Letter of Map Revision Request
for
Buchanan Wash
(Additional Data)

City of Phoenix

November, 2003

City of Phoenix

November 21, 2003

Andrea L. Ryon, P.E. Director
Engineering Division
Michael Baker Jr., Inc.
3601 Eisenhower Avenue
Suite 600
Alexandria, Virginia 22304-6425

IN REPLY TO:
Case No.: 02-09-290P
Community: City of Phoenix, AZ
Community No.: 0400541

316-AD

Attention: Sacha TOHME, CFM, Civil Associate

Dear Ms. Ryon:

This is a follow-up of a previous submittal, dated June 5, 2003, on the above-mentioned application regarding additional data to complete the review of the above-mentioned request to issue a revision to the Flood Insurance Rate Map (FIRM) for Maricopa County, Arizona and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	LOMR Request for Buchanan Wash
Flooding Source:	Buchanan Wash
FIRM Panel(s) Affected:	04013C1185 G

The items are included with this correspondence

ITEM

1. Combined HEC-RAS hydraulic analysis including Riordan Ranch modifications (this file was sent to Sacha Tohme via email on October 31, 2003).

2. A copy of hard copy input and output files.

3. A revised work map.

Should you have further questions in this regard, please do not hesitate to contact Mr. Garth Bowers, P.E., EMCON/OWT, Inc., 305 S. Euclid Avenue, Suite 101, Tucson, Arizona 85719-6649, Telephone (520) 792-2800. If you have any other questions, please contact this office at (602)-262-4960.

Sincerely,

Hasan Mushtaq, Ph.D., P.E., CFM
Floodplain Manager

Cc: Garth Bowers, P.E.
EMCON/OWT, Inc.

Tim Murphy, P.E., CFM
Flood Control District of Maricopa County

Brian Cosson
NFIP Coordinator
ADWR

Ken Tarr, P.E.
RBF Consulting

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X      XXX  XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
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PROJECT DATA
Project Title: Buchanan Wash with Riordan Ranch X-Secs
Project File : Buchanan_Riordan.prj
Run Date and Time: 10/29/2003 8:21:26 AM

Project in English units

Project Description:
Buchanan Wash LOMR
Tetra Tech, Inc. ISG May 2001

This model is
using the Riordan Ranch Cross Sections developed by RBF. Station numbers were re-numbered to match Tetra Tech's existing nomenclature. The new RS used from RBF are from 1.417 to 0.707. Last Modeling: EMCON 10/23/2003

As a result
of the construction of the Skunk Creek Landfill, the natural drainage pattern for Buchanan Wash was altered significantly. Several new cross-sections below the current effective FIS were input to more accurately model the confluence of Buchanan and Skunk Creek. With the new mapping, the effective FIS cross-sections were recut with new topographic mapping in their former locations and renumbered. Additional cross-sectios were added in locations of interest as necessary.

Starting WSEL
The initial boundary condition is the
normal slope area method.

Encroachments
Method 4 was used to initially
place the encroachments. From this point, the existing FIS encroachments were matched using Method 1. Then further Method 1 adjustments were made to model the changes along the watercourse and smooth the floodway.

PLAN DATA

Plan Title: Plan 04
Plan File : C:\Projects\skunk\LoMR\Buchanan_Riordan.p04

Geometry Title: Buchanan Wash Geometry - combined
Geometry File : C:\Projects\skunk\LoMR\Buchanan_Riordan.g05

Flow Title : Buchanan Discharge
Flow File : C:\Projects\skunk\LoMR\Buchanan_Riordan.f02

Plan Summary Information:

Number of:	Cross Sections =	43	Mulitple Openings =	0
	Culverts =	2	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information

Water surface calculation tolerance =	0.01
Critical depth calculaton tolerance =	0.01
Maximum number of interations =	20
Maximum difference tolerance =	0.3
Flow tolerance factor =	0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

FLOW DATA

Flow Title: Buchanan Discharge
Flow File : C:\Projects\skunk\LoMR\Buchanan_Riordan.f02

Flow Data (cfs)

River	Reach	RS	10-yr	50-yr	100-yr	500-yr
Buchanan Wash	Buchanan Wash	1.935	1065	1253	1308	1407
Buchanan Wash	Buchanan Wash	1.766	1175	1467	1609	1958
Buchanan Wash	Buchanan Wash	1.184	1422	2005	2304	3067

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Buchanan Wash	Buchanan Wash	10-yr		Normal S = 0.003
Buchanan Wash	Buchanan Wash	50-yr		Normal S = 0.003

GEOMETRY DATA

Geometry Title: Buchanan Wash Geometry - combined
Geometry File : C:\Projects\skunk\LoMR\Buchanan_Riordan.g05

CROSS SECTION

```
RIVER: Buchanan Wash
REACH: Buchanan Wash       RS: 1.935

INPUT
Description: 1.935  Adjacent to CAP bank
Station Elevation Data    num=     146
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9703.081497.0179705.6321496.9269705.8391496.9199717.2991496.8229724.5131496.761
9724.7931496.7589725.8181496.7469734.4291496.9369741.2351497.0869742.7321497.087
9751.9591497.2929755.2751497.3729763.835    14969776.2031495.8449778.1011495.781
9778.4891495.7829790.404    14969795.1221496.6039798.0381496.5529806.4871496.404
9807.977    14969818.5471495.6599830.241 1495.599838.0841495.6089848.1361495.841
9848.4161495.8479848.6431495.8539849.5071495.892 9863.451495.8289864.1211495.843
9865.3651495.8459874.8531495.8149875.4261495.817 9891.691495.7949891.8991495.796
9903.736    14969905.305    1496 9909.281496.4749909.8151496.4719914.4871496.576
9920.7971496.9679926.5981497.1489937.2491497.1649939.6791497.3119941.2561497.419
9941.7731497.4199947.0661497.6299955.1711497.2819957.476 1497.129964.1051496.954
9966.5851496.9729973.076    14969977.3741495.0379981.998    14949987.3071493.448
10001.74    149210002.83    149210015.761493.54910020.09    149410020.891494.174
10029.51    149610036.331496.70110048.731497.173 10049.81497.17810057.911497.168
10071.38    149610074.281495.49210077.651495.52810079.291495.54610080.131495.529
10092.041495.42710100.631495.45110101.011495.45410116.67    149610116.79    1496
10116.92    149610135.23    149610146.83    149610146.92    149610147.06    1496
10151.34    149610155.94    149610174.491497.28110176.041496.79710180.451496.865
10183.57    149610187.15    149610188.68    149610190.35    149610193.211496.488
10193.521496.48810205.761497.52310225.331497.28410227.321497.34310232.471497.446
10232.941497.44710262.291497.70510263.391497.723 10264.71497.77110283.091497.764
10292.81    149810311.78    149810312.41    1498 10324.8    149810326.85    1498
10339.86    149810340.33    149810354.27    149810365.62    149810365.92    1498
10367.41    149810372.77    149810377.251498.265 10380.91498.03610390.361498.222
10391.971498.20110396.471498.693 10399.91498.61310401.58 1498.5510401.911498.549
 10409.71499.21110414.631499.41810425.231499.28410433.511499.264   10445 1499.35
10459.63    150010463.83    150010464.36    150010473.74    150010484.66    1500
10485.61    150010490.77    1500 10496.1    150010499.35    150010500.66    1500
10502.47    150010503.11    1500 10504.5 1500.0510512.571500.18210513.131500.198
10514.531500.26210520.471500.46710524.921500.80610534.36    150210536.08    1502
10538.13    1502

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9703.08    .0559966.585    .05510048.73    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9966.58510048.73                70  100.93    100              .1       .3
Blocked Obstructions      num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
 9703.089947.0661497.629 10049.810538.13 1497.17

CROSS SECTION OUTPUT  Profile #10-yr

  E.G. Elev (ft)          1496.98    Element                    Left OB    Channel   Right OB
  Vel Head (ft)              1.14    Wt. n-Val.                            0.055
  W.S. Elev (ft)          1495.83    Reach Len. (ft)             70.00     100.93     100.00
  Crit W.S. (ft)          1495.83    Flow Area (sq ft)                     124.17
  E.G. Slope (ft/ft)     0.034467    Area (sq ft)                          124.17
  Q Total (cfs)           1065.00    Flow (cfs)                           1065.00
  Top Width (ft)            54.91    Top Width (ft)                         54.91
  Vel Total (ft/s)           8.58    Avg. Vel. (ft/s)                        8.58
  Max Chl Dpth (ft)          3.83    Hydr. Depth (ft)                        2.26
  Conv. Total (cfs)         5736.5    Conv. (cfs)                          5736.5
```

Length Wtd. (ft)	91.82	Wetted Per. (ft)		55.52	
Min Ch El (ft)	1492.00	Shear (lb/sq ft)		4.81	
Alpha	1.00	Stream Power (lb/ft s)		41.27	
Frctn Loss (ft)	0.55	Cum Volume (acre-ft)	47.48	60.00	25.50
C & E Loss (ft)	0.32	Cum SA (acres)	29.16	12.72	23.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #50-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1497.36				
Vel Head (ft)	1.22	Wt. n-Val.		0.055	
W.S. Elev (ft)	1496.14	Reach Len. (ft)	70.00	100.93	100.00
Crit W.S. (ft)	1496.14	Flow Area (sq ft)		141.29	
E.G. Slope (ft/ft)	0.033896	Area (sq ft)		141.29	
Q Total (cfs)	1253.00	Flow (cfs)		1253.00	
Top Width (ft)	58.69	Top Width (ft)		58.69	
Vel Total (ft/s)	8.87	Avg. Vel. (ft/s)		8.87	
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)		2.41	
Conv. Total (cfs)	6805.7	Conv. (cfs)		6805.7	
Length Wtd. (ft)	91.36	Wetted Per. (ft)		59.35	
Min Ch El (ft)	1492.00	Shear (lb/sq ft)		5.04	
Alpha	1.00	Stream Power (lb/ft s)		44.67	
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	60.03	68.01	35.35
C & E Loss (ft)	0.34	Cum SA (acres)	35.28	12.88	28.56

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
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Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1497.46				
Vel Head (ft)	1.22	Wt. n-Val.		0.055	
W.S. Elev (ft)	1496.24	Reach Len. (ft)	70.00	100.93	100.00
Crit W.S. (ft)	1496.24	Flow Area (sq ft)		147.46	
E.G. Slope (ft/ft)	0.033272	Area (sq ft)		147.46	
Q Total (cfs)	1308.00	Flow (cfs)		1308.00	
Top Width (ft)	60.39	Top Width (ft)		60.39	
Vel Total (ft/s)	8.87	Avg. Vel. (ft/s)		8.87	
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)		2.44	

Conv. Total (cfs)	7170.9	Conv. (cfs)		7170.9	
Length Wtd. (ft)	91.25	Wetted Per. (ft)		61.07	
Min Ch El (ft)	1492.00	Shear (lb/sq ft)		5.02	
Alpha	1.00	Stream Power (lb/ft s)		44.49	
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	66.93	71.61	40.48
C & E Loss (ft)	0.34	Cum SA (acres)	37.88	12.94	29.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1497.64	Element			
Vel Head (ft)	1.25	Wt. n-Val.		0.055	
W.S. Elev (ft)	1496.39	Reach Len. (ft)	70.00	100.93	100.00
Crit W.S. (ft)	1496.39	Flow Area (sq ft)		156.83	
E.G. Slope (ft/ft)	0.033086	Area (sq ft)		156.83	
Q Total (cfs)	1407.00	Flow (cfs)		1407.00	
Top Width (ft)	62.88	Top Width (ft)		62.88	
Vel Total (ft/s)	8.97	Avg. Vel. (ft/s)		8.97	
Max Chl Dpth (ft)	4.39	Hydr. Depth (ft)		2.49	
Conv. Total (cfs)	7735.3	Conv. (cfs)		7735.3	
Length Wtd. (ft)	91.08	Wetted Per. (ft)		63.58	
Min Ch El (ft)	1492.00	Shear (lb/sq ft)		5.10	
Alpha	1.00	Stream Power (lb/ft s)		45.71	
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	86.50	80.05	56.27
C & E Loss (ft)	0.35	Cum SA (acres)	43.09	13.01	35.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.916

INPUT
Description: 2.200
Station Elevation Data num= 117

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
 9599.361502.6099603.768    15029604.5731501.8899605.8131501.7179606.8891501.376
9610.5471500.2159614.986    15009617.171    15009622.569 1499.859622.6141499.848
9633.184 1499.549638.4451499.3649646.8371499.2419658.322    14989666.1691497.487
9667.401 1497.37    96681497.3299673.3531496.9789674.1671496.925  9682.91496.615
9683.9991496.6159684.3051496.6079688.833    14969688.908    14969725.9371494.901
9735.8721494.7669736.0661494.7639742.2221494.6989749.4161494.5569753.0671494.516
 9785.811494.2289788.5461494.167 9792.57    14949796.213    14949798.313    1494
9801.201    14949835.584    14949837.106    14949840.883    14949842.035    1494
9843.942    14949846.086    14949857.892    14949862.302    1494 9863.56    1494
9875.441    1494 9875.93    1494 9876.15    1494 9876.99    14949877.374    1494
9907.028    14949918.926    14949921.588    1494 9935.35    14949963.935    1494
9964.791    14949965.117    14949979.543    14949986.288    14949990.9931493.123
 9993.53 1492.659994.8861492.3459996.425    1492   10000    149210001.88    1492
10027.37    149210031.331493.31710033.39    1494 10039.21495.92910039.41    1496
10039.791496.06310050.371497.39810052.99    149810062.21    149810063.24    1498
10066.33    149810072.481496.07810072.73    149610078.98    149610127.75    1496
10128.88    149610135.37    1496 10137.9    149610140.67    149610152.11    1496
10158.65    149610167.29    149610169.72    149610193.56    149610195.42    1496
10199.61    149610204.44    149610214.96    1496 10225.5    149610246.971496.938
10251.59 1496.9910267.741497.45810268.361497.47910284.62    1498 10285.2    1498
10288.631498.26210292.791498.62710303.281499.53310309.95    150010316.081500.542
10321.25 1501.0510330.93    150210337.381502.68810359.831505.07210367.99    1506
10371.461506.40710371.711506.43610372.071506.47210372.581506.52910384.84    1508
10396.431509.39110398.52 1509.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9599.36    .0559986.288    .05510033.39    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9986.28810033.39              230   389.3     380              .1       .3

CROSS SECTION OUTPUT  Profile #10-yr

  E.G. Elev (ft)           1495.66    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.08    Wt. n-Val.                0.055      0.055      0.055
  W.S. Elev (ft)           1495.58    Reach Len. (ft)          230.00     389.30     380.00
  Crit W.S. (ft)                      Flow Area (sq ft)        387.21     152.15       3.77
  E.G. Slope (ft/ft)      0.002368    Area (sq ft)             387.21     152.15       3.77
  Q Total (cfs)            1065.00    Flow (cfs)               626.96     433.95       4.09
  Top Width (ft)            335.16    Top Width (ft)           283.29      47.10       4.77
  Vel Total (ft/s)            1.96    Avg. Vel. (ft/s)           1.62       2.85       1.09
  Max Chl Dpth (ft)           3.58    Hydr. Depth (ft)           1.37       3.23       0.79
  Conv. Total (cfs)        21885.0    Conv. (cfs)              12883.6     8917.3       84.1
  Length Wtd. (ft)          335.13    Wetted Per. (ft)         283.31      47.62       5.02
  Min Ch El (ft)           1492.00    Shear (lb/sq ft)           0.20       0.47       0.11
  Alpha                       1.26    Stream Power (lb/ft s)     0.33       1.35       0.12
  Frctn Loss (ft)             1.45    Cum Volume (acre-ft)      47.17      59.68      25.49
  C & E Loss (ft)             0.04    Cum SA (acres)            28.93      12.60      23.07

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT  Profile #50-yr

  E.G. Elev (ft)           1495.89    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.08    Wt. n-Val.                0.055      0.055      0.055
  W.S. Elev (ft)           1495.81    Reach Len. (ft)          230.00     389.30     380.00
```

Crit W.S. (ft)		Flow Area (sq ft)	452.12	162.80	4.92
E.G. Slope (ft/ft)	0.002237	Area (sq ft)	452.12	162.80	4.92
Q Total (cfs)	1253.00	Flow (cfs)	775.18	472.14	5.68
Top Width (ft)	343.46	Top Width (ft)	290.91	47.10	5.45
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)	1.71	2.90	1.15
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.55	3.46	0.90
Conv. Total (cfs)	26489.6	Conv. (cfs)	16388.0	9981.5	120.1
Length Wtd. (ft)	332.12	Wetted Per. (ft)	290.93	47.62	5.74
Min Ch El (ft)	1492.00	Shear (lb/sq ft)	0.22	0.48	0.12
Alpha	1.22	Stream Power (lb/ft s)	0.37	1.38	0.14
Frctn Loss (ft)	1.46	Cum Volume (acre-ft)	59.67	67.65	35.35
C & E Loss (ft)	0.05	Cum SA (acres)	35.05	12.76	28.56

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1495.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1495.87	Reach Len. (ft)	230.00	389.30	380.00
Crit W.S. (ft)		Flow Area (sq ft)	470.44	165.76	5.27
E.G. Slope (ft/ft)	0.002207	Area (sq ft)	470.44	165.76	5.27
Q Total (cfs)	1308.00	Flow (cfs)	818.62	483.20	6.18
Top Width (ft)	345.76	Top Width (ft)	293.02	47.10	5.63
Vel Total (ft/s)	2.04	Avg. Vel. (ft/s)	1.74	2.92	1.17
Max Chl Dpth (ft)	3.87	Hydr. Depth (ft)	1.61	3.52	0.94
Conv. Total (cfs)	27842.0	Conv. (cfs)	17425.2	10285.3	131.5
Length Wtd. (ft)	331.39	Wetted Per. (ft)	293.05	47.62	5.94
Min Ch El (ft)	1492.00	Shear (lb/sq ft)	0.22	0.48	0.12
Alpha	1.21	Stream Power (lb/ft s)	0.38	1.40	0.14
Frctn Loss (ft)	1.46	Cum Volume (acre-ft)	66.55	71.25	40.47
C & E Loss (ft)	0.05	Cum SA (acres)	37.65	12.81	29.86

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1496.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1495.97	Reach Len. (ft)	230.00	389.30	380.00
Crit W.S. (ft)		Flow Area (sq ft)	500.52	170.56	5.86
E.G. Slope (ft/ft)	0.002184	Area (sq ft)	500.52	170.56	5.86
Q Total (cfs)	1407.00	Flow (cfs)	895.85	504.06	7.08
Top Width (ft)	349.50	Top Width (ft)	296.46	47.10	5.94
Vel Total (ft/s)	2.08	Avg. Vel. (ft/s)	1.79	2.96	1.21
Max Chl Dpth (ft)	3.97	Hydr. Depth (ft)	1.69	3.62	0.99
Conv. Total (cfs)	30110.4	Conv. (cfs)	19171.6	10787.2	151.6
Length Wtd. (ft)	329.90	Wetted Per. (ft)	296.49	47.62	6.26
Min Ch El (ft)	1492.00	Shear (lb/sq ft)	0.23	0.49	0.13
Alpha	1.20	Stream Power (lb/ft s)	0.41	1.44	0.15
Frctn Loss (ft)	1.44	Cum Volume (acre-ft)	86.10	79.67	56.26

C & E Loss (ft)	0.05	Cum SA (acres)	42.85	12.88	35.75

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.842

INPUT
Description: 2.121
Station Elevation Data num= 85

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9611.04	1508.151	9612.898	1507.592	9614.711	1507.048	9618.199	1506	9619.925	1505.482
9621.572	1504.987	9624.805	1504	9638.502	1503.219	9650.949	1502	9653.173	1501.975
9660.049	1501.885	9762.897	1500.628	9773.102	1500.52	9800.527	1500	9832.442	1499.101
9847.302	1498.735	9865.33	1498.441	9887.345	1498	9893.71	1497.674	9896.999	1497.511
9910.36	1496.803	9916.749	1496.466	9919.009	1496.339	9925.591	1496	9930.759	1495.405
9939.232	1494.399	9942.511	1494	9946.105	1493.806	9982.894	1492	9986.17	1492
9989.889	1491.649	9991.873	1491.435	10000	1490.511	10004.37	1490	10007.07	1490
10012.54	1490	10024.33	1490	10028.85	1490.79	10030.89	1491.158	10031.56	1491.29
10035.16	1492	10035.54	1492	10042.06	1492.298	10061	1493.098	10090.47	1494
10114.21	1495.483	10123.35	1496	10126.79	1496	10145.18	1496	10147.39	1495.969
10166.79	1495.721	10199.97	1495.284	10254.75	1496	10261.98	1496	10265.11	1494
10266.57	1494	10268.64	1494	10270.71	1493.959	10396.38	1493.871	10404.23	1494
10405.19	1494	10407.22	1494.184	10408.55	1494.305	10411.43	1494.582	10421.52	1495.579
10423.07	1495.69	10427.2	1496	10442.5	1496.567	10457.46	1497.083	10462.46	1497.279
10466.47	1497.421	10467.15	1497.445	10480.33	1498	10488.51	1499.251	10493.31	1500
10509.83	1501.717	10512.98	1502	10525.32	1503.264	10531.9	1504	10538.41	1505.213
10540.25	1505.543	10542.38	1505.926	10543.31	1506.082	10545.1	1506.331	10553.76	1507.614

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9611.04	.055	9986.17	.055	10035.16	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.17	10035.16	400	401.78	430	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1494.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1493.71	Reach Len. (ft)	400.00	401.78	430.00
Crit W.S. (ft)		Flow Area (sq ft)	35.23	152.16	35.93
E.G. Slope (ft/ft)	0.010393	Area (sq ft)	35.23	152.16	35.93
Q Total (cfs)	1065.00	Flow (cfs)	92.16	888.58	84.26
Top Width (ft)	132.72	Top Width (ft)	38.03	48.99	45.71
Vel Total (ft/s)	4.77	Avg. Vel. (ft/s)	2.62	5.84	2.34
Max Chl Dpth (ft)	3.71	Hydr. Depth (ft)	0.93	3.11	0.79
Conv. Total (cfs)	10446.7	Conv. (cfs)	904.0	8716.2	826.5
Length Wtd. (ft)	408.24	Wetted Per. (ft)	38.07	49.28	45.74
Min Ch El (ft)	1490.00	Shear (lb/sq ft)	0.60	2.00	0.51
Alpha	1.30	Stream Power (lb/ft s)	1.57	11.70	1.20
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)	46.05	58.32	25.32

C & E Loss (ft)	0.10	Cum SA (acres)	28.09	12.17	22.85

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1494.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1493.82	Reach Len. (ft)	400.00	401.78	430.00
Crit W.S. (ft)		Flow Area (sq ft)	39.70	157.74	41.35
E.G. Slope (ft/ft)	0.012280	Area (sq ft)	39.70	157.74	41.35
Q Total (cfs)	1253.00	Flow (cfs)	117.53	1025.62	109.86
Top Width (ft)	138.74	Top Width (ft)	40.32	48.99	49.43
Vel Total (ft/s)	5.25	Avg. Vel. (ft/s)	2.96	6.50	2.66
Max Chl Dpth (ft)	3.82	Hydr. Depth (ft)	0.98	3.22	0.84
Conv. Total (cfs)	11307.3	Conv. (cfs)	1060.6	9255.3	991.4
Length Wtd. (ft)	408.70	Wetted Per. (ft)	40.37	49.28	49.46
Min Ch El (ft)	1490.00	Shear (lb/sq ft)	0.75	2.45	0.64
Alpha	1.31	Stream Power (lb/ft s)	2.23	15.95	1.70
Frctn Loss (ft)	2.30	Cum Volume (acre-ft)	58.37	66.22	35.15
C & E Loss (ft)	0.14	Cum SA (acres)	34.18	12.33	28.32

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1494.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1493.85	Reach Len. (ft)	400.00	401.78	430.00
Crit W.S. (ft)	1493.47	Flow Area (sq ft)	40.90	159.19	42.82
E.G. Slope (ft/ft)	0.012849	Area (sq ft)	40.90	159.19	42.82
Q Total (cfs)	1308.00	Flow (cfs)	125.20	1065.20	117.60
Top Width (ft)	140.25	Top Width (ft)	40.87	48.99	50.39
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	3.06	6.69	2.75
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)	1.00	3.25	0.85
Conv. Total (cfs)	11539.4	Conv. (cfs)	1104.5	9397.3	1037.5
Length Wtd. (ft)	408.94	Wetted Per. (ft)	40.92	49.28	50.43
Min Ch El (ft)	1490.00	Shear (lb/sq ft)	0.80	2.59	0.68
Alpha	1.31	Stream Power (lb/ft s)	2.45	17.34	1.87
Frctn Loss (ft)	2.19	Cum Volume (acre-ft)	65.20	69.80	40.26
C & E Loss (ft)	0.15	Cum SA (acres)	36.77	12.38	29.61

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1494.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1493.97	Reach Len. (ft)	400.00	401.78	430.00

Crit W.S. (ft)	1493.59	Flow Area (sq ft)	45.72	164.83	55.41
E.G. Slope (ft/ft)	0.012670	Area (sq ft)	45.72	164.83	55.41
Q Total (cfs)	1407.00	Flow (cfs)	144.74	1120.97	141.29
Top Width (ft)	277.82	Top Width (ft)	43.00	48.99	185.83
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	3.17	6.80	2.55
Max Chl Dpth (ft)	3.96	Hydr. Depth (ft)	1.06	3.36	0.30
Conv. Total (cfs)	12499.8	Conv. (cfs)	1285.9	9958.7	1255.2
Length Wtd. (ft)	409.48	Wetted Per. (ft)	43.05	49.28	185.87
Min Ch El (ft)	1490.00	Shear (lb/sq ft)	0.84	2.65	0.24
Alpha	1.38	Stream Power (lb/ft s)	2.66	17.99	0.60
Frctn Loss (ft)	1.98	Cum Volume (acre-ft)	84.65	78.17	56.00
C & E Loss (ft)	0.15	Cum SA (acres)	41.95	12.45	34.92

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.766

INPUT
Description: 2.045
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9461.51	1499.259	543.418	1498	9548.48	1498	9567.832	1498	9581.578	1498
9584.415	1498	9587.5	1498	9589.731	1498	9597.626	1498	9600.765	1498
9610.142	1498	9634.549	1498	9713.152	1496.969	9764.797	1496	9765.388	1496
9827.427	1494.142	9832.273	1494	9832.996	1493.929	9851.416	1492	9871.167	1490.594
9880.905	1490	9885.271	1490	9898.368	1490	9949.75	1490	9957.941	1490
9965.181	1490	9968.293	1490	9971.08	1490	9972.279	1490	9974.012	1490
9977.142	1490	9979.177	1490	9987.15	1490	9988.264	1489.477	9991.744	1488
10000	1488	10009.23	1488	10011.77	1488	10012.83	1488.405	10013.81	1488.778
10015.89	1489.506	10017.31	1490	10021.6	1490	10029.44	1490	10033.91	1490
10036.64	1490	10039.65	1490	10040.94	1490	10044.47	1489.392	10057.95	1488.15
10058.71	1488.085	10059.53	1488	10062.49	1488	10063.51	1488	10066.46	1488.627
10071.87	1489.748	10075.85	1490	10086.13	1490	10087.29	1490	10089.82	1490
10093.09	1490	10149.57	1490.85	10177.34	1491.23	10178.68	1491.25	10225.05	1491.959
10225.43	1491.965	10227.52	1492	10314.73	1493.074	10372.22	1493.611	10384.97	1493.958
10386.57	1494	10391	1494.547	10401.68	1496	10408.93	1497.452	10411.5	1498
10415.16	1498.783	10420.85	1500	10423.51	1500.567	10430.19	1502	10432.35	1502.461
10439.54	1504	10445.02	1505.173	10451.77	1506.618	10454.46	1507.194		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9461.51	.055	9987.15	.055	10017.31	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.15	10017.31	500	508.03	555	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1491.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1491.49	Reach Len. (ft)	500.00	508.03	555.00
Crit W.S. (ft)		Flow Area (sq ft)	175.03	94.97	225.50

E.G. Slope (ft/ft)	0.004084	Area (sq ft)	175.03	94.97	225.50
Q Total (cfs)	1175.00	Flow (cfs)	371.22	346.41	457.37
Top Width (ft)	335.47	Top Width (ft)	128.51	30.16	176.79
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)	2.12	3.65	2.03
Max Chl Dpth (ft)	3.49	Hydr. Depth (ft)	1.36	3.15	1.28
Conv. Total (cfs)	18385.4	Conv. (cfs)	5808.5	5420.2	7156.6
Length Wtd. (ft)	514.10	Wetted Per. (ft)	128.56	30.93	177.11
Min Ch El (ft)	1488.00	Shear (lb/sq ft)	0.35	0.78	0.32
Alpha	1.24	Stream Power (lb/ft s)	0.74	2.86	0.66
Frctn Loss (ft)	2.11	Cum Volume (acre-ft)	45.09	57.18	24.03
C & E Loss (ft)	0.01	Cum SA (acres)	27.32	11.81	21.75

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1491.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1491.84	Reach Len. (ft)	500.00	508.03	555.00
Crit W.S. (ft)		Flow Area (sq ft)	221.01	105.55	291.60
E.G. Slope (ft/ft)	0.003458	Area (sq ft)	221.01	105.55	291.60
Q Total (cfs)	1467.00	Flow (cfs)	491.36	380.14	595.50
Top Width (ft)	363.36	Top Width (ft)	133.44	30.16	199.76
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)	2.22	3.60	2.04
Max Chl Dpth (ft)	3.84	Hydr. Depth (ft)	1.66	3.50	1.46
Conv. Total (cfs)	24947.0	Conv. (cfs)	8355.8	6464.4	10126.8
Length Wtd. (ft)	514.31	Wetted Per. (ft)	133.51	30.93	200.08
Min Ch El (ft)	1488.00	Shear (lb/sq ft)	0.36	0.74	0.31
Alpha	1.19	Stream Power (lb/ft s)	0.79	2.65	0.64
Frctn Loss (ft)	1.95	Cum Volume (acre-ft)	57.17	65.01	33.50
C & E Loss (ft)	0.01	Cum SA (acres)	33.38	11.96	27.09

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1492.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1492.00	Reach Len. (ft)	500.00	508.03	555.00
Crit W.S. (ft)		Flow Area (sq ft)	242.38	110.34	324.14
E.G. Slope (ft/ft)	0.003236	Area (sq ft)	242.38	110.34	324.14
Q Total (cfs)	1609.00	Flow (cfs)	548.26	395.97	664.77
Top Width (ft)	375.79	Top Width (ft)	135.67	30.16	209.96
Vel Total (ft/s)	2.38	Avg. Vel. (ft/s)	2.26	3.59	2.05
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)	1.79	3.66	1.54
Conv. Total (cfs)	28284.6	Conv. (cfs)	9637.9	6960.7	11686.0
Length Wtd. (ft)	514.42	Wetted Per. (ft)	135.74	30.93	210.28
Min Ch El (ft)	1488.00	Shear (lb/sq ft)	0.36	0.72	0.31
Alpha	1.18	Stream Power (lb/ft s)	0.82	2.59	0.64
Frctn Loss (ft)	1.89	Cum Volume (acre-ft)	63.90	68.56	38.45
C & E Loss (ft)	0.01	Cum SA (acres)	35.96	12.02	28.33

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1492.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1492.33	Reach Len. (ft)	500.00	508.03	555.00
Crit W.S. (ft)		Flow Area (sq ft)	287.69	120.30	397.84
E.G. Slope (ft/ft)	0.002983	Area (sq ft)	287.69	120.30	397.84
Q Total (cfs)	1958.00	Flow (cfs)	689.70	439.06	829.23
Top Width (ft)	405.67	Top Width (ft)	138.85	30.16	236.67
Vel Total (ft/s)	2.43	Avg. Vel. (ft/s)	2.40	3.65	2.08
Max Chl Dpth (ft)	4.33	Hydr. Depth (ft)	2.07	3.99	1.68
Conv. Total (cfs)	35847.4	Conv. (cfs)	12627.2	8038.5	15181.8
Length Wtd. (ft)	515.14	Wetted Per. (ft)	138.93	30.93	236.99
Min Ch El (ft)	1488.00	Shear (lb/sq ft)	0.39	0.72	0.31
Alpha	1.16	Stream Power (lb/ft s)	0.92	2.64	0.65
Frctn Loss (ft)	1.79	Cum Volume (acre-ft)	83.12	76.86	53.76
C & E Loss (ft)	0.01	Cum SA (acres)	41.12	12.09	32.83

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.670

INPUT
Description: 1.951
Station Elevation Data num= 72

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     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9429.61496.7869467.767 1496.719503.5921496.4869576.888    14969598.438    1496
9602.473    14969605.481    14969633.8241495.7419663.2241495.5589685.1141495.372
9816.504    14949833.324    14949835.127    14949835.583    14949866.865 1492.93
9892.538    14929892.584    14929901.8351490.9139909.386    14909918.9391488.931
9924.8551488.3099927.282    14889942.1051487.0719944.9911486.9129962.916    1486
9965.668    14869972.966    14869976.019    14869979.006    14869987.351    1486
9991.6711484.6729993.656    14849998.969    1484   10000    148410001.11    1484
10010.07    148410013.581485.06210016.35    148610018.991486.61810024.12    1488
10034.621489.17710042.39    149010042.79    149010043.76    149010053.07    1490
10060.11    149010063.49    149010065.28    149010072.42    1490 10117.2    1490
10159.55    1490   10249 1491.4410254.171491.452 10281.41491.84310283.541491.853
10290.19    149210316.091492.51410352.721493.14310378.741493.56510383.721493.645
10389.421493.72210402.841493.87910409.53    149410443.271495.351 10457.9    1496
 10472.41497.91410472.87    149810479.531499.21410483.81    150010490.571501.126
10495.76    150210509.341503.506
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Manning's n Values num= 3

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     Sta   n Val     Sta   n Val     Sta   n Val
  9429.6    .0559987.351    .05510042.39    .055
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Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9987.35110042.39              510  500.86     490             .1       .3
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CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1489.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.055	0.055	
W.S. Elev (ft)	1489.28	Reach Len. (ft)	510.00	500.86	490.00
Crit W.S. (ft)		Flow Area (sq ft)	170.53	165.92	
E.G. Slope (ft/ft)	0.004127	Area (sq ft)	170.53	165.92	

Q Total (cfs)	1175.00	Flow (cfs)	527.47	647.53	
Top Width (ft)	119.80	Top Width (ft)	71.55	48.26	
Vel Total (ft/s)	3.49	Avg. Vel. (ft/s)	3.09	3.90	
Max Chl Dpth (ft)	5.28	Hydr. Depth (ft)	2.38	3.44	
Conv. Total (cfs)	18291.3	Conv. (cfs)	8211.1	10080.2	
Length Wtd. (ft)	502.49	Wetted Per. (ft)	71.67	49.21	
Min Ch El (ft)	1484.00	Shear (lb/sq ft)	0.61	0.87	
Alpha	1.04	Stream Power (lb/ft s)	1.90	3.39	
Frctn Loss (ft)	2.10	Cum Volume (acre-ft)	43.10	55.66	22.59
C & E Loss (ft)	0.01	Cum SA (acres)	26.17	11.35	20.62

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1489.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.055	0.055	
W.S. Elev (ft)	1489.76	Reach Len. (ft)	510.00	500.86	490.00
Crit W.S. (ft)		Flow Area (sq ft)	205.85	190.13	
E.G. Slope (ft/ft)	0.004165	Area (sq ft)	205.85	190.13	
Q Total (cfs)	1467.00	Flow (cfs)	697.44	769.56	
Top Width (ft)	128.61	Top Width (ft)	75.83	52.78	
Vel Total (ft/s)	3.70	Avg. Vel. (ft/s)	3.39	4.05	
Max Chl Dpth (ft)	5.76	Hydr. Depth (ft)	2.71	3.60	
Conv. Total (cfs)	22732.4	Conv. (cfs)	10807.5	11924.9	
Length Wtd. (ft)	502.63	Wetted Per. (ft)	75.98	53.75	
Min Ch El (ft)	1484.00	Shear (lb/sq ft)	0.70	0.92	
Alpha	1.02	Stream Power (lb/ft s)	2.39	3.72	
Frctn Loss (ft)	2.24	Cum Volume (acre-ft)	54.72	63.28	31.65
C & E Loss (ft)	0.01	Cum SA (acres)	32.18	11.48	25.82

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1490.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.055	0.055	
W.S. Elev (ft)	1489.97	Reach Len. (ft)	510.00	500.86	490.00
Crit W.S. (ft)		Flow Area (sq ft)	222.01	201.46	
E.G. Slope (ft/ft)	0.004184	Area (sq ft)	222.01	201.46	
Q Total (cfs)	1609.00	Flow (cfs)	780.02	828.98	
Top Width (ft)	132.48	Top Width (ft)	77.71	54.77	
Vel Total (ft/s)	3.80	Avg. Vel. (ft/s)	3.51	4.11	
Max Chl Dpth (ft)	5.97	Hydr. Depth (ft)	2.86	3.68	
Conv. Total (cfs)	24875.3	Conv. (cfs)	12059.2	12816.1	
Length Wtd. (ft)	502.68	Wetted Per. (ft)	77.88	55.75	
Min Ch El (ft)	1484.00	Shear (lb/sq ft)	0.74	0.94	
Alpha	1.02	Stream Power (lb/ft s)	2.62	3.88	
Frctn Loss (ft)	2.31	Cum Volume (acre-ft)	61.24	66.74	36.39
C & E Loss (ft)	0.01	Cum SA (acres)	34.73	11.52	26.99

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1490.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1490.38	Reach Len. (ft)	510.00	500.86	490.00
Crit W.S. (ft)		Flow Area (sq ft)	254.67	224.08	49.39
E.G. Slope (ft/ft)	0.004082	Area (sq ft)	254.67	224.08	49.39
Q Total (cfs)	1958.00	Flow (cfs)	940.97	974.66	42.37
Top Width (ft)	277.10	Top Width (ft)	81.13	55.04	140.93
Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)	3.69	4.35	0.86
Max Chl Dpth (ft)	6.38	Hydr. Depth (ft)	3.14	4.07	0.35
Conv. Total (cfs)	30644.8	Conv. (cfs)	14727.2	15254.4	663.1
Length Wtd. (ft)	502.58	Wetted Per. (ft)	81.32	56.02	140.94
Min Ch El (ft)	1484.00	Shear (lb/sq ft)	0.80	1.02	0.09
Alpha	1.16	Stream Power (lb/ft s)	2.95	4.43	0.08
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	80.01	74.85	50.91
C & E Loss (ft)	0.02	Cum SA (acres)	39.85	11.59	30.42

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.575

INPUT
Description: 1.856
Station Elevation Data num= 82

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     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9486.56    14929486.838    14929494.261    14929513.417 1491.929532.5891491.946
9582.936    14929583.304    14929583.318    14929583.321    14929584.706    1492
9594.8841491.9989597.763    14929608.3281492.0089608.3861492.0089656.4951492.129
9679.7971492.0699692.451    14929703.992    14929715.933    14929718.365    1492
9777.8571491.0419791.4151490.7829802.1971490.5579827.477    14909832.851    1490
9859.6771488.5339861.8321488.4039867.103    14889867.852    14889880.3911487.629
9916.5041486.6699941.263    14869965.8071484.2519967.0821484.1669969.577    1484
9970.6291483.6879977.811    14829989.617    14829998.541    1482   10000  1482.5
10001.871483.25310003.86    148410004.331484.02410043.35    148610055.311486.991
10067.27    148810083.361488.71910087.521488.81710095.541489.12310098.891489.255
10104.141489.30210128.271489.51110129.321489.48710138.421489.172 10144.9 1488.95
10153.391488.76410163.361488.31210169.39    148810173.81    1488 10175.3    1488
10223.06    148810228.24    148810233.97    148810242.741487.92810252.74    1488
10274.751488.19310297.321488.46110330.011488.50510342.931488.61210346.361488.664
10385.921489.64110398.13    149010399.01    1490 10399.81490.12310411.83    1492
10421.211493.46310424.65    149410426.471494.28510454.041498.54810458.871499.314
10463.03    150010466.551500.599
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Manning's n Values num= 3

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     Sta   n Val     Sta   n Val     Sta   n Val
 9486.56    .0559969.577    .05510003.86    .055
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Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.57	10003.86	505	505.7	540	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1487.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1487.10	Reach Len. (ft)	505.00	505.70	540.00
Crit W.S. (ft)		Flow Area (sq ft)	81.90	161.50	90.05

E.G. Slope (ft/ft)	0.004230	Area (sq ft)	81.90	161.50	90.05
Q Total (cfs)	1175.00	Flow (cfs)	160.95	788.16	225.88
Top Width (ft)	156.15	Top Width (ft)	69.17	34.28	52.70
Vel Total (ft/s)	3.52	Avg. Vel. (ft/s)	1.97	4.88	2.51
Max Chl Dpth (ft)	5.10	Hydr. Depth (ft)	1.18	4.71	1.71
Conv. Total (cfs)	18066.2	Conv. (cfs)	2474.7	12118.4	3473.1
Length Wtd. (ft)	512.73	Wetted Per. (ft)	69.25	34.89	52.80
Min Ch El (ft)	1482.00	Shear (lb/sq ft)	0.31	1.22	0.45
Alpha	1.43	Stream Power (lb/ft s)	0.61	5.97	1.13
Frctn Loss (ft)	3.10	Cum Volume (acre-ft)	41.63	53.78	22.08
C & E Loss (ft)	0.01	Cum SA (acres)	25.35	10.88	20.33

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1487.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1487.40	Reach Len. (ft)	505.00	505.70	540.00
Crit W.S. (ft)		Flow Area (sq ft)	104.32	171.77	106.38
E.G. Slope (ft/ft)	0.004802	Area (sq ft)	104.32	171.77	106.38
Q Total (cfs)	1467.00	Flow (cfs)	232.11	930.72	304.18
Top Width (ft)	170.98	Top Width (ft)	80.44	34.28	56.26
Vel Total (ft/s)	3.84	Avg. Vel. (ft/s)	2.22	5.42	2.86
Max Chl Dpth (ft)	5.40	Hydr. Depth (ft)	1.30	5.01	1.89
Conv. Total (cfs)	21169.1	Conv. (cfs)	3349.3	13430.4	4389.4
Length Wtd. (ft)	514.40	Wetted Per. (ft)	80.53	34.89	56.36
Min Ch El (ft)	1482.00	Shear (lb/sq ft)	0.39	1.48	0.57
Alpha	1.43	Stream Power (lb/ft s)	0.86	8.00	1.62
Frctn Loss (ft)	3.21	Cum Volume (acre-ft)	52.91	61.20	31.05
C & E Loss (ft)	0.00	Cum SA (acres)	31.26	10.98	25.50

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1487.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1487.52	Reach Len. (ft)	505.00	505.70	540.00
Crit W.S. (ft)		Flow Area (sq ft)	114.60	176.03	113.46
E.G. Slope (ft/ft)	0.005084	Area (sq ft)	114.60	176.03	113.46
Q Total (cfs)	1609.00	Flow (cfs)	269.00	997.52	342.48
Top Width (ft)	177.12	Top Width (ft)	85.11	34.28	57.73
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	2.35	5.67	3.02
Max Chl Dpth (ft)	5.52	Hydr. Depth (ft)	1.35	5.13	1.97
Conv. Total (cfs)	22565.2	Conv. (cfs)	3772.5	13989.6	4803.1
Length Wtd. (ft)	515.05	Wetted Per. (ft)	85.20	34.89	57.84
Min Ch El (ft)	1482.00	Shear (lb/sq ft)	0.43	1.60	0.62
Alpha	1.44	Stream Power (lb/ft s)	1.00	9.08	1.88
Frctn Loss (ft)	3.26	Cum Volume (acre-ft)	59.26	64.57	35.75
C & E Loss (ft)	0.00	Cum SA (acres)	33.78	11.01	26.67

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1488.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1487.80	Reach Len. (ft)	505.00	505.70	540.00
Crit W.S. (ft)		Flow Area (sq ft)	139.91	185.65	130.12
E.G. Slope (ft/ft)	0.005675	Area (sq ft)	139.91	185.65	130.12
Q Total (cfs)	1958.00	Flow (cfs)	368.33	1151.66	438.01
Top Width (ft)	190.35	Top Width (ft)	95.01	34.28	61.05
Vel Total (ft/s)	4.30	Avg. Vel. (ft/s)	2.63	6.20	3.37
Max Chl Dpth (ft)	5.80	Hydr. Depth (ft)	1.47	5.42	2.13
Conv. Total (cfs)	25990.4	Conv. (cfs)	4889.2	15287.1	5814.2
Length Wtd. (ft)	516.33	Wetted Per. (ft)	95.10	34.89	61.18
Min Ch El (ft)	1482.00	Shear (lb/sq ft)	0.52	1.89	0.75
Alpha	1.43	Stream Power (lb/ft s)	1.37	11.70	2.54
Frctn Loss (ft)	3.30	Cum Volume (acre-ft)	77.70	72.50	49.90
C & E Loss (ft)	0.03	Cum SA (acres)	38.82	11.08	29.29

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.479

INPUT
Description: 1.761
Station Elevation Data num= 74

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     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
 9486.18    14889532.129    14889587.464    14889601.325    14889601.809    1488
 9601.88    14889602.6081487.9879648.2261487.2299691.5221486.7489699.7231486.647
9702.1731486.6049703.4381486.5819737.7681486.1299741.2251486.127 9743.191486.127
9743.4521486.1269762.758    14869769.997    14869772.618    14869776.918    1486
9840.026    14869843.143    14869854.567    14869894.082    1486 9914.97    1486
9915.241    14869923.008 1485.259935.777    14849948.907 1482.97 9961.84    1482
9964.531    14829971.744    14829979.602    14829984.1031480.3289985.138    1480
9988.286    1480   10000    1480 10008.2    148010012.121481.303 10014.1    1482
10021.041482.15610023.151482.17710044.06 1482.6110079.841483.17110087.971483.272
10118.461483.46310122.041483.45810198.751483.56510241.951483.94710243.751483.962
 10245.7    148410248.57    148410271.351484.60410274.791484.67610285.941484.802
10290.661484.84610311.961485.17810316.111485.16410323.051485.05810330.421484.838
10334.791484.70210341.611484.59910344.721484.57110356.231484.24910360.38 1484.17
10360.931484.15810367.87    148410370.28    148410371.16    1484 10373.5    1484
10384.83    148410387.83    148410390.451484.06510430.431485.469
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Manning's n Values num= 3

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     Sta   n Val     Sta   n Val     Sta   n Val
 9486.18    .0559979.602    .055 10014.1    .055
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Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.602	10014.1	355	351.78	335	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
10300	10430.43		F

CROSS SECTION OUTPUT Profile #10-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1484.26	Wt. n-Val.	0.055	0.055	0.055
Vel Head (ft)	0.39	Reach Len. (ft)	355.00	351.78	335.00
W.S. Elev (ft)	1483.87	Flow Area (sq ft)	56.40	122.36	137.34
Crit W.S. (ft)		Area (sq ft)	56.40	122.36	137.34
E.G. Slope (ft/ft)	0.009352	Flow (cfs)	178.57	733.91	262.52
Q Total (cfs)	1175.00	Top Width (ft)	42.20	34.50	219.43
Top Width (ft)	296.13	Avg. Vel. (ft/s)	3.17	6.00	1.91
Vel Total (ft/s)	3.72	Hydr. Depth (ft)	1.34	3.55	0.63
Max Chl Dpth (ft)	3.87	Conv. (cfs)	1846.6	7589.2	2714.7
Conv. Total (cfs)	12150.5	Wetted Per. (ft)	42.27	35.18	219.45
Length Wtd. (ft)	346.85	Shear (lb/sq ft)	0.78	2.03	0.37
Min Ch El (ft)	1480.00	Stream Power (lb/ft s)	2.47	12.18	0.70
Alpha	1.80	Cum Volume (acre-ft)	40.83	52.13	20.67
Frctn Loss (ft)	2.03	Cum SA (acres)	24.70	10.48	18.64
C & E Loss (ft)	0.07				

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1484.51	Wt. n-Val.	0.055	0.055	0.055
Vel Head (ft)	0.35	Reach Len. (ft)	355.00	351.78	335.00
W.S. Elev (ft)	1484.15	Flow Area (sq ft)	68.76	132.08	202.81
Crit W.S. (ft)		Area (sq ft)	68.76	132.08	206.84
E.G. Slope (ft/ft)	0.008448	Flow (cfs)	224.92	792.33	449.75
Q Total (cfs)	1467.00	Top Width (ft)	45.40	34.50	272.19
Top Width (ft)	352.09	Avg. Vel. (ft/s)	3.27	6.00	2.22
Vel Total (ft/s)	3.63	Hydr. Depth (ft)	1.51	3.83	0.84
Max Chl Dpth (ft)	4.15	Conv. (cfs)	2447.0	8620.3	4893.2
Conv. Total (cfs)	15960.5	Wetted Per. (ft)	45.48	35.18	240.31
Length Wtd. (ft)	346.20	Shear (lb/sq ft)	0.80	1.98	0.45
Min Ch El (ft)	1480.00	Stream Power (lb/ft s)	2.61	11.88	0.99
Alpha	1.71	Cum Volume (acre-ft)	51.90	59.44	29.11
Frctn Loss (ft)	1.96	Cum SA (acres)	30.53	10.58	23.46
C & E Loss (ft)	0.06				

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1484.62	Wt. n-Val.	0.055	0.055	0.055
Vel Head (ft)	0.34	Reach Len. (ft)	355.00	351.78	335.00
W.S. Elev (ft)	1484.28	Flow Area (sq ft)	74.40	136.31	232.54
Crit W.S. (ft)		Area (sq ft)	74.40	136.31	241.07
E.G. Slope (ft/ft)	0.008085	Flow (cfs)	246.41	816.91	545.68
Q Total (cfs)	1609.00	Top Width (ft)	46.65	34.50	286.16
Top Width (ft)	367.31	Avg. Vel. (ft/s)	3.31	5.99	2.35
Vel Total (ft/s)	3.63	Hydr. Depth (ft)	1.59	3.95	0.95
Max Chl Dpth (ft)	4.28	Conv. (cfs)	2740.4	9085.1	6068.7
Conv. Total (cfs)	17894.1	Wetted Per. (ft)	46.74	35.18	244.93
Length Wtd. (ft)	345.94	Shear (lb/sq ft)	0.80	1.96	0.48
Min Ch El (ft)	1480.00				

Alpha	1.65	Stream Power (lb/ft s)	2.66	11.72	1.12
Frctn Loss (ft)	1.92	Cum Volume (acre-ft)	58.17	62.75	33.55
C & E Loss (ft)	0.05	Cum SA (acres)	33.01	10.61	24.54

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1484.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1484.57	Reach Len. (ft)	355.00	351.78	335.00
Crit W.S. (ft)		Flow Area (sq ft)	88.36	146.32	305.16
E.G. Slope (ft/ft)	0.007248	Area (sq ft)	88.36	146.32	328.36
Q Total (cfs)	1958.00	Flow (cfs)	298.21	870.41	789.38
Top Width (ft)	399.84	Top Width (ft)	49.62	34.50	315.73
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	3.37	5.95	2.59
Max Chl Dpth (ft)	4.57	Hydr. Depth (ft)	1.78	4.24	1.19
Conv. Total (cfs)	22997.9	Conv. (cfs)	3502.7	10223.5	9271.7
Length Wtd. (ft)	345.34	Wetted Per. (ft)	49.72	35.18	255.87
Min Ch El (ft)	1480.00	Shear (lb/sq ft)	0.80	1.88	0.54
Alpha	1.53	Stream Power (lb/ft s)	2.71	11.20	1.40
Frctn Loss (ft)	1.86	Cum Volume (acre-ft)	76.38	70.57	47.06
C & E Loss (ft)	0.04	Cum SA (acres)	37.99	10.68	26.95

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.417

INPUT
Description:
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9489.44	14849497.438		14849512.968		14849518.285		14849522.267		1484
9523.68	14849539.023		14849540.713		1484 9564.2		14849567.169		1484
9594.619	14849604.671		14849621.753		14849704.446		14849713.941		1484
9726.539	14849744.536		14849748.402		14849789.392		14849791.973	1483.971	
9792.157	1483.968	9797.308	14849799.985		14849804.081		1484 9814.48		1484
9819.818	14849821.591		14849837.558		1484 9838.44		14849851.588		1484
9855.874	14849863.081		14849864.931		14849886.974	1482.733	9896.056	1482.68	
9903.299	14829903.553		1482 9911.08	1481.625	9913.147	1481.529	9920.195	1481.226	
9923.939	1481.114	9930.293	1480.983	9974.97	14809989.316		14809990.174		1480
9990.562	1479.765	9994.023	1478 10000		147810011.15		147810014.43		1478
10015.13	1478.284	10019.36	148010019.49		148010043.29		148010073.92		1480
10094.75	148010100.53		148010104.65		148010107.06		148010118.87	1480.891	
10121.66	1481.121	0125.08	1481.379	10132.78	1481.988	10132.83	1481.991	10132.89	1481.996
10132.94	148210193.79		1483.377	10220.37	148410225.23		148410233.71		1484.315
10235.23	1484.357	10243.18	1484.518	10250.01	1484.796	10258.87	1485.139	10284.16	1485.957
10284.76	1485.982	10285.33	148610285.44		148610285.54		148610315.95		1486
10369.56	1487.386								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9489.44	.055	9990.17	.055	10019.36	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.17	10019.36	297	300	303	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1482.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1482.00	Reach Len. (ft)	297.00	300.00	303.00
Crit W.S. (ft)		Flow Area (sq ft)	113.97	108.13	201.93
E.G. Slope (ft/ft)	0.004016	Area (sq ft)	113.97	108.13	201.93
Q Total (cfs)	1175.00	Flow (cfs)	233.72	434.58	506.70
Top Width (ft)	229.83	Top Width (ft)	86.91	29.19	113.73
Vel Total (ft/s)	2.77	Avg. Vel. (ft/s)	2.05	4.02	2.51
Max Chl Dpth (ft)	4.00	Hydr. Depth (ft)	1.31	3.70	1.78
Conv. Total (cfs)	18540.5	Conv. (cfs)	3687.8	6857.4	7995.3
Length Wtd. (ft)	300.07	Wetted Per. (ft)	86.94	30.07	113.81
Min Ch El (ft)	1478.00	Shear (lb/sq ft)	0.33	0.90	0.44
Alpha	1.24	Stream Power (lb/ft s)	0.67	3.62	1.12
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	40.13	51.20	19.37
C & E Loss (ft)	0.01	Cum SA (acres)	24.18	10.22	17.36

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1482.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1482.33	Reach Len. (ft)	297.00	300.00	303.00
Crit W.S. (ft)		Flow Area (sq ft)	142.87	117.65	241.36
E.G. Slope (ft/ft)	0.004044	Area (sq ft)	142.87	117.65	241.36
Q Total (cfs)	1467.00	Flow (cfs)	332.96	501.89	632.16
Top Width (ft)	247.71	Top Width (ft)	90.38	29.19	128.14
Vel Total (ft/s)	2.92	Avg. Vel. (ft/s)	2.33	4.27	2.62
Max Chl Dpth (ft)	4.33	Hydr. Depth (ft)	1.58	4.03	1.88
Conv. Total (cfs)	23069.2	Conv. (cfs)	5235.9	7892.4	9940.9
Length Wtd. (ft)	300.03	Wetted Per. (ft)	90.43	30.07	128.22
Min Ch El (ft)	1478.00	Shear (lb/sq ft)	0.40	0.99	0.48
Alpha	1.22	Stream Power (lb/ft s)	0.93	4.21	1.24
Frctn Loss (ft)	0.87	Cum Volume (acre-ft)	51.04	58.43	27.38
C & E Loss (ft)	0.01	Cum SA (acres)	29.98	10.32	21.92

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1482.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1482.47	Reach Len. (ft)	297.00	300.00	303.00
Crit W.S. (ft)		Flow Area (sq ft)	155.89	121.81	260.11
E.G. Slope (ft/ft)	0.004058	Area (sq ft)	155.89	121.81	260.11
Q Total (cfs)	1609.00	Flow (cfs)	381.43	532.81	694.76
Top Width (ft)	255.54	Top Width (ft)	91.91	29.19	134.45
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)	2.45	4.37	2.67
Max Chl Dpth (ft)	4.47	Hydr. Depth (ft)	1.70	4.17	1.93
Conv. Total (cfs)	25257.7	Conv. (cfs)	5987.6	8364.0	10906.1
Length Wtd. (ft)	300.02	Wetted Per. (ft)	91.96	30.07	134.53
Min Ch El (ft)	1478.00	Shear (lb/sq ft)	0.43	1.03	0.49
Alpha	1.21	Stream Power (lb/ft s)	1.05	4.49	1.31
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	57.23	61.71	31.62
C & E Loss (ft)	0.01	Cum SA (acres)	32.45	10.35	22.92

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1482.98	Element			
Vel Head (ft)	0.19	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1482.80	Reach Len. (ft)	297.00	300.00	303.00
Crit W.S. (ft)		Flow Area (sq ft)	187.23	131.33	306.31
E.G. Slope (ft/ft)	0.004167	Area (sq ft)	187.23	131.33	306.31
Q Total (cfs)	1958.00	Flow (cfs)	481.99	612.08	863.93
Top Width (ft)	282.39	Top Width (ft)	104.34	29.19	148.87
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)	2.57	4.66	2.82
Max Chl Dpth (ft)	4.80	Hydr. Depth (ft)	1.79	4.50	2.06
Conv. Total (cfs)	30330.6	Conv. (cfs)	7466.3	9481.5	13382.8
Length Wtd. (ft)	300.02	Wetted Per. (ft)	104.40	30.07	148.95
Min Ch El (ft)	1478.00	Shear (lb/sq ft)	0.47	1.14	0.54
Alpha	1.22	Stream Power (lb/ft s)	1.20	5.30	1.51
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	75.25	69.45	44.62
C & E Loss (ft)	0.01	Cum SA (acres)	37.36	10.42	25.17

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.360

INPUT
Description: CROSS SECTION NO. 4 OF SPECIAL BRIDGE ROUTINE.

Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9582	1483	9583	1483	9671	1482.9	9750	1482.9	9810	1481.9
9849	1480.5	9907	1479.3	9933	1478.6	9949	1478.8	9970	1479.5
9984	1475.7	10000	1475.7	10020	1479.8	10052	1479.7	10084	1480.3
10100	1479.9	10122	1482.1	10140	1482.5	10167	1485.4	10194	1488.4
10203	1488.7								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9582	.055	9970	.055	10020	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970	10020	192	148	122	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1481.29	Element			
Vel Head (ft)	0.10	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.19	Reach Len. (ft)	192.00	148.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	222.04	206.78	109.70
E.G. Slope (ft/ft)	0.002094	Area (sq ft)	222.04	206.78	109.70
Q Total (cfs)	1175.00	Flow (cfs)	372.92	650.63	151.44
Top Width (ft)	283.03	Top Width (ft)	140.16	50.00	92.88
Vel Total (ft/s)	2.18	Avg. Vel. (ft/s)	1.68	3.15	1.38
Max Chl Dpth (ft)	5.49	Hydr. Depth (ft)	1.58	4.14	1.18
Conv. Total (cfs)	25679.4	Conv. (cfs)	8150.2	14219.4	3309.8
Length Wtd. (ft)	158.15	Wetted Per. (ft)	140.20	50.92	92.95
Min Ch El (ft)	1475.70	Shear (lb/sq ft)	0.21	0.53	0.15
Alpha	1.39	Stream Power (lb/ft s)	0.35	1.67	0.21
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	38.99	50.11	18.29

C & E Loss (ft)	0.01	Cum SA (acres)	23.40	9.95	16.64

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1481.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.49	Reach Len. (ft)	192.00	148.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	265.45	221.82	138.09
E.G. Slope (ft/ft)	0.002197	Area (sq ft)	265.45	221.82	138.09
Q Total (cfs)	1467.00	Flow (cfs)	494.92	749.22	222.86
Top Width (ft)	294.42	Top Width (ft)	148.53	50.00	95.88
Vel Total (ft/s)	2.35	Avg. Vel. (ft/s)	1.86	3.38	1.61
Max Chl Dpth (ft)	5.79	Hydr. Depth (ft)	1.79	4.44	1.44
Conv. Total (cfs)	31298.1	Conv. (cfs)	10559.0	15984.5	4754.6
Length Wtd. (ft)	158.91	Wetted Per. (ft)	148.59	50.92	95.97
Min Ch El (ft)	1475.70	Shear (lb/sq ft)	0.25	0.60	0.20
Alpha	1.34	Stream Power (lb/ft s)	0.46	2.02	0.32
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	49.65	57.26	26.06
C & E Loss (ft)	0.02	Cum SA (acres)	29.17	10.05	21.14

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1481.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.62	Reach Len. (ft)	192.00	148.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	284.90	228.29	150.58
E.G. Slope (ft/ft)	0.002252	Area (sq ft)	284.90	228.29	150.58
Q Total (cfs)	1609.00	Flow (cfs)	554.84	795.81	258.35
Top Width (ft)	299.32	Top Width (ft)	152.14	50.00	97.18
Vel Total (ft/s)	2.42	Avg. Vel. (ft/s)	1.95	3.49	1.72
Max Chl Dpth (ft)	5.92	Hydr. Depth (ft)	1.87	4.57	1.55
Conv. Total (cfs)	33904.2	Conv. (cfs)	11691.4	16769.0	5443.8
Length Wtd. (ft)	159.22	Wetted Per. (ft)	152.19	50.92	97.27
Min Ch El (ft)	1475.70	Shear (lb/sq ft)	0.26	0.63	0.22
Alpha	1.33	Stream Power (lb/ft s)	0.51	2.20	0.37
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	55.73	60.51	30.20
C & E Loss (ft)	0.02	Cum SA (acres)	31.62	10.08	22.11

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1482.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.91	Reach Len. (ft)	192.00	148.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	329.75	242.65	178.90
E.G. Slope (ft/ft)	0.002386	Area (sq ft)	329.75	242.65	178.90
Q Total (cfs)	1958.00	Flow (cfs)	703.68	906.77	347.55
Top Width (ft)	310.35	Top Width (ft)	160.30	50.00	100.05
Vel Total (ft/s)	2.61	Avg. Vel. (ft/s)	2.13	3.74	1.94
Max Chl Dpth (ft)	6.21	Hydr. Depth (ft)	2.06	4.85	1.79
Conv. Total (cfs)	40085.3	Conv. (cfs)	14406.1	18563.8	7115.3
Length Wtd. (ft)	159.76	Wetted Per. (ft)	160.36	50.92	100.16
Min Ch El (ft)	1475.70	Shear (lb/sq ft)	0.31	0.71	0.27
Alpha	1.29	Stream Power (lb/ft s)	0.65	2.65	0.52
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	73.49	68.16	42.93
C & E Loss (ft)	0.02	Cum SA (acres)	36.46	10.15	24.30

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.332

INPUT
Description: CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9683.12	1482	9708.61	1481.1	9723.22	1480.9	9779.28	1480.39	9783.52	1479.8
9836.76	1479.5	9895.28	1479.2	9908.3	1478.9	9925.63	1478.87	9929.92	1479
9937.19	1479.1	9945.9	1479.09	9945.94	1478.68	9971.95	1478.22	9978.4	1477.8
9987.5	1475.2	10000.01	1475.3	10000.44	1475.18	10017.89	1475.21	10023.04	1477.8
10026.42	1478.5	10041.01	1479.2	10052.63	1479.27	10057.2	1479.43	10080.04	1479.8
10092.94	1480.1	10112.48	1480.86	10131.4	1481.44	10144.04	1482.2		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9683.12	.055	9945.94	.055	10041.01	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9945.94	10041.01	81	81	81	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
9683.12	9945.94	1478.68	F
10041.01	10144.04	1479.2	F

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1481.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1480.99	Reach Len. (ft)	81.00	81.00	81.00
Crit W.S. (ft)	1478.75	Flow Area (sq ft)	291.88	365.42	82.91
E.G. Slope (ft/ft)	0.001085	Area (sq ft)	291.88	365.42	82.91
Q Total (cfs)	1175.00	Flow (cfs)	304.75	791.86	78.39
Top Width (ft)	400.02	Top Width (ft)	229.26	95.07	75.70
Vel Total (ft/s)	1.59	Avg. Vel. (ft/s)	1.04	2.17	0.95
Max Chl Dpth (ft)	5.81	Hydr. Depth (ft)	1.27	3.84	1.10
Conv. Total (cfs)	35670.4	Conv. (cfs)	9251.7	24039.1	2379.7
Length Wtd. (ft)	81.00	Wetted Per. (ft)	229.68	96.17	75.72
Min Ch El (ft)	1475.18	Shear (lb/sq ft)	0.09	0.26	0.07
Alpha	1.39	Stream Power (lb/ft s)	0.09	0.56	0.07
Frctn Loss (ft)		Cum Volume (acre-ft)	37.85	49.14	18.02
C & E Loss (ft)		Cum SA (acres)	22.59	9.70	16.40

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1481.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.28	Reach Len. (ft)	81.00	81.00	81.00
Crit W.S. (ft)	1479.21	Flow Area (sq ft)	360.49	392.90	106.16
E.G. Slope (ft/ft)	0.001157	Area (sq ft)	360.49	392.90	106.16
Q Total (cfs)	1467.00	Flow (cfs)	431.17	922.82	113.01
Top Width (ft)	422.58	Top Width (ft)	242.39	95.07	85.13
Vel Total (ft/s)	1.71	Avg. Vel. (ft/s)	1.20	2.35	1.06
Max Chl Dpth (ft)	6.10	Hydr. Depth (ft)	1.49	4.13	1.25

Conv. Total (cfs)	43123.6	Conv. (cfs)	12674.6	27127.1	3322.0
Length Wtd. (ft)	81.00	Wetted Per. (ft)	242.82	96.17	85.16
Min Ch El (ft)	1475.18	Shear (lb/sq ft)	0.11	0.30	0.09
Alpha	1.37	Stream Power (lb/ft s)	0.13	0.69	0.10
Frctn Loss (ft)		Cum Volume (acre-ft)	48.27	56.22	25.72
C & E Loss (ft)		Cum SA (acres)	28.30	9.80	20.89

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1481.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.40	Reach Len. (ft)	81.00	81.00	81.00
Crit W.S. (ft)	1479.40	Flow Area (sq ft)	390.80	404.70	116.98
E.G. Slope (ft/ft)	0.001190	Area (sq ft)	390.80	404.70	116.98
Q Total (cfs)	1609.00	Flow (cfs)	495.38	983.02	130.59
Top Width (ft)	430.15	Top Width (ft)	245.90	95.07	89.18
Vel Total (ft/s)	1.76	Avg. Vel. (ft/s)	1.27	2.43	1.12
Max Chl Dpth (ft)	6.22	Hydr. Depth (ft)	1.59	4.26	1.31
Conv. Total (cfs)	46646.4	Conv. (cfs)	14361.6	28498.7	3786.1
Length Wtd. (ft)	81.00	Wetted Per. (ft)	246.33	96.17	89.21
Min Ch El (ft)	1475.18	Shear (lb/sq ft)	0.12	0.31	0.10
Alpha	1.35	Stream Power (lb/ft s)	0.15	0.76	0.11
Frctn Loss (ft)		Cum Volume (acre-ft)	54.24	59.43	29.82
C & E Loss (ft)		Cum SA (acres)	30.74	9.83	21.85

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1481.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1481.68	Reach Len. (ft)	81.00	81.00	81.00
Crit W.S. (ft)	1479.86	Flow Area (sq ft)	459.81	430.96	142.40
E.G. Slope (ft/ft)	0.001260	Area (sq ft)	459.81	430.96	142.40
Q Total (cfs)	1958.00	Flow (cfs)	654.81	1123.56	179.64
Top Width (ft)	443.16	Top Width (ft)	253.73	95.07	94.37
Vel Total (ft/s)	1.90	Avg. Vel. (ft/s)	1.42	2.61	1.26
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	1.81	4.53	1.51
Conv. Total (cfs)	55151.1	Conv. (cfs)	18444.0	31647.3	5059.9
Length Wtd. (ft)	81.00	Wetted Per. (ft)	254.16	96.17	94.41
Min Ch El (ft)	1475.18	Shear (lb/sq ft)	0.14	0.35	0.12
Alpha	1.32	Stream Power (lb/ft s)	0.20	0.92	0.15
Frctn Loss (ft)		Cum Volume (acre-ft)	71.75	67.02	42.48
C & E Loss (ft)		Cum SA (acres)	35.54	9.90	24.03

CULVERT

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.325

INPUT
Description: Pinnacle Vista Culvert (4 8' x 3' Boxes)
EXISTING CULVERT LOCATED
ON PINNACLE VISTA ROAD (EXTENDED CULVERT).

Distance from Upstream XS =8.099998
Deck/Roadway Width = 64.8
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates

```
    num=      27
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  9711.2 1481.04         9737.62 1480.84         9750.78  1480.8
 9773.28 1480.79         9812.34 1480.66         9867.01 1480.16
 9933.42 1480.02         9938.84 1479.85         9938.84 1481.88
 9945.94 1481.76         9945.94 1481.76         9977.68 1481.49
10026.42 1481.58        10040.47 1479.85        10040.48 1479.85
10041.01 1479.85        10041.01 1479.85        10057.43 1479.86
 10065.8 1480.05        10079.04 1480.38        10087.02 1480.67
10096.76 1481.07        10104.76 1481.42        10118.72 1482.03
10125.68 1482.46        10144.75 1483.67        10148.75  1483.9

Upstream Bridge Cross Section Data
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9683.12    1482 9708.61  1481.1 9723.22  1480.9 9779.28 1480.39 9783.52  1479.8
 9836.76  1479.5 9895.28  1479.2  9908.3  1478.9 9925.63 1478.87 9929.92    1479
 9937.19  1479.1  9945.9 1479.09 9945.94 1478.68 9971.95 1478.22  9978.4  1477.8
  9987.5  1475.210000.01  1475.310000.44 1475.1810017.89 1475.2110023.04  1477.8
10026.42  1478.510041.01  1479.210052.63 1479.27 10057.2 1479.4310080.04  1479.8
10092.94  1480.110112.48 1480.86 10131.4 1481.4410144.04  1482.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9683.12    .055 9945.94    .05510041.01    .055

Bank Sta: Left   Right    Coeff Contr.   Expan.
       9945.9410041.01             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 9683.12 9945.94 1478.68       F
10041.0110144.04  1479.2       F

Downstream  Deck/Roadway Coordinates
    num=      29
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  9711.2 1481.04         9737.62 1480.84         9750.78  1480.8
 9773.28 1480.79         9812.34 1480.66         9867.01 1480.16
 9933.42 1480.02         9938.84 1479.85         9938.84 1481.88
 9945.94 1481.76         9977.68 1481.49         9987.351481.508
 9987.351481.508        10025.091481.578        10025.091481.578
10026.42 1481.58        10040.47 1479.85        10040.48 1479.85
10057.43 1479.86         10065.8 1480.05        10079.04 1480.38
10087.02 1480.67        10096.76 1481.07        10104.76 1481.42
10118.72 1482.03        10125.68 1482.46        10144.75 1483.67
10148.75  1483.9        10203.31 1485.44

Downstream Bridge Cross Section Data
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9626.26    1480 9694.39 1480.74 9749.82 1481.08 9809.84 1480.92 9871.67 1480.69
 9987.35  1478.8 9987.35 1474.41  9995.7 1474.41 10014.4 1474.4510025.09 1474.45
10025.09  1478.410090.45 1480.0210148.08 1482.0210203.31 1485.44   10261 1489.66
 10328.2    1494

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9626.26    .055 9987.35    .05510025.09    .055

Bank Sta: Left   Right    Coeff Contr.   Expan.
       9987.3510025.09             .1       .3
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Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 9626.26 9987.35  1478.8       F
10025.09 10328.2  1478.4       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         = 1479.85
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Pinnacle Vis        Box       3       8
FHWA Chart # 9 - flared wingwalls and Inlet top edge bevel
FHWA Scale # 2 - Wingwall flared 18 to 33.7 deg.; inlet top edge bevel=0.083D
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
               4.8    64.8     .016     .016        0                  .5                 1
Number of Barrels =  4
Upstream   Elevation =  1475.26
Centerline Stations
    Sta.    Sta.    Sta.    Sta.
    9990  9998.5   10007 10015.5
Downstream Elevation =  1474.43
Centerline Stations
    Sta.    Sta.    Sta.    Sta.
    9994 10002.5   10011 10019.5

CROSS SECTION


RIVER: Buchanan Wash
REACH: Buchanan Wash      RS: 1.317

INPUT
Description: CROSS SECTION NO. 2 OF SPECIAL CULVERT ROUTINE.

Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 9626.26    1480 9694.39 1480.74 9749.82 1481.08 9809.84 1480.92 9871.67 1480.69
 9987.35  1478.8 9987.35 1474.41  9995.7 1474.41 10014.4 1474.4510025.09 1474.45
10025.09  1478.410090.45 1480.0210148.08 1482.0210203.31 1485.44   10261 1489.66
 10328.2    1494

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9626.26    .055 9987.35    .05510025.09    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9987.3510025.09              101     112     122            .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
 9626.26 9987.35  1478.8       F
10025.09 10328.2  1478.4       F

CROSS SECTION OUTPUT  Profile #10-yr
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			Left OB	Channel	Right OB
E.G. Elev (ft)	1479.80	Element			
Vel Head (ft)	0.64	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.15	Reach Len. (ft)	101.00	112.00	122.00
Crit W.S. (ft)	1477.52	Flow Area (sq ft)	3.77	178.13	11.38
E.G. Slope (ft/ft)	0.009516	Area (sq ft)	3.77	178.13	11.38
Q Total (cfs)	1175.00	Flow (cfs)	3.11	1156.28	15.60
Top Width (ft)	89.52	Top Width (ft)	21.48	37.74	30.30
Vel Total (ft/s)	6.08	Avg. Vel. (ft/s)	0.83	6.49	1.37
Max Chl Dpth (ft)	4.74	Hydr. Depth (ft)	0.18	4.72	0.38
Conv. Total (cfs)	12044.9	Conv. (cfs)	31.9	11853.1	159.9
Length Wtd. (ft)	112.10	Wetted Per. (ft)	21.48	46.08	30.31
Min Ch El (ft)	1474.41	Shear (lb/sq ft)	0.10	2.30	0.22
Alpha	1.12	Stream Power (lb/ft s)	0.09	14.91	0.31
Frctn Loss (ft)	0.70	Cum Volume (acre-ft)	37.58	48.64	17.93
C & E Loss (ft)	0.15	Cum SA (acres)	22.36	9.58	16.31

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1480.27	Element			
Vel Head (ft)	0.84	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.43	Reach Len. (ft)	101.00	112.00	122.00
Crit W.S. (ft)	1478.04	Flow Area (sq ft)	12.12	188.63	21.37
E.G. Slope (ft/ft)	0.011699	Area (sq ft)	12.12	188.63	21.37
Q Total (cfs)	1467.00	Flow (cfs)	16.38	1410.52	40.10
Top Width (ft)	117.79	Top Width (ft)	38.52	37.74	41.53
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	1.35	7.48	1.88
Max Chl Dpth (ft)	5.02	Hydr. Depth (ft)	0.31	5.00	0.51
Conv. Total (cfs)	13563.0	Conv. (cfs)	151.4	13040.8	370.7
Length Wtd. (ft)	111.99	Wetted Per. (ft)	38.52	46.08	41.54
Min Ch El (ft)	1474.41	Shear (lb/sq ft)	0.23	2.99	0.38
Alpha	1.24	Stream Power (lb/ft s)	0.31	22.36	0.71
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	47.92	55.68	25.60
C & E Loss (ft)	0.20	Cum SA (acres)	28.04	9.68	20.77

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1480.47	Element			
Vel Head (ft)	0.93	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.54	Reach Len. (ft)	101.00	112.00	122.00
Crit W.S. (ft)	1478.28	Flow Area (sq ft)	16.55	192.64	26.01
E.G. Slope (ft/ft)	0.012808	Area (sq ft)	16.55	192.64	26.01
Q Total (cfs)	1609.00	Flow (cfs)	25.98	1528.50	54.52
Top Width (ft)	128.57	Top Width (ft)	45.02	37.74	45.81
Vel Total (ft/s)	6.84	Avg. Vel. (ft/s)	1.57	7.93	2.10
Max Chl Dpth (ft)	5.13	Hydr. Depth (ft)	0.37	5.10	0.57
Conv. Total (cfs)	14217.1	Conv. (cfs)	229.6	13505.9	481.7
Length Wtd. (ft)	112.01	Wetted Per. (ft)	45.02	46.08	45.83

Min Ch El (ft)	1474.41	Shear (lb/sq ft)	0.29	3.34	0.45
Alpha	1.28	Stream Power (lb/ft s)	0.46	26.52	0.95
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	53.86	58.88	29.69
C & E Loss (ft)	0.23	Cum SA (acres)	30.47	9.71	21.73

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1480.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.77	Reach Len. (ft)	101.00	112.00	122.00
Crit W.S. (ft)	1479.63	Flow Area (sq ft)	28.87	201.54	37.94
E.G. Slope (ft/ft)	0.015279	Area (sq ft)	28.87	201.54	37.94
Q Total (cfs)	1958.00	Flow (cfs)	59.57	1799.94	98.49
Top Width (ft)	152.52	Top Width (ft)	59.45	37.74	55.33
Vel Total (ft/s)	7.30	Avg. Vel. (ft/s)	2.06	8.93	2.60
Max Chl Dpth (ft)	5.36	Hydr. Depth (ft)	0.49	5.34	0.69
Conv. Total (cfs)	15840.6	Conv. (cfs)	481.9	14561.8	796.8
Length Wtd. (ft)	112.07	Wetted Per. (ft)	59.46	46.08	55.35
Min Ch El (ft)	1474.41	Shear (lb/sq ft)	0.46	4.17	0.65
Alpha	1.39	Stream Power (lb/ft s)	0.96	37.26	1.70
Frctn Loss (ft)	0.72	Cum Volume (acre-ft)	71.30	66.43	42.31
C & E Loss (ft)	0.30	Cum SA (acres)	35.25	9.78	23.89

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.294

INPUT
Description: CROSS SECTION NO. 1 OF SPECIAL CULVERT ROUTINE.

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9813.67	1480.2	9868.51	1480.2	9915.82	1477.7	9933.23	1476.45	9938.26	1476.82
9965.01	1477.2	9965.78	1477.01	9991.46	1477.6	10000	1474.38	10016.93	1474.4
10024.23	1477.5	10031.33	1477.3	10037.89	1475.71	10045.55	1476.21	10062.1	1476.09
10064.86	1476.2	10073.55	1477.15	10085.8	1477.72	10134.89	1478.89	10161.25	1479.2
10215.2	1480.8	10220.99	1480.9	10223.88	1481.06	10234.14	1483.31		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9813.67	.055	9991.46	.055	10024.23	.055

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

9991.4610024.23 124 130 133 .1 .3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1478.95	Element			
Vel Head (ft)	0.16	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1478.79	Reach Len. (ft)	124.00	130.00	133.00
Crit W.S. (ft)		Flow Area (sq ft)	138.75	119.05	156.26
E.G. Slope (ft/ft)	0.004434	Area (sq ft)	138.75	119.05	156.26
Q Total (cfs)	1175.00	Flow (cfs)	318.34	494.01	362.65
Top Width (ft)	235.35	Top Width (ft)	96.22	32.77	106.36
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)	2.29	4.15	2.32
Max Chl Dpth (ft)	4.41	Hydr. Depth (ft)	1.44	3.63	1.47
Conv. Total (cfs)	17644.9	Conv. (cfs)	4780.4	7418.6	5445.9
Length Wtd. (ft)	129.14	Wetted Per. (ft)	96.34	33.99	106.65
Min Ch El (ft)	1474.38	Shear (lb/sq ft)	0.40	0.97	0.41
Alpha	1.28	Stream Power (lb/ft s)	0.91	4.02	0.94
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	37.41	48.25	17.69
C & E Loss (ft)	0.01	Cum SA (acres)	22.22	9.49	16.11

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1479.33	Element			
Vel Head (ft)	0.17	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.16	Reach Len. (ft)	124.00	130.00	133.00
Crit W.S. (ft)		Flow Area (sq ft)	175.95	131.27	200.41
E.G. Slope (ft/ft)	0.004218	Area (sq ft)	175.95	131.27	200.41
Q Total (cfs)	1467.00	Flow (cfs)	439.99	567.01	460.00
Top Width (ft)	269.70	Top Width (ft)	103.28	32.77	133.66
Vel Total (ft/s)	2.89	Avg. Vel. (ft/s)	2.50	4.32	2.30
Max Chl Dpth (ft)	4.78	Hydr. Depth (ft)	1.70	4.01	1.50
Conv. Total (cfs)	22588.5	Conv. (cfs)	6774.8	8730.7	7083.0
Length Wtd. (ft)	129.06	Wetted Per. (ft)	103.41	33.99	133.95
Min Ch El (ft)	1474.38	Shear (lb/sq ft)	0.45	1.02	0.39
Alpha	1.29	Stream Power (lb/ft s)	1.12	4.39	0.90
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	47.70	55.26	25.29
C & E Loss (ft)	0.01	Cum SA (acres)	27.88	9.59	20.53

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1479.50	Element			
Vel Head (ft)	0.17	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.33	Reach Len. (ft)	124.00	130.00	133.00
Crit W.S. (ft)		Flow Area (sq ft)	193.65	136.81	223.76
E.G. Slope (ft/ft)	0.004032	Area (sq ft)	193.65	136.81	223.76
Q Total (cfs)	1609.00	Flow (cfs)	494.56	593.85	520.59
Top Width (ft)	280.62	Top Width (ft)	106.47	32.77	141.38
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)	2.55	4.34	2.33
Max Chl Dpth (ft)	4.95	Hydr. Depth (ft)	1.82	4.17	1.58
Conv. Total (cfs)	25340.2	Conv. (cfs)	7788.9	9352.5	8198.7
Length Wtd. (ft)	129.06	Wetted Per. (ft)	106.61	33.99	141.67
Min Ch El (ft)	1474.38	Shear (lb/sq ft)	0.46	1.01	0.40
Alpha	1.27	Stream Power (lb/ft s)	1.17	4.40	0.92
Frctn Loss (ft)	0.53	Cum Volume (acre-ft)	53.62	58.45	29.34
C & E Loss (ft)	0.01	Cum SA (acres)	30.29	9.62	21.46

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1479.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.74	Reach Len. (ft)	124.00	130.00	133.00
Crit W.S. (ft)		Flow Area (sq ft)	238.89	150.24	284.55
E.G. Slope (ft/ft)	0.003525	Area (sq ft)	238.89	150.24	284.55
Q Total (cfs)	1958.00	Flow (cfs)	626.09	649.08	682.82
Top Width (ft)	302.20	Top Width (ft)	114.23	32.77	155.20
Vel Total (ft/s)	2.91	Avg. Vel. (ft/s)	2.62	4.32	2.40
Max Chl Dpth (ft)	5.36	Hydr. Depth (ft)	2.09	4.58	1.83
Conv. Total (cfs)	32978.9	Conv. (cfs)	10545.4	10932.6	11500.9
Length Wtd. (ft)	129.08	Wetted Per. (ft)	114.37	33.99	155.50
Min Ch El (ft)	1474.38	Shear (lb/sq ft)	0.46	0.97	0.40
Alpha	1.23	Stream Power (lb/ft s)	1.20	4.20	0.97
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	70.99	65.97	41.86
C & E Loss (ft)	0.01	Cum SA (acres)	35.05	9.69	23.59

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.271

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9897.83	1479.8	9912.53	1478.17	9931.96	1476.04	9939.15	1475.6	9944.81	1475.49
9953.63	1476.6	9955.58	1476.7	9963.18	1476.48	9974.29	1476.4	9977.71	1475.6
9986.51	1473.9	9989.1	1473.7	10000	1473.48	10008.39	1473.5	10019.1	1475.9
10020.37	1476	10025.59	1476	10051.54	1477.11	10054.35	1477.3	10063.05	1477.56
10074.98	1477.8	10091.94	1478	10102.65	1478.5	10112.11	1479.8	10125.24	1482.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9897.83	.055	9974.29	.055	10019.1	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.29	10019.1	135	171	175	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1478.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1478.10	Reach Len. (ft)	135.00	171.00	175.00
Crit W.S. (ft)		Flow Area (sq ft)	100.93	171.94	70.45
E.G. Slope (ft/ft)	0.004820	Area (sq ft)	100.93	171.94	70.45
Q Total (cfs)	1175.00	Flow (cfs)	263.96	784.25	126.78
Top Width (ft)	180.84	Top Width (ft)	61.10	44.81	74.93
Vel Total (ft/s)	3.42	Avg. Vel. (ft/s)	2.62	4.56	1.80
Max Chl Dpth (ft)	4.62	Hydr. Depth (ft)	1.65	3.84	0.94
Conv. Total (cfs)	16924.4	Conv. (cfs)	3802.1	11296.2	1826.1
Length Wtd. (ft)	166.13	Wetted Per. (ft)	61.30	45.34	74.97
Min Ch El (ft)	1473.48	Shear (lb/sq ft)	0.50	1.14	0.28
Alpha	1.35	Stream Power (lb/ft s)	1.30	5.20	0.51
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	37.07	47.82	17.35
C & E Loss (ft)	0.01	Cum SA (acres)	22.00	9.37	15.84

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1478.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1478.51	Reach Len. (ft)	135.00	171.00	175.00
Crit W.S. (ft)		Flow Area (sq ft)	126.88	190.40	103.15
E.G. Slope (ft/ft)	0.004469	Area (sq ft)	126.88	190.40	103.15
Q Total (cfs)	1467.00	Flow (cfs)	357.72	895.09	214.18
Top Width (ft)	193.25	Top Width (ft)	64.82	44.81	83.62
Vel Total (ft/s)	3.49	Avg. Vel. (ft/s)	2.82	4.70	2.08
Max Chl Dpth (ft)	5.03	Hydr. Depth (ft)	1.96	4.25	1.23
Conv. Total (cfs)	21945.0	Conv. (cfs)	5351.2	13389.8	3204.0
Length Wtd. (ft)	165.55	Wetted Per. (ft)	65.05	45.34	83.67
Min Ch El (ft)	1473.48	Shear (lb/sq ft)	0.54	1.17	0.34
Alpha	1.32	Stream Power (lb/ft s)	1.53	5.51	0.71
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	47.27	54.78	24.83
C & E Loss (ft)	0.01	Cum SA (acres)	27.64	9.47	20.20

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1478.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1478.71	Reach Len. (ft)	135.00	171.00	175.00
Crit W.S. (ft)		Flow Area (sq ft)	139.69	199.15	119.60
E.G. Slope (ft/ft)	0.004259	Area (sq ft)	139.69	199.15	119.60
Q Total (cfs)	1609.00	Flow (cfs)	402.71	941.72	264.57
Top Width (ft)	196.43	Top Width (ft)	66.58	44.81	85.04
Vel Total (ft/s)	3.51	Avg. Vel. (ft/s)	2.88	4.73	2.21
Max Chl Dpth (ft)	5.22	Hydr. Depth (ft)	2.10	4.44	1.41
Conv. Total (cfs)	24654.5	Conv. (cfs)	6170.7	14429.9	4054.0
Length Wtd. (ft)	165.35	Wetted Per. (ft)	66.82	45.34	85.11
Min Ch El (ft)	1473.48	Shear (lb/sq ft)	0.56	1.17	0.37
Alpha	1.30	Stream Power (lb/ft s)	1.60	5.52	0.83
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	53.14	57.95	28.81
C & E Loss (ft)	0.01	Cum SA (acres)	30.05	9.50	21.12

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1479.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1479.18	Reach Len. (ft)	135.00	171.00	175.00
Crit W.S. (ft)		Flow Area (sq ft)	172.37	220.45	160.86
E.G. Slope (ft/ft)	0.003753	Area (sq ft)	172.37	220.45	160.86
Q Total (cfs)	1958.00	Flow (cfs)	514.67	1047.13	396.20
Top Width (ft)	204.18	Top Width (ft)	70.87	44.81	88.50
Vel Total (ft/s)	3.54	Avg. Vel. (ft/s)	2.99	4.75	2.46
Max Chl Dpth (ft)	5.70	Hydr. Depth (ft)	2.43	4.92	1.82
Conv. Total (cfs)	31962.7	Conv. (cfs)	8401.5	17093.5	6467.6
Length Wtd. (ft)	164.94	Wetted Per. (ft)	71.13	45.34	88.60
Min Ch El (ft)	1473.48	Shear (lb/sq ft)	0.57	1.14	0.43
Alpha	1.25	Stream Power (lb/ft s)	1.70	5.41	1.05
Frctn Loss (ft)	0.63	Cum Volume (acre-ft)	70.40	65.42	41.18
C & E Loss (ft)	0.01	Cum SA (acres)	34.79	9.57	23.22

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.240

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9923.92	1479	9949.86	1476.69	9976.69	1474.8	9980.22	1474.3	9987.42	1472.05
10000	1471.61	10014.71	1474.18	10021.74	1475.21	10040.18	1476	10054.93	1475.98
10058.37	1476	10080.37	1476.71	10097.02	1478	10117.33	1481.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9923.92	.055	9976.69	.055	10021.74	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9976.69	10021.74	180	184	186	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1477.41	Element			
Vel Head (ft)	0.38	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1477.02	Reach Len. (ft)	180.00	184.00	186.00
Crit W.S. (ft)		Flow Area (sq ft)	34.87	178.95	60.41
E.G. Slope (ft/ft)	0.006457	Area (sq ft)	34.87	178.95	60.41
Q Total (cfs)	1175.00	Flow (cfs)	82.51	964.68	127.81
Top Width (ft)	138.35	Top Width (ft)	30.55	45.05	62.75
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)	2.37	5.39	2.12
Max Chl Dpth (ft)	5.42	Hydr. Depth (ft)	1.14	3.97	0.96
Conv. Total (cfs)	14622.7	Conv. (cfs)	1026.8	12005.3	1590.6
Length Wtd. (ft)	184.05	Wetted Per. (ft)	30.63	45.73	62.79
Min Ch El (ft)	1471.60	Shear (lb/sq ft)	0.46	1.58	0.39
Alpha	1.35	Stream Power (lb/ft s)	1.09	8.50	0.82
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	36.86	47.13	17.09
C & E Loss (ft)	0.04	Cum SA (acres)	21.85	9.19	15.56

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1477.95	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1477.61	Reach Len. (ft)	180.00	184.00	186.00
Crit W.S. (ft)		Flow Area (sq ft)	54.61	205.25	99.22
E.G. Slope (ft/ft)	0.005189	Area (sq ft)	54.61	205.25	99.22
Q Total (cfs)	1467.00	Flow (cfs)	137.25	1086.77	242.98
Top Width (ft)	152.38	Top Width (ft)	37.11	45.05	70.22
Vel Total (ft/s)	4.09	Avg. Vel. (ft/s)	2.51	5.29	2.45
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)	1.47	4.56	1.41
Conv. Total (cfs)	20366.1	Conv. (cfs)	1905.4	15087.4	3373.3
Length Wtd. (ft)	184.06	Wetted Per. (ft)	37.22	45.73	70.29
Min Ch El (ft)	1471.60	Shear (lb/sq ft)	0.48	1.45	0.46
Alpha	1.34	Stream Power (lb/ft s)	1.19	7.70	1.12
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	46.99	54.01	24.42
C & E Loss (ft)	0.04	Cum SA (acres)	27.48	9.29	19.89

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1478.20	Element			
Vel Head (ft)	0.34	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1477.86	Reach Len. (ft)	180.00	184.00	186.00
Crit W.S. (ft)		Flow Area (sq ft)	64.51	216.82	117.67
E.G. Slope (ft/ft)	0.004781	Area (sq ft)	64.51	216.82	117.67
Q Total (cfs)	1609.00	Flow (cfs)	165.42	1142.99	300.59

Top Width (ft)	158.55	Top Width (ft)	39.99	45.05	73.51
Vel Total (ft/s)	4.03	Avg. Vel. (ft/s)	2.56	5.27	2.55
Max Chl Dpth (ft)	6.26	Hydr. Depth (ft)	1.61	4.81	1.60
Conv. Total (cfs)	23270.4	Conv. (cfs)	2392.5	16530.7	4347.3
Length Wtd. (ft)	184.02	Wetted Per. (ft)	40.11	45.73	73.58
Min Ch El (ft)	1471.60	Shear (lb/sq ft)	0.48	1.41	0.48
Alpha	1.33	Stream Power (lb/ft s)	1.23	7.46	1.22
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	52.83	57.13	28.34
C & E Loss (ft)	0.04	Cum SA (acres)	29.88	9.33	20.80

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1478.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1478.48	Reach Len. (ft)	180.00	184.00	186.00
Crit W.S. (ft)		Flow Area (sq ft)	91.32	244.61	164.60
E.G. Slope (ft/ft)	0.003896	Area (sq ft)	91.32	244.61	164.60
Q Total (cfs)	1958.00	Flow (cfs)	239.57	1261.59	456.84
Top Width (ft)	169.81	Top Width (ft)	46.92	45.05	77.84
Vel Total (ft/s)	3.91	Avg. Vel. (ft/s)	2.62	5.16	2.78
Max Chl Dpth (ft)	6.88	Hydr. Depth (ft)	1.95	5.43	2.11
Conv. Total (cfs)	31368.0	Conv. (cfs)	3838.0	20211.2	7318.8
Length Wtd. (ft)	183.95	Wetted Per. (ft)	47.06	45.73	77.96
Min Ch El (ft)	1471.60	Shear (lb/sq ft)	0.47	1.30	0.51
Alpha	1.29	Stream Power (lb/ft s)	1.24	6.71	1.43
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	69.99	64.51	40.53
C & E Loss (ft)	0.04	Cum SA (acres)	34.60	9.40	22.89

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.205

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9868.51	1479	9870.77	1479	9896.72	1477	9947.69	1476.2	9980.37	1473.84
9985.59	1472	9990.88	1470.11	10007.24	1469.81	10017.29	1474.31	10032.06	1473.9
10061.99	1474.81	10072.56	1475.41	10093.65	1477.25	10099.71	1478.81	10175.72	1495

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9868.51	.055	9980.37	.055	10017.29	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.37	10017.29	112	113	112	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1476.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1476.26	Reach Len. (ft)	112.00	113.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	40.65	190.50	105.49
E.G. Slope (ft/ft)	0.003437	Area (sq ft)	40.65	190.50	105.49

Q Total (cfs)	1175.00	Flow (cfs)	69.04	875.58	230.39
Top Width (ft)	138.53	Top Width (ft)	36.53	36.92	65.08
Vel Total (ft/s)	3.49	Avg. Vel. (ft/s)	1.70	4.60	2.18
Max Chl Dpth (ft)	6.46	Hydr. Depth (ft)	1.11	5.16	1.62
Conv. Total (cfs)	20043.7	Conv. (cfs)	1177.6	14936.0	3930.0
Length Wtd. (ft)	112.77	Wetted Per. (ft)	36.61	38.53	65.15
Min Ch El (ft)	1469.80	Shear (lb/sq ft)	0.24	1.06	0.35
Alpha	1.38	Stream Power (lb/ft s)	0.40	4.87	0.76
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	36.71	46.35	16.73
C & E Loss (ft)	0.01	Cum SA (acres)	21.72	9.02	15.29

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1477.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1477.02	Reach Len. (ft)	112.00	113.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	86.41	218.39	157.90
E.G. Slope (ft/ft)	0.002703	Area (sq ft)	86.41	218.39	157.90
Q Total (cfs)	1467.00	Flow (cfs)	123.72	975.03	368.25
Top Width (ft)	194.46	Top Width (ft)	83.85	36.92	73.69
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	1.43	4.46	2.33
Max Chl Dpth (ft)	7.22	Hydr. Depth (ft)	1.03	5.92	2.14
Conv. Total (cfs)	28217.7	Conv. (cfs)	2379.8	18754.7	7083.2
Length Wtd. (ft)	112.70	Wetted Per. (ft)	83.95	38.53	73.80
Min Ch El (ft)	1469.80	Shear (lb/sq ft)	0.17	0.96	0.36
Alpha	1.47	Stream Power (lb/ft s)	0.25	4.27	0.84
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	46.70	53.11	23.87
C & E Loss (ft)	0.02	Cum SA (acres)	27.23	9.12	19.58

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1477.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1477.35	Reach Len. (ft)	112.00	113.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	115.43	230.84	183.36
E.G. Slope (ft/ft)	0.002357	Area (sq ft)	115.43	230.84	183.36
Q Total (cfs)	1609.00	Flow (cfs)	180.96	998.74	429.30
Top Width (ft)	201.91	Top Width (ft)	88.23	36.92	76.76
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)	1.57	4.33	2.34
Max Chl Dpth (ft)	7.55	Hydr. Depth (ft)	1.31	6.25	2.39
Conv. Total (cfs)	33139.9	Conv. (cfs)	3727.2	20570.7	8842.1
Length Wtd. (ft)	112.66	Wetted Per. (ft)	88.33	38.53	76.89
Min Ch El (ft)	1469.80	Shear (lb/sq ft)	0.19	0.88	0.35
Alpha	1.45	Stream Power (lb/ft s)	0.30	3.81	0.82
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	52.45	56.19	27.69
C & E Loss (ft)	0.03	Cum SA (acres)	29.62	9.15	20.48

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1478.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1478.10	Reach Len. (ft)	112.00	113.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	185.37	258.57	242.12
E.G. Slope (ft/ft)	0.001796	Area (sq ft)	185.37	258.57	242.12
Q Total (cfs)	1958.00	Flow (cfs)	324.35	1053.20	580.46
Top Width (ft)	214.57	Top Width (ft)	97.98	36.92	79.68
Vel Total (ft/s)	2.85	Avg. Vel. (ft/s)	1.75	4.07	2.40
Max Chl Dpth (ft)	8.30	Hydr. Depth (ft)	1.89	7.00	3.04

Conv. Total (cfs)	46203.8	Conv. (cfs)	7653.7	24852.8	13697.3
Length Wtd. (ft)	112.60	Wetted Per. (ft)	98.11	38.53	79.90
Min Ch El (ft)	1469.80	Shear (lb/sq ft)	0.21	0.75	0.34
Alpha	1.37	Stream Power (lb/ft s)	0.37	3.06	0.81
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	69.42	63.45	39.66
C & E Loss (ft)	0.04	Cum SA (acres)	34.31	9.22	22.55

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.184

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9890.18	1477.2	9896.36	1476.6	9900.75	1475.9	9912.02	1475.5	9931.01	1475.2
9948.64	1474.8	9963.86	1473.5	9964.1	1473.4	9971.59	1473.2	9992.16	1470
10000	1469.7	10007.08	1469.8	10012.15	1471.5	10016.09	1472.5	10030.44	1473.4
10038.38	1474.2	10040.07	1474.4	10067.01	1481				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9890.18	.055	9971.59	.055	10016.09	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9971.59	10016.09	193	193	192	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1476.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1475.64	Reach Len. (ft)	193.00	193.00	192.00
Crit W.S. (ft)		Flow Area (sq ft)	57.98	209.66	58.32
E.G. Slope (ft/ft)	0.005185	Area (sq ft)	57.98	209.66	58.32
Q Total (cfs)	1422.00	Flow (cfs)	105.95	1135.47	180.58
Top Width (ft)	136.91	Top Width (ft)	63.59	44.50	28.82
Vel Total (ft/s)	4.36	Avg. Vel. (ft/s)	1.83	5.42	3.10
Max Chl Dpth (ft)	5.94	Hydr. Depth (ft)	0.91	4.71	2.02
Conv. Total (cfs)	19747.1	Conv. (cfs)	1471.3	15768.2	2507.7
Length Wtd. (ft)	192.92	Wetted Per. (ft)	63.68	45.14	29.05
Min Ch El (ft)	1469.70	Shear (lb/sq ft)	0.29	1.50	0.65
Alpha	1.31	Stream Power (lb/ft s)	0.54	8.14	2.01
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	36.58	45.83	16.52
C & E Loss (ft)	0.00	Cum SA (acres)	21.59	8.92	15.17

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1476.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1476.34	Reach Len. (ft)	193.00	193.00	192.00
Crit W.S. (ft)		Flow Area (sq ft)	106.64	240.45	79.25
E.G. Slope (ft/ft)	0.005347	Area (sq ft)	106.64	240.45	79.25
Q Total (cfs)	2005.00	Flow (cfs)	269.54	1448.80	286.65
Top Width (ft)	149.74	Top Width (ft)	73.57	44.50	31.67

Vel Total (ft/s)	4.70	Avg. Vel. (ft/s)	2.53	6.03	3.62
Max Chl Dpth (ft)	6.63	Hydr. Depth (ft)	1.45	5.40	2.50
Conv. Total (cfs)	27418.8	Conv. (cfs)	3686.1	19812.7	3920.1
Length Wtd. (ft)	192.91	Wetted Per. (ft)	73.69	45.14	31.99
Min Ch El (ft)	1469.70	Shear (lb/sq ft)	0.48	1.78	0.83
Alpha	1.31	Stream Power (lb/ft s)	1.22	10.71	2.99
Frctn Loss (ft)	1.09	Cum Volume (acre-ft)	46.45	52.52	23.57
C & E Loss (ft)	0.01	Cum SA (acres)	27.03	9.02	19.44

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1477.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1476.64	Reach Len. (ft)	193.00	193.00	192.00
Crit W.S. (ft)		Flow Area (sq ft)	129.49	254.09	89.15
E.G. Slope (ft/ft)	0.005396	Area (sq ft)	129.49	254.09	89.15
Q Total (cfs)	2304.00	Flow (cfs)	367.22	1595.58	341.20
Top Width (ft)	153.09	Top Width (ft)	75.65	44.50	32.94
Vel Total (ft/s)	4.87	Avg. Vel. (ft/s)	2.84	6.28	3.83
Max Chl Dpth (ft)	6.94	Hydr. Depth (ft)	1.71	5.71	2.71
Conv. Total (cfs)	31365.1	Conv. (cfs)	4999.1	21721.2	4644.9
Length Wtd. (ft)	192.90	Wetted Per. (ft)	75.80	45.14	33.29
Min Ch El (ft)	1469.70	Shear (lb/sq ft)	0.58	1.90	0.90
Alpha	1.29	Stream Power (lb/ft s)	1.63	11.91	3.45
Frctn Loss (ft)	1.09	Cum Volume (acre-ft)	52.14	55.56	27.34
C & E Loss (ft)	0.01	Cum SA (acres)	29.41	9.05	20.34

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1477.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1477.31	Reach Len. (ft)	193.00	193.00	192.00
Crit W.S. (ft)		Flow Area (sq ft)	182.69	284.04	112.26
E.G. Slope (ft/ft)	0.005582	Area (sq ft)	182.69	284.04	112.26
Q Total (cfs)	3067.00	Flow (cfs)	630.55	1954.11	482.34
Top Width (ft)	161.63	Top Width (ft)	81.41	44.50	35.71
Vel Total (ft/s)	5.30	Avg. Vel. (ft/s)	3.45	6.88	4.30
Max Chl Dpth (ft)	7.61	Hydr. Depth (ft)	2.24	6.38	3.14
Conv. Total (cfs)	41050.8	Conv. (cfs)	8439.7	26155.2	6456.0
Length Wtd. (ft)	192.89	Wetted Per. (ft)	81.70	45.14	36.14
Min Ch El (ft)	1469.70	Shear (lb/sq ft)	0.78	2.19	1.08
Alpha	1.27	Stream Power (lb/ft s)	2.69	15.09	4.65
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	68.95	62.74	39.20
C & E Loss (ft)	0.01	Cum SA (acres)	34.07	9.12	22.40

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.148

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9884.94	1475.6	9925.94	1471.42	9934.3	1473.1	9938.91	1473.2	9949.8	1473
9952.14	1473	9978.31	1472.4	9984.19	1470.15	9987.16	1468.5	10000	1468.3
10003.23	1469.4	10014.82	1473.69	10024.97	1473.11	10034.28	1474.4	10054	1478.9

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9884.94	.055	9978.31	.055	10014.82	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.31	10014.82	76	79	79	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1474.92	Element			
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1474.54	Reach Len. (ft)	76.00	79.00	79.00
Crit W.S. (ft)		Flow Area (sq ft)	140.21	166.43	18.92
E.G. Slope (ft/ft)	0.006365	Area (sq ft)	140.21	166.43	18.92
Q Total (cfs)	1422.00	Flow (cfs)	427.80	955.14	39.06
Top Width (ft)	139.48	Top Width (ft)	82.92	36.51	20.05
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)	3.05	5.74	2.06
Max Chl Dpth (ft)	6.23	Hydr. Depth (ft)	1.69	4.56	0.94
Conv. Total (cfs)	17823.4	Conv. (cfs)	5362.1	11971.8	489.6
Length Wtd. (ft)	78.52	Wetted Per. (ft)	83.26	38.31	20.17
Min Ch El (ft)	1468.30	Shear (lb/sq ft)	0.67	1.73	0.37
Alpha	1.31	Stream Power (lb/ft s)	2.04	9.91	0.77
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	36.14	45.00	16.35
C & E Loss (ft)	0.02	Cum SA (acres)	21.26	8.74	15.06

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1475.69	Element			
Vel Head (ft)	0.42	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1475.27	Reach Len. (ft)	76.00	79.00	79.00
Crit W.S. (ft)		Flow Area (sq ft)	203.36	193.08	34.72
E.G. Slope (ft/ft)	0.005955	Area (sq ft)	203.36	193.08	34.72
Q Total (cfs)	2005.00	Flow (cfs)	727.60	1183.38	94.02
Top Width (ft)	149.84	Top Width (ft)	90.08	36.51	23.25
Vel Total (ft/s)	4.65	Avg. Vel. (ft/s)	3.58	6.13	2.71
Max Chl Dpth (ft)	6.96	Hydr. Depth (ft)	2.26	5.29	1.49
Conv. Total (cfs)	25981.8	Conv. (cfs)	9428.6	15334.8	1218.4
Length Wtd. (ft)	78.39	Wetted Per. (ft)	90.45	38.31	23.45
Min Ch El (ft)	1468.30	Shear (lb/sq ft)	0.84	1.87	0.55
Alpha	1.26	Stream Power (lb/ft s)	2.99	11.49	1.49
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	45.77	51.56	23.32
C & E Loss (ft)	0.01	Cum SA (acres)	26.67	8.84	19.32

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1476.02	Element			
Vel Head (ft)	0.45	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1475.57	Reach Len. (ft)	76.00	79.00	79.00

Crit W.S. (ft)		Flow Area (sq ft)	231.07	204.13	41.96
E.G. Slope (ft/ft)	0.005958	Area (sq ft)	231.07	204.13	41.96
Q Total (cfs)	2304.00	Flow (cfs)	881.16	1298.67	124.17
Top Width (ft)	154.14	Top Width (ft)	93.05	36.51	24.58
Vel Total (ft/s)	4.83	Avg. Vel. (ft/s)	3.81	6.36	2.96
Max Chl Dpth (ft)	7.27	Hydr. Depth (ft)	2.48	5.59	1.71
Conv. Total (cfs)	29849.8	Conv. (cfs)	11416.0	16825.1	1608.7
Length Wtd. (ft)	78.33	Wetted Per. (ft)	93.44	38.31	24.81
Min Ch El (ft)	1468.30	Shear (lb/sq ft)	0.92	1.98	0.63
Alpha	1.24	Stream Power (lb/ft s)	3.51	12.61	1.86
Frctn Loss (ft)	0.41	Cum Volume (acre-ft)	51.34	54.54	27.06
C & E Loss (ft)	0.00	Cum SA (acres)	29.03	8.87	20.21

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1476.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1476.23	Reach Len. (ft)	76.00	79.00	79.00
Crit W.S. (ft)		Flow Area (sq ft)	292.55	228.17	59.09
E.G. Slope (ft/ft)	0.005968	Area (sq ft)	292.55	228.17	59.09
Q Total (cfs)	3067.00	Flow (cfs)	1298.07	1564.92	204.01
Top Width (ft)	157.34	Top Width (ft)	93.37	36.51	27.46
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)	4.44	6.86	3.45
Max Chl Dpth (ft)	7.93	Hydr. Depth (ft)	3.13	6.25	2.15
Conv. Total (cfs)	39699.2	Conv. (cfs)	16802.2	20256.2	2640.7
Length Wtd. (ft)	78.22	Wetted Per. (ft)	94.38	38.31	27.78
Min Ch El (ft)	1468.30	Shear (lb/sq ft)	1.15	2.22	0.79
Alpha	1.18	Stream Power (lb/ft s)	5.12	15.22	2.74
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	67.90	61.61	38.83
C & E Loss (ft)	0.00	Cum SA (acres)	33.69	8.94	22.26

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.133

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9905.98	1475.3	9910.5	1474.74	9957.93	1473.9	9964.29	1472.7	9966.03	1472.6
9966.76	1472.4	9971.18	1471.81	9976.08	1471.37	9979	1470.9	9979.9	1470.9
9982.72	1470.6	9984.48	1470.15	9987.79	1470.2	9989.73	1469.7	9990.71	1469.6
9991.69	1469.4	9995.45	1468.77	9997.05	1468.2	10000	1468.1	10015.43	1468.2
10033.03	1471.9	10037.33	1472.6	10048.66	1472.7	10058.13	1473.3	10090	1480.9

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9905.98	.055	9971.18	.055	10033.03	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9971.18	10033.03	153	152	146	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1474.52	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.31	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1474.21	Reach Len. (ft)	153.00	152.00	146.00
Crit W.S. (ft)		Flow Area (sq ft)	21.69	284.88	39.12
E.G. Slope (ft/ft)	0.003860	Area (sq ft)	21.69	284.88	39.12
Q Total (cfs)	1422.00	Flow (cfs)	28.82	1313.16	80.02
Top Width (ft)	121.37	Top Width (ft)	30.61	61.85	28.91
Vel Total (ft/s)	4.11	Avg. Vel. (ft/s)	1.33	4.61	2.05
Max Chl Dpth (ft)	6.11	Hydr. Depth (ft)	0.71	4.61	1.35
Conv. Total (cfs)	22886.5	Conv. (cfs)	463.9	21134.8	1287.8
Length Wtd. (ft)	151.80	Wetted Per. (ft)	30.80	62.61	29.09
Min Ch El (ft)	1468.10	Shear (lb/sq ft)	0.17	1.10	0.32
Alpha	1.18	Stream Power (lb/ft s)	0.23	5.06	0.66
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	36.00	44.59	16.30
C & E Loss (ft)	0.02	Cum SA (acres)	21.16	8.65	15.02

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1475.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1474.88	Reach Len. (ft)	153.00	152.00	146.00
Crit W.S. (ft)		Flow Area (sq ft)	54.56	326.46	59.50
E.G. Slope (ft/ft)	0.004377	Area (sq ft)	54.56	326.46	59.50
Q Total (cfs)	2005.00	Flow (cfs)	89.54	1754.61	160.86
Top Width (ft)	155.38	Top Width (ft)	61.81	61.85	31.72
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	1.64	5.37	2.70
Max Chl Dpth (ft)	6.78	Hydr. Depth (ft)	0.88	5.28	1.88
Conv. Total (cfs)	30306.9	Conv. (cfs)	1353.4	26522.1	2431.5
Length Wtd. (ft)	151.71	Wetted Per. (ft)	62.00	62.61	31.98
Min Ch El (ft)	1468.10	Shear (lb/sq ft)	0.24	1.42	0.51
Alpha	1.25	Stream Power (lb/ft s)	0.39	7.66	1.37
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	45.54	51.09	23.23
C & E Loss (ft)	0.01	Cum SA (acres)	26.53	8.75	19.27

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1475.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1475.16	Reach Len. (ft)	153.00	152.00	146.00
Crit W.S. (ft)		Flow Area (sq ft)	72.47	344.06	68.70
E.G. Slope (ft/ft)	0.004570	Area (sq ft)	72.47	344.06	68.70
Q Total (cfs)	2304.00	Flow (cfs)	143.32	1956.98	203.69
Top Width (ft)	158.87	Top Width (ft)	64.10	61.85	32.92
Vel Total (ft/s)	4.75	Avg. Vel. (ft/s)	1.98	5.69	2.97
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	1.13	5.56	2.09
Conv. Total (cfs)	34080.6	Conv. (cfs)	2120.0	28947.6	3013.0
Length Wtd. (ft)	151.69	Wetted Per. (ft)	64.32	62.61	33.21
Min Ch El (ft)	1468.10	Shear (lb/sq ft)	0.32	1.57	0.59
Alpha	1.26	Stream Power (lb/ft s)	0.64	8.92	1.75
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	51.08	54.05	26.96
C & E Loss (ft)	0.01	Cum SA (acres)	28.90	8.78	20.16

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1476.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1475.77	Reach Len. (ft)	153.00	152.00	146.00
Crit W.S. (ft)		Flow Area (sq ft)	111.74	381.38	89.32
E.G. Slope (ft/ft)	0.005064	Area (sq ft)	111.74	381.38	89.32

Q Total (cfs)	3067.00	Flow (cfs)	305.49	2445.68	315.83
Top Width (ft)	162.50	Top Width (ft)	65.20	61.85	35.45
Vel Total (ft/s)	5.27	Avg. Vel. (ft/s)	2.73	6.41	3.54
Max Chl Dpth (ft)	7.67	Hydr. Depth (ft)	1.71	6.17	2.52
Conv. Total (cfs)	43098.9	Conv. (cfs)	4292.8	34367.8	4438.2
Length Wtd. (ft)	151.66	Wetted Per. (ft)	65.89	62.61	35.81
Min Ch El (ft)	1468.10	Shear (lb/sq ft)	0.54	1.93	0.79
Alpha	1.26	Stream Power (lb/ft s)	1.47	12.35	2.79
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	67.54	61.05	38.69
C & E Loss (ft)	0.01	Cum SA (acres)	33.55	8.85	22.21

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.105

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9862.88	1474.6	9869.02	1473.9	9873.19	1473.9	9888.54	1473.5	9896.25	1473
9919.19	1472.7	9948.56	1471.7	9956.32	1471.2	9961.12	1471.4	9964.3	1471.8
9970.16	1471.9	9980.05	1468.5	9989.76	1467.7	9994.43	1467.4	10000	1467
10016.84	1472.2	10025.23	1471.7	10035.35	1472.8	10050.65	1475.6	10072.52	1481

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9862.88	.055	9970.16	.055	10016.84	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970.16	10016.84	168	163	157	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1473.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1473.26	Reach Len. (ft)	168.00	163.00	157.00
Crit W.S. (ft)		Flow Area (sq ft)	78.14	202.47	21.81
E.G. Slope (ft/ft)	0.007015	Area (sq ft)	78.14	202.47	21.81
Q Total (cfs)	1422.00	Flow (cfs)	177.02	1194.59	50.39
Top Width (ft)	145.65	Top Width (ft)	77.94	46.68	21.03
Vel Total (ft/s)	4.70	Avg. Vel. (ft/s)	2.27	5.90	2.31
Max Chl Dpth (ft)	6.26	Hydr. Depth (ft)	1.00	4.34	1.04
Conv. Total (cfs)	16978.3	Conv. (cfs)	2113.5	14263.1	601.7
Length Wtd. (ft)	163.25	Wetted Per. (ft)	78.01	48.09	21.15
Min Ch El (ft)	1467.00	Shear (lb/sq ft)	0.44	1.84	0.45
Alpha	1.36	Stream Power (lb/ft s)	0.99	10.88	1.04
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	35.82	43.74	16.20
C & E Loss (ft)	0.05	Cum SA (acres)	20.97	8.46	14.93

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1474.42	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.55	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1473.87	Reach Len. (ft)	168.00	163.00	157.00
Crit W.S. (ft)		Flow Area (sq ft)	130.23	230.99	35.68
E.G. Slope (ft/ft)	0.007395	Area (sq ft)	130.23	230.99	35.68
Q Total (cfs)	2005.00	Flow (cfs)	370.79	1527.81	106.40
Top Width (ft)	166.95	Top Width (ft)	95.90	46.68	24.37
Vel Total (ft/s)	5.05	Avg. Vel. (ft/s)	2.85	6.61	2.98
Max Chl Dpth (ft)	6.87	Hydr. Depth (ft)	1.36	4.95	1.46
Conv. Total (cfs)	23315.4	Conv. (cfs)	4311.8	17766.3	1237.3
Length Wtd. (ft)	163.34	Wetted Per. (ft)	95.98	48.09	24.54
Min Ch El (ft)	1467.00	Shear (lb/sq ft)	0.63	2.22	0.67
Alpha	1.38	Stream Power (lb/ft s)	1.78	14.67	2.00
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)	45.22	50.11	23.07
C & E Loss (ft)	0.06	Cum SA (acres)	26.26	8.56	19.18

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1474.72				
Vel Head (ft)	0.58	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1474.13	Reach Len. (ft)	168.00	163.00	157.00
Crit W.S. (ft)		Flow Area (sq ft)	156.70	243.16	42.22
E.G. Slope (ft/ft)	0.007548	Area (sq ft)	156.70	243.16	42.22
Q Total (cfs)	2304.00	Flow (cfs)	485.64	1681.40	136.95
Top Width (ft)	175.66	Top Width (ft)	103.18	46.68	25.79
Vel Total (ft/s)	5.21	Avg. Vel. (ft/s)	3.10	6.91	3.24
Max Chl Dpth (ft)	7.13	Hydr. Depth (ft)	1.52	5.21	1.64
Conv. Total (cfs)	26520.2	Conv. (cfs)	5590.0	19353.8	1576.4
Length Wtd. (ft)	163.40	Wetted Per. (ft)	103.28	48.09	25.99
Min Ch El (ft)	1467.00	Shear (lb/sq ft)	0.71	2.38	0.77
Alpha	1.38	Stream Power (lb/ft s)	2.22	16.48	2.48
Frctn Loss (ft)	1.04	Cum Volume (acre-ft)	50.67	53.02	26.77
C & E Loss (ft)	0.06	Cum SA (acres)	28.60	8.59	20.06

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1475.36				
Vel Head (ft)	0.65	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1474.71	Reach Len. (ft)	168.00	163.00	157.00
Crit W.S. (ft)		Flow Area (sq ft)	217.45	270.01	57.96
E.G. Slope (ft/ft)	0.007716	Area (sq ft)	217.45	270.01	57.96
Q Total (cfs)	3067.00	Flow (cfs)	825.34	2024.32	217.34
Top Width (ft)	182.90	Top Width (ft)	107.28	46.68	28.94
Vel Total (ft/s)	5.62	Avg. Vel. (ft/s)	3.80	7.50	3.75
Max Chl Dpth (ft)	7.71	Hydr. Depth (ft)	2.03	5.78	2.00
Conv. Total (cfs)	34915.0	Conv. (cfs)	9395.7	23045.0	2474.2
Length Wtd. (ft)	163.54	Wetted Per. (ft)	107.51	48.09	29.18
Min Ch El (ft)	1467.00	Shear (lb/sq ft)	0.97	2.70	0.96
Alpha	1.33	Stream Power (lb/ft s)	3.70	20.28	3.59
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)	66.96	59.92	38.44
C & E Loss (ft)	0.06	Cum SA (acres)	33.25	8.66	22.10

Warning: The cross-section end points had to be extended vertically for the computed water surface.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.073

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9857.67	1473.5	9867.48	1472.42	9880.65	1472.6	9924.11	1470.9	9938.54	1470.8
9942.88	1470.6	9959.46	1469.7	9978.65	1467.51	9992.31	1466.7	10000	1466.7
10011.03	1471.4	10013.4	1471.54	10024.88	1471.34	10042.77	1471.3	10059.89	1472.5
10063.71	1473.4	10069.72	1474.4	10091.37	1478.89				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9857.67	.055	9942.88	.055	10011.03	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9942.88	10011.03	153	163	164	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1472.72	Element			
Vel Head (ft)	0.30	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1472.43	Reach Len. (ft)	153.00	163.00	164.00
Crit W.S. (ft)		Flow Area (sq ft)	60.04	265.07	42.45
E.G. Slope (ft/ft)	0.004936	Area (sq ft)	60.04	265.07	42.45
Q Total (cfs)	1422.00	Flow (cfs)	116.84	1230.77	74.38
Top Width (ft)	174.32	Top Width (ft)	58.35	68.15	47.81
Vel Total (ft/s)	3.87	Avg. Vel. (ft/s)	1.95	4.64	1.75
Max Chl Dpth (ft)	5.73	Hydr. Depth (ft)	1.03	3.89	0.89
Conv. Total (cfs)	20239.8	Conv. (cfs)	1663.1	17518.0	1058.7
Length Wtd. (ft)	161.25	Wetted Per. (ft)	58.39	69.28	47.86
Min Ch El (ft)	1466.70	Shear (lb/sq ft)	0.32	1.18	0.27
Alpha	1.28	Stream Power (lb/ft s)	0.62	5.47	0.48
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	35.56	42.86	16.08
C & E Loss (ft)	0.00	Cum SA (acres)	20.71	8.24	14.81

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1473.35	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1472.98	Reach Len. (ft)	153.00	163.00	164.00
Crit W.S. (ft)		Flow Area (sq ft)	101.96	303.00	70.10
E.G. Slope (ft/ft)	0.005333	Area (sq ft)	101.96	303.00	70.10
Q Total (cfs)	2005.00	Flow (cfs)	235.34	1598.72	170.94
Top Width (ft)	199.58	Top Width (ft)	80.52	68.15	50.91
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	2.31	5.28	2.44
Max Chl Dpth (ft)	6.28	Hydr. Depth (ft)	1.27	4.45	1.38
Conv. Total (cfs)	27455.0	Conv. (cfs)	3222.5	21891.7	2340.7
Length Wtd. (ft)	160.91	Wetted Per. (ft)	80.59	69.28	51.02
Min Ch El (ft)	1466.70	Shear (lb/sq ft)	0.42	1.46	0.46
Alpha	1.31	Stream Power (lb/ft s)	0.97	7.68	1.12

Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	44.77	49.11	22.88
C & E Loss (ft)	0.01	Cum SA (acres)	25.92	8.34	19.04

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1473.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1473.23	Reach Len. (ft)	153.00	163.00	164.00
Crit W.S. (ft)		Flow Area (sq ft)	121.96	319.69	82.70
E.G. Slope (ft/ft)	0.005438	Area (sq ft)	121.96	319.69	82.70
Q Total (cfs)	2304.00	Flow (cfs)	314.49	1765.27	224.24
Top Width (ft)	202.84	Top Width (ft)	82.74	68.15	51.95
Vel Total (ft/s)	4.39	Avg. Vel. (ft/s)	2.58	5.52	2.71
Max Chl Dpth (ft)	6.53	Hydr. Depth (ft)	1.47	4.69	1.59
Conv. Total (cfs)	31244.7	Conv. (cfs)	4264.8	23939.0	3040.9
Length Wtd. (ft)	160.77	Wetted Per. (ft)	82.82	69.28	52.08
Min Ch El (ft)	1466.70	Shear (lb/sq ft)	0.50	1.57	0.54
Alpha	1.29	Stream Power (lb/ft s)	1.29	8.65	1.46
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	50.14	51.97	26.54
C & E Loss (ft)	0.01	Cum SA (acres)	28.24	8.38	19.92

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1474.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1473.77	Reach Len. (ft)	153.00	163.00	164.00
Crit W.S. (ft)		Flow Area (sq ft)	167.72	356.56	111.54
E.G. Slope (ft/ft)	0.005697	Area (sq ft)	167.72	356.56	111.54
Q Total (cfs)	3067.00	Flow (cfs)	535.61	2167.33	364.06
Top Width (ft)	208.26	Top Width (ft)	85.21	68.15	54.90
Vel Total (ft/s)	4.82	Avg. Vel. (ft/s)	3.19	6.08	3.26
Max Chl Dpth (ft)	7.07	Hydr. Depth (ft)	1.97	5.23	2.03
Conv. Total (cfs)	40633.4	Conv. (cfs)	7096.0	28714.0	4823.3
Length Wtd. (ft)	160.49	Wetted Per. (ft)	85.58	69.28	55.08
Min Ch El (ft)	1466.70	Shear (lb/sq ft)	0.70	1.83	0.72
Alpha	1.25	Stream Power (lb/ft s)	2.23	11.13	2.35
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	66.22	58.75	38.14
C & E Loss (ft)	0.02	Cum SA (acres)	32.88	8.44	21.95

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.043

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876.67	1472.7	9892.87	1471.03	9915.58	1470.95	9954.87	1469.14	9958.88	1469.09
9965.35	1469.2	9972.08	1469.1	9974.02	1468.98	9984.58	1468.77	9987.8	1467.68
9991.72	1466	10000	1465.61	10008.59	1465.73	10016.85	1468.94	10020.11	1470.5
10027.07	1470.2	10030.3	1470.31	10032.63	1470.61	10043.51	1470.56	10055.25	1470.19
10061.05	1470.5	10068.68	1470.6	10080	1471.02	10091.02	1471.29	10127.26	1472.8
10128.14	1473	10130.29	1473.3	10137.3	1474.8	10142.03	1476.04		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9876.67	.055	9984.58	.055	10020.11	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.58	10020.11	167	178	182	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1471.95	Element			
Vel Head (ft)	0.29	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1471.66	Reach Len. (ft)	167.00	178.00	182.00
Crit W.S. (ft)		Flow Area (sq ft)	158.41	172.01	76.22
E.G. Slope (ft/ft)	0.004658	Area (sq ft)	158.41	172.01	76.22
Q Total (cfs)	1422.00	Flow (cfs)	402.61	883.13	136.26
Top Width (ft)	213.13	Top Width (ft)	97.82	35.53	79.78
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)	2.54	5.13	1.79
Max Chl Dpth (ft)	6.06	Hydr. Depth (ft)	1.62	4.84	0.96
Conv. Total (cfs)	20834.3	Conv. (cfs)	5898.8	12939.2	1996.4
Length Wtd. (ft)	175.27	Wetted Per. (ft)	97.90	37.02	79.84
Min Ch El (ft)	1465.60	Shear (lb/sq ft)	0.47	1.35	0.28
Alpha	1.51	Stream Power (lb/ft s)	1.20	6.94	0.50
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	35.17	42.05	15.86
C & E Loss (ft)	0.00	Cum SA (acres)	20.44	8.05	14.57

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1472.50	Element			
Vel Head (ft)	0.33	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1472.17	Reach Len. (ft)	167.00	178.00	182.00
Crit W.S. (ft)		Flow Area (sq ft)	209.63	190.15	120.08
E.G. Slope (ft/ft)	0.005031	Area (sq ft)	209.63	190.15	120.08
Q Total (cfs)	2005.00	Flow (cfs)	645.64	1084.74	274.62
Top Width (ft)	230.33	Top Width (ft)	102.77	35.53	92.03
Vel Total (ft/s)	3.86	Avg. Vel. (ft/s)	3.08	5.70	2.29
Max Chl Dpth (ft)	6.57	Hydr. Depth (ft)	2.04	5.35	1.30
Conv. Total (cfs)	28266.9	Conv. (cfs)	9102.4	15292.8	3871.7
Length Wtd. (ft)	174.85	Wetted Per. (ft)	102.88	37.02	92.10
Min Ch El (ft)	1465.60	Shear (lb/sq ft)	0.64	1.61	0.41
Alpha	1.44	Stream Power (lb/ft s)	1.97	9.20	0.94
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	44.22	48.19	22.52
C & E Loss (ft)	0.00	Cum SA (acres)	25.59	8.15	18.77

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1472.75	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1472.40	Reach Len. (ft)	167.00	178.00	182.00
Crit W.S. (ft)		Flow Area (sq ft)	233.67	198.37	142.02
E.G. Slope (ft/ft)	0.005156	Area (sq ft)	233.67	198.37	142.02
Q Total (cfs)	2304.00	Flow (cfs)	772.00	1178.36	353.64
Top Width (ft)	238.13	Top Width (ft)	105.02	35.53	97.59
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)	3.30	5.94	2.49
Max Chl Dpth (ft)	6.80	Hydr. Depth (ft)	2.23	5.58	1.46
Conv. Total (cfs)	32087.6	Conv. (cfs)	10751.6	16410.9	4925.1
Length Wtd. (ft)	174.71	Wetted Per. (ft)	105.14	37.02	97.66
Min Ch El (ft)	1465.60	Shear (lb/sq ft)	0.72	1.72	0.47
Alpha	1.41	Stream Power (lb/ft s)	2.36	10.25	1.17
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	49.51	51.00	26.12

C & E Loss (ft)	0.00	Cum SA (acres)	27.91	8.18	19.64

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1473.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1472.93	Reach Len. (ft)	167.00	178.00	182.00
Crit W.S. (ft)		Flow Area (sq ft)	290.20	217.13	196.71
E.G. Slope (ft/ft)	0.005297	Area (sq ft)	290.20	217.13	196.71
Q Total (cfs)	3067.00	Flow (cfs)	1101.00	1388.47	577.53
Top Width (ft)	251.16	Top Width (ft)	107.91	35.53	107.72
Vel Total (ft/s)	4.36	Avg. Vel. (ft/s)	3.79	6.39	2.94
Max Chl Dpth (ft)	7.33	Hydr. Depth (ft)	2.69	6.11	1.83
Conv. Total (cfs)	42140.2	Conv. (cfs)	15127.6	19077.4	7935.2
Length Wtd. (ft)	174.43	Wetted Per. (ft)	108.28	37.02	107.82
Min Ch El (ft)	1465.60	Shear (lb/sq ft)	0.89	1.94	0.60
Alpha	1.33	Stream Power (lb/ft s)	3.36	12.40	1.77
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	65.42	57.67	37.56
C & E Loss (ft)	0.00	Cum SA (acres)	32.54	8.25	21.64

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 1.010

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9847.14	1471.5	9862.07	1469.92	9878.96	1470.38	9914.83	1469.7	9940.95	1468.4
9959.41	1468	9968.09	1469.2	9985.44	1469.25	9994.96	1465.3	10000	1465
10010.83	1465.4	10020.55	1469.5	10044.93	1468.9	10050.41	1469	10056.19	1469.4
10074.79	1470.3	10087.53	1471.6	10096.32	1472.04	10122.51	1474.2		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9847.14	.055	9985.44	.055	10020.55	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.44	10020.55	153	166	172	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1470.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1470.66	Reach Len. (ft)	153.00	166.00	172.00
Crit W.S. (ft)		Flow Area (sq ft)	162.97	150.13	68.79
E.G. Slope (ft/ft)	0.006557	Area (sq ft)	162.97	150.13	68.79
Q Total (cfs)	1422.00	Flow (cfs)	413.49	839.46	169.05
Top Width (ft)	223.14	Top Width (ft)	130.31	35.11	57.71
Vel Total (ft/s)	3.72	Avg. Vel. (ft/s)	2.54	5.59	2.46
Max Chl Dpth (ft)	5.65	Hydr. Depth (ft)	1.25	4.28	1.19
Conv. Total (cfs)	17561.4	Conv. (cfs)	5106.5	10367.1	2087.7
Length Wtd. (ft)	162.86	Wetted Per. (ft)	130.48	36.74	57.78
Min Ch El (ft)	1465.00	Shear (lb/sq ft)	0.51	1.67	0.49
Alpha	1.52	Stream Power (lb/ft s)	1.30	9.35	1.20

Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	34.56	41.39	15.55
C & E Loss (ft)	0.00	Cum SA (acres)	20.00	7.90	14.28

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1471.51	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1471.16	Reach Len. (ft)	153.00	166.00	172.00
Crit W.S. (ft)		Flow Area (sq ft)	229.80	167.82	99.10
E.G. Slope (ft/ft)	0.006457	Area (sq ft)	229.80	167.82	99.10
Q Total (cfs)	2005.00	Flow (cfs)	710.30	1002.91	291.80
Top Width (ft)	232.83	Top Width (ft)	135.07	35.11	62.65
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)	3.09	5.98	2.94
Max Chl Dpth (ft)	6.16	Hydr. Depth (ft)	1.70	4.78	1.58
Conv. Total (cfs)	24952.2	Conv. (cfs)	8839.6	12481.1	3631.4
Length Wtd. (ft)	162.13	Wetted Per. (ft)	135.27	36.74	62.74
Min Ch El (ft)	1465.00	Shear (lb/sq ft)	0.68	1.84	0.64
Alpha	1.38	Stream Power (lb/ft s)	2.12	11.00	1.87
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	43.38	47.46	22.07
C & E Loss (ft)	0.00	Cum SA (acres)	25.14	8.01	18.45

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1471.75	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1471.39	Reach Len. (ft)	153.00	166.00	172.00
Crit W.S. (ft)		Flow Area (sq ft)	261.67	176.03	114.03
E.G. Slope (ft/ft)	0.006377	Area (sq ft)	261.67	176.03	114.03
Q Total (cfs)	2304.00	Flow (cfs)	866.98	1079.33	357.69
Top Width (ft)	237.34	Top Width (ft)	137.28	35.11	64.94
Vel Total (ft/s)	4.18	Avg. Vel. (ft/s)	3.31	6.13	3.14
Max Chl Dpth (ft)	6.39	Hydr. Depth (ft)	1.91	5.01	1.76
Conv. Total (cfs)	28852.2	Conv. (cfs)	10856.9	13516.1	4479.2
Length Wtd. (ft)	161.88	Wetted Per. (ft)	137.49	36.74	65.04
Min Ch El (ft)	1465.00	Shear (lb/sq ft)	0.76	1.91	0.70
Alpha	1.33	Stream Power (lb/ft s)	2.51	11.69	2.19
Frctn Loss (ft)	1.03	Cum Volume (acre-ft)	48.56	50.24	25.59
C & E Loss (ft)	0.00	Cum SA (acres)	27.45	8.04	19.30

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1472.32	Element			
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1471.93	Reach Len. (ft)	153.00	166.00	172.00
Crit W.S. (ft)		Flow Area (sq ft)	336.00	194.92	150.93
E.G. Slope (ft/ft)	0.006201	Area (sq ft)	336.00	194.92	150.93
Q Total (cfs)	3067.00	Flow (cfs)	1287.82	1261.33	517.86
Top Width (ft)	246.98	Top Width (ft)	138.30	35.11	73.57
Vel Total (ft/s)	4.50	Avg. Vel. (ft/s)	3.83	6.47	3.43

Max Chl Dpth (ft)	6.93	Hydr. Depth (ft)	2.43	5.55	2.05
Conv. Total (cfs)	38948.7	Conv. (cfs)	16354.4	16018.0	6576.4
Length Wtd. (ft)	161.41	Wetted Per. (ft)	138.95	36.74	73.69
Min Ch El (ft)	1465.00	Shear (lb/sq ft)	0.94	2.05	0.79
Alpha	1.25	Stream Power (lb/ft s)	3.59	13.29	2.72
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	64.22	56.83	36.83
C & E Loss (ft)	0.00	Cum SA (acres)	32.06	8.11	21.26

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.978

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9851.37	1470.7	9862.56	1469.46	9880.05	1469.3	9887.26	1468.83	9894.56	1468.8
9908.76	1468.6	9933.42	1467.87	9943.1	1467.91	9945.24	1467.83	9952.43	1467.2
9959.52	1466.8	9966.78	1467.2	9969.73	1467.8	9970.93	1467.62	9985.52	1468.1
9994.77	1464.7	10000	1464.43	10013.19	1464.87	10017.47	1466.31	10022.96	1468.3
10040.81	1467.71	10055.02	1468.11	10063.73	1469.35	10104.04	1474.33		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9851.37	.055	9985.52	.055	10022.96	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.52	10022.96	144	159	162	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1469.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1469.54	Reach Len. (ft)	144.00	159.00	162.00
Crit W.S. (ft)		Flow Area (sq ft)	158.61	148.69	57.93
E.G. Slope (ft/ft)	0.007127	Area (sq ft)	158.61	148.69	57.93
Q Total (cfs)	1422.00	Flow (cfs)	426.65	832.69	162.66
Top Width (ft)	203.39	Top Width (ft)	123.66	37.44	42.29
Vel Total (ft/s)	3.89	Avg. Vel. (ft/s)	2.69	5.60	2.81
Max Chl Dpth (ft)	5.11	Hydr. Depth (ft)	1.28	3.97	1.37
Conv. Total (cfs)	16844.5	Conv. (cfs)	5054.0	9863.8	1926.8
Length Wtd. (ft)	155.29	Wetted Per. (ft)	123.82	38.65	42.40
Min Ch El (ft)	1464.43	Shear (lb/sq ft)	0.57	1.71	0.61
Alpha	1.41	Stream Power (lb/ft s)	1.53	9.59	1.71
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	33.99	40.82	15.30
C & E Loss (ft)	0.00	Cum SA (acres)	19.55	7.77	14.08

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1470.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1470.11	Reach Len. (ft)	144.00	159.00	162.00
Crit W.S. (ft)		Flow Area (sq ft)	230.65	170.06	83.38
E.G. Slope (ft/ft)	0.006528	Area (sq ft)	230.65	170.06	83.38
Q Total (cfs)	2005.00	Flow (cfs)	741.66	996.85	266.50

Top Width (ft)	213.15	Top Width (ft)	128.81	37.44	46.91
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)	3.22	5.86	3.20
Max Chl Dpth (ft)	5.68	Hydr. Depth (ft)	1.79	4.54	1.78
Conv. Total (cfs)	24815.0	Conv. (cfs)	9179.1	12337.5	3298.3
Length Wtd. (ft)	154.23	Wetted Per. (ft)	129.00	38.65	47.06
Min Ch El (ft)	1464.43	Shear (lb/sq ft)	0.73	1.79	0.72
Alpha	1.30	Stream Power (lb/ft s)	2.34	10.51	2.31
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	42.57	46.82	21.71
C & E Loss (ft)	0.01	Cum SA (acres)	24.68	7.87	18.24

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1470.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1470.36	Reach Len. (ft)	144.00	159.00	162.00
Crit W.S. (ft)		Flow Area (sq ft)	263.91	179.64	95.65
E.G. Slope (ft/ft)	0.006356	Area (sq ft)	263.91	179.64	95.65
Q Total (cfs)	2304.00	Flow (cfs)	905.18	1077.68	321.14
Top Width (ft)	217.54	Top Width (ft)	131.12	37.44	48.98
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	3.43	6.00	3.36
Max Chl Dpth (ft)	5.93	Hydr. Depth (ft)	2.01	4.80	1.95
Conv. Total (cfs)	28900.5	Conv. (cfs)	11354.3	13518.0	4028.2
Length Wtd. (ft)	153.87	Wetted Per. (ft)	131.33	38.65	49.15
Min Ch El (ft)	1464.43	Shear (lb/sq ft)	0.80	1.84	0.77
Alpha	1.26	Stream Power (lb/ft s)	2.73	11.06	2.59
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	47.64	49.56	25.17
C & E Loss (ft)	0.01	Cum SA (acres)	26.98	7.90	19.08

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1471.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1470.95	Reach Len. (ft)	144.00	159.00	162.00
Crit W.S. (ft)		Flow Area (sq ft)	341.43	201.42	125.51
E.G. Slope (ft/ft)	0.006038	Area (sq ft)	341.43	201.42	125.51
Q Total (cfs)	3067.00	Flow (cfs)	1332.99	1271.07	462.93
Top Width (ft)	225.28	Top Width (ft)	134.15	37.44	53.69
Vel Total (ft/s)	4.59	Avg. Vel. (ft/s)	3.90	6.31	3.69
Max Chl Dpth (ft)	6.52	Hydr. Depth (ft)	2.55	5.38	2.34
Conv. Total (cfs)	39471.1	Conv. (cfs)	17155.1	16358.2	5957.7
Length Wtd. (ft)	153.21	Wetted Per. (ft)	134.63	38.65	53.89
Min Ch El (ft)	1464.43	Shear (lb/sq ft)	0.96	1.96	0.88
Alpha	1.20	Stream Power (lb/ft s)	3.73	12.40	3.24
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	63.03	56.08	36.29
C & E Loss (ft)	0.01	Cum SA (acres)	31.59	7.97	21.01

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.949

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
    9854    1470 9877.45 1467.43 9898.13  1467.7 9937.73  1467.6 9953.13  1467.3
 9963.82  1466.8 9984.14 1465.39 9988.74  1463.6   10000  1462.910010.51  1463.5
10018.47  1464.210023.91  1466.810031.94  1466.710038.59  1467.610040.83    1468
10049.42  1468.610071.44 1473.13
```

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Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9854    .055 9984.14    .05510023.91    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9984.1410023.91               107     100      98             .1       .3
```

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1468.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1468.51	Reach Len. (ft)	107.00	100.00	98.00
Crit W.S. (ft)		Flow Area (sq ft)	140.19	187.07	26.69
E.G. Slope (ft/ft)	0.005600	Area (sq ft)	140.19	187.07	26.69
Q Total (cfs)	1422.00	Flow (cfs)	320.32	1044.36	57.32
Top Width (ft)	180.59	Top Width (ft)	116.57	39.77	24.25
Vel Total (ft/s)	4.02	Avg. Vel. (ft/s)	2.28	5.58	2.15
Max Chl Dpth (ft)	5.61	Hydr. Depth (ft)	1.20	4.70	1.10
Conv. Total (cfs)	19002.5	Conv. (cfs)	4280.5	13956.1	765.9
Length Wtd. (ft)	101.35	Wetted Per. (ft)	116.69	40.77	24.37
Min Ch El (ft)	1462.90	Shear (lb/sq ft)	0.42	1.60	0.38
Alpha	1.50	Stream Power (lb/ft s)	0.96	8.96	0.82
Frctn Loss (ft)	0.87	Cum Volume (acre-ft)	33.50	40.21	15.15
C & E Loss (ft)	0.04	Cum SA (acres)	19.15	7.63	13.96

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1469.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1469.08	Reach Len. (ft)	107.00	100.00	98.00
Crit W.S. (ft)		Flow Area (sq ft)	207.38	209.50	41.57
E.G. Slope (ft/ft)	0.005811	Area (sq ft)	207.38	209.50	41.57
Q Total (cfs)	2005.00	Flow (cfs)	608.76	1284.81	111.43
Top Width (ft)	189.31	Top Width (ft)	121.71	39.77	27.83
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)	2.94	6.13	2.68
Max Chl Dpth (ft)	6.18	Hydr. Depth (ft)	1.70	5.27	1.49
Conv. Total (cfs)	26302.9	Conv. (cfs)	7986.1	16855.0	1461.8
Length Wtd. (ft)	101.87	Wetted Per. (ft)	121.87	40.77	27.99
Min Ch El (ft)	1462.90	Shear (lb/sq ft)	0.62	1.86	0.54
Alpha	1.42	Stream Power (lb/ft s)	1.81	11.43	1.44
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	41.85	46.12	21.47
C & E Loss (ft)	0.04	Cum SA (acres)	24.26	7.73	18.10

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1469.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1469.33	Reach Len. (ft)	107.00	100.00	98.00

Crit W.S. (ft)		Flow Area (sq ft)	238.52	219.57	48.78
E.G. Slope (ft/ft)	0.005883	Area (sq ft)	238.52	219.57	48.78
Q Total (cfs)	2304.00	Flow (cfs)	763.71	1398.15	142.14
Top Width (ft)	192.85	Top Width (ft)	124.02	39.77	29.06
Vel Total (ft/s)	4.55	Avg. Vel. (ft/s)	3.20	6.37	2.91
Max Chl Dpth (ft)	6.43	Hydr. Depth (ft)	1.92	5.52	1.68
Conv. Total (cfs)	30037.8	Conv. (cfs)	9956.6	18228.0	1853.2
Length Wtd. (ft)	102.06	Wetted Per. (ft)	124.19	40.77	29.25
Min Ch El (ft)	1462.90	Shear (lb/sq ft)	0.71	1.98	0.61
Alpha	1.38	Stream Power (lb/ft s)	2.26	12.60	1.79
Frctn Loss (ft)	0.95	Cum Volume (acre-ft)	46.81	48.83	24.90
C & E Loss (ft)	0.05	Cum SA (acres)	26.56	7.76	18.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1470.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1469.90	Reach Len. (ft)	107.00	100.00	98.00
Crit W.S. (ft)	1468.99	Flow Area (sq ft)	310.71	242.25	66.13
E.G. Slope (ft/ft)	0.006055	Area (sq ft)	310.71	242.25	66.13
Q Total (cfs)	3067.00	Flow (cfs)	1171.06	1670.75	225.19
Top Width (ft)	200.82	Top Width (ft)	129.23	39.77	31.83
Vel Total (ft/s)	4.95	Avg. Vel. (ft/s)	3.77	6.90	3.41
Max Chl Dpth (ft)	7.00	Hydr. Depth (ft)	2.40	6.09	2.08
Conv. Total (cfs)	39415.5	Conv. (cfs)	15049.9	21471.7	2894.0
Length Wtd. (ft)	102.41	Wetted Per. (ft)	129.43	40.77	32.08
Min Ch El (ft)	1462.90	Shear (lb/sq ft)	0.91	2.25	0.78
Alpha	1.31	Stream Power (lb/ft s)	3.42	15.49	2.65
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	61.95	55.27	35.93
C & E Loss (ft)	0.06	Cum SA (acres)	31.15	7.83	20.85

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.929

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9858.73	1469.4	9898.43	1466	9919.45	1466	9926.83	1466.4	9950.09	1466.7
9964.01	1466.7	9976.02	1466.3	9990.52	1466.1	10000	1462.8	10018.85	1462.8
10027.97	1465.5	10035.59	1465.7	10041.15	1466.2	10066.45	1474.5		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9858.73	.055	9990.52	.055	10027.97	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.5	210027.97	78	91	96	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1467.98	Wt. n-Val.	0.055	0.055	0.055
Vel Head (ft)	0.74	Reach Len. (ft)	78.00	91.00	96.00
W.S. Elev (ft)	1467.25	Flow Area (sq ft)	90.84	138.53	21.41
Crit W.S. (ft)	1467.25	Area (sq ft)	90.84	138.53	21.41
E.G. Slope (ft/ft)	0.014787	Flow (cfs)	268.04	1070.49	83.47
Q Total (cfs)	1422.00	Top Width (ft)	106.63	37.45	16.37
Top Width (ft)	160.45	Avg. Vel. (ft/s)	2.95	7.73	3.90
Vel Total (ft/s)	5.67	Hydr. Depth (ft)	0.85	3.70	1.31
Max Chl Dpth (ft)	4.45	Conv. (cfs)	2204.3	8803.3	686.4
Conv. Total (cfs)	11694.0	Wetted Per. (ft)	106.71	38.40	16.56
Length Wtd. (ft)	84.88	Shear (lb/sq ft)	0.79	3.33	1.19
Min Ch El (ft)	1462.80	Stream Power (lb/ft s)	2.32	25.74	4.65
Alpha	1.48	Cum Volume (acre-ft)	33.21	39.83	15.09
Frctn Loss (ft)	0.60	Cum SA (acres)	18.88	7.54	13.91
C & E Loss (ft)	0.06				

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #50-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1468.53	Wt. n-Val.	0.055	0.055	0.055
Vel Head (ft)	0.87	Reach Len. (ft)	78.00	91.00	96.00
W.S. Elev (ft)	1467.66	Flow Area (sq ft)	136.25	154.12	28.49
Crit W.S. (ft)	1467.66	Area (sq ft)	136.25	154.12	28.49
E.G. Slope (ft/ft)	0.016164	Flow (cfs)	534.62	1336.98	133.41
Q Total (cfs)	2005.00	Top Width (ft)	111.49	37.45	17.64
Top Width (ft)	166.58	Avg. Vel. (ft/s)	3.92	8.67	4.68
Vel Total (ft/s)	6.29	Hydr. Depth (ft)	1.22	4.12	1.62
Max Chl Dpth (ft)	4.86	Conv. (cfs)	4205.1	10516.1	1049.3
Conv. Total (cfs)	15770.5	Wetted Per. (ft)	111.59	38.40	17.90
Length Wtd. (ft)	84.51	Shear (lb/sq ft)	1.23	4.05	1.61
Min Ch El (ft)	1462.80	Stream Power (lb/ft s)	4.83	35.13	7.52
Alpha	1.41	Cum Volume (acre-ft)	41.42	45.71	21.39
Frctn Loss (ft)	0.63	Cum SA (acres)	23.97	7.64	18.05
C & E Loss (ft)	0.10				

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1468.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.93	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1467.84	Reach Len. (ft)	78.00	91.00	96.00
Crit W.S. (ft)	1467.84	Flow Area (sq ft)	156.54	160.87	31.72
E.G. Slope (ft/ft)	0.016834	Area (sq ft)	156.54	160.87	31.72
Q Total (cfs)	2304.00	Flow (cfs)	679.09	1465.50	159.41
Top Width (ft)	169.24	Top Width (ft)	113.60	37.45	18.19
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	4.34	9.11	5.03
Max Chl Dpth (ft)	5.04	Hydr. Depth (ft)	1.38	4.30	1.74
Conv. Total (cfs)	17757.8	Conv. (cfs)	5234.0	11295.2	1228.7
Length Wtd. (ft)	84.28	Wetted Per. (ft)	113.70	38.40	18.47
Min Ch El (ft)	1462.80	Shear (lb/sq ft)	1.45	4.40	1.80
Alpha	1.38	Stream Power (lb/ft s)	6.28	40.11	9.07
Frctn Loss (ft)	0.59	Cum Volume (acre-ft)	46.32	48.39	24.81
C & E Loss (ft)	0.11	Cum SA (acres)	26.26	7.67	18.88

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1469.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1468.26	Reach Len. (ft)	78.00	91.00	96.00
Crit W.S. (ft)	1468.26	Flow Area (sq ft)	204.55	176.37	39.50
E.G. Slope (ft/ft)	0.018083	Area (sq ft)	204.55	176.37	39.50
Q Total (cfs)	3067.00	Flow (cfs)	1069.05	1770.51	227.44
Top Width (ft)	175.33	Top Width (ft)	118.43	37.45	19.45
Vel Total (ft/s)	7.30	Avg. Vel. (ft/s)	5.23	10.04	5.76
Max Chl Dpth (ft)	5.46	Hydr. Depth (ft)	1.73	4.71	2.03
Conv. Total (cfs)	22807.6	Conv. (cfs)	7949.9	13166.3	1691.4
Length Wtd. (ft)	83.83	Wetted Per. (ft)	118.55	38.40	19.80
Min Ch El (ft)	1462.80	Shear (lb/sq ft)	1.95	5.19	2.25
Alpha	1.32	Stream Power (lb/ft s)	10.18	52.05	12.97
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	61.32	54.79	35.81
C & E Loss (ft)	0.18	Cum SA (acres)	30.85	7.74	20.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.912

INPUT
Description: FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9850.94	1469.1	9866.78	1468	9886.78	1463	9942.43	1463	9953.46	1465.7
9973.63	1466	9979.06	1465.9	9984.76	1465.9	9988.33	1464.4	9993.34	1462.6
10000	1462.2	10009.95	1462.5	10023.02	1463.6	10029.88	1466	10037.79	1466.5
10041.85	1467.9	10057	1473.8						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9850.94	.025	9984.76	.055	10029.88	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.76	10029.88	138	138	138	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1466.12	Element			
Vel Head (ft)	0.54	Wt. n-Val.	0.025	0.055	
W.S. Elev (ft)	1465.58	Reach Len. (ft)	138.00	138.00	138.00
Crit W.S. (ft)		Flow Area (sq ft)	170.62	104.14	
E.G. Slope (ft/ft)	0.004102	Area (sq ft)	170.62	104.14	
Q Total (cfs)	1422.00	Flow (cfs)	1102.52	319.48	
Top Width (ft)	119.69	Top Width (ft)	76.52	43.17	
Vel Total (ft/s)	5.18	Avg. Vel. (ft/s)	6.46	3.07	
Max Chl Dpth (ft)	3.38	Hydr. Depth (ft)	2.23	2.41	
Conv. Total (cfs)	22201.8	Conv. (cfs)	17213.7	4988.1	
Length Wtd. (ft)	138.00	Wetted Per. (ft)	77.15	44.12	
Min Ch El (ft)	1462.20	Shear (lb/sq ft)	0.57	0.60	
Alpha	1.29	Stream Power (lb/ft s)	3.66	1.85	
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	32.98	39.58	15.07
C & E Loss (ft)	0.04	Cum SA (acres)	18.72	7.45	13.90

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1466.80	Element			
Vel Head (ft)	0.53	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1466.27	Reach Len. (ft)	138.00	138.00	138.00
Crit W.S. (ft)		Flow Area (sq ft)	236.37	134.63	0.56
E.G. Slope (ft/ft)	0.004302	Area (sq ft)	236.37	134.63	0.56
Q Total (cfs)	2005.00	Flow (cfs)	1518.11	486.63	0.26
Top Width (ft)	160.36	Top Width (ft)	111.04	45.12	4.20
Vel Total (ft/s)	5.40	Avg. Vel. (ft/s)	6.42	3.61	0.46
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)	2.13	2.98	0.13
Conv. Total (cfs)	30570.1	Conv. (cfs)	23146.5	7419.6	3.9
Length Wtd. (ft)	138.00	Wetted Per. (ft)	111.77	46.21	4.21
Min Ch El (ft)	1462.20	Shear (lb/sq ft)	0.57	0.78	0.04
Alpha	1.18	Stream Power (lb/ft s)	3.65	2.83	0.02
Frctn Loss (ft)	0.52	Cum Volume (acre-ft)	41.09	45.40	21.36
C & E Loss (ft)	0.03	Cum SA (acres)	23.78	7.55	18.02

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1467.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1466.56	Reach Len. (ft)	138.00	138.00	138.00
Crit W.S. (ft)		Flow Area (sq ft)	269.66	148.08	2.49
E.G. Slope (ft/ft)	0.003805	Area (sq ft)	269.66	148.08	2.49
Q Total (cfs)	2304.00	Flow (cfs)	1765.65	536.46	1.88
Top Width (ft)	165.45	Top Width (ft)	112.23	45.12	8.10
Vel Total (ft/s)	5.48	Avg. Vel. (ft/s)	6.55	3.62	0.76
Max Chl Dpth (ft)	4.36	Hydr. Depth (ft)	2.40	3.28	0.31
Conv. Total (cfs)	37348.9	Conv. (cfs)	28622.0	8696.3	30.6
Length Wtd. (ft)	138.00	Wetted Per. (ft)	113.00	46.21	8.12
Min Ch El (ft)	1462.20	Shear (lb/sq ft)	0.57	0.76	0.07
Alpha	1.19	Stream Power (lb/ft s)	3.71	2.76	0.06
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	45.94	48.07	24.78
C & E Loss (ft)	0.05	Cum SA (acres)	26.06	7.58	18.85

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1468.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1467.62	Reach Len. (ft)	138.00	138.00	138.00
Crit W.S. (ft)		Flow Area (sq ft)	390.53	195.77	12.67
E.G. Slope (ft/ft)	0.002162	Area (sq ft)	390.53	195.77	12.67
Q Total (cfs)	3067.00	Flow (cfs)	2405.88	644.02	17.10
Top Width (ft)	172.74	Top Width (ft)	116.46	45.12	11.16
Vel Total (ft/s)	5.12	Avg. Vel. (ft/s)	6.16	3.29	1.35
Max Chl Dpth (ft)	5.42	Hydr. Depth (ft)	3.35	4.34	1.13
Conv. Total (cfs)	65953.6	Conv. (cfs)	51736.6	13849.2	367.8
Length Wtd. (ft)	138.00	Wetted Per. (ft)	117.36	46.21	11.36
Min Ch El (ft)	1462.20	Shear (lb/sq ft)	0.45	0.57	0.15
Alpha	1.22	Stream Power (lb/ft s)	2.77	1.88	0.20
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	60.78	54.40	35.75
C & E Loss (ft)	0.05	Cum SA (acres)	30.64	7.65	20.76

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.886

INPUT
Description: FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9830.82	1468.4	9844.61	1468	9865.4	1463	9946.58	1463	9950.58	1464
9954.88	1464.8	9967.43	1465.5	9968.45	1465.4	9982.34	1465.8	9994.82	1461
10000	1460.6	10009.82	1461.2	10015.83	1463.3	10023.28	1465.7	10038.87	1465.8
10046.62	1466.6	10062.04	1468.9	10068.82	1469.4				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9830.82	.025	9982.34	.055	10023.28	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.34	10023.28	138	129	112	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1465.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.025	0.055	
W.S. Elev (ft)	1465.15	Reach Len. (ft)	138.00	129.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	194.52	109.20	
E.G. Slope (ft/ft)	0.003725	Area (sq ft)	194.52	109.20	
Q Total (cfs)	1422.00	Flow (cfs)	1064.08	357.92	
Top Width (ft)	142.09	Top Width (ft)	104.58	37.51	
Vel Total (ft/s)	4.68	Avg. Vel. (ft/s)	5.47	3.28	
Max Chl Dpth (ft)	4.54	Hydr. Depth (ft)	1.86	2.91	
Conv. Total (cfs)	23300.5	Conv. (cfs)	17435.6	5864.9	
Length Wtd. (ft)	135.92	Wetted Per. (ft)	105.04	38.96	
Min Ch El (ft)	1460.60	Shear (lb/sq ft)	0.43	0.65	
Alpha	1.14	Stream Power (lb/ft s)	2.36	2.14	
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	32.40	39.24	15.07
C & E Loss (ft)	0.05	Cum SA (acres)	18.43	7.32	13.90

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1466.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1465.82	Reach Len. (ft)	138.00	129.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	272.74	135.83	1.10
E.G. Slope (ft/ft)	0.003353	Area (sq ft)	272.74	135.83	1.10
Q Total (cfs)	2005.00	Flow (cfs)	1544.41	460.30	0.29
Top Width (ft)	185.39	Top Width (ft)	128.67	40.94	15.79
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	5.66	3.39	0.26
Max Chl Dpth (ft)	5.22	Hydr. Depth (ft)	2.12	3.32	0.07
Conv. Total (cfs)	34627.6	Conv. (cfs)	26672.9	7949.7	5.0
Length Wtd. (ft)	136.08	Wetted Per. (ft)	129.23	42.60	15.79
Min Ch El (ft)	1460.60	Shear (lb/sq ft)	0.44	0.67	0.01
Alpha	1.14	Stream Power (lb/ft s)	2.50	2.26	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	40.28	44.98	21.36
C & E Loss (ft)	0.07	Cum SA (acres)	23.40	7.41	17.99

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1466.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1466.25	Reach Len. (ft)	138.00	129.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	328.19	153.35	8.74
E.G. Slope (ft/ft)	0.002526	Area (sq ft)	328.19	153.35	8.74
Q Total (cfs)	2304.00	Flow (cfs)	1808.02	489.13	6.85
Top Width (ft)	191.32	Top Width (ft)	130.45	40.94	19.93
Vel Total (ft/s)	4.70	Avg. Vel. (ft/s)	5.51	3.19	0.78
Max Chl Dpth (ft)	5.65	Hydr. Depth (ft)	2.52	3.75	0.44
Conv. Total (cfs)	45838.6	Conv. (cfs)	35971.0	9731.3	136.3
Length Wtd. (ft)	136.06	Wetted Per. (ft)	131.06	42.60	19.96
Min Ch El (ft)	1460.60	Shear (lb/sq ft)	0.39	0.57	0.07
Alpha	1.18	Stream Power (lb/ft s)	2.18	1.81	0.05
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	44.99	47.59	24.76
C & E Loss (ft)	0.07	Cum SA (acres)	25.68	7.45	18.80

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1467.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1467.52	Reach Len. (ft)	138.00	129.00	112.00
Crit W.S. (ft)		Flow Area (sq ft)	497.33	205.38	40.64
E.G. Slope (ft/ft)	0.001238	Area (sq ft)	497.33	205.38	40.64
Q Total (cfs)	3067.00	Flow (cfs)	2462.23	557.07	47.70
Top Width (ft)	206.17	Top Width (ft)	135.73	40.94	29.50
Vel Total (ft/s)	4.13	Avg. Vel. (ft/s)	4.95	2.71	1.17
Max Chl Dpth (ft)	6.92	Hydr. Depth (ft)	3.66	5.02	1.38
Conv. Total (cfs)	87184.0	Conv. (cfs)	69992.6	15835.4	1355.9
Length Wtd. (ft)	135.84	Wetted Per. (ft)	136.49	42.60	29.61
Min Ch El (ft)	1460.60	Shear (lb/sq ft)	0.28	0.37	0.11
Alpha	1.24	Stream Power (lb/ft s)	1.39	1.01	0.12
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	59.38	53.76	35.67
C & E Loss (ft)	0.05	Cum SA (acres)	30.24	7.52	20.70

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.861

INPUT
Description: FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9781.66	1467.5	9796.59	1467	9813.42	1463	9947.17	1463	9951.17	1464
9951.37	1464.4	9974.76	1463.97	9981.49	1464.2	9990.82	1461.9	9993.08	1460.9
10000	1460.4	10009.97	1460.8	10016.85	1464.6	10017.72	1465	10017.97	1464.9
10027.79	1465.2	10048.36	1464.95	10064.01	1465.2	10075.47	1466.7	10091.61	1468

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9781.66	.025	9981.49	.055	10017.72	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.49	10017.72	106	100	89	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1465.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.025	0.055	
W.S. Elev (ft)	1464.88	Reach Len. (ft)	106.00	100.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	285.48	111.83	
E.G. Slope (ft/ft)	0.002303	Area (sq ft)	285.48	111.83	
Q Total (cfs)	1422.00	Flow (cfs)	1121.73	300.28	
Top Width (ft)	211.92	Top Width (ft)	175.96	35.96	
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)	3.93	2.69	
Max Chl Dpth (ft)	4.48	Hydr. Depth (ft)	1.62	3.11	

Conv. Total (cfs)	29632.7	Conv. (cfs)	23375.3	6257.4	
Length Wtd. (ft)	104.46	Wetted Per. (ft)	176.56	37.52	
Min Ch El (ft)	1460.40	Shear (lb/sq ft)	0.23	0.43	
Alpha	1.07	Stream Power (lb/ft s)	0.91	1.15	
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	31.64	38.91	15.07
C & E Loss (ft)	0.03	Cum SA (acres)	17.99	7.22	13.90

CROSS SECTION OUTPUT Profile #50-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1465.91	Wt. n-Val.	0.025	0.055	0.055
Vel Head (ft)	0.20	Reach Len. (ft)	106.00	100.00	89.00
W.S. Elev (ft)	1465.71	Flow Area (sq ft)	434.22	142.13	30.82
Crit W.S. (ft)		Area (sq ft)	434.22	142.13	30.82
E.G. Slope (ft/ft)	0.001269	Flow (cfs)	1652.85	330.73	21.41
Q Total (cfs)	2005.00	Top Width (ft)	179.49	36.23	50.21
Top Width (ft)	265.93	Avg. Vel. (ft/s)	3.81	2.33	0.69
Vel Total (ft/s)	3.30	Hydr. Depth (ft)	2.42	3.92	0.61
Max Chl Dpth (ft)	5.31	Conv. (cfs)	46391.4	9282.9	601.0
Conv. Total (cfs)	56275.4	Wetted Per. (ft)	180.18	37.81	50.27
Length Wtd. (ft)	104.56	Shear (lb/sq ft)	0.19	0.30	0.05
Min Ch El (ft)	1460.40	Stream Power (lb/ft s)	0.73	0.69	0.03
Alpha	1.18	Cum Volume (acre-ft)	39.16	44.56	21.32
Frctn Loss (ft)	0.09	Cum SA (acres)	22.91	7.30	17.90
C & E Loss (ft)	0.03				

CROSS SECTION OUTPUT Profile #100-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1466.39	Wt. n-Val.	0.025	0.055	0.055
Vel Head (ft)	0.18	Reach Len. (ft)	106.00	100.00	89.00
W.S. Elev (ft)	1466.21	Flow Area (sq ft)	523.41	160.03	56.56
Crit W.S. (ft)		Area (sq ft)	523.41	160.03	56.56
E.G. Slope (ft/ft)	0.000926	Flow (cfs)	1911.93	344.17	47.91
Q Total (cfs)	2304.00	Top Width (ft)	181.56	36.23	53.99
Top Width (ft)	271.78	Avg. Vel. (ft/s)	3.65	2.15	0.85
Vel Total (ft/s)	3.11	Hydr. Depth (ft)	2.88	4.42	1.05
Max Chl Dpth (ft)	5.81	Conv. (cfs)	62839.7	11311.8	1574.5
Conv. Total (cfs)	75726.0	Wetted Per. (ft)	182.32	37.81	54.08
Length Wtd. (ft)	104.52	Shear (lb/sq ft)	0.17	0.24	0.06
Min Ch El (ft)	1460.40	Stream Power (lb/ft s)	0.61	0.53	0.05
Alpha	1.22	Cum Volume (acre-ft)	43.65	47.13	24.67
Frctn Loss (ft)	0.07	Cum SA (acres)	25.18	7.33	18.71
C & E Loss (ft)	0.02				

CROSS SECTION OUTPUT Profile #500-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1467.69	Wt. n-Val.	0.025	0.055	0.055
Vel Head (ft)	0.15	Reach Len. (ft)	106.00	100.00	89.00
W.S. Elev (ft)	1467.54	Flow Area (sq ft)	773.50	208.43	137.21
Crit W.S. (ft)		Area (sq ft)	773.50	208.43	137.21
E.G. Slope (ft/ft)	0.000505	Flow (cfs)	2539.57	394.90	132.53
Q Total (cfs)	3067.00	Top Width (ft)	199.83	36.23	68.22
Top Width (ft)	304.28	Avg. Vel. (ft/s)	3.28	1.89	0.97
Vel Total (ft/s)	2.74	Hydr. Depth (ft)	3.87	5.75	2.01
Max Chl Dpth (ft)	7.14	Conv. (cfs)	113001.2	17571.8	5897.1
Conv. Total (cfs)	136470.0	Wetted Per. (ft)	200.73	37.81	68.38
Length Wtd. (ft)	104.34	Shear (lb/sq ft)	0.12	0.17	0.06
Min Ch El (ft)	1460.40	Stream Power (lb/ft s)	0.40	0.33	0.06
Alpha	1.26				

Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	57.36	53.15	35.44
C & E Loss (ft)	0.02	Cum SA (acres)	29.70	7.40	20.57

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.842

INPUT
Description: FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9744.78	1466.8	9760.79	1466	9773.85	1463	9942.25	1463	9949.44	1463.3
9968.95	1463.8	9970.48	1463.7	9986.44	1460.3	10000	1460	10009.33	1460.3
10026.1	1464.7	10038	1464.7	10045.94	1463.9	10059.55	1464	10074.23	1465.6
10081.14	1466.1	10099.54	1466.9	10127.5	1469.5				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9744.78	.025	9968.95	.055	10026.1	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.95	10026.1	93	96	99	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1464.89	Element			
Vel Head (ft)	0.12	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1464.77	Reach Len. (ft)	93.00	96.00	99.00
Crit W.S. (ft)		Flow Area (sq ft)	340.19	189.55	18.42
E.G. Slope (ft/ft)	0.001258	Area (sq ft)	340.19	189.55	18.42
Q Total (cfs)	1422.00	Flow (cfs)	1011.93	399.65	10.42
Top Width (ft)	300.46	Top Width (ft)	202.80	57.15	40.51
Vel Total (ft/s)	2.59	Avg. Vel. (ft/s)	2.97	2.11	0.57
Max Chl Dpth (ft)	4.77	Hydr. Depth (ft)	1.68	3.32	0.45
Conv. Total (cfs)	40086.0	Conv. (cfs)	28526.1	11266.1	293.8
Length Wtd. (ft)	93.97	Wetted Per. (ft)	203.02	58.09	40.59
Min Ch El (ft)	1460.00	Shear (lb/sq ft)	0.13	0.26	0.04
Alpha	1.12	Stream Power (lb/ft s)	0.39	0.54	0.02
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	30.88	38.57	15.05
C & E Loss (ft)	0.00	Cum SA (acres)	17.52	7.11	13.85

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1465.79	Element			
Vel Head (ft)	0.11	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1465.68	Reach Len. (ft)	93.00	96.00	99.00
Crit W.S. (ft)		Flow Area (sq ft)	527.06	241.69	59.22
E.G. Slope (ft/ft)	0.000676	Area (sq ft)	527.06	241.69	59.22
Q Total (cfs)	2005.00	Flow (cfs)	1518.72	439.33	46.96
Top Width (ft)	313.18	Top Width (ft)	206.77	57.15	49.26
Vel Total (ft/s)	2.42	Avg. Vel. (ft/s)	2.88	1.82	0.79
Max Chl Dpth (ft)	5.68	Hydr. Depth (ft)	2.55	4.23	1.20
Conv. Total (cfs)	77093.0	Conv. (cfs)	58395.2	16892.3	1805.5
Length Wtd. (ft)	93.91	Wetted Per. (ft)	207.09	58.09	49.39

Min Ch El (ft)	1460.00	Shear (lb/sq ft)	0.11	0.18	0.05
Alpha	1.20	Stream Power (lb/ft s)	0.31	0.32	0.04
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	37.99	44.12	21.23
C & E Loss (ft)	0.01	Cum SA (acres)	22.44	7.19	17.80

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1466.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1466.19	Reach Len. (ft)	93.00	96.00	99.00
Crit W.S. (ft)		Flow Area (sq ft)	633.52	270.88	86.22
E.G. Slope (ft/ft)	0.000515	Area (sq ft)	633.52	270.88	86.22
Q Total (cfs)	2304.00	Flow (cfs)	1770.98	463.62	69.40
Top Width (ft)	326.33	Top Width (ft)	212.01	57.15	57.17
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)	2.80	1.71	0.80
Max Chl Dpth (ft)	6.19	Hydr. Depth (ft)	2.99	4.74	1.51
Conv. Total (cfs)	101515.9	Conv. (cfs)	78030.5	20427.5	3058.0
Length Wtd. (ft)	93.93	Wetted Per. (ft)	212.37	58.09	57.32
Min Ch El (ft)	1460.00	Shear (lb/sq ft)	0.10	0.15	0.05
Alpha	1.22	Stream Power (lb/ft s)	0.27	0.26	0.04
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	42.24	46.63	24.53
C & E Loss (ft)	0.01	Cum SA (acres)	24.70	7.23	18.60

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1467.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1467.55	Reach Len. (ft)	93.00	96.00	99.00
Crit W.S. (ft)		Flow Area (sq ft)	933.28	348.24	182.12
E.G. Slope (ft/ft)	0.000282	Area (sq ft)	933.28	348.24	182.12
Q Total (cfs)	3067.00	Flow (cfs)	2403.18	521.50	142.32
Top Width (ft)	361.71	Top Width (ft)	224.17	57.15	80.39
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)	2.57	1.50	0.78
Max Chl Dpth (ft)	7.55	Hydr. Depth (ft)	4.16	6.09	2.27
Conv. Total (cfs)	182602.3	Conv. (cfs)	143079.8	31049.1	8473.4
Length Wtd. (ft)	93.99	Wetted Per. (ft)	225.29	58.09	80.58
Min Ch El (ft)	1460.00	Shear (lb/sq ft)	0.07	0.11	0.04
Alpha	1.28	Stream Power (lb/ft s)	0.19	0.16	0.03
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	55.29	52.51	35.11
C & E Loss (ft)	0.01	Cum SA (acres)	29.19	7.29	20.42

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.824

INPUT
Description: FILL RETENTION BASIN TO OVERFLOW ELEVATION

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9766.67	1466.9	9778.38	1465	9786.38	1463	9949.08	1463	9960.18	1462.9
9972.98	1462.9	9986.7	1463	9988	1462.9	9997.36	1459.7	10000	1459.5
10006.82	1459.9	10027.37	1460.5	10043.47	1464.5	10047.98	1464.4	10055.91	1463.7
10057.72	1463.1	10059.16	1462.4	10065.36	1463.9	10072.7	1464.1	10080.67	1463.6

```
10094.26  1464.410130.05  1464.810134.56  1464.8 10156.8  1465.210164.58  1465.1
10172.74  1465.210179.84  1464.9 10181.7    146510182.88  1465.210191.47  1465.7
10196.74  1466.310197.82  1466.5   10210  1468.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9766.67    .025  9986.7    .05510043.47    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9986.710043.47               66      65      62             .1       .3
```

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1464.77	Element			
Vel Head (ft)	0.10	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1464.67	Reach Len. (ft)	66.00	65.00	62.00
Crit W.S. (ft)		Flow Area (sq ft)	342.19	207.73	44.05
E.G. Slope (ft/ft)	0.001124	Area (sq ft)	342.19	207.73	44.05
Q Total (cfs)	1422.00	Flow (cfs)	952.72	441.36	27.92
Top Width (ft)	338.51	Top Width (ft)	206.99	56.77	74.75
Vel Total (ft/s)	2.39	Avg. Vel. (ft/s)	2.78	2.12	0.63
Max Chl Dpth (ft)	5.17	Hydr. Depth (ft)	1.65	3.66	0.59
Conv. Total (cfs)	42413.9	Conv. (cfs)	28416.6	13164.5	832.8
Length Wtd. (ft)	65.57	Wetted Per. (ft)	207.20	57.82	75.26
Min Ch El (ft)	1459.50	Shear (lb/sq ft)	0.12	0.25	0.04
Alpha	1.15	Stream Power (lb/ft s)	0.32	0.54	0.03
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	30.15	38.13	14.98
C & E Loss (ft)	0.01	Cum SA (acres)	17.09	6.98	13.72

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1465.73	Element			
Vel Head (ft)	0.09	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1465.64	Reach Len. (ft)	66.00	65.00	62.00
Crit W.S. (ft)		Flow Area (sq ft)	545.49	262.85	160.87
E.G. Slope (ft/ft)	0.000558	Area (sq ft)	545.49	262.85	160.87
Q Total (cfs)	2005.00	Flow (cfs)	1435.82	460.39	108.79
Top Width (ft)	415.98	Top Width (ft)	212.26	56.77	146.95
Vel Total (ft/s)	2.07	Avg. Vel. (ft/s)	2.63	1.75	0.68
Max Chl Dpth (ft)	6.14	Hydr. Depth (ft)	2.57	4.63	1.09
Conv. Total (cfs)	84866.7	Conv. (cfs)	60774.5	19487.3	4604.9
Length Wtd. (ft)	65.54	Wetted Per. (ft)	212.56	57.82	147.51
Min Ch El (ft)	1459.50	Shear (lb/sq ft)	0.09	0.16	0.04
Alpha	1.33	Stream Power (lb/ft s)	0.24	0.28	0.03
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	36.85	43.57	20.98
C & E Loss (ft)	0.01	Cum SA (acres)	21.99	7.07	17.58

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1466.25	Element			
Vel Head (ft)	0.08	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1466.17	Reach Len. (ft)	66.00	65.00	62.00
Crit W.S. (ft)		Flow Area (sq ft)	658.23	292.77	239.80
E.G. Slope (ft/ft)	0.000406	Area (sq ft)	658.23	292.77	239.80
Q Total (cfs)	2304.00	Flow (cfs)	1657.68	469.93	176.38
Top Width (ft)	424.37	Top Width (ft)	215.51	56.77	152.09
Vel Total (ft/s)	1.93	Avg. Vel. (ft/s)	2.52	1.61	0.74
Max Chl Dpth (ft)	6.67	Hydr. Depth (ft)	3.05	5.16	1.58
Conv. Total (cfs)	114349.5	Conv. (cfs)	82272.2	23323.3	8754.0

Length Wtd. (ft)	65.50	Wetted Per. (ft)	215.85	57.82	152.68
Min Ch El (ft)	1459.50	Shear (lb/sq ft)	0.08	0.13	0.04
Alpha	1.37	Stream Power (lb/ft s)	0.19	0.21	0.03
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	40.86	46.01	24.16
C & E Loss (ft)	0.01	Cum SA (acres)	24.25	7.10	18.36

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1467.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1467.54	Reach Len. (ft)	66.00	65.00	62.00
Crit W.S. (ft)		Flow Area (sq ft)	958.63	370.71	455.01
E.G. Slope (ft/ft)	0.000212	Area (sq ft)	958.63	370.71	455.01
Q Total (cfs)	3067.00	Flow (cfs)	2207.12	503.49	356.39
Top Width (ft)	438.18	Top Width (ft)	220.03	56.77	161.38
Vel Total (ft/s)	1.72	Avg. Vel. (ft/s)	2.30	1.36	0.78
Max Chl Dpth (ft)	8.04	Hydr. Depth (ft)	4.36	6.53	2.82
Conv. Total (cfs)	210542.5	Conv. (cfs)	151513.8	34563.7	24465.0
Length Wtd. (ft)	65.43	Wetted Per. (ft)	221.07	57.82	162.07
Min Ch El (ft)	1459.50	Shear (lb/sq ft)	0.06	0.08	0.04
Alpha	1.42	Stream Power (lb/ft s)	0.13	0.12	0.03
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	53.27	51.72	34.39
C & E Loss (ft)	0.01	Cum SA (acres)	28.71	7.17	20.15

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.812

INPUT
Description: FILL RETENTION BASIN TO OVERFLOW ELEVATION

Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9666.07	1467	9707.45	1463	9931.05	1463	9942.2	1463.1	9948.33	1463		
9959.2	1462.7	9984.28	1461.05	10000	1459.05	10013.47	1459.11	10032.82	1464.3		
10042.86	1463.91	10048.17	1462.91	10050.13	1462.67	10057.08	1463	10058.68	1462.8		
10063.07	1463.21	10065.62	1463.77	10070.53	1463.81	10072.73	1463.71	10076.17	1463.6		
10076.79	1463.51	10084.53	1463.93	10103.94	1464.51	10115.96	1465	10127.98	1466.1		
10144.17	1467.2										

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9666.07	.025	9948.33	.055	10032.82	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9948.33	10032.82	71	136	122	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1464.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1464.64	Reach Len. (ft)	71.00	136.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	407.53	292.62	66.71
E.G. Slope (ft/ft)	0.000733	Area (sq ft)	407.53	292.62	66.71
Q Total (cfs)	1422.00	Flow (cfs)	889.92	486.75	45.34

Top Width (ft)	416.57	Top Width (ft)	257.82	84.49	74.25
Vel Total (ft/s)	1.85	Avg. Vel. (ft/s)	2.18	1.66	0.68
Max Chl Dpth (ft)	5.59	Hydr. Depth (ft)	1.58	3.46	0.90
Conv. Total (cfs)	52508.7	Conv. (cfs)	32861.0	17973.6	1674.2
Length Wtd. (ft)	115.44	Wetted Per. (ft)	257.90	85.36	74.51
Min Ch El (ft)	1459.05	Shear (lb/sq ft)	0.07	0.16	0.04
Alpha	1.15	Stream Power (lb/ft s)	0.16	0.26	0.03
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	29.58	37.76	14.90
C & E Loss (ft)	0.01	Cum SA (acres)	16.73	6.88	13.62

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1465.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1465.63	Reach Len. (ft)	71.00	136.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	669.61	376.82	150.15
E.G. Slope (ft/ft)	0.000356	Area (sq ft)	669.61	376.82	150.15
Q Total (cfs)	2005.00	Flow (cfs)	1381.05	516.63	107.33
Top Width (ft)	442.70	Top Width (ft)	268.13	84.49	90.07
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	2.06	1.37	0.71
Max Chl Dpth (ft)	6.58	Hydr. Depth (ft)	2.50	4.46	1.67
Conv. Total (cfs)	106322.0	Conv. (cfs)	73234.8	27395.9	5691.3
Length Wtd. (ft)	113.24	Wetted Per. (ft)	268.26	85.36	90.36
Min Ch El (ft)	1459.05	Shear (lb/sq ft)	0.06	0.10	0.04
Alpha	1.23	Stream Power (lb/ft s)	0.11	0.13	0.03
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	35.93	43.09	20.76
C & E Loss (ft)	0.02	Cum SA (acres)	21.63	6.96	17.41

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1466.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1466.17	Reach Len. (ft)	71.00	136.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	813.45	421.69	199.53
E.G. Slope (ft/ft)	0.000264	Area (sq ft)	813.45	421.69	199.53
Q Total (cfs)	2304.00	Flow (cfs)	1624.48	537.22	142.30
Top Width (ft)	454.24	Top Width (ft)	273.63	84.49	96.12
Vel Total (ft/s)	1.61	Avg. Vel. (ft/s)	2.00	1.27	0.71
Max Chl Dpth (ft)	7.12	Hydr. Depth (ft)	2.97	4.99	2.08
Conv. Total (cfs)	141722.1	Conv. (cfs)	99923.7	33045.2	8753.2
Length Wtd. (ft)	112.65	Wetted Per. (ft)	273.78	85.36	96.43
Min Ch El (ft)	1459.05	Shear (lb/sq ft)	0.05	0.08	0.03
Alpha	1.25	Stream Power (lb/ft s)	0.10	0.10	0.02
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	39.74	45.48	23.84
C & E Loss (ft)	0.03	Cum SA (acres)	23.88	7.00	18.18

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1467.59	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.04	Wt. n-Val.	0.025	0.055	0.055
W.S. Elev (ft)	1467.54	Reach Len. (ft)	71.00	136.00	122.00
Crit W.S. (ft)		Flow Area (sq ft)	1198.50	538.03	344.98
E.G. Slope (ft/ft)	0.000144	Area (sq ft)	1198.50	538.03	344.98
Q Total (cfs)	3067.00	Flow (cfs)	2235.78	594.69	236.52
Top Width (ft)	478.10	Top Width (ft)	282.26	84.49	111.35
Vel Total (ft/s)	1.47	Avg. Vel. (ft/s)	1.87	1.11	0.69
Max Chl Dpth (ft)	8.49	Hydr. Depth (ft)	4.25	6.37	3.10
Conv. Total (cfs)	255789.7	Conv. (cfs)	186465.7	49597.9	19726.1
Length Wtd. (ft)	111.77	Wetted Per. (ft)	283.00	85.36	112.04
Min Ch El (ft)	1459.05	Shear (lb/sq ft)	0.04	0.06	0.03
Alpha	1.29	Stream Power (lb/ft s)	0.07	0.06	0.02
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	51.63	51.04	33.82
C & E Loss (ft)	0.03	Cum SA (acres)	28.33	7.06	19.95

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.789

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9611.57	1467.5	9650.21	1466	9664.02	1463	9906.66	1463	9919.87	1462.7
9952.53	1462.5	9959.99	1462.6	9961.39	1462.64	9961.39	1459.34	10039.94	1459.34
10039.94	1462.91	10050.74	1462.61	10065.32	1462.71	10076.33	1463.12	10106.11	1463.6
10112.38	1464.11	10123.63	1464.51	10136.86	1465.41	10140.46	1465.91	10146.66	1466.1
10172.2	1467.31	10187.65	1468.31	10217.66	1469	10268.99	1468.84	10297.71	1469.4
10312.39	1470.9								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9611.57	.055	9961.39	.055	10039.94	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9961.39	10039.94	98	98	116	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
9611.57	9961.39	1467.5	F
10039.94	10312.39	1467.74	F

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1464.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.055	
W.S. Elev (ft)	1464.34	Reach Len. (ft)	98.00	98.00	116.00
Crit W.S. (ft)	1461.50	Flow Area (sq ft)		392.93	
E.G. Slope (ft/ft)	0.002345	Area (sq ft)	422.20	392.93	90.80
Q Total (cfs)	1422.00	Flow (cfs)		1422.00	
Top Width (ft)	461.35	Top Width (ft)	303.55	78.55	79.25
Vel Total (ft/s)	3.62	Avg. Vel. (ft/s)		3.62	
Max Chl Dpth (ft)	5.00	Hydr. Depth (ft)		5.00	
Conv. Total (cfs)	29363.6	Conv. (cfs)		29363.6	
Length Wtd. (ft)	98.00	Wetted Per. (ft)		85.41	

Min Ch El (ft)	1459.34	Shear (lb/sq ft)		0.67	
Alpha	1.00	Stream Power (lb/ft s)		2.44	
Frctn Loss (ft)		Cum Volume (acre-ft)	28.91	36.69	14.68
C & E Loss (ft)		Cum SA (acres)	16.28	6.62	13.40

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1465.58	Element			
Vel Head (ft)	0.29	Wt. n-Val.		0.055	
W.S. Elev (ft)	1465.29	Reach Len. (ft)	98.00	98.00	116.00
Crit W.S. (ft)	1462.07	Flow Area (sq ft)		467.63	
E.G. Slope (ft/ft)	0.002610	Area (sq ft)	712.97	467.63	174.66
Q Total (cfs)	2005.00	Flow (cfs)		2005.00	
Top Width (ft)	481.83	Top Width (ft)	307.93	78.55	95.35
Vel Total (ft/s)	4.29	Avg. Vel. (ft/s)		4.29	
Max Chl Dpth (ft)	5.95	Hydr. Depth (ft)		5.95	
Conv. Total (cfs)	39246.2	Conv. (cfs)		39246.2	
Length Wtd. (ft)	98.00	Wetted Per. (ft)		85.41	
Min Ch El (ft)	1459.34	Shear (lb/sq ft)		0.89	
Alpha	1.00	Stream Power (lb/ft s)		3.82	
Frctn Loss (ft)		Cum Volume (acre-ft)	34.80	41.77	20.30
C & E Loss (ft)		Cum SA (acres)	21.16	6.71	17.15

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1466.12	Element			
Vel Head (ft)	0.32	Wt. n-Val.		0.055	
W.S. Elev (ft)	1465.80	Reach Len. (ft)	98.00	98.00	116.00
Crit W.S. (ft)	1462.33	Flow Area (sq ft)		507.42	
E.G. Slope (ft/ft)	0.002625	Area (sq ft)	869.52	507.42	224.24
Q Total (cfs)	2304.00	Flow (cfs)		2304.00	
Top Width (ft)	488.61	Top Width (ft)	310.26	78.55	99.80
Vel Total (ft/s)	4.54	Avg. Vel. (ft/s)		4.54	
Max Chl Dpth (ft)	6.46	Hydr. Depth (ft)		6.46	
Conv. Total (cfs)	44967.3	Conv. (cfs)		44967.3	
Length Wtd. (ft)	98.00	Wetted Per. (ft)		85.41	
Min Ch El (ft)	1459.34	Shear (lb/sq ft)		0.97	
Alpha	1.00	Stream Power (lb/ft s)		4.42	
Frctn Loss (ft)		Cum Volume (acre-ft)	38.37	44.03	23.25
C & E Loss (ft)		Cum SA (acres)	23.40	6.74	17.91

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1467.51	Element			
Vel Head (ft)	0.39	Wt. n-Val.		0.055	
W.S. Elev (ft)	1467.12	Reach Len. (ft)	98.00	98.00	116.00
Crit W.S. (ft)	1462.96	Flow Area (sq ft)		610.98	
E.G. Slope (ft/ft)	0.002505	Area (sq ft)	1295.81	610.98	374.70
Q Total (cfs)	3067.00	Flow (cfs)		3067.00	

Top Width (ft)	546.92	Top Width (ft)	339.98	78.55	128.39
Vel Total (ft/s)	5.02	Avg. Vel. (ft/s)		5.02	
Max Chl Dpth (ft)	7.78	Hydr. Depth (ft)		7.78	
Conv. Total (cfs)	61282.9	Conv. (cfs)		61282.9	
Length Wtd. (ft)	98.00	Wetted Per. (ft)		85.41	
Min Ch El (ft)	1459.34	Shear (lb/sq ft)		1.12	
Alpha	1.00	Stream Power (lb/ft s)		5.61	
Frctn Loss (ft)		Cum Volume (acre-ft)	49.60	49.25	32.81
C & E Loss (ft)		Cum SA (acres)	27.83	6.81	19.62

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.778

INPUT
Description: 35 th Ave. (5 10' x 6' Boxes)

Distance from Upstream XS = 19
Deck/Roadway Width = 60
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 12

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9611.57	1467.5		9820.84	1466.09		9961.39	1467.5	
9961.39	1467.5		9970.84	1467.59		10039.94	1467.74	
10039.94	1467.74		10108.25	1467.93		10120.46	1468.07	
10170.84	1468.52		10216	1468.31		10238.99	1468.84	

Upstream Bridge Cross Section Data
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9611.57	1467.5	9650.21	1466	9664.02	1463	9906.66	1463	9919.87	1462.7		
9952.53	1462.5	9959.99	1462.6	9961.39	1462.64	9961.39	1459.34	10039.94	1459.34		
10039.94	1462.91	10050.74	1462.61	10065.32	1462.71	10076.33	1463.12	10106.11	1463.6		
10112.38	1464.11	10123.63	1464.51	10136.86	1465.41	10140.46	1465.91	10146.66	1466.1		
10172.2	1467.31	10187.65	1468.31	10217.66	1469	10268.99	1468.84	10297.71	1469.4		
10312.39	1470.9										

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9611.57	.055	9961.39	.055	10039.94	.055

Bank Sta: Left	Right	Coeff Contr.	Expan.
9961.39	10039.94	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
9611.57	9961.39	1467.5	F
10039.94	10312.39	1467.74	F

Downstream Deck/Roadway Coordinates
num= 16

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9529.35	1467.71		9611.57	1467.5		9820.84	1466.09	
9959.01	1467.476		9959.01	1467.476		9961.39	1467.5	
9970.84	1467.59		10039.88	1467.74		10039.88	1467.74	

```
10039.94 1467.74        10108.25 1467.93        10120.46 1468.07
10170.84 1468.52           10216 1468.31        10238.99 1468.84
10249.15  1468.7

Downstream Bridge Cross Section Data
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9000  1473.6 9047.61  1472.4  9080.5  1470.9  9088.1 1469.94 9111.47 1468.99
 9165.84  1468.1 9175.95  1467.7 9185.09 1467.76 9188.83  1465.1  9193.3 1467.58
 9195.73  1467.7 9233.04 1467.44 9257.62 1467.62 9305.68 1469.24 9353.17 1469.39
 9393.28    1469 9412.05 1467.87 9437.64 1467.73 9445.79  1467.9 9497.65  1467.5
    9515  1468.2 9526.31 1467.93 9529.35 1467.71 9540.86 1466.41 9552.16  1465.5
 9567.87  1465.4 9602.53 1464.97 9661.68  1464.8 9662.88  1464.2 9664.37 1463.76
 9669.24  1465.2 9703.09 1464.38 9764.57    1465 9793.67  1465.7 9850.28  1465.1
 9858.05  1464.5 9868.18 1463.11 9887.64  1461.9 9959.01 1462.01 9963.98 1461.55
 9969.82  1460.3 9975.21 1459.98 9994.11 1460.26 9996.03 1460.5810011.16 1460.68
10015.77  1459.910018.82 1458.76 10029.4 1459.0610039.88 1462.7110044.58 1463.29
10050.26  1463.110052.77 1463.2110073.03 1462.8110090.67 1463.0110104.15 1463.79
10117.09  1464.210142.38  1465.810148.87 1466.02 10187.7 1467.5410249.15  1468.7
10263.96  1470.310362.79 1476.6810377.28 1478.0110385.52 1478.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9000    .055 9959.01    .05510039.88    .055

Bank Sta: Left   Right    Coeff Contr.   Expan.
       9959.0110039.88            .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    9000 9959.01 1462.01       F
10039.8810385.52 1462.71       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         = 1466.09
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
35 th Ave.          Box       6      10
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
              14.45      60     .013     .013        0                .4                 1
Number of Barrels =  5
Upstream   Elevation =  1459.34
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.
    9980    9991 10001.5   10012 10022.5
Downstream Elevation =  1458.9
Centerline Stations
    Sta.    Sta.    Sta.    Sta.    Sta.
    9979    9990 10000.5   10011 10021.5

CROSS SECTION
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RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.767

INPUT
Description:
Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9000	1473.6	9047.61	1472.4	9080.5	1470.9	9088.1	1469.94	9111.47	1468.99
9165.84	1468.1	9175.95	1467.7	9185.09	1467.76	9188.83	1465.1	9193.3	1467.58
9195.73	1467.7	9233.04	1467.44	9257.62	1467.62	9305.68	1469.24	9353.17	1469.39
9393.28	1469	9412.05	1467.87	9437.64	1467.73	9445.79	1467.9	9497.65	1467.5
9515	1468.2	9526.31	1467.93	9529.35	1467.71	9540.86	1466.41	9552.16	1465.5
9567.87	1465.4	9602.53	1464.97	9661.68	1464.8	9662.88	1464.2	9664.37	1463.76
9669.24	1465.2	9703.09	1464.38	9764.57	1465	9793.67	1465.7	9850.28	1465.1
9858.05	1464.5	9868.18	1463.11	9887.64	1461.9	9959.01	1462.01	9963.98	1461.55
9969.82	1460.3	9975.21	1459.98	9994.11	1460.26	9996.03	1460.58	10011.16	1460.68
10015.77	1459.9	10018.82	1458.76	10029.4	1459.06	10039.88	1462.71	10044.58	1463.29
10050.26	1463.1	10052.77	1463.21	10073.03	1462.81	10090.67	1463.01	10104.15	1463.79
10117.09	1464.2	10142.38	1465.8	10148.87	1466.02	10187.7	1467.54	10249.15	1468.7
10263.96	1470.3	10362.79	1476.68	10377.28	1478.01	10385.52	1478.29		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9000	.055	9959.01	.055	10039.88	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9959.01	10039.88	316	317	319	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
9000	9959.01	1462.01	F
10039.88	10385.52	1462.71	F

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1463.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1463.66	Reach Len. (ft)	316.00	317.00	319.00
Crit W.S. (ft)	1462.56	Flow Area (sq ft)	144.75	270.90	36.72
E.G. Slope (ft/ft)	0.004132	Area (sq ft)	144.75	270.90	36.72
Q Total (cfs)	1422.00	Flow (cfs)	333.13	1043.89	44.98
Top Width (ft)	237.60	Top Width (ft)	94.80	80.87	61.93
Vel Total (ft/s)	3.14	Avg. Vel. (ft/s)	2.30	3.85	1.22
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)	1.53	3.35	0.59
Conv. Total (cfs)	22122.4	Conv. (cfs)	5182.6	16240.1	699.7
Length Wtd. (ft)	316.74	Wetted Per. (ft)	94.87	81.96	61.99
Min Ch El (ft)	1458.76	Shear (lb/sq ft)	0.39	0.85	0.15
Alpha	1.23	Stream Power (lb/ft s)	0.91	3.29	0.19
Frctn Loss (ft)	1.39	Cum Volume (acre-ft)	28.27	35.94	14.51
C & E Loss (ft)	0.01	Cum SA (acres)	15.83	6.44	13.21

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1464.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.	0.055	0.055	0.055

W.S. Elev (ft)	1464.09	Reach Len. (ft)	316.00	317.00	319.00
Crit W.S. (ft)	1462.98	Flow Area (sq ft)	187.30	306.29	66.13
E.G. Slope (ft/ft)	0.004666	Area (sq ft)	187.30	306.29	66.13
Q Total (cfs)	2005.00	Flow (cfs)	530.44	1361.22	113.34
Top Width (ft)	254.91	Top Width (ft)	100.24	80.87	73.81
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)	2.83	4.44	1.71
Max Chl Dpth (ft)	5.33	Hydr. Depth (ft)	1.87	3.79	0.90
Conv. Total (cfs)	29352.8	Conv. (cfs)	7765.5	19928.0	1659.3
Length Wtd. (ft)	316.74	Wetted Per. (ft)	100.44	81.96	73.88
Min Ch El (ft)	1458.76	Shear (lb/sq ft)	0.54	1.09	0.26
Alpha	1.22	Stream Power (lb/ft s)	1.54	4.84	0.45
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	33.79	40.90	19.98
C & E Loss (ft)	0.03	Cum SA (acres)	20.70	6.53	16.93

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1464.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1464.28	Reach Len. (ft)	316.00	317.00	319.00
Crit W.S. (ft)	1463.20	Flow Area (sq ft)	206.44	321.53	80.55
E.G. Slope (ft/ft)	0.004923	Area (sq ft)	206.44	321.53	80.55
Q Total (cfs)	2304.00	Flow (cfs)	632.67	1516.08	155.25
Top Width (ft)	262.13	Top Width (ft)	102.77	80.87	78.49
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)	3.06	4.72	1.93
Max Chl Dpth (ft)	5.52	Hydr. Depth (ft)	2.01	3.98	1.03
Conv. Total (cfs)	32838.0	Conv. (cfs)	9017.2	21608.1	2212.7
Length Wtd. (ft)	316.74	Wetted Per. (ft)	103.05	81.96	78.56
Min Ch El (ft)	1458.76	Shear (lb/sq ft)	0.62	1.21	0.32
Alpha	1.22	Stream Power (lb/ft s)	1.89	5.69	0.61
Frctn Loss (ft)	1.41	Cum Volume (acre-ft)	37.16	43.10	22.85
C & E Loss (ft)	0.04	Cum SA (acres)	22.94	6.56	17.67

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1465.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1464.69	Reach Len. (ft)	316.00	317.00	319.00
Crit W.S. (ft)	1463.62	Flow Area (sq ft)	257.03	354.96	114.34
E.G. Slope (ft/ft)	0.005521	Area (sq ft)	257.03	354.96	114.34
Q Total (cfs)	3067.00	Flow (cfs)	894.21	1893.32	279.47
Top Width (ft)	319.09	Top Width (ft)	153.20	80.87	85.02
Vel Total (ft/s)	4.22	Avg. Vel. (ft/s)	3.48	5.33	2.44
Max Chl Dpth (ft)	5.93	Hydr. Depth (ft)	1.68	4.39	1.34
Conv. Total (cfs)	41275.7	Conv. (cfs)	12034.3	25480.3	3761.1
Length Wtd. (ft)	316.75	Wetted Per. (ft)	153.66	81.96	85.11
Min Ch El (ft)	1458.76	Shear (lb/sq ft)	0.58	1.49	0.46
Alpha	1.21	Stream Power (lb/ft s)	2.01	7.96	1.13
Frctn Loss (ft)	1.45	Cum Volume (acre-ft)	47.85	48.16	32.16
C & E Loss (ft)	0.06	Cum SA (acres)	27.27	6.63	19.33

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.707

INPUT
Description: Section 0.696 in City model
Station Elevation Data num= 144

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9040.82	1476.51	9042.33	1476.46	9054.879	1476	9062.599	1476	9067.439	1475.795
9078.347	1475.287	9098.818	1474	9114.851	1472.9	9128.162	1472	9139.605	1470.602
9146.093	1470	9161.904	1468.09	9162.711	1468	9165.174	1467.7	9172.292	1466.99
9182.289	1466	9183.338	1465.81	9191.305	1464.3	9193.022	1464	9193.431	1464
9200.985	1464	9211.63	1464	9217.332	1464	9222.717	1464	9223.176	1464
9223.487	1464	9224.528	1464	9229.813	1464	9232.48	1464	9234.082	1464
9235.984	1464	9236.082	1464	9237.756	1464	9241.378	1464	9243.263	1464
9274.926	1464	9278.44	1464	9281.511	1464	9281.58	1464	9327.692	1464
9332.682	1464	9335.958	1464	9336.408	1464	9337.291	1464	9392.485	1463.115
9417.274	1463.131	9523.725	1462.176	9529.31	1462.13	9531.92	1462.111	9546.141	1462
9547.931	1462	9548.889	1462	9552.756	1462	9553.363	1462	9556.322	1462
9556.983	1462	9568.451	1462	9588.322	1462	9600.057	1462	9601.482	1462
9604.415	1462	9607.399	1462	9610.587	1462	9619.997	1462	9620.065	1462
9622.08	1462	9631.213	1462	9635.915	1462	9636.55	1462	9637.299	1462
9640.639	1462	9642.107	1462	9654.129	1462	9658.336	1462	9664.389	1462
9669.983	1462	9672.263	1462	9705.198	1462	9705.449	1462	9706.476	1462
9713.721	1462	9715.769	1462	9723.987	1462	9725.68	1462	9725.875	1462.017
9726.778	1462	9727.321	1462	9727.383	1462	9728.326	1462.057	9728.46	1462.059
9728.751	1462.074	9729.001	1462.092	9732.019	1462.359	9733.153	1462.519	9735.352	1462.966
9752.47	1464	9821.829	1462.642	9832.867	1462.403	9852.886	1462	9854.803	1462
9854.908	1462	9856.586	1461.883	9868.072	1461.172	9893.795	1460	9897.817	1460
9903.094	1460	9904.901	1460	9905.022	1460	9922.332	1460	9928.807	1460
9933.612	1460	9939.881	1460	9943.167	1460	9944.247	1460	9948.92	1460
9949.483	1460	9950.35	1460	9950.839	1460	9953.397	1460	9953.975	1460
9981.216	1460	9991.525	1460	9995.71	1460	10000	1458.91	10003.02	1458.245
10004.08	1458	10006.04	1458	10014	1458	10018.59	1459.458	10020.3	1460
10020.57	1460	10049.63	1460.92	10082.65	1462	10082.89	1462	10083.07	1462
10107.03	1463.479	10114.46	1463.935	10115.5	1464	10115.75	1464.02	10144.26	1466
10149.05	1466.26	10182	1468	10187.24	1468.33	10188.15	1468.381		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9040.82	.055	9995.71	.055	10020.3	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.71	10020.3	703.08	591.57	558.08	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1462.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1462.30	Reach Len. (ft)	703.08	591.57	558.08
Crit W.S. (ft)		Flow Area (sq ft)	350.92	91.32	82.40
E.G. Slope (ft/ft)	0.004650	Area (sq ft)	350.92	91.32	82.40
Q Total (cfs)	1422.00	Flow (cfs)	851.29	397.57	173.14
Top Width (ft)	471.13	Top Width (ft)	378.93	24.59	67.61
Vel Total (ft/s)	2.71	Avg. Vel. (ft/s)	2.43	4.35	2.10

Max Chl Dpth (ft)	4.30	Hydr. Depth (ft)	0.93	3.71	1.22
Conv. Total (cfs)	20853.8	Conv. (cfs)	12484.3	5830.5	2539.1
Length Wtd. (ft)	628.54	Wetted Per. (ft)	379.00	25.14	67.65
Min Ch El (ft)	1458.00	Shear (lb/sq ft)	0.27	1.05	0.35
Alpha	1.27	Stream Power (lb/ft s)	0.65	4.59	0.74
Frctn Loss (ft)	2.88	Cum Volume (acre-ft)	26.47	34.62	14.07
C & E Loss (ft)	0.01	Cum SA (acres)	14.11	6.06	12.74

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1462.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1462.77	Reach Len. (ft)	703.08	591.57	558.08
Crit W.S. (ft)		Flow Area (sq ft)	546.82	102.84	115.86
E.G. Slope (ft/ft)	0.004195	Area (sq ft)	546.82	102.84	115.86
Q Total (cfs)	2005.00	Flow (cfs)	1274.32	460.36	270.33
Top Width (ft)	556.62	Top Width (ft)	456.83	24.59	75.20
Vel Total (ft/s)	2.62	Avg. Vel. (ft/s)	2.33	4.48	2.33
Max Chl Dpth (ft)	4.77	Hydr. Depth (ft)	1.20	4.18	1.54
Conv. Total (cfs)	30955.8	Conv. (cfs)	19674.6	7107.6	4173.6
Length Wtd. (ft)	632.71	Wetted Per. (ft)	456.94	25.14	75.26
Min Ch El (ft)	1458.00	Shear (lb/sq ft)	0.31	1.07	0.40
Alpha	1.28	Stream Power (lb/ft s)	0.73	4.80	0.94
Frctn Loss (ft)	2.95	Cum Volume (acre-ft)	31.13	39.41	19.31
C & E Loss (ft)	0.02	Cum SA (acres)	18.68	6.14	16.38

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1463.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1462.96	Reach Len. (ft)	703.08	591.57	558.08
Crit W.S. (ft)		Flow Area (sq ft)	639.12	107.64	130.84
E.G. Slope (ft/ft)	0.004063	Area (sq ft)	639.12	107.64	130.84
Q Total (cfs)	2304.00	Flow (cfs)	1498.22	488.82	316.96
Top Width (ft)	592.44	Top Width (ft)	489.49	24.59	78.36
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)	2.34	4.54	2.42
Max Chl Dpth (ft)	4.96	Hydr. Depth (ft)	1.31	4.38	1.67
Conv. Total (cfs)	36145.5	Conv. (cfs)	23504.3	7668.6	4972.5
Length Wtd. (ft)	634.61	Wetted Per. (ft)	489.63	25.14	78.42
Min Ch El (ft)	1458.00	Shear (lb/sq ft)	0.33	1.09	0.42
Alpha	1.27	Stream Power (lb/ft s)	0.78	4.93	1.03
Frctn Loss (ft)	2.98	Cum Volume (acre-ft)	34.09	41.53	22.07
C & E Loss (ft)	0.02	Cum SA (acres)	20.79	6.18	17.09

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1463.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1463.39	Reach Len. (ft)	703.08	591.57	558.08
Crit W.S. (ft)		Flow Area (sq ft)	867.06	118.03	165.39
E.G. Slope (ft/ft)	0.003848	Area (sq ft)	867.06	118.03	165.39
Q Total (cfs)	3067.00	Flow (cfs)	2081.33	554.63	431.04
Top Width (ft)	688.24	Top Width (ft)	578.44	24.59	85.20
Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	2.40	4.70	2.61
Max Chl Dpth (ft)	5.38	Hydr. Depth (ft)	1.50	4.80	1.94
Conv. Total (cfs)	49444.7	Conv. (cfs)	33554.2	8941.4	6949.1
Length Wtd. (ft)	638.84	Wetted Per. (ft)	578.60	25.14	85.28
Min Ch El (ft)	1458.00	Shear (lb/sq ft)	0.36	1.13	0.47
Alpha	1.25	Stream Power (lb/ft s)	0.86	5.30	1.21
Frctn Loss (ft)	3.00	Cum Volume (acre-ft)	43.78	46.44	31.14
C & E Loss (ft)	0.02	Cum SA (acres)	24.62	6.25	18.71

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.595

INPUT
Description: Former 0.890
Station Elevation Data num= 140

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 8732.541470.8788734.5851470.7838735.3061470.8038738.7351470.8748742.7241470.726
8749.3481470.8318751.459 1470.778817.5461470.2688824.6471470.156 8834.14    1470
8843.0981469.852 8862.651469.529 8865.721469.4788916.9661468.9468921.3021468.972
8927.9291468.7738930.1781468.7048941.5881469.0898946.9931468.6028947.9921468.528
8956.695    1468  8957.4    14688958.135    14688960.826    14688979.8681467.768
9008.367 1466.949022.4061466.6589035.912    14669045.6071465.4449047.2191465.363
9049.508 1465.289058.3421464.8049069.896    14649071.442    14649115.4021462.848
9141.4771462.1649145.0041462.091 9152.96    14629153.717    14629156.192    1462
9159.557    14629163.955    14629164.251    14629164.315    14629177.088    1462
9187.531 1461.64 9216.731461.2289263.4721461.115 9266.391461.1219269.4621461.128
9280.1231461.0829285.3561461.1029308.2951461.0759324.267 1460.959383.0881460.044
9385.745    14609385.965    14609387.599    14609412.872    14609415.444    1460
9441.917    14609443.356    14609443.933    14609445.773    14609462.5821459.766
9566.2171459.5329599.3181459.4359610.689 1459.389624.5361459.346 9696.571459.049
9851.312    14609859.738    14609868.789    14609870.247    14609871.576    1460
9874.212    14609875.725    1460 9879.261459.9579884.5981459.6849886.1511459.702
9889.4011459.6659895.4121459.2149898.0741459.1319909.968    14589911.349    1458
9927.466    14589930.652    14589930.772    14589932.464    14589937.123    1458
 9962.22    14589962.952    14589963.221    14589967.909    14589981.882    1458
9991.042    14589992.4141457.347 9994.181456.5069997.3881454.987   100001453.788
10002.111452.72610010.911452.853 10019.4    145410022.931455.642 10023.7    1456
10026.891457.48510028.12    145810028.22    145810029.77    1458 10035.1    1458
10049.17    145810078.81    145810085.63    145810109.51    145810116.33    1458
10118.41    145810121.91    145810122.59    145810127.63    145810129.541458.054
10129.961458.068 10133.8 1458.1910190.42    146010193.81    1460 10206.9    1460
 10210.7    146010211.25    146010211.46    146010211.68    146010213.951460.073
10214.871460.10710216.33 1460.1610263.92    146210278.751463.52910282.25    1464
10284.981464.36710287.091464.57610299.51    146610301.161466.18510302.411466.333
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8732.54	.055	9991.042	.055	10028.12	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.04	10028.12	635	497.19	360	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1459.55	Element			
Vel Head (ft)	0.26	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1459.29	Reach Len. (ft)	635.00	497.19	360.00
Crit W.S. (ft)		Flow Area (sq ft)	124.46	178.59	154.05
E.G. Slope (ft/ft)	0.004516	Area (sq ft)	124.46	178.59	154.05
Q Total (cfs)	1422.00	Flow (cfs)	233.08	890.76	298.17
Top Width (ft)	369.48	Top Width (ft)	192.45	37.08	139.95
Vel Total (ft/s)	3.11	Avg. Vel. (ft/s)	1.87	4.99	1.94
Max Chl Dpth (ft)	6.56	Hydr. Depth (ft)	0.65	4.82	1.10
Conv. Total (cfs)	21159.6	Conv. (cfs)	3468.3	13254.6	4436.7
Length Wtd. (ft)	482.01	Wetted Per. (ft)	192.51	39.22	139.97
Min Ch El (ft)	1452.73	Shear (lb/sq ft)	0.18	1.28	0.31
Alpha	1.75	Stream Power (lb/ft s)	0.34	6.40	0.60
Frctn Loss (ft)	2.63	Cum Volume (acre-ft)	22.64	32.79	12.56
C & E Loss (ft)	0.03	Cum SA (acres)	9.50	5.64	11.41

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1459.94	Element			
Vel Head (ft)	0.30	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1459.64	Reach Len. (ft)	635.00	497.19	360.00
Crit W.S. (ft)		Flow Area (sq ft)	223.61	191.82	205.98
E.G. Slope (ft/ft)	0.005203	Area (sq ft)	223.61	191.82	205.98
Q Total (cfs)	2005.00	Flow (cfs)	434.51	1077.05	493.44
Top Width (ft)	565.30	Top Width (ft)	377.11	37.08	151.11
Vel Total (ft/s)	3.23	Avg. Vel. (ft/s)	1.94	5.61	2.40
Max Chl Dpth (ft)	6.92	Hydr. Depth (ft)	0.59	5.17	1.36
Conv. Total (cfs)	27795.4	Conv. (cfs)	6023.6	14931.2	6840.6
Length Wtd. (ft)	475.59	Wetted Per. (ft)	377.18	39.22	151.14
Min Ch El (ft)	1452.73	Shear (lb/sq ft)	0.19	1.59	0.44
Alpha	1.84	Stream Power (lb/ft s)	0.37	8.92	1.06
Frctn Loss (ft)	2.66	Cum Volume (acre-ft)	24.91	37.41	17.25
C & E Loss (ft)	0.04	Cum SA (acres)	11.95	5.73	14.93

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1460.10	Element			
Vel Head (ft)	0.31	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1459.79	Reach Len. (ft)	635.00	497.19	360.00
Crit W.S. (ft)		Flow Area (sq ft)	286.69	197.32	228.72
E.G. Slope (ft/ft)	0.005489	Area (sq ft)	286.69	197.32	228.72
Q Total (cfs)	2304.00	Flow (cfs)	553.00	1159.58	591.42
Top Width (ft)	657.76	Top Width (ft)	464.94	37.08	155.75

Vel Total (ft/s)	3.23	Avg. Vel. (ft/s)	1.93	5.88	2.59
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	0.62	5.32	1.47
Conv. Total (cfs)	31097.0	Conv. (cfs)	7463.8	15650.8	7982.4
Length Wtd. (ft)	473.85	Wetted Per. (ft)	465.02	39.22	155.78
Min Ch El (ft)	1452.73	Shear (lb/sq ft)	0.21	1.72	0.50
Alpha	1.91	Stream Power (lb/ft s)	0.41	10.13	1.30
Frctn Loss (ft)	2.66	Cum Volume (acre-ft)	26.62	39.46	19.77
C & E Loss (ft)	0.04	Cum SA (acres)	13.09	5.76	15.59

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1460.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1460.18	Reach Len. (ft)	635.00	497.19	360.00
Crit W.S. (ft)		Flow Area (sq ft)	498.52	211.69	295.19
E.G. Slope (ft/ft)	0.005870	Area (sq ft)	498.52	211.69	295.19
Q Total (cfs)	3067.00	Flow (cfs)	895.41	1348.19	823.40
Top Width (ft)	842.42	Top Width (ft)	616.66	37.08	188.68
Vel Total (ft/s)	3.05	Avg. Vel. (ft/s)	1.80	6.37	2.79
Max Chl Dpth (ft)	7.45	Hydr. Depth (ft)	0.81	5.71	1.56
Conv. Total (cfs)	40029.8	Conv. (cfs)	11686.7	17596.3	10746.8
Length Wtd. (ft)	472.43	Wetted Per. (ft)	616.75	39.22	188.71
Min Ch El (ft)	1452.73	Shear (lb/sq ft)	0.30	1.98	0.57
Alpha	2.24	Stream Power (lb/ft s)	0.53	12.60	1.60
Frctn Loss (ft)	2.72	Cum Volume (acre-ft)	32.76	44.20	28.19
C & E Loss (ft)	0.04	Cum SA (acres)	14.97	5.83	16.95

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.501

INPUT
Description: Section 0.782 in old study

Ineffective Flow Areas reflect the
retention basin for the Arizona Hillcrest Subdivision. It is
assumed the full depth of the retention basin will not act as
conveyance area.

Station Elevation Data num= 279

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8635.48	14688642.139	14688647.536	14688649.667	14688650.937	1468				
8675.91467.3768689.1091466.9798721.194	14668726.3651465.0898729.7611464.512								
8739.2151464.3258740.4871464.3868752.8941464.6368760.8231465.1498763.3561465.252									
8766.1081465.3138768.8931465.5538770.1831465.5968770.9451465.6068774.013	1466								
8800.406	14668806.774	14668815.609	14668826.128	14668827.613	1466				
8829.278	14668831.712	14668833.399	14668839.277	14668845.919	1466				
8850.093	14668865.729	14668895.104	14668900.608	14668904.611	1466				
8905.998	14668908.321	14668935.362	14668939.827	14668962.998	1466				
8965.164	14668966.265	14668968.021	14668969.869	14668971.068	1466				
9021.9451464.5339024.9141464.5149032.4041464.4649041.7141464.4059043.987 1464.39									

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9045.8091464.3799053.3441464.3289064.1811464.2599065.8981464.2489073.5851464.197
9074.3221464.192 9086.761464.113 9087.641464.1079095.2181464.0579095.3621464.057
9104.262    14649108.899    1464  9109.5    14649120.653    14649121.355    1464
9129.919    14649132.824    14649136.192    14649139.237    14649149.705    1464
9153.155    1464 9156.17    14649182.531 1462.419187.0561462.3219192.3881462.008
9192.4191462.0079192.566    14629195.007    14629195.936    14629203.053    1462
9204.655    14629206.078    14629208.154    14629215.4181462.249 9217.13  1462.3
9225.4251462.6339226.5741462.6549226.6321462.6569227.2621462.681 9232.081462.739
 9244.091463.1199245.6581463.1599245.7051463.1619249.6881463.2789259.6421462.758
9265.6851462.8399267.7231462.8659274.0161462.9279278.864 1462.999327.0151462.623
9339.8931462.6839346.6071462.7179354.705 1462.759358.9151462.7739359.8571462.775
9368.0161462.8159371.3651462.8359372.325 1462.849374.5451462.8369377.6041462.854
9377.7011462.8549384.8091462.8899387.454    14629406.373    14629407.028    1462
9424.172    14629434.321    14629459.1231463.2719461.0851463.2959468.0521463.331
9469.2081463.3379470.921 1463.359476.3391463.3789476.4881463.378 9477.821463.385
9481.9521463.4079483.5841463.4139502.201    14629505.967    14629508.469    1462
 9556.97    14629558.603    1462 9561.86    14629569.589    14629572.453    1462
9574.869    14629580.071    1462  9592.2    14629595.901    14629597.072    1462
9597.224    14629600.426    14629601.129    14629605.171    14629617.998    1462
 9618.84    14629622.355    14629622.596    14629626.398    14629632.071    1462
9634.653    14629637.311    14629638.515    1462 9647.351461.7529649.9541461.701
9655.9771461.578 9665.391461.3949675.0821461.1839678.3621461.1149702.2791460.593
9729.325    14609750.678    1460  9760.7    1460 9760.87    14609761.161    1460
9761.793    14609773.737    14609807.2051461.0019809.5581461.0799828.0411461.302
9831.0431461.3889832.8871461.3529834.4331461.3259838.4061461.2549840.829 1461.26
9844.9941461.1769845.2551461.1699848.3721461.1129855.6361460.9269856.0111460.914
9857.8341460.8579858.2371460.8419865.4271460.6769877.6451460.374 9879.141460.337
9879.268 1460.339882.2341460.2019887.777    14609887.925    14609888.506    1460
9895.839    1460 9896.29    14609898.931    14609902.8691459.4819904.4461459.273
 9904.61 1459.26 9905.051459.2269908.2751458.8419911.751 1458.389914.471    1458
9915.7271457.8259915.8981457.8019917.2351457.5559920.7991456.8999922.4091456.416
9923.797    14569930.1181454.9829936.8021454.642 9942.14    14549949.848    1454
9950.184    14549950.454    14549951.941    14549967.0521454.9099971.3981454.484
9972.1661454.4279976.579    1454   10000    1454 10002.2    145410021.79    1454
10022.96    145410023.03    145410023.341454.03610023.621454.055 10032.91454.956
10033.381454.97510043.99    1456 10045.5    145610058.33    145610067.44    1456
10072.07    145610073.31    145610075.01    145610076.57    145610084.61    1456
10088.93    145610095.68    145610095.91    145610098.55    1456 10116.4    1456
10120.46    145610121.52    145610142.27    145610148.08    145610183.91    1456
10187.68    145610258.37    145610272.53    145610277.22    145610287.14    1456
10312.88    145610349.42    145610356.01    145610362.06    1456 10388.7    1456
10392.75    145610393.88    145610394.12    145610454.941457.02110513.73    1458
10532.071459.92410532.441459.95210532.78    146010532.82    146010548.261460.735
10574.67    146210574.78    146210575.181462.446 10576.6    1464 10577.21464.656
10578.42    1466 10579.11466.74510580.25    1468 10580.5    146810592.121468.428
 10607.71468.98610628.591469.56410633.361469.71610640.561469.932

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 8635.48    .0559967.052    .05510043.99    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9967.05210043.99              260  235.61     225             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 8635.489967.052    1455       T

CROSS SECTION OUTPUT  Profile #10-yr

  E.G. Elev (ft)           1456.89    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.16    Wt. n-Val.                0.055      0.055      0.055
```

W.S. Elev (ft)	1456.73	Reach Len. (ft)	260.00	235.61	225.00
Crit W.S. (ft)		Flow Area (sq ft)	72.55	184.76	271.41
E.G. Slope (ft/ft)	0.006740	Area (sq ft)	95.53	184.76	271.41
Q Total (cfs)	1422.00	Flow (cfs)	218.20	733.95	469.85
Top Width (ft)	516.23	Top Width (ft)	45.69	76.94	393.61
Vel Total (ft/s)	2.69	Avg. Vel. (ft/s)	3.01	3.97	1.73
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	1.59	2.40	0.69
Conv. Total (cfs)	17321.0	Conv. (cfs)	2657.8	8940.1	5723.1
Length Wtd. (ft)	238.47	Wetted Per. (ft)	45.95	77.08	393.61
Min Ch El (ft)	1454.00	Shear (lb/sq ft)	0.66	1.01	0.29
Alpha	1.45	Stream Power (lb/ft s)	2.00	4.01	0.50
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	21.03	30.72	10.80
C & E Loss (ft)	0.00	Cum SA (acres)	7.76	4.99	9.21

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1457.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1457.08	Reach Len. (ft)	260.00	235.61	225.00
Crit W.S. (ft)		Flow Area (sq ft)	88.58	211.35	411.04
E.G. Slope (ft/ft)	0.006012	Area (sq ft)	111.56	211.35	411.04
Q Total (cfs)	2005.00	Flow (cfs)	281.06	867.35	856.60
Top Width (ft)	538.38	Top Width (ft)	47.21	76.94	414.23
Vel Total (ft/s)	2.82	Avg. Vel. (ft/s)	3.17	4.10	2.08
Max Chl Dpth (ft)	3.08	Hydr. Depth (ft)	1.88	2.75	0.99
Conv. Total (cfs)	25859.3	Conv. (cfs)	3624.9	11186.5	11047.9
Length Wtd. (ft)	237.52	Wetted Per. (ft)	47.52	77.08	414.24
Min Ch El (ft)	1454.00	Shear (lb/sq ft)	0.70	1.03	0.37
Alpha	1.33	Stream Power (lb/ft s)	2.22	4.22	0.78
Frctn Loss (ft)	1.15	Cum Volume (acre-ft)	22.47	35.11	14.70
C & E Loss (ft)	0.00	Cum SA (acres)	8.85	5.08	12.59

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1457.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1457.24	Reach Len. (ft)	260.00	235.61	225.00
Crit W.S. (ft)		Flow Area (sq ft)	96.20	223.67	478.10
E.G. Slope (ft/ft)	0.005744	Area (sq ft)	119.19	223.67	478.10
Q Total (cfs)	2304.00	Flow (cfs)	311.42	931.75	1060.83
Top Width (ft)	548.86	Top Width (ft)	48.08	76.94	423.84
Vel Total (ft/s)	2.89	Avg. Vel. (ft/s)	3.24	4.17	2.22
Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)	2.00	2.91	1.13
Conv. Total (cfs)	30399.3	Conv. (cfs)	4108.9	12293.6	13996.8
Length Wtd. (ft)	237.18	Wetted Per. (ft)	48.40	77.08	423.85
Min Ch El (ft)	1454.00	Shear (lb/sq ft)	0.71	1.04	0.40
Alpha	1.28	Stream Power (lb/ft s)	2.31	4.34	0.90
Frctn Loss (ft)	1.15	Cum Volume (acre-ft)	23.66	37.06	16.85
C & E Loss (ft)	0.00	Cum SA (acres)	9.35	5.11	13.20

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1457.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1457.56	Reach Len. (ft)	260.00	235.61	225.00
Crit W.S. (ft)		Flow Area (sq ft)	112.30	248.95	620.62
E.G. Slope (ft/ft)	0.005634	Area (sq ft)	135.28	248.95	620.62
Q Total (cfs)	3067.00	Flow (cfs)	389.45	1103.12	1574.42
Top Width (ft)	570.38	Top Width (ft)	49.87	76.94	443.57
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)	3.47	4.43	2.54
Max Chl Dpth (ft)	3.56	Hydr. Depth (ft)	2.25	3.24	1.40
Conv. Total (cfs)	40859.0	Conv. (cfs)	5188.4	14696.0	20974.7
Length Wtd. (ft)	236.37	Wetted Per. (ft)	50.21	77.08	443.58
Min Ch El (ft)	1454.00	Shear (lb/sq ft)	0.79	1.14	0.49
Alpha	1.22	Stream Power (lb/ft s)	2.73	5.03	1.25
Frctn Loss (ft)	1.20	Cum Volume (acre-ft)	28.14	41.57	24.40
C & E Loss (ft)	0.00	Cum SA (acres)	10.12	5.18	14.34

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.456

INPUT
Description: Section 0.456 placed to reflect retention basin and property boundary of Arizona Hillcrest property.

Ineffective Flow Areas
reflect the retention basin for the Arizona Hillcrest Subdivision.
It is assumed the full depth of the retention basin will not act as conveyance area.

Station Elevation Data num= 277

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8629.371	466.6468	640.091	1466.356	8653.045	14668667.635		14668678.398		1466
8685.581	14668693.535		14668766.081		14668769.063		14668769.192		1466
8772.8	14668774.245		14668776.499		14668782.608		14668790.616		1466
8791.52	14668799.382		14668799.419		14668800.415	1465.858	8802.171	1465.644	
8814.088	14648828.103		14648838.877		14648841.857		14648847.187		1464
8848.731	1464 8848.86		14648850.155	1464.053	8855.981	1464.357	8859.164	1464.503	
8913.084	14668917.431		14668920.275		14668923.665		14668946.138		1466
8949.51	1465.926	8949.985	1465.929	8959.483	1465.996	8960.173	14668960.203		1466
8962.547	14668962.798		14668963.372		14668972.974		14668973.016		1466
8973.104	14668991.538		14669005.479		14669007.818		14669009.094		1466
9021.266	14669021.881		14669024.489		14669025.761		14669084.168	1465.231	
9112.981	14669127.913		14669128.393		1466 9131.57		14669132.596		1466
9133.818	14669134.178		14669134.557		14669139.692		14669141.932		1466
9142.593	14669143.787		1466 9143.83		14669143.883		14669144.447		1466
9144.58	14669145.212		14669147.017		14669152.485		14669152.628		1466
9157.85	14669159.592		14669160.228		14669160.669	1465.786	9162.541	1464.914	
9164.201	14649164.307		14649164.602		14649171.877		14649172.101		1464
9180.519	14649187.673		14649234.019		1464 9253.71		14649262.575		1464
9267.764	14649268.228		14649271.305		14649282.929	1462.933	9289.471	1462.798	
9299.076	1462.652	9311.743	1462.389	9328.998	14629329.974		14629331.755		1462
9331.792	14629343.045		1461.765	9350.214	1461.628	9350.265	1461.627	9360.899	1461.489
9364.342	1461.463	9373.277	1461.342	9376.606	1461.297	9377.023	1461.299	9378.173	1461.273

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9379.016 1461.269385.5871461.1989393.8471461.0699394.2771461.0619398.1541460.982
9398.6041460.9729407.2141460.8069419.5131460.5179424.178 1460.499430.9261460.414
9443.3541460.185  9447.3     14609456.409     14609456.955     14609462.899     1460
9464.179     14609466.1151459.8699468.649     14609475.965     14609476.535     1460
9478.299     14609480.488     14609481.9511459.7979503.1291459.0169511.3351459.158
9538.227     14609538.274     14609538.4091460.0439538.4191460.0469544.042     1462
9548.841     1462 9554.87     14629567.068 1461.399569.8031461.4189571.4551461.437
9572.5261461.4559575.9521461.4929581.2081461.3249623.135     14609628.683     1460
9635.511     14609643.894     14609653.433     14609657.678     14609668.081     1460
9669.247     14609670.475     14609678.805     14609683.926     14609689.147     1460
9695.397     14609709.986     14609717.548     14609720.999     14609725.183     1460
9729.608     14609737.068     14609743.464     14609746.047     14609758.213     1460
9760.548     14609762.555     14609770.375     14609772.369     14609788.847     1460
9795.627     14609795.724     14609802.096     14609804.062     14609812.851     1460
9814.894     14609818.051     14609818.795     14609825.236     14609827.0861459.813
9830.2591459.4949836.1821458.732 9836.381458.7179838.8971458.5089842.311     1458
9843.134     14589847.8761457.0049853.7621455.4549854.8971455.255 9855.451455.158
9858.2081454.5679858.5751454.4889860.673     1454 9863.881453.2549869.271     1452
9877.0561450.1899877.869     14509883.252     14509890.985     14509894.505     1450
9902.334     14509903.475     14509905.127     14509907.0381450.4879912.906     1452
9916.2031452.8369920.828     14549921.353     14549938.929     14549947.152     1454
9959.914     1454 9963.65     14549964.843     14549965.718     14549971.563     1454
9977.948     14549981.7661454.434 9983.05     1454 9983.59     14549984.6861453.724
9985.3031453.568  9986.61453.1069989.704     14529990.0951451.8619991.2051451.465
9994.6371450.4239995.6191450.1259995.7991450.0439995.893     1450   10000     1450
10008.99     145010009.42     145010014.28     145010015.54     145010015.58     1450
 10020.21451.915 10020.4     145210024.681453.77710025.22     145410028.76 1455.47
10030.04     145610030.21     145610030.35     145610034.58     145610036.34     1456
10036.57     145610041.08     145610125.051455.01110130.131454.97210131.43 1454.97
10159.771454.96510192.731454.83910262.851454.50210460.39     145610464.49     1456
10468.59     1456 10478.7     145610479.13     145610481.62     145610482.05     1456
10483.48     145610508.691456.64810562.81     1458 10573.71458.81610589.17     1460
10595.931461.04410602.13     146210607.321462.73510616.59     146410625.941465.209
10634.22     146610634.451466.023

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
 8629.37    .0559981.766    .05510030.04    .055

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9981.76610030.04               210  210.92     200              .1       .5
Ineffective Flow      num=        1
   Sta L   Sta R    Elev  Permanent
    98509920.828    1454       T

CROSS SECTION OUTPUT  Profile #10-yr

  E.G. Elev (ft)          1455.72    Element                  Left OB    Channel   Right OB
  Vel Head (ft)              0.17    Wt. n-Val.                0.055      0.055      0.055
  W.S. Elev (ft)          1455.55    Reach Len. (ft)          210.00     210.92     200.00
  Crit W.S. (ft)                     Flow Area (sq ft)        192.63     192.47     188.69
  E.G. Slope (ft/ft)      0.003728   Area (sq ft)             367.31     192.47     188.69
  Q Total (cfs)           1422.00    Flow (cfs)               413.98     790.21     217.81
  Top Width (ft)           497.88    Top Width (ft)           128.38      47.19     322.30
  Vel Total (ft/s)           2.48    Avg. Vel. (ft/s)           2.15       4.11       1.15
  Max Chl Dpth (ft)          5.55    Hydr. Depth (ft)           1.50       4.08       0.59
  Conv. Total (cfs)       23289.9    Conv. (cfs)              6780.2    12942.3     3567.4
  Length Wtd. (ft)         208.31    Wetted Per. (ft)         129.53      49.01     322.31
  Min Ch El (ft)          1450.00    Shear (lb/sq ft)           0.35       0.91       0.14
  Alpha                      1.78    Stream Power (lb/ft s)     0.74       3.75       0.16
  Frctn Loss (ft)            1.05    Cum Volume (acre-ft)      19.65      29.70       9.61
```

C & E Loss (ft)	0.01	Cum SA (acres)	7.24	4.66	7.36

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1456.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1455.91	Reach Len. (ft)	210.00	210.92	200.00
Crit W.S. (ft)		Flow Area (sq ft)	238.93	209.55	318.27
E.G. Slope (ft/ft)	0.003989	Area (sq ft)	413.61	209.55	318.27
Q Total (cfs)	2005.00	Flow (cfs)	608.75	930.03	466.22
Top Width (ft)	577.87	Top Width (ft)	129.74	48.06	400.07
Vel Total (ft/s)	2.61	Avg. Vel. (ft/s)	2.55	4.44	1.46
Max Chl Dpth (ft)	5.91	Hydr. Depth (ft)	1.84	4.36	0.80
Conv. Total (cfs)	31747.5	Conv. (cfs)	9639.0	14726.3	7382.2
Length Wtd. (ft)	207.66	Wetted Per. (ft)	130.94	49.95	400.08
Min Ch El (ft)	1450.00	Shear (lb/sq ft)	0.45	1.04	0.20
Alpha	1.70	Stream Power (lb/ft s)	1.16	4.64	0.29
Frctn Loss (ft)	1.21	Cum Volume (acre-ft)	20.90	33.97	12.82
C & E Loss (ft)	0.02	Cum SA (acres)	8.33	4.74	10.49

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1456.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1456.07	Reach Len. (ft)	210.00	210.92	200.00
Crit W.S. (ft)		Flow Area (sq ft)	259.10	217.03	384.82
E.G. Slope (ft/ft)	0.004131	Area (sq ft)	433.79	217.03	384.82
Q Total (cfs)	2304.00	Flow (cfs)	706.95	1000.36	596.70
Top Width (ft)	634.63	Top Width (ft)	130.33	48.27	456.02
Vel Total (ft/s)	2.68	Avg. Vel. (ft/s)	2.73	4.61	1.55
Max Chl Dpth (ft)	6.07	Hydr. Depth (ft)	1.99	4.50	0.84
Conv. Total (cfs)	35847.8	Conv. (cfs)	10999.3	15564.5	9283.9
Length Wtd. (ft)	207.44	Wetted Per. (ft)	131.55	50.18	456.04
Min Ch El (ft)	1450.00	Shear (lb/sq ft)	0.51	1.12	0.22
Alpha	1.69	Stream Power (lb/ft s)	1.39	5.14	0.34
Frctn Loss (ft)	1.28	Cum Volume (acre-ft)	22.01	35.87	14.62
C & E Loss (ft)	0.02	Cum SA (acres)	8.81	4.77	10.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1456.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1456.34	Reach Len. (ft)	210.00	210.92	200.00

Crit W.S. (ft)		Flow Area (sq ft)	294.83	230.22	510.80
E.G. Slope (ft/ft)	0.004564	Area (sq ft)	469.52	230.22	510.80
Q Total (cfs)	3067.00	Flow (cfs)	916.66	1160.12	990.22
Top Width (ft)	646.29	Top Width (ft)	131.37	48.27	466.65
Vel Total (ft/s)	2.96	Avg. Vel. (ft/s)	3.11	5.04	1.94
Max Chl Dpth (ft)	6.34	Hydr. Depth (ft)	2.24	4.77	1.09
Conv. Total (cfs)	45397.1	Conv. (cfs)	13568.2	17171.8	14657.1
Length Wtd. (ft)	206.91	Wetted Per. (ft)	132.62	50.18	466.67
Min Ch El (ft)	1450.00	Shear (lb/sq ft)	0.63	1.31	0.31
Alpha	1.56	Stream Power (lb/ft s)	1.97	6.59	0.60
Frctn Loss (ft)	1.39	Cum Volume (acre-ft)	26.33	40.27	21.48
C & E Loss (ft)	0.02	Cum SA (acres)	9.57	4.84	11.99

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.416

INPUT
Description: Section 0.710 in old study

Ineffective Flow Areas reflect the retention basin for the Arizona Hillcrest Subdivision. It is assumed the full depth of the retention basin will not act as conveyance area.

Station Elevation Data num= 190

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8579.83	14648586.223		14648592.832		14648593.379		14648598.017		1464
8598.625	14648600.713		14648632.067	1464.237	8632.291	1464.238	8632.627	1464.228	
8665.942	1464.043	8666.255	1464.034	8667.297	1464.035	8667.543	1464.042	8667.589	1464.044
8673.869	1464.148	8673.926	1464.149	8673.998	1464.149	8688.736	1464.506	8688.887	1464.506
8735.783	1464.385	8744.534	1464.416	8744.998	1464.431	8752.962	1464.344	8757.155	1464.274
8766.562	1464.149	8768.143	1464.128	8769.247	1464.121	8770.908	1464.111	8778.607	1464
8785.054	1464.636	8785.952	1464.313	8787.354	14648789.476		14648792.384		1464
8794.682	14648794.959		14648795.835		14648799.048		14648800.717		1464
8806.81	14648809.723		14648814.045		14648818.168		14648829.564		1464
8833.584	14648861.581		14648892.718		14648897.862		1464 8904.43		1464
8910.633	14648917.225		14648929.348		14648938.972		14648943.191		1464
8948.451	14648950.631		14648954.894		14648960.915		14648998.163	1462.875	
9007.259	1462.845	9054.108	14629061.363		14629095.638		14629100.513		1462
9101.764	14629105.377		14629124.169		14629136.647		14629161.174		1462
9189.14	1461.303	9219.494	1460.845	9245.83	1460.546	9251.015	1460.526	9279.638	1460
9280.698	1460 9282.19		14609283.126		14609290.461		14609292.982		1460
9294.839	14609304.056		14609335.992		14609344.013		14609363.677	1459.676	
9393.355	1459.521	9405.152	1459.287	9426.999	1458.888	9471.46	1458	9531.11	1456.524
9552.387	14569555.137		1455.705	9558.782	1455.366	9573.947	14549580.945		1452.3
9582.116	14529583.001		1451.773	9589.909	14509589.972		14509594.231		1450
9595.339	14509602.213		14509603.154		14509613.337		14509788.536	1448.279	
9795.252	1448.221	9800.594	1448.175	9819.058	1448.253	9819.692	1448.404	9820.367	1448.633
9820.932	1448.473	9821.355	1448.574	9821.768	1448.696	9827.269	14509828.615		1450.312
9831.029	1450.871	9833.909	1451.61	9835.429	14529837.784		1452.622	9843.1	1454
9847.304	14549847.306		14549857.489		14549860.769		14549887.096		1454
9891.678	14549943.257		14549965.172		14549965.969		14549977.895		1454
9977.976	1454 9978.35		14549978.712		1454 9978.76		14549985.359		1454

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9986.006    1454  9988.61452.7269991.2221451.4239994.114    14509995.4371449.365
9998.516    1448   10000    144810003.91    144810006.74    144810007.651448.479
10013.73    1450 10016.21451.921 10016.3    1452 10016.4  1452.110016.821452.147
10023.48    145410024.93    145410043.881453.40910048.041453.61610050.57    1454
10090.61    145410128.931453.69510138.55 1453.6910142.841453.68610182.031453.473
10204.86 1453.4110299.641453.60110348.321453.91810351.05 1453.9310352.751453.932
10353.331453.93210363.21    145410370.17    145410378.05    145410399.55 1454.26
10424.351454.805 10462.21455.454 10475.2    145610479.121456.733 10485.9    1458
10493.951459.505 10496.6    146010500.431460.71610507.69    146210511.561462.743
10517.721463.94110518.08    146410518.551464.078 10530.1    146610530.591466.061
10548.74    146810550.151468.14410561.511469.228 10569.6    147010584.911471.159

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 8579.83    .0559986.006    .05510023.48    .055

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      9986.00610023.48              670  601.53     500              .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    9500  9843.1    1454       T

CROSS SECTION OUTPUT  Profile #10-yr

  E.G. Elev (ft)           1454.66    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.29    Wt. n-Val.                0.055      0.055      0.055
  W.S. Elev (ft)           1454.37    Reach Len. (ft)          670.00     601.53     500.00
  Crit W.S. (ft)           1454.37    Flow Area (sq ft)        152.91     150.53     243.11
  E.G. Slope (ft/ft)      0.007164    Area (sq ft)            1378.93     150.53     243.11
  Q Total (cfs)            1422.00    Flow (cfs)               179.02     831.02     411.96
  Top Width (ft)            834.67    Top Width (ft)           416.16      37.47     381.04
  Vel Total (ft/s)             2.60   Avg. Vel. (ft/s)           1.17       5.52       1.69
  Max Chl Dpth (ft)            6.37   Hydr. Depth (ft)           0.37       4.02       0.64
  Conv. Total (cfs)        16800.5    Conv. (cfs)              2115.1     9818.3     4867.2
  Length Wtd. (ft)          584.85    Wetted Per. (ft)         417.44      40.13     381.09
  Min Ch El (ft)           1448.00    Shear (lb/sq ft)           0.16       1.68       0.29
  Alpha                       2.78    Stream Power (lb/ft s)     0.19       9.26       0.48
  Frctn Loss (ft)             0.96    Cum Volume (acre-ft)      15.44      28.86       8.62
  C & E Loss (ft)             0.08    Cum SA (acres)             5.93       4.45       5.74

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT  Profile #50-yr

  E.G. Elev (ft)           1454.87    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.35    Wt. n-Val.                0.055      0.055      0.055
  W.S. Elev (ft)           1454.51    Reach Len. (ft)          670.00     601.53     500.00
  Crit W.S. (ft)           1454.51    Flow Area (sq ft)        212.21     155.86     297.76
  E.G. Slope (ft/ft)      0.009296    Area (sq ft)            1438.23     155.86     297.76
  Q Total (cfs)            2005.00    Flow (cfs)               351.21    1003.17     650.62
  Top Width (ft)            842.72    Top Width (ft)           417.74      37.47     387.51
  Vel Total (ft/s)             3.01   Avg. Vel. (ft/s)           1.66       6.44       2.19
```

Max Chl Dpth (ft)	6.51	Hydr. Depth (ft)	0.51	4.16	0.77
Conv. Total (cfs)	20795.0	Conv. (cfs)	3642.6	10404.5	6747.9
Length Wtd. (ft)	585.64	Wetted Per. (ft)	419.02	40.13	387.56
Min Ch El (ft)	1448.00	Shear (lb/sq ft)	0.29	2.25	0.45
Alpha	2.51	Stream Power (lb/ft s)	0.49	14.51	0.97
Frctn Loss (ft)	2.22	Cum Volume (acre-ft)	16.44	33.09	11.40
C & E Loss (ft)	0.08	Cum SA (acres)	7.01	4.53	8.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1454.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1454.58	Reach Len. (ft)	670.00	601.53	500.00
Crit W.S. (ft)	1454.58	Flow Area (sq ft)	239.16	158.28	322.83
E.G. Slope (ft/ft)	0.010214	Area (sq ft)	1465.18	158.28	322.83
Q Total (cfs)	2304.00	Flow (cfs)	448.79	1078.80	776.41
Top Width (ft)	846.37	Top Width (ft)	418.45	37.47	390.44
Vel Total (ft/s)	3.20	Avg. Vel. (ft/s)	1.88	6.82	2.41
Max Chl Dpth (ft)	6.58	Hydr. Depth (ft)	0.57	4.22	0.83
Conv. Total (cfs)	22797.8	Conv. (cfs)	4440.7	10674.6	7682.5
Length Wtd. (ft)	585.20	Wetted Per. (ft)	419.74	40.13	390.50
Min Ch El (ft)	1448.00	Shear (lb/sq ft)	0.36	2.51	0.53
Alpha	2.38	Stream Power (lb/ft s)	0.68	17.14	1.27
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	17.44	34.96	12.99
C & E Loss (ft)	0.08	Cum SA (acres)	7.49	4.56	8.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1455.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1454.77	Reach Len. (ft)	670.00	601.53	500.00
Crit W.S. (ft)	1454.72	Flow Area (sq ft)	321.30	165.62	400.15
E.G. Slope (ft/ft)	0.010754	Area (sq ft)	1547.32	165.62	400.15
Q Total (cfs)	3067.00	Flow (cfs)	750.69	1193.83	1122.48
Top Width (ft)	857.45	Top Width (ft)	420.63	37.47	399.35
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)	2.34	7.21	2.81
Max Chl Dpth (ft)	6.77	Hydr. Depth (ft)	0.76	4.42	1.00
Conv. Total (cfs)	29574.9	Conv. (cfs)	7238.8	11512.0	10824.0

Length Wtd. (ft)	583.99	Wetted Per. (ft)	421.92	40.13	399.41
Min Ch El (ft)	1448.00	Shear (lb/sq ft)	0.51	2.77	0.67
Alpha	2.04	Stream Power (lb/ft s)	1.19	19.97	1.89
Frctn Loss (ft)	2.24	Cum Volume (acre-ft)	21.47	39.32	19.39
C & E Loss (ft)	0.08	Cum SA (acres)	8.24	4.63	10.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.302

INPUT
Description: 0.302
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9649.66	1456	9664.57	1456	9670.01	1456	9673.15	1456	9673.5	1456
9675.57	1456	9675.87	1456	9675.94	1456	9695.31	1454.39	9699.21	1454
9723.42	1452.32	9728.47	1452	9728.84	1452	9729.17	1452	9730.56	1452
9731.19	1452	9762.67	1451.41	9807.48	1450.59	9821.35	1450	9825.97	1450
9827.35	1450	9828.05	1450	9838.4	1450	9847.28	1450	9853.7	1450.22
9856.75	1450.27	9871.57	1450.46	9874.77	1450.51	9883.31	1450.62	9886.85	1450.67
9902.26	1450.89	9912.54	1450	9914.07	1450	9968.34	1450	9970.34	1450
9973.33	1450	9977.57	1450	9978.18	1450	9981.03	1450	9983.12	1450
9983.38	1450	9987.82	1448.09	9988.02	1448	9988.15	1447.95	9988.48	1447.8
9991.74	1446	9996.51	1445.19	9996.55	1445.18	10002.47	1444	10004.08	1444
10004.57	1444	10007.25	1445.11	10009.65	1446	10011.2	1447.16	10012.33	1448
10014.65	1449.73	10015.03	1449.94	10015.15	1450	10015.53	1450	10064.58	1450
10072.2	1450	10072.32	1450	10076.29	1450	10077.11	1450	10083.81	1450
10083.87	1450	10084.4	1450.02	10165.23	1450.75	10209.1	1450.82	10226.9	1450.98
10237.43	1451.06	10240.22	1451.09	10253.92	1451.25	10272.83	1451.35	10337.64	1451.91
10344.95	1452	10375.52	1453.73	10380.45	1454	10386.41	1454.66		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9649.66	.055	9983.38	.055	10015.15	.055

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.38	10015.15	180	193	230	.1	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1452.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1452.36	Reach Len. (ft)	180.00	193.00	230.00
Crit W.S. (ft)	1450.91	Flow Area (sq ft)	461.52	192.39	522.37
E.G. Slope (ft/ft)	0.000706	Area (sq ft)	461.52	192.39	522.37
Q Total (cfs)	1422.00	Flow (cfs)	485.02	433.82	503.16
Top Width (ft)	628.35	Top Width (ft)	260.48	31.77	336.10
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	1.05	2.25	0.96
Max Chl Dpth (ft)	8.36	Hydr. Depth (ft)	1.77	6.06	1.55
Conv. Total (cfs)	53514.2	Conv. (cfs)	18252.9	16325.9	18935.3
Length Wtd. (ft)	197.33	Wetted Per. (ft)	260.57	34.56	336.11
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.08	0.25	0.07
Alpha	1.54	Stream Power (lb/ft s)	0.08	0.55	0.07

Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	1.29	26.50	4.23
C & E Loss (ft)	0.22	Cum SA (acres)	0.73	3.97	1.63

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1452.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1452.12	Reach Len. (ft)	180.00	193.00	230.00
Crit W.S. (ft)		Flow Area (sq ft)	400.51	184.90	443.60
E.G. Slope (ft/ft)	0.002042	Area (sq ft)	400.51	184.90	443.60
Q Total (cfs)	2005.00	Flow (cfs)	657.45	690.49	657.06
Top Width (ft)	620.51	Top Width (ft)	256.81	31.77	331.93
Vel Total (ft/s)	1.95	Avg. Vel. (ft/s)	1.64	3.73	1.48
Max Chl Dpth (ft)	8.12	Hydr. Depth (ft)	1.56	5.82	1.34
Conv. Total (cfs)	44369.3	Conv. (cfs)	14549.0	15280.1	14540.3
Length Wtd. (ft)	200.83	Wetted Per. (ft)	256.89	34.56	331.94
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.20	0.68	0.17
Alpha	1.69	Stream Power (lb/ft s)	0.33	2.55	0.25
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	2.29	30.74	7.15
C & E Loss (ft)	0.04	Cum SA (acres)	1.82	4.05	4.55

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1452.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1452.25	Reach Len. (ft)	180.00	193.00	230.00
Crit W.S. (ft)		Flow Area (sq ft)	432.61	188.85	485.06
E.G. Slope (ft/ft)	0.002203	Area (sq ft)	432.61	188.85	485.06
Q Total (cfs)	2304.00	Flow (cfs)	772.53	742.92	788.56
Top Width (ft)	624.68	Top Width (ft)	258.78	31.77	334.13
Vel Total (ft/s)	2.08	Avg. Vel. (ft/s)	1.79	3.93	1.63
Max Chl Dpth (ft)	8.24	Hydr. Depth (ft)	1.67	5.94	1.45
Conv. Total (cfs)	49089.7	Conv. (cfs)	16459.7	15828.8	16801.2
Length Wtd. (ft)	201.83	Wetted Per. (ft)	258.86	34.56	334.14
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.23	0.75	0.20
Alpha	1.61	Stream Power (lb/ft s)	0.41	2.96	0.32
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	2.84	32.56	8.36
C & E Loss (ft)	0.03	Cum SA (acres)	2.28	4.08	4.83

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1452.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1452.73	Reach Len. (ft)	180.00	193.00	230.00
Crit W.S. (ft)		Flow Area (sq ft)	558.88	204.15	647.93
E.G. Slope (ft/ft)	0.001944	Area (sq ft)	558.88	204.15	647.93
Q Total (cfs)	3067.00	Flow (cfs)	1092.29	794.57	1180.14

Top Width (ft)	640.22	Top Width (ft)	265.82	31.77	342.63
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)	1.95	3.89	1.82
Max Chl Dpth (ft)	8.73	Hydr. Depth (ft)	2.10	6.43	1.89
Conv. Total (cfs)	69564.1	Conv. (cfs)	24774.6	18022.1	26767.4
Length Wtd. (ft)	204.79	Wetted Per. (ft)	265.91	34.56	342.66
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.26	0.72	0.23
Alpha	1.39	Stream Power (lb/ft s)	0.50	2.79	0.42
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	5.27	36.76	13.38
C & E Loss (ft)	0.00	Cum SA (acres)	2.96	4.15	5.74

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.266

INPUT
Description: Cross-Section 0.266
Station Elevation Data num= 84

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
 9677.35    14569686.064    14569687.1281455.9659688.9881455.9139756.171    1454
9762.9951453.7799815.152    14529815.674    14529825.187 1451.359846.129    1450
9847.472    14509849.528    14509860.794    1450 9867.46    14509875.183    1450
9939.197    14509945.714    14509954.301    14509962.389    14509962.606    1450
9966.592    14509966.684    14509972.453    14509976.293    14509977.096    1450
9984.769    14509986.5941448.5199989.107 1446.489989.3361446.2959989.699    1446
9991.2691444.7279992.355    14449993.222    14449993.631    14449997.361    1444
9999.153    144410003.77    144410007.53    144410008.951445.43710009.51    1446
10010.881447.38910011.48    144810012.711449.24910013.131449.67410013.41    1450
10030.27    145010030.42    1450 10040.5    145010053.12    145010054.75    1450
10080.79    145010082.05    1450 10097.5    145010119.92    145010119.97    1450
10126.63    145010135.92    145010140.01    145010148.42    1450 10150.9    1450
10184.56    145010202.99    145010223.62    145010228.57    145010293.371450.715
10302.77  1450.810427.33    145210427.46    1452 10427.7    145210431.471452.208
10449.221453.00810452.311453.11910468.121453.90410468.521453.925 10469.11453.952
10470.03    145410487.461454.727   104971454.966 10504.1  1455.210511.321455.339
 10514.51455.35610524.581455.731 10525.61455.75910527.351455.828
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Manning's n Values num= 3

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     Sta   n Val     Sta   n Val     Sta   n Val
 9677.35    .0559984.769    .05510013.41    .055
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Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.76	10013.41	380	467.87	590	.5	.3

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1451.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.19	Wt. n-Val.		0.055	
W.S. Elev (ft)	1449.56	Reach Len. (ft)	380.00	467.87	590.00
Crit W.S. (ft)	1449.56	Flow Area (sq ft)		119.77	
E.G. Slope (ft/ft)	0.033202	Area (sq ft)		119.77	
Q Total (cfs)	1422.00	Flow (cfs)		1422.00	
Top Width (ft)	27.71	Top Width (ft)		27.71	
Vel Total (ft/s)	11.87	Avg. Vel. (ft/s)		11.87	
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)		4.32	
Conv. Total (cfs)	7804.0	Conv. (cfs)		7804.0	
Length Wtd. (ft)	488.14	Wetted Per. (ft)		31.97	
Min Ch El (ft)	1444.00	Shear (lb/sq ft)		7.76	
Alpha	1.00	Stream Power (lb/ft s)		92.18	

Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	0.33	25.81	2.85
C & E Loss (ft)	0.63	Cum SA (acres)	0.19	3.84	0.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #50-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1451.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1450.95	Reach Len. (ft)	380.00	467.87	590.00
Crit W.S. (ft)	1450.95	Flow Area (sq ft)	139.07	159.36	246.50
E.G. Slope (ft/ft)	0.008670	Area (sq ft)	139.07	159.36	246.50
Q Total (cfs)	2005.00	Flow (cfs)	327.66	1139.52	537.82
Top Width (ft)	487.23	Top Width (ft)	153.41	28.64	305.17
Vel Total (ft/s)	3.68	Avg. Vel. (ft/s)	2.36	7.15	2.18
Max Chl Dpth (ft)	6.95	Hydr. Depth (ft)	0.91	5.56	0.81
Conv. Total (cfs)	21533.2	Conv. (cfs)	3518.9	12238.1	5776.1
Length Wtd. (ft)	498.58	Wetted Per. (ft)	153.44	33.25	305.18
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.49	2.59	0.44
Alpha	2.31	Stream Power (lb/ft s)	1.16	18.55	0.95
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	1.18	29.97	5.33
C & E Loss (ft)	0.11	Cum SA (acres)	0.97	3.92	2.87

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #100-yr

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1451.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1451.19	Reach Len. (ft)	380.00	467.87	590.00
Crit W.S. (ft)		Flow Area (sq ft)	176.53	166.27	323.13
E.G. Slope (ft/ft)	0.007340	Area (sq ft)	176.53	166.27	323.13
Q Total (cfs)	2304.00	Flow (cfs)	441.46	1125.34	737.20
Top Width (ft)	516.01	Top Width (ft)	157.16	28.64	330.21
Vel Total (ft/s)	3.46	Avg. Vel. (ft/s)	2.50	6.77	2.28
Max Chl Dpth (ft)	7.19	Hydr. Depth (ft)	1.12	5.81	0.98
Conv. Total (cfs)	26892.6	Conv. (cfs)	5152.8	13135.1	8604.7
Length Wtd. (ft)	501.48	Wetted Per. (ft)	157.19	33.25	330.22
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.51	2.29	0.45
Alpha	2.11	Stream Power (lb/ft s)	1.29	15.51	1.02

Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	1.58	31.78	6.22
C & E Loss (ft)	0.08	Cum SA (acres)	1.42	3.95	3.07

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1452.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.055	0.055	0.055
W.S. Elev (ft)	1452.23	Reach Len. (ft)	380.00	467.87	590.00
Crit W.S. (ft)		Flow Area (sq ft)	346.98	195.80	716.73
E.G. Slope (ft/ft)	0.002640	Area (sq ft)	346.98	195.80	716.73
Q Total (cfs)	3067.00	Flow (cfs)	756.48	886.27	1424.25
Top Width (ft)	623.28	Top Width (ft)	176.21	28.64	418.43
Vel Total (ft/s)	2.44	Avg. Vel. (ft/s)	2.18	4.53	1.99
Max Chl Dpth (ft)	8.22	Hydr. Depth (ft)	1.97	6.84	1.71
Conv. Total (cfs)	59693.2	Conv. (cfs)	14723.5	17249.5	27720.3
Length Wtd. (ft)	507.20	Wetted Per. (ft)	176.27	33.25	418.45
Min Ch El (ft)	1444.00	Shear (lb/sq ft)	0.32	0.97	0.28
Alpha	1.51	Stream Power (lb/ft s)	0.71	4.39	0.56
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	3.40	35.88	9.77
C & E Loss (ft)	0.00	Cum SA (acres)	2.05	4.02	3.73

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.177

INPUT
Description: 0.177
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9674.62	14529	678.067	14529	700.544	14529	729.273	14529	729.811	1452
9739.118	14529	743.646	14529	754.261	14529	760.141	14529	774.887	1452
9828.613	1450.7	089839.208	1450.5	969869.064	1450.2	559878.085	1450.1	489882.461	1450.132
9890.542	14509	891.981	1449.6	799900.362	14489	906.195	1446.8	319909.876	1446
9913.138	1445.2	639918.732	14449	922.882	1443.0	639927.588	14429	933.501	1442
9944.819	14429	949.677	14429	957.674	14429	960.466	1442.2	99972.593	1444
9976.378	14449	979.425	14449	998.891	144410	006.83	144410	013.541	1445.556
10015.51	144610	023.511	1447.8	6310024.09	144810	029.571	1449.2	7610032.69	1450
10033.06	1450.0	8710041.29	1452	10042.71	1452.3	2810049.89	145410	052.331	1454.569
10058.48	145610	065.271	1457.5	9610066.95	145810	067.931	1458.3	1310073.21	1460
10081.71	146010	091.64	146010	094.96	1458.7	310098.281	1457.4	5310104.391	1455.125
10106.26	1454.4	110107.33	145410	112.351	1452.0	8210112.56	1452	10113.9	1451.73
10120.11	1450.4	6910124.19	145010	126.31	145010	131.82	145010	135.48	1450
10150.17	1449.519	10160.31	1449.5	1310165.59	1449.5	110168.96	1449.524		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
9674.62	.055	9913.138	.055	9972.593	.055	10006.83	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9913.138	9972.593	515	487.43	487.43	.1	.3

Blocked Obstructions num= 1

Sta L Sta R Elev
1008010168.96

CROSS SECTION OUTPUT Profile #10-yr

E.G. Elev (ft)	1449.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.055	0.055	0.046
W.S. Elev (ft)	1449.01	Reach Len. (ft)	515.00	487.43	487.43
Crit W.S. (ft)		Flow Area (sq ft)	32.38	378.80	225.63
E.G. Slope (ft/ft)	0.000653	Area (sq ft)	32.38	378.80	225.63
Q Total (cfs)	1422.00	Flow (cfs)	32.82	893.53	495.65
Top Width (ft)	133.09	Top Width (ft)	17.81	59.46	55.83
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)	1.01	2.36	2.20
Max Chl Dpth (ft)	7.01	Hydr. Depth (ft)	1.82	6.37	4.04
Conv. Total (cfs)	55663.0	Conv. (cfs)	1284.7	34976.5	19401.7
Length Wtd. (ft)	487.75	Wetted Per. (ft)	18.20	59.95	56.40
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.07	0.26	0.16
Alpha	1.04	Stream Power (lb/ft s)	0.07	0.61	0.36
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	0.19	23.13	1.32
C & E Loss (ft)	0.02	Cum SA (acres)	0.11	3.37	0.36

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #50-yr

E.G. Elev (ft)	1450.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.055	0.055	0.045
W.S. Elev (ft)	1450.07	Reach Len. (ft)	515.00	487.43	487.43
Crit W.S. (ft)		Flow Area (sq ft)	54.14	441.79	287.19
E.G. Slope (ft/ft)	0.000697	Area (sq ft)	54.14	441.79	287.19
Q Total (cfs)	2005.00	Flow (cfs)	61.08	1193.69	750.23
Top Width (ft)	146.58	Top Width (ft)	26.74	59.46	60.38
Vel Total (ft/s)	2.56	Avg. Vel. (ft/s)	1.13	2.70	2.61
Max Chl Dpth (ft)	8.07	Hydr. Depth (ft)	2.02	7.43	4.76
Conv. Total (cfs)	75917.7	Conv. (cfs)	2312.9	45197.9	28406.9
Length Wtd. (ft)	487.85	Wetted Per. (ft)	27.23	59.95	61.08
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.09	0.32	0.20
Alpha	1.06	Stream Power (lb/ft s)	0.10	0.87	0.53
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	0.34	26.74	1.71
C & E Loss (ft)	0.03	Cum SA (acres)	0.19	3.45	0.40

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1450.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.055	0.055	0.044
W.S. Elev (ft)	1450.53	Reach Len. (ft)	515.00	487.43	487.43
Crit W.S. (ft)		Flow Area (sq ft)	76.36	469.44	315.74
E.G. Slope (ft/ft)	0.000732	Area (sq ft)	76.36	469.44	315.74
Q Total (cfs)	2304.00	Flow (cfs)	59.77	1352.58	891.65
Top Width (ft)	190.22	Top Width (ft)	68.38	59.46	62.38
Vel Total (ft/s)	2.67	Avg. Vel. (ft/s)	0.78	2.88	2.82
Max Chl Dpth (ft)	8.53	Hydr. Depth (ft)	1.12	7.90	5.06
Conv. Total (cfs)	85186.1	Conv. (cfs)	2209.7	50009.2	32967.2
Length Wtd. (ft)	487.79	Wetted Per. (ft)	68.88	59.95	63.13
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.05	0.36	0.23

Alpha	1.12	Stream Power (lb/ft s)	0.04	1.03	0.65
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	0.48	28.36	1.90
C & E Loss (ft)	0.03	Cum SA (acres)	0.44	3.48	0.41

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #500-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1451.71	Element			
Vel Head (ft)	0.15	Wt. n-Val.	0.055	0.055	0.043
W.S. Elev (ft)	1451.56	Reach Len. (ft)	515.00	487.43	487.43
Crit W.S. (ft)		Flow Area (sq ft)	177.12	530.66	382.25
E.G. Slope (ft/ft)	0.000750	Area (sq ft)	177.12	530.66	382.25
Q Total (cfs)	3067.00	Flow (cfs)	169.39	1680.18	1217.43
Top Width (ft)	246.32	Top Width (ft)	120.05	59.46	66.81
Vel Total (ft/s)	2.81	Avg. Vel. (ft/s)	0.96	3.17	3.18
Max Chl Dpth (ft)	9.56	Hydr. Depth (ft)	1.48	8.93	5.72
Conv. Total (cfs)	111978.1	Conv. (cfs)	6184.4	61344.5	44449.2
Length Wtd. (ft)	488.19	Wetted Per. (ft)	120.56	59.95	67.68
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.07	0.41	0.26
Alpha	1.21	Stream Power (lb/ft s)	0.07	1.31	0.84
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	1.12	31.98	2.33
C & E Loss (ft)	0.04	Cum SA (acres)	0.76	3.54	0.45

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.085

INPUT
Description: 0.085
Station Elevation Data num= 126

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9361.87	1466	9365.14	1466	9367.83	1465.56	9369.51	1465.29	9370.65	1465.1
9373.66	1465.25	9391.92	1465.91	9392.1	1465.94	9393.3	1465.99	9393.58	1466
9393.84	1465.95	9403.44	1464	9413.27	1462.01	9413.3	1462	9416.53	1461.42
9418.86	1461	9424.88	1460.04	9425.02	1460.02	9425.06	1460.01	9428.68	1459.39
9431.63	1458.88	9436.84	1458	9437.01	1457.97	9437.31	1457.92	9442.39	1457.03
9448.31	1456	9448.99	1455.94	9449.15	1455.93	9449.35	1455.91	9459.85	1455.14
9461.39	1455.18	9462.16	1455.13	9465.02	1454.84	9467.77	1454.62	9469.81	1454.47
9471.13	1454.34	9477.55	1455.08	9480.53	1454.98	9500.12	1454	9521.99	1454
9544.34	1454	9550.75	1454	9562.74	1454	9568.49	1454	9569.5	1454
9574.92	1454	9576.06	1454	9578.23	1454	9585.09	1454	9658.46	1454
9660.55	1454	9661.41	1454	9664.1	1454	9667.28	1453.62	9674.48	1452
9678.66	1450.98	9682.67	1450	9688.09	1448.68	9690.86	1448	9697.51	1446.38
9699.04	1446	9706.36	1444.22	9707.23	1444	9715.34	1442.78	9720.43	1442
9721.28	1442	9745.4	1440.21	9747.7	1440	9813.98	1440	9827.74	1440
9839.93	1440	9845.24	1440	9845.78	1440	9855.04	1441.05	9862.39	1441.56
9866.01	1442	9866.71	1442	9870.8	1442	9877.62	1442	9883.92	1442
9886.02	1442	9887.35	1442	9887.89	1442	9898.24	1442	9900.37	1442
9908.53	1442	9913.91	1442	9943.81	1442	9974.8	1442	9975	1442
9975.23	1442.11	9979.15	1444	9982.32	1444	9985.95	1444	9987.52	1443.41
9991.26	1442	9996.24	1442	9997.72	1442	10000	1442.16	10020.49	1443.68
10022.09	1444	10024.48	1444.52	10037.54	1447.58	10039.37	1448	10039.47	1448.03

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10039.73 1448.0910047.76    145010050.28  1450.610055.69    145210058.78  1452.8
10063.41    145410068.35 1455.2810071.13    1456   10076 1457.2610078.85    1458
10079.95  1458.310086.43 1459.9710086.57    146010086.68    1460 10109.7    1460
10112.25 1458.9610118.66 1456.3510120.56 1455.5710126.94 1452.9810129.23    1452
10135.49 1451.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 9361.87    .055  9664.1    .055 9997.72    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9664.110086.57              245  224.46  224.46             .3       .3

CROSS SECTION OUTPUT  Profile #10-yr

  E.G. Elev (ft)           1449.03    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.01    Wt. n-Val.                          0.052
  W.S. Elev (ft)           1449.02    Reach Len. (ft)          245.00     224.46     224.46
  Crit W.S. (ft)                      Flow Area (sq ft)                  2500.54
  E.G. Slope (ft/ft)      0.000029    Area (sq ft)                       2500.54
  Q Total (cfs)            1422.00    Flow (cfs)                         1422.00
  Top Width (ft)            356.96    Top Width (ft)                      356.96
  Vel Total (ft/s)            0.57    Avg. Vel. (ft/s)                      0.57
  Max Chl Dpth (ft)           9.02    Hydr. Depth (ft)                      7.01
  Conv. Total (cfs)       262175.8    Conv. (cfs)                      262175.8
  Length Wtd. (ft)          224.46    Wetted Per. (ft)                    359.39
  Min Ch El (ft)           1440.00    Shear (lb/sq ft)                      0.01
  Alpha                       1.00    Stream Power (lb/ft s)                0.01
  Frctn Loss (ft)             0.02    Cum Volume (acre-ft)       0.00       7.02       0.06
  C & E Loss (ft)             0.16    Cum SA (acres)             0.01       1.04       0.05

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT  Profile #50-yr

  E.G. Elev (ft)           1450.10    Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.01    Wt. n-Val.                          0.051
  W.S. Elev (ft)           1450.09    Reach Len. (ft)          245.00     224.46     224.46
  Crit W.S. (ft)                      Flow Area (sq ft)                  2886.46
  E.G. Slope (ft/ft)      0.000037    Area (sq ft)                       2886.46
  Q Total (cfs)            2005.00    Flow (cfs)                         2005.00
  Top Width (ft)            365.84    Top Width (ft)                      365.84
  Vel Total (ft/s)            0.69    Avg. Vel. (ft/s)                      0.69
  Max Chl Dpth (ft)          10.09    Hydr. Depth (ft)                      7.89
  Conv. Total (cfs)       329065.3    Conv. (cfs)                      329065.3
  Length Wtd. (ft)          224.53    Wetted Per. (ft)                    368.52
  Min Ch El (ft)           1440.00    Shear (lb/sq ft)                      0.02
  Alpha                       1.00    Stream Power (lb/ft s)                0.01
  Frctn Loss (ft)             0.03    Cum Volume (acre-ft)       0.02       8.12       0.11
  C & E Loss (ft)             0.20    Cum SA (acres)             0.03       1.07       0.06

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
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Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1450.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.051	
W.S. Elev (ft)	1450.56	Reach Len. (ft)	245.00	224.46	224.46
Crit W.S. (ft)		Flow Area (sq ft)		3059.67	
E.G. Slope (ft/ft)	0.000041	Area (sq ft)		3059.67	
Q Total (cfs)	2304.00	Flow (cfs)		2304.00	
Top Width (ft)	369.74	Top Width (ft)		369.74	
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)		0.75	
Max Chl Dpth (ft)	10.56	Hydr. Depth (ft)		8.28	
Conv. Total (cfs)	360749.8	Conv. (cfs)		360749.8	
Length Wtd. (ft)	224.59	Wetted Per. (ft)		372.53	
Min Ch El (ft)	1440.00	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	0.03	8.62	0.13
C & E Loss (ft)	0.21	Cum SA (acres)	0.04	1.08	0.06

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1451.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.051	
W.S. Elev (ft)	1451.60	Reach Len. (ft)	245.00	224.46	224.46
Crit W.S. (ft)		Flow Area (sq ft)		3446.74	
E.G. Slope (ft/ft)	0.000050	Area (sq ft)		3446.74	
Q Total (cfs)	3067.00	Flow (cfs)		3067.00	
Top Width (ft)	378.00	Top Width (ft)		378.00	
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)		0.89	
Max Chl Dpth (ft)	11.60	Hydr. Depth (ft)		9.12	
Conv. Total (cfs)	435117.5	Conv. (cfs)		435117.5	
Length Wtd. (ft)	224.78	Wetted Per. (ft)		381.04	
Min Ch El (ft)	1440.00	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	0.07	9.72	0.19
C & E Loss (ft)	0.25	Cum SA (acres)	0.05	1.10	0.07

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Buchanan Wash
REACH: Buchanan Wash RS: 0.043

INPUT
Description: 0.043
Station Elevation Data num= 54

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9921.66	1460	9923.24	1460	9930.85	1460	9936.35	1460	9938.28	1459.5
9942.85	1458	9944.38	1457.49	9948.17	1456	9950.25	1455.2	9953.09	1454
9954.38	1453.54	9958.66	1452	9959.52	1451.69	9961.31	1451.05	9964.05	1450
9966.52	1449.73	9980.52	1448	9983.33	1447.05	9986.43	1446	9990.28	1444.7
9992.43	1444	9994.96	1443.16	9998.36	1442	10000	1442	10006.02	1442
10016.11	1442	10020.05	1443.3	10022.18	1444	10027.52	1445.75	10028.31	1446
10035.4	1446.85	10045.48	1448	10049.85	1448.9	10055.17	1450	10060.69	1451.17
10064.67	1452	10072.33	1453.67	10075.18	1454.29	10082.12	1456	10087.99	1457.69
10089.23	1458	10090.21	1458.24	10097.28	1460	10115.21	1460	10120.93	1460
10123.95	1458.79	10125.91	1458	10129.1	1456.72	10130.9	1456	10135.46	1454.17
10135.88	1454	10136.16	1453.89	10142.79	1452	10143.6	1452		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9921.66	.025	9998.36	.055	10016.11	.025

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.52	10028.31	0	0	0	.1	.5

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
10100	10143.6		T

CROSS SECTION OUTPUT Profile #10-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1448.85	Element			
Vel Head (ft)	0.54	Wt. n-Val.	0.025	0.037	0.025
W.S. Elev (ft)	1448.31	Reach Len. (ft)			
Crit W.S. (ft)	1446.52	Flow Area (sq ft)	0.39	223.54	22.50
E.G. Slope (ft/ft)	0.003001	Area (sq ft)	0.39	223.54	22.50
Q Total (cfs)	1422.00	Flow (cfs)	0.36	1339.11	82.53
Top Width (ft)	68.96	Top Width (ft)	2.50	47.79	18.67
Vel Total (ft/s)	5.77	Avg. Vel. (ft/s)	0.93	5.99	3.67
Max Chl Dpth (ft)	6.31	Hydr. Depth (ft)	0.15	4.68	1.21
Conv. Total (cfs)	25956.1	Conv. (cfs)	6.6	24443.1	1506.4
Length Wtd. (ft)		Wetted Per. (ft)	2.52	49.41	18.82
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.03	0.85	0.22
Alpha	1.04	Stream Power (lb/ft s)	0.03	5.08	0.82
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #50-yr

			Left OB	Channel	Right OB
E.G. Elev (ft)	1449.87	Element			
Vel Head (ft)	0.67	Wt. n-Val.	0.025	0.037	0.025
W.S. Elev (ft)	1449.21	Reach Len. (ft)			
Crit W.S. (ft)	1447.50	Flow Area (sq ft)	5.90	266.48	41.23
E.G. Slope (ft/ft)	0.003001	Area (sq ft)	5.90	266.48	41.23
Q Total (cfs)	2005.00	Flow (cfs)	13.65	1794.72	196.63
Top Width (ft)	80.59	Top Width (ft)	9.77	47.79	23.03
Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)	2.31	6.73	4.77
Max Chl Dpth (ft)	7.21	Hydr. Depth (ft)	0.60	5.58	1.79
Conv. Total (cfs)	36598.6	Conv. (cfs)	249.2	32760.2	3589.3
Length Wtd. (ft)		Wetted Per. (ft)	9.84	49.41	23.27
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.11	1.01	0.33
Alpha	1.05	Stream Power (lb/ft s)	0.26	6.81	1.58
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #100-yr

E.G. Elev (ft)	1450.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.025	0.037	0.025
W.S. Elev (ft)	1449.60	Reach Len. (ft)			
Crit W.S. (ft)	1447.92	Flow Area (sq ft)	10.40	285.38	50.72
E.G. Slope (ft/ft)	0.003001	Area (sq ft)	10.40	285.38	50.72
Q Total (cfs)	2304.00	Flow (cfs)	29.06	2011.81	263.13
Top Width (ft)	85.70	Top Width (ft)	12.97	47.79	24.94
Vel Total (ft/s)	6.65	Avg. Vel. (ft/s)	2.80	7.05	5.19
Max Chl Dpth (ft)	7.60	Hydr. Depth (ft)	0.80	5.97	2.03
Conv. Total (cfs)	42057.4	Conv. (cfs)	530.5	36723.8	4803.1
Length Wtd. (ft)		Wetted Per. (ft)	13.07	49.41	25.22
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.15	1.08	0.38
Alpha	1.05	Stream Power (lb/ft s)	0.42	7.63	1.95
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION OUTPUT Profile #500-yr

E.G. Elev (ft)	1451.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.025	0.037	0.025
W.S. Elev (ft)	1450.47	Reach Len. (ft)			
Crit W.S. (ft)	1448.79	Flow Area (sq ft)	24.26	326.83	74.16
E.G. Slope (ft/ft)	0.003004	Area (sq ft)	24.26	326.83	74.16
Q Total (cfs)	3067.00	Flow (cfs)	96.75	2523.12	447.13
Top Width (ft)	94.57	Top Width (ft)	17.70	47.79	29.08
Vel Total (ft/s)	7.21	Avg. Vel. (ft/s)	3.99	7.72	6.03
Max Chl Dpth (ft)	8.47	Hydr. Depth (ft)	1.37	6.84	2.55
Conv. Total (cfs)	55962.7	Conv. (cfs)	1765.4	46038.6	8158.7
Length Wtd. (ft)		Wetted Per. (ft)	17.91	49.41	29.45
Min Ch El (ft)	1442.00	Shear (lb/sq ft)	0.25	1.24	0.47
Alpha	1.05	Stream Power (lb/ft s)	1.01	9.57	2.85
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Note: Manning's n values were composited to a single value in the main channel.

SUMMARY OF MANNING'S N VALUES

River:Buchanan Wash

Reach	River Sta.	n1	n2	n3	n4
Buchanan Wash	1.935	.055	.055	.055	
Buchanan Wash	1.916	.055	.055	.055	
Buchanan Wash	1.842	.055	.055	.055	
Buchanan Wash	1.766	.055	.055	.055	
Buchanan Wash	1.670	.055	.055	.055	
Buchanan Wash	1.575	.055	.055	.055	
Buchanan Wash	1.479	.055	.055	.055	

Buchanan Wash	1.417	.055	.055	.055	
Buchanan Wash	1.360	.055	.055	.055	
Buchanan Wash	1.332	.055	.055	.055	
Buchanan Wash	1.325	Culvert			
Buchanan Wash	1.317	.055	.055	.055	
Buchanan Wash	1.294	.055	.055	.055	
Buchanan Wash	1.271	.055	.055	.055	
Buchanan Wash	1.240	.055	.055	.055	
Buchanan Wash	1.205	.055	.055	.055	
Buchanan Wash	1.184	.055	.055	.055	
Buchanan Wash	1.148	.055	.055	.055	
Buchanan Wash	1.133	.055	.055	.055	
Buchanan Wash	1.105	.055	.055	.055	
Buchanan Wash	1.073	.055	.055	.055	
Buchanan Wash	1.043	.055	.055	.055	
Buchanan Wash	1.010	.055	.055	.055	
Buchanan Wash	0.978	.055	.055	.055	
Buchanan Wash	0.949	.055	.055	.055	
Buchanan Wash	0.929	.055	.055	.055	
Buchanan Wash	0.912	.025	.055	.055	
Buchanan Wash	0.886	.025	.055	.055	
Buchanan Wash	0.861	.025	.055	.055	
Buchanan Wash	0.842	.025	.055	.055	
Buchanan Wash	0.824	.025	.055	.055	
Buchanan Wash	0.812	.025	.055	.055	
Buchanan Wash	0.789	.055	.055	.055	
Buchanan Wash	0.778	Culvert			
Buchanan Wash	0.767	.055	.055	.055	
Buchanan Wash	0.707	.055	.055	.055	
Buchanan Wash	0.595	.055	.055	.055	
Buchanan Wash	0.501	.055	.055	.055	
Buchanan Wash	0.456	.055	.055	.055	
Buchanan Wash	0.416	.055	.055	.055	
Buchanan Wash	0.302	.055	.055	.055	
Buchanan Wash	0.266	.055	.055	.055	
Buchanan Wash	0.177	.055	.055	.055	.025
Buchanan Wash	0.085	.055	.055	.025	
Buchanan Wash	0.043	.025	.055	.025	

SUMMARY OF REACH LENGTHS

River: Buchanan Wash

Reach	River Sta.	Left	Channel	Right
Buchanan Wash	1.935	70	100.93	100
Buchanan Wash	1.916	230	389.3	380
Buchanan Wash	1.842	400	401.78	430
Buchanan Wash	1.766	500	508.03	555
Buchanan Wash	1.670	510	500.86	490
Buchanan Wash	1.575	505	505.7	540
Buchanan Wash	1.479	355	351.78	335
Buchanan Wash	1.417	297	300	303
Buchanan Wash	1.360	192	148	122
Buchanan Wash	1.332	81	81	81
Buchanan Wash	1.325	Culvert		
Buchanan Wash	1.317	101	112	122
Buchanan Wash	1.294	124	130	133

Buchanan Wash	1.271	135	171	175
Buchanan Wash	1.240	180	184	186
Buchanan Wash	1.205	112	113	112
Buchanan Wash	1.184	193	193	192
Buchanan Wash	1.148	76	79	79
Buchanan Wash	1.133	153	152	146
Buchanan Wash	1.105	168	163	157
Buchanan Wash	1.073	153	163	164
Buchanan Wash	1.043	167	178	182
Buchanan Wash	1.010	153	166	172
Buchanan Wash	0.978	144	159	162
Buchanan Wash	0.949	107	100	98
Buchanan Wash	0.929	78	91	96
Buchanan Wash	0.912	138	138	138
Buchanan Wash	0.886	138	129	112
Buchanan Wash	0.861	106	100	89
Buchanan Wash	0.842	93	96	99
Buchanan Wash	0.824	66	65	62
Buchanan Wash	0.812	71	136	122
Buchanan Wash	0.789	98	98	116
Buchanan Wash	0.778	Culvert		
Buchanan Wash	0.767	316	317	319
Buchanan Wash	0.707	703.08	591.57	558.08
Buchanan Wash	0.595	635	497.19	360
Buchanan Wash	0.501	260	235.61	225
Buchanan Wash	0.456	210	210.92	200
Buchanan Wash	0.416	670	601.53	500
Buchanan Wash	0.302	180	193	230
Buchanan Wash	0.266	380	467.87	590
Buchanan Wash	0.177	515	487.43	487.43
Buchanan Wash	0.085	245	224.46	224.46
Buchanan Wash	0.043	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Buchanan Wash

Reach	River Sta.	Contr.	Expan.
Buchanan Wash	1.935	.1	.3
Buchanan Wash	1.916	.1	.3
Buchanan Wash	1.842	.1	.3
Buchanan Wash	1.766	.1	.3
Buchanan Wash	1.670	.1	.3
Buchanan Wash	1.575	.1	.3
Buchanan Wash	1.479	.1	.3
Buchanan Wash	1.417	.1	.3
Buchanan Wash	1.360	.1	.3
Buchanan Wash	1.332	.1	.3
Buchanan Wash	1.325	Culvert	
Buchanan Wash	1.317	.1	.3
Buchanan Wash	1.294	.1	.3
Buchanan Wash	1.271	.1	.3
Buchanan Wash	1.240	.1	.3
Buchanan Wash	1.205	.1	.3
Buchanan Wash	1.184	.1	.3
Buchanan Wash	1.148	.1	.3
Buchanan Wash	1.133	.1	.3

Buchanan Wash	1.105		.1	.3
Buchanan Wash	1.073		.1	.3
Buchanan Wash	1.043		.1	.3
Buchanan Wash	1.010		.1	.3
Buchanan Wash	0.978		.1	.3
Buchanan Wash	0.949		.1	.3
Buchanan Wash	0.929		.1	.3
Buchanan Wash	0.912		.1	.3
Buchanan Wash	0.886		.1	.3
Buchanan Wash	0.861		.1	.3
Buchanan Wash	0.842		.1	.3
Buchanan Wash	0.824		.1	.3
Buchanan Wash	0.812		.1	.3
Buchanan Wash	0.789		.1	.3
Buchanan Wash	0.778	Culvert		
Buchanan Wash	0.767		.1	.3
Buchanan Wash	0.707		.1	.3
Buchanan Wash	0.595		.1	.3
Buchanan Wash	0.501		.1	.3
Buchanan Wash	0.456		.1	.5
Buchanan Wash	0.416		.1	.3
Buchanan Wash	0.302		.1	.3
Buchanan Wash	0.266		.5	.3
Buchanan Wash	0.177		.1	.3
Buchanan Wash	0.085		.3	.3
Buchanan Wash	0.043		.1	.5

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 04

River: Buchanan Wash Reach: Buchanan Wash RS: 1.935 Profile: 10-yr
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.935 Profile: 50-yr
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.935 Profile: 100-yr
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.935 Profile: 500-yr
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.916 Profile: 10-yr
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.916 Profile: 50-yr
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.916 Profile: 100-yr
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.916 Profile: 500-yr
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.842 Profile: 10-yr
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.842 Profile: 50-yr
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.842 Profile: 100-yr
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.842 Profile: 500-yr
Warning:Divided flow computed for this cross-section.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Buchanan Wash Reach: Buchanan Wash RS: 1.766 Profile: 10-yr
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

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            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.766     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.766     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.766     Profile: 500-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.670     Profile: 10-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.670     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.670     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.670     Profile: 500-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.575     Profile: 10-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.575     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.575     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.575     Profile: 500-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.479     Profile: 10-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.479     Profile: 50-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.479     Profile: 100-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.479     Profile: 500-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.332     Profile: 10-yr
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.317     Profile: 10-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
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River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.317     Profile: 50-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.317     Profile: 100-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.317     Profile: 500-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.240     Profile: 500-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.184     Profile: 10-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.184     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.184     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.184     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.148     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.133     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.105     Profile: 10-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.105     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.105     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.105     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.073     Profile: 10-yr
     Warning:Divided flow computed for this cross-section.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.073     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.043     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.010     Profile: 10-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.010     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
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River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.010     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 1.010     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.978     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.949     Profile: 10-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.949     Profile: 50-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.949     Profile: 100-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.949     Profile: 500-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.929     Profile: 10-yr
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.929     Profile: 50-yr
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.929     Profile: 100-yr
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
             water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
             program defaulted to critical depth.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.929     Profile: 500-yr
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program used critical depth
             for the water surface and continued on with the calculations.
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
             This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
             the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
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            water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
            program defaulted to critical depth.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.912     Profile: 10-yr
     Warning:Divided flow computed for this cross-section.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.886     Profile: 10-yr
     Warning:Divided flow computed for this cross-section.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.886     Profile: 50-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.886     Profile: 100-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.886     Profile: 500-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.861     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.842     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.824     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.812     Profile: 10-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.812     Profile: 50-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.812     Profile: 100-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.812     Profile: 500-yr
     Warning:The cross-section end points had to be extended vertically for the computed water surface.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.789     Profile: 10-yr
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.789     Profile: 50-yr
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.789     Profile: 100-yr
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.789     Profile: 500-yr
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.778     Profile: 500-yr
     Warning:During subcritical analysis, while trying to calculate culvert and weir flow, the program could not get a balance of
            energy within the specified tolerance and number of trials.  The program used the solution with the minimum error.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.778     Profile: 500-yr     Culv: 35 th Ave.
     Warning:During the culvert inlet computations, the program could not balance the culvert/weir flow.  The reported inlet
            energy grade answer may not be valid.
     Warning:During the culvert outlet computations, the program could not balance the culvert/weir flow.  The reported outlet
            energy grade answer may not be valid.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.767     Profile: 10-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
     Note:   Multiple critical depths were found at this location.  The critical depth with the lowest, valid, energy was used.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.767     Profile: 50-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.767     Profile: 100-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
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            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.767     Profile: 500-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.707     Profile: 10-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.707     Profile: 50-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.707     Profile: 100-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.707     Profile: 500-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.595     Profile: 10-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.595     Profile: 50-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.595     Profile: 100-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.595     Profile: 500-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.501     Profile: 10-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.501     Profile: 50-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.501     Profile: 100-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.501     Profile: 500-yr
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.456     Profile: 10-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.456     Profile: 50-yr
     Warning:Divided flow computed for this cross-section.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.456     Profile: 100-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
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Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.456 Profile: 500-yr

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.416 Profile: 10-yr

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.416 Profile: 50-yr

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.416 Profile: 100-yr

Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.416 Profile: 500-yr

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.302 Profile: 10-yr

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.302 Profile: 50-yr

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.302 Profile: 100-yr

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

River: Buchanan Wash Reach: Buchanan Wash RS: 0.266 Profile: 10-yr

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

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            water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
            program defaulted to critical depth.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.266     Profile: 50-yr
     Warning:The energy equation could not be balanced within the specified number of iterations.  The program selected the water
            surface that had the least amount of error between computed and assumed values.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.  This may indicate
            the need for additional cross sections.
     Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated
            water surface came back below critical depth.  This indicates that there is not a valid subcritical answer.  The
            program defaulted to critical depth.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.266     Profile: 100-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.266     Profile: 500-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.177     Profile: 10-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.177     Profile: 50-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.177     Profile: 100-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.177     Profile: 500-yr
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.085     Profile: 10-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.085     Profile: 50-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.085     Profile: 100-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.085     Profile: 500-yr
     Warning:The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for additional cross sections.
     Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.
            This may indicate the need for additional cross sections.
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.043     Profile: 10-yr
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.043     Profile: 50-yr
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.043     Profile: 100-yr
     Note:   Manning's n values were composited to a single value in the main channel.
River: Buchanan Wash  Reach: Buchanan Wash     RS: 0.043     Profile: 500-yr
     Note:   Manning's n values were composited to a single value in the main channel.
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Flow Title=Buchanan Discharge
Program Version=3.11
Number of Profiles= 4
Profile Names=10-yr,50-yr,100-yr,500-yr
River Rch & RM=Buchanan Wash,Buchanan Wash   ,1.935
    1065    1253    1308    1407
River Rch & RM=Buchanan Wash,Buchanan Wash   ,1.766
    1175    1467    1609    1958
River Rch & RM=Buchanan Wash,Buchanan Wash   ,1.184
    1422    2005    2304    3067
Boundary for River Rch & Prof#=Buchanan Wash,Buchanan Wash   , 1
Up Type= 0
Dn Type= 3
Dn Slope=0.003
Boundary for River Rch & Prof#=Buchanan Wash,Buchanan Wash   , 2
Up Type= 0
Dn Type= 3
Dn Slope=0.003
DSS Import StartDate=
DSS Import StartTime=
DSS Import EndDate=
DSS Import EndTime=
DSS Import GetInterval= 0
DSS Import Interval=
DSS Import GetPeak= 0
DSS Import FillOption= 0
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Geom Title=Buchanan Wash Geometry - combined
Program Version=3.11
Viewing Rectangle= 0.4074 , 0.5631 , 1.2586 ,-0.1398

River Reach=Buchanan Wash   ,Buchanan Wash
Reach XY= 2
        .4637681       1.2449275        .4637681       -.1260869
Rch Text X Y=0.4637681,0.9021739
Reverse River Text= 0

Type RM Length L Ch R = 1 ,1.935   ,70,100.93,100
BEGIN DESCRIPTION:
1.935  Adjacent to CAP bank
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 146
 9703.081497.0179705.6321496.9269705.8391496.9199717.2991496.8229724.5131496.761
9724.7931496.7589725.8181496.7469734.4291496.9369741.2351497.0869742.7321497.087
9751.9591497.2929755.2751497.3729763.835    14969776.2031495.8449778.1011495.781
9778.4891495.7829790.404    14969795.1221496.6039798.0381496.5529806.4871496.404
9807.977    14969818.5471495.6599830.241 1495.599838.0841495.6089848.1361495.841
9848.4161495.8479848.6431495.8539849.5071495.892 9863.451495.8289864.1211495.843
9865.3651495.8459874.8531495.8149875.4261495.817 9891.691495.7949891.8991495.796
9903.736    14969905.305    1496 9909.281496.4749909.8151496.4719914.4871496.576
9920.7971496.9679926.5981497.1489937.2491497.1649939.6791497.3119941.2561497.419
9941.7731497.4199947.0661497.6299955.1711497.2819957.476 1497.129964.1051496.954
9966.5851496.9729973.076    14969977.3741495.0379981.998    14949987.3071493.448
10001.74    149210002.83    149210015.761493.54910020.09    149410020.891494.174
10029.51    149610036.331496.70110048.731497.173 10049.81497.17810057.911497.168
10071.38    149610074.281495.49210077.651495.52810079.291495.54610080.131495.529
10092.041495.42710100.631495.45110101.011495.45410116.67    149610116.79    1496
10116.92    149610135.23    149610146.83    149610146.92    149610147.06    1496
10151.34    149610155.94    149610174.491497.28110176.041496.79710180.451496.865
10183.57    149610187.15    149610188.68    149610190.35    149610193.211496.488
10193.521496.48810205.761497.52310225.331497.28410227.321497.34310232.471497.446
10232.941497.44710262.291497.70510263.391497.723 10264.71497.77110283.091497.764
10292.81    149810311.78    149810312.41    1498 10324.8    149810326.85    1498
10339.86    149810340.33    149810354.27    149810365.62    149810365.92    1498
10367.41    149810372.77    149810377.251498.265 10380.91498.03610390.361498.222
10391.971498.20110396.471498.693 10399.91498.61310401.58 1498.5510401.911498.549
 10409.71499.21110414.631499.41810425.231499.28410433.511499.264   10445 1499.35
10459.63    150010463.83    150010464.36    150010473.74    150010484.66    1500
10485.61    150010490.77    1500 10496.1    150010499.35    150010500.66    1500
10502.47    150010503.11    1500 10504.5 1500.0510512.571500.18210513.131500.198
10514.531500.26210520.471500.46710524.921500.80610534.36    150210536.08    1502
10538.13    1502
#Mann= 3 , 0 , 0
 9703.08    .055       09966.585    .055       010048.73    .055       0
#Block Obstruct= 2 , 0
       09947.0661497.629 10049.8       0 1497.17
Bank Sta=9966.585,10048.73
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.916   ,230,389.3,380
BEGIN DESCRIPTION:
2.200
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 117
 9599.361502.6099603.768    15029604.5731501.8899605.8131501.7179606.8891501.376
9610.5471500.2159614.986    15009617.171    15009622.569 1499.859622.6141499.848
9633.184 1499.549638.4451499.3649646.8371499.2419658.322    14989666.1691497.487
9667.401 1497.37    96681497.3299673.3531496.9789674.1671496.925  9682.91496.615
9683.9991496.6159684.3051496.6079688.833    14969688.908    14969725.9371494.901
9735.8721494.7669736.0661494.7639742.2221494.6989749.4161494.5569753.0671494.516
 9785.811494.2289788.5461494.167 9792.57    14949796.213    14949798.313    1494
9801.201    14949835.584    14949837.106    14949840.883    14949842.035    1494
9843.942    14949846.086    14949857.892    14949862.302    1494 9863.56    1494
9875.441    1494 9875.93    1494 9876.15    1494 9876.99    14949877.374    1494
9907.028    14949918.926    14949921.588    1494 9935.35    14949963.935    1494
9964.791    14949965.117    14949979.543    14949986.288    14949990.9931493.123
 9993.53 1492.659994.8861492.3459996.425    1492   10000    149210001.88    1492
10027.37    149210031.331493.31710033.39    1494 10039.21495.92910039.41    1496
10039.791496.06310050.371497.39810052.99    149810062.21    149810063.24    1498
10066.33    149810072.481496.07810072.73    149610078.98    149610127.75    1496
10128.88    149610135.37    1496 10137.9    149610140.67    149610152.11    1496
10158.65    149610167.29    149610169.72    149610193.56    149610195.42    1496
10199.61    149610204.44    149610214.96    1496 10225.5    149610246.971496.938
10251.59 1496.9910267.741497.45810268.361497.47910284.62    1498 10285.2    1498
10288.631498.26210292.791498.62710303.281499.53310309.95    150010316.081500.542
10321.25 1501.0510330.93    150210337.381502.68810359.831505.07210367.99    1506
10371.461506.40710371.711506.43610372.071506.47210372.581506.52910384.84    1508
10396.431509.39110398.52 1509.66
```

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#Mann= 3 , 0 , 0
 9599.36    .055       09986.288    .055       010033.39    .055       0
Bank Sta=9986.288,10033.39
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.842   ,400,401.78,430
BEGIN DESCRIPTION:
2.121
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 85
 9611.041508.1519612.8981507.5929614.7111507.0489618.199    15069619.9251505.482
9621.5721504.9879624.805    15049638.5021503.2199650.949    15029653.1731501.975
9660.0491501.8859762.8971500.6289773.102 1500.529800.527    15009832.4421499.101
9847.3021498.735 9865.331498.4419887.345    1498 9893.711497.6749896.9991497.511
 9910.361496.8039916.7491496.4669919.0091496.3399925.591    14969930.7591495.405
9939.2321494.3999942.511    14949946.1051493.8069982.894    1492 9986.17    1492
9989.8891491.6499991.8731491.435   10000 1490.5110004.37    149010007.07    1490
10012.54    149010024.33    149010028.851490.79710030.891491.15810031.56 1491.29
10035.16    149210035.54    149210042.061492.298   100611493.09810090.47    1494
 10114.21495.48310123.35    149610126.79    149610145.18    149610147.391495.969
10166.79 1495.7210199.971495.28410254.75    149410261.98    149410265.11    1494
10266.57    149410268.64    1494 10270.71493.95910396.38 1493.8710404.23    1494
10405.19    149410407.221494.18410408.551494.30510411.431494.58210421.521495.579
10423.07 1495.69 10427.2    1496 10442.51496.56710457.461497.08310462.461497.279
10466.47 1497.4210467.151497.44510480.33    149810488.511499.25110493.31    1500
10509.831501.71710512.98    150210525.321503.264 10531.9    150410538.411505.213
10540.251505.54310542.381505.92610543.311506.082 10545.1 1506.3310553.761507.614
#Mann= 3 , 0 , 0
 9611.04    .055       0 9986.17    .055       010035.16    .055       0
Bank Sta=9986.17,10035.16
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.766   ,500,508.03,555
BEGIN DESCRIPTION:
2.045
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 84
 9461.51 1499.259543.418    1498 9548.48    14989567.832    14989581.578    1498
9584.415    1498  9587.5    14989589.731    14989597.626    14989600.765    1498
9610.142    14989634.549    14989713.1521496.9699764.797    14969765.388    1496
9827.4271494.1429832.273    14949832.9961493.9299851.416    14929871.1671490.594
9880.905    14909885.271    14909898.368    1490 9949.75    14909957.941    1490
9965.181    14909968.293    1490 9971.08    14909972.279    14909974.012    1490
9977.142    14909979.177    1490 9987.15    14909988.2641489.4779991.744    1488
   10000    148810009.23    148810011.77    148810012.831488.40510013.811488.778
10015.891489.50610017.31    1490 10021.6    149010029.44    149010033.91    1490
10036.64    149010039.65    149010040.94    149010044.471489.39210057.95 1488.15
10058.711488.08510059.53    148810062.49    148810063.51    148810066.461488.627
10071.871489.74810075.85    149010086.13    149010087.29    149010089.82    1490
10093.09    149010149.571490.85110177.341491.23110178.68 1491.2510225.051491.959
10225.431491.96510227.52    149210314.731493.07410372.221493.61110384.971493.958
10386.57    1494   103911494.54710401.68    149610408.931497.452 10411.5    1498
10415.161498.78310420.85    1500 10423.51500.56710430.19    150210432.351502.461
10439.54    150410445.021505.17310451.771506.61810454.461507.194
#Mann= 3 , 0 , 0
 9461.51    .055       0 9987.15    .055       010017.31    .055       0
Bank Sta=9987.15,10017.31
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.670   ,510,500.86,490
BEGIN DESCRIPTION:
1.951
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 72
  9429.61496.7869467.767 1496.719503.5921496.4869576.888    14969598.438    1496
9602.473    14969605.481    14969633.8241495.7419663.2241495.5589685.1141495.372
9816.504    14949833.324    14949835.127    14949835.583    14949866.865 1492.93
9892.538    14929892.584    14929901.8351490.9139909.386    14909918.9391488.931
9924.8551488.3099927.282    14889942.1051487.0719944.9911486.9129962.916    1486
9965.668    14869972.966    14869976.019    14869979.006    14869987.351    1486
9991.6711484.6729993.656    14849998.969    1484   10000    148410001.11    1484
10010.07    148410013.581485.06210016.35    148610018.991486.61810024.12    1488
10034.621489.17710042.39    149010042.79    149010043.76    149010053.07    1490
10060.11    149010063.49    149010065.28    149010072.42    1490 10117.2    1490
10159.55    1490   10249 1491.4410254.171491.452 10281.41491.84310283.541491.853
10290.19    149210316.091492.51410352.721493.14310378.741493.56510383.721493.645
10389.421493.72210402.841493.87910409.53    149410443.271495.351 10457.9    1496
 10472.41497.91410472.87    149810479.531499.21410483.81    150010490.571501.126
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10495.76    150210509.341503.506
#Mann= 3 , 0 , 0
  9429.6    .055       09987.351    .055       010042.39    .055       0
Bank Sta=9987.351,10042.39
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.575   ,505,505.7,540
BEGIN DESCRIPTION:
1.856
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 82
 9486.56    14929486.838    14929494.261    14929513.417 1491.929532.5891491.946
9582.936    14929583.304    14929583.318    14929583.321    14929584.706    1492
9594.8841491.9989597.763    14929608.3281492.0089608.3861492.0089656.4951492.129
9679.7971492.0699692.451    14929703.992    14929715.933    14929718.365    1492
9777.8571491.0419791.4151490.7829802.1971490.5579827.477    14909832.851    1490
9859.6771488.5339861.8321488.4039867.103    14889867.852    14889880.3911487.629
9916.5041486.6699941.263    14869965.8071484.2519967.0821484.1669969.577    1484
9970.6291483.6879977.811    14829989.617    14829998.541    1482   10000  1482.5
10001.871483.25310003.86    148410004.331484.02410043.35    148610055.311486.991
10067.27    148810083.361488.71910087.521488.81710095.541489.12310098.891489.255
10104.141489.30210128.271489.51110129.321489.48710138.421489.172 10144.9 1488.95
10153.391488.76410163.361488.31210169.39    148810173.81    1488 10175.3    1488
10223.06    148810228.24    148810233.97    148810242.741487.92810252.74    1488
10274.751488.19310297.321488.46110330.011488.50510342.931488.61210346.361488.664
10385.921489.64110398.13    149010399.01    1490 10399.81490.12310411.83    1492
10421.211493.46310424.65    149410426.471494.28510454.041498.54810458.871499.314
10463.03    150010466.551500.599
#Mann= 3 , 0 , 0
 9486.56    .055       09969.577    .055       010003.86    .055       0
Bank Sta=9969.577,10003.86
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.479   ,355,351.78,335
BEGIN DESCRIPTION:
1.761
END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:41
#Sta/Elev= 74
 9486.18    14889532.129    14889587.464    14889601.325    14889601.809    1488
 9601.88    14889602.6081487.9879648.2261487.2299691.5221486.7489699.7231486.647
9702.1731486.6049703.4381486.5819737.7681486.1299741.2251486.127 9743.191486.127
9743.4521486.1269762.758    14869769.997    14869772.618    14869776.918    1486
9840.026    14869843.143    14869854.567    14869894.082    1486 9914.97    1486
9915.241    14869923.008 1485.259935.777    14849948.907 1482.97 9961.84    1482
9964.531    14829971.744    14829979.602    14829984.1031480.3289985.138    1480
9988.286    1480   10000    1480 10008.2    148010012.121481.303 10014.1    1482
10021.041482.15610023.151482.17710044.06 1482.6110079.841483.17110087.971483.272
10118.461483.46310122.041483.45810198.751483.56510241.951483.94710243.751483.962
 10245.7    148410248.57    148410271.351484.60410274.791484.67610285.941484.802
10290.661484.84610311.961485.17810316.111485.16410323.051485.05810330.421484.838
10334.791484.70210341.611484.59910344.721484.57110356.231484.24910360.38 1484.17
10360.931484.15810367.87    148410370.28    148410371.16    1484 10373.5    1484
10384.83    148410387.83    148410390.451484.06510430.431485.469
#Mann= 3 , 0 , 0
 9486.18    .055       09979.602    .055       0 10014.1    .055       0
#XS Ineff= 2 , 0
      0                  10300       0
Permanent Ineff=
      F          F
Bank Sta=9979.602,10014.1
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.417   ,297,300,303
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 81
 9489.44    14849497.438    14849512.968    14849518.285    14849522.267    1484
 9523.68    14849539.023    14849540.713    1484  9564.2    14849567.169    1484
9594.619    14849604.671    14849621.753    14849704.446    14849713.941    1484
9726.539    14849744.536    14849748.402    14849789.392    14849791.9731483.971
9792.1571483.9689797.308    14849799.985    14849804.081    1484 9814.48    1484
9819.818    14849821.591    14849837.558    1484 9838.44    14849851.588    1484
9855.874    14849863.081    14849864.931    14849886.9741482.7339896.056 1482.68
9903.299    14829903.553    1482 9911.081481.6259913.147 1481.529920.1951481.226
9923.9391481.1149930.2931480.983 9974.97    14809989.316    14809990.174    1480
9990.5621479.7659994.023    1478   10000    147810011.15    147810014.43    1478
10015.131478.28410019.36    148010019.49    148010043.29    148010073.92    1480
10094.75    148010100.53    148010104.65    148010107.06    148010118.871480.891
10121.66 1481.1210125.081481.37910132.781481.98810132.831481.99110132.891481.996
10132.94    148210193.791483.37710220.37    148410225.23    148410233.711484.315
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10235.231484.35710243.181484.51810250.011484.79610258.871485.13910284.161485.957
10284.761485.98210285.33    148610285.44    148610285.54    148610315.95    1486
10369.561487.386
#Mann= 3 , 0 , 0
 9489.44    .055       09990.174    .055       010019.36    .055       0
Bank Sta=9990.174,10019.36
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.360   ,192,148,122
BEGIN DESCRIPTION:
CROSS SECTION NO. 4 OF SPECIAL BRIDGE ROUTINE.

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 21
    9582    1483    9583    1483    9671  1482.9    9750  1482.9    9810  1481.9
    9849  1480.5    9907  1479.3    9933  1478.6    9949  1478.8    9970  1479.5
    9984  1475.7   10000  1475.7   10020  1479.8   10052  1479.7   10084  1480.3
   10100  1479.9   10122  1482.1   10140  1482.5   10167  1485.4   10194  1488.4
   10203  1488.7
#Mann= 3 , 0 , 0
    9582    .055       0    9970    .055       0   10020    .055       0
Bank Sta=9970,10020
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.332   ,81,81,81
BEGIN DESCRIPTION:
CROSS SECTION NO. 3 OF SPECIAL CULVERT ROUTINE.

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 29
 9683.12    1482 9708.61  1481.1 9723.22  1480.9 9779.28 1480.39 9783.52  1479.8
 9836.76  1479.5 9895.28  1479.2  9908.3  1478.9 9925.63 1478.87 9929.92    1479
 9937.19  1479.1  9945.9 1479.09 9945.94 1478.68 9971.95 1478.22  9978.4  1477.8
  9987.5  1475.210000.01  1475.310000.44 1475.1810017.89 1475.2110023.04  1477.8
10026.42  1478.510041.01  1479.210052.63 1479.27 10057.2 1479.4310080.04  1479.8
10092.94  1480.110112.48 1480.86 10131.4 1481.4410144.04  1482.2
#Mann= 3 , 0 , 0
 9683.12    .055       0 9945.94    .055       010041.01    .055       0
#XS Ineff= 2 , 0
         9945.94 1478.6810041.01          1479.2
Permanent Ineff=
       F       F
Bank Sta=9945.94,10041.01
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 2 ,1.325   ,,,
BEGIN DESCRIPTION:
Pinnacle Vista Culvert (4 8' x 3' Boxes)
EXISTING CULVERT LOCATED ON PINNACLE VISTA ROAD (EXTENDED CULVERT).

END DESCRIPTION:
Node Last Edited Time=Aug/05/2003 13:23:27
Bridge Culvert--1,0,-1,-1, 0
Deck Dist Width WeirC Skew NumUp NumDn MinLoCord MaxHiCord MaxSubmerge Is_Ogee
8.099998,64.8,2.6,0, 27, 29, 1479.85, , 0.95, 0, 0,0,,
  9711.2 9737.62 9750.78 9773.28 9812.34 9867.01 9933.42 9938.84 9938.84 9945.94
 9945.94 9977.6810026.4210040.4710040.4810041.0110041.0110057.43 10065.810079.04
10087.0210096.7610104.7610118.7210125.6810144.7510148.75
 1481.04 1480.84  1480.8 1480.79 1480.66 1480.16 1480.02 1479.85 1481.88 1481.76
 1481.76 1481.49 1481.58 1479.85 1479.85 1479.85 1479.85 1479.86 1480.05 1480.38
 1480.67 1481.07 1481.42 1482.03 1482.46 1483.67  1483.9


  9711.2 9737.62 9750.78 9773.28 9812.34 9867.01 9933.42 9938.84 9938.84 9945.94
 9977.68 9987.35 9987.3510025.0910025.0910026.4210040.4710040.4810057.43 10065.8
10079.0410087.0210096.7610104.7610118.7210125.6810144.7510148.7510203.31
 1481.04 1480.84  1480.8 1480.79 1480.66 1480.16 1480.02 1479.85 1481.88 1481.76
 1481.491481.5081481.5081481.5781481.578 1481.58 1479.85 1479.85 1479.86 1480.05
 1480.38 1480.67 1481.07 1481.42 1482.03 1482.46 1483.67  1483.9 1485.44


BR Coef=-1 , 0 , 0 ,, 0 ,,,0.8,0,,0,
WSPro=,,,, 1 ,,,, 0 ,,,, 0 ,,,,-1 ,-1 , 0 , 0 , 0 , 0 , 0
Multiple Barrel Culv=2,3,8,64.8,0.016,0.5,1,9,2,1475.26,1474.43, 4,Pinnacle Vis, 0 ,4.8
    9990    9994  9998.5 10002.5   10007   10011 10015.5 10019.5
Culvert Bottom n=0.016
BC Design=,, 0 ,, 0 ,,,,,,
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Type RM Length L Ch R = 1 ,1.317   ,101,112,122
BEGIN DESCRIPTION:
CROSS SECTION NO. 2 OF SPECIAL CULVERT ROUTINE.

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 16
 9626.26    1480 9694.39 1480.74 9749.82 1481.08 9809.84 1480.92 9871.67 1480.69
 9987.35  1478.8 9987.35 1474.41  9995.7 1474.41 10014.4 1474.4510025.09 1474.45
10025.09  1478.410090.45 1480.0210148.08 1482.0210203.31 1485.44   10261 1489.66
 10328.2    1494
#Mann= 3 , 0 , 0
 9626.26    .055       0 9987.35    .055       010025.09    .055       0
#XS Ineff= 2 , 0
         9987.35  1478.810025.09          1478.4
Permanent Ineff=
       F       F
Bank Sta=9987.35,10025.09
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.294   ,124,130,133
BEGIN DESCRIPTION:
CROSS SECTION NO. 1 OF SPECIAL CULVERT ROUTINE.

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 24
 9813.67  1480.2 9868.51  1480.2 9915.82  1477.7 9933.23 1476.45 9938.26 1476.82
 9965.01  1477.2 9965.78 1477.01 9991.46  1477.6   10000 1474.3810016.93  1474.4
10024.23  1477.510031.33  1477.310037.89 1475.7110045.55 1476.21 10062.1 1476.09
10064.86  1476.210073.55 1477.15 10085.8 1477.7210134.89 1478.8910161.25  1479.2
 10215.2  1480.810220.99  1480.910223.88 1481.0610234.14 1483.31
#Mann= 3 , 0 , 0
 9813.67    .055       0 9991.46    .055       010024.23    .055       0
Bank Sta=9991.46,10024.23
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.271   ,135,171,175
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 25
 9897.83  1479.8 9912.53 1478.17 9931.96 1476.04 9939.15  1475.6 9944.81 1475.49
 9953.63  1476.6 9955.58  1476.7 9963.18 1476.48 9974.29  1476.4 9977.71  1475.6
 9986.51  1473.9  9989.1  1473.7   10000 1473.4810008.39  1473.5 10019.1  1475.9
10020.37    147610025.59    147610051.54 1477.1110054.35  1477.310063.05 1477.56
10074.98  1477.810091.94    147810102.65  1478.510112.11  1479.810125.24  1482.7
#Mann= 3 , 0 , 0
 9897.83    .055       0 9974.29    .055       0 10019.1    .055       0
Bank Sta=9974.29,10019.1
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.240   ,180,184,186
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 14
 9923.92    1479 9949.86 1476.69 9976.69  1474.8 9980.22  1474.3 9987.42 1472.05
   10000  1471.610014.71 1474.1810021.74  1475.210040.18    147610054.93 1475.98
10058.37    147610080.37  1476.710097.02    147810117.33  1481.8
#Mann= 3 , 0 , 0
 9923.92    .055       0 9976.69    .055       010021.74    .055       0
Bank Sta=9976.69,10021.74
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.205   ,112,113,112
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 15
 9868.51    1479 9870.77    1479 9896.72    1477 9947.69  1476.2 9980.37 1473.84
 9985.59    1472 9990.88  1470.110007.24  1469.810017.29 1474.3110032.06  1473.9
10061.99  1474.810072.56  1475.410093.65 1477.2510099.71 1478.8110175.72    1495
#Mann= 3 , 0 , 0
 9868.51    .055       0 9980.37    .055       010017.29    .055       0
Bank Sta=9980.37,10017.29
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.184   ,193,193,192
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 18
 9890.18  1477.2 9896.36  1476.6 9900.75  1475.9 9912.02  1475.5 9931.01  1475.2
 9948.64  1474.8 9963.86  1473.5  9964.1  1473.4 9971.59  1473.2 9992.16    1470
   10000  1469.710007.08 1469.8510012.15  1471.510016.09  1472.510030.44  1473.4
```

```
10038.38  1474.210040.07 1474.4710067.01    1481
#Mann= 3 , 0 , 0
 9890.18    .055       0 9971.59    .055       010016.09    .055       0
Bank Sta=9971.59,10016.09
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.148   ,76,79,79
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 15
 9884.94  1475.6 9925.94 1471.42  9934.3  1473.1 9938.91  1473.2  9949.8    1473
 9952.14    1473 9978.31  1472.4 9984.19 1470.15 9987.16  1468.5   10000  1468.3
10003.23  1469.410014.82 1473.6910024.97  1473.110034.28  1474.4   10054  1478.9
#Mann= 3 , 0 , 0
 9884.94    .055       0 9978.31    .055       010014.82    .055       0
Bank Sta=9978.31,10014.82
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.133   ,153,152,146
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 25
 9905.98  1475.3  9910.5 1474.74 9957.93  1473.9 9964.29  1472.7 9966.03  1472.6
 9966.76  1472.4 9971.18 1471.81 9976.08 1471.37    9979  1470.9  9979.9  1470.9
 9982.72  1470.6 9984.48 1470.15 9987.79  1470.2 9989.73  1469.7 9990.71  1469.6
 9991.69  1469.4 9995.45 1468.77 9997.05  1468.2   10000  1468.110015.43  1468.2
10033.03  1471.910037.33  1472.610048.66 1472.7110058.13  1473.3   10090  1480.9
#Mann= 3 , 0 , 0
 9905.98    .055       0 9971.18    .055       010033.03    .055       0
Bank Sta=9971.18,10033.03
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.105   ,168,163,157
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 20
 9862.88  1474.6 9869.02  1473.9 9873.19  1473.9 9888.54  1473.5 9896.25    1473
 9919.19  1472.7 9948.56  1471.7 9956.32  1471.2 9961.12  1471.4  9964.3  1471.8
 9970.16  1471.9 9980.05  1468.5 9989.76  1467.7 9994.43  1467.4   10000    1467
10016.84  1472.210025.23  1471.710035.35  1472.810050.65  1475.610072.52    1481
#Mann= 3 , 0 , 0
 9862.88    .055       0 9970.16    .055       010016.84    .055       0
Bank Sta=9970.16,10016.84
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.073   ,153,163,164
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 18
 9857.67  1473.5 9867.48 1472.42 9880.65  1472.6 9924.11  1470.9 9938.54  1470.8
 9942.88  1470.6 9959.46  1469.7 9978.65 1467.51 9992.31  1466.7   10000  1466.7
10011.03  1471.4 10013.4 1471.5410024.88 1471.3410042.77  1471.310059.89  1472.5
10063.71  1473.410069.72  1474.410091.37 1478.89
#Mann= 3 , 0 , 0
 9857.67    .055       0 9942.88    .055       010011.03    .055       0
Bank Sta=9942.88,10011.03
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.043   ,167,178,182
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 29
 9876.67  1472.7 9892.87 1471.03 9915.58 1470.95 9954.87 1469.14 9958.88 1469.09
 9965.35  1469.2 9972.08  1469.1 9974.02 1468.98 9984.58 1468.77  9987.8 1467.68
 9991.72    1466   10000  1465.610008.59 1465.7310016.85 1468.9410020.11  1470.5
10027.07  1470.2 10030.3  1470.310032.63  1470.610043.51 1470.5610055.25 1470.19
10061.05  1470.510068.68  1470.6   10080 1471.0210091.02 1471.2910127.26  1472.8
10128.14    147310130.29  1473.3 10137.3  1474.810142.03 1476.04
#Mann= 3 , 0 , 0
 9876.67    .055       0 9984.58    .055       010020.11    .055       0
Bank Sta=9984.58,10020.11
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,1.010   ,153,166,172
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 19
 9847.14  1471.5 9862.07 1469.92 9878.96 1470.38 9914.83  1469.7 9940.95  1468.4
 9959.41    1468 9968.09  1469.2 9985.44 1469.25 9994.96  1465.3   10000    1465
10010.83  1465.410020.55  1469.510044.93  1468.910050.41    146910056.19  1469.4
10074.79  1470.310087.53  1471.610096.32 1472.0410122.51  1474.2
#Mann= 3 , 0 , 0
 9847.14    .055       0 9985.44    .055       010020.55    .055       0
Bank Sta=9985.44,10020.55
```

```
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.978   ,144,159,162
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 24
 9851.37  1470.7 9862.56 1469.46 9880.05  1469.3 9887.26 1468.83 9894.56  1468.8
 9908.76  1468.6 9933.42 1467.87  9943.1 1467.91 9945.24 1467.83 9952.43  1467.2
 9959.52  1466.8 9966.78  1467.2 9969.73  1467.8 9970.93 1467.62 9985.52  1468.1
 9994.77  1464.7   10000 1464.4310013.19 1464.8710017.47  1466.310022.96  1468.3
10040.81  1467.710055.02  1468.110063.73 1469.3510104.04 1474.33
#Mann= 3 , 0 , 0
 9851.37    .055       0 9985.52    .055       010022.96    .055       0
Bank Sta=9985.52,10022.96
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.949   ,107,100,98
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 17
    9854    1470 9877.45 1467.43 9898.13  1467.7 9937.73  1467.6 9953.13  1467.3
 9963.82  1466.8 9984.14 1465.39 9988.74  1463.6   10000  1462.910010.51  1463.5
10018.47  1464.210023.91  1466.810031.94  1466.710038.59  1467.610040.83    1468
10049.42  1468.610071.44 1473.13
#Mann= 3 , 0 , 0
    9854    .055       0 9984.14    .055       010023.91    .055       0
Bank Sta=9984.14,10023.91
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.929   ,78,91,96
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 14
 9858.73  1469.4 9898.43    1466 9919.45    1466 9926.83  1466.4 9950.09  1466.7
 9964.01  1466.7 9976.02  1466.3 9990.52  1466.1   10000  1462.810018.85  1462.8
10027.97  1465.510035.59  1465.710041.15  1466.210066.45  1474.5
#Mann= 3 , 0 , 0
 9858.73    .055       0 9990.52    .055       010027.97    .055       0
Bank Sta=9990.52,10027.97
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.912   ,138,138,138
BEGIN DESCRIPTION:
FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 17
 9850.94  1469.1 9866.78    1468 9886.78    1463 9942.43    1463 9953.46  1465.7
 9973.63    1466 9979.06  1465.9 9984.76  1465.9 9988.33  1464.4 9993.34  1462.6
   10000  1462.210009.95  1462.510023.02  1463.610029.88    146610037.79  1466.5
10041.85  1467.9   10057  1473.8
#Mann= 3 , 0 , 0
 9850.94    .025       0 9984.76    .055       010029.88    .055       0
Bank Sta=9984.76,10029.88
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.886   ,138,129,112
BEGIN DESCRIPTION:
FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 18
 9830.82  1468.4 9844.61    1468  9865.4    1463 9946.58    1463 9950.58    1464
 9954.88  1464.8 9967.43  1465.5 9968.45  1465.4 9982.34  1465.8 9994.82    1461
   10000  1460.610009.82  1461.210015.83  1463.310023.28  1465.710038.87  1465.8
10046.62  1466.610062.04  1468.910068.82  1469.4
#Mann= 3 , 0 , 0
 9830.82    .025       0 9982.34    .055       010023.28    .055       0
Bank Sta=9982.34,10023.28
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.861   ,106,100,89
BEGIN DESCRIPTION:
FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 20
 9781.66  1467.5 9796.59    1467 9813.42    1463 9947.17    1463 9951.17    1464
```

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 9951.37  1464.4 9974.76 1463.97 9981.49  1464.2 9990.82  1461.9 9993.08  1460.9
   10000  1460.410009.97  1460.810016.85  1464.610017.72    146510017.97  1464.9
10027.79  1465.210048.36 1464.9510064.01  1465.210075.47  1466.710091.61    1468
#Mann= 3 , 0 , 0
 9781.66    .025       0 9981.49    .055       010017.72    .055       0
Bank Sta=9981.49,10017.72
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.842   ,93,96,99
BEGIN DESCRIPTION:
FILL RETENTION BASIN TO OVERFLOW ELEVATION (1463)

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 18
 9744.78  1466.8 9760.79    1466 9773.85    1463 9942.25    1463 9949.44  1463.3
 9968.95  1463.8 9970.48  1463.7 9986.44  1460.3   10000    146010009.33  1460.3
 10026.1  1464.7   10038  1464.710045.94  1463.910059.55    146410074.23  1465.6
10081.14  1466.110099.54  1466.9 10127.5  1469.5
#Mann= 3 , 0 , 0
 9744.78    .025       0 9968.95    .055       0 10026.1    .055       0
Bank Sta=9968.95,10026.1
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.824   ,66,65,62
BEGIN DESCRIPTION:
FILL RETENTION BASIN TO OVERFLOW ELEVATION

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 33
 9766.67  1466.9 9778.38    1465 9786.38    1463 9949.08    1463 9960.18  1462.9
 9972.98  1462.9  9986.7    1463    9988  1462.9 9997.36  1459.7   10000  1459.5
10006.82  1459.910027.37  1460.510043.47  1464.510047.98  1464.410055.91  1463.7
10057.72  1463.110059.16  1462.410065.36  1463.9 10072.7  1464.110080.67  1463.6
10094.26  1464.410130.05  1464.810134.56  1464.8 10156.8  1465.210164.58  1465.1
10172.74  1465.210179.84  1464.9 10181.7    146510182.88  1465.210191.47  1465.7
10196.74  1466.310197.82  1466.5   10210  1468.3
#Mann= 3 , 0 , 0
 9766.67    .025       0  9986.7    .055       010043.47    .055       0
Bank Sta=9986.7,10043.47
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.812   ,71,136,122
BEGIN DESCRIPTION:
FILL RETENTION BASIN TO OVERFLOW ELEVATION

END DESCRIPTION:
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 26
 9666.07    1467 9707.45    1463 9931.05    1463  9942.2  1463.1 9948.33    1463
  9959.2  1462.7 9984.28 1461.05   10000 1459.0510013.47  1459.110032.82  1464.3
10042.86  1463.910048.17  1462.910050.13 1462.6710057.08    146310058.68  1462.8
10063.07  1463.210065.62 1463.7710070.53  1463.810072.73  1463.710076.17  1463.6
10076.79  1463.510084.53 1463.9310103.94 1464.5110115.96    146510127.98  1466.1
10144.17  1467.2
#Mann= 3 , 0 , 0
 9666.07    .025       0 9948.33    .055       010032.82    .055       0
Bank Sta=9948.33,10032.82
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.789   ,98,98,116
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 26
 9611.57  1467.5 9650.21    1466 9664.02    1463 9906.66    1463 9919.87  1462.7
 9952.53  1462.5 9959.99  1462.6 9961.39 1462.64 9961.39 1459.3410039.94 1459.34
10039.94  1462.910050.74  1462.610065.32  1462.710076.33 1463.1210106.11  1463.6
10112.38  1464.110123.63  1464.510136.86  1465.410140.46  1465.910146.66  1466.1
 10172.2  1467.310187.65  1468.310217.66    146910268.99 1468.8410297.71  1469.4
10312.39  1470.9
#Mann= 3 , 0 , 0
 9611.57    .055       0 9961.39    .055       010039.94    .055       0
#XS Ineff= 2 , 0
        9961.39  1467.510039.94         1467.74
Permanent Ineff=
       F       F
Bank Sta=9961.39,10039.94
XS Rating Curve= 0
Exp/Cntr=0.3,0.1
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```
Type RM Length L Ch R = 2 ,0.778   ,,,
BEGIN DESCRIPTION:
35 th Ave. (5 10' x 6' Boxes)

END DESCRIPTION:
Node Last Edited Time=Aug/05/2003 13:26:06
Bridge Culvert--1,0,-1,-1, 0
Deck Dist Width WeirC Skew NumUp NumDn MinLoCord MaxHiCord MaxSubmerge Is_Ogee
19,60,2.6,0, 12, 16, 1466.09, , 0.95, 0, 0,0,,
 9611.57 9820.84 9961.39 9961.39 9970.8410039.9410039.9410108.2510120.4610170.84
   1021610238.99
  1467.5 1466.09  1467.5  1467.5 1467.59 1467.74 1467.74 1467.93 1468.07 1468.52
 1468.31 1468.84


 9529.35 9611.57 9820.84 9959.01 9959.01 9961.39 9970.8410039.8810039.8810039.94
10108.2510120.4610170.84   1021610238.9910249.15
 1467.71  1467.5 1466.091467.4761467.476  1467.5 1467.59 1467.74 1467.74 1467.74
 1467.93 1468.07 1468.52 1468.31 1468.84  1468.7


Multiple Barrel Culv=2,6,10,60,0.013,0.4,1,8,1,1459.34,1458.9, 5,35 th Ave.   , 0 ,14.45
    9980    9979    9991    9990 10001.5 10000.5   10012   10011 10022.5 10021.5
Culvert Bottom n=0.013
BC Design=,, 0 ,, 0 ,,,,,,

Type RM Length L Ch R = 1 ,0.767   ,316,317,319
Node Last Edited Time=Oct/23/2003 15:29:14
#Sta/Elev= 64
    9000  1473.6 9047.61  1472.4  9080.5  1470.9  9088.1 1469.94 9111.47 1468.99
 9165.84  1468.1 9175.95  1467.7 9185.09 1467.76 9188.83  1465.1  9193.3 1467.58
 9195.73  1467.7 9233.04 1467.44 9257.62 1467.62 9305.68 1469.24 9353.17 1469.39
 9393.28    1469 9412.05 1467.87 9437.64 1467.73 9445.79  1467.9 9497.65  1467.5
    9515  1468.2 9526.31 1467.93 9529.35 1467.71 9540.86 1466.41 9552.16  1465.5
 9567.87  1465.4 9602.53 1464.97 9661.68  1464.8 9662.88  1464.2 9664.37 1463.76
 9669.24  1465.2 9703.09 1464.38 9764.57    1465 9793.67  1465.7 9850.28  1465.1
 9858.05  1464.5 9868.18 1463.11 9887.64  1461.9 9959.01 1462.01 9963.98 1461.55
 9969.82  1460.3 9975.21 1459.98 9994.11 1460.26 9996.03 1460.5810011.16 1460.68
10015.77  1459.910018.82 1458.76 10029.4 1459.0610039.88 1462.7110044.58 1463.29
10050.26  1463.110052.77 1463.2110073.03 1462.8110090.67 1463.0110104.15 1463.79
10117.09  1464.210142.38  1465.810148.87 1466.02 10187.7 1467.5410249.15  1468.7
10263.96  1470.310362.79 1476.6810377.28 1478.0110385.52 1478.29
#Mann= 3 , 0 , 0
    9000    .055       0 9959.01    .055       010039.88    .055       0
#XS Ineff= 2 , 0
         9959.01 1462.0110039.88         1462.71
Permanent Ineff=
       F       F
Bank Sta=9959.01,10039.88
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.707   ,703.08,591.57,558.08
BEGIN DESCRIPTION:
Section 0.696 in City model
END DESCRIPTION:
Node Last Edited Time=Oct/24/2003 08:16:05
#Sta/Elev= 144
 9040.821476.5119042.3371476.4699054.879    14769062.599    14769067.4391475.795
9078.3471475.2879098.818    1474 9114.851472.9079128.162    14729139.6051470.602
9146.093    14709161.9041468.0979162.711    14689165.1741467.7049172.292 1466.99
9182.289    14669183.3381465.8179191.3051464.3129193.022    14649193.431    1464
9200.985    1464 9211.63    14649217.332    14649222.717    14649223.176    1464
9223.487    14649224.528    14649229.813    1464 9232.48    14649234.082    1464
9235.984    14649236.082    14649237.756    14649241.378    14649243.263    1464
9274.926    1464 9278.44    14649281.511    1464 9281.58    14649327.692    1464
9332.682    14649335.958    14649336.408    14649337.291    14649392.4851463.115
9417.2741463.1319523.7251462.176 9529.31 1462.13 9531.921462.1119546.141    1462
9547.931    14629548.889    14629552.756    14629553.363    14629556.322    1462
9556.983    14629568.451    14629588.322    14629600.057    14629601.482    1462
9604.415    14629607.399    14629610.587    14629619.997    14629620.065    1462
 9622.08    14629631.213    14629635.915    1462 9636.55    14629637.299    1462
9640.639    14629642.107    14629654.129    14629658.336    14629664.389    1462
9669.983    14629672.263    14629705.198    14629705.449    14629706.476    1462
9713.721    14629715.769    14629723.987    1462 9725.68    14629725.8751462.017
9726.778    14629727.321    14629727.383    14629728.3261462.057 9728.461462.059
 9728.751462.0749729.0011462.0929732.0191462.3599733.1531462.5199735.3521462.966
 9752.47    14649821.8291462.6429832.8671462.4039852.886    14629854.803    1462
9854.908    14629856.5861461.8839868.0721461.1729893.795    14609897.817    1460
9903.094    14609904.901    14609905.022    14609922.332    14609928.807    1460
9933.612    14609939.881    14609943.167    14609944.247    1460 9948.92    1460
9949.483    1460 9950.35    14609950.839    14609953.397    14609953.975    1460
9981.216    14609991.525    1460 9995.71    1460   10000  1458.910003.021458.245
10004.08    145810006.04    1458   10014    145810018.591459.458 10020.3    1460
```

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10020.57    146010049.631460.92610082.65    146210082.89    146210083.07    1462
10107.031463.47910114.461463.935 10115.5    146410115.75 1464.0210144.26    1466
10149.05 1466.26   10182    146810187.24 1468.3310188.151468.381
#Mann= 3 , 0 , 0
 9040.82    .055       0 9995.71    .055       0 10020.3    .055       0
Bank Sta=9995.71,10020.3
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.595   ,635,497.19,360
BEGIN DESCRIPTION:
Former 0.890
END DESCRIPTION:
Node Last Edited Time=May/21/2001 14:47:54
#Sta/Elev= 140
 8732.541470.8788734.5851470.7838735.3061470.8038738.7351470.8748742.7241470.726
8749.3481470.8318751.459 1470.778817.5461470.2688824.6471470.156 8834.14    1470
8843.0981469.852 8862.651469.529 8865.721469.4788916.9661468.9468921.3021468.972
8927.9291468.7738930.1781468.7048941.5881469.0898946.9931468.6028947.9921468.528
8956.695    1468  8957.4    14688958.135    14688960.826    14688979.8681467.768
9008.367 1466.949022.4061466.6589035.912    14669045.6071465.4449047.2191465.363
9049.508 1465.289058.3421464.8049069.896    14649071.442    14649115.4021462.848
9141.4771462.1649145.0041462.091 9152.96    14629153.717    14629156.192    1462
9159.557    14629163.955    14629164.251    14629164.315    14629177.088    1462
9187.531 1461.64 9216.731461.2289263.4721461.115 9266.391461.1219269.4621461.128
9280.1231461.0829285.3561461.1029308.2951461.0759324.267 1460.959383.0881460.044
9385.745    14609385.965    14609387.599    14609412.872    14609415.444    1460
9441.917    14609443.356    14609443.933    14609445.773    14609462.5821459.766
9566.2171459.5329599.3181459.4359610.689 1459.389624.5361459.346 9696.571459.049
9851.312    14609859.738    14609868.789    14609870.247    14609871.576    1460
9874.212    14609875.725    1460 9879.261459.9579884.5981459.6849886.1511459.702
9889.4011459.6659895.4121459.2149898.0741459.1319909.968    14589911.349    1458
9927.466    14589930.652    14589930.772    14589932.464    14589937.123    1458
 9962.22    14589962.952    14589963.221    14589967.909    14589981.882    1458
9991.042    14589992.4141457.347 9994.181456.5069997.3881454.987   100001453.788
10002.111452.72610010.911452.853 10019.4    145410022.931455.642 10023.7    1456
10026.891457.48510028.12    145810028.22    145810029.77    1458 10035.1    1458
10049.17    145810078.81    145810085.63    145810109.51    145810116.33    1458
10118.41    145810121.91    145810122.59    145810127.63    145810129.541458.054
10129.961458.068 10133.8 1458.1910190.42    146010193.81    1460 10206.9    1460
 10210.7    146010211.25    146010211.46    146010211.68    146010213.951460.073
10214.871460.10710216.33 1460.1610263.92    146210278.751463.52910282.25    1464
10284.981464.36710287.091464.57610299.51    146610301.161466.18510302.411466.333
#Mann= 3 , 0 , 0
 8732.54    .055       09991.042    .055       010028.12    .055       0
Bank Sta=9991.042,10028.12
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.501   ,260,235.61,225
BEGIN DESCRIPTION:
Section 0.782 in old study

Ineffective Flow Areas reflect the retention basin for the Arizona Hillcrest Subdivision.  It is
assumed the full depth of the retention basin will not act as conveyance area.
END DESCRIPTION:
Node Last Edited Time=Sep/26/2001 11:40:26
#Sta/Elev= 279
 8635.48    14688642.139    14688647.536    14688649.667    14688650.937    1468
  8675.91467.3768689.1091466.9798721.194    14668726.3651465.0898729.7611464.512
8739.2151464.3258740.4871464.3868752.8941464.6368760.8231465.1498763.3561465.252
8766.1081465.3138768.8931465.5538770.1831465.5968770.9451465.6068774.013    1466
8800.406    14668806.774    14668815.609    14668826.128    14668827.613    1466
8829.278    14668831.712    14668833.399    14668839.277    14668845.919    1466
8850.093    14668865.729    14668895.104    14668900.608    14668904.611    1466
8905.998    14668908.321    14668935.362    14668939.827    14668962.998    1466
8965.164    14668966.265    14668968.021    14668969.869    14668971.068    1466
9021.9451464.5339024.9141464.5149032.4041464.4649041.7141464.4059043.987 1464.39
9045.8091464.3799053.3441464.3289064.1811464.2599065.8981464.2489073.5851464.197
9074.3221464.192 9086.761464.113 9087.641464.1079095.2181464.0579095.3621464.057
9104.262    14649108.899    1464  9109.5    14649120.653    14649121.355    1464
9129.919    14649132.824    14649136.192    14649139.237    14649149.705    1464
9153.155    1464 9156.17    14649182.531 1462.419187.0561462.3219192.3881462.008
9192.4191462.0079192.566    14629195.007    14629195.936    14629203.053    1462
9204.655    14629206.078    14629208.154    14629215.4181462.249 9217.13  1462.3
9225.4251462.6339226.5741462.6549226.6321462.6569227.2621462.681 9232.081462.739
 9244.091463.1199245.6581463.1599245.7051463.1619249.6881463.2789259.6421462.758
9265.6851462.8399267.7231462.8659274.0161462.9279278.864 1462.999327.0151462.623
9339.8931462.6839346.6071462.7179354.705 1462.759358.9151462.7739359.8571462.775
9368.0161462.8159371.3651462.8359372.325 1462.849374.5451462.8369377.6041462.854
9377.7011462.8549384.8091462.8899387.454    14629406.373    14629407.028    1462
9424.172    14629434.321    14629459.1231463.2719461.0851463.2959468.0521463.331
9469.2081463.3379470.921 1463.359476.3391463.3789476.4881463.378 9477.821463.385
9481.9521463.4079483.5841463.4139502.201    14629505.967    14629508.469    1462
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 9556.97    14629558.603    1462 9561.86    14629569.589    14629572.453    1462
9574.869    14629580.071    1462  9592.2    14629595.901    14629597.072    1462
9597.224    14629600.426    14629601.129    14629605.171    14629617.998    1462
 9618.84    14629622.355    14629622.596    14629626.398    14629632.071    1462
9634.653    14629637.311    14629638.515    1462 9647.351461.7529649.9541461.701
9655.9771461.578 9665.391461.3949675.0821461.1839678.3621461.1149702.2791460.593
9729.325    14609750.678    1460  9760.7    1460 9760.87    14609761.161    1460
9761.793    14609773.737    14609807.2051461.0019809.5581461.0799828.0411461.302
9831.0431461.3889832.8871461.3529834.4331461.3259838.4061461.2549840.829 1461.26
9844.9941461.1769845.2551461.1699848.3721461.1129855.6361460.9269856.0111460.914
9857.8341460.8579858.2371460.8419865.4271460.6769877.6451460.374 9879.141460.337
9879.268 1460.339882.2341460.2019887.777    14609887.925    14609888.506    1460
9895.839    1460 9896.29    14609898.931    14609902.8691459.4819904.4461459.273
 9904.61 1459.26 9905.051459.2269908.2751458.8419911.751 1458.389914.471    1458
9915.7271457.8259915.8981457.8019917.2351457.5559920.7991456.8999922.4091456.416
9923.797    14569930.1181454.9829936.8021454.642 9942.14    14549949.848    1454
9950.184    14549950.454    14549951.941    14549967.0521454.9099971.3981454.484
9972.1661454.4279976.579    1454   10000    1454 10002.2    145410021.79    1454
10022.96    145410023.03    145410023.341454.03610023.621454.055 10032.91454.956
10033.381454.97510043.99    1456 10045.5    145610058.33    145610067.44    1456
10072.07    145610073.31    145610075.01    145610076.57    145610084.61    1456
10088.93    145610095.68    145610095.91    145610098.55    1456 10116.4    1456
10120.46    145610121.52    145610142.27    145610148.08    145610183.91    1456
10187.68    145610258.37    145610272.53    145610277.22    145610287.14    1456
10312.88    145610349.42    145610356.01    145610362.06    1456 10388.7    1456
10392.75    145610393.88    145610394.12    145610454.941457.02110513.73    1458
10532.071459.92410532.441459.95210532.78    146010532.82    146010548.261460.735
10574.67    146210574.78    146210575.181462.446 10576.6    1464 10577.21464.656
10578.42    1466 10579.11466.74510580.25    1468 10580.5    146810592.121468.428
 10607.71468.98610628.591469.56410633.361469.71610640.561469.932
#Mann= 3 , 0 , 0
 8635.48    .055       09967.052    .055       010043.99    .055       0
#XS Ineff= 2 , 0
       09967.052    1455               0
Permanent Ineff=
       T       F
Bank Sta=9967.052,10043.99
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.456   ,210,210.92,200
BEGIN DESCRIPTION:
Section 0.456 placed to reflect retention basin and property boundary of Arizona Hillcrest
property.

Ineffective Flow Areas reflect the retention basin for the Arizona Hillcrest Subdivision.  It is
assumed the full depth of the retention basin will not act as conveyance area.
END DESCRIPTION:
Node Last Edited Time=Sep/26/2001 11:40:07
#Sta/Elev= 277
 8629.371466.6468640.0911466.3568653.045    14668667.635    14668678.398    1466
8685.581    14668693.535    14668766.081    14668769.063    14668769.192    1466
  8772.8    14668774.245    14668776.499    14668782.608    14668790.616    1466
 8791.52    14668799.382    14668799.419    14668800.4151465.858 8802.171465.644
8814.088    14648828.103    14648838.877    14648841.857    14648847.187    1464
8848.731    1464 8848.86    14648850.1551464.053 8855.981464.3578859.1641464.503
8913.084    14668917.431    14668920.275    14668923.665    14668946.138    1466
  8949.51465.9268949.9851465.9298959.4831465.9968960.173    14668960.203    1466
8962.547    14668962.798    14668963.372    14668972.974    14668973.016    1466
8973.104    14668991.538    14669005.479    14669007.818    14669009.094    1466
9021.266    14669021.881    14669024.489    14669025.761    14669084.1681465.231
9112.981    14669127.913    14669128.393    1466 9131.57    14669132.596    1466
9133.818    14669134.178    14669134.557    14669139.692    14669141.932    1466
9142.593    14669143.787    1466 9143.83    14669143.883    14669144.447    1466
 9144.58    14669145.212    14669147.017    14669152.485    14669152.628    1466
 9157.85    14669159.592    14669160.228    14669160.6691465.786 9162.541464.914
9164.201    14649164.307    14649164.602    14649171.877    14649172.101    1464
9180.519    14649187.673    14649234.019    1464 9253.71    14649262.575    1464
9267.764    14649268.228    14649271.305    14649282.9291462.933 9289.471462.798
9299.0761462.6529311.743 1462.389328.998    14629329.974    14629331.755    1462
9331.792    14629343.0451461.7659350.2141461.6289350.2651461.6279360.8991461.489
9364.3421461.4639373.2771461.3429376.6061461.2979377.023 1461.299378.1731461.273
9379.016 1461.269385.5871461.1989393.8471461.0699394.2771461.0619398.1541460.982
9398.6041460.9729407.2141460.8069419.5131460.5179424.178 1460.499430.9261460.414
9443.3541460.185  9447.3    14609456.409    14609456.955    14609462.899    1460
9464.179    14609466.1151459.8699468.649    14609475.965    14609476.535    1460
9478.299    14609480.488    14609481.9511459.7979503.1291459.0169511.3351459.158
9538.227    14609538.274    14609538.4091460.0439538.4191460.0469544.042    1462
9548.841    1462 9554.87    14629567.068 1461.399569.8031461.4189571.4551461.437
9572.5261461.4559575.9521461.4929581.2081461.3249623.135    14609628.683    1460
9635.511    14609643.894    14609653.433    14609657.678    14609668.081    1460
9669.247    14609670.475    14609678.805    14609683.926    14609689.147    1460
9695.397    14609709.986    14609717.548    14609720.999    14609725.183    1460
9729.608    14609737.068    14609743.464    14609746.047    14609758.213    1460
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9760.548    14609762.555    14609770.375    14609772.369    14609788.847    1460
9795.627    14609795.724    14609802.096    14609804.062    14609812.851    1460
9814.894    14609818.051    14609818.795    14609825.236    14609827.0861459.813
9830.2591459.4949836.1821458.732 9836.381458.7179838.8971458.5089842.311    1458
9843.134    14589847.8761457.0049853.7621455.4549854.8971455.255 9855.451455.158
9858.2081454.5679858.5751454.4889860.673    1454 9863.881453.2549869.271    1452
9877.0561450.1899877.869    14509883.252    14509890.985    14509894.505    1450
9902.334    14509903.475    14509905.127    14509907.0381450.4879912.906    1452
9916.2031452.8369920.828    14549921.353    14549938.929    14549947.152    1454
9959.914    1454 9963.65    14549964.843    14549965.718    14549971.563    1454
9977.948    14549981.7661454.434 9983.05    1454 9983.59    14549984.6861453.724
9985.3031453.568  9986.61453.1069989.704    14529990.0951451.8619991.2051451.465
9994.6371450.4239995.6191450.1259995.7991450.0439995.893    1450   10000    1450
10008.99    145010009.42    145010014.28    145010015.54    145010015.58    1450
 10020.21451.915 10020.4    145210024.681453.77710025.22    145410028.76 1455.47
10030.04    145610030.21    145610030.35    145610034.58    145610036.34    1456
10036.57    145610041.08    145610125.051455.01110130.131454.97210131.43 1454.97
10159.771454.96510192.731454.83910262.851454.50210460.39    145610464.49    1456
10468.59    1456 10478.7    145610479.13    145610481.62    145610482.05    1456
10483.48    145610508.691456.64810562.81    1458 10573.71458.81610589.17    1460
10595.931461.04410602.13    146210607.321462.73510616.59    146410625.941465.209
10634.22    146610634.451466.023
#Mann= 3 , 0 , 0
 8629.37    .055       09981.766    .055       010030.04    .055       0
#XS Ineff= 1 ,-1
    98509920.828    1454
Permanent Ineff=
       T
Bank Sta=9981.766,10030.04
XS Rating Curve= 0
Exp/Cntr=0.5,0.1

Type RM Length L Ch R = 1 ,0.416   ,670,601.53,500
BEGIN DESCRIPTION:
Section 0.710 in old study

Ineffective Flow Areas reflect the retention basin for the Arizona Hillcrest Subdivision.  It is
assumed the full depth of the retention basin will not act as conveyance area.
END DESCRIPTION:
Node Last Edited Time=Sep/26/2001 11:39:58
#Sta/Elev= 190
 8579.83    14648586.223    14648592.832    14648593.379    14648598.017    1464
8598.625    14648600.713    14648632.0671464.237 8632.291464.2388632.6271464.228
8665.9421464.0438666.2551464.0348667.2971464.0358667.5431464.0428667.5891464.044
8673.8691464.1488673.9261464.1498673.9981464.1498688.7361464.5068688.8871464.506
8735.7831464.3858744.5341464.4168744.9981464.4318752.9621464.3448757.1551464.274
8766.5621464.1498768.1431464.1288769.2471464.1218770.9081464.1118778.607    1464
8785.0541464.6368785.9521464.3138787.354    14648789.476    14648792.384    1464
8794.682    14648794.959    14648795.835    14648799.048    14648800.717    1464
 8806.81    14648809.723    14648814.045    14648818.168    14648829.564    1464
8833.584    14648861.581    14648892.718    14648897.862    1464 8904.43    1464
8910.633    14648917.225    14648929.348    14648938.972    14648943.191    1464
8948.451    14648950.631    14648954.894    14648960.915    14648998.1631462.875
9007.2591462.8459054.108    14629061.363    14629095.638    14629100.513    1462
9101.764    14629105.377    14629124.169    14629136.647    14629161.174    1462
 9189.141461.3039219.4941460.845 9245.831460.5469251.0151460.5269279.638    1460
9280.698    1460 9282.19    14609283.126    14609290.461    14609292.982    1460
9294.839    14609304.056    14609335.992    14609344.013    14609363.6771459.676
9393.3551459.5219405.1521459.2879426.9991458.888 9471.46    1458  9531.11456.524
9552.387    14569555.1371455.7059558.7821455.3669573.947    14549580.945  1452.3
9582.116    14529583.0011451.7739589.909    14509589.972    14509594.231    1450
9595.339    14509602.213    14509603.154    14509613.337    14509788.5361448.279
9795.2521448.2219800.5941448.1759819.0581448.2539819.6921448.4049820.3671448.633
9820.9321448.4739821.3551448.5749821.7681448.6969827.269    14509828.6151450.312
9831.0291450.8719833.909 1451.619835.429    14529837.7841452.622  9843.1    1454
9847.304    14549847.306    14549857.489    14549860.769    14549887.096    1454
9891.678    14549943.257    14549965.172    14549965.969    14549977.895    1454
9977.976    1454 9978.35    14549978.712    1454 9978.76    14549985.359    1454
9986.006    1454  9988.61452.7269991.2221451.4239994.114    14509995.4371449.365
9998.516    1448   10000    144810003.91    144810006.74    144810007.651448.479
10013.73    1450 10016.21451.921 10016.3    1452 10016.4  1452.110016.821452.147
10023.48    145410024.93    145410043.881453.40910048.041453.61610050.57    1454
10090.61    145410128.931453.69510138.55 1453.6910142.841453.68610182.031453.473
10204.86 1453.4110299.641453.60110348.321453.91810351.05 1453.9310352.751453.932
10353.331453.93210363.21    145410370.17    145410378.05    145410399.55 1454.26
10424.351454.805 10462.21455.454 10475.2    145610479.121456.733 10485.9    1458
10493.951459.505 10496.6    146010500.431460.71610507.69    146210511.561462.743
10517.721463.94110518.08    146410518.551464.078 10530.1    146610530.591466.061
10548.74    146810550.151468.14410561.511469.228 10569.6    147010584.911471.159
#Mann= 3 , 0 , 0
 8579.83    .055       09986.006    .055       010023.48    .055       0
#XS Ineff= 1 ,-1
    9500  9843.1    1454
Permanent Ineff=
```

```
        T
Bank Sta=9986.006,10023.48
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.302   ,180,193,230
BEGIN DESCRIPTION:
0.302
END DESCRIPTION:
Node Last Edited Time=May/21/2001 14:23:40
#Sta/Elev= 79
 9649.66    1456 9664.57    1456 9670.01    1456 9673.15    1456  9673.5    1456
 9675.57    1456 9675.87    1456 9675.94    1456 9695.31 1454.39 9699.21    1454
 9723.42 1452.32 9728.47    1452 9728.84    1452 9729.17    1452 9730.56    1452
 9731.19    1452 9762.67 1451.41 9807.48 1450.59 9821.35    1450 9825.97    1450
 9827.35    1450 9828.05    1450  9838.4    1450 9847.28    1450  9853.7 1450.22
 9856.75 1450.27 9871.57 1450.46 9874.77 1450.51 9883.31 1450.62 9886.85 1450.67
 9902.26 1450.89 9912.54    1450 9914.07    1450 9968.34    1450 9970.34    1450
 9973.33    1450 9977.57    1450 9978.18    1450 9981.03    1450 9983.12    1450
 9983.38    1450 9987.82 1448.09 9988.02    1448 9988.15 1447.95 9988.48  1447.8
 9991.74    1446 9996.51 1445.19 9996.55 1445.1810002.47    144410004.08    1444
10004.57    144410007.25 1445.1110009.65    1446 10011.2 1447.1610012.33    1448
10014.65 1449.7310015.03 1449.9410015.15    145010015.53    145010064.58    1450
 10072.2    145010072.32    145010076.29    145010077.11    145010083.81    1450
10083.87    1450 10084.4 1450.0210165.23 1450.75 10209.1 1450.82 10226.9 1450.98
10237.43 1451.0610240.22 1451.0910253.92 1451.2510272.83 1451.3510337.64 1451.91
10344.95    145210375.52 1453.7310380.45    145410386.41 1454.66
#Mann= 3 , 0 , 0
 9649.66    .055       0 9983.38    .055       010015.15    .055       0
Bank Sta=9983.38,10015.15
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.266   ,380,467.87,590
BEGIN DESCRIPTION:
Cross-Section 0.266
END DESCRIPTION:
Node Last Edited Time=Oct/03/2001 14:30:57
#Sta/Elev= 84
 9677.35    14569686.064    14569687.1281455.9659688.9881455.9139756.171    1454
9762.9951453.7799815.152    14529815.674    14529825.187 1451.359846.129    1450
9847.472    14509849.528    14509860.794    1450 9867.46    14509875.183    1450
9939.197    14509945.714    14509954.301    14509962.389    14509962.606    1450
9966.592    14509966.684    14509972.453    14509976.293    14509977.096    1450
9984.769    14509986.5941448.5199989.107 1446.489989.3361446.2959989.699    1446
9991.2691444.7279992.355    14449993.222    14449993.631    14449997.361    1444
9999.153    144410003.77    144410007.53    144410008.951445.43710009.51    1446
10010.881447.38910011.48    144810012.711449.24910013.131449.67410013.41    1450
10030.27    145010030.42    1450 10040.5    145010053.12    145010054.75    1450
10080.79    145010082.05    1450 10097.5    145010119.92    145010119.97    1450
10126.63    145010135.92    145010140.01    145010148.42    1450 10150.9    1450
10184.56    145010202.99    145010223.62    145010228.57    145010293.371450.715
10302.77  1450.810427.33    145210427.46    1452 10427.7    145210431.471452.208
10449.221453.00810452.311453.11910468.121453.90410468.521453.925 10469.11453.952
10470.03    145410487.461454.727   104971454.966 10504.1  1455.210511.321455.339
 10514.51455.35610524.581455.731 10525.61455.75910527.351455.828
#Mann= 3 , 0 , 0
 9677.35    .055       09984.769    .055       010013.41    .055       0
Bank Sta=9984.769,10013.41
XS Rating Curve= 0
Exp/Cntr=0.3,0.5

Type RM Length L Ch R = 1 ,0.177   ,515,487.43,487.43
BEGIN DESCRIPTION:
0.177
END DESCRIPTION:
Node Last Edited Time=Sep/26/2001 09:43:13
#Sta/Elev= 69
 9674.62    14529678.067    14529700.544    14529729.273    14529729.811    1452
9739.118    14529743.646    14529754.261    14529760.141    14529774.887    1452
9828.6131450.7089839.2081450.5969869.0641450.2559878.0851450.1489882.4611450.132
9890.542    14509891.9811449.6799900.362    14489906.1951446.8319909.876    1446
9913.1381445.2639918.732    14449922.8821443.0639927.588    14429933.501    1442
9944.819    14429949.677    14429957.674    14429960.466 1442.299972.593    1444
9976.378    14449979.425    14449998.891    144410006.83    144410013.541445.556
10015.51    144610023.511447.86310024.09    144810029.571449.27610032.69    1450
10033.061450.08710041.29    1452 10042.71452.32810049.89    145410052.331454.569
10058.48    145610065.271457.59610066.95    145810067.931458.31310073.21    1460
10081.71    146010091.64    146010094.96 1458.7310098.281457.45310104.391455.125
10106.26 1454.4110107.33    145410112.351452.08210112.56    1452 10113.9 1451.73
 10120.11450.46910124.19    145010126.31    145010131.82    145010135.48    1450
10150.171449.519 10160.31449.51310165.59 1449.5110168.961449.524
#Mann= 4 ,-1 , 0
 9674.62    .055       09913.138    .055       09972.593    .055       0
```

```
10006.83    .025       0
#Block Obstruct= 2 , 0
       0                 10080       0
Bank Sta=9913.138,9972.593
XS Rating Curve= 0
Exp/Cntr=0.3,0.1

Type RM Length L Ch R = 1 ,0.085   ,245,224.46,224.46
BEGIN DESCRIPTION:
0.085
END DESCRIPTION:
Node Last Edited Time=Oct/03/2001 14:31:15
#Sta/Elev= 126
 9361.87    1466 9365.14    1466 9367.83 1465.56 9369.51 1465.29 9370.65  1465.1
 9373.66 1465.25 9391.92 1465.91  9392.1 1465.94  9393.3 1465.99 9393.58    1466
 9393.84 1465.95 9403.44    1464 9413.27 1462.01  9413.3    1462 9416.53 1461.42
 9418.86    1461 9424.88 1460.04 9425.02 1460.02 9425.06 1460.01 9428.68 1459.39
 9431.63 1458.88 9436.84    1458 9437.01 1457.97 9437.31 1457.92 9442.39 1457.03
 9448.31    1456 9448.99 1455.94 9449.15 1455.93 9449.35 1455.91 9459.85 1455.14
 9461.39 1455.18 9462.16 1455.13 9465.02 1454.84 9467.77 1454.62 9469.81 1454.47
 9471.13 1454.34 9477.55 1455.08 9480.53 1454.98 9500.12    1454 9521.99    1454
 9544.34    1454 9550.75    1454 9562.74    1454 9568.49    1454  9569.5    1454
 9574.92    1454 9576.06    1454 9578.23    1454 9585.09    1454 9658.46    1454
 9660.55    1454 9661.41    1454  9664.1    1454 9667.28 1453.62 9674.48    1452
 9678.66 1450.98 9682.67    1450 9688.09 1448.68 9690.86    1448 9697.51 1446.38
 9699.04    1446 9706.36 1444.22 9707.23    1444 9715.34 1442.78 9720.43    1442
 9721.28    1442  9745.4 1440.21  9747.7    1440 9813.98    1440 9827.74    1440
 9839.93    1440 9845.24    1440 9845.78    1440 9855.04 1441.05 9862.39 1441.56
 9866.01    1442 9866.71    1442  9870.8    1442 9877.62    1442 9883.92    1442
 9886.02    1442 9887.35    1442 9887.89    1442 9898.24    1442 9900.37    1442
 9908.53    1442 9913.91    1442 9943.81    1442  9974.8    1442    9975    1442
 9975.23 1442.11 9979.15    1444 9982.32    1444 9985.95    1444 9987.52 1443.41
 9991.26    1442 9996.24    1442 9997.72    1442   10000 1442.1610020.49 1443.68
10022.09    144410024.48 1444.5210037.54 1447.5810039.37    144810039.47 1448.03
10039.73 1448.0910047.76    145010050.28  1450.610055.69    145210058.78  1452.8
10063.41    145410068.35 1455.2810071.13    1456   10076 1457.2610078.85    1458
10079.95  1458.310086.43 1459.9710086.57    146010086.68    1460 10109.7    1460
10112.25 1458.9610118.66 1456.3510120.56 1455.5710126.94 1452.9810129.23    1452
10135.49 1451.89
#Mann= 3 ,-1 , 0
 9361.87    .055       0  9664.1    .055       0 9997.72    .025       0
Bank Sta=9664.1,10086.57
XS Rating Curve= 0
Exp/Cntr=0.3,0.3

Type RM Length L Ch R = 1 ,0.043   ,0,0,0
BEGIN DESCRIPTION:
0.043
END DESCRIPTION:
Node Last Edited Time=Oct/03/2001 14:31:32
#Sta/Elev= 54
 9921.66    1460 9923.24    1460 9930.85    1460 9936.35    1460 9938.28  1459.5
 9942.85    1458 9944.38 1457.49 9948.17    1456 9950.25  1455.2 9953.09    1454
 9954.38 1453.54 9958.66    1452 9959.52 1451.69 9961.31 1451.05 9964.05    1450
 9966.52 1449.73 9980.52    1448 9983.33 1447.05 9986.43    1446 9990.28  1444.7
 9992.43    1444 9994.96 1443.16 9998.36    1442   10000    144210006.02    1442
10016.11    144210020.05  1443.310022.18    144410027.52 1445.7510028.31    1446
 10035.4 1446.8510045.48    144810049.85  1448.910055.17    145010060.69 1451.17
10064.67    145210072.33 1453.6710075.18 1454.2910082.12    145610087.99 1457.69
10089.23    145810090.21 1458.2410097.28    146010115.21    146010120.93    1460
10123.95 1458.7910125.91    1458 10129.1 1456.72 10130.9    145610135.46 1454.17
10135.88    145410136.16 1453.8910142.79    1452 10143.6    1452
#Mann= 3 ,-1 , 0
 9921.66    .025       0 9998.36    .055       010016.11    .025       0
#XS Ineff= 2 , 0
       0                 10100       0
Permanent Ineff=
       F       T
Bank Sta=9980.52,10028.31
XS Rating Curve= 0
Exp/Cntr=0.5,0.1

Chan Stop Cuts=-1
```

```
Plan Title=Plan 04
Program Version=3.11
Short Identifier=
Simulation Date=,,,
Geom File=g05
Flow File=f02
Subcritical Flow
K Sum by GR= 0
Std Step Tol= 0.01
Critical Tol= 0.01
Num of Std Step Trials= 20
Max Error Tol= 0.3
Flow Tol Ratio= 0.001
Split Flow NTrial= 30
Split Flow Tol= 0.02
Split Flow Ratio= 0.02
Log Output Level= 0
Friction Slope Method= 1
Unsteady Friction Slope Method= 2
Unsteady Bridges Friction Slope Method= 1
Parabolic Critical Depth
Global Vel Dist= 0 , 0 , 0
Global Log Level= 0
CheckData=True
Encroach Param=-1 ,0,0, 0
Computation Interval=1HOUR
Output Interval=1HOUR
Run HTab= 0
Run UNet= 0
Run PostProcess= 0
UNET Theta= 1
UNET Theta Warmup= 1
UNET ZTol= 0.02
UNET ZSATol= 0.05
UNET MxIter= 20
UNET MaxInSteps= 0
UNET DtIC= 0
UNET DtMin= 0
UNET MaxCRTS= 20
UNET WFStab= 2
UNET SFStab= 1
UNET WFX= 1
UNET SFX= 1
UNET DSS MLevel= 4
UNET DZMax Abort= 100
UNET Convert EG Bridges=-1
UNET Use Existing IB Tables=-1
UNET Froude Reduction=False
UNET Froude Limit= 1
UNET Froude Power= 10
Instantaneous Interval=1HOUR
Write IC File= 0
IC Time=,,
Echo Input=False
Echo Output=False
Write Detailed= 0
Detailed Automatic Start=False, 10
```

```
Proj Title=Buchanan Wash with Riordan Ranch X-Secs
Current Plan=p04
Default Exp/Contr=0.3,0.1
English Units
Geom File=g05
Geom File=g01
Flow File=f02
Plan File=p04
Plan File=p01
Plan File=p02
Plan File=p03
Y Axis Title=Elevation
X Axis Title(PF)=Main Channel Distance
X Axis Title(XS)=Station
BEGIN DESCRIPTION:
Buchanan Wash LOMR
Tetra Tech, Inc. ISG          May 2001

This model is using the Riordan Ranch Cross Sections developed by RBF.  Station numbers were re-numbered to match Tetra Tech's existing
nomenclature.  The new RS used from RBF are from 1.417 to 0.707.   Last Modeling: EMCON 10/23/2003

As a result of the construction of the Skunk Creek Landfill, the natural drainage pattern for Buchanan Wash was altered significantly.
Several new cross-sections below the current effective FIS were input to more accurately model the confluence of Buchanan and Skunk Creek.
With the new mapping, the effective FIS cross-sections were recut with new topographic mapping in their former locations and renumbered.
Additional cross-sectios were added in locations of interest as necessary.

Starting WSEL
The initial boundary condition is the normal slope area method.

Encroachments
Method 4 was used to initially place the encroachments.  From this point, the existing FIS encroachments were matched using Method 1.  Then
further Method 1 adjustments were made to model the changes along the watercourse and smooth the floodway.


END DESCRIPTION:
DSS Start Date=
DSS Start Time=
DSS End Date=
DSS End Time=
DSS Export Filename=
DSS Export Rating Curves= 0
DSS Export Rating Curve Sorted= 0
DSS Export Volume Flow Curves= 0
DXF Filename=
DXF OffsetX= 0
DXF OffsetY= 0
DXF ScaleX= 1
DXF ScaleY= 10
```

```
Version 3.1.1 May 2003
Plan 04                 1       7       0     154    3405       F
       4       3       0       0
      45      53       0       2       0       2       2       0
       0       0       0       F       F       0       0       0       0       0
       0       0       F       F       0       0       0       F       0       0
       0
       0       0
       1       7       0       F       T       F       0      45      30
       4
       0     .01       F     .01      20      .3     .01       F       5       T
Expansion and Contraction Coefficients
      .1      .3       1      .1      .5      39      .1      .3      40
      .5      .3      42      .1      .3      43      .3      .3      44
      .1      .5      45
       1       1       1       F       F
Flow Data
       3        10-yr
    1065       1    1175       4    1422      17
       3        50-yr
    1253       1    1467       4    2005      17
       3       100-yr
    1308       1    1609       4    2304      17
       3       500-yr
    1407       1    1958       4    3067      17
Flow and Seasonal Roughness Flag (plan)
       F       F
Reach Boundaries
       T       T       1      45        Buchanan Wash          F       F
       0       0
       0       0
       0       0
       0       0
       3       0    .003
       3       0    .003
       3       0    .003
       3       0    .003
NODE   1Buchanan Wash   1.935         70  100.93     100       0
       1
     146
 9703.081497.0179705.6321496.9269705.8391496.9199717.2991496.8229724.5131496.761
9724.7931496.7589725.8181496.7469734.4291496.9369741.2351497.0869742.7321497.087
9751.9591497.2929755.2751497.3729763.835    14969776.2031495.8449778.1011495.781
9778.4891495.7829790.404    14969795.1221496.6039798.0381496.5529806.4871496.404
9807.977    14969818.5471495.6599830.241 1495.599838.0841495.6089848.1361495.841
9848.4161495.8479848.6431495.8539849.5071495.892 9863.451495.8289864.1211495.843
9865.3651495.8459874.8531495.8149875.4261495.817 9891.691495.7949891.8991495.796
9903.736    14969905.305    1496 9909.281496.4749909.8151496.4719914.4871496.576
9920.7971496.9679926.5981497.1489937.2491497.1649939.6791497.3119941.2561497.419
9941.7731497.4199947.0661497.6299955.1711497.2819957.476 1497.129964.1051496.954
9966.5851496.9729973.076    14969977.3741495.0379981.998    14949987.3071493.448
10001.74    149210002.83    149210015.761493.54910020.09    149410020.891494.174
10029.51    149610036.331496.70110048.731497.173 10049.81497.17810057.911497.168
10071.38    149610074.281495.49210077.651495.52810079.291495.54610080.131495.529
10092.041495.42710100.631495.45110101.011495.45410116.67    149610116.79    1496
10116.92    149610135.23    149610146.83    149610146.92    149610147.06    1496
10151.34    149610155.94    149610174.491497.28110176.041496.79710180.451496.865
10183.57    149610187.15    149610188.68    149610190.35    149610193.211496.488
10193.521496.48810205.761497.52310225.331497.28410227.321497.34310232.471497.446
10232.941497.44710262.291497.70510263.391497.723 10264.71497.77110283.091497.764
10292.81    149810311.78    149810312.41    1498 10324.8    149810326.85    1498
10339.86    149810340.33    149810354.27    149810365.62    149810365.92    1498
10367.41    149810372.77    149810377.251498.265 10380.91498.03610390.361498.222
10391.971498.20110396.471498.693 10399.91498.61310401.58 1498.5510401.911498.549
 10409.71499.21110414.631499.41810425.231499.28410433.511499.264   10445 1499.35
10459.63    150010463.83    150010464.36    150010473.74    150010484.66    1500
10485.61    150010490.77    1500 10496.1    150010499.35    150010500.66    1500
10502.47    150010503.11    1500 10504.5 1500.0510512.571500.18210513.131500.198
10514.531500.26210520.471500.46710524.921500.80610534.36    150210536.08    1502
10538.13    1502
       3       F       F       0
 9703.08    .0559966.585    .05510048.73    .055
                                   F       F9966.58510048.73       F       F
       2       0       F
 9703.089947.0661497.629 10049.810538.13 1497.17
       0       F
NODE   1Buchanan Wash   1.916        230   389.3     380       0
       1
     117
 9599.361502.6099603.768    15029604.5731501.8899605.8131501.7179606.8891501.376
9610.5471500.2159614.986    15009617.171    15009622.569 1499.859622.6141499.848
9633.184 1499.549638.4451499.3649646.8371499.2419658.322    14989666.1691497.487
9667.401 1497.37    96681497.3299673.3531496.9789674.1671496.925  9682.91496.615
9683.9991496.6159684.3051496.6079688.833    14969688.908    14969725.9371494.901
```

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9735.8721494.7669736.0661494.7639742.2221494.6989749.4161494.5569753.0671494.516
 9785.811494.2289788.5461494.167 9792.57     14949796.213     14949798.313     1494
9801.201     14949835.584     14949837.106     14949840.883     14949842.035     1494
9843.942     14949846.086     14949857.892     14949862.302     1494 9863.56     1494
9875.441     1494 9875.93     1494 9876.15     1494 9876.99     14949877.374     1494
9907.028     14949918.926     14949921.588     1494 9935.35     14949963.935     1494
9964.791     14949965.117     14949979.543     14949986.288     14949990.9931493.123
 9993.53 1492.659994.8861492.3459996.425     1492   10000     149210001.88     1492
10027.37     149210031.331493.31710033.39     1494 10039.21495.92910039.41     1496
10039.791496.06310050.371497.39810052.99     149810062.21     149810063.24     1498
10066.33     149810072.481496.07810072.73     149610078.98     149610127.75     1496
10128.88     149610135.37     1496 10137.9     149610140.67     149610152.11     1496
10158.65     149610167.29     149610169.72     149610193.56     149610195.42     1496
10199.61     149610204.44     149610214.96     1496 10225.5     149610246.971496.938
10251.59 1496.9910267.741497.45810268.361497.47910284.62     1498 10285.2     1498
10288.631498.26210292.791498.62710303.281499.53310309.95     150010316.081500.542
10321.25 1501.0510330.93     150210337.381502.68810359.831505.07210367.99     1506
10371.461506.40710371.711506.43610372.071506.47210372.581506.52910384.84     1508
10396.431509.39110398.52 1509.66
       3        F        F        0
 9599.36     .0559986.288     .05510033.39     .055
                                         F        F9986.28810033.39        F        F
       0        0        F
       0        F
NODE   1Buchanan Wash   1.842         400  401.78      430        0
       1
      85
 9611.041508.1519612.8981507.5929614.7111507.0489618.199     15069619.9251505.482
9621.5721504.9879624.805     15049638.5021503.2199650.949     15029653.1731501.975
9660.0491501.8859762.8971500.6289773.102 1500.529800.527     15009832.4421499.101
9847.3021498.735 9865.331498.4419887.345     1498 9893.711497.6749896.9991497.511
 9910.361496.8039916.7491496.4669919.0091496.3399925.591     14969930.7591495.405
9939.2321494.3999942.511     14949946.1051493.8069982.894     1492 9986.17     1492
9989.8891491.6499991.8731491.435    10000 1490.5110004.37     149010007.07     1490
10012.54     149010024.33     149010028.851490.79710030.891491.15810031.56 1491.29
10035.16     149210035.54     149210042.061492.298    100611493.09810090.47     1494
 10114.21495.48310123.35     149610126.79     149610145.18     149610147.391495.969
10166.79 1495.7210199.971495.28410254.75     149410261.98     149410265.11     1494
10266.57     149410268.64     1494 10270.71493.95910396.38 1493.8710404.23     1494
10405.19     149410407.221494.18410408.551494.30510411.431494.58210421.521495.579
10423.07 1495.69 10427.2     1496 10442.51496.56710457.461497.08310462.461497.279
10466.47 1497.4210467.151497.44510480.33     149810488.511499.25110493.31     1500
10509.831501.71710512.98     150210525.321503.264 10531.9     150410538.411505.213
10540.251505.54310542.381505.92610543.311506.082 10545.1 1506.3310553.761507.614
       3        F        F        0
 9611.04     .055 9986.17     .05510035.16     .055
                                         F        F 9986.1710035.16        F        F
       0        0        F
       0        F
NODE   1Buchanan Wash   1.766         500  508.03      555        0
       1
      84
 9461.51 1499.259543.418     1498 9548.48     14989567.832     14989581.578     1498
9584.415     1498  9587.5     14989589.731     14989597.626     14989600.765     1498
9610.142     14989634.549     14989713.1521496.9699764.797     14969765.388     1496
9827.4271494.1429832.273     14949832.9961493.9299851.416     14929871.1671490.594
9880.905     14909885.271     14909898.368     1490 9949.75     14909957.941     1490
9965.181     14909968.293     1490 9971.08     14909972.279     14909974.012     1490
9977.142     14909979.177     1490 9987.15     14909988.2641489.4779991.744     1488
   10000     148810009.23     148810011.77     148810012.831488.40510013.811488.778
10015.891489.50610017.31     1490 10021.6     149010029.44     149010033.91     1490
10036.64     149010039.65     149010040.94     149010044.471489.39210057.95 1488.15
10058.711488.08510059.53     148810062.49     148810063.51     148810066.461488.627
10071.871489.74810075.85     149010086.13     149010087.29     149010089.82     1490
10093.09     149010149.571490.85110177.341491.23110178.68 1491.2510225.051491.959
10225.431491.96510227.52     149210314.731493.07410372.221493.61110384.971493.958
10386.57     1494   103911494.54710401.68     149610408.931497.452 10411.5     1498
10415.161498.78310420.85     1500 10423.51500.56710430.19     150210432.351502.461
10439.54     150410445.021505.17310451.771506.61810454.461507.194
       3        F        F        0
 9461.51     .055 9987.15     .05510017.31     .055
                                         F        F 9987.1510017.31        F        F
       0        0        F
       0        F
NODE   1Buchanan Wash   1.670         510  500.86      490        0
       1
      72
  9429.61496.7869467.767 1496.719503.5921496.4869576.888     14969598.438     1496
9602.473     14969605.481     14969633.8241495.7419663.2241495.5589685.1141495.372
9816.504     14949833.324     14949835.127     14949835.583     14949866.865 1492.93
9892.538     14929892.584     14929901.8351490.9139909.386     14909918.9391488.931
9924.8551488.3099927.282     14889942.1051487.0719944.9911486.9129962.916     1486
9965.668     14869972.966     14869976.019     14869979.006     14869987.351     1486
9991.6711484.6729993.656     14849998.969     1484   10000     148410001.11     1484
```

```
10010.07    148410013.581485.06210016.35    148610018.991486.61810024.12    1488
10034.621489.17710042.39    149010042.79    149010043.76    149010053.07    1490
10060.11    149010063.49    149010065.28    149010072.42    1490 10117.2    1490
10159.55    1490   10249 1491.4410254.171491.452 10281.41491.84310283.541491.853
10290.19    149210316.091492.51410352.721493.14310378.741493.56510383.721493.645
10389.421493.72210402.841493.87910409.53    149410443.271495.351 10457.9    1496
 10472.41497.91410472.87    149810479.531499.21410483.81    150010490.571501.126
10495.76    150210509.341503.506
       3       F       F       0
  9429.6    .0559987.351    .05510042.39    .055
                                     F       F9987.35110042.39       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   1.575        505   505.7     540       0
       1
      82
 9486.56    14929486.838    14929494.261    14929513.417 1491.929532.5891491.946
9582.936    14929583.304    14929583.318    14929583.321    14929584.706    1492
9594.8841491.9989597.763    14929608.3281492.0089608.3861492.0089656.4951492.129
9679.7971492.0699692.451    14929703.992    14929715.933    14929718.365    1492
9777.8571491.0419791.4151490.7829802.1971490.5579827.477    14909832.851    1490
9859.6771488.5339861.8321488.4039867.103    14889867.852    14889880.3911487.629
9916.5041486.6699941.263    14869965.8071484.2519967.0821484.1669969.577    1484
9970.6291483.6879977.811    14829989.617    14829998.541    1482   10000  1482.5
10001.871483.25310003.86    148410004.331484.02410043.35    148610055.311486.991
10067.27    148810083.361488.71910087.521488.81710095.541489.12310098.891489.255
10104.141489.30210128.271489.51110129.321489.48710138.421489.172 10144.9 1488.95
10153.391488.76410163.361488.31210169.39    148810173.81    1488 10175.3    1488
10223.06    148810228.24    148810233.97    148810242.741487.92810252.74    1488
10274.751488.19310297.321488.46110330.011488.50510342.931488.61210346.361488.664
10385.921489.64110398.13    149010399.01    1490 10399.81490.12310411.83    1492
10421.211493.46310424.65    149410426.471494.28510454.041498.54810458.871499.314
10463.03    150010466.551500.599
       3       F       F       0
 9486.56    .0559969.577    .05510003.86    .055
                                     F       F9969.57710003.86       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   1.479        355  351.78     335       0
       1
      74
 9486.18    14889532.129    14889587.464    14889601.325    14889601.809    1488
 9601.88    14889602.6081487.9879648.2261487.2299691.5221486.7489699.7231486.647
9702.1731486.6049703.4381486.5819737.7681486.1299741.2251486.127 9743.191486.127
9743.4521486.1269762.758    14869769.997    14869772.618    14869776.918    1486
9840.026    14869843.143    14869854.567    14869894.082    1486 9914.97    1486
9915.241    14869923.008 1485.259935.777    14849948.907 1482.97 9961.84    1482
9964.531    14829971.744    14829979.602    14829984.1031480.3289985.138    1480
9988.286    1480   10000    1480 10008.2    148010012.121481.303 10014.1    1482
10021.041482.15610023.151482.17710044.06 1482.6110079.841483.17110087.971483.272
10118.461483.46310122.041483.45810198.751483.56510241.951483.94710243.751483.962
 10245.7    148410248.57    148410271.351484.60410274.791484.67610285.941484.802
10290.661484.84610311.961485.17810316.111485.16410323.051485.05810330.421484.838
10334.791484.70210341.611484.59910344.721484.57110356.231484.24910360.38 1484.17
10360.931484.15810367.87    148410370.28    148410371.16    1484 10373.5    1484
10384.83    148410387.83    148410390.451484.06510430.431485.469
       3       F       F       0
 9486.18    .0559979.602    .055 10014.1    .055
                                     F       F9979.602 10014.1       F       F
       0       0       F
       1       F
   1030010430.43 3.1E+38       F
NODE   1Buchanan Wash   1.417        297     300     303       0
       1
      81
 9489.44    14849497.438    14849512.968    14849518.285    14849522.267    1484
 9523.68    14849539.023    14849540.713    1484  9564.2    14849567.169    1484
9594.619    14849604.671    14849621.753    14849704.446    14849713.941    1484
9726.539    14849744.536    14849748.402    14849789.392    14849791.9731483.971
9792.1571483.9689797.308    14849799.985    14849804.081    1484 9814.48    1484
9819.818    14849821.591    14849837.558    1484 9838.44    14849851.588    1484
9855.874    14849863.081    14849864.931    14849886.9741482.7339896.056 1482.68
9903.299    14829903.553    1482 9911.081481.6259913.147 1481.529920.1951481.226
9923.9391481.1149930.2931480.983 9974.97    14809989.316    14809990.174    1480
9990.5621479.7659994.023    1478   10000    147810011.15    147810014.43    1478
10015.131478.28410019.36    148010019.49    148010043.29    148010073.92    1480
10094.75    148010100.53    148010104.65    148010107.06    148010118.871480.891
10121.66 1481.1210125.081481.37910132.781481.98810132.831481.99110132.891481.996
10132.94    148210193.791483.37710220.37    148410225.23    148410233.711484.315
10235.231484.35710243.181484.51810250.011484.79610258.871485.13910284.161485.957
10284.761485.98210285.33    148610285.44    148610285.54    148610315.95    1486
10369.561487.386
       3       F       F       0
 9489.44    .0559990.174    .05510019.36    .055
```

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                                        F       F9990.17410019.36       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   1.360       192     148     122       0
       1
      21
    9582    1483    9583    1483    9671  1482.9    9750  1482.9    9810  1481.9
    9849  1480.5    9907  1479.3    9933  1478.6    9949  1478.8    9970  1479.5
    9984  1475.7   10000  1475.7   10020  1479.8   10052  1479.7   10084  1480.3
   10100  1479.9   10122  1482.1   10140  1482.5   10167  1485.4   10194  1488.4
   10203  1488.7
       3       F       F       0
    9582    .055    9970    .055   10020    .055
                                        F       F    9970   10020       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   1.332        81      81      81       0
       1
      29
 9683.12    1482 9708.61  1481.1 9723.22  1480.9 9779.28 1480.39 9783.52  1479.8
 9836.76  1479.5 9895.28  1479.2  9908.3  1478.9 9925.63 1478.87 9929.92    1479
 9937.19  1479.1  9945.9 1479.09 9945.94 1478.68 9971.95 1478.22  9978.4  1477.8
  9987.5  1475.210000.01  1475.310000.44 1475.1810017.89 1475.2110023.04  1477.8
10026.42  1478.510041.01  1479.210052.63 1479.27 10057.2 1479.4310080.04  1479.8
10092.94  1480.110112.48 1480.86 10131.4 1481.4410144.04  1482.2
       3       F       F       0
 9683.12    .055 9945.94    .05510041.01    .055
                                        F       F 9945.9410041.01       F       F
       0       0       F
       2       F
 9683.12 9945.94 1478.68       F
10041.0110144.04  1479.2       F
NODE   2Buchanan Wash   1.325                                   0
       1
      26
 9683.12    1482 9708.61  1481.19715.206 1481.01 9737.62 1480.84 9750.78  1480.8
 9773.28 1480.79 9812.34 1480.66 9867.01 1480.16 9933.42 1480.02 9938.84 1479.85
 9938.84 1481.88 9945.94 1481.76 9977.68 1481.4910026.42 1481.5810040.47 1479.85
10040.48 1479.8510041.01 1479.8510057.43 1479.86 10065.8 1480.0510079.04 1480.38
10087.02 1480.6710096.76 1481.0710104.76 1481.4210118.72 1482.0310125.68 1482.46
10144.041483.625
       3       F       F       0
 9683.12    .055 9945.94    .05510041.01    .055
                                        F       F 9945.9410041.01       F       F
       0       0       F
       2       F
 9683.12 9945.94 1478.68       F
10041.0110144.04  1479.2       F
       1
      32
 9626.26    1480 9694.39 1480.74  9711.21480.843  9711.2 1481.049725.5691480.931
 9749.82 1481.08 9809.84 1480.92 9871.67 1480.699909.602 1480.07 9933.42 1480.02
 9938.84 1479.85 9938.84 1481.88 9945.94 1481.76 9977.68 1481.49 9987.351481.508
10025.091481.57810026.42 1481.5810040.47 1479.8510040.48 1479.8510057.43 1479.86
 10065.8 1480.0510079.04 1480.3810087.02 1480.6710096.76 1481.0710104.76 1481.42
10118.72 1482.0310125.68 1482.4610144.75 1483.6710148.75  1483.910203.31 1485.44
   10261 1489.66 10328.2    1494
       3       F       F       0
 9626.26    .055 9987.35    .05510025.09    .055
                                        F       F 9987.3510025.09       F       F
       0       0       F
       2       F
 9626.26 9987.35  1478.8       F
10025.09 10328.2  1478.4       F
       F     2.6     .95       T 1479.85               F
       1    11.4    64.8     4.8       F       F       F 1475.18 1474.41
       2       4Pinnacle Vis           F       0       0       F    .016
       9       2      20       0
    .016      .5       1       3       8    64.8 1475.26 1474.43     .01    .001
    9990    9994  9998.5 10002.5   10007   10011 10015.5 10019.5
NODE   1Buchanan Wash   1.317       101     112     122       0
       1
      16
 9626.26    1480 9694.39 1480.74 9749.82 1481.08 9809.84 1480.92 9871.67 1480.69
 9987.35  1478.8 9987.35 1474.41  9995.7 1474.41 10014.4 1474.4510025.09 1474.45
10025.09  1478.410090.45 1480.0210148.08 1482.0210203.31 1485.44   10261 1489.66
 10328.2    1494
       3       F       F       0
 9626.26    .055 9987.35    .05510025.09    .055
                                        F       F 9987.3510025.09       F       F
       0       0       F
       2       F
 9626.26 9987.35  1478.8       F
10025.09 10328.2  1478.4       F
```

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NODE    1Buchanan Wash   1.294        124     130     133       0
        1
       24
 9813.67  1480.2 9868.51  1480.2 9915.82  1477.7 9933.23 1476.45 9938.26 1476.82
 9965.01  1477.2 9965.78 1477.01 9991.46  1477.6   10000 1474.3810016.93  1474.4
10024.23  1477.510031.33  1477.310037.89 1475.7110045.55 1476.21 10062.1 1476.09
10064.86  1476.210073.55 1477.15 10085.8 1477.7210134.89 1478.8910161.25  1479.2
 10215.2  1480.810220.99  1480.910223.88 1481.0610234.14 1483.31
        3       F       F       0
 9813.67    .055 9991.46    .05510024.23    .055
                                     F       F 9991.4610024.23       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.271        135     171     175       0
        1
       25
 9897.83  1479.8 9912.53 1478.17 9931.96 1476.04 9939.15  1475.6 9944.81 1475.49
 9953.63  1476.6 9955.58  1476.7 9963.18 1476.48 9974.29  1476.4 9977.71  1475.6
 9986.51  1473.9  9989.1  1473.7   10000 1473.4810008.39  1473.5 10019.1  1475.9
10020.37    147610025.59    147610051.54 1477.1110054.35  1477.310063.05 1477.56
10074.98  1477.810091.94    147810102.65  1478.510112.11  1479.810125.24  1482.7
        3       F       F       0
 9897.83    .055 9974.29    .055 10019.1    .055
                                     F       F 9974.29 10019.1       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.240        180     184     186       0
        1
       14
 9923.92    1479 9949.86 1476.69 9976.69  1474.8 9980.22  1474.3 9987.42 1472.05
   10000  1471.610014.71 1474.1810021.74  1475.210040.18    147610054.93 1475.98
10058.37    147610080.37  1476.710097.02    147810117.33  1481.8
        3       F       F       0
 9923.92    .055 9976.69    .05510021.74    .055
                                     F       F 9976.6910021.74       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.205        112     113     112       0
        1
       15
 9868.51    1479 9870.77    1479 9896.72    1477 9947.69  1476.2 9980.37 1473.84
 9985.59    1472 9990.88  1470.110007.24  1469.810017.29 1474.3110032.06  1473.9
10061.99  1474.810072.56  1475.410093.65 1477.2510099.71 1478.8110175.72    1495
        3       F       F       0
 9868.51    .055 9980.37    .05510017.29    .055
                                     F       F 9980.3710017.29       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.184        193     193     192       0
        1
       18
 9890.18  1477.2 9896.36  1476.6 9900.75  1475.9 9912.02  1475.5 9931.01  1475.2
 9948.64  1474.8 9963.86  1473.5  9964.1  1473.4 9971.59  1473.2 9992.16    1470
   10000  1469.710007.08 1469.8510012.15  1471.510016.09  1472.510030.44  1473.4
10038.38  1474.210040.07 1474.4710067.01    1481
        3       F       F       0
 9890.18    .055 9971.59    .05510016.09    .055
                                     F       F 9971.5910016.09       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.148         76      79      79       0
        1
       15
 9884.94  1475.6 9925.94 1471.42  9934.3  1473.1 9938.91  1473.2  9949.8    1473
 9952.14    1473 9978.31  1472.4 9984.19 1470.15 9987.16  1468.5   10000  1468.3
10003.23  1469.410014.82 1473.6910024.97  1473.110034.28  1474.4   10054  1478.9
        3       F       F       0
 9884.94    .055 9978.31    .05510014.82    .055
                                     F       F 9978.3110014.82       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.133        153     152     146       0
        1
       25
 9905.98  1475.3  9910.5 1474.74 9957.93  1473.9 9964.29  1472.7 9966.03  1472.6
 9966.76  1472.4 9971.18 1471.81 9976.08 1471.37    9979  1470.9  9979.9  1470.9
 9982.72  1470.6 9984.48 1470.15 9987.79  1470.2 9989.73  1469.7 9990.71  1469.6
 9991.69  1469.4 9995.45 1468.77 9997.05  1468.2   10000  1468.110015.43  1468.2
10033.03  1471.910037.33  1472.610048.66 1472.7110058.13  1473.3   10090  1480.9
        3       F       F       0
 9905.98    .055 9971.18    .05510033.03    .055
                                     F       F 9971.1810033.03       F       F
        0       0       F
        0       F
```

```
NODE    1Buchanan Wash   1.105        168     163     157       0
        1
       20
 9862.88  1474.6 9869.02  1473.9 9873.19  1473.9 9888.54  1473.5 9896.25    1473
 9919.19  1472.7 9948.56  1471.7 9956.32  1471.2 9961.12  1471.4  9964.3  1471.8
 9970.16  1471.9 9980.05  1468.5 9989.76  1467.7 9994.43  1467.4   10000    1467
10016.84  1472.210025.23  1471.710035.35  1472.810050.65  1475.610072.52    1481
        3       F       F       0
 9862.88    .055 9970.16    .05510016.84    .055
                                     F       F 9970.1610016.84       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.073        153     163     164       0
        1
       18
 9857.67  1473.5 9867.48 1472.42 9880.65  1472.6 9924.11  1470.9 9938.54  1470.8
 9942.88  1470.6 9959.46  1469.7 9978.65 1467.51 9992.31  1466.7   10000  1466.7
10011.03  1471.4 10013.4 1471.5410024.88 1471.3410042.77  1471.310059.89  1472.5
10063.71  1473.410069.72  1474.410091.37 1478.89
        3       F       F       0
 9857.67    .055 9942.88    .05510011.03    .055
                                     F       F 9942.8810011.03       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.043        167     178     182       0
        1
       29
 9876.67  1472.7 9892.87 1471.03 9915.58 1470.95 9954.87 1469.14 9958.88 1469.09
 9965.35  1469.2 9972.08  1469.1 9974.02 1468.98 9984.58 1468.77  9987.8 1467.68
 9991.72    1466   10000  1465.610008.59 1465.7310016.85 1468.9410020.11  1470.5
10027.07  1470.2 10030.3  1470.310032.63  1470.610043.51 1470.5610055.25 1470.19
10061.05  1470.510068.68  1470.6   10080 1471.0210091.02 1471.2910127.26  1472.8
10128.14    147310130.29  1473.3 10137.3  1474.810142.03 1476.04
        3       F       F       0
 9876.67    .055 9984.58    .05510020.11    .055
                                     F       F 9984.5810020.11       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   1.010        153     166     172       0
        1
       19
 9847.14  1471.5 9862.07 1469.92 9878.96 1470.38 9914.83  1469.7 9940.95  1468.4
 9959.41    1468 9968.09  1469.2 9985.44 1469.25 9994.96  1465.3   10000    1465
10010.83  1465.410020.55  1469.510044.93  1468.910050.41    146910056.19  1469.4
10074.79  1470.310087.53  1471.610096.32 1472.0410122.51  1474.2
        3       F       F       0
 9847.14    .055 9985.44    .05510020.55    .055
                                     F       F 9985.4410020.55       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   0.978        144     159     162       0
        1
       24
 9851.37  1470.7 9862.56 1469.46 9880.05  1469.3 9887.26 1468.83 9894.56  1468.8
 9908.76  1468.6 9933.42 1467.87  9943.1 1467.91 9945.24 1467.83 9952.43  1467.2
 9959.52  1466.8 9966.78  1467.2 9969.73  1467.8 9970.93 1467.62 9985.52  1468.1
 9994.77  1464.7   10000 1464.4310013.19 1464.8710017.47  1466.310022.96  1468.3
10040.81  1467.710055.02  1468.110063.73 1469.3510104.04 1474.33
        3       F       F       0
 9851.37    .055 9985.52    .05510022.96    .055
                                     F       F 9985.5210022.96       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   0.949        107     100      98       0
        1
       17
    9854    1470 9877.45 1467.43 9898.13  1467.7 9937.73  1467.6 9953.13  1467.3
 9963.82  1466.8 9984.14 1465.39 9988.74  1463.6   10000  1462.910010.51  1463.5
10018.47  1464.210023.91  1466.810031.94  1466.710038.59  1467.610040.83    1468
10049.42  1468.610071.44 1473.13
        3       F       F       0
    9854    .055 9984.14    .05510023.91    .055
                                     F       F 9984.1410023.91       F       F
        0       0       F
        0       F
NODE    1Buchanan Wash   0.929         78      91      96       0
        1
       14
 9858.73  1469.4 9898.43    1466 9919.45    1466 9926.83  1466.4 9950.09  1466.7
 9964.01  1466.7 9976.02  1466.3 9990.52  1466.1   10000  1462.810018.85  1462.8
10027.97  1465.510035.59  1465.710041.15  1466.210066.45  1474.5
        3       F       F       0
 9858.73    .055 9990.52    .05510027.97    .055
                                     F       F 9990.5210027.97       F       F
```

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       0       0       F
       0       F
NODE   1Buchanan Wash   0.912       138     138     138       0
       1
      17
 9850.94  1469.1 9866.78    1468 9886.78    1463 9942.43    1463 9953.46  1465.7
 9973.63    1466 9979.06  1465.9 9984.76  1465.9 9988.33  1464.4 9993.34  1462.6
   10000  1462.210009.95  1462.510023.02  1463.610029.88    146610037.79  1466.5
10041.85  1467.9   10057  1473.8
       3       F       F       0
 9850.94    .025 9984.76    .05510029.88    .055
                                       F       F 9984.7610029.88       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.886       138     129     112       0
       1
      18
 9830.82  1468.4 9844.61    1468  9865.4    1463 9946.58    1463 9950.58    1464
 9954.88  1464.8 9967.43  1465.5 9968.45  1465.4 9982.34  1465.8 9994.82    1461
   10000  1460.610009.82  1461.210015.83  1463.310023.28  1465.710038.87  1465.8
10046.62  1466.610062.04  1468.910068.82  1469.4
       3       F       F       0
 9830.82    .025 9982.34    .05510023.28    .055
                                       F       F 9982.3410023.28       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.861       106     100      89       0
       1
      20
 9781.66  1467.5 9796.59    1467 9813.42    1463 9947.17    1463 9951.17    1464
 9951.37  1464.4 9974.76 1463.97 9981.49  1464.2 9990.82  1461.9 9993.08  1460.9
   10000  1460.410009.97  1460.810016.85  1464.610017.72    146510017.97  1464.9
10027.79  1465.210048.36 1464.9510064.01  1465.210075.47  1466.710091.61    1468
       3       F       F       0
 9781.66    .025 9981.49    .05510017.72    .055
                                       F       F 9981.4910017.72       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.842        93      96      99       0
       1
      18
 9744.78  1466.8 9760.79    1466 9773.85    1463 9942.25    1463 9949.44  1463.3
 9968.95  1463.8 9970.48  1463.7 9986.44  1460.3   10000    146010009.33  1460.3
 10026.1  1464.7   10038  1464.710045.94  1463.910059.55    146410074.23  1465.6
10081.14  1466.110099.54  1466.9 10127.5  1469.5
       3       F       F       0
 9744.78    .025 9968.95    .055 10026.1    .055
                                       F       F 9968.95 10026.1       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.824        66      65      62       0
       1
      33
 9766.67  1466.9 9778.38    1465 9786.38    1463 9949.08    1463 9960.18  1462.9
 9972.98  1462.9  9986.7    1463    9988  1462.9 9997.36  1459.7   10000  1459.5
10006.82  1459.910027.37  1460.510043.47  1464.510047.98  1464.410055.91  1463.7
10057.72  1463.110059.16  1462.410065.36  1463.9 10072.7  1464.110080.67  1463.6
10094.26  1464.410130.05  1464.810134.56  1464.8 10156.8  1465.210164.58  1465.1
10172.74  1465.210179.84  1464.9 10181.7    146510182.88  1465.210191.47  1465.7
10196.74  1466.310197.82  1466.5   10210  1468.3
       3       F       F       0
 9766.67    .025  9986.7    .05510043.47    .055
                                       F       F  9986.710043.47       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.812        71     136     122       0
       1
      26
 9666.07    1467 9707.45    1463 9931.05    1463  9942.2  1463.1 9948.33    1463
  9959.2  1462.7 9984.28 1461.05   10000 1459.0510013.47  1459.110032.82  1464.3
10042.86  1463.910048.17  1462.910050.13 1462.6710057.08    146310058.68  1462.8
10063.07  1463.210065.62 1463.7710070.53  1463.810072.73  1463.710076.17  1463.6
10076.79  1463.510084.53 1463.9310103.94 1464.5110115.96    146510127.98  1466.1
10144.17  1467.2
       3       F       F       0
 9666.07    .025 9948.33    .05510032.82    .055
                                       F       F 9948.3310032.82       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.789        98      98     116       0
       1
      26
 9611.57  1467.5 9650.21    1466 9664.02    1463 9906.66    1463 9919.87  1462.7
 9952.53  1462.5 9959.99  1462.6 9961.39 1462.64 9961.39 1459.3410039.94 1459.34
```

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10039.94  1462.910050.74  1462.610065.32  1462.710076.33 1463.1210106.11  1463.6
10112.38  1464.110123.63  1464.510136.86  1465.410140.46  1465.910146.66  1466.1
 10172.2  1467.310187.65  1468.310217.66    146910268.99 1468.8410297.71  1469.4
10312.39  1470.9
       3       F       F       0
 9611.57    .055 9961.39    .05510039.94    .055
                                       F       F 9961.3910039.94       F       F
       0       0       F
       2       F
 9611.57 9961.39  1467.5       F
10039.9410312.39 1467.74       F
NODE   2Buchanan Wash   0.778                                   0
       1
      13
 9611.57  1467.5 9820.84 1466.09 9961.39  1467.5 9970.84 1467.5910039.94 1467.74
10108.25 1467.9310120.46 1468.0710170.84 1468.5210192.721468.41810217.66    1469
10268.99 1468.8410297.71  1469.410312.39  1470.9
       3       F       F       0
 9611.57    .055 9961.39    .05510039.94    .055
                                       F       F 9961.3910039.94       F       F
       0       0       F
       2       F
 9611.57 9961.39  1467.5       F
10039.9410312.39 1467.74       F
       1
      40
    9000  1473.6 9047.61  1472.4  9080.5  1470.9  9088.1 1469.94 9111.47 1468.99
 9165.84  1468.1 9175.95  1467.7 9185.09 1467.76 9188.83  1465.1  9193.3 1467.58
 9195.73  1467.7 9233.04 1467.44 9257.62 1467.62 9305.68 1469.24 9353.17 1469.39
 9393.28    1469 9412.05 1467.87 9437.64 1467.73 9445.79  1467.9 9497.65  1467.5
    9515  1468.2 9526.31 1467.93 9529.35 1467.71 9611.57  1467.5 9820.84 1466.09
 9959.011467.476 9961.39  1467.5 9970.84 1467.5910039.88 1467.7410039.94 1467.74
10108.25 1467.9310120.46 1468.0710170.84 1468.52   10216 1468.3110238.99 1468.84
10249.15  1468.710263.96  1470.310362.79 1476.6810377.28 1478.0110385.52 1478.29
       3       F       F       0
    9000    .055 9959.01    .05510039.88    .055
                                       F       F 9959.0110039.88       F       F
       0       0       F
       2       F
    9000 9959.01 1462.01       F
10039.8810385.52 1462.71       F
       F     2.6     .95       T 1466.09               F
       1   23.55      60   14.45       F       F       F 1459.34 1458.76
       2       535 th Ave.               F       0       0       F    .013
       8       1       20       0
    .013      .4       1       6      10      60 1459.34  1458.9     .01    .001
    9980    9979    9991    9990 10001.5 10000.5   10012   10011 10022.5 10021.5
NODE   1Buchanan Wash   0.767        316     317     319       0
       1
      64
    9000  1473.6 9047.61  1472.4  9080.5  1470.9  9088.1 1469.94 9111.47 1468.99
 9165.84  1468.1 9175.95  1467.7 9185.09 1467.76 9188.83  1465.1  9193.3 1467.58
 9195.73  1467.7 9233.04 1467.44 9257.62 1467.62 9305.68 1469.24 9353.17 1469.39
 9393.28    1469 9412.05 1467.87 9437.64 1467.73 9445.79  1467.9 9497.65  1467.5
    9515  1468.2 9526.31 1467.93 9529.35 1467.71 9540.86 1466.41 9552.16  1465.5
 9567.87  1465.4 9602.53 1464.97 9661.68  1464.8 9662.88  1464.2 9664.37 1463.76
 9669.24  1465.2 9703.09 1464.38 9764.57    1465 9793.67  1465.7 9850.28  1465.1
 9858.05  1464.5 9868.18 1463.11 9887.64  1461.9 9959.01 1462.01 9963.98 1461.55
 9969.82  1460.3 9975.21 1459.98 9994.11 1460.26 9996.03 1460.5810011.16 1460.68
10015.77  1459.910018.82 1458.76 10029.4 1459.0610039.88 1462.7110044.58 1463.29
10050.26  1463.110052.77 1463.2110073.03 1462.8110090.67 1463.0110104.15 1463.79
10117.09  1464.210142.38  1465.810148.87 1466.02 10187.7 1467.5410249.15  1468.7
10263.96  1470.310362.79 1476.6810377.28 1478.0110385.52 1478.29
       3       F       F       0
    9000    .055 9959.01    .05510039.88    .055
                                       F       F 9959.0110039.88       F       F
       0       0       F
       2       F
    9000 9959.01 1462.01       F
10039.8810385.52 1462.71       F
NODE   1Buchanan Wash   0.707     703.08  591.57  558.08       0
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 9040.821476.5119042.3371476.4699054.879    14769062.599    14769067.4391475.795
9078.3471475.2879098.818    1474 9114.851472.9079128.162    14729139.6051470.602
9146.093    14709161.9041468.0979162.711    14689165.1741467.7049172.292 1466.99
9182.289    14669183.3381465.8179191.3051464.3129193.022    14649193.431    1464
9200.985    1464 9211.63    14649217.332    14649222.717    14649223.176    1464
9223.487    14649224.528    14649229.813    1464 9232.48    14649234.082    1464
9235.984    14649236.082    14649237.756    14649241.378    14649243.263    1464
9274.926    1464 9278.44    14649281.511    1464 9281.58    14649327.692    1464
9332.682    14649335.958    14649336.408    14649337.291    14649392.4851463.115
9417.2741463.1319523.7251462.176 9529.31 1462.13 9531.921462.1119546.141    1462
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 9622.08    14629631.213    14629635.915    1462 9636.55    14629637.299    1462
9640.639    14629642.107    14629654.129    14629658.336    14629664.389    1462
9669.983    14629672.263    14629705.198    14629705.449    14629706.476    1462
9713.721    14629715.769    14629723.987    1462 9725.68    14629725.8751462.017
9726.778    14629727.321    14629727.383    14629728.3261462.057 9728.461462.059
 9728.751462.0749729.0011462.0929732.0191462.3599733.1531462.5199735.3521462.966
 9752.47    14649821.8291462.6429832.8671462.4039852.886    14629854.803    1462
9854.908    14629856.5861461.8839868.0721461.1729893.795    14609897.817    1460
9903.094    14609904.901    14609905.022    14609922.332    14609928.807    1460
9933.612    14609939.881    14609943.167    14609944.247    1460 9948.92    1460
9949.483    1460 9950.35    14609950.839    14609953.397    14609953.975    1460
9981.216    14609991.525    1460 9995.71    1460   10000  1458.910003.021458.245
10004.08    145810006.04    1458   10014    145810018.591459.458 10020.3    1460
10020.57    146010049.631460.92610082.65    146210082.89    146210083.07    1462
10107.031463.47910114.461463.935 10115.5    146410115.75 1464.0210144.26    1466
10149.05 1466.26   10182    146810187.24 1468.3310188.151468.381
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 9040.82    .055 9995.71    .055 10020.3    .055
                                       F       F 9995.71 10020.3       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.595        635  497.19     360       0
       1
     140
 8732.541470.8788734.5851470.7838735.3061470.8038738.7351470.8748742.7241470.726
8749.3481470.8318751.459 1470.778817.5461470.2688824.6471470.156 8834.14    1470
8843.0981469.852 8862.651469.529 8865.721469.4788916.9661468.9468921.3021468.972
8927.9291468.7738930.1781468.7048941.5881469.0898946.9931468.6028947.9921468.528
8956.695    1468  8957.4    14688958.135    14688960.826    14688979.8681467.768
9008.367 1466.949022.4061466.6589035.912    14669045.6071465.4449047.2191465.363
9049.508 1465.289058.3421464.8049069.896    14649071.442    14649115.4021462.848
9141.4771462.1649145.0041462.091 9152.96    14629153.717    14629156.192    1462
9159.557    14629163.955    14629164.251    14629164.315    14629177.088    1462
9187.531 1461.64 9216.731461.2289263.4721461.115 9266.391461.1219269.4621461.128
9280.1231461.0829285.3561461.1029308.2951461.0759324.267 1460.959383.0881460.044
9385.745    14609385.965    14609387.599    14609412.872    14609415.444    1460
9441.917    14609443.356    14609443.933    14609445.773    14609462.5821459.766
9566.2171459.5329599.3181459.4359610.689 1459.389624.5361459.346 9696.571459.049
9851.312    14609859.738    14609868.789    14609870.247    14609871.576    1460
9874.212    14609875.725    1460 9879.261459.9579884.5981459.6849886.1511459.702
9889.4011459.6659895.4121459.2149898.0741459.1319909.968    14589911.349    1458
9927.466    14589930.652    14589930.772    14589932.464    14589937.123    1458
 9962.22    14589962.952    14589963.221    14589967.909    14589981.882    1458
9991.042    14589992.4141457.347 9994.181456.5069997.3881454.987   100001453.788
10002.111452.72610010.911452.853 10019.4    145410022.931455.642 10023.7    1456
10026.891457.48510028.12    145810028.22    145810029.77    1458 10035.1    1458
10049.17    145810078.81    145810085.63    145810109.51    145810116.33    1458
10118.41    145810121.91    145810122.59    145810127.63    145810129.541458.054
10129.961458.068 10133.8 1458.1910190.42    146010193.81    1460 10206.9    1460
 10210.7    146010211.25    146010211.46    146010211.68    146010213.951460.073
10214.871460.10710216.33 1460.1610263.92    146210278.751463.52910282.25    1464
10284.981464.36710287.091464.57610299.51    146610301.161466.18510302.411466.333
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                                       F       F9991.04210028.12       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.501        260  235.61     225       0
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     279
 8635.48    14688642.139    14688647.536    14688649.667    14688650.937    1468
  8675.91467.3768689.1091466.9798721.194    14668726.3651465.0898729.7611464.512
8739.2151464.3258740.4871464.3868752.8941464.6368760.8231465.1498763.3561465.252
8766.1081465.3138768.8931465.5538770.1831465.5968770.9451465.6068774.013    1466
8800.406    14668806.774    14668815.609    14668826.128    14668827.613    1466
8829.278    14668831.712    14668833.399    14668839.277    14668845.919    1466
8850.093    14668865.729    14668895.104    14668900.608    14668904.611    1466
8905.998    14668908.321    14668935.362    14668939.827    14668962.998    1466
8965.164    14668966.265    14668968.021    14668969.869    14668971.068    1466
9021.9451464.5339024.9141464.5149032.4041464.4649041.7141464.4059043.987 1464.39
9045.8091464.3799053.3441464.3289064.1811464.2599065.8981464.2489073.5851464.197
9074.3221464.192 9086.761464.113 9087.641464.1079095.2181464.0579095.3621464.057
9104.262    14649108.899    1464  9109.5    14649120.653    14649121.355    1464
9129.919    14649132.824    14649136.192    14649139.237    14649149.705    1464
9153.155    1464 9156.17    14649182.531 1462.419187.0561462.3219192.3881462.008
9192.4191462.0079192.566    14629195.007    14629195.936    14629203.053    1462
9204.655    14629206.078    14629208.154    14629215.4181462.249 9217.13  1462.3
9225.4251462.6339226.5741462.6549226.6321462.6569227.2621462.681 9232.081462.739
 9244.091463.1199245.6581463.1599245.7051463.1619249.6881463.2789259.6421462.758
9265.6851462.8399267.7231462.8659274.0161462.9279278.864 1462.999327.0151462.623
9339.8931462.6839346.6071462.7179354.705 1462.759358.9151462.7739359.8571462.775
9368.0161462.8159371.3651462.8359372.325 1462.849374.5451462.8369377.6041462.854
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9424.172    14629434.321    14629459.1231463.2719461.0851463.2959468.0521463.331
9469.2081463.3379470.921 1463.359476.3391463.3789476.4881463.378 9477.821463.385
9481.9521463.4079483.5841463.4139502.201    14629505.967    14629508.469    1462
 9556.97    14629558.603    1462 9561.86    14629569.589    14629572.453    1462
9574.869    14629580.071    1462  9592.2    14629595.901    14629597.072    1462
9597.224    14629600.426    14629601.129    14629605.171    14629617.998    1462
 9618.84    14629622.355    14629622.596    14629626.398    14629632.071    1462
9634.653    14629637.311    14629638.515    1462 9647.351461.7529649.9541461.701
9655.9771461.578 9665.391461.3949675.0821461.1839678.3621461.1149702.2791460.593
9729.325    14609750.678    1460  9760.7    1460 9760.87    14609761.161    1460
9761.793    14609773.737    14609807.2051461.0019809.5581461.0799828.0411461.302
9831.0431461.3889832.8871461.3529834.4331461.3259838.4061461.2549840.829 1461.26
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9857.8341460.8579858.2371460.8419865.4271460.6769877.6451460.374 9879.141460.337
9879.268 1460.339882.2341460.2019887.777    14609887.925    14609888.506    1460
9895.839    1460 9896.29    14609898.931    14609902.8691459.4819904.4461459.273
 9904.61 1459.26 9905.051459.2269908.2751458.8419911.751 1458.389914.471    1458
9915.7271457.8259915.8981457.8019917.2351457.5559920.7991456.8999922.4091456.416
9923.797    14569930.1181454.9829936.8021454.642 9942.14    14549949.848    1454
9950.184    14549950.454    14549951.941    14549967.0521454.9099971.3981454.484
9972.1661454.4279976.579    1454   10000    1454 10002.2    145410021.79    1454
10022.96    145410023.03    145410023.341454.03610023.621454.055 10032.91454.956
10033.381454.97510043.99    1456 10045.5    145610058.33    145610067.44    1456
10072.07    145610073.31    145610075.01    145610076.57    145610084.61    1456
10088.93    145610095.68    145610095.91    145610098.55    1456 10116.4    1456
10120.46    145610121.52    145610142.27    145610148.08    145610183.91    1456
10187.68    145610258.37    145610272.53    145610277.22    145610287.14    1456
10312.88    145610349.42    145610356.01    145610362.06    1456 10388.7    1456
10392.75    145610393.88    145610394.12    145610454.941457.02110513.73    1458
10532.071459.92410532.441459.95210532.78    146010532.82    146010548.261460.735
10574.67    146210574.78    146210575.181462.446 10576.6    1464 10577.21464.656
10578.42    1466 10579.11466.74510580.25    1468 10580.5    146810592.121468.428
 10607.71468.98610628.591469.56410633.361469.71610640.561469.932
       3       F       F       0
 8635.48    .0559967.052    .05510043.99    .055
                                    F       F9967.05210043.99       F       F
       0       0       F
       1       F
 8635.489967.052    1455       T
NODE   1Buchanan Wash   0.456        210  210.92     200       0
       1
     277
 8629.371466.6468640.0911466.3568653.045    14668667.635    14668678.398    1466
8685.581    14668693.535    14668766.081    14668769.063    14668769.192    1466
  8772.8    14668774.245    14668776.499    14668782.608    14668790.616    1466
 8791.52    14668799.382    14668799.419    14668800.4151465.858 8802.171465.644
8814.088    14648828.103    14648838.877    14648841.857    14648847.187    1464
8848.731    1464 8848.86    14648850.1551464.053 8855.981464.3578859.1641464.503
8913.084    14668917.431    14668920.275    14668923.665    14668946.138    1466
  8949.51465.9268949.9851465.9298959.4831465.9968960.173    14668960.203    1466
8962.547    14668962.798    14668963.372    14668972.974    14668973.016    1466
8973.104    14668991.538    14669005.479    14669007.818    14669009.094    1466
9021.266    14669021.881    14669024.489    14669025.761    14669084.1681465.231
9112.981    14669127.913    14669128.393    1466 9131.57    14669132.596    1466
9133.818    14669134.178    14669134.557    14669139.692    14669141.932    1466
9142.593    14669143.787    1466 9143.83    14669143.883    14669144.447    1466
 9144.58    14669145.212    14669147.017    14669152.485    14669152.628    1466
 9157.85    14669159.592    14669160.228    14669160.6691465.786 9162.541464.914
9164.201    14649164.307    14649164.602    14649171.877    14649172.101    1464
9180.519    14649187.673    14649234.019    1464 9253.71    14649262.575    1464
9267.764    14649268.228    14649271.305    14649282.9291462.933 9289.471462.798
9299.0761462.6529311.743 1462.389328.998    14629329.974    14629331.755    1462
9331.792    14629343.0451461.7659350.2141461.6289350.2651461.6279360.8991461.489
9364.3421461.4639373.2771461.3429376.6061461.2979377.023 1461.299378.1731461.273
9379.016 1461.269385.5871461.1989393.8471461.0699394.2771461.0619398.1541460.982
9398.6041460.9729407.2141460.8069419.5131460.5179424.178 1460.499430.9261460.414
9443.3541460.185  9447.3    14609456.409    14609456.955    14609462.899    1460
9464.179    14609466.1151459.8699468.649    14609475.965    14609476.535    1460
9478.299    14609480.488    14609481.9511459.7979503.1291459.0169511.3351459.158
9538.227    14609538.274    14609538.4091460.0439538.4191460.0469544.042    1462
9548.841    1462 9554.87    14629567.068 1461.399569.8031461.4189571.4551461.437
9572.5261461.4559575.9521461.4929581.2081461.3249623.135    14609628.683    1460
9635.511    14609643.894    14609653.433    14609657.678    14609668.081    1460
9669.247    14609670.475    14609678.805    14609683.926    14609689.147    1460
9695.397    14609709.986    14609717.548    14609720.999    14609725.183    1460
9729.608    14609737.068    14609743.464    14609746.047    14609758.213    1460
9760.548    14609762.555    14609770.375    14609772.369    14609788.847    1460
9795.627    14609795.724    14609802.096    14609804.062    14609812.851    1460
9814.894    14609818.051    14609818.795    14609825.236    14609827.0861459.813
9830.2591459.4949836.1821458.732 9836.381458.7179838.8971458.5089842.311    1458
9843.134    14589847.8761457.0049853.7621455.4549854.8971455.255 9855.451455.158
9858.2081454.5679858.5751454.4889860.673    1454 9863.881453.2549869.271    1452
9877.0561450.1899877.869    14509883.252    14509890.985    14509894.505    1450
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9959.914    1454 9963.65    14549964.843    14549965.718    14549971.563    1454
9977.948    14549981.7661454.434 9983.05    1454 9983.59    14549984.6861453.724
9985.3031453.568  9986.61453.1069989.704    14529990.0951451.8619991.2051451.465
9994.6371450.4239995.6191450.1259995.7991450.0439995.893    1450   10000    1450
10008.99    145010009.42    145010014.28    145010015.54    145010015.58    1450
 10020.21451.915 10020.4    145210024.681453.77710025.22    145410028.76 1455.47
10030.04    145610030.21    145610030.35    145610034.58    145610036.34    1456
10036.57    145610041.08    145610125.051455.01110130.131454.97210131.43 1454.97
10159.771454.96510192.731454.83910262.851454.50210460.39    145610464.49    1456
10468.59    1456 10478.7    145610479.13    145610481.62    145610482.05    1456
10483.48    145610508.691456.64810562.81    1458 10573.71458.81610589.17    1460
10595.931461.04410602.13    146210607.321462.73510616.59    146410625.941465.209
10634.22    146610634.451466.023
       3       F       F       0
 8629.37    .0559981.766    .05510030.04    .055
                                       F       F9981.76610030.04       F       F
       0       0       F
       1       F
    98509920.828    1454       T
NODE   1Buchanan Wash   0.416        670  601.53     500       0
       1
     190
 8579.83    14648586.223    14648592.832    14648593.379    14648598.017    1464
8598.625    14648600.713    14648632.0671464.237 8632.291464.2388632.6271464.228
8665.9421464.0438666.2551464.0348667.2971464.0358667.5431464.0428667.5891464.044
8673.8691464.1488673.9261464.1498673.9981464.1498688.7361464.5068688.8871464.506
8735.7831464.3858744.5341464.4168744.9981464.4318752.9621464.3448757.1551464.274
8766.5621464.1498768.1431464.1288769.2471464.1218770.9081464.1118778.607    1464
8785.0541464.6368785.9521464.3138787.354    14648789.476    14648792.384    1464
8794.682    14648794.959    14648795.835    14648799.048    14648800.717    1464
 8806.81    14648809.723    14648814.045    14648818.168    14648829.564    1464
8833.584    14648861.581    14648892.718    14648897.862    1464 8904.43    1464
8910.633    14648917.225    14648929.348    14648938.972    14648943.191    1464
8948.451    14648950.631    14648954.894    14648960.915    14648998.1631462.875
9007.2591462.8459054.108    14629061.363    14629095.638    14629100.513    1462
9101.764    14629105.377    14629124.169    14629136.647    14629161.174    1462
 9189.141461.3039219.4941460.845 9245.831460.5469251.0151460.5269279.638    1460
9280.698    1460 9282.19    14609283.126    14609290.461    14609292.982    1460
9294.839    14609304.056    14609335.992    14609344.013    14609363.6771459.676
9393.3551459.5219405.1521459.2879426.9991458.888 9471.46    1458  9531.11456.524
9552.387    14569555.1371455.7059558.7821455.3669573.947    14549580.945  1452.3
9582.116    14529583.0011451.7739589.909    14509589.972    14509594.231    1450
9595.339    14509602.213    14509603.154    14509613.337    14509788.5361448.279
9795.2521448.2219800.5941448.1759819.0581448.2539819.6921448.4049820.3671448.633
9820.9321448.4739821.3551448.5749821.7681448.6969827.269    14509828.6151450.312
9831.0291450.8719833.909 1451.619835.429    14529837.7841452.622  9843.1    1454
9847.304    14549847.306    14549857.489    14549860.769    14549887.096    1454
9891.678    14549943.257    14549965.172    14549965.969    14549977.895    1454
9977.976    1454 9978.35    14549978.712    1454 9978.76    14549985.359    1454
9986.006    1454  9988.61452.7269991.2221451.4239994.114    14509995.4371449.365
9998.516    1448   10000    144810003.91    144810006.74    144810007.651448.479
10013.73    1450 10016.21451.921 10016.3    1452 10016.4  1452.110016.821452.147
10023.48    145410024.93    145410043.881453.40910048.041453.61610050.57    1454
10090.61    145410128.931453.69510138.55 1453.6910142.841453.68610182.031453.473
10204.86 1453.4110299.641453.60110348.321453.91810351.05 1453.9310352.751453.932
10353.331453.93210363.21    145410370.17    145410378.05    145410399.55 1454.26
10424.351454.805 10462.21455.454 10475.2    145610479.121456.733 10485.9    1458
10493.951459.505 10496.6    146010500.431460.71610507.69    146210511.561462.743
10517.721463.94110518.08    146410518.551464.078 10530.1    146610530.591466.061
10548.74    146810550.151468.14410561.511469.228 10569.6    147010584.911471.159
       3       F       F       0
 8579.83    .0559986.006    .05510023.48    .055
                                       F       F9986.00610023.48       F       F
       0       0       F
       1       F
    9500  9843.1    1454       T
NODE   1Buchanan Wash   0.302        180     193     230       0
       1
      79
 9649.66    1456 9664.57    1456 9670.01    1456 9673.15    1456  9673.5    1456
 9675.57    1456 9675.87    1456 9675.94    1456 9695.31 1454.39 9699.21    1454
 9723.42 1452.32 9728.47    1452 9728.84    1452 9729.17    1452 9730.56    1452
 9731.19    1452 9762.67 1451.41 9807.48 1450.59 9821.35    1450 9825.97    1450
 9827.35    1450 9828.05    1450  9838.4    1450 9847.28    1450  9853.7 1450.22
 9856.75 1450.27 9871.57 1450.46 9874.77 1450.51 9883.31 1450.62 9886.85 1450.67
 9902.26 1450.89 9912.54    1450 9914.07    1450 9968.34    1450 9970.34    1450
 9973.33    1450 9977.57    1450 9978.18    1450 9981.03    1450 9983.12    1450
 9983.38    1450 9987.82 1448.09 9988.02    1448 9988.15 1447.95 9988.48  1447.8
 9991.74    1446 9996.51 1445.19 9996.55 1445.1810002.47    144410004.08    1444
10004.57    144410007.25 1445.1110009.65    1446 10011.2 1447.1610012.33    1448
10014.65 1449.7310015.03 1449.9410015.15    145010015.53    145010064.58    1450
 10072.2    145010072.32    145010076.29    145010077.11    145010083.81    1450
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10083.87    1450 10084.4 1450.0210165.23 1450.75 10209.1 1450.82 10226.9 1450.98
10237.43 1451.0610240.22 1451.0910253.92 1451.2510272.83 1451.3510337.64 1451.91
10344.95    145210375.52 1453.7310380.45    145410386.41 1454.66
       3       F       F       0
 9649.66    .055 9983.38    .05510015.15    .055
                                     F       F 9983.3810015.15       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.266        380  467.87     590       0
       1
      84
 9677.35    14569686.064    14569687.1281455.9659688.9881455.9139756.171    1454
9762.9951453.7799815.152    14529815.674    14529825.187 1451.359846.129    1450
9847.472    14509849.528    14509860.794    1450 9867.46    14509875.183    1450
9939.197    14509945.714    14509954.301    14509962.389    14509962.606    1450
9966.592    14509966.684    14509972.453    14509976.293    14509977.096    1450
9984.769    14509986.5941448.5199989.107 1446.489989.3361446.2959989.699    1446
9991.2691444.7279992.355    14449993.222    14449993.631    14449997.361    1444
9999.153    144410003.77    144410007.53    144410008.951445.43710009.51    1446
10010.881447.38910011.48    144810012.711449.24910013.131449.67410013.41    1450
10030.27    145010030.42    1450 10040.5    145010053.12    145010054.75    1450
10080.79    145010082.05    1450 10097.5    145010119.92    145010119.97    1450
10126.63    145010135.92    145010140.01    145010148.42    1450 10150.9    1450
10184.56    145010202.99    145010223.62    145010228.57    145010293.371450.715
10302.77  1450.810427.33    145210427.46    1452 10427.7    145210431.471452.208
10449.221453.00810452.311453.11910468.121453.90410468.521453.925 10469.11453.952
10470.03    145410487.461454.727   104971454.966 10504.1  1455.210511.321455.339
 10514.51455.35610524.581455.731 10525.61455.75910527.351455.828
       3       F       F       0
 9677.35    .0559984.769    .05510013.41    .055
                                     F       F9984.76910013.41       F       F
       0       0       F
       0       F
NODE   1Buchanan Wash   0.177        515  487.43  487.43       0
       1
      69
 9674.62    14529678.067    14529700.544    14529729.273    14529729.811    1452
9739.118    14529743.646    14529754.261    14529760.141    14529774.887    1452
9828.6131450.7089839.2081450.5969869.0641450.2559878.0851450.1489882.4611450.132
9890.542    14509891.9811449.6799900.362    14489906.1951446.8319909.876    1446
9913.1381445.2639918.732    14449922.8821443.0639927.588    14429933.501    1442
9944.819    14429949.677    14429957.674    14429960.466 1442.299972.593    1444
9976.378    14449979.425    14449998.891    144410006.83    144410013.541445.556
10015.51    144610023.511447.86310024.09    144810029.571449.27610032.69    1450
10033.061450.08710041.29    1452 10042.71452.32810049.89    145410052.331454.569
10058.48    145610065.271457.59610066.95    145810067.931458.31310073.21    1460
10081.71    146010091.64    146010094.96 1458.7310098.281457.45310104.391455.125
10106.26 1454.4110107.33    145410112.351452.08210112.56    1452 10113.9 1451.73
 10120.11450.46910124.19    145010126.31    145010131.82    145010135.48    1450
10150.171449.519 10160.31449.51310165.59 1449.5110168.961449.524
       4       F       F       0
 9674.62    .0559913.138    .0559972.593    .05510006.83    .025
                                     F       F9913.1389972.593       F       F
       1       0       F
   1008010168.96    1460
       0       F
NODE   1Buchanan Wash   0.085        245  224.46  224.46       0
       1
     126
 9361.87    1466 9365.14    1466 9367.83 1465.56 9369.51 1465.29 9370.65  1465.1
 9373.66 1465.25 9391.92 1465.91  9392.1 1465.94  9393.3 1465.99 9393.58    1466
 9393.84 1465.95 9403.44    1464 9413.27 1462.01  9413.3    1462 9416.53 1461.42
 9418.86    1461 9424.88 1460.04 9425.02 1460.02 9425.06 1460.01 9428.68 1459.39
 9431.63 1458.88 9436.84    1458 9437.01 1457.97 9437.31 1457.92 9442.39 1457.03
 9448.31    1456 9448.99 1455.94 9449.15 1455.93 9449.35 1455.91 9459.85 1455.14
 9461.39 1455.18 9462.16 1455.13 9465.02 1454.84 9467.77 1454.62 9469.81 1454.47
 9471.13 1454.34 9477.55 1455.08 9480.53 1454.98 9500.12    1454 9521.99    1454
 9544.34    1454 9550.75    1454 9562.74    1454 9568.49    1454  9569.5    1454
 9574.92    1454 9576.06    1454 9578.23    1454 9585.09    1454 9658.46    1454
 9660.55    1454 9661.41    1454  9664.1    1454 9667.28 1453.62 9674.48    1452
 9678.66 1450.98 9682.67    1450 9688.09 1448.68 9690.86    1448 9697.51 1446.38
 9699.04    1446 9706.36 1444.22 9707.23    1444 9715.34 1442.78 9720.43    1442
 9721.28    1442  9745.4 1440.21  9747.7    1440 9813.98    1440 9827.74    1440
 9839.93    1440 9845.24    1440 9845.78    1440 9855.04 1441.05 9862.39 1441.56
 9866.01    1442 9866.71    1442  9870.8    1442 9877.62    1442 9883.92    1442
 9886.02    1442 9887.35    1442 9887.89    1442 9898.24    1442 9900.37    1442
 9908.53    1442 9913.91    1442 9943.81    1442  9974.8    1442    9975    1442
 9975.23 1442.11 9979.15    1444 9982.32    1444 9985.95    1444 9987.52 1443.41
 9991.26    1442 9996.24    1442 9997.72    1442   10000 1442.1610020.49 1443.68
10022.09    144410024.48 1444.5210037.54 1447.5810039.37    144810039.47 1448.03
10039.73 1448.0910047.76    145010050.28  1450.610055.69    145210058.78  1452.8
10063.41    145410068.35 1455.2810071.13    1456   10076 1457.2610078.85    1458
10079.95  1458.310086.43 1459.9710086.57    146010086.68    1460 10109.7    1460
10112.25 1458.9610118.66 1456.3510120.56 1455.5710126.94 1452.9810129.23    1452
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10135.49 1451.89
       3        F        F        0
 9361.87     .055  9664.1     .055 9997.72     .025
                                   F        F  9664.110086.57        F        F
       0        0      F
       0        F
NODE   1Buchanan Wash   0.043          0        0        0        0
       1
      54
 9921.66     1460 9923.24     1460 9930.85     1460 9936.35     1460 9938.28  1459.5
 9942.85     1458 9944.38 1457.49 9948.17     1456 9950.25  1455.2 9953.09    1454
 9954.38 1453.54 9958.66     1452 9959.52 1451.69 9961.31 1451.05 9964.05    1450
 9966.52 1449.73 9980.52     1448 9983.33 1447.05 9986.43     1446 9990.28  1444.7
 9992.43     1444 9994.96 1443.16 9998.36     1442   10000     144210006.02    1442
10016.11     144210020.05  1443.310022.18     144410027.52 1445.7510028.31    1446
 10035.4 1446.8510045.48     144810049.85  1448.910055.17     145010060.69 1451.17
10064.67     145210072.33 1453.6710075.18 1454.2910082.12     145610087.99 1457.69
10089.23     145810090.21 1458.2410097.28     146010115.21     146010120.93    1460
10123.95 1458.7910125.91     1458 10129.1 1456.72 10130.9     145610135.46 1454.17
10135.88     145410136.16 1453.8910142.79     1452 10143.6     1452
       3        F        F        0
 9921.66     .025 9998.36     .05510016.11     .025
                                   F        F 9980.5210028.31        F        F
       0        0      F
       1        F
   10100 10143.6 3.1E+38        T
 0
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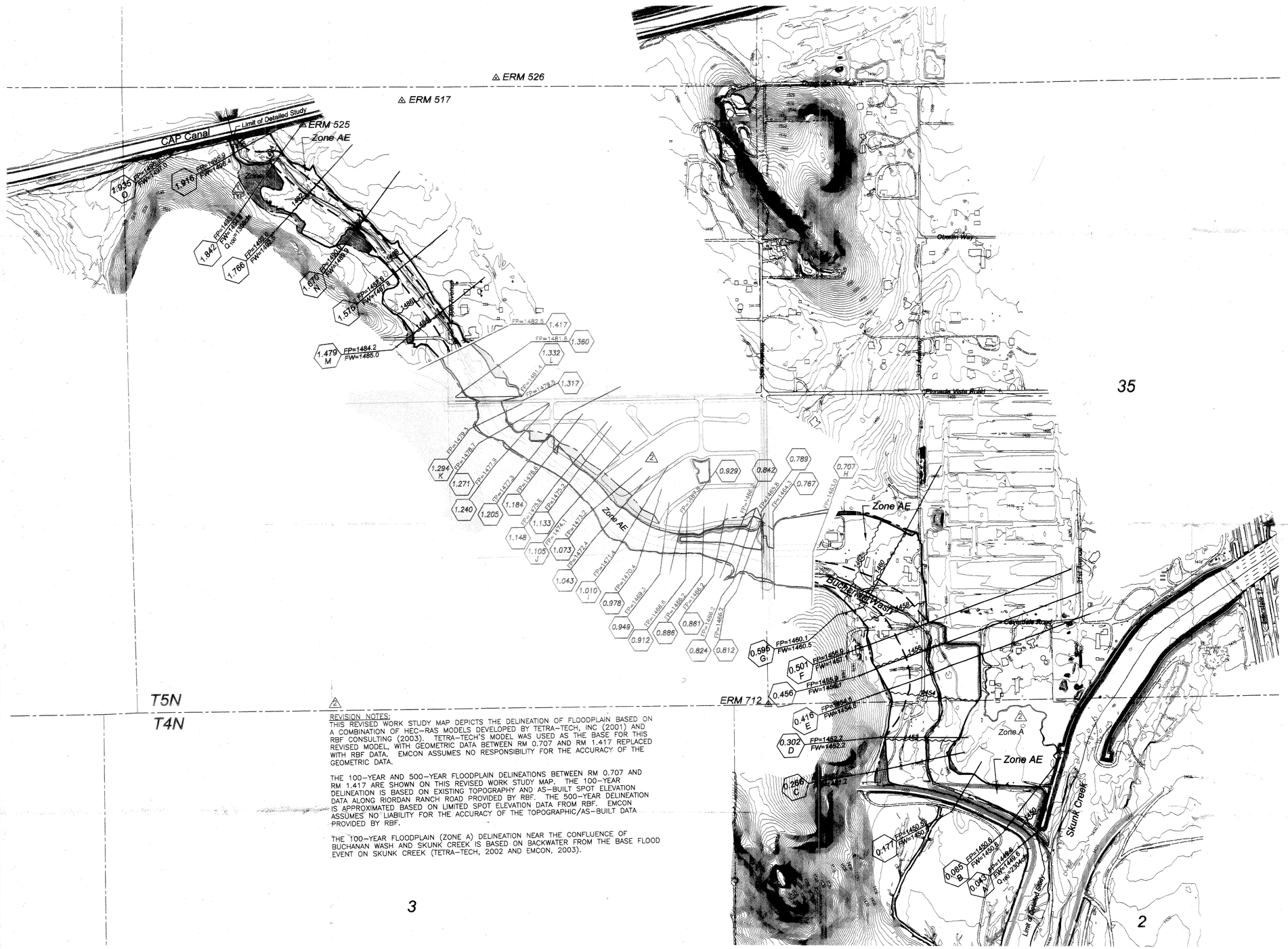

REVISION NOTES:
THIS REVISED WORK STUDY MAP DEPICTS THE DELINEATION OF FLOODPLAIN BASED ON A COMBINATION OF HEC-RAS MODELS DEVELOPED BY TETRA-TECH, INC (2001) AND RBF CONSULTING (2003). TETRA-TECH'S MODEL WAS USED AS THE BASE FOR THIS REVISED MODEL, WITH GEOMETRIC DATA BETWEEN RM 0.707 AND RM 1.417 REPLACED WITH RBF DATA. EMCON ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE GEOMETRIC DATA.

THE 100-YEAR AND 500-YEAR FLOODPLAIN DELINEATIONS BETWEEN RM 0.707 AND RM 1.417 ARE SHOWN ON THIS REVISED WORK STUDY MAP. THE 100-YEAR DELINEATION IS BASED ON EXISTING TOPOGRAPHY AND AS-BUILT SPOT ELEVATION DATA ALONG RIORDAN RANCH ROAD PROVIDED BY RBF. THE 500-YEAR DELINEATION IS APPROXIMATED BASED ON LIMITED SPOT ELEVATION DATA FROM RBF. EMCON ASSUMES NO LIABILITY FOR THE ACCURACY OF THE TOPOGRAPHIC/AS-BUILT DATA PROVIDED BY RBF.

THE 100-YEAR FLOODPLAIN (ZONE A) DELINEATION NEAR THE CONFLUENCE OF BUCHANAN WASH AND SKUNK CREEK IS BASED ON BACKWATER FROM THE BASE FLOOD EVENT ON SKUNK CREEK (TETRA-TECH, 2002 AND EMCON, 2003).

THE BASE TOPOGRAPHIC MAPPING USED TO CONDUCT THIS FLOODPLAIN DELINEATION STUDY WAS PREPARED BY M & B AERIAL MAPPING COMPANY, INC. THIS MAPPING IS BASED ON AERIAL PHOTOGRAPHY TAKEN FEB 11, 2000 AND JAN 24, 2001. PROJECT CONTROL WAS PROVIDED BY MORRISON-MAIERLE, INC. TETRA TECH, INC. ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE CONTROL SURVEY OR THE BASE TOPOGRAPHIC MAPPING.

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE	
500-YEAR FLOODPLAIN BOUNDARY (1)	
CROSS SECTION	0.10 A — FP= 1483.6 (FLOODPLAIN WATER SURFACE ELEVATION); FW= 1483.0 (FLOODWAY WATER SURFACE ELEVATION); CROSS SECTION INDEX MAP; INDEX CROSS SECTION
ELEVATION REFERENCE MARK	ERM XXX
BASE FLOOD ELEVATION	1462
SFH ZONE DESIGNATION	ZONE AE
AREA BETWEEN 100-YEAR AND 500-YEAR FLOODPLAINS (1)	

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929. CONVERSION FACTOR: NGVD 1929 +1.95' = NAVD 1988

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
517	1500.60	FOUND U.S. DEPARTMENT OF INTERIOR BRASS CAP ALONG C.A.P. CANAL. STAMPED POINT #44, STATION 373+41.83 150' RIGHT N: 996,684.42 E: 430,995.55
525	1502.21	FOUND U.S. DEPARTMENT OF INTERIOR BRASS CAP ALONG C.A.P. CANAL. POINT #43 STATION 386+00, 125' RIGHT N: 996,480.99 E: 430,163.65
526	1500.11	FOUND U.S. DEPARTMENT OF INTERIOR BRASS CAP ALONG C.A.P. CANAL. STAMPED POINT #44, STATION 402+67.37 125' RIGHT N: 996,877.09 E: 431,783.43
712	1555.08	FOUND STONE AT THE SOUTHEAST CORNER OF OF SECTION 34 T5N R2E N: 991,520.42 E: 434,056.21

(2) Shaw™ EMCON/OWT, Inc.

ADDED REVISED FLOODPLAIN BY OTHERS (SEE REVISION NOTES) AND ZONE A FLOODPLAIN RESULTING FROM BACKWATER AT THE SKUNK CREEK/ BUCHANAN WASH CONFLUENCE FROM THE BASE FLOOD ON SKUNK CREEK

(1) ADDED 500-YEAR FLOODPLAIN

Shaw™ EMCON/OWT, Inc.

NO.	REVISION	BY	DATE
2			
1			

CITY OF PHOENIX
MARICOPA COUNTY, ARIZONA

BUCHANAN WASH

WORK STUDY MAP

LETTER OF MAP REVISION

400 0' 400 800
SCALE: 1"= 400 FEET
CONTOUR INTERVAL = 2 FEET

TETRA TECH, INC.
INFRASTRUCTURE SOUTHWEST GROUP
4801 East Washington Street, Suite 260, Phoenix, AZ 85034
(480) 968-2000 FAX (480) 944-1164

	BY	DATE
DESIGN	DEJ	10/2001
DESIGN CHK.	BSB	10/2001
PLANS	CBC	10/2001
PLANS CHK.	BSB	10/2001

SHEET 01 OF 01

Figure 2