG47	1177.	13.00	295.	82.	40.	10.93
	ROUTED TO							

+		RCPG47	831.	14.50	294.	82.	40.	10.93
	HYDROGRAPH AT							
+		DRG31	2516.	12.83	577.	161.	78.	10.81
	ROUTED TO							
+		RDG31	1741.	14.17	571.	160.	78.	10.81
	HYDROGRAPH AT							
+		G43	1842.	12.50	249.	62.	30.	2.17
	4 COMBINED AT							
+		CPG43	3168.	14.33	1415.	403.	195.	14.45
	3 COMBINED AT							
+		D27RIV	8246.	13.00	6812.	2614.	1279.	123.22
	ROUTED TO							
+		RCPD27	8184.	13.00	6814.	2614.	1279.	123.22
	HYDROGRAPH AT							
+		D28	1454.	12.67	217.	54.	26.	1.69
	2 COMBINED AT							
+		D28RIV	8709.	13.00	6890.	2654.	1298.	124.90
	ROUTED TO							
+		RCPD28	8632.	13.00	6883.	2654.	1298.	124.90
	HYDROGRAPH AT							
+		D29	2379.	12.67	338.	85.	41.	3.51
	2 COMBINED AT							
+		D29RIV	9468.	13.00	7026.	2711.	1326.	128.41
	ROUTED TO							
+		RCPD29	9393.	13.00	7015.	2711.	1326.	128.41
	HYDROGRAPH AT							
+		D30	495.	12.33	48.	12.	6.	.43
	HYDROGRAPH AT							
+		DRG47	1177.	13.00	295.	82.	40.	10.93
	ROUTED TO							
+		RDG47	926.	14.00	294.	82.	40.	10.93
	HYDROGRAPH AT							
+		G32	1329.	12.33	135.	34.	16.	1.14
	2 COMBINED AT							
+		CPG32	1305.	12.33	419.	113.	55.	12.07
	3 COMBINED AT							
+		D30RIV	9529.	13.00	7277.	2809.	1373.	129.98
	ROUTED TO							
+		RCPD30	9470.	13.00	7274.	2809.	1373.	129.98
	HYDROGRAPH AT							
+		D31	607.	12.50	72.	18.	9.	.67
	2 COMBINED AT							
+		D31RIV	9543.	13.00	7294.	2821.	1379.	130.65
	ROUTED TO							
+		RCPD31	9511.	13.17	7286.	2821.	1379.	130.65
	HYDROGRAPH AT							
+		G33	897.	12.33	86.	21.	10.	.74
	2 COMBINED AT							
+		G33RIV	9511.	13.17	7298.	2837.	1387.	131.39
	ROUTED TO							
+		RCPG33	9543.	13.17	7291.	2836.	1386.	131.39
	HYDROGRAPH AT							
+		D32	617.	12.33	59.	15.	7.	.50
	HYDROGRAPH AT							
+		G14	220.	12.17	16.	4.	2.	.14
	ROUTED TO							

+		RCPG14	137.	12.50	16.	4.	2.	.14
+	HYDROGRAPH AT	G34	323.	12.17	24.	6.	3.	.20
	2 COMBINED AT	CPG34A	376.	12.17	39.	10.	5.	.34
+	HYDROGRAPH AT	G13	553.	12.33	57.	14.	7.	.50
+	2 COMBINED AT	CPG34	827.	12.33	96.	24.	12.	.84
+	ROUTED TO	RCPG34	597.	12.83	96.	24.	12.	.84
+	HYDROGRAPH AT	G35	629.	12.33	61.	15.	7.	.53
+	2 COMBINED AT	CPG35	974.	12.33	156.	39.	19.	1.37
+	3 COMBINED AT	D32RIV	9769.	13.17	7354.	2873.	1404.	133.26
+	ROUTED TO	RCPD32	9597.	13.17	7330.	2873.	1404.	133.26
+	HYDROGRAPH AT	DRD07	245.	12.50	22.	6.	3.	1.05
+	ROUTED TO	RDD07	150.	13.17	22.	6.	3.	1.05
+	HYDROGRAPH AT	D15	743.	12.33	81.	20.	10.	.65
+	2 COMBINED AT	CPD15	736.	12.33	102.	25.	12.	1.70
	ROUTED TO	RCPD15	112.	13.50	69.	24.	12.	1.70
+	HYDROGRAPH AT	D47	68.	12.00	4.	1.	0.	.04
+	ROUTED TO	RCPD47	2.	12.33	2.	1.	0.	.04
+	HYDROGRAPH AT	D02	685.	12.17	45.	11.	5.	.50
+	DIVERSION TO	DVD02	154.	12.17	7.	2.	1.	.50
+	HYDROGRAPH AT	DD02	531.	12.17	38.	10.	5.	.50
+	ROUTED TO	RCPD02	453.	12.17	38.	10.	5.	.50
+	HYDROGRAPH AT	D03	400.	12.17	29.	7.	3.	.34
+	2 COMBINED AT	CPD03	847.	12.17	66.	17.	8.	.84
+	DIVERSION TO	DVD03	509.	12.17	39.	10.	5.	.84
+	HYDROGRAPH AT	DD03	338.	12.17	27.	7.	3.	.84
+	ROUTED TO	RCPD03	251.	12.33	27.	7.	3.	.84
+	HYDROGRAPH AT	D04	219.	12.17	16.	4.	2.	.20
+	2 COMBINED AT	CPD04	392.	12.33	42.	11.	5.	1.03
	DIVERSION TO							

+	DVD04	219.	12.33	24.	6.	3.	1.03
+ HYDROGRAPH AT	DD04	173.	12.33	18.	5.	2.	1.03
+ ROUTED TO	RCPD04	119.	12.67	18.	5.	2.	1.03
+ HYDROGRAPH AT	DRD02	154.	12.17	7.	2.	1.	.50
+ ROUTED TO	RDD02	38.	13.17	7.	2.	1.	.50
+ HYDROGRAPH AT	DRD03	509.	12.17	39.	10.	5.	.84
+ ROUTED TO	RDD03	283.	12.83	39.	10.	5.	.84
+ HYDROGRAPH AT	D01	1990.	12.33	226.	57.	27.	2.65
+ 4 COMBINED AT	CPD01	2195.	12.50	289.	72.	35.	3.69
+ DIVERSION TO	DVD01	908.	12.50	94.	23.	11.	3.69
+ HYDROGRAPH AT	DD01	1288.	12.50	195.	49.	23.	3.69
+ ROUTED TO	RCPD01	1149.	12.83	194.	49.	23.	3.69
+ HYDROGRAPH AT	DRD04	219.	12.33	24.	6.	3.	1.03
+ ROUTED TO	RDD04	102.	14.17	24.	6.	3.	1.03
+ HYDROGRAPH AT	D05	1197.	12.67	169.	42.	20.	1.93
+ 3 COMBINED AT	CPD05	2031.	12.83	383.	96.	46.	5.61
+ DIVERSION TO	DVD05	1931.	12.83	368.	92.	45.	5.61
+ HYDROGRAPH AT	DD05	100.	12.83	15.	4.	2.	5.61
+ ROUTED TO	RCPD05	84.	13.17	15.	4.	2.	5.61
+ HYDROGRAPH AT	D11	453.	12.33	42.	11.	5.	.40
+ 2 COMBINED AT	CPD11	443.	12.33	55.	14.	7.	6.01
+ ROUTED TO	RCPD11	318.	12.67	55.	14.	7.	6.01
+ HYDROGRAPH AT	D06	840.	12.50	93.	23.	11.	1.22
+ DIVERSION TO	DVD06	527.	12.50	60.	15.	7.	1.22
+ HYDROGRAPH AT	DD06	313.	12.50	33.	8.	4.	1.22
+ ROUTED TO	RCPD06	162.	13.50	33.	8.	4.	1.22
+ HYDROGRAPH AT	DRD06	527.	12.50	60.	15.	7.	1.22
+ ROUTED TO	RDD06	455.	12.67	60.	15.	7.	1.22
HYDROGRAPH AT							

+	D08	326.	12.17	25.	6.	3.	.28
+ 2 COMBINED AT	CPD08	474.	12.50	84.	21.	10.	1.50
ROUTED TO	RCPD08	406.	13.17	83.	21.	10.	1.50
+ HYDROGRAPH AT	D10	736.	12.50	93.	23.	11.	.84
+ 4 COMBINED AT	CPD10	1032.	12.50	259.	65.	31.	8.35
+ ROUTED TO	RCPD10	340.	13.83	198.	64.	31.	8.35
+ HYDROGRAPH AT	D46	119.	12.00	7.	2.	1.	.05
+ ROUTED TO	RCPD46	4.	18.00	4.	2.	1.	.05
+ HYDROGRAPH AT	DRD05	1931.	12.83	368.	92.	45.	5.61
+ ROUTED TO	RDD05	1579.	13.17	367.	92.	45.	5.61
+ HYDROGRAPH AT	D13	923.	12.17	70.	17.	8.	.56
+ 2 COMBINED AT	CPD13	1579.	13.17	434.	110.	53.	6.17
+ ROUTED TO	RCPD13	674.	14.67	367.	109.	53.	6.17
+ HYDROGRAPH AT	D22	3946.	13.17	880.	220.	106.	7.72
6 COMBINED AT	CPD22	4196.	13.17	1391.	394.	191.	18.42
+ ROUTED TO	RCPD22	3557.	13.67	1367.	393.	191.	18.42
+ HYDROGRAPH AT	D33	693.	12.33	78.	19.	9.	.65
+ 2 COMBINED AT	CPD33	3557.	13.67	1409.	411.	200.	19.07
+ 2 COMBINED AT	D33RIV	11487.	13.33	8326.	3171.	1550.	151.28
+ ROUTED TO	RCPD33	11475.	13.33	8327.	3171.	1550.	151.28
+ HYDROGRAPH AT	D45	404.	12.17	32.	8.	4.	.26
+ HYDROGRAPH AT	G36	959.	12.50	115.	29.	14.	1.00
+ 3 COMBINED AT	G36RIV	11488.	13.33	8341.	3196.	1562.	152.54
+ ROUTED TO	RCPG36	11315.	13.67	8317.	3196.	1562.	152.54
+ HYDROGRAPH AT	D44	445.	12.17	40.	10.	5.	.33
+ HYDROGRAPH AT	G37	534.	12.17	47.	12.	6.	.41
3 COMBINED AT	G37RIV	11315.	13.67	8318.	3212.	1570.	153.28
+ ROUTED TO	RCPG37	11209.	13.67	8298.	3211.	1569.	153.28
HYDROGRAPH AT							

+		D43	247.	12.17	18.	4.	2.	.15
+	HYDROGRAPH AT	G12	986.	12.33	119.	30.	14.	1.03
+	DIVERSION TO	DVG12	638.	12.33	75.	19.	9.	1.03
+	HYDROGRAPH AT	DG12	348.	12.33	44.	11.	5.	1.03
+	ROUTED TO	RCPG12	247.	13.00	44.	11.	5.	1.03
+	HYDROGRAPH AT	G38	409.	12.33	39.	10.	5.	.34
+	2 COMBINED AT	CPG38	417.	12.33	83.	21.	10.	1.37
+	3 COMBINED AT	G38RIV	11270.	13.67	8312.	3227.	1577.	154.80
+	ROUTED TO	RCPG38	11084.	13.83	8287.	3227.	1577.	154.80
+	HYDROGRAPH AT	D34	1432.	12.33	150.	38.	18.	1.20
+	ROUTED TO	RCPD34	1080.	12.67	150.	38.	18.	1.20
+	HYDROGRAPH AT	D42	334.	12.17	24.	6.	3.	.21
+	2 COMBINED AT	CPD42	1080.	12.67	174.	43.	21.	1.41
+	HYDROGRAPH AT	DRG12	638.	12.33	75.	19.	9.	1.03
+	ROUTED TO	RDG12	615.	12.83	75.	19.	9.	1.03
+	HYDROGRAPH AT	G39	612.	12.50	89.	22.	11.	.76
+	2 COMBINED AT	CPG39	1021.	12.67	162.	41.	20.	1.79
+	3 COMBINED AT	D42RIV	11148.	13.83	8331.	3286.	1605.	156.97
+	ROUTED TO	RCPD42	11068.	14.00	8319.	3286.	1605.	156.97
+	HYDROGRAPH AT	D41	428.	12.17	37.	9.	4.	.29
+	2 COMBINED AT	D41RIV	11068.	14.00	8319.	3293.	1609.	157.27
+	ROUTED TO	RCPD41	11067.	14.00	8318.	3293.	1608.	157.27
+	HYDROGRAPH AT	G02	2401.	12.33	370.	114.	55.	2.06
+	HYDROGRAPH AT	G03	2847.	12.33	469.	147.	71.	2.46
+	2 COMBINED AT	CPG03	5219.	12.33	834.	260.	125.	4.52
+	ROUTED TO	RCPG03	3913.	12.83	834.	259.	125.	4.52
+	HYDROGRAPH AT	DRG08	204.	12.33	19.	5.	2.	.40
+	ROUTED TO	RDG08	117.	13.00	19.	5.	2.	.40
	HYDROGRAPH AT							

+	G09	674.	12.50	81.	20.	10.	.70
3 COMBINED AT +	CPG09	4246.	12.83	929.	283.	137.	5.63
ROUTED TO	RCPG09	3863.	13.17	928.	282.	137.	5.63
HYDROGRAPH AT +	G48	2724.	12.17	447.	148.	71.	1.91
ROUTED TO +	RCPG48	1865.	12.67	447.	148.	71.	1.91
HYDROGRAPH AT +	G01	1314.	12.50	177.	44.	21.	1.58
2 COMBINED AT +	CPG01	3003.	12.67	621.	191.	92.	3.49
HYDROGRAPH AT +	G10	522.	12.33	51.	13.	6.	.44
2 COMBINED AT +	CPG10	3230.	12.50	671.	204.	98.	3.93
ROUTED TO +	RCPG10	2729.	13.17	670.	203.	98.	3.93
HYDROGRAPH AT +	G11	731.	12.33	70.	17.	8.	.61
3 COMBINED AT +	CPG11	6536.	13.17	1655.	499.	242.	10.16
DIVERSION TO +	DVG11	2955.	13.17	691.	201.	97.	10.16
HYDROGRAPH AT +	DG11	3582.	13.17	964.	298.	144.	10.16
ROUTED TO	RCPG11	3043.	13.83	962.	297.	144.	10.16
HYDROGRAPH AT +	G40	1427.	12.50	175.	44.	21.	1.52
2 COMBINED AT +	CPG40	3043.	13.83	1134.	340.	165.	11.68
2 COMBINED AT +	G40RIV	13378.	14.00	9003.	3540.	1734.	168.55
ROUTED TO +	RCPG40	13264.	14.17	8993.	3540.	1734.	168.55
HYDROGRAPH AT +	D40	379.	12.17	29.	7.	4.	.23
HYDROGRAPH AT +	G41	515.	12.33	49.	12.	6.	.42
3 COMBINED AT +	D40RIV	13264.	14.17	8993.	3555.	1741.	169.20
ROUTED TO +	RCPD40	13139.	14.17	8975.	3553.	1741.	169.20
HYDROGRAPH AT +	D36	391.	12.17	32.	8.	4.	.25
HYDROGRAPH AT +	D35	984.	12.50	137.	34.	17.	1.18
2 COMBINED AT +	CPD35	1069.	12.50	169.	42.	20.	1.43
ROUTED TO	RCPD35	890.	13.00	169.	42.	20.	1.43
HYDROGRAPH AT +	D37	353.	12.33	35.	9.	4.	.28
2 COMBINED AT							

+		CPD37	900.	13.00	203.	51.	24.	1.71
+	HYDROGRAPH AT	D38	472.	12.33	46.	12.	6.	.37
+	2 COMBINED AT	CPD38	907.	13.00	248.	62.	30.	2.07
+	ROUTED TO	RCPD38	834.	13.33	247.	62.	30.	2.07
+	HYDROGRAPH AT	D39	391.	12.33	39.	10.	5.	.29
+	2 COMBINED AT	CPD39	834.	13.33	285.	71.	34.	2.36
+	2 COMBINED AT	D39RIV	13431.	14.17	9087.	3603.	1765.	171.57
+	ROUTED TO	RCPD39	13349.	14.33	9075.	3603.	1764.	171.57
+	HYDROGRAPH AT	DRG11	2955.	13.17	691.	201.	97.	10.16
+	ROUTED TO	RDG11	2353.	14.00	691.	201.	97.	10.16
+	HYDROGRAPH AT	G42	665.	12.33	81.	20.	10.	.69
+	2 COMBINED AT	CPG42	2352.	14.00	769.	220.	107.	10.85
+	2 COMBINED AT	G42RIV	15070.	14.33	9579.	3774.	1850.	172.26
+	ROUTED TO	RCPG42	15006.	14.33	9576.	3774.	1849.	172.26
+	HYDROGRAPH AT	C50	230.	12.50	45.	11.	5.	.32
+	ROUTED TO	RCPC50	175.	13.67	45.	11.	5.	.32
+	HYDROGRAPH AT	C51	211.	12.83	52.	13.	6.	.33
+	2 COMBINED AT	CPC51	282.	13.50	96.	24.	12.	.65
+	ROUTED TO	RCPC51	267.	13.83	95.	24.	12.	.65
+	HYDROGRAPH AT	C52	184.	12.83	47.	12.	6.	.29
+	ROUTED TO	RCPC52	171.	13.33	46.	12.	6.	.29
+	HYDROGRAPH AT	C53	188.	12.83	46.	12.	6.	.29
+	ROUTED TO	RCPC53	171.	13.33	46.	12.	6.	.29
+	HYDROGRAPH AT	B07	227.	12.67	53.	13.	6.	.34
+	4 COMBINED AT	CPB07	701.	13.17	237.	60.	29.	1.57
+	ROUTED TO	RCPB07	625.	14.00	232.	60.	29.	1.57
+	HYDROGRAPH AT	B08	243.	12.83	61.	15.	7.	.43
+	2 COMBINED AT	CPB08	688.	14.00	287.	75.	36.	2.00
	2 COMBINED AT							

+	B08RIV	15485.	14.33	9763.	3831.	1877.	174.26
ROUTED TO +	RCPB08	15479.	14.33	9763.	3831.	1877.	174.26
HYDROGRAPH AT	C04	274.	12.00	20.	5.	2.	.23
ROUTED TO +	RCPC04	182.	12.50	20.	5.	2.	.23
HYDROGRAPH AT +	C12	265.	12.17	18.	4.	2.	.20
2 COMBINED AT +	CPC12	357.	12.17	37.	9.	5.	.44
DIVERSION TO +	DVC12	182.	12.17	19.	5.	2.	.44
HYDROGRAPH AT +	DC12	175.	12.17	18.	5.	2.	.44
ROUTED TO +	RCPC12	134.	12.50	18.	5.	2.	.44
HYDROGRAPH AT +	C13	536.	12.33	47.	12.	6.	.52
2 COMBINED AT +	CPC13	634.	12.33	65.	16.	8.	.95
ROUTED TO +	RCPC13	281.	12.67	63.	16.	8.	.95
HYDROGRAPH AT +	C11	299.	12.17	26.	6.	3.	.29
DIVERSION TO +	DVC11	141.	12.17	12.	3.	1.	.29
HYDROGRAPH AT	DC11	158.	12.17	14.	3.	2.	.29
ROUTED TO +	RCPC11	110.	12.67	14.	3.	2.	.29
HYDROGRAPH AT +	DRC12	182.	12.17	19.	5.	2.	.44
ROUTED TO +	RDC12	119.	12.83	19.	5.	2.	.44
HYDROGRAPH AT +	C31	140.	12.17	9.	2.	1.	.10
3 COMBINED AT +	CPC31	224.	12.67	41.	10.	5.	.82
ROUTED TO +	RCPC31	141.	13.00	40.	10.	5.	.82
HYDROGRAPH AT +	DRC11	141.	12.17	12.	3.	1.	.29
ROUTED TO +	RDC11	74.	13.00	12.	3.	1.	.29
HYDROGRAPH AT +	C14	263.	12.17	20.	5.	2.	.22
2 COMBINED AT +	CPC14	263.	12.17	31.	8.	4.	.51
ROUTED TO +	RCPC14	97.	12.50	30.	8.	4.	.51
HYDROGRAPH AT	C05	321.	12.00	20.	5.	2.	.23
ROUTED TO +	RCPC05	135.	12.83	20.	5.	2.	.23
HYDROGRAPH AT							

+		C03	390.	12.17	25.	6.	3.	.29
+	DIVERSION TO	DVC03	210.	12.17	14.	3.	2.	.29
+	HYDROGRAPH AT	DC03	180.	12.17	11.	3.	1.	.29
+	ROUTED TO	RCPC03	99.	12.33	11.	3.	1.	.29
+	HYDROGRAPH AT	C09	177.	12.17	12.	3.	1.	.14
+	2 COMBINED AT	CPC09	224.	12.17	23.	6.	3.	.43
+	DIVERSION TO	DVC09	103.	12.17	11.	3.	1.	.43
+	HYDROGRAPH AT	DC09	120.	12.17	12.	3.	2.	.43
+	ROUTED TO	RCPC09	97.	12.50	12.	3.	2.	.43
+	HYDROGRAPH AT	C15	157.	12.17	12.	3.	1.	.09
+	2 COMBINED AT	CPC15	186.	12.17	24.	6.	3.	.53
+	DIVERSION TO	DVC15	176.	12.17	23.	6.	3.	.53
+	HYDROGRAPH AT	DC15	9.	12.17	1.	0.	0.	.53
+	ROUTED TO	RCPC15	4.	12.67	1.	0.	0.	.53
+	HYDROGRAPH AT	C10	509.	12.33	49.	12.	6.	.55
+	3 COMBINED AT	CPC10	519.	12.33	68.	17.	8.	1.30
+	ROUTED TO	RCPC10	316.	12.67	67.	17.	8.	1.30
+	HYDROGRAPH AT	DRC03	210.	12.17	14.	3.	2.	.29
+	ROUTED TO	RDC03	127.	12.50	14.	3.	2.	.29
+	HYDROGRAPH AT	C06	415.	12.17	31.	8.	4.	.35
+	2 COMBINED AT	CPC06	442.	12.17	45.	11.	5.	.64
+	DIVERSION TO	DVC06	220.	12.17	22.	6.	3.	.64
+	HYDROGRAPH AT	DC06	221.	12.17	22.	6.	3.	.64
+	ROUTED TO	RCPC06	212.	12.33	22.	6.	3.	.64
+	HYDROGRAPH AT	DRC09	103.	12.17	11.	3.	1.	.43
+	ROUTED TO	RDC09	88.	12.33	11.	3.	1.	.43
+	HYDROGRAPH AT	C16	173.	12.17	12.	3.	1.	.13
+	3 COMBINED AT	CPC16	391.	12.17	45.	11.	5.	.91
	ROUTED TO							

+	RCPC16	264.	12.83	45.	11.	5.	.91
+ HYDROGRAPH AT	DRC06	220.	12.17	22.	6.	3.	.64
ROUTED TO	RDC06	193.	12.33	22.	6.	3.	.64
HYDROGRAPH AT +	C18	156.	12.00	9.	2.	1.	.08
+ 2 COMBINED AT	CPC18	199.	12.17	31.	8.	4.	.72
+ DIVERSION TO	DVC18	28.	12.17	3.	1.	0.	.72
+ HYDROGRAPH AT	DC18	171.	12.17	28.	7.	3.	.72
+ ROUTED TO	RCPC18	166.	12.33	28.	7.	3.	.72
+ HYDROGRAPH AT	C17	179.	12.00	12.	3.	1.	.12
+ 2 COMBINED AT	CPC17	320.	12.17	40.	10.	5.	.84
+ DIVERSION TO	DVC17	291.	12.17	38.	10.	5.	.84
+ HYDROGRAPH AT	DC17	30.	12.17	2.	0.	0.	.84
+ ROUTED TO	RCPC17	15.	12.33	2.	0.	0.	.84
+ HYDROGRAPH AT	DRC15	176.	12.17	23.	6.	3.	.53
ROUTED TO	RDC15	131.	12.50	23.	6.	3.	.53
HYDROGRAPH AT +	C30	386.	12.17	28.	7.	3.	.23
+ 4 COMBINED AT	CPC30	494.	12.17	97.	24.	12.	1.44
+ ROUTED TO	RCPC30	361.	12.67	96.	24.	12.	1.44
+ 5 COMBINED AT	CPC33A	1131.	12.67	290.	75.	36.	3.78
+ ROUTED TO	RC33A	917.	13.67	278.	75.	36.	3.78
+ HYDROGRAPH AT	C02	180.	12.00	11.	3.	1.	.13
+ ROUTED TO	RCPC02	82.	12.67	11.	3.	1.	.13
+ HYDROGRAPH AT	C01	366.	12.00	19.	5.	2.	.23
+ ROUTED TO	RCPC01	146.	12.50	19.	5.	2.	.23
+ HYDROGRAPH AT	C08	874.	12.33	77.	19.	9.	.87
+ ROUTED TO	RCPC08	739.	12.33	77.	19.	9.	.87
HYDROGRAPH AT	C07	1145.	12.33	100.	25.	12.	1.18
4 COMBINED AT +	CPC07	1952.	12.33	205.	51.	25.	2.41
DIVERSION TO							

+	DVC07	740.	12.33	66.	17.	8.	2.41
+ HYDROGRAPH AT	DC07	1213.	12.33	139.	35.	17.	2.41
+ ROUTED TO	RCPC07	1003.	12.50	139.	35.	17.	2.41
+ HYDROGRAPH AT	DRC18	28.	12.17	3.	1.	0.	.72
+ ROUTED TO	RDC18	22.	12.50	3.	1.	0.	.72
+ HYDROGRAPH AT	C19	392.	12.17	27.	7.	3.	.26
+ 3 COMBINED AT	CPC19	1038.	12.50	167.	42.	20.	3.39
+ DIVERSION TO	DVC19	548.	12.50	96.	24.	12.	3.39
+ HYDROGRAPH AT	DC19	490.	12.50	72.	18.	9.	3.39
+ ROUTED TO	RCPC19	408.	12.83	72.	18.	9.	3.39
+ HYDROGRAPH AT	DRC17	291.	12.17	38.	10.	5.	.84
+ ROUTED TO	RDC17	210.	12.67	38.	10.	5.	.84
+ HYDROGRAPH AT	C29	518.	12.17	39.	10.	5.	.34
+ 3 COMBINED AT	CPC29	744.	12.17	147.	37.	18.	3.85
+ ROUTED TO	RCPC29	411.	13.17	141.	37.	18.	3.85
+ HYDROGRAPH AT	C28	120.	12.00	7.	2.	1.	.05
+ ROUTED TO	RCPC28	15.	13.17	6.	2.	1.	.05
+ HYDROGRAPH AT	DRC19	548.	12.50	96.	24.	12.	3.39
+ ROUTED TO	RDC19	513.	12.67	95.	24.	12.	3.39
+ HYDROGRAPH AT	C27	324.	12.17	23.	6.	3.	.21
+ 2 COMBINED AT	CPC27	513.	12.67	117.	29.	14.	3.60
+ ROUTED TO	RCPC27	350.	13.00	115.	29.	14.	3.60
+ HYDROGRAPH AT	DRC07	740.	12.33	66.	17.	8.	2.41
+ ROUTED TO	RDC07	411.	12.83	66.	17.	8.	2.41
+ HYDROGRAPH AT	C21	703.	12.17	44.	11.	5.	.56
+ DIVERSION TO	DVC21	446.	12.17	30.	8.	4.	.56
+ HYDROGRAPH AT	DC21	257.	12.17	14.	3.	2.	.56
+ ROUTED TO	RCPC21	146.	12.33	14.	3.	2.	.56
HYDROGRAPH AT							

	C20	482.	12.33	43.	11.	5.	.46
3 COMBINED AT	CPC20	680.	12.33	120.	30.	15.	3.44
ROUTED TO	RCPC20	439.	12.83	119.	30.	15.	3.44
4 COMBINED AT	CPC33B	1192.	13.00	379.	98.	47.	5.14
ROUTED TO	RC33B	1152.	13.33	375.	98.	47.	5.14
HYDROGRAPH AT	C26	138.	12.17	9.	2.	1.	.10
ROUTED TO	RCPC26	39.	12.67	9.	2.	1.	.10
HYDROGRAPH AT	DRC21	446.	12.17	30.	8.	4.	.56
ROUTED TO	RDC21	259.	12.50	30.	8.	4.	.56
HYDROGRAPH AT	C23	692.	12.00	43.	11.	5.	.50
ROUTED TO	RCPC23	588.	12.17	43.	11.	5.	.50
HYDROGRAPH AT	C22	1058.	12.17	72.	18.	9.	.80
3 COMBINED AT	CPC22	1661.	12.17	143.	36.	17.	1.86
ROUTED TO	RCPC22	809.	12.33	142.	36.	17.	1.86
HYDROGRAPH AT	C24	230.	12.17	15.	4.	2.	.16
ROUTED TO	RCPC24	76.	12.33	15.	4.	2.	.16
HYDROGRAPH AT	C25	151.	12.00	7.	2.	1.	.08
ROUTED TO	RCPC25	37.	12.17	7.	2.	1.	.08
HYDROGRAPH AT	DRD01	908.	12.50	94.	23.	11.	3.69
ROUTED TO	RDD01	608.	13.00	94.	23.	11.	3.69
HYDROGRAPH AT	D09	600.	12.33	55.	14.	7.	.54
2 COMBINED AT	CPD09	619.	13.00	147.	37.	18.	4.23
ROUTED TO	RCPD09	533.	13.17	145.	37.	18.	4.23
5 COMBINED AT	CPC33C	1263.	12.50	314.	79.	38.	6.43
ROUTED TO	RC33C	1189.	12.67	312.	79.	38.	6.43
2 COMBINED AT	CPC33D	2059.	13.00	675.	174.	84.	11.01
ROUTED TO	RC33D	2029.	13.17	669.	174.	84.	11.01
2 COMBINED AT	CPC33E	2703.	13.50	915.	241.	116.	13.95
ROUTED TO							

+		RC33E	2640.	13.83	906.	241.	116.	13.95
+	HYDROGRAPH AT	D12	184.	12.17	12.	3.	1.	.13
+	ROUTED TO	RCPD12	17.	12.50	9.	3.	1.	.13
+	2 COMBINED AT	CPC33F	2647.	13.83	911.	244.	117.	14.08
+	ROUTED TO	RC33F	2616.	13.83	908.	244.	117.	14.08
+	HYDROGRAPH AT	C33	13221.	13.17	2894.	723.	348.	32.50
+	2 COMBINED AT	CPC33	13151.	13.17	3543.	910.	439.	46.58
+	ROUTED TO	RCPC33	10797.	13.83	3498.	910.	439.	46.58
+	HYDROGRAPH AT	C34	651.	12.50	87.	22.	11.	.83
+	2 COMBINED AT	CPC34A	10796.	13.83	3545.	928.	447.	47.41
+	HYDROGRAPH AT	C35	4952.	12.50	586.	146.	71.	5.83
+	ROUTED TO	RCPC35	4778.	12.50	586.	146.	71.	5.83
+	2 COMBINED AT	CPC34	10796.	13.83	4007.	1046.	504.	53.24
+	ROUTED TO	RCPC34	10288.	14.17	3956.	1037.	500.	53.24
+	HYDROGRAPH AT	C36	2666.	12.50	338.	85.	41.	3.06
+	2 COMBINED AT	CPC36	10288.	14.17	4222.	1108.	534.	56.30
+	ROUTED TO	RCPC36	9945.	14.33	4186.	1101.	531.	56.30
+	HYDROGRAPH AT	C49	320.	12.17	24.	6.	3.	.19
+	2 COMBINED AT	CPC49	9945.	14.33	4201.	1106.	533.	56.41
+	ROUTED TO	RCPC49	9686.	14.50	4193.	1106.	533.	56.41
+	HYDROGRAPH AT	C40	225.	12.17	16.	4.	2.	.17
+	DIVERSION TO	DVC40	40.	12.17	2.	0.	0.	.17
+	HYDROGRAPH AT	DC40	185.	12.17	14.	3.	2.	.17
+	ROUTED TO	RCPC40	143.	12.33	14.	3.	2.	.17
+	HYDROGRAPH AT	C41	112.	12.00	7.	2.	1.	.08
+	DIVERSION TO	DVC41	37.	12.00	2.	1.	0.	.08
+	HYDROGRAPH AT	DC41	74.	12.00	5.	1.	1.	.08
+	ROUTED TO	RCPC41	45.	12.33	5.	1.	1.	.08
	HYDROGRAPH AT							

+	C42	161.	12.17	11.	3.	1.	.11
+ 3 COMBINED AT	CPC42	271.	12.17	29.	7.	4.	.36
DIVERSION TO	DVC42A	108.	12.17	11.	3.	1.	.36
+ HYDROGRAPH AT	DC42A	163.	12.17	18.	4.	2.	.36
+ DIVERSION TO	DVC42B	82.	12.17	9.	2.	1.	.36
+ HYDROGRAPH AT	DC42B	81.	12.17	9.	2.	1.	.36
+ ROUTED TO	RCPC42	50.	12.83	9.	2.	1.	.36
+ HYDROGRAPH AT	DRC41	37.	12.00	2.	1.	0.	.08
+ ROUTED TO	RDC41	12.	13.33	2.	1.	0.	.08
+ HYDROGRAPH AT	C46	245.	12.50	30.	7.	4.	.25
+ 3 COMBINED AT	CPC46	270.	12.50	41.	10.	5.	.60
+ DIVERSION TO	DVC46	71.	12.50	6.	1.	1.	.60
+ HYDROGRAPH AT	DC46	199.	12.50	35.	9.	4.	.60
+ ROUTED TO	RCPC46	163.	12.83	35.	9.	4.	.60
HYDROGRAPH AT	C37	1321.	12.67	199.	50.	24.	1.79
+ 2 COMBINED AT	CPC37	1450.	12.67	233.	58.	28.	2.40
+ ROUTED TO	RCPC37	1265.	12.83	232.	58.	28.	2.40
+ HYDROGRAPH AT	C48	396.	12.17	32.	8.	4.	.25
+ 2 COMBINED AT	CPC48A	1265.	12.83	264.	66.	32.	2.65
+ 2 COMBINED AT	CPC48	9686.	14.50	4385.	1157.	557.	59.14
+ ROUTED TO	RCPC48	9677.	14.50	4378.	1156.	557.	59.14
+ HYDROGRAPH AT	C39	168.	12.17	11.	3.	1.	.13
+ DIVERSION TO	DVC39	69.	12.17	4.	1.	1.	.13
+ HYDROGRAPH AT	DC39	98.	12.17	6.	2.	1.	.13
+ ROUTED TO	RCPC39	44.	12.67	6.	2.	1.	.13
+ HYDROGRAPH AT	DRC40	40.	12.17	2.	0.	0.	.17
ROUTED TO	RDC40	17.	12.50	2.	0.	0.	.17
HYDROGRAPH AT	C43	281.	12.17	18.	5.	2.	.21
3 COMBINED AT							

+	CPC43	287.	12.17	26.	7.	3.	.51
+ DIVERSION TO	DVC43	107.	12.17	10.	2.	1.	.51
+ HYDROGRAPH AT	DC43	180.	12.17	17.	4.	2.	.51
+ ROUTED TO	RCPC43	96.	12.50	17.	4.	2.	.51
+ HYDROGRAPH AT	DRC42A	108.	12.17	11.	3.	1.	.36
+ ROUTED TO	RDC42A	79.	12.50	11.	3.	1.	.36
+ HYDROGRAPH AT	C45	214.	12.17	16.	4.	2.	.13
+ 2 COMBINED AT	CPC45	241.	12.17	27.	7.	3.	.48
+ DIVERSION TO	DVC45	129.	12.17	14.	4.	2.	.48
+ HYDROGRAPH AT	DC45	112.	12.17	13.	3.	2.	.48
+ ROUTED TO	RCPC45	96.	12.17	13.	3.	2.	.48
+ HYDROGRAPH AT	C44	303.	12.17	24.	6.	3.	.17
+ 3 COMBINED AT	CPC44	410.	12.17	53.	13.	6.	.99
+ ROUTED TO	RCPC44	235.	13.00	52.	13.	6.	.99
+ HYDROGRAPH AT	DRC39	69.	12.17	4.	1.	1.	.13
+ ROUTED TO	RDC39	25.	13.17	4.	1.	1.	.13
+ HYDROGRAPH AT	DRC43	107.	12.17	10.	2.	1.	.51
+ ROUTED TO	RDC43	62.	12.50	10.	2.	1.	.51
+ HYDROGRAPH AT	C38	602.	12.50	70.	18.	8.	.69
+ 3 COMBINED AT	CPC38	660.	12.50	84.	21.	10.	1.19
+ ROUTED TO	RCPC38	489.	13.17	83.	21.	10.	1.19
+ HYDROGRAPH AT	DRC42B	82.	12.17	9.	2.	1.	.36
+ ROUTED TO	RDC42B	33.	14.17	9.	2.	1.	.36
+ HYDROGRAPH AT	DRC45	129.	12.17	14.	4.	2.	.48
+ ROUTED TO	RDC45	61.	13.17	14.	4.	2.	.48
+ HYDROGRAPH AT	DRC46	71.	12.50	6.	1.	1.	.60
+ ROUTED TO	RDC46	26.	13.67	6.	1.	1.	.60
+ HYDROGRAPH AT	C47	1060.	12.50	132.	33.	16.	1.00
6 COMBINED AT							

+	CPC47A	1104.	12.50	290.	73.	35.	2.92
+ 2 COMBINED AT	CPC47	9761.	14.50	4591.	1212.	584.	61.46
ROUTED TO	RCPC47	8965.	15.17	4549.	1212.	584.	61.46
+ HYDROGRAPH AT	B09	245.	12.33	30.	7.	4.	.26
+ 2 COMBINED AT	CPB09	8965.	15.17	4556.	1218.	587.	61.72
+ ROUTED TO	RCPB09	8954.	15.17	4553.	1217.	587.	61.72
+ HYDROGRAPH AT	B01	3076.	12.50	405.	101.	49.	5.16
+ ROUTED TO	RCPB01	1552.	14.17	390.	101.	49.	5.16
+ HYDROGRAPH AT	B02	2815.	12.50	341.	85.	41.	3.58
+ ROUTED TO	RCPB02	2130.	12.83	340.	85.	41.	3.58
+ HYDROGRAPH AT	B03	6306.	12.83	1137.	284.	137.	13.22
+ 3 COMBINED AT	CPB03	7922.	12.83	1727.	439.	211.	21.96
+ DIVERSION TO	DVB03A	3251.	12.83	585.	147.	71.	21.96
+ HYDROGRAPH AT	DB03A	4672.	12.83	1142.	293.	141.	21.96
DIVERSION TO	DVB03B	542.	12.83	78.	20.	9.	21.96
+ HYDROGRAPH AT	DB03B	4129.	12.83	1064.	273.	132.	21.96
+ ROUTED TO	RCPB03	3789.	13.00	1061.	273.	132.	21.96
+ HYDROGRAPH AT	B13	268.	12.00	19.	5.	2.	.16
+ 2 COMBINED AT	CPB13	3789.	13.00	1076.	277.	134.	22.11
+ DIVERSION TO	DVB13	3061.	13.00	871.	225.	108.	22.11
+ HYDROGRAPH AT	DB13	725.	13.00	205.	53.	25.	22.11
+ ROUTED TO	RCPB13	657.	13.33	203.	53.	25.	22.11
+ HYDROGRAPH AT	B04	851.	12.33	103.	26.	12.	.85
+ ROUTED TO	RCPB04	716.	12.67	103.	26.	12.	.85
+ HYDROGRAPH AT	B05	651.	12.33	69.	17.	8.	.53
+ 3 COMBINED AT	CPB05	1109.	12.67	356.	91.	44.	23.49
ROUTED TO	RCPB05	948.	13.67	344.	91.	44.	23.49
+ HYDROGRAPH AT	B06	753.	12.33	74.	19.	9.	.57
ROUTED TO							

+		RCPB06	367.	13.33	74.	19.	9.	.57
+	HYDROGRAPH AT	B10	746.	12.33	74.	18.	9.	.55
+	3 COMBINED AT	CPB10	1232.	13.50	463.	125.	60.	24.61
+	HYDROGRAPH AT	B11	327.	12.17	32.	8.	4.	.24
+	2 COMBINED AT	CPB11	1232.	13.50	491.	132.	63.	24.85
+	ROUTED TO	RCPB11	1090.	14.17	483.	132.	63.	24.85
+	HYDROGRAPH AT	B12	385.	12.33	43.	11.	5.	.33
+	2 COMBINED AT	CPB12A	1088.	14.17	515.	141.	68.	25.18
+	2 COMBINED AT	CPB12	9168.	15.17	4816.	1300.	627.	86.90
+	HYDROGRAPH AT	H02	2638.	12.17	381.	127.	61.	1.58
+	ROUTED TO	RCPH02	1984.	12.33	381.	126.	61.	1.58
+	HYDROGRAPH AT	H01	2199.	12.17	258.	77.	37.	1.61
+	2 COMBINED AT	CPH01	4064.	12.33	635.	202.	98.	3.20
+	DIVERSION TO	DVH01	1676.	12.33	336.	111.	54.	3.20
+	HYDROGRAPH AT	DH01	2388.	12.33	300.	91.	44.	3.20
+	ROUTED TO	RCPH01	1884.	12.50	299.	91.	44.	3.20
+	HYDROGRAPH AT	H24	663.	12.17	48.	12.	6.	.42
+	2 COMBINED AT	CPH24	1926.	12.50	346.	103.	50.	3.61
+	ROUTED TO	RCPH24	1633.	12.83	345.	103.	50.	3.61
+	HYDROGRAPH AT	H55	521.	12.17	39.	10.	5.	.34
+	2 COMBINED AT	CPH55	1633.	12.83	384.	112.	54.	3.96
+	ROUTED TO	RCPH55	1389.	13.33	383.	112.	54.	3.96
+	HYDROGRAPH AT	H56	569.	12.17	46.	11.	5.	.40
+	2 COMBINED AT	CPH56	1388.	13.33	427.	123.	60.	4.35
+	ROUTED TO	RCPH56	1257.	13.67	425.	123.	60.	4.35
+	HYDROGRAPH AT	H57	606.	12.17	49.	12.	6.	.42
+	2 COMBINED AT	CPH57	1257.	13.67	470.	135.	65.	4.77
+	ROUTED TO	RCPH57	1152.	14.17	466.	134.	65.	4.77
	HYDROGRAPH AT							

+	H68	532.	12.17	39.	10.	5.	.34
2 COMBINED AT +	CPH68	1151.	14.17	500.	144.	70.	5.11
3 COMBINED AT	B12RIV	21726.	14.50	13875.	4968.	2426.	262.59
ROUTED TO +	RCPB12	21695.	14.67	13860.	4968.	2426.	262.59
HYDROGRAPH AT +	DRH01	1676.	12.33	336.	111.	54.	3.20
ROUTED TO +	RDH01	1529.	12.50	336.	110.	54.	3.20
HYDROGRAPH AT +	H25	503.	12.17	36.	9.	4.	.32
2 COMBINED AT +	CPH25	1562.	12.50	371.	119.	58.	3.51
ROUTED TO +	RCPH25	1452.	12.83	370.	119.	58.	3.51
HYDROGRAPH AT +	H58	470.	12.17	35.	9.	4.	.31
2 COMBINED AT +	CPH58	1452.	12.83	404.	128.	62.	3.82
ROUTED TO +	RCPH58	1358.	13.00	404.	127.	62.	3.82
HYDROGRAPH AT +	H26	858.	12.33	86.	22.	10.	.75
ROUTED TO +	RCPH26	704.	12.50	86.	22.	10.	.75
HYDROGRAPH AT	H59	615.	12.17	44.	11.	5.	.39
3 COMBINED AT +	CPH59	1626.	12.83	531.	159.	77.	4.96
DIVERSION TO +	DVH59	836.	12.83	280.	86.	42.	4.96
HYDROGRAPH AT +	DH59	790.	12.83	252.	73.	36.	4.96
ROUTED TO +	RCPH59	741.	13.33	251.	73.	36.	4.96
HYDROGRAPH AT +	H60	668.	12.33	63.	16.	8.	.55
2 COMBINED AT +	CPH60	741.	13.33	312.	89.	43.	5.51
ROUTED TO +	RCPH60	705.	13.83	308.	88.	43.	5.51
HYDROGRAPH AT +	DRH59	836.	12.83	280.	86.	42.	4.96
ROUTED TO +	RDH59	771.	13.33	279.	86.	42.	4.96
HYDROGRAPH AT +	H61	577.	12.33	55.	14.	7.	.47
2 COMBINED AT +	CPH61	771.	13.33	333.	99.	48.	5.43
ROUTED TO	RCPH61	731.	13.83	330.	99.	48.	5.43
HYDROGRAPH AT +	H69	758.	12.17	61.	15.	7.	.53
3 COMBINED AT							

+	CPH69	1434.	13.83	692.	202.	98.	6.51
+ 2 COMBINED AT	H69RIV	22490.	14.67	14292.	5122.	2502.	265.90
+ ROUTED TO	RCPH69	22490.	14.67	14288.	5122.	2502.	265.90
+ HYDROGRAPH AT	H65	507.	12.33	49.	12.	6.	.42
+ ROUTED TO	RCPH65	297.	13.00	48.	12.	6.	.42
+ HYDROGRAPH AT	H67	270.	12.17	22.	5.	3.	.19
+ 2 COMBINED AT	CPH67	297.	13.00	70.	17.	8.	.60
+ ROUTED TO	RCPH67	232.	13.67	69.	17.	8.	.60
+ HYDROGRAPH AT	H70	599.	12.33	57.	14.	7.	.49
+ 2 COMBINED AT	CPH70	598.	12.33	125.	32.	15.	1.10
+ HYDROGRAPH AT	B15	824.	12.33	82.	21.	10.	.64
+ 3 COMBINED AT	B15RIV	22556.	14.67	14326.	5156.	2518.	267.64
+ ROUTED TO	RCPB15	22369.	14.83	14310.	5156.	2518.	267.64
+ HYDROGRAPH AT	DRB13	3061.	13.00	871.	225.	108.	22.11
+ ROUTED TO	RDB13	2747.	13.50	861.	225.	108.	22.11
+ HYDROGRAPH AT	B14	500.	12.33	51.	13.	6.	.39
+ 2 COMBINED AT	CPB14	2747.	13.50	899.	236.	114.	22.50
+ HYDROGRAPH AT	B21	409.	12.17	38.	10.	5.	.31
+ 2 COMBINED AT	CPB21	2747.	13.50	932.	245.	118.	22.82
+ ROUTED TO	RCPB21	2583.	14.17	915.	244.	118.	22.82
+ HYDROGRAPH AT	B45	986.	12.50	120.	30.	14.	.96
+ 2 COMBINED AT	CPB45	2583.	14.17	999.	271.	131.	23.78
+ 2 COMBINED AT	B45RIV	23771.	14.83	15027.	5373.	2622.	269.31
+ ROUTED TO	RCPB45	23780.	14.83	15027.	5373.	2622.	269.31
+ HYDROGRAPH AT	H22	2281.	12.17	232.	68.	33.	1.46
+ ROUTED TO	RCPH22	1623.	12.33	232.	68.	33.	1.46
+ HYDROGRAPH AT	H03	2429.	12.17	342.	114.	55.	1.42
+ ROUTED TO	RCPH03	1972.	12.17	342.	114.	55.	1.42
HYDROGRAPH AT							

+	H21	1362.	12.17	145.	45.	22.	.76
+ 2 COMBINED AT	CPH21	3317.	12.17	484.	158.	76.	2.19
ROUTED TO	RCPH21	2494.	12.50	483.	157.	76.	2.19
+ HYDROGRAPH AT	H23	894.	12.17	79.	20.	9.	.71
+ 3 COMBINED AT	CPH23	4654.	12.33	788.	244.	118.	4.35
+ ROUTED TO	RCPH23	3790.	12.67	787.	243.	118.	4.35
+ HYDROGRAPH AT	H27	561.	12.17	43.	11.	5.	.38
+ ROUTED TO	RCPH27	331.	12.50	43.	11.	5.	.38
+ HYDROGRAPH AT	H62	757.	12.17	57.	14.	7.	.49
+ 3 COMBINED AT	CPH62	4097.	12.67	884.	268.	130.	5.23
+ ROUTED TO	RCPH62	3712.	12.83	883.	267.	130.	5.23
+ HYDROGRAPH AT	H20	750.	12.17	58.	15.	7.	.52
+ ROUTED TO	RCPH20	465.	12.50	58.	15.	7.	.52
+ HYDROGRAPH AT	H28	1025.	12.17	82.	20.	10.	.72
2 COMBINED AT	CPH28	1156.	12.17	139.	35.	17.	1.24
+ ROUTED TO	RCPH28	973.	12.50	139.	35.	17.	1.24
+ HYDROGRAPH AT	H63	270.	12.17	20.	5.	2.	.17
+ 3 COMBINED AT	CPH63	4228.	12.83	1037.	306.	148.	6.64
+ DIVERSION TO	DVH63	1608.	12.83	328.	82.	40.	6.64
+ HYDROGRAPH AT	DH63	2620.	12.83	709.	224.	109.	6.64
+ ROUTED TO	RCPH63	2320.	13.17	706.	223.	109.	6.64
+ HYDROGRAPH AT	H66	776.	12.33	84.	21.	10.	.72
+ 2 COMBINED AT	CPH66	2340.	13.17	786.	244.	118.	7.36
+ ROUTED TO	RCPH66	2174.	13.67	780.	243.	118.	7.36
+ HYDROGRAPH AT	H71	929.	12.17	74.	19.	9.	.65
+ 2 COMBINED AT	CPH71	2173.	13.67	844.	262.	127.	8.01
ROUTED TO	RCPH71	2111.	13.83	838.	261.	127.	8.01
+ HYDROGRAPH AT	H72	688.	12.17	50.	12.	6.	.42
2 COMBINED AT							

+		CPH72	2111.	13.83	880.	273.	133.	8.43
+	2 COMBINED AT	H72RIV	24807.	14.67	15597.	5572.	2722.	277.74
+	ROUTED TO	RCPH72	24523.	15.17	15569.	5571.	2722.	277.74
+	HYDROGRAPH AT	B20	282.	12.17	21.	5.	3.	.18
+	ROUTED TO	RCPB20	109.	13.33	21.	5.	3.	.18
+	HYDROGRAPH AT	B44	469.	12.33	47.	12.	6.	.38
+	2 COMBINED AT	CPB44	468.	12.33	68.	17.	8.	.55
+	ROUTED TO	RCPB44	339.	12.83	67.	17.	8.	.55
+	HYDROGRAPH AT	B42	304.	12.17	24.	6.	3.	.20
+	ROUTED TO	RCPB42	154.	12.83	24.	6.	3.	.20
+	HYDROGRAPH AT	B43	270.	12.17	24.	6.	3.	.17
+	2 COMBINED AT	CPB43	270.	12.17	47.	12.	6.	.37
+	HYDROGRAPH AT	B41	467.	12.33	54.	14.	7.	.44
+	2 COMBINED AT	CPB41	687.	12.33	101.	25.	12.	.82
+	ROUTED TO	RCPB41	538.	12.83	100.	25.	12.	.82
+	HYDROGRAPH AT	B46	1022.	12.50	136.	34.	16.	1.06
+	3 COMBINED AT	CPB46	1574.	12.67	299.	75.	36.	2.43
+	2 COMBINED AT	B46RIV	24551.	15.17	15611.	5623.	2747.	280.17
+	ROUTED TO	RCPB46	24563.	15.17	15610.	5623.	2747.	280.17
+	HYDROGRAPH AT	DRH63	1608.	12.83	328.	82.	40.	6.64
+	ROUTED TO	RDH63	1416.	13.17	328.	82.	40.	6.64
+	HYDROGRAPH AT	H53	454.	12.33	45.	11.	5.	.39
+	2 COMBINED AT	CPH53	1423.	13.17	371.	93.	45.	7.02
+	HYDROGRAPH AT	H18	669.	12.17	49.	12.	6.	.44
+	ROUTED TO	RCPH18	276.	13.17	49.	12.	6.	.44
+	HYDROGRAPH AT	H29	994.	12.50	120.	30.	15.	1.04
+	2 COMBINED AT	CPH29	1004.	12.50	168.	42.	20.	1.48
+	HYDROGRAPH AT	H04	1444.	12.17	188.	59.	29.	1.06
	ROUTED TO							

	RCPH04	1045.	12.33	188.	59.	29.	1.06
HYDROGRAPH AT	H17	842.	12.17	66.	17.	8.	.58
2 COMBINED AT	CPH17	1562.	12.33	253.	76.	37.	1.64
DIVERSION TO	DVH17	875.	12.33	138.	41.	20.	1.64
HYDROGRAPH AT	DH17	687.	12.33	115.	35.	17.	1.64
ROUTED TO	RCPH17	553.	12.67	115.	35.	17.	1.64
HYDROGRAPH AT	H30	681.	12.17	54.	14.	7.	.48
2 COMBINED AT	CPH30	798.	12.17	168.	48.	23.	2.12
ROUTED TO	RCPH30	664.	12.67	168.	48.	23.	2.12
HYDROGRAPH AT	H51	489.	12.17	35.	9.	4.	.30
2 COMBINED AT	CPH51	703.	12.17	202.	56.	27.	2.42
ROUTED TO	RCPH51	647.	12.83	202.	56.	27.	2.42
HYDROGRAPH AT	H52	349.	12.17	26.	7.	3.	.22
2 COMBINED AT	CPH52A	647.	12.83	228.	63.	30.	2.64
3 COMBINED AT	CPH52B	2316.	13.17	752.	194.	94.	11.14
ROUTED TO	RCPH52	2243.	13.33	751.	194.	94.	11.14
HYDROGRAPH AT	H54	342.	12.17	25.	6.	3.	.21
2 COMBINED AT	CPH54	2243.	13.33	774.	200.	97.	11.36
ROUTED TO	RCPH54	2160.	13.50	771.	200.	96.	11.36
HYDROGRAPH AT	H16	613.	12.17	83.	27.	13.	.37
ROUTED TO	RCPH16	618.	12.17	83.	27.	13.	.37
HYDROGRAPH AT	H05	1450.	12.33	179.	55.	26.	1.14
2 COMBINED AT	CPH05	2009.	12.17	261.	81.	39.	1.51
ROUTED TO	RCPH05	1604.	12.50	261.	81.	39.	1.51
HYDROGRAPH AT	H31	573.	12.17	42.	10.	5.	.37
2 COMBINED AT	CPH31	1658.	12.50	301.	91.	44.	2.09
DIVERSION TO	DVH31	872.	12.50	155.	47.	23.	2.09
HYDROGRAPH AT	DH31	786.	12.50	146.	44.	21.	2.09
ROUTED TO							

+		RCPH31	623.	12.83	146.	44.	21.	2.09
+	HYDROGRAPH AT	DRH17	875.	12.33	138.	41.	20.	1.64
+	ROUTED TO	RDH17	630.	12.83	138.	41.	20.	1.64
+	HYDROGRAPH AT	H32	831.	12.33	82.	21.	10.	.71
+	3 COMBINED AT	CPH32	1333.	12.83	363.	105.	51.	4.23
+	DIVERSION TO	DVH32	609.	12.83	159.	45.	22.	4.23
+	HYDROGRAPH AT	DH32	724.	12.83	203.	60.	29.	4.23
+	ROUTED TO	RCPH32	659.	13.33	203.	60.	29.	4.23
+	HYDROGRAPH AT	DRH32	609.	12.83	159.	45.	22.	4.23
+	ROUTED TO	RDH32	568.	13.17	159.	45.	22.	4.23
+	HYDROGRAPH AT	H48	460.	12.17	39.	10.	5.	.33
+	2 COMBINED AT	CPH48	568.	13.17	197.	54.	26.	4.57
+	DIVERSION TO	DVH48	259.	13.17	85.	23.	11.	4.57
+	HYDROGRAPH AT	DH48	308.	13.17	112.	32.	15.	4.57
+	ROUTED TO	RCPH48	294.	13.50	112.	31.	15.	4.57
+	HYDROGRAPH AT	H50	648.	12.33	72.	18.	9.	.63
+	3 COMBINED AT	CPH50	955.	13.33	384.	109.	53.	5.19
+	ROUTED TO	RCPH50	940.	13.50	384.	109.	53.	5.19
+	HYDROGRAPH AT	DRH48	259.	13.17	85.	23.	11.	4.57
+	ROUTED TO	RDH48	247.	13.50	85.	23.	11.	4.57
+	HYDROGRAPH AT	H49	579.	12.33	55.	14.	7.	.48
+	2 COMBINED AT	CPH49	621.	12.33	139.	36.	18.	5.04
+	ROUTED TO	RCPH49	518.	12.50	138.	36.	18.	5.04
+	HYDROGRAPH AT	H73	455.	12.17	33.	8.	4.	.29
+	4 COMBINED AT	CPH73	3189.	13.50	1279.	341.	165.	15.68
+	ROUTED TO	RCPH73	3044.	14.00	1262.	341.	165.	15.68
+	HYDROGRAPH AT	H74	1255.	12.17	93.	23.	11.	.80
+	2 COMBINED AT	CPH74	3044.	14.00	1323.	363.	175.	16.48
	2 COMBINED AT							

+	H74RIV	25981.	15.00	16488.	5888.	2875.	290.02
ROUTED TO +	RCPH74	25733.	15.17	16468.	5887.	2874.	290.02
HYDROGRAPH AT	H15	1340.	12.17	140.	43.	21.	.77
ROUTED TO +	RCPH15	712.	12.83	140.	43.	21.	.77
HYDROGRAPH AT +	DRH31	872.	12.50	155.	47.	23.	2.09
ROUTED TO +	RDH31	608.	13.17	154.	47.	23.	2.09
HYDROGRAPH AT +	H33	1065.	12.33	124.	31.	15.	1.08
3 COMBINED AT +	CPH33	1506.	12.50	414.	119.	58.	3.74
DIVERSION TO +	DVH33	810.	12.50	214.	58.	28.	3.74
HYDROGRAPH AT +	DH33	696.	12.50	200.	61.	30.	3.74
ROUTED TO +	RCPH33	618.	13.17	200.	61.	30.	3.74
HYDROGRAPH AT +	H47	613.	12.17	44.	11.	5.	.38
2 COMBINED AT +	CPH47	643.	12.17	242.	72.	35.	4.12
ROUTED TO +	RCPH47	587.	13.50	241.	72.	35.	4.12
HYDROGRAPH AT	H75	480.	12.67	101.	25.	12.	.75
2 COMBINED AT +	CPH75	858.	12.50	340.	97.	47.	4.87
ROUTED TO +	RCPH75	805.	13.00	338.	97.	47.	4.87
HYDROGRAPH AT +	H76	1116.	12.17	86.	22.	10.	.75
2 COMBINED AT +	CPH76	1157.	12.17	420.	118.	57.	5.62
ROUTED TO +	RCPH76	854.	12.50	418.	118.	57.	5.62
HYDROGRAPH AT +	H77	448.	12.17	33.	8.	4.	.27
2 COMBINED AT +	CPH77	956.	12.33	448.	125.	61.	5.89
2 COMBINED AT +	H77RIV	26011.	15.17	16668.	5977.	2918.	294.03
ROUTED TO +	RCPH77	25775.	15.50	16651.	5977.	2918.	294.03
HYDROGRAPH AT +	B40	192.	12.33	17.	4.	2.	.18
ROUTED TO +	RCPB40	99.	13.00	17.	4.	2.	.18
HYDROGRAPH AT	B49	377.	12.17	38.	9.	5.	.27
ROUTED TO +	RCPB49	302.	12.33	38.	9.	5.	.27
HYDROGRAPH AT							

+	B50	334.	12.33	35.	9.	4.	.27
3 COMBINED AT +	CPB50	631.	12.33	89.	22.	11.	.72
ROUTED TO +	RCPB50	425.	13.17	88.	22.	11.	.72
HYDROGRAPH AT +	B19	540.	12.50	65.	16.	8.	.54
ROUTED TO +	RCPB19	381.	13.00	65.	16.	8.	.54
HYDROGRAPH AT +	B48	758.	12.33	75.	19.	9.	.57
2 COMBINED AT +	CPB48	775.	12.33	139.	35.	17.	1.11
ROUTED TO +	RCPB48	491.	13.17	137.	35.	17.	1.11
HYDROGRAPH AT +	B47	455.	12.17	41.	10.	5.	.32
ROUTED TO +	RCPB47	168.	13.33	41.	10.	5.	.32
HYDROGRAPH AT +	B61	339.	13.17	113.	28.	14.	.75
4 COMBINED AT +	CPB61	1372.	13.17	372.	95.	46.	2.90
2 COMBINED AT +	B61RIV	25892.	15.50	16825.	6043.	2950.	296.93
ROUTED TO +	RCPB61	25895.	15.50	16825.	6043.	2950.	296.93
HYDROGRAPH AT +	B22	821.	12.17	59.	15.	7.	.55
ROUTED TO +	RCPB22	534.	12.50	59.	15.	7.	.55
HYDROGRAPH AT +	B23	381.	12.00	26.	6.	3.	.30
DIVERSION TO +	DVB23	221.	12.00	15.	4.	2.	.30
HYDROGRAPH AT +	DB23	160.	12.00	11.	3.	1.	.30
ROUTED TO +	RCPB23	90.	12.50	11.	3.	1.	.30
HYDROGRAPH AT +	B36	292.	12.17	24.	6.	3.	.18
2 COMBINED AT +	CPB36	318.	12.17	35.	9.	4.	.48
HYDROGRAPH AT +	DRB23	221.	12.00	15.	4.	2.	.30
ROUTED TO +	RDB23	137.	12.33	15.	4.	2.	.30
HYDROGRAPH AT +	B24	342.	12.17	23.	6.	3.	.24
2 COMBINED AT +	CPB24A	425.	12.17	37.	9.	4.	.54
2 COMBINED AT +	CPB24	740.	12.17	72.	18.	9.	.72
ROUTED TO +	RCPB24	609.	12.33	71.	18.	9.	.72
HYDROGRAPH AT							

+	B37	150.	12.17	11.	3.	1.	.09
+ 3 COMBINED AT	CPB37	1114.	12.33	141.	35.	17.	1.35
HYDROGRAPH AT	B25	374.	12.17	27.	7.	3.	.30
+ 2 COMBINED AT	CPB25	1347.	12.33	167.	42.	20.	1.65
+ ROUTED TO	RCPB25	1069.	12.50	167.	42.	20.	1.65
+ HYDROGRAPH AT	B26	370.	12.33	34.	8.	4.	.35
+ 2 COMBINED AT	CPB26	1227.	12.50	200.	50.	24.	2.00
+ DIVERSION TO	DVB26	818.	12.50	133.	33.	16.	2.00
+ HYDROGRAPH AT	DB26	409.	12.50	67.	17.	8.	2.00
+ ROUTED TO	RCPB26	320.	12.83	66.	17.	8.	2.00
+ HYDROGRAPH AT	DRB03B	542.	12.83	78.	20.	9.	21.96
+ ROUTED TO	RDB03B	334.	14.00	77.	20.	9.	21.96
+ HYDROGRAPH AT	B17	82.	12.00	5.	1.	1.	.05
+ DIVERSION TO	DVB17	41.	12.00	3.	1.	0.	.05
HYDROGRAPH AT	DB17	42.	12.00	3.	1.	0.	.05
+ ROUTED TO	RCPB17	10.	14.33	3.	1.	0.	.05
+ HYDROGRAPH AT	B18	575.	12.50	68.	17.	8.	.62
+ 3 COMBINED AT	CPB18	522.	12.50	138.	35.	17.	22.63
+ HYDROGRAPH AT	DRB03A	3251.	12.83	585.	147.	71.	21.96
+ ROUTED TO	RDB03A	2544.	13.33	579.	147.	71.	21.96
+ HYDROGRAPH AT	DRB17	41.	12.00	3.	1.	0.	.05
+ ROUTED TO	RDB17	18.	12.83	3.	1.	0.	.05
+ HYDROGRAPH AT	B16	957.	12.33	90.	23.	11.	.82
+ 3 COMBINED AT	CPB16	2544.	13.33	656.	167.	80.	22.83
+ ROUTED TO	RCPB16	2133.	13.67	646.	167.	80.	22.83
+ HYDROGRAPH AT	B39	470.	12.33	44.	11.	5.	.39
2 COMBINED AT	CPB39A	2133.	13.67	680.	177.	85.	23.22
+ 2 COMBINED AT	CPB39	2328.	13.83	813.	211.	102.	23.84
ROUTED TO							

+	RCPB39	2232.	14.00	808.	211.	102.	23.84
HYDROGRAPH AT +	B54	389.	12.33	38.	10.	5.	.29
2 COMBINED AT +	CPB54	2232.	14.00	839.	219.	106.	24.14
ROUTED TO +	RCPB54	2177.	14.17	835.	219.	106.	24.14
HYDROGRAPH AT +	B38	543.	12.33	62.	15.	7.	.46
2 COMBINED AT +	CPB38	2177.	14.17	887.	233.	112.	24.60
ROUTED TO +	RCPB38	2151.	14.17	884.	232.	112.	24.60
HYDROGRAPH AT +	B65	292.	12.17	23.	6.	3.	.17
3 COMBINED AT +	CPB65	2189.	14.17	959.	252.	122.	24.76
ROUTED TO +	RCPB65	2017.	14.67	940.	252.	122.	24.76
HYDROGRAPH AT +	B27	1093.	12.17	76.	19.	9.	.86
ROUTED TO +	RCPB27	822.	12.33	76.	19.	9.	.86
HYDROGRAPH AT +	B35	267.	12.33	24.	6.	3.	.25
2 COMBINED AT +	CPB35A	1082.	12.33	99.	25.	12.	1.11
HYDROGRAPH AT +	DRB26	818.	12.50	133.	33.	16.	2.00
2 COMBINED AT +	CPB35	1839.	12.33	230.	58.	28.	3.11
ROUTED TO +	RCPB35	1627.	12.50	230.	58.	28.	3.11
HYDROGRAPH AT +	B28	455.	12.17	34.	9.	4.	.39
HYDROGRAPH AT +	B34	147.	12.17	12.	3.	1.	.13
2 COMBINED AT +	CPB34	598.	12.17	46.	11.	6.	.51
ROUTED TO +	RCPB34	442.	12.50	46.	11.	6.	.51
HYDROGRAPH AT +	B33	313.	12.33	29.	7.	3.	.28
2 COMBINED AT +	CPB33A	690.	12.33	74.	19.	9.	.80
2 COMBINED AT +	CPB33	2215.	12.50	302.	76.	36.	3.90
ROUTED TO +	RCPB33	2236.	12.50	302.	76.	36.	3.90
HYDROGRAPH AT +	B55	119.	12.00	8.	2.	1.	.08
2 COMBINED AT +	CPB55	2236.	12.50	310.	78.	37.	3.98
ROUTED TO +	RCPB55	1480.	13.17	307.	78.	37.	3.98
HYDROGRAPH AT							

+	B31	214.	12.17	14.	3.	2.	.16
+ ROUTED TO	RCPB31	85.	12.83	14.	3.	2.	.16
HYDROGRAPH AT	B32	56.	12.00	4.	1.	0.	.04
+ ROUTED TO	RCPB32	20.	13.17	4.	1.	0.	.04
+ HYDROGRAPH AT	B30	498.	12.33	43.	11.	5.	.53
+ DIVERSION TO	DVB30	290.	12.33	26.	6.	3.	.53
+ HYDROGRAPH AT	DB30	208.	12.33	17.	4.	2.	.53
+ ROUTED TO	RCPB30	132.	12.83	17.	4.	2.	.53
+ HYDROGRAPH AT	B29	960.	12.33	86.	21.	10.	.91
+ 4 COMBINED AT	CPB29	965.	12.33	119.	30.	14.	1.65
+ ROUTED TO	RCPB29	550.	13.17	118.	30.	14.	1.65
+ HYDROGRAPH AT	DRB30	290.	12.33	26.	6.	3.	.53
+ ROUTED TO	RDB30	220.	12.50	26.	6.	3.	.53
+ HYDROGRAPH AT	B57	168.	12.17	12.	3.	2.	.10
2 COMBINED AT	CPB57	231.	12.50	38.	10.	5.	.63
+ ROUTED TO	RCPB57	231.	12.50	38.	10.	5.	.63
+ HYDROGRAPH AT	B56	289.	12.33	28.	7.	3.	.22
+ 2 COMBINED AT	CPB56	509.	12.33	66.	17.	8.	.85
+ ROUTED TO	RCPB56	489.	12.33	66.	17.	8.	.85
+ HYDROGRAPH AT	B58	401.	12.17	30.	7.	4.	.24
+ 2 COMBINED AT	CPB58	741.	12.17	95.	24.	11.	1.10
+ ROUTED TO	RCPB58	485.	12.83	95.	24.	11.	1.10
+ HYDROGRAPH AT	B59	612.	12.33	60.	15.	7.	.50
+ 5 COMBINED AT	CPB59	3391.	13.17	1402.	374.	180.	31.46
+ ROUTED TO	RCPB59	2959.	13.67	1378.	374.	180.	31.46
+ HYDROGRAPH AT	B52	686.	12.33	65.	16.	8.	.58
+ ROUTED TO	RCPB52	366.	13.17	65.	16.	8.	.58
+ HYDROGRAPH AT	B53	674.	12.33	66.	17.	8.	.54
ROUTED TO							

+	RCPB53	273.	13.83	65.	17.	8.	.54
+ HYDROGRAPH AT	B60	384.	13.33	150.	38.	18.	1.00
+ 4 COMBINED AT	CPB60	3608.	13.67	1599.	434.	209.	33.58
+ ROUTED TO	RCPB60	3583.	13.83	1596.	434.	209.	33.58
+ HYDROGRAPH AT	DRH33	810.	12.50	214.	58.	28.	3.74
+ ROUTED TO	RDH33	734.	12.83	214.	58.	28.	3.74
+ HYDROGRAPH AT	H46	487.	12.17	37.	9.	4.	.31
+ 2 COMBINED AT	CPH46	734.	12.83	249.	67.	32.	4.05
+ ROUTED TO	RCPH46	698.	13.17	248.	67.	32.	4.05
+ HYDROGRAPH AT	H06	1126.	12.33	98.	24.	12.	1.23
+ DIVERSION TO	DVH06	635.	12.33	55.	14.	7.	1.23
+ HYDROGRAPH AT	DH06	491.	12.33	42.	11.	5.	1.23
+ ROUTED TO	RCPH06	363.	12.50	42.	11.	5.	1.23
+ HYDROGRAPH AT	H14	1310.	12.17	130.	35.	17.	1.14
+ 2 COMBINED AT	CPH14	1544.	12.33	171.	45.	22.	2.37
+ ROUTED TO	RCPH14	1234.	12.50	171.	45.	22.	2.37
+ HYDROGRAPH AT	DRH06	635.	12.33	55.	14.	7.	1.23
+ ROUTED TO	RDH06	425.	12.67	55.	14.	7.	1.23
+ HYDROGRAPH AT	H13	707.	12.17	60.	15.	7.	.52
+ 3 COMBINED AT	CPH13	1958.	12.33	284.	73.	35.	2.88
+ ROUTED TO	RCPH13	1718.	12.67	284.	73.	35.	2.88
+ HYDROGRAPH AT	H12	550.	12.17	57.	15.	7.	.44
+ DIVERSION TO	DVH12	171.	12.17	17.	5.	2.	.44
+ HYDROGRAPH AT	DH12	378.	12.17	39.	11.	5.	.44
+ ROUTED TO	RCPH12	318.	12.33	39.	11.	5.	.44
+ HYDROGRAPH AT	H07	1323.	12.33	129.	32.	16.	1.18
+ 2 COMBINED AT	CPH07	1634.	12.33	168.	43.	21.	1.62
+ DIVERSION TO	DVH07	817.	12.33	84.	21.	10.	1.62
HYDROGRAPH AT							

+		DH07	817.	12.33	84.	21.	10.	1.62
+	ROUTED TO	RCPH07	699.	12.50	84.	21.	10.	1.62
	HYDROGRAPH AT	H34	639.	12.17	47.	12.	6.	.41
+	3 COMBINED AT	CPH34	2330.	12.50	411.	105.	51.	4.91
+	ROUTED TO	RCPH34	1983.	13.00	410.	105.	51.	4.91
+	HYDROGRAPH AT	H45	416.	12.17	32.	8.	4.	.28
+	2 COMBINED AT	CPH45	1982.	13.00	442.	113.	55.	5.19
+	ROUTED TO	RCPH45	1805.	13.17	441.	113.	55.	5.19
+	HYDROGRAPH AT	DRH07	817.	12.33	84.	21.	10.	1.62
+	ROUTED TO	RDH07	614.	12.67	84.	21.	10.	1.62
+	HYDROGRAPH AT	H36	673.	12.17	51.	13.	6.	.44
+	2 COMBINED AT	CPH36	758.	12.17	134.	34.	16.	2.06
+	ROUTED TO	RCPH36	605.	12.67	133.	34.	16.	2.06
+	HYDROGRAPH AT	H44	824.	12.17	64.	16.	8.	.55
	2 COMBINED AT	CPH44	942.	12.17	196.	50.	24.	2.61
+	ROUTED TO	RCPH44	829.	12.50	196.	50.	24.	2.61
+	HYDROGRAPH AT	H78	781.	12.17	56.	14.	7.	.49
+	4 COMBINED AT	CPH78	3000.	13.17	925.	240.	116.	10.72
+	ROUTED TO	RCPH78	2827.	13.50	923.	240.	116.	10.72
+	HYDROGRAPH AT	H79	774.	12.17	58.	15.	7.	.50
+	2 COMBINED AT	CPH79	2827.	13.50	977.	254.	122.	11.23
+	ROUTED TO	RCPH79	2622.	13.83	963.	253.	122.	11.23
+	HYDROGRAPH AT	H80	447.	12.33	56.	14.	7.	.46
+	2 COMBINED AT	CPH80	2618.	13.83	1007.	265.	128.	11.69
+	3 COMBINED AT	H80RIV	28306.	15.33	18599.	6546.	3192.	316.49
+	ROUTED TO	RCPH80	28162.	15.50	18569.	6545.	3192.	316.49
	HYDROGRAPH AT	B62	182.	13.00	51.	13.	6.	.33
+	2 COMBINED AT	B62RIV	28164.	15.50	18583.	6555.	3196.	316.83
	ROUTED TO							

+	RCPB62	28094.	15.67	18576.	6555.	3196.	316.83
+ HYDROGRAPH AT	H43	356.	12.17	26.	6.	3.	.22
+ ROUTED TO	RCPH43	274.	12.33	26.	6.	3.	.22
+ HYDROGRAPH AT	H81	451.	12.00	27.	7.	3.	.24
+ 2 COMBINED AT	CPH81	528.	12.00	53.	13.	6.	.46
+ ROUTED TO	RCPH81	372.	12.50	53.	13.	6.	.46
+ HYDROGRAPH AT	H08	1880.	12.17	192.	56.	27.	1.39
+ ROUTED TO	RCPH08	1343.	12.50	192.	56.	27.	1.39
+ HYDROGRAPH AT	H11	427.	12.17	31.	8.	4.	.27
+ DIVERSION TO	DVH11	176.	12.17	12.	3.	1.	.27
+ HYDROGRAPH AT	DH11	251.	12.17	20.	5.	2.	.27
+ ROUTED TO	RCPH11	193.	12.33	20.	5.	2.	.27
+ HYDROGRAPH AT	DRH12	171.	12.17	17.	5.	2.	.44
+ ROUTED TO	RDH12	140.	12.50	17.	5.	2.	.44
+ HYDROGRAPH AT	H35	541.	12.17	39.	10.	5.	.34
+ 4 COMBINED AT	CPH35	1644.	12.50	266.	75.	36.	2.44
+ ROUTED TO	RCPH35	1477.	12.67	266.	75.	36.	2.44
+ HYDROGRAPH AT	H37	880.	12.17	65.	16.	8.	.56
+ 2 COMBINED AT	CPH37	1494.	12.67	330.	90.	44.	3.00
+ ROUTED TO	RCPH37	1330.	13.00	329.	90.	44.	3.00
+ HYDROGRAPH AT	H42	579.	12.17	51.	13.	6.	.44
+ 2 COMBINED AT	CPH42	1330.	13.00	379.	103.	50.	3.45
+ ROUTED TO	RCPH42	1243.	13.33	379.	103.	50.	3.45
+ HYDROGRAPH AT	H82	748.	12.17	58.	14.	7.	.50
+ 3 COMBINED AT	CPH82	1322.	13.17	485.	129.	63.	4.41
+ ROUTED TO	RCPH82	1266.	13.50	484.	129.	63.	4.41
+ HYDROGRAPH AT	H83	671.	12.33	78.	20.	9.	.66
+ 2 COMBINED AT	CPH83	1266.	13.50	560.	149.	72.	5.07
HYDROGRAPH AT							

+	B63	141.	12.67	33.	8.	4.	.22
+ 3 COMBINED AT	B63RIV	28335.	15.50	18826.	6661.	3248.	321.67
ROUTED TO	RCPB63	28272.	15.67	18813.	6660.	3248.	321.67
HYDROGRAPH AT							
+	B64	206.	13.17	47.	12.	6.	.30
+ 2 COMBINED AT	B64RIV	28272.	15.67	18824.	6670.	3252.	321.98
+ ROUTED TO	RCPB64	28216.	15.83	18824.	6669.	3252.	321.98
HYDROGRAPH AT							
+	H09	1788.	12.17	241.	79.	38.	1.08
+ ROUTED TO	RCPH09	1449.	12.33	241.	79.	38.	1.08
HYDROGRAPH AT							
+	H10	893.	12.17	67.	17.	8.	.56
+ 2 COMBINED AT	CPH10	2043.	12.17	306.	96.	46.	1.63
+ ROUTED TO	RCPH10	1685.	12.50	306.	95.	46.	1.63
HYDROGRAPH AT							
+	DRH11	176.	12.17	12.	3.	1.	.27
+ ROUTED TO	RDH11	97.	12.50	12.	3.	1.	.27
HYDROGRAPH AT							
+	H38	768.	12.17	55.	14.	7.	.48
3 COMBINED AT	CPH38	1912.	12.33	371.	112.	54.	2.38
+ ROUTED TO	RCPH38	1730.	12.67	370.	111.	54.	2.38
HYDROGRAPH AT							
+	H39	611.	12.17	44.	11.	5.	.38
+ 2 COMBINED AT	CPH39	1730.	12.67	414.	122.	59.	2.76
+ DIVERSION TO	DVH39	864.	12.67	206.	61.	30.	2.76
HYDROGRAPH AT							
+	DH39	864.	12.67	207.	61.	30.	2.76
+ ROUTED TO	RCPH39	806.	12.83	207.	61.	30.	2.76
HYDROGRAPH AT							
+	H41	484.	12.17	35.	9.	4.	.30
+ 2 COMBINED AT	CPH41	806.	12.83	241.	70.	34.	3.06
+ ROUTED TO	RCPH41	743.	13.17	240.	69.	34.	3.06
HYDROGRAPH AT							
+	DRH39	864.	12.67	206.	61.	30.	2.76
+ ROUTED TO	RDH39	761.	13.00	206.	61.	30.	2.76
HYDROGRAPH AT							
+	H40	700.	12.17	54.	14.	7.	.47
+ 2 COMBINED AT	CPH40	763.	12.17	259.	74.	36.	3.23
ROUTED TO							

+		RCPH40	728.	13.17	259.	74.	36.	3.23
+	HYDROGRAPH AT	H84	1184.	12.17	88.	22.	11.	.76
+	3 COMBINED AT	CPH84	1884.	12.17	584.	165.	80.	4.29
+	ROUTED TO	RCPH84	1441.	12.50	583.	165.	80.	4.29
+	HYDROGRAPH AT	H85	619.	12.67	133.	33.	16.	.98
+	2 COMBINED AT	CPH85	2016.	12.67	712.	197.	95.	5.26
+	ROUTED TO	RCPH85	1793.	13.17	707.	197.	95.	5.26
+	HYDROGRAPH AT	H86	702.	12.67	144.	36.	17.	1.08
+	2 COMBINED AT	CPH86	2318.	13.00	842.	232.	112.	6.34
+	2 COMBINED AT	H86RIV	28556.	15.67	19218.	6834.	3333.	328.05
+	ROUTED TO	RCPH86	28120.	16.00	19137.	6834.	3333.	328.05
+	HYDROGRAPH AT	I02	815.	12.17	91.	29.	14.	.43
+	HYDROGRAPH AT	I01	1058.	12.17	121.	39.	19.	.58
+	2 COMBINED AT	CPI01	1865.	12.17	211.	68.	33.	1.01
+	ROUTED TO	RCPI01	1834.	12.17	211.	68.	33.	1.01
+	HYDROGRAPH AT	I03	198.	12.00	11.	3.	1.	.09
+	2 COMBINED AT	CPI03	1895.	12.17	222.	70.	34.	1.10
+	DIVERSION TO	DVI03	948.	12.17	111.	35.	17.	1.10
+	HYDROGRAPH AT	DI03	947.	12.17	111.	35.	17.	1.10
+	ROUTED TO	RCPI03	716.	12.33	111.	35.	17.	1.10
+	HYDROGRAPH AT	I04	527.	12.17	38.	10.	5.	.33
+	2 COMBINED AT	CPI04	1060.	12.17	148.	44.	21.	1.43
+	ROUTED TO	RCPI04	811.	12.50	148.	44.	21.	1.43
+	HYDROGRAPH AT	I06	799.	12.17	58.	14.	7.	.50
+	2 COMBINED AT	CPI06	1127.	12.17	205.	59.	28.	1.93
+	ROUTED TO	RCPI06	833.	12.83	205.	58.	28.	1.93
+	HYDROGRAPH AT	I08	1213.	12.17	91.	23.	11.	.79
+	2 COMBINED AT	CPI08	1337.	12.17	294.	81.	39.	2.72
	ROUTED TO							

+	RCPI08	996.	12.50	294.	81.	39.	2.72
+ HYDROGRAPH AT	I10	794.	12.17	57.	14.	7.	.50
2 COMBINED AT	CPI10	1301.	12.17	349.	95.	46.	3.22
+ ROUTED TO	RCPI10	1173.	12.50	348.	95.	46.	3.22
+ HYDROGRAPH AT	DRI03	948.	12.17	111.	35.	17.	1.10
+ ROUTED TO	RDI03	754.	12.33	111.	35.	17.	1.10
+ HYDROGRAPH AT	I05	335.	12.00	24.	6.	3.	.20
+ 2 COMBINED AT	CPI05	960.	12.17	134.	41.	20.	1.31
+ ROUTED TO	RCPI05	752.	12.50	134.	41.	20.	1.31
+ HYDROGRAPH AT	I07	318.	12.00	23.	6.	3.	.19
+ 2 COMBINED AT	CPI07	752.	12.50	156.	46.	22.	1.50
+ ROUTED TO	RCPI07	624.	13.00	156.	46.	22.	1.50
+ HYDROGRAPH AT	I09	508.	12.17	37.	9.	4.	.31
+ 2 COMBINED AT	CPI09	626.	12.17	191.	55.	27.	1.82
ROUTED TO	RCPI09	568.	13.33	191.	55.	27.	1.82
+ HYDROGRAPH AT	I11	430.	12.17	33.	8.	4.	.29
+ 2 COMBINED AT	CPI11	568.	13.33	224.	63.	31.	2.11
+ ROUTED TO	RCPI11	528.	14.00	223.	63.	31.	2.11
+ HYDROGRAPH AT	I12	800.	12.17	59.	15.	7.	.51
+ 3 COMBINED AT	CPI12	1413.	12.50	626.	172.	83.	4.73
+ ROUTED TO	RCPI12	1357.	12.67	623.	171.	83.	4.73
+ HYDROGRAPH AT	I13	834.	12.17	62.	16.	8.	.52
+ 2 COMBINED AT	CPI13	1375.	12.67	682.	187.	90.	5.25
+ ROUTED TO	RCPI13	1354.	12.83	680.	187.	90.	5.25
+ HYDROGRAPH AT	I14	495.	12.00	32.	8.	4.	.24
+ 2 COMBINED AT	CPI14	1354.	12.83	710.	194.	94.	5.49
HYDROGRAPH AT	A12	1205.	12.33	136.	34.	16.	1.06
+ ROUTED TO	RCPA12	476.	13.83	132.	34.	16.	1.06
HYDROGRAPH AT							

+	A41	740.	12.50	136.	37.	18.	.91
+ 2 COMBINED AT	CPA41	735.	12.50	262.	70.	34.	1.97
+ 3 COMBINED AT	A41RIV	28426.	16.00	19508.	7016.	3422.	335.51
+ ROUTED TO	RCPA41	28371.	16.17	19506.	7016.	3422.	335.51
+ HYDROGRAPH AT	I15	1105.	12.17	97.	27.	13.	.66
+ ROUTED TO	RCPI15	766.	12.33	97.	27.	13.	.66
+ HYDROGRAPH AT	I16	833.	12.17	80.	24.	11.	.49
+ ROUTED TO	RCPI16	640.	12.33	80.	24.	11.	.49
+ HYDROGRAPH AT	I17	676.	12.17	69.	21.	10.	.36
+ ROUTED TO	RCPI17	507.	12.33	69.	21.	10.	.36
+ HYDROGRAPH AT	I18	1054.	12.17	76.	19.	9.	.66
+ 4 COMBINED AT	CPI18	2360.	12.17	318.	90.	43.	2.18
+ ROUTED TO	RCPI18	2076.	12.50	317.	90.	43.	2.18
+ HYDROGRAPH AT	I19	570.	12.17	41.	10.	5.	.35
+ 2 COMBINED AT	CPI19	2100.	12.50	357.	100.	48.	2.53
+ ROUTED TO	RCPI19	1769.	12.83	357.	100.	48.	2.53
+ HYDROGRAPH AT	I20	920.	12.17	71.	18.	9.	.62
+ 2 COMBINED AT	CPI20	1769.	12.83	427.	117.	57.	3.15
+ ROUTED TO	RCPI20	1601.	13.00	426.	117.	57.	3.15
+ HYDROGRAPH AT	I21	738.	12.17	55.	14.	7.	.47
+ 2 COMBINED AT	CPI21	1601.	13.00	480.	130.	63.	3.62
+ ROUTED TO	RCPI21	1495.	13.17	477.	130.	63.	3.62
+ HYDROGRAPH AT	I22	400.	12.33	50.	13.	6.	.38
+ 2 COMBINED AT	CPI22	1532.	13.17	526.	142.	69.	4.00
+ HYDROGRAPH AT	A40	730.	12.17	66.	17.	8.	.50
+ ROUTED TO	RCPA40	269.	13.50	65.	17.	8.	.50
+ HYDROGRAPH AT	A42	440.	13.00	132.	33.	16.	.85
+ 2 COMBINED AT	CPA42	629.	13.33	195.	49.	24.	1.35
3 COMBINED AT							

+	A42RIV	28489.	16.17	19731.	7148.	3487.	340.86
ROUTED TO +	RCPA42	28422.	16.33	19725.	7148.	3487.	340.86
HYDROGRAPH AT	A13	723.	12.33	89.	23.	11.	.58
ROUTED TO +	RCPA13	514.	13.00	89.	23.	11.	.58
HYDROGRAPH AT +	A39	304.	12.83	78.	20.	9.	.50
2 COMBINED AT +	CPA39	801.	13.00	166.	42.	20.	1.08
ROUTED TO +	RCPA39	683.	13.50	165.	42.	20.	1.08
HYDROGRAPH AT +	A43	385.	12.67	80.	20.	10.	.50
2 COMBINED AT +	CPA43	803.	13.50	242.	62.	30.	1.58
ROUTED TO +	RCPA43	721.	14.00	239.	62.	30.	1.58
HYDROGRAPH AT +	A44	314.	12.50	52.	13.	6.	.37
2 COMBINED AT +	CPA44	728.	14.00	286.	74.	36.	1.95
2 COMBINED AT +	A44RIV	28505.	16.33	19872.	7202.	3513.	342.81
ROUTED TO +	RCPA44	28339.	16.50	19842.	7201.	3513.	342.81
HYDROGRAPH AT	I24	542.	12.00	51.	15.	7.	.28
ROUTED TO +	RCPI24	306.	12.67	51.	15.	7.	.28
HYDROGRAPH AT +	I26	863.	12.17	63.	16.	8.	.53
2 COMBINED AT +	CPI26	965.	12.17	113.	31.	15.	.81
ROUTED TO +	RCPI26	562.	12.67	113.	31.	15.	.81
HYDROGRAPH AT +	I28	706.	12.17	51.	13.	6.	.44
2 COMBINED AT +	CPI28	818.	12.17	163.	43.	21.	1.26
ROUTED TO +	RCPI28	543.	12.83	163.	43.	21.	1.26
HYDROGRAPH AT +	I30	678.	12.17	49.	12.	6.	.42
2 COMBINED AT +	CPI30	794.	12.17	211.	55.	27.	1.68
ROUTED TO +	RCPI30	519.	13.50	211.	55.	27.	1.68
HYDROGRAPH AT +	I32	795.	12.17	59.	15.	7.	.51
2 COMBINED AT	CPI32	865.	12.17	269.	70.	34.	2.18
ROUTED TO +	RCPI32	509.	13.00	268.	70.	34.	2.18
HYDROGRAPH AT							

+	I34	520.	12.50	65.	16.	8.	.51
+ 2 COMBINED AT	CPI34	731.	12.50	331.	85.	41.	2.69
+ ROUTED TO	RCPI34	721.	12.83	330.	85.	41.	2.69
+ HYDROGRAPH AT	I36	319.	12.17	24.	6.	3.	.19
+ 2 COMBINED AT	CPI36	721.	12.83	353.	91.	44.	2.89
+ 2 COMBINED AT	I36RIV	28433.	16.50	19965.	7261.	3542.	345.69
+ ROUTED TO	RCPI36	28307.	16.67	19936.	7261.	3542.	345.69
+ HYDROGRAPH AT	A01	4595.	12.67	655.	164.	79.	6.98
+ ROUTED TO	RCPA01	3556.	13.00	655.	164.	79.	6.98
+ HYDROGRAPH AT	A02	2057.	12.33	179.	45.	22.	2.38
+ 2 COMBINED AT	CPA02	3587.	13.00	829.	207.	100.	9.36
+ DIVERSION TO	DVA02A	1776.	13.00	414.	103.	50.	9.36
+ HYDROGRAPH AT	DA02A	1811.	13.00	415.	104.	50.	9.36
+ DIVERSION TO	DVA02B	827.	13.00	191.	48.	23.	9.36
+ HYDROGRAPH AT	DA02B	984.	13.00	224.	56.	27.	9.36
+ ROUTED TO	RCPA02	819.	14.00	220.	56.	27.	9.36
+ HYDROGRAPH AT	A11	1400.	12.50	165.	41.	20.	1.80
+ 2 COMBINED AT	CPA11	1359.	12.50	374.	95.	46.	11.16
+ DIVERSION TO	DVA11	680.	12.50	187.	47.	23.	11.16
+ HYDROGRAPH AT	DA11	679.	12.50	187.	48.	23.	11.16
+ ROUTED TO	RCPA11	492.	13.00	185.	48.	23.	11.16
+ HYDROGRAPH AT	A14	913.	12.50	119.	30.	15.	.86
+ 2 COMBINED AT	CPA14	1049.	12.50	296.	76.	37.	12.02
+ ROUTED TO	RCPA14	847.	13.33	292.	76.	37.	12.02
+ HYDROGRAPH AT	A38	291.	12.83	73.	18.	9.	.48
+ ROUTED TO	RCPA38	229.	14.17	71.	18.	9.	.48
+ HYDROGRAPH AT	A37	1425.	12.50	184.	46.	22.	1.35
+ 3 COMBINED AT	CPA37	1456.	12.50	525.	137.	66.	13.85
ROUTED TO							

+	RCPA37	1220.	13.17	513.	137.	66.	13.85
HYDROGRAPH AT +	A45	593.	12.33	67.	17.	8.	.53
2 COMBINED AT	CPA45	1237.	13.17	564.	152.	73.	14.38
HYDROGRAPH AT +	I23	743.	12.00	98.	32.	15.	.41
ROUTED TO +	RCPI23	560.	12.33	98.	32.	15.	.41
HYDROGRAPH AT +	I25	539.	12.17	40.	10.	5.	.32
2 COMBINED AT +	CPI25	983.	12.17	137.	42.	20.	.73
ROUTED TO +	RCPI25	768.	12.50	137.	42.	20.	.73
HYDROGRAPH AT +	I27	662.	12.17	48.	12.	6.	.40
2 COMBINED AT +	CPI27	1063.	12.17	184.	54.	26.	1.13
ROUTED TO +	RCPI27	900.	12.33	184.	53.	26.	1.13
HYDROGRAPH AT +	I29	586.	12.17	43.	11.	5.	.37
2 COMBINED AT +	CPI29	1239.	12.17	226.	64.	31.	1.51
ROUTED TO +	RCPI29	1046.	12.33	226.	64.	31.	1.51
HYDROGRAPH AT	I31	587.	12.00	41.	10.	5.	.36
2 COMBINED AT +	CPI31	1340.	12.17	266.	74.	36.	1.87
ROUTED TO +	RCPI31	1116.	12.50	266.	74.	36.	1.87
HYDROGRAPH AT +	I33	792.	12.17	59.	15.	7.	.50
2 COMBINED AT +	CPI33	1370.	12.33	323.	88.	43.	2.37
ROUTED TO +	RCPI33	1217.	12.50	322.	88.	43.	2.37
HYDROGRAPH AT +	I35	738.	12.17	67.	17.	8.	.51
2 COMBINED AT +	CPI35	1508.	12.33	387.	104.	50.	2.88
ROUTED TO +	RCPI35	1430.	12.67	386.	104.	50.	2.88
HYDROGRAPH AT +	I37	731.	12.17	56.	14.	7.	.41
2 COMBINED AT +	CPI37	1430.	12.67	439.	118.	57.	3.29
3 COMBINED AT +	I37RIV	28438.	16.67	20139.	7420.	3620.	363.37
ROUTED TO	RCPI37	28327.	16.83	20117.	7419.	3620.	363.37
HYDROGRAPH AT +	A36	578.	12.33	60.	15.	7.	.44
ROUTED TO							

+		RCPA36	347.	12.83	60.	15.	7.	.44
+	HYDROGRAPH AT	A46	128.	12.67	30.	7.	4.	.20
+	2 COMBINED AT	CPA46	471.	12.83	89.	22.	11.	.63
+	2 COMBINED AT	A46RIV	28327.	16.83	20122.	7435.	3628.	364.00
+	ROUTED TO	RCPA46	28229.	17.00	20104.	7433.	3627.	364.00
+	HYDROGRAPH AT	I38	471.	12.17	51.	16.	8.	.25
+	ROUTED TO	RCPI38	314.	12.50	51.	16.	8.	.25
+	HYDROGRAPH AT	I39	366.	12.00	26.	6.	3.	.22
+	2 COMBINED AT	CPI39	521.	12.17	77.	23.	11.	.47
+	ROUTED TO	RCPI39	389.	12.50	77.	23.	11.	.47
+	HYDROGRAPH AT	I40	668.	12.17	48.	12.	6.	.41
+	2 COMBINED AT	CPI40	907.	12.17	125.	34.	17.	.87
+	ROUTED TO	RCPI40	668.	12.33	125.	34.	17.	.87
+	HYDROGRAPH AT	I41	765.	12.17	55.	14.	7.	.48
+	2 COMBINED AT	CPI41	1150.	12.17	179.	48.	23.	1.35
+	ROUTED TO	RCPI41	745.	12.83	178.	48.	23.	1.35
+	HYDROGRAPH AT	I42	543.	12.33	57.	15.	7.	.42
+	2 COMBINED AT	CPI42	832.	12.67	234.	62.	30.	1.77
+	ROUTED TO	RCPI42	802.	12.83	234.	62.	30.	1.77
+	HYDROGRAPH AT	I43	717.	12.17	54.	14.	7.	.43
+	2 COMBINED AT	CPI43	838.	12.17	287.	76.	37.	2.20
+	ROUTED TO	RCPI43	788.	13.00	286.	76.	37.	2.20
+	HYDROGRAPH AT	I44	1211.	12.17	113.	33.	16.	.71
+	ROUTED TO	RCPI44	898.	12.33	113.	33.	16.	.71
+	HYDROGRAPH AT	I45	591.	12.17	44.	11.	5.	.35
+	2 COMBINED AT	CPI45	1162.	12.17	156.	44.	21.	1.06
+	ROUTED TO	RCPI45	976.	12.50	156.	43.	21.	1.06
+	HYDROGRAPH AT	I46	736.	12.17	53.	13.	6.	.46
	2 COMBINED AT							

+		CPI46	1082.	12.17	208.	57.	27.	1.52
+	ROUTED TO	RCPI46	1021.	12.50	208.	56.	27.	1.52
	HYDROGRAPH AT	I47	447.	12.33	48.	13.	6.	.35
+	2 COMBINED AT	CPI47	1305.	12.50	254.	69.	33.	1.87
+	ROUTED TO	RCPI47	1127.	12.83	254.	69.	33.	1.87
+	HYDROGRAPH AT	I48	554.	12.17	40.	10.	5.	.34
+	2 COMBINED AT	CPI48	1125.	12.83	293.	79.	38.	2.21
+	ROUTED TO	RCPI48	1085.	12.83	293.	79.	38.	2.21
+	HYDROGRAPH AT	I49	676.	12.00	49.	12.	6.	.38
+	3 COMBINED AT	CPI49	1829.	13.00	623.	165.	80.	4.79
+	ROUTED TO	RCPI49	1788.	13.17	621.	165.	80.	4.79
+	HYDROGRAPH AT	I61	573.	12.00	37.	10.	5.	.25
+	ROUTED TO	RCPI61	265.	12.50	37.	10.	5.	.25
+	HYDROGRAPH AT	I50	1011.	12.17	75.	19.	9.	.60
	3 COMBINED AT	CPI50	1826.	12.17	728.	193.	93.	5.64
+	2 COMBINED AT	I50RIV	28240.	17.00	20214.	7557.	3689.	369.64
+	ROUTED TO	RCPI50	28176.	17.00	20202.	7556.	3689.	369.64
+	HYDROGRAPH AT	I62	760.	12.17	70.	20.	10.	.42
+	2 COMBINED AT	I62RIV	28175.	17.00	20203.	7567.	3696.	370.07
+	ROUTED TO	RCPI62	28033.	17.33	20177.	7565.	3695.	370.07
+	HYDROGRAPH AT	DRA11	680.	12.50	187.	47.	23.	11.16
+	ROUTED TO	RDA11	417.	13.17	183.	47.	23.	11.16
+	HYDROGRAPH AT	A15	938.	12.50	130.	32.	16.	.94
+	2 COMBINED AT	CPA15	910.	12.50	302.	78.	38.	12.10
+	HYDROGRAPH AT	A16	467.	12.33	49.	12.	6.	.33
+	2 COMBINED AT	CPA16	1205.	12.50	347.	90.	43.	12.44
	ROUTED TO	RCPA16	1031.	12.83	341.	90.	43.	12.44
+	HYDROGRAPH AT	DRA02A	1776.	13.00	414.	103.	50.	9.36
	ROUTED TO							

+		RDA02A	1751.	13.17	413.	103.	50.	9.36
+	HYDROGRAPH AT	A03	825.	12.33	81.	20.	10.	1.06
+	2 COMBINED AT	CPA03	1943.	12.50	490.	123.	59.	10.42
+	ROUTED TO	RCPA03	1674.	13.50	487.	123.	59.	10.42
+	HYDROGRAPH AT	A64	789.	12.33	80.	20.	10.	.78
+	2 COMBINED AT	CPA64	1674.	13.50	564.	142.	68.	11.20
+	DIVERSION TO	DVA64	584.	13.50	188.	47.	23.	11.20
+	HYDROGRAPH AT	DA64	1077.	13.50	371.	94.	45.	11.20
+	ROUTED TO	RCPA64	1024.	14.00	369.	94.	45.	11.20
+	HYDROGRAPH AT	DRA02B	827.	13.00	191.	48.	23.	9.36
+	ROUTED TO	RDA02B	714.	13.83	188.	48.	23.	9.36
+	HYDROGRAPH AT	A10	916.	12.50	122.	31.	15.	.93
+	3 COMBINED AT	CPA10	1703.	13.83	664.	169.	81.	12.13
+	DIVERSION TO	DVA10	811.	13.83	309.	78.	38.	12.13
+	HYDROGRAPH AT	DA10	892.	13.83	355.	90.	44.	12.13
+	ROUTED TO	RCPA10	831.	14.33	351.	90.	44.	12.13
+	HYDROGRAPH AT	A34	571.	12.17	55.	14.	7.	.38
+	2 COMBINED AT	CPA34	830.	14.33	397.	104.	50.	12.52
+	ROUTED TO	RCPA34	805.	14.67	392.	103.	50.	12.52
+	HYDROGRAPH AT	A35	1111.	12.33	113.	28.	14.	.85
+	3 COMBINED AT	CPA35	1727.	12.50	813.	214.	103.	16.44
+	ROUTED TO	RCPA35	1527.	13.00	797.	214.	103.	16.44
+	HYDROGRAPH AT	A47	473.	12.83	114.	29.	14.	.79
+	2 COMBINED AT	CPA47	1952.	12.83	894.	240.	116.	17.23
+	ROUTED TO	RCPA47	1784.	13.50	864.	240.	116.	17.23
+	HYDROGRAPH AT	A48	822.	12.83	153.	41.	20.	1.06
+	ROUTED TO	RCPA48	738.	13.00	153.	41.	20.	1.06
+	HYDROGRAPH AT	A49	796.	12.33	93.	23.	11.	.75
	3 COMBINED AT							

+	CPA49	2169.	13.50	1035.	296.	143.	19.04
+ 2 COMBINED AT	A49RIV	28441.	17.33	20565.	7771.	3796.	377.94
ROUTED TO	RCPA49	28366.	17.50	20556.	7769.	3795.	377.94
+ HYDROGRAPH AT	A04	758.	12.17	51.	13.	6.	.74
+ DIVERSION TO	DVA04	410.	12.17	28.	7.	3.	.74
+ HYDROGRAPH AT	DA04	348.	12.17	23.	6.	3.	.74
+ ROUTED TO	RCPA04	185.	12.83	23.	6.	3.	.74
+ HYDROGRAPH AT	A07	463.	12.17	40.	10.	5.	.52
+ 2 COMBINED AT	CPA07	459.	12.17	62.	16.	7.	1.27
+ DIVERSION TO	DVA07	227.	12.17	29.	7.	4.	1.27
+ HYDROGRAPH AT	DA07	232.	12.17	33.	8.	4.	1.27
+ ROUTED TO	RCPA07	126.	13.50	33.	8.	4.	1.27
+ HYDROGRAPH AT	A09	666.	12.33	63.	16.	8.	.78
+ DIVERSION TO	DVA09	117.	12.33	11.	3.	1.	.78
+ HYDROGRAPH AT	DA09	548.	12.33	52.	13.	6.	.78
+ ROUTED TO	RCPA09	376.	12.67	52.	13.	6.	.78
+ HYDROGRAPH AT	A08	1272.	12.67	179.	45.	22.	2.12
+ 2 COMBINED AT	CPA08	1636.	12.67	230.	57.	28.	2.90
+ DIVERSION TO	DVA08	690.	12.67	100.	25.	12.	2.90
+ HYDROGRAPH AT	DA08	946.	12.67	130.	33.	16.	2.90
+ ROUTED TO	RCPA08	851.	12.83	130.	33.	16.	2.90
+ HYDROGRAPH AT	A21	1095.	12.50	134.	33.	16.	1.06
+ 3 COMBINED AT	CPA21	1529.	12.50	292.	73.	35.	5.22
+ DIVERSION TO	DVA21	682.	12.50	130.	33.	16.	5.22
+ HYDROGRAPH AT	DA21	847.	12.50	163.	41.	20.	5.22
+ ROUTED TO	RCPA21	693.	13.17	162.	41.	20.	5.22
+ HYDROGRAPH AT	A20	457.	12.17	45.	11.	5.	.34
+ 2 COMBINED AT	CPA20	693.	13.17	205.	52.	25.	5.56
DIVERSION TO							

+		DVA20	285.	13.17	78.	20.	10.	5.56
+	HYDROGRAPH AT	DA20	407.	13.17	127.	32.	15.	5.56
+	ROUTED TO	RCPA20	302.	16.00	120.	32.	15.	5.56
+	HYDROGRAPH AT	A51	1146.	12.67	199.	50.	24.	1.53
+	2 COMBINED AT	CPA51A	1130.	12.67	300.	81.	39.	7.09
+	HYDROGRAPH AT	DRA09	117.	12.33	11.	3.	1.	.78
+	ROUTED TO	RDA09	48.	13.83	11.	3.	1.	.78
+	HYDROGRAPH AT	DRA64	584.	13.50	188.	47.	23.	11.20
+	ROUTED TO	RDA64	550.	14.17	187.	47.	23.	11.20
+	HYDROGRAPH AT	A18	832.	12.33	100.	25.	12.	.69
+	3 COMBINED AT	CPA18	801.	12.33	288.	73.	35.	12.68
+	DIVERSION TO	DVA18	428.	12.33	154.	39.	19.	12.68
+	HYDROGRAPH AT	DA18	373.	12.33	134.	34.	16.	12.68
+	ROUTED TO	RCPA18	344.	12.50	133.	34.	16.	12.68
+	HYDROGRAPH AT	DRA08	690.	12.67	100.	25.	12.	2.90
+	ROUTED TO	RDA08	528.	13.17	99.	25.	12.	2.90
+	HYDROGRAPH AT	A19	646.	12.33	65.	16.	8.	.46
+	2 COMBINED AT	CPA19A	637.	12.33	162.	41.	20.	3.36
+	2 COMBINED AT	CPA19	886.	12.33	284.	72.	35.	15.26
+	ROUTED TO	RCPA19	659.	12.83	281.	72.	35.	15.26
+	HYDROGRAPH AT	A63	841.	12.17	84.	21.	10.	.61
+	2 COMBINED AT	CPA63A	912.	12.33	355.	92.	44.	15.86
+	HYDROGRAPH AT	DRA10	811.	13.83	309.	78.	38.	12.13
+	ROUTED TO	RDA10	737.	14.50	304.	78.	38.	12.13
+	HYDROGRAPH AT	A17	662.	12.50	83.	21.	10.	.57
+	2 COMBINED AT	CPA17	737.	14.50	379.	98.	47.	12.70
+	HYDROGRAPH AT	DRA18	428.	12.33	154.	39.	19.	12.68
+	ROUTED TO	RDA18	310.	13.00	151.	39.	19.	12.68
	HYDROGRAPH AT							

+	A33	427.	12.17	41.	10.	5.	.28
2 COMBINED AT +	CPA33A	409.	12.17	187.	49.	23.	12.96
2 COMBINED AT	CPA33	987.	14.50	556.	145.	70.	14.46
ROUTED TO +	RCPA33	947.	15.00	547.	145.	70.	14.46
2 COMBINED AT +	CPA63	1421.	12.83	876.	233.	112.	17.65
ROUTED TO +	RCPA63	1285.	13.83	846.	233.	112.	17.65
HYDROGRAPH AT +	A50	1301.	12.33	154.	43.	21.	.99
2 COMBINED AT +	CPA50	1297.	13.83	925.	270.	131.	18.64
ROUTED TO +	RCPA50	1275.	14.17	912.	270.	131.	18.64
2 COMBINED AT +	CPA51	1936.	12.67	1161.	340.	165.	22.83
2 COMBINED AT +	A51RIV	28873.	17.50	21063.	7999.	3908.	388.64
ROUTED TO +	RCPA51	28880.	17.50	21062.	7999.	3908.	388.64
HYDROGRAPH AT +	A05	1848.	12.33	176.	44.	21.	2.14
ROUTED TO +	RCPA05	1066.	13.00	176.	44.	21.	2.14
HYDROGRAPH AT	A23	219.	12.33	20.	5.	2.	.23
ROUTED TO +	RCPA23	122.	13.00	20.	5.	2.	.23
HYDROGRAPH AT +	A25	218.	12.33	19.	5.	2.	.22
ROUTED TO +	RCPA25	159.	12.50	19.	5.	2.	.22
HYDROGRAPH AT +	A26	570.	12.33	55.	14.	7.	.50
4 COMBINED AT +	CPA26	1249.	13.00	267.	67.	32.	3.09
ROUTED TO +	RCPA26	1075.	13.50	266.	67.	32.	3.09
HYDROGRAPH AT +	A27	981.	12.50	115.	29.	14.	1.11
2 COMBINED AT +	CPA27A	1089.	13.50	379.	95.	46.	4.19
HYDROGRAPH AT +	A28	653.	12.17	54.	13.	6.	.55
ROUTED TO +	RCPA28	524.	12.33	54.	13.	6.	.55
2 COMBINED AT +	CPA27	1452.	12.50	430.	108.	52.	4.74
ROUTED TO	RCPA27	1308.	12.67	429.	108.	52.	4.74
HYDROGRAPH AT +	A29	896.	12.33	97.	24.	12.	1.19
2 COMBINED AT							

+		CPA29	2016.	12.50	523.	131.	63.	5.93
+	HYDROGRAPH AT	DRA04	410.	12.17	28.	7.	3.	.74
+	ROUTED TO	RDA04	159.	13.50	28.	7.	3.	.74
+	HYDROGRAPH AT	A06	798.	12.33	87.	22.	10.	1.11
+	2 COMBINED AT	CPA06	793.	12.33	114.	28.	14.	1.85
+	ROUTED TO	RCPA06	479.	13.33	113.	28.	14.	1.85
+	HYDROGRAPH AT	DRA07	227.	12.17	29.	7.	4.	1.27
+	ROUTED TO	RDA07	111.	14.50	29.	7.	4.	1.27
+	HYDROGRAPH AT	A22	437.	12.50	63.	16.	8.	.58
+	2 COMBINED AT	CPA22	432.	12.50	90.	23.	11.	1.84
+	ROUTED TO	RCPA22	413.	12.67	90.	23.	11.	1.84
+	HYDROGRAPH AT	A24	996.	12.50	119.	30.	14.	1.36
+	3 COMBINED AT	CPA24	1332.	12.50	317.	80.	39.	4.31
+	ROUTED TO	RCPA24	1084.	13.17	315.	80.	39.	4.31
+	HYDROGRAPH AT	A30	600.	12.50	76.	19.	9.	.68
+	2 COMBINED AT	CPA30A	1237.	13.00	387.	99.	48.	4.98
+	2 COMBINED AT	CPA30	2901.	12.50	896.	227.	109.	10.91
+	ROUTED TO	RCPA30	2766.	12.67	893.	227.	109.	10.91
+	HYDROGRAPH AT	A52	350.	12.17	28.	7.	3.	.22
+	2 COMBINED AT	CPA52A	2772.	12.67	917.	233.	112.	11.13
+	HYDROGRAPH AT	A31	602.	12.50	76.	19.	9.	.54
+	ROUTED TO	RCPA31	429.	13.00	75.	19.	9.	.54
+	HYDROGRAPH AT	DRA21	682.	12.50	130.	33.	16.	5.22
+	ROUTED TO	RDA21	425.	14.50	127.	33.	16.	5.22
+	HYDROGRAPH AT	DRA20	285.	13.17	78.	20.	10.	5.56
+	ROUTED TO	RDA20	221.	14.50	77.	20.	10.	5.56
+	HYDROGRAPH AT	A32	1271.	12.50	172.	43.	21.	1.21
+	3 COMBINED AT	CPA32A	1252.	12.50	368.	94.	45.	6.77
	2 COMBINED AT							

+	CPA32	1354.	12.50	441.	113.	54.	7.31
ROUTED TO +	RCPA32	1318.	12.67	440.	113.	54.	7.31
2 COMBINED AT	CPA52	3898.	12.67	1293.	330.	159.	17.17
ROUTED TO +	RCPA52	3726.	12.83	1291.	330.	159.	17.17
HYDROGRAPH AT +	A53	1259.	12.33	137.	34.	16.	1.75
HYDROGRAPH AT +	A54	620.	12.17	71.	21.	10.	.51
2 COMBINED AT +	CPA54	1856.	12.33	206.	55.	26.	2.25
ROUTED TO +	RCPA54	1585.	12.50	206.	55.	26.	2.25
HYDROGRAPH AT +	A55	746.	12.17	66.	17.	8.	.61
2 COMBINED AT +	CPA55A	2061.	12.33	271.	71.	34.	2.87
2 COMBINED AT +	CPA55	4626.	12.67	1517.	390.	188.	20.04
ROUTED TO +	RCPA55	4092.	13.17	1501.	390.	188.	20.04
HYDROGRAPH AT +	A56	2060.	12.33	273.	76.	37.	1.84
2 COMBINED AT +	CPA56	4195.	13.17	1723.	457.	221.	21.88
2 COMBINED AT	A56RIV	28916.	17.50	21397.	8291.	4053.	404.96
ROUTED TO +	RCPA56	28910.	17.50	21391.	8290.	4053.	404.96
HYDROGRAPH AT +	I51	512.	12.00	34.	9.	4.	.29
ROUTED TO +	RCPI51	272.	12.50	34.	9.	4.	.29
HYDROGRAPH AT +	I53	612.	12.17	45.	11.	5.	.37
2 COMBINED AT +	CPI53	750.	12.17	79.	20.	9.	.66
ROUTED TO +	RCPI53	493.	12.50	78.	20.	9.	.66
HYDROGRAPH AT +	I55	401.	12.17	29.	7.	3.	.25
2 COMBINED AT +	CPI55	659.	12.17	107.	27.	13.	.91
ROUTED TO +	RCPI55	578.	12.50	107.	27.	13.	.91
HYDROGRAPH AT +	I57	366.	12.00	33.	10.	5.	.19
2 COMBINED AT +	CPI57	678.	12.17	139.	36.	18.	1.10
ROUTED TO	RCPI57	587.	12.67	139.	36.	18.	1.10
HYDROGRAPH AT +	I72	316.	12.17	32.	9.	4.	.21
2 COMBINED AT							

+	CPI72	653.	12.33	170.	45.	22.	1.30
+ ROUTED TO	RCPI72	608.	13.00	170.	45.	22.	1.30
+ HYDROGRAPH AT	I60	1402.	12.17	152.	41.	20.	1.02
+ 2 COMBINED AT	CPI60A	1474.	12.33	318.	85.	41.	2.33
+ HYDROGRAPH AT	I52	434.	12.00	32.	8.	4.	.26
+ ROUTED TO	RCPI52	252.	12.50	32.	8.	4.	.26
+ HYDROGRAPH AT	I54	565.	12.17	41.	10.	5.	.35
+ 2 COMBINED AT	CPI54	694.	12.17	72.	18.	9.	.61
+ ROUTED TO	RCPI54	409.	12.67	72.	18.	9.	.61
+ HYDROGRAPH AT	I56	696.	12.17	50.	13.	6.	.43
+ 2 COMBINED AT	CPI56	786.	12.17	122.	31.	15.	1.04
+ ROUTED TO	RCPI56	420.	13.50	121.	31.	15.	1.04
+ HYDROGRAPH AT	I58	847.	12.33	110.	30.	15.	.75
+ 2 COMBINED AT	CPI58	842.	12.33	228.	60.	29.	1.79
+ HYDROGRAPH AT	I59	736.	12.17	72.	21.	10.	.39
+ HYDROGRAPH AT	I64	546.	12.17	57.	17.	8.	.27
+ 3 COMBINED AT	CPI64	1912.	12.17	354.	98.	47.	2.45
+ ROUTED TO	RCPI64	1299.	12.67	353.	98.	47.	2.45
+ HYDROGRAPH AT	I65	605.	12.17	51.	13.	7.	.34
+ 2 COMBINED AT	CPI65	1333.	12.50	402.	111.	54.	2.79
+ 2 COMBINED AT	CPI60	2678.	12.33	716.	195.	94.	5.12
+ ROUTED TO	RCPI60	2437.	12.50	716.	195.	94.	5.12
+ HYDROGRAPH AT	I66	1713.	12.17	170.	50.	24.	.91
+ 2 COMBINED AT	CPI66	3272.	12.17	880.	244.	118.	6.03
+ ROUTED TO	RCPI66	2818.	12.67	879.	243.	118.	6.03
+ HYDROGRAPH AT	I67	1674.	12.17	156.	43.	21.	.97
+ 2 COMBINED AT	CPI67	2918.	12.67	1028.	286.	138.	7.00
+ HYDROGRAPH AT	I68	523.	12.17	47.	13.	6.	.29

HYDROGRAPH AT

+	I69	334.	12.00	27.	8.	4.	.17
+ 3 COMBINED AT	CPI69	3071.	12.17	1098.	306.	148.	7.46
ROUTED TO	RCPI69	2727.	13.00	1097.	306.	148.	7.46
+ HYDROGRAPH AT	I70	646.	12.17	57.	16.	8.	.37
+ 2 COMBINED AT	CPI70	2735.	13.00	1152.	321.	155.	7.83
+ HYDROGRAPH AT	I71	744.	12.17	66.	19.	9.	.42
+ 2 COMBINED AT	CPI71	2749.	13.00	1214.	339.	164.	8.25
+ ROUTED TO	RCPI71	2725.	13.00	1214.	339.	164.	8.25
+ HYDROGRAPH AT	I63	509.	12.17	41.	11.	5.	.29
+ 2 COMBINED AT	CPI63	2728.	13.00	1253.	349.	169.	8.54
+ 2 COMBINED AT	I63RIV	28943.	17.50	21634.	8516.	4170.	413.50
+ ROUTED TO	RCPI63	28789.	17.67	21613.	8513.	4169.	413.50
+ HYDROGRAPH AT	A57	2559.	12.17	277.	85.	41.	1.47
+ 2 COMBINED AT	A57RIV	28797.	17.67	21625.	8561.	4200.	414.97
ROUTED TO	RCPA57	28650.	18.00	21606.	8554.	4198.	414.97
+ HYDROGRAPH AT	A58	2225.	12.50	351.	104.	50.	2.13
+ HYDROGRAPH AT	A59	1762.	12.33	219.	65.	32.	1.25
+ 2 COMBINED AT	CPA59	3642.	12.33	567.	168.	81.	3.39
+ ROUTED TO	RCPA59	3329.	12.50	567.	168.	81.	3.39
+ HYDROGRAPH AT	A60	2219.	12.33	264.	75.	36.	1.67
+ 2 COMBINED AT	CPA60	4800.	12.33	827.	242.	117.	5.05
+ 2 COMBINED AT	A60RIV	28653.	18.00	21626.	8701.	4282.	420.03
+ ROUTED TO	RCPA60	28572.	18.17	21609.	8698.	4281.	420.03
+ HYDROGRAPH AT	A61	1698.	12.67	278.	76.	36.	1.88
+ HYDROGRAPH AT	A62	378.	12.33	39.	10.	5.	.29
+ 3 COMBINED AT	A62RIV	28572.	18.17	21612.	8754.	4311.	422.19

NORMAL END OF HEC-1 ***

Appendix D.6.3

HEC-1 MODEL FOR WATERSHED J

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1****************************************
****************************************
 *                                      *                                                    *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                                    *    U.S. ARMY CORPS OF
ENGINEERS     *
                JUN   1998               *                                                    *    HYDROLOGIC
ENGINEERING CENTER    *
              VERSION 4.1                *                                                    *          609 SECOND
STREET          *
 *                                      *                                                    *       DAVIS, CALIFORNIA
95616       *
 *  RUN DATE   10JAN05  TIME  08:56:07  *                                                    *           (916) 756-1104
*
 *                                      *                                                    *
*
 ****************************************
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```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.

THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION

NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1           ID   FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
  2           ID   WATERMAN WASH - Contract # 2002C024
  3           ID
  4           ID   Prepared by:
  5           ID   Engineering and Environmental Consultants
  6           ID   3003 N. Central, Suite 600
  7           ID   Phoenix, Arizona   85012
  8           ID   Phone: 602-248-7702  FAX: 602-248-7851
  9           ID
 10           ID
 11           ID
 12           ID
 13           ID   6/10/03  Filename:  Watershed J.IH1
 14           ID                Last Revised: 01/03/05
 15           ID
 16           ID   1. The storm used was 100-year, 24-hour.
 17           ID   2. S-graph was the unit hydrograph.
 18           ID   3. Time step of 10 minutes.
 19           ID   4. A point rainfall of 4.4 inches from NOAA 2 with Maricopa County Areal redu
 20           ID   5. Green-Ampt loss methods were used. Normal depth Channel routing.
 21           ID   6. The sub-basin parameters were generated using FCDMC's DDMSW software.
 22           ID   7. 100 % of contributing area carried with each branch of every split on the
 23           ID
 24           ID
              *DIAGRAM
 25           IT      10                    300
 26           IO       3
 27           IN      15
              *
 28           JD     4.4   0.001
 29           PC   0.000   0.002   0.005   0.008   0.011   0.014   0.017   0.020   0.023   0.026
 30           PC   0.029   0.032   0.035   0.038   0.041   0.044   0.048   0.052   0.056   0.060
 31           PC   0.064   0.068   0.072   0.076   0.080   0.085   0.090   0.095   0.100   0.105
 32           PC   0.110   0.115   0.120   0.126   0.133   0.140   0.147   0.155   0.163   0.172
 33           PC   0.181   0.191   0.203   0.218   0.236   0.257   0.283   0.387   0.663   0.707
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34          PC   0.735   0.758   0.776   0.791   0.804   0.815   0.825   0.834   0.842   0.849
35          PC   0.856   0.863   0.869   0.875   0.881   0.887   0.893   0.898   0.903   0.908
36          PC   0.913   0.918   0.922   0.926   0.930   0.934   0.938   0.942   0.946   0.950
37          PC   0.953   0.956   0.959   0.962   0.965   0.968   0.971   0.974   0.977   0.980
38          PC   0.983   0.986   0.989   0.992   0.995   0.998   1.000
39          JD   4.180      10
40          JD   4.039      20
41          JD   3.903      40
42          JD   3.771      80
43          JD   3.700     120
44          JD   3.608     200
45          JD   3.524     350
46          JD   3.445     500
            *
```



```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

47          KK     J26
48          KM        Runoff subbasin J26
49          BA   0.514
50          LG    0.35    0.35    4.10    0.42      58
51          UI     653    1143     168       0       0       0       0       0       0       0
52          UI       0       0       0       0       0       0       0       0       0       0
            *

53          KK  RCPJ26
54          KM        Route flow from CP J26 to CP J33
55          RS       4    FLOW      -1
56          RC   0.050   0.045   0.050   11380  0.0099
57          RX       0     150     325     365     420     460     580     660
58          RY    1013    1008    1004    1000    1000    1004    1008    1013
            *

59          KK     J33
60          KM        Runoff subbasin J33
61          BA   1.343
62          LG    0.35    0.34    4.35    0.39      36
63          UI     432    1255    1970    1039     331     106      58       0       0       0
64          UI       0       0       0       0       0       0       0       0       0       0
            *

65          KK   CPJ33
66          KM        Combine J26 with J33
67          HC       2   1.857
            *

68          KK  RCPJ33
69          KM        Route flow from CP J33 to CP J34
70          RS       1    FLOW      -1
71          RC   0.050   0.045   0.050    2290  0.0057
72          RX       0      40      85     105     180     200     310     420
73          RY     950     942     935     930     930     935     937     940
            *

74          KK     J34
75          KM        Runoff subbasin J34
76          BA   0.454
77          LG    0.35    0.35    4.25    0.41      44
78          UI     577    1009     149       0       0       0       0       0       0       0
79          UI       0       0       0       0       0       0       0       0       0       0
            *

80          KK   CPJ34
81          KM        Combine J33 with J34
82          HC       2   2.311
            *
```



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LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

83          KK  RCPJ34
84          KM        Route flow from CP J34 to CP J35
85          RS       1    FLOW      -1
86          RC   0.050   0.045   0.050     880  0.0069
87          RX       0      30      45      70     170     195     310     500
88          RY     940     930     925     920     920     925     928     930
            *

89          KK     J35
90          KM        Runoff subbasin J35
91          BA   0.401
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 92          LG    0.35    0.35    4.40    0.38      41
 93          UI     621     827      94       0       0       0       0       0       0       0
 94          UI       0       0       0       0       0       0       0       0       0       0
             *

 95          KK   CPJ35
 96          KM        Combine J34 with J35
 97          HC       2   2.713
             *

 98          KK     J51
 99          KM        Runoff subbasin J51
100          BA   0.237
101          LG    0.35    0.35    4.00    0.47      60
102          UI     367     489      55       0       0       0       0       0       0       0
103          UI       0       0       0       0       0       0       0       0       0       0
             *

104          KK     J52
105          KM        Runoff subbasin J52
106          BA   0.091
107          LG    0.35    0.35    4.40    0.38      31
108          UI     338       0       0       0       0       0       0       0       0       0
109          UI       0       0       0       0       0       0       0       0       0       0
             *

110          KK     J50
111          KM        Runoff subbasin J50
112          BA   0.588
113          LG    0.35    0.35    4.10    0.46      52
114          UI     747    1308     192       0       0       0       0       0       0       0
115          UI       0       0       0       0       0       0       0       0       0       0
             *

116          KK     J49
117          KM        Runoff subbasin J49
118          BA   0.191
119          LG    0.35    0.35    4.25    0.42      29
120          UI     522     208       0       0       0       0       0       0       0       0
121          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

122          KK   NULL1
123          KM        Combine J35, J51, J52, J50 with J49
124          KM        This operation is used to combine hydrographs at the Gila River
125          KM        to reduce the stack, do NOT use the resultant value.
126          HC       5   3.820
             *

127          KK     J31
128          KM        Runoff subbasin J31
129          BA   0.454
130          LG    0.35    0.35    4.00    0.44      59
131          UI     211     668     598     209      49       0       0       0       0       0
132          UI       0       0       0       0       0       0       0       0       0       0
             *

133          KK  RCPJ31
134          KM        Route flow from CP J31 to CP J48
135          RS       2    FLOW      -1
136          RC   0.050   0.045   0.050    9040  0.0123
137          RX       0      60     110     120     150     160     280     310
138          RY     970     966     963     960     960     963     966     970
             *

139          KK     J32
140          KM        Runoff subbasin J32
141          BA   0.318
142          LG    0.32    0.28    4.15    0.44      36
143          UI     227     638     293      58       0       0       0       0       0       0
144          UI       0       0       0       0       0       0       0       0       0       0
             *

145          KK  RCPJ32
146          KM        Route flow from CP J32 to CP J48
147          RS       3    FLOW      -1
148          RC   0.050   0.045   0.050    8440  0.0122
149          RX       0      60     110     120     150     160     280     310
150          RY     970     966     963     960     960     963     966     970
             *
```

```
151          KK     J48
152          KM        Runoff subbasin J48
153          BA   0.869
154          LG    0.35    0.35    4.55    0.35      24
155          UI     332    1006    1261     540     161      42       0       0       0       0
156          UI       0       0       0       0       0       0       0       0       0       0
             *

157          KK   CPJ48
158          KM        Combine J31, J32 with J48
159          HC       3   1.641
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

160          KK     J53
161          KM        RUNOFF FROM J53
162          BA   0.050
163          LG    0.35    0.35    4.55    0.35      25
164          UI     175       0       0       0       0       0       0       0       0       0
165          UI       0       0       0       0       0       0       0       0       0       0
             *

166          KK  RCPJ53
167          KM        Route flow from CP J53 to CP J47
168          RS       1    FLOW      -1
169          RC   0.050   0.045   0.050    8640  0.0201
170          RX       0     160     305     320     335     350     400     440
171          RY     975     974     973     970     970     973     974     975
             *

172          KK     J47
173          KM        Runoff subbasin J47
174          BA   0.456
175          LG    0.35    0.35    4.90    0.29       3
176          UI     236     732     574     168      39       0       0       0       0       0
177          UI       0       0       0       0       0       0       0       0       0       0
             *

178          KK   CPJ47
179          KM        Combine J53 with J47
180          HC       2   0.505
             *

181          KK     J30
182          KM        Runoff subbasin J30
183          BA   0.333
184          LG    0.35    0.35    4.00    0.43      61
185          UI     213     625     354      76      19       0       0       0       0       0
186          UI       0       0       0       0       0       0       0       0       0       0
             *

187          KK  RCPJ30
188          KM        Route flow from CP J30 to CP J46
189          RS       2    FLOW      -1
190          RC   0.050   0.045   0.050    8950  0.0200
191          RX       0      25      50      60      70      80      90     100
192          RY    1040    1038    1035    1030    1030    1035    1038    1040
             *

193          KK     J46
194          KM        Runoff subbasin J46
195          BA   0.564
196          LG    0.35    0.35    4.60    0.34      29
197          UI     216     653     817     351     105      27       0       0       0       0
198          UI       0       0       0       0       0       0       0       0       0       0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

199          KK   CPJ46
200          KM        Combine J30 with J46
201          HC       2   0.897
             *

202          KK     J45
203          KM        Runoff subbasin J45
204          BA   0.337
205          LG    0.35    0.35    4.60    0.34      27
```

```
206          UI     652     600       0       0       0       0       0       0       0       0
207          UI       0       0       0       0       0       0       0       0       0       0
             *

208          KK     J44
209          KM        Runoff subbasin J44
210          BA   0.175
211          LG    0.35    0.35    4.70    0.31       1
212          UI     612       0       0       0       0       0       0       0       0       0
213          UI       0       0       0       0       0       0       0       0       0       0
             *

214          KK   NULL2
215          KM        Combine J44, J45, J46, J47, J48 with NULL1
216          KM        This operation is used to combine hydrographs at the Gila River
217          KM        to reduce the stack, do NOT use the resultant value.
218          HC       6   7.376
             *

219          KK     J03
220          KM        Runoff subbasin J03
221          BA   2.169
222          LG    0.35    0.35    4.40    0.37      33
223          UI    1124    3483    2728     801     182       0       0       0       0       0
224          UI       0       0       0       0       0       0       0       0       0       0
             *

225          KK  RCPJ03
226          KM        Route flow from CP J03 to CP J02
227          RS       1    FLOW      -1
228          RC   0.050   0.045   0.050    3790  0.0105
229          RX       0      11     160     180     220     240     390     401
230          RY    1185 1182.75    1182    1180    1180    1182 1182.75    1185
             *

231          KK     J02
232          KM        Runoff subbasin J02
233          BA   1.941
234          LG    0.35    0.35    4.30    0.39      32
235          UI     386    1179    2193    1918    1107     426     176      67       0       0
236          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

237          KK   CPJ02
238          KM        Combine J03 with J02
239          HC       2   4.110
             *

240          KK  RCPJ02
241          KM        Route flow from CP J02 to CP J05
242          RS       1    FLOW      -1
243          RC   0.050   0.045   0.050     750  0.0114
244          RX       0       9     250     270     320     340     540     549
245          RY    1160 1158.25    1157    1155    1155    1157 1158.25    1160
             *

246          KK     J01
247          KM        Runoff subbasin J01
248          BA   2.790
249          LG    0.35    0.35    4.00    0.44      54
250          UI     640    1938    3551    2593    1298     480     164     102       0       0
251          UI       0       0       0       0       0       0       0       0       0       0
             *

252          KK  RCPJ01
253          KM        Route flow from CP J01 to CP J05
254          RS       2    FLOW      -1
255          RC   0.050   0.045   0.050    9540  0.0191
256          RX       0      75     130     170     260     300     390     490
257          RY    1252    1248    1244    1240    1240    1244    1248    1252
             *

258          KK     J05
259          KM        Runoff subbasin J05
260          BA   0.321
261          LG    0.35    0.35    4.30    0.41       0
262          UI     103     301     470     249      78      26      14       0       0       0
263          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
264          KK   CPJ05
265          KM        Combine J01, J02 with J05
266          HC       3   7.221
             *

267          KK  RCPJ05
268          KM        Route flow from CP J05 to CP J14
269          RS       4    FLOW      -1
270          RC   0.050   0.045   0.050   12040  0.0094
271          RX       0       8     260     280     330     350     610     618
272          RY    1106  1104.5    1103    1100    1100    1103  1104.5    1106
             *
1                                        HEC-1 INPUT                                                    PAGE  8

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

273          KK     J14
274          KM        Runoff subbasin J14
275          BA   2.133
276          LG    0.35    0.35    4.30    0.39      30
277          UI     340    1097    1852    2306    1400     708     309     123      67       0
278          UI       0       0       0       0       0       0       0       0       0       0
279          UI       0       0       0       0       0       0       0       0       0       0
             *

280          KK  CPJ14A
281          KM        Combine J05 with J14
282          HC       2   9.354
             *

283          KK     J25
284          KM        Runoff subbasin J25
285          BA   0.523
286          LG    0.35    0.35    4.30    0.38      57
287          UI     201     604     759     325      98      24       0       0       0       0
288          UI       0       0       0       0       0       0       0       0       0       0
             *

289          KK  RCPJ25
290          KM        Route flow from CP J25 to CP J14
291          RS       1    FLOW      -1
292          RC   0.050   0.045   0.050    1120  0.0101
293          RX       0       6      50      60      75      85     145     151
294          RY    1048 1046.75    1046    1044    1044    1046 1046.75    1048
             *

295          KK   CPJ14
296          KM        Combine J25 with J14
297          HC       2   9.877
             *

298          KK  RCPJ14
299          KM        Route flow from CP J14 to CP J23
300          RS       1    FLOW      -1
301          RC   0.050   0.045   0.050    4080  0.0116
302          RX       0      14     210     230     270     290     490     504
303          RY    1018 1015.25    1013    1010    1010    1013 1015.25    1018
             *

304          KK     J24
305          KM        Runoff subbasin J24
306          BA   0.185
307          LG    0.35    0.39    5.70    0.20       9
308          UI     579     135       0       0       0       0       0       0       0       0
309          UI       0       0       0       0       0       0       0       0       0       0
             *
1                                        HEC-1 INPUT                                                    PAGE  9

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

310          KK  RCPJ24
311          KM        Route flow from CP J24 to CP J23
312          RS       1    FLOW      -1
313          RC   0.050   0.045   0.050    2900  0.0193
314          RX       0      90     200     210     230     240     310     420
315          RY    1027    1025    1023    1020    1020    1023    1025    1027
             *

316          KK     J23
317          KM        Runoff subbasin J23
318          BA   0.332
319          LG    0.26    0.26    4.80    0.35      30
```

```
320          UI     128     383     482     206      62      15       0       0       0       0
321          UI       0       0       0       0       0       0       0       0       0       0
             *

322          KK   CPJ23
323          KM        Combine J14, J24 with J23
324          HC       3  10.394
             *

325          KK  RCPJ23
326          KM        Route flow from CP J23 to CP J29
327          RS       1    FLOW      -1
328          RC   0.050   0.045   0.050    5100  0.0088
329          RX       0      14     170     190     270     290     340     354
330          RY     988  985.25     983     980     980     983  985.25     988
             *

331          KK     J29
332          KM        Runoff subbasin J29
333          BA   1.845
334          LG    0.30    0.30    4.70    0.34      38
335          UI     424    1281    2348    1715     858     318     108      67       0       0
336          UI       0       0       0       0       0       0       0       0       0       0
             *

337          KK   CPJ29
338          KM        Combine J23 with J29
339          HC       2  12.239
             *

340          KK  RCPJ29
341          KM        Route flow from CP J29 to CP J43
342          RS       1    FLOW      -1
343          RC   0.050   0.045   0.050    5970  0.0104
344          RX       0      11      60      70     115     125     165     176
345          RY     912  909.75     907     900     900     907  909.75     912
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

346          KK     J43
347          KM        Runoff subbasin J43
348          BA   0.551
349          LG    0.32    0.32    4.45    0.39      24
350          UI     317     963     645     164      32       0       0       0       0       0
351          UI       0       0       0       0       0       0       0       0       0       0
             *

352          KK   CPJ43
353          KM        Combine J29 with J43
354          HC       2  12.791
             *

355          KK     J42
356          KM        Runoff subbasin J42
357          BA   0.201
358          LG    0.35    0.35    4.35    0.40      31
359          UI     702       0       0       0       0       0       0       0       0       0
360          UI       0       0       0       0       0       0       0       0       0       0
             *

361          KK     J41
362          KM        Runoff subbasin J41
363          BA   0.182
364          LG    0.35    0.35    4.45    0.37      22
365          UI     636       0       0       0       0       0       0       0       0       0
366          UI       0       0       0       0       0       0       0       0       0       0
             *

367          KK   NULL3
368          KM        Combine J43, J42, J41 with NULL2
369          KM        This operation is used to combine hydrographs at the Gila River
370          KM        to reduce the stack, do NOT use the resultant value.
371          HC       4  20.549
             *

372          KK     J04
373          KM        Runoff subbasin J04
374          BA   0.412
375          LG    0.35    0.36    5.00    0.28       1
376          UI     294     827     381      72       0       0       0       0       0       0
377          UI       0       0       0       0       0       0       0       0       0       0
```

```
                *
378             KK    DJ04
379             KM            Divert flow from J04 into J06
380             KM        Natural divergence of flow due to a braided channel network.
381             DT    DVJ04
382             DI        0      175      394      460     1998     5451    10381    16188
383             DQ        0        0       10       43      675     2083     4259     6963
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

384             KK   RCPJ04
385             KM        Route remainder flow from CP J04 to CP J07
386             RS        7    FLOW      -1
387             RC    0.050   0.045   0.050    7970  0.0151
388             RX        0     180     370     400     410     440     620     800
389             RY     1143    1142    1142    1140    1140    1142    1142    1143
                *

390             KK     J07
391             KM        Runoff subbasin J07
392             BA    0.452
393             LG     0.35    0.35    4.00    0.47       0
394             UI      210     665     595     209      48       0       0       0       0       0
395             UI        0       0       0       0       0       0       0       0       0       0
                *

396             KK   CPJ07
397             KM        Combine J04 with J07
398             HC        2  0.865
                *

399             KK   RCPJ07
400             KM        Route flow from CP J07 to CP J11
401             RS        3    FLOW      -1
402             RC    0.050   0.045   0.050    3940  0.0104
403             RX        0     170     340     360     380     400     560     730
404             RY     1093    1092    1092    1090    1090    1092    1092    1093
                *

405             KK     J11
406             KM        Runoff subbasin J11
407             BA    0.252
408             LG     0.35    0.35    4.10    0.46       0
409             UI      320     561      82       0       0       0       0       0       0       0
410             UI        0       0       0       0       0       0       0       0       0       0
                *

411             KK   CPJ11
412             KM        Combine J07 with J11
413             HC        2   1.117
                *

414             KK   RCPJ11
415             KM        Route flow from CP J11 to CP J16
416             RS        5    FLOW      -1
417             RC    0.050   0.045   0.050    6190  0.0105
418             RX        0     145     280     300     340     360     500     710
419             RY     1042    1041    1041    1040    1040    1041    1041    1042
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

420             KK     J16
421             KM        Runoff subbasin J16
422             BA    0.288
423             LG     0.35    0.35    4.60    0.34       3
424             UI      165     504     338      85      17       0       0       0       0       0
425             UI        0       0       0       0       0       0       0       0       0       0
                *

426             KK   CPJ16
427             KM        Combine J11 with J16
428             HC        2   1.405
                *

429             KK   DRJ04
430             KM            Return Diverted flow from CP J04 in basin J06
431             DR   DVJ04
```

```
                *

432             KK   RDJ04
433             KM        Route diverted flow to CP J06
434             RS       4    FLOW      -1
435             RC   0.050   0.045   0.050    6150  0.0152
436             RX       0     200     410     440     460     490     610     880
437             RY    1183    1182    1182    1180    1180    1182    1182    1183
                *

438             KK     J06
439             KM        Runoff subbasin J06
440             BA   0.352
441             LG    0.35    0.35    4.00    0.47       0
442             UI     287     742     277      46       0       0       0       0       0       0
443             UI       0       0       0       0       0       0       0       0       0       0
                *

444             KK   CPJ06
445             KM        Combine DRJ04 with J06
446             HC       2   0.764
                *

447             KK  RCPJ06
448             KM        Route flow from CP J06 to CP J10
449             RS       4    FLOW      -1
450             RC   0.050   0.045   0.050    4840  0.0113
451             RX       0     190     370     390     410     430     550     750
452             RY    1123    1122    1122    1120    1120    1122    1122    1123
                *

453             KK     J10
454             KM        Runoff subbasin J10
455             BA   0.295
456             LG    0.35    0.35    4.00    0.47       0
457             UI     274     647     189      28       0       0       0       0       0       0
458             UI       0       0       0       0       0       0       0       0       0       0
                *
```



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LINE            ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

459             KK   CPJ10
460             KM        Combine J06 with J10
461             HC       2   1.059
                *

462             KK  RCPJ10
463             KM        Route flow from CP J10 to CP J15
464             RS       5    FLOW      -1
465             RC   0.050   0.045   0.050    5470  0.0098
466             RX       0     170     340     380     420     460     610     800
467             RY    1042    1041    1041    1040    1040    1041    1041    1042
                *

468             KK     J15
469             KM        Runoff subbasin J15
470             BA   0.612
471             LG    0.35    0.35    4.70    0.31      10
472             UI     197     572     898     473     151      48      27       0       0       0
473             UI       0       0       0       0       0       0       0       0       0       0
                *

474             KK  CPJ15A
475             KM        Combine J10 with J15
476             HC       2   1.671
                *

477             KK   CPJ15
478             KM        Combine J16 with J15
479             HC       2   2.664
                *

480             KK  RCPJ15
481             KM        Route flow from CP J15 to CP J20
482             RS       3    FLOW      -1
483             RC   0.050   0.045   0.050    3630  0.0072
484             RX       0     190     365     385     405     425     710    1000
485             RY    1020    1016    1013    1010    1010    1013    1016    1020
                *

486             KK     J08
487             KM        Runoff subbasin J08
```

```
488          BA   0.171
489          LG    0.35    0.37    5.20    0.25       0
490          UI     183     383      84       0       0       0       0       0       0       0
491          UI       0       0       0       0       0       0       0       0       0       0
             *

492          KK  RCPJ08
493          KM        Route flow from CP J08 to CP J12
494          RS       3    FLOW      -1
495          RC   0.050   0.045   0.050    7150  0.0140
496          RX       0     220     420     450     480     510     700     900
497          RY    1153    1152    1152    1150    1150    1152    1152    1153
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

498          KK     J12
499          KM        Runoff subbasin J12
500          BA   0.468
501          LG    0.35    0.35    4.15    0.44       0
502          UI     269     818     549     138      28       0       0       0       0       0
503          UI       0       0       0       0       0       0       0       0       0       0
             *

504          KK   CPJ12
505          KM        Combine J08 with J12
506          HC       2   0.639
             *

507          KK  RCPJ12
508          KM        Route flow from CP J12 to CP J17
509          RS       2    FLOW      -1
510          RC   0.050   0.045   0.050    5420  0.0096
511          RX       0       9      35      45      65      75     100     109
512          RY    1074 1072.25    1072    1070    1070    1072 1072.25    1074
             *

513          KK     J09
514          KM        Runoff subbasin J09
515          BA   0.196
516          LG    0.35    0.35    4.55    0.35       0
517          UI     249     436      64       0       0       0       0       0       0       0
518          UI       0       0       0       0       0       0       0       0       0       0
             *

519          KK  RCPJ09
520          KM        Route flow from CP J09 to CP J13
521          RS       4    FLOW      -1
522          RC   0.050   0.045   0.050    7850  0.0138
523          RX       0     220     420     450     480     510     700     900
524          RY    1153    1152    1152    1150    1150    1152    1152    1153
             *

525          KK     J13
526          KM        Runoff subbasin J13
527          BA   0.522
528          LG    0.35    0.35    4.15    0.44       0
529          UI     142     415     726     449     184      69      20       0       0       0
530          UI       0       0       0       0       0       0       0       0       0       0
             *

531          KK   CPJ13
532          KM        Combine J09 with J13
533          HC       2   0.718
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

534          KK  RCPJ13
535          KM        Route flow from CP J13 to CP J17
536          RS       2    FLOW      -1
537          RC   0.050   0.045   0.050    5750  0.0089
538          RX       0       9      30      40      60      70      90      99
539          RY    1074 1072.25    1072    1070    1070    1072 1072.25    1074
             *

540          KK     J17
541          KM        Runoff subbasin J17
542          BA   0.465
543          LG    0.35    0.35    4.30    0.41       0
```

```
544          UI     216     684     612     214      51       0       0       0       0       0
545          UI       0       0       0       0       0       0       0       0       0       0
             *

546          KK   CPJ17
547          KM        Combine J12, J13 with J17
548          HC       3   1.821
             *

549          KK  RCPJ17
550          KM        Route flow from CP J17 to CP J54
551          RS       2    FLOW      -1
552          RC   0.050   0.045   0.050    6130  0.0093
553          RX       0       8      80     100     120     140     190     198
554          RY    1024  1022.5    1022    1020    1020    1022  1022.5    1024
             *

555          KK     J54
556          KM        RUNOFF FROM J54
557          BA   0.151
558          LG    0.35    0.35    4.90    0.29       3
559          UI      87     264     177      44      10       0       0       0       0       0
560          UI       0       0       0       0       0       0       0       0       0       0
             *

561          KK   CPJ54
562          KM        Combine J17 with J54
563          HC       2   1.972
             *

564          KK     J20
565          KM        Runoff subbasin J20
566          BA   0.551
567          LG    0.35    0.39    6.20    0.17      37
568          UI     448    1163     435      69       0       0       0       0       0       0
569          UI       0       0       0       0       0       0       0       0       0       0
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

570          KK   CPJ20
571          KM        Combine J15, J54 with J20
572          HC       3   5.187
             *

573          KK  RCPJ20
574          KM        Route flow from CP J20 to CP J21
575          RS       3    FLOW      -1
576          RC   0.050   0.045   0.050    1000  0.0041
577          RX       0      10     250     260     280     290     420     430
578          RY     997     995     993     990     990     993     995     997
             *

579          KK     J18
580          KM        Runoff subbasin J18
581          BA   0.866
582          LG    0.34    0.34    4.40    0.39       2
583          UI     199     601    1102     806     402     149      51      32       0       0
584          UI       0       0       0       0       0       0       0       0       0       0
             *

585          KK  RCPJ18
586          KM        Route flow from CP J18 to CP J21
587          RS       2    FLOW      -1
588          RC   0.050   0.045   0.050    5020  0.0087
589          RX       0       9      35      50      80      95     120     129
590          RY    1015 1013.25    1013    1010    1010    1013 1013.25    1015
             *

591          KK     J21
592          KM        Runoff subbasin J21
593          BA   0.199
594          LG    0.30    0.30    4.35    0.43      18
595          UI      54     158     277     172      69      27       8       0       0       0
596          UI       0       0       0       0       0       0       0       0       0       0
             *

597          KK  CPJ21A
598          KM        Combine J18 with J21
599          HC       2   1.065
             *
```

```
600          KK   CPJ21
601          KM        COMBINE J20 WITH J21
602          HC       2   6.252
             *

603          KK  RCPJ21
604          KM        Route flow from CP J21 to CP J22
605          RS       3    FLOW      -1
606          RC   0.050   0.045   0.050    6150  0.0041
607          RX       0      10     250     260     280     290     420     430
608          RY     987     985     983     980     980     983     985     987
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

609          KK     J19
610          KM        Runoff subbasin J19
611          BA   0.096
612          LG    0.34    0.34    4.45    0.38       2
613          UI     103     215      47       0       0       0       0       0       0       0
614          UI       0       0       0       0       0       0       0       0       0       0
             *

615          KK  RCPJ19
616          KM        Route flow from CP J19 to CP J22
617          RS       9    FLOW      -1
618          RC   0.050   0.045   0.050    9750  0.0072
619          RX       0     100     190     220     250     280     370     470
620          RY    1000     999     998     997     997     998     999    1000
             *

621          KK     J22
622          KM        Runoff subbasin J22
623          BA   1.693
624          LG    0.27    0.30    5.20    0.31      29
625          UI     114     382     625     840    1317    1105     810     584     318     192
626          UI     116      50      35      35       0       0       0       0       0       0
627          UI       0       0       0       0       0       0       0       0       0       0
             *

628          KK   CPJ22
629          KM        Combine J19, J21 with J22
630          HC       3   8.041
             *

631          KK  RCPJ22
632          KM        Route flow from CP J22 to CP J39
633          RS       4    FLOW      -1
634          RC   0.050   0.045   0.050   11340  0.0075
635          RX       0      11      60      70     140     150     300     311
636          RY     927  924.75     923     920     920     923  924.75     927
             *

637          KK     J40
638          KM        Runoff subbasin J40
639          BA   0.896
640          LG    0.33    0.33    4.90    0.30      25
641          UI     464    1439    1127     331      75       0       0       0       0       0
642          UI       0       0       0       0       0       0       0       0       0       0
             *

643          KK  RCPJ40
644          KM        Route flow from CP J40 to CP J39
645          RS       1    FLOW      -1
646          RC   0.050   0.045   0.050     600   0.013
647          RX       0      13      25      40      55      75      80      93
648          RY     891   888.5     888     883     883     888   888.5     891
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

649          KK     J39
650          KM        Runoff subbasin J39
651          BA   0.976
652          LG    0.34    0.32    4.65    0.33      12
653          UI     120     406     633    1017     717     465     208     113      44      27
654          UI      28       0       0       0       0       0       0       0       0       0
655          UI       0       0       0       0       0       0       0       0       0       0
             *
```

```
656          KK   CPJ39
657          KM        Combine J22, J40 with J39
658          HC       3   9.912
             *

659          KK     J38
660          KM        Runoff subbasin J38
661          BA   2.061
662          LG    0.33     0.32     4.65     0.33       11
663          UI     307     1000     1661     2235     1394      780      321      148       62       63
664          UI       0        0        0        0        0        0        0        0        0        0
665          UI       0        0        0        0        0        0        0        0        0        0
             *

666          KK     J28
667          KM        Runoff subbasin J28
668          BA   0.958
669          LG    0.33     0.31     4.70     0.31       19
670          UI     117      399      622      997      704      457      205      110       43       27
671          UI      27        0        0        0        0        0        0        0        0        0
672          UI       0        0        0        0        0        0        0        0        0        0
             *

673          KK     J27
674          KM        Runoff subbasin J27
675          BA   1.501
676          LG    0.30     0.26     4.70     0.31        6
677          UI     110      416      636      916     1293      920      649      409      189      127
678          UI      55       34       33        0        0        0        0        0        0        0
679          UI       0        0        0        0        0        0        0        0        0        0
             *

680          KK   CPJ27
681          KM        COMBINE J28 WITH 27
682          HC       2   2.459
             *

683          KK  RCPJ27
684          KM        Route flow from CP J27 to CP J37
685          RS       1    FLOW       -1
686          RC   0.050   0.045    0.050     2000   0.0068
687          RX       0      15       75       85       95      105      135      150
688          RY     888     885      883      880      880      883      885      888
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

689          KK     J37
690          KM        Runoff subbasin J37
691          BA   0.805
692          LG    0.32     0.29     4.60     0.34        3
693          UI      92      320      494      812      604      400      197      100       47       22
694          UI      21        0        0        0        0        0        0        0        0        0
695          UI       0        0        0        0        0        0        0        0        0        0
             *

696          KK   CPJ37
697          KM        Combine J27 with J37
698          HC       2   3.264
             *

699          KK     J36
700          KM        Runoff subbasin J36
701          BA   0.526
702          LG    0.30     0.25     4.90     0.29        5
703          UI     104      320      594      520      300      115       48       19        0        0
704          UI       0        0        0        0        0        0        0        0        0        0
705          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.     (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

   47        J26
              V
              V
   53     RCPJ26
              .
              .
   59         .          J33
```

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                .          .
                .          .
  65        CPJ33............
                V
                V
  68       RCPJ33
                .
                .
  74            .        J34
                .          .
                .          .
  80        CPJ34............
                V
                V
  83       RCPJ34
                .
                .
  89            .        J35
                .          .
                .          .
  95        CPJ35............
                .
                .
  98            .        J51
                .          .
                .          .
 104            .          .        J52
                .          .          .
                .          .          .
 110            .          .          .        J50
                .          .          .          .
                .          .          .          .
 116            .          .          .          .        J49
                .          .          .          .          .
                .          .          .          .          .
 122        NULL1.......................................................
                .
                .
 127            .        J31
                .          V
                .          V
 133            .      RCPJ31
                .          .
                .          .
 139            .          .        J32
                .          .          V
                .          .          V
 145            .          .      RCPJ32
                .          .          .
                .          .          .
 151            .          .          .        J48
                .          .          .          .
                .          .          .          .
 157            .      CPJ48........................
                .          .
                .          .
 160            .          .        J53
                .          .          V
                .          .          V
 166            .          .      RCPJ53
                .          .          .
                .          .          .
 172            .          .          .        J47
                .          .          .          .
                .          .          .          .
 178            .          .      CPJ47............
                .          .          .
                .          .          .
 181            .          .          .        J30
                .          .          .          V
                .          .          .          V
 187            .          .          .      RCPJ30
                .          .          .          .
                .          .          .          .
 193            .          .          .          .        J46
                .          .          .          .          .
                .          .          .          .          .
 199            .          .          .      CPJ46............
                .          .          .          .
                .          .          .          .
 202            .          .          .          .        J45
                .          .          .          .          .
                .          .          .          .          .
 208            .          .          .          .          .        J44
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                .          .          .          .          .          .
                .          .          .          .          .          .
214       NULL2.............................................................
                .
                .
219             .        J03
                .          V
                .          V
225             .      RCPJ03
                .          .
                .          .
231             .          .         J02
                .          .           .
                .          .           .
237             .      CPJ02............
                .          V
                .          V
240             .      RCPJ02
                .          .
                .          .
246             .          .         J01
                .          .           V
                .          .           V
252             .          .      RCPJ01
                .          .           .
                .          .           .
258             .          .           .         J05
                .          .           .           .
                .          .           .           .
264             .      CPJ05........................
                .          V
                .          V
267             .      RCPJ05
                .          .
                .          .
273             .          .         J14
                .          .           .
                .          .           .
280             .      CPJ14A...........
                .          .
                .          .
283             .          .         J25
                .          .           V
                .          .           V
289             .          .      RCPJ25
                .          .           .
                .          .           .
295             .      CPJ14............
                .          V
                .          V
298             .      RCPJ14
                .          .
                .          .
304             .          .         J24
                .          .           V
                .          .           V
310             .          .      RCPJ24
                .          .           .
                .          .           .
316             .          .           .         J23
                .          .           .           .
                .          .           .           .
322             .      CPJ23........................
                .          V
                .          V
325             .      RCPJ23
                .          .
                .          .
331             .          .         J29
                .          .           .
                .          .           .
337             .      CPJ29............
                .          V
                .          V
340             .      RCPJ29
                .          .
                .          .
346             .          .         J43
                .          .           .
                .          .           .
352             .      CPJ43............
                .          .
                .          .
355             .          .         J42
```

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                .          .          .
                .          .          .
361             .          .          .        J41
                .          .          .          .
                .          .          .          .
367        NULL3.......................................
                .
                .
372             .       J04
                .          .
                .          .
381             .          .-------->   DVJ04
378             .      DJ04
                .          V
                .          V
384             .     RCPJ04
                .          .
                .          .
390             .          .        J07
                .          .          .
                .          .          .
396             .     CPJ07............
                .          V
                .          V
399             .     RCPJ07
                .          .
                .          .
405             .          .        J11
                .          .          .
                .          .          .
411             .     CPJ11............
                .          V
                .          V
414             .     RCPJ11
                .          .
                .          .
420             .          .        J16
                .          .          .
                .          .          .
426             .     CPJ16............
                .          .
                .          .
431             .          .          .<-------   DVJ04
429             .          .     DRJ04
                .          .          V
                .          .          V
432             .          .     RDJ04
                .          .          .
                .          .          .
438             .          .          .        J06
                .          .          .          .
                .          .          .          .
444             .          .     CPJ06............
                .          .          V
                .          .          V
447             .          .    RCPJ06
                .          .          .
                .          .          .
453             .          .          .        J10
                .          .          .          .
                .          .          .          .
459             .          .     CPJ10............
                .          .          V
                .          .          V
462             .          .    RCPJ10
                .          .          .
                .          .          .
468             .          .          .        J15
                .          .          .          .
                .          .          .          .
474             .          .    CPJ15A............
                .          .          .
                .          .          .
477             .     CPJ15............
                .          V
                .          V
480             .     RCPJ15
                .          .
                .          .
486             .          .        J08
                .          .          V
                .          .          V
492             .          .    RCPJ08
                .          .          .
```

```
498                J12
                    .
                    .
504          CPJ12.....
                 V
                 V
507         RCPJ12
                    .
                    .
513                J09
                    V
                    V
519            RCPJ09
                    .
                    .
525                .        J13
                    .          .
                    .          .
531           CPJ13.....
                    V
                    V
534            RCPJ13
                    .
                    .
540                .        J17
                    .          .
                    .          .
546          CPJ17.............
                 V
                 V
549         RCPJ17
                    .
                    .
555                J54
                    .
                    .
561          CPJ54.....
                    .
                    .
564                J20
                    .
                    .
570     CPJ20.............
            V
            V
573     RCPJ20
            .
            .
579         J18
              V
              V
585         RCPJ18
                .
                .
591             J21
                  .
                  .
597         CPJ21A.....
                .
                .
600     CPJ21.....
            V
            V
603     RCPJ21
            .
            .
609         J19
              V
              V
615         RCPJ19
                .
                .
621             J22
                  .
                  .
628     CPJ22.............
            V
            V
631     RCPJ22
            .
            .
637         J40
              V
```

```
                    .          .          V
643                 .          .      RCPJ40
                    .          .          .
                    .          .          .
649                 .          .          .          J39
                    .          .          .           .
                    .          .          .           .
656                 .      CPJ39.......................
                    .          .
                    .          .
659                 .          .        J38
                    .          .          .
                    .          .          .
666                 .          .          .          J28
                    .          .          .           .
                    .          .          .           .
673                 .          .          .           .          J27
                    .          .          .           .           .
                    .          .          .           .           .
680                 .          .          .       CPJ27............
                    .          .          .           V
                    .          .          .           V
683                 .          .          .      RCPJ27
                    .          .          .           .
                    .          .          .           .
689                 .          .          .           .          J37
                    .          .          .           .           .
                    .          .          .           .           .
696                 .          .          .       CPJ37............
                    .          .          .           .
                    .          .          .           .
699                 .          .          .           .          J36
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

TIME OF STAGE +	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	MAX
+	HYDROGRAPH AT	J26	1045.	12.00	121.	40.	19.	.51		
+	ROUTED TO	RCPJ26	613.	12.50	121.	40.	19.	.51		
+	HYDROGRAPH AT	J33	1948.	12.17	261.	81.	39.	1.34		
+	2 COMBINED AT	CPJ33	2367.	12.33	379.	120.	58.	1.86		
+	ROUTED TO	RCPJ33	2265.	12.33	379.	120.	58.	1.86		
+	HYDROGRAPH AT	J34	886.	12.00	94.	30.	15.	.45		
+	2 COMBINED AT	CPJ34	2489.	12.17	471.	150.	72.	2.31		
+	ROUTED TO	RCPJ34	2507.	12.33	471.	150.	72.	2.31		
+	HYDROGRAPH AT	J35	825.	12.00	82.	26.	13.	.40		
+	2 COMBINED AT	CPJ35	3029.	12.17	551.	175.	85.	2.71		
+	HYDROGRAPH AT	J51	507.	12.00	57.	19.	9.	.24		
+	HYDROGRAPH AT	J52	234.	12.00	16.	5.	2.	.09		
+	HYDROGRAPH AT	J50	1159.	12.00	130.	43.	21.	.59		
	HYDROGRAPH AT									

+	J49	443.	12.00	34.	10.	5.	.19
+ 5 COMBINED AT	NULL1	4633.	12.17	783.	250.	121.	3.82
HYDROGRAPH AT	J31	826.	12.17	108.	36.	17.	.45
+ ROUTED TO	RCPJ31	580.	12.50	107.	36.	17.	.45
+ HYDROGRAPH AT	J32	594.	12.17	62.	19.	9.	.32
+ ROUTED TO	RCPJ32	404.	12.50	62.	19.	9.	.32
+ HYDROGRAPH AT	J48	1328.	12.17	150.	44.	21.	.87
+ 3 COMBINED AT	CPJ48	2080.	12.33	316.	98.	48.	1.64
+ HYDROGRAPH AT	J53	121.	12.00	8.	2.	1.	.05
+ ROUTED TO	RCPJ53	41.	12.17	8.	2.	1.	.05
+ HYDROGRAPH AT	J47	758.	12.17	63.	16.	8.	.46
+ 2 COMBINED AT	CPJ47	797.	12.17	71.	19.	9.	.50
+ HYDROGRAPH AT	J30	656.	12.17	82.	27.	13.	.33
+ ROUTED TO	RCPJ30	515.	12.33	81.	27.	13.	.33
HYDROGRAPH AT	J46	883.	12.17	103.	31.	15.	.56
+ 2 COMBINED AT	CPJ46	1276.	12.33	184.	58.	28.	.90
+ HYDROGRAPH AT	J45	711.	12.00	59.	18.	8.	.34
+ HYDROGRAPH AT	J44	407.	12.00	21.	5.	3.	.17
+ 6 COMBINED AT	NULL2	8914.	12.17	1420.	444.	215.	7.38
+ HYDROGRAPH AT	J03	3758.	12.17	406.	125.	60.	2.17
+ ROUTED TO	RCPJ03	2885.	12.33	406.	124.	60.	2.17
+ HYDROGRAPH AT	J02	2581.	12.33	358.	110.	53.	1.94
+ 2 COMBINED AT	CPJ02	5436.	12.33	760.	233.	112.	4.11
+ ROUTED TO	RCPJ02	5434.	12.33	760.	233.	112.	4.11
+ HYDROGRAPH AT	J01	4145.	12.33	633.	207.	100.	2.79
+ ROUTED TO	RCPJ01	3529.	12.50	631.	207.	100.	2.79
HYDROGRAPH AT	J05	402.	12.33	39.	10.	5.	.32
+ 3 COMBINED AT	CPJ05	8656.	12.33	1420.	447.	216.	7.22
ROUTED TO							

+	RCPJ05	6275.	13.00	1419.	446.	216.	7.22
HYDROGRAPH AT +	J14	2550.	12.33	385.	117.	56.	2.13
2 COMBINED AT +	CPJ14A	7048.	12.83	1795.	560.	271.	9.35
HYDROGRAPH AT +	J25	887.	12.17	124.	41.	20.	.52
ROUTED TO +	RCPJ25	842.	12.33	124.	41.	20.	.52
2 COMBINED AT +	CPJ14	7165.	12.83	1915.	599.	291.	9.88
ROUTED TO +	RCPJ14	6863.	13.00	1914.	599.	291.	9.88
HYDROGRAPH AT +	J24	463.	12.00	30.	8.	4.	.19
ROUTED TO +	RCPJ24	357.	12.00	30.	8.	4.	.19
HYDROGRAPH AT +	J23	538.	12.17	63.	19.	9.	.33
3 COMBINED AT +	CPJ23	6873.	13.00	2000.	623.	303.	10.39
ROUTED TO +	RCPJ23	6538.	13.17	1999.	623.	303.	10.39
HYDROGRAPH AT +	J29	2697.	12.33	374.	117.	56.	1.85
2 COMBINED AT +	CPJ29	6659.	13.17	2340.	729.	355.	12.24
ROUTED TO +	RCPJ29	6514.	13.17	2339.	728.	355.	12.24
HYDROGRAPH AT +	J43	965.	12.17	95.	28.	14.	.55
2 COMBINED AT +	CPJ43	6515.	13.17	2423.	753.	367.	12.79
HYDROGRAPH AT +	J42	481.	12.00	34.	10.	5.	.20
HYDROGRAPH AT +	J41	431.	12.00	28.	8.	4.	.18
4 COMBINED AT +	NULL3	12429.	12.17	3756.	1169.	570.	20.55
HYDROGRAPH AT +	J04	724.	12.17	55.	14.	7.	.41
DIVERSION TO +	DVJ04	152.	12.17	7.	2.	1.	.41
HYDROGRAPH AT +	DJ04	573.	12.17	48.	12.	6.	.41
ROUTED TO +	RCPJ04	361.	12.67	48.	12.	6.	.41
HYDROGRAPH AT +	J07	650.	12.17	52.	13.	6.	.45
2 COMBINED AT +	CPJ07	724.	12.17	100.	25.	12.	.87
ROUTED TO +	RCPJ07	546.	12.67	100.	25.	12.	.87
HYDROGRAPH AT +	J11	414.	12.00	29.	7.	4.	.25
2 COMBINED AT							

+	CPJ11	650.	12.17	128.	32.	15.	1.12
ROUTED TO +	RCPJ11	492.	13.33	128.	32.	15.	1.12
HYDROGRAPH AT	J16	481.	12.17	39.	10.	5.	.29
2 COMBINED AT +	CPJ16	519.	12.17	165.	42.	20.	1.40
HYDROGRAPH AT +	DRJ04	152.	12.17	7.	2.	1.	.41
ROUTED TO +	RDJ04	59.	12.50	7.	2.	1.	.41
HYDROGRAPH AT +	J06	567.	12.17	41.	10.	5.	.35
2 COMBINED AT +	CPJ06	567.	12.17	48.	12.	6.	.76
ROUTED TO +	RCPJ06	374.	12.50	48.	12.	6.	.76
HYDROGRAPH AT +	J10	474.	12.17	34.	9.	4.	.29
2 COMBINED AT +	CPJ10	701.	12.17	82.	20.	10.	1.06
ROUTED TO +	RCPJ10	426.	12.83	81.	20.	10.	1.06
HYDROGRAPH AT +	J15	844.	12.17	92.	25.	12.	.61
2 COMBINED AT +	CPJ15A	990.	12.33	171.	45.	22.	1.67
2 COMBINED AT	CPJ15	1391.	12.17	334.	87.	42.	2.66
ROUTED TO +	RCPJ15	1287.	12.50	334.	87.	42.	2.66
HYDROGRAPH AT +	J08	300.	12.00	23.	6.	3.	.17
ROUTED TO +	RCPJ08	180.	12.50	23.	6.	3.	.17
HYDROGRAPH AT +	J12	731.	12.17	55.	14.	7.	.47
2 COMBINED AT +	CPJ12	794.	12.17	78.	20.	9.	.64
ROUTED TO +	RCPJ12	547.	12.50	78.	20.	9.	.64
HYDROGRAPH AT +	J09	345.	12.00	25.	6.	3.	.20
ROUTED TO +	RCPJ09	203.	12.50	25.	6.	3.	.20
HYDROGRAPH AT +	J13	641.	12.33	62.	15.	7.	.52
2 COMBINED AT +	CPJ13	781.	12.33	86.	21.	10.	.72
ROUTED TO +	RCPJ13	569.	12.67	86.	21.	10.	.72
HYDROGRAPH AT	J17	689.	12.17	56.	14.	7.	.47
3 COMBINED AT +	CPJ17	1365.	12.33	217.	54.	26.	1.82
ROUTED TO							

+	RCPJ17	1125.	12.67	216.	54.	26.	1.82
+ HYDROGRAPH AT	J54	261.	12.17	21.	5.	3.	.15
+ 2 COMBINED AT	CPJ54	1133.	12.67	236.	60.	29.	1.97
+ HYDROGRAPH AT	J20	1098.	12.17	117.	36.	17.	.55
+ 3 COMBINED AT	CPJ20	2395.	12.50	678.	180.	87.	5.19
+ ROUTED TO	RCPJ20	2490.	12.33	678.	180.	87.	5.19
+ HYDROGRAPH AT	J18	1071.	12.33	110.	28.	14.	.87
+ ROUTED TO	RCPJ18	899.	12.50	110.	28.	14.	.87
+ HYDROGRAPH AT	J21	273.	12.33	32.	9.	4.	.20
+ 2 COMBINED AT	CPJ21A	1053.	12.50	141.	37.	18.	1.07
+ 2 COMBINED AT	CPJ21	3496.	12.33	815.	216.	104.	6.25
+ ROUTED TO	RCPJ21	3027.	12.83	815.	216.	104.	6.25
+ HYDROGRAPH AT	J19	159.	12.17	12.	3.	2.	.10
+ ROUTED TO	RCPJ19	60.	13.17	12.	3.	2.	.10
+ HYDROGRAPH AT	J22	1661.	12.67	317.	95.	46.	1.69
+ 3 COMBINED AT	CPJ22	4385.	12.83	1135.	313.	151.	8.04
+ ROUTED TO	RCPJ22	3841.	13.33	1134.	312.	151.	8.04
+ HYDROGRAPH AT	J40	1577.	12.17	161.	47.	23.	.90
+ ROUTED TO	RCPJ40	1570.	12.17	161.	47.	23.	.90
+ HYDROGRAPH AT	J39	1084.	12.50	150.	41.	20.	.98
+ 3 COMBINED AT	CPJ39	3946.	13.33	1430.	398.	193.	9.91
+ HYDROGRAPH AT	J38	2303.	12.33	312.	85.	41.	2.06
+ HYDROGRAPH AT	J28	1114.	12.50	163.	47.	23.	.96
+ HYDROGRAPH AT	J27	1431.	12.67	225.	59.	29.	1.50
+ 2 COMBINED AT	CPJ27	2475.	12.50	386.	105.	51.	2.46
+ ROUTED TO	RCPJ27	2338.	12.67	386.	105.	51.	2.46
+ HYDROGRAPH AT	J37	863.	12.50	112.	29.	14.	.81
+ 2 COMBINED AT	CPJ37	3167.	12.50	496.	134.	64.	3.26
HYDROGRAPH AT							

+	J36	707.	12.33	80.	21.	10.	.53

*** NORMAL END OF HEC-1 ***