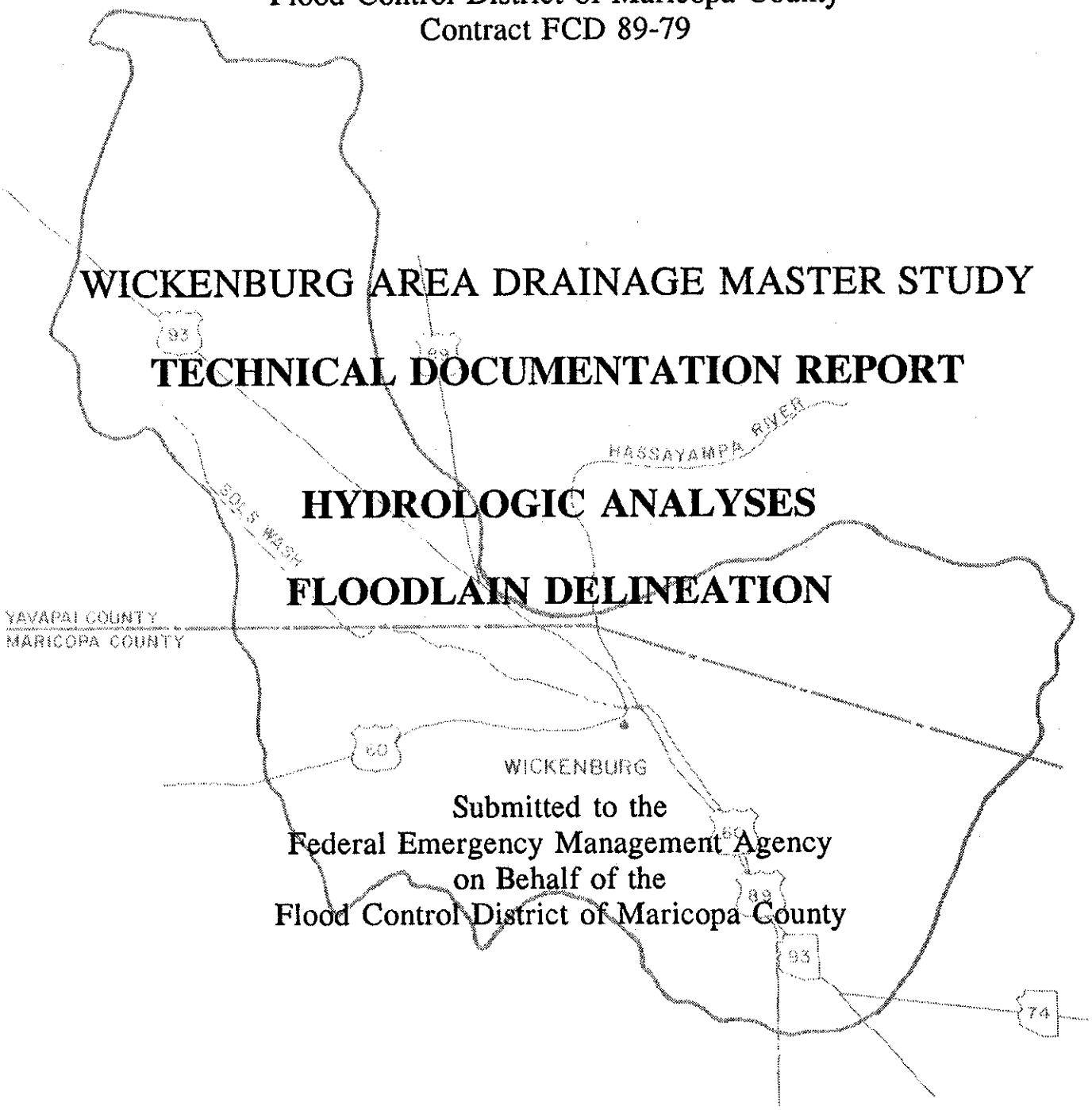
Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

HYDROLOGIC ANALYSES

FLOODLAIN DELINEATION



Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

BLACK & VEATCH
PROGRESS BY DESIGN

COE & VAN LOO
PLANNING • ENGINEERING
LANDSCAPE ARCHITECTURE

Project No. 17676

May 1994

CVL No. 1197-02

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.4: HEC-2 Models & Cross Section Plots for East Area Wash MOCKINGBIRD WASH (Wash e)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1197\02\ADMIN\119702RP.063

May 1994

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: UNINCORPORATED MARICOPA COUNTY / TOWN OF WICKENBURG

Flooding Source: WASH E: Mockingbird Wash
(One form for each flooding source)

Project Name/Identifier: WICKENBURG ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

- [x] Approximate study stream (Zone A)
- [x] Detailed study stream (briefly explain methodology) TR-20 Model

2. REASON FOR NEW HYDROLOGIC ANALYSIS

- [ ] No existing analysis
- [ ] Improved data *(see data revision on page 3)*
- [ ] Changed physical conditions of watershed *(explain)*
- [x] Alternative methodology *(justify why the revised model is better than model used in the effective FIS)* Hydrologic analysis method standardized by Flood Control District of Maricopa County
- [ ] Evaluation of proposed conditions (CLOMRs only) (explain)
- [x] Other No existing analysis or analysis being updated to reflect existing conditions

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

- [x] Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
  Attach evidence of approval.
- [ ] Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: WASH E: MOCKINGBIRD WASH

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
Confluence w/ Hassayampa R.	FIS-6.9 Rev-10.3	5,060	3,459

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

NA

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data	_____	_____
Systematic	_____	_____
Historical	_____	_____
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers	_____	_____
Low outliers	_____	_____
Zero events	_____	_____
5. Generalized skew	_____	_____
6. Station skew	_____	_____
7. Adopted skew	_____	_____
8. Probability distribution used (justify if log-Pearson III was not used)	_____	_____
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:

NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
8. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		VER 3.0
	Date:		02 AUG 88
2.	Source of rainfall depth:		NOAA ATLAS 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 HOURS
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-GRAPH
7.	Loss rate method:		GREEN-AMPT
	Source of soils information:		SCS
	Source of land use information		TOWN of WICKENBURG
8.	Channel routing method:		NORMAL DEPTH
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☐ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
12.	Model calibration:	☐ Yes ☐ No	☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE VS DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County

13.	Future land use condition:	☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA – NO FLOW RECORDS

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH E: Mockingbird Wash
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.241

Upstream limit: Station 2.269

2. EFFECTIVE FIS

☐ Not studied

☒ Studied by approximate methods

Downstream limit of study .7 mi. Upstream from US 60-89

Upstream limit of study 1.0 mi Upstream from US 60-89

☒ Studied by detailed methods

Downstream limit of study US. Hwy 60-89

Upstream limit of study Approx .7 mi

☒ Floodway delineated

Downstream limit of Floodway Same as detailed

Upstream limit of Floodway " " "

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. *(Check all that apply)*

☐ Not studied in FIS

☒ Improved hydrologic data/analysis. Explain: Hydrologic Analysis procedures standardized by the Flood Control District of Maricopa County

☒ Improved hydraulic analysis. Explain: Cross sections from current 4 ft contour photogrammetry - ± 1/4 C.I. accuracy from spotelevations taken from stereo models

☐ Flood control structure. Explain:

☐ Other. Explain:

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model
(Proposed Effective Model)

4. MODEL PARAMETERS *(from model used to revise 100-year water surface elevation)*

Discharges:	Upstream Limit	Downstream Limit
10-year		
50-year		
100-year	2167	3459
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevation determined by the Slope-Area Method

3. Give range of friction loss coefficients (*Manning's "N"*) Channel 0.030

Overbanks 0.045

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

Location	FIS	Revised
NA		

Explain:

4. Describe how the cross section geometry data were determined (*e.g., field survey, topographic map, taken from previous study*) and list cross sections that were added.

Data points for cross sections are based on the photogrammetric models for the topographic maps

5. Explain how reach lengths for channel and overbanks were determined:

All reach lengths were measured from floodplain work maps.

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☒ Yes ☐ No

(If yes, Special Problem Report attached)

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? 19.85

Specify location 1.012

3. What is the distance between the cross-sections in 2 above? 760

Specify location 1.012

4. What is the maximum distance between cross-sections? 760

Specify location 1.012

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... 0.6 foot

Specify location ..... Sta 0.774

c. What is the maximum velocity? ..... 13.3 fps

Specify location 0.283

Explain:

d. Are there any negeative surcharge values at any cross-section ☒ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge. Maximum negative surcharge is -0.1 ft. This is a result of downstream encroachment that increases velocity and slightly lowers WSEL at the section

6. Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ..... ☐ Yes ☒ No

If Yes, explain:

7. Do 100-year water surface elevations increase at any location? ..... ☐ Yes ☒ No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

NA- New Model

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section NA within _____ feet and upstream of the project at cross section _____ within _____ feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section NA within _____ feet and upstream of the project at cross section _____ within NA feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME: Unincorporated Maricopa County/ Town of Wickenburg

FLOODIND SOURCE:

PROJECT NAME /IDENTIFIER: Wickenburg ADMS FCD89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS: New Model - See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

Sheet 1 of 1

FLOODWAY DATA, WASH E: MOCKINGBIRD WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
.241	85.	332.	10.4	1985.0	1985.0	.0
.283	43.	260.	13.3	1990.7	1990.7	.0
.294	43.	353.	9.8	1993.9	1993.9	.0
.299	55.	426.	8.1	1994.3	1994.3	.0
.303	41.	344.	10.0	1994.3	1994.3	.0
.311	41.	322.	10.7	1994.6	1994.6	.0
.338	132.	414.	8.3	1996.7	1996.6	.1
.372	106.	369.	9.4	2000.3	2000.4	-.1
.420	62.	310.	11.2	2006.0	2006.0	.0
.502	118.	382.	9.1	2015.3	2015.3	.0
.563	232.	509.	6.8	2020.7	2020.7	.0
.613	299.	536.	6.4	2027.4	2027.3	.1
.685	244.	512.	6.8	2035.0	2034.9	.1
.774	393.	530.	6.5	2045.3	2044.7	.6
.868	370.	432.	8.0	2055.2	2055.2	.0
1.012	223.	284.	7.6	2074.9	2074.9	.0
1.105	129.	326.	6.6	2089.1	2088.5	.6
1.186	116.	276.	7.9	2102.3	2102.3	.0
1.253	246.	419.	5.2	2110.3	2110.3	.0
1.370	139.	310.	7.0	2126.3	2126.3	.0
1.461	44.	198.	10.9	2141.2	2141.2	.0
1.532	27.	167.	13.0	2147.6	2147.6	.0
1.626	31.	181.	12.0	2165.9	2165.9	.0
1.719	51.	212.	10.2	2177.6	2177.6	.0
1.779	192.	295.	7.3	2186.8	2186.8	.0
1.860	513.	452.	4.8	2199.7	2199.7	.0
1.937	402.	416.	5.2	2209.4	2209.4	.0
1.977	261.	385.	5.6	2216.5	2216.5	.0
2.045	168.	320.	6.8	2226.4	2226.4	.0
2.174	112.	272.	8.0	2241.3	2241.3	.0
2.229	167.	317.	6.8	2250.7	2250.7	.0
2.269	99.	264.	8.2	2255.6	2255.6	.0
-.868	385.	435.	5.0	2055.2	2055.2	.0
.929	153.	199.	5.3	2061.4	2061.4	.0
1.003	200.	157.	4.5	2069.1	2069.1	.0
1.094	130.	152.	4.7	2081.5	2081.5	.0

Wickenburg ADMS FCD 89-79

EXPLANATORY NOTES FOR
FORM 4 SECTION 5 PARAGRAPH 1.C

This watercourse islocated in a mountainous area. It is common for this watercourse to flow in subcritical, supercritical, and transitional flow regimes. The subcritical profile has been used to delineate the 100 year floodplain and prepare maps, tables, etc.

Town of Wickenburg (CID 040056) and Unincorporated Maricopa County (CID 040037) Arizona.

November 1992.

Black & Veatch (PN 17676) / Coe & Van Loo (JN 1197) for the Flood Control District of Maricopa County (Contract FCD 89-79).

Mockingbird Wash (Wash E)

Reference Report Section 4.5. Special Problems Report (Appendix 1.1)

PREPARER: Black & Veatch.

LOCATION/SPECIAL PROBLEM DESCRIPTION:

MOCKINGBIRD WASH AT ROUTE 93 (WASH E)

MAP SHEET 18

Structures at State Route 93 and Mockingbird Wash (Wash E). Affected area is shown on sheet 18. The HEC-2 model pertaining to the wash is WASHE.* on the ETRIBS diskette. The complexity of physical conditions is not represented well by the HEC-2 model. Manual calculations are attached.

The State Route 93 structures over Mockingbird Wash will not carry the 3459 cfs 100-year flood peak flow. There are separate structures for the eastbound and westbound lanes. The eastbound structure is a 4-10x8x56 ft reinforced concrete box culvert. The effective height is 5 ft, as there is approximately 3 ft of sediment. The westbound structure is a 2-20 ft span reinforced concrete bridge with an effective height of 3.5 ft. The structures are separated by 50 ft of open channel. The top-of-road elevation of the two structures is virtually identical.

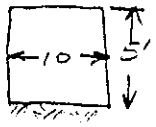
As expected, the initial attempts at representing the structures within the model using special bridge and special culvert methods resulted in numerous error messages and unreasonable results. Manual calculations use basic weir and orifice equations to calculate the water surface elevation just upstream of the highway. Elevations at the bridge sections and sections immediately upstream are entered into the HEC-2 model using the X5 card.

EAST BOUND STRUCTURE

$Q = 3459$

$Q_{culvert} = 3459/4 = 865$

4 - 10'x5' RCB



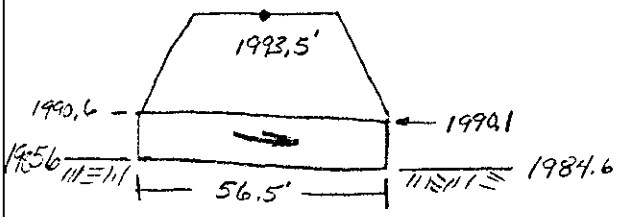
$A = 50 ft^2$

$P_w = 30 ft$

$R = 1.67 ft$

$n = 0.020$

$S_o = 0.0177$



$S_o = (1985.6 - 1984.6)/56.5 = 0.0177$ ft/ft

ASSUME OUTLET CONTROL (CULVERT FLOWING FULL ∴ TW = 1990.1)

$$H = \left(K_e + 1 + \frac{29 n^2 L}{R^{4/3}}\right)\frac{Q^2}{64.4 A^2}$$

$$K = K_e + 1 + \frac{29 n^2 L}{R^{4/3}} = 0.5 + 1 + \left(\frac{29(.02)^2(56.5)}{(1.67)^{4/3}}\right)$$

$K \Rightarrow 1.83$

$$H = 1.83\left(\frac{(865)^2}{(64.4)(50)^2}\right)$$

$H = 1.83(4.64)$

$H = 8.50$ ft

$H = S_o L + HW - TW$

$H = 0.0177(56.5) + HW - (1990.1 - 1984.6)$

$8.50 = 1 + HW - 5.5$

$8.50 = HW - 4.5$

$HW = 13.0 \Rightarrow WSEL = 1985.6 + 13.0$

$WSEL = 1998.6$ ft

ASSUME INLET CONTROL (OUTLET FLOWING PARTIALLY FULL ∴ TW = 1987.4'

$$Q = A\sqrt{\frac{2gh}{K}}$$

$K = 1.83$ $Q = 3459$ $A = 50 ft^2$

$Q/4 = 865$

$$865 = 50\sqrt{\frac{2(32.2)h}{1.83}} \Rightarrow 299.3 = 35.2(h)$$

$h = 8.5$

$h = HW - TW \Rightarrow 8.5 = HW - 1987.4$

$HW = 1995.9$ ft

OUTLET CONTROL

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

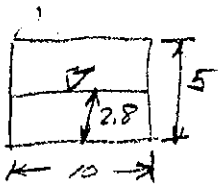
DO NOT WRITE IN THIS SPACE

P-GN-172A

VERIFY OUTLET CONTROL USING MANNINGS EQUATION

FLOWING FULL $Q = \frac{1.49}{n} A R^{2/3} S^{1/2} = \frac{1.49}{0.02}(50)(1.67)^{2/3}(0.0177)^{1/2} = 697.6$ cfs

PARTIALLY FULL



$A = 50 ft^2$

$P_w = 15.6 ft$

$R = \frac{50}{15.6} = 3.21$

$Q = \frac{1.49}{0.02}(50)(3.21)^{2/3}(0.0177)^{1/2} = 1078.4$ cfs

THUS, FRICTIONAL RESISTANCE OF TOP OF CULVERT BARREL SIGNIFICANTLY REDUCES FLOW

VERIFY OUTLET CONTROL USING SAME STARTING ASSUMPTIONS (SEE PAGE 3)

CALCULATE CRITICAL DEPTH (d_c)

$\frac{Q^2}{g} = \frac{A^3}{T}$ $Q = 865$

$\frac{(865)^2}{32.2} = \frac{(10 d_c)^3}{10}$

$d_c = \frac{1}{10}\left(\sqrt[3]{\frac{(865)^2(10)}{32.2}}\right)$

$d_c \approx 6.1$ ft

HEC-2 METHOD

$Y_c = \sqrt[3]{\frac{q^2}{g}}$

$q = Q/SPAN = 865/10 = 86.5$

$Y_c = \sqrt[3]{\frac{(86.5)^2}{32.2}}$

$Y_c = 6.1$

IF $D < d_c$ then Culvert flows full

$5' < 6.1'$

$D = 5$ ft

Culvert Flows Full

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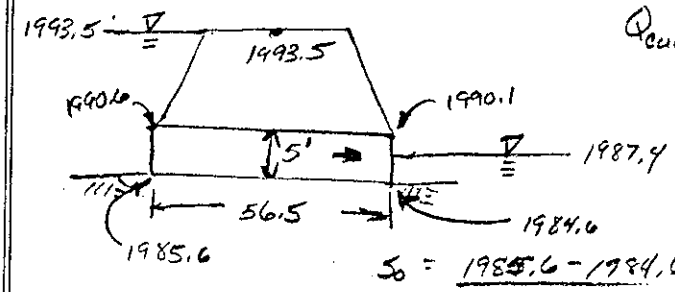
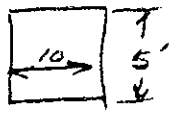
REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

4 - 10'x5' RCB $Q = 3459$

$Q_{culvert} = 3459/4 = 865$ cfs





$A = 50 ft^2$
$P_w = 30'$
$R = 1.67$
$n = 0.020$

$$S_o = \frac{1985.6 - 1984.6}{56.5} = 0.0177$$

$$S_oL = 0.0177(56.5) = 1.0'$$

UNDER ASSUMED CONDITIONS ABOVE

ASSUME OUTLET CONTROL (EXIT FLOWING FULL) TW = 1990.1

$$H = \left(K_e + 1 + \frac{29 n^2 L}{R^{4/3}}\right)\frac{Q^2}{2gA^2} \qquad .5 + 1 + \frac{29(.02)^2 56.5}{(1.67)^{4/3}} = 1.83$$

$$HW + S_oL - TW = 1.83\left(\frac{Q^2}{64.4(50)^2}\right)$$

$$(1993.5 - 1985.6) + 1 - (1990.1 - 1984.6) = 1.83\left(\frac{Q^2}{64.4(50)^2}\right)$$

HW = 7.9, S_oL = 1

$$Q = \sqrt{\frac{3.4(64.4)(50)^2}{1.83}}$$

$Q \approx 547$ cfs

ASSUME INLET CONTROL (EXIT FLOWING PARTIALLY FULL)

$K = 1.83$ $h = HW - TW$

$$Q = A\sqrt{\frac{2gh}{K}}$$

$h = 1993.5 - 1987.4$

$h = 6.1$

$$Q = 50 ft^2 \sqrt{\frac{64.4(6.1)}{1.83}} = 733 \text{ cfs}$$

OUTLET CONTROL → IS CONTROLLING CONDITION

VERIFY OUTLET CONTROL USING MANNINGS EQUATION

$R = 1.67$ $Q = 1.49/.02\,(50)(1.67)^{2/3}(.0177)^{1/2} = 698$ cfs (Flowing Full)

$R = 3.21$ $Q = 1.49/.02\,(50)(3.21)^{2/3}(0.0177)^{1/2} = 1078.4$ cfs (Partially Full)

REDUCES FRICTIONAL RESISTANCE OF TOP OF CULVERT SIGNIFICANTLY

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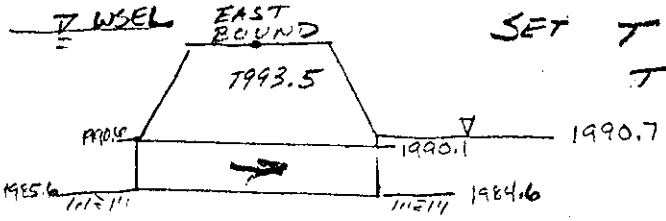
DETERMINE HW – WITH OUTLET CONTROL & WEIR FL.
SINCE OUTLET SUBMERGED



SET TW = d_c + 1984.6 d_c = 6.1 ft
TW = 1990.7'

Q_c = 865

$S_o L$ = 1 ft

$H = S_o L + HW - TW = 1 + HW - 1990.7$

$K_e + \frac{29 n^2 L}{R^{4/3}} + 1 = 1.83$

$HW - 1989.7 = \left(K_e + \frac{29 n^2 L}{R^{4/3}} + 1\right) \frac{Q^2}{2g A^2}$

$HW - 1989.7 = 1.83 \left(\frac{Q^2}{64.4 (50)^2}\right)$

$Q_c = \sqrt{\frac{HW - 1989.7 (64.4)(50)^2}{1.83}}$

WEIR FLOW
$Q = C L H^{1.5}$
C = 2.8
L = (Varies)
H = WSEL - TOR
H = WSEL - 1993.5

HW	Q_c	H	~L	Q_W	Q_{TOTAL}
1993.5	578	0		0	578
1993.6	586	0.1	89	8	594
1993.8	601	0.3	244	112	713 (-152)
1994.0	615	0.5	358	354	969 (+104)
1994.2		0.7			
1994.4		0.9			
1994.6		1.1			
1994.8		1.3			
1995.0		1.5			
1993.9	608	0.4	334	237	942 (+77)

WSEL ≃ 1993.9 ft

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REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

BLACK & VEATCH
ENGINEERS-ARCHITECTS

Owner: WICKERSHOPE ADMS
Plant: _____ Unit: _____
Project No. 17674 File No. _____
Title: EAST BOULD WEIR LENGTHS

Computed By: JAH
Date: 11/19/1994
Checked By: _____
Date: _____ 19__
Page 5 of 8

675	~~SETA~~	~~ELEV~~ 1993.1	~~ENDTA~~	L
		1995.1	1491	
	718.7	1995.0	1447	→ 728
		1994.9	1403	
	731.3	1994.8	1372	→ 641
	743.8	1994.6	1310	→ 566
	756.2	1994.4	1248	→ 492
		1994.3	1217	
	768.7	1994.2	1193.5	→ 425
775		1994.1	1170	→ 395
	788	1994.0	1146	→ 358
	789	1993.9	1123	→ 334
	814	1993.8	1058.3	→ 244
840		1993.6	929	→ 89

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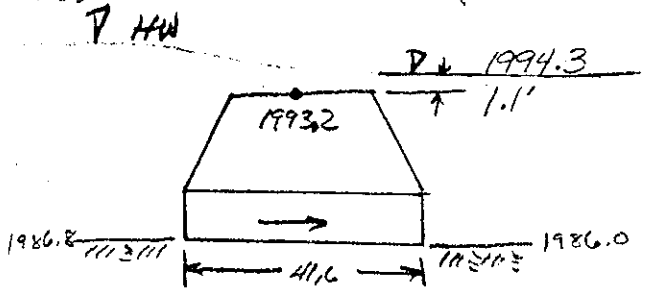
REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

ASSUME: WSEL = 1992.9 + (1986.0 − 1985.6) = 1994.3'

$Q = 3459$

$Q_{CULVERT} = 1730$ cfs



$A = 70$ ft

$P_w = 47$ ft

$R = 1.49$

$S_o = 0.0192$

$S_o L = 0.8$

- ASSUME HW @ EAST BOUND STRUCTURE = TW @ WEST BOUND STRUCTURE SINCE OUTLET SUBMERGED — OUTLET CONTROL CONDITIONS

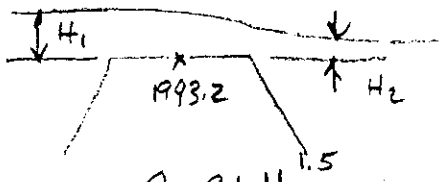
$$H = S_o L + HW - TW = 0.8\ HW - 1994.3 = \left(K_e + \frac{29 n^2 L}{R^{4/3}} + 1\right)\frac{Q^2}{2gA^2}$$

$$1 + K_e + 29n^2 L/R^{4/3} = 0.5 + \frac{29(.020)^2(41.6)}{(1.49)^{4/3}} = 1.78$$

$$HW - 1993.5 = 1.78\left(\frac{Q_c^2}{64.4(70)^2}\right)$$

$$Q_c^2 = \frac{HW - 1993.5}{1.78}(64.4)(70)^2$$

$$Q_c = \sqrt{\frac{HW - 1993.5}{1.78}(64.4)(70)^2}$$



$C = 2.8$ $\quad Q_1 = CLH_1$ $\quad$ 56 Welsh 19

SINCE WEIR IS SUBMERGED USE FIGURE 5.20 pg 200 (Q/Q) in URBAN SURFACE WATER MANAGEMENT

HW	Q_c	H_1	H_2	H_2/H_1	L	Q_1	Q/Q_1	Q	Q_{TOTAL}
1994.3	377	1.1	1.1	1					
1994.4	399	1.2	1.1	0.92	490.7	1806	.43	777	1176
1994.5	421	1.3	1.1	0.85	504.2	2093	.55	1151	1572 (−558)
1994.6	442	1.4	1.1	0.79	517.7	2401	.62	1489	1931 (−15) (+201)
1994.56	433	1.36	1.1	0.81	512.3	2275	0.6	1365	1798 (+68) OK

$$\boxed{HW = 1994.56 \text{ ft}}$$

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REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

BLACK & VEATCH ENGINEERS-ARCHITECTS

Owner: WICKENBURG ADMS
Plant: Unit:
Project No. 17676 File No.
Title: WASH E
WEST BOUND WEIR LENGTHS

Computed By: JAH
Date: 11/20 19 91
Checked By:
Date: 19
Page 7 of 8

LEFT STA	EL	RIGHT STA	~L
440	1997.2	1965	1520
	1996.2	1517	
551	1996.0	1417.7	866.7
	1995.9	1368	
569.5	1995.8	1363.7	794.2
588	1995.6	1355.1	767.1
670.7	1995.4	1346.5	675.8
712	1995.2	1337.8	625.8
753.3	1995.0	1329.2	575.9
774	1994.9	1324.9	550.9
780.8	1994.6	1320	539.2
797.02 → 794.3	1994.6	1312 ← 1309.32	517.7 ← 512.3
	1994.56		
801.1	1994.5	1305.3	504.2
807.8	1994.4	1298.5	490.7
814.6	1994.3	1291.8 →	477.2
821.4	1994.2	1285.1	463.7
834.9	1994.0	1271.6	436.7
862	1993.6	1244.7	382.7
	1993.5	1238	

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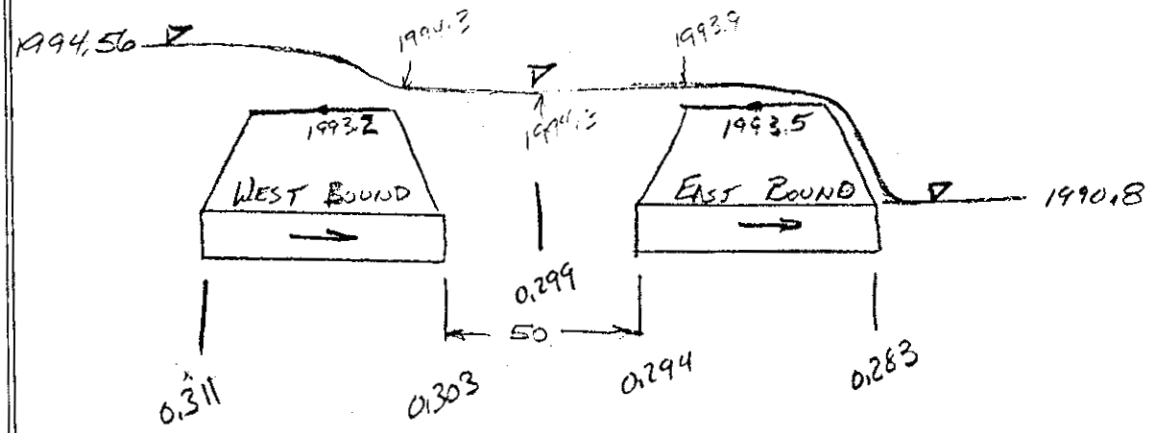
REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

SO: FOR HEC-2 MODEL X5 CARDS



X5

XSECT	WSEL
0.283	1990.7
0.294	1993.9
0.299	1994.3
0.303	1994.3
0.311	1994.56

DO NOT WRITE IN THIS SPACE

P-GN-172A

REVISED, SUPERSEDED, AND VOID CALCULATIONS MUST BE CLEARLY IDENTIFIED, INITIALED, AND DATED BY THE RESPONSIBLE INDIVIDUAL.

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE/COASTAL MAPPING FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Mockingbird Wash; Wash E

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. MAPPING CHANGES

1. A topographic work map of suitable scale, contour interval, and planimetric definition must be submitted showing *(indicate N/A when not applicable)*:

		Included		
A.	Revised approximate 100-year floodplain boundaries (Zone A)	☐ Yes	☒ No	☐ N/A
B.	Revised detailed 100- and 500-year floodplain boundaries	☒ Yes	☐ No	☐ N/A
C.	Revised 100-year floodway boundaries	☒ Yes	☐ No	☐ N/A
D.	Location and alignment of all cross sections used in the revised hydraulic model with stationing control indicated	☒ Yes	☐ No	☐ N/A
E.	Stream alignments, road and dam alignments	☒ Yes	☐ No	☐ N/A
F.	Current community boundaries	☒ Yes	☐ No	☐ N/A
G.	Effective 100- and 500-year floodplain and 100-year floodway boundaries from the FIRM/FBFM reduced or enlarged to the scale of the topographic work map	☐ Yes	☐ No	☒ N/A
H.	Tie-ins between the effective and revised 100- and 500-year floodplains and 100-year floodway boundaries	☐ Yes	☐ No	☒ N/A
I.	The requestor's property boundaries and community easements	☐ Yes	☐ No	☒ N/A
J.	The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
K.	Location and description of reference marks	☒ Yes	☐ No	☐ N/A
L.	Vertical datum (example: NGVD, NAVD etc.)	☒ Yes	☐ No	☐ N/A
M.	Coastal zone designations tie into adjacent areas not being revised	☐ Yes	☐ No	☒ N/A
N.	Location and alignment of all coastal transects used to revise the coastal analyses	☐ Yes	☐ No	☒ N/A

If any of the items above are marked no or N/A, please explain: No Zone A, 500-year, or coastal zones revised or delineated. Revised 100-year floodplains tie into effective Hassayampa River floodplain.

2. What is the source and date of the updated topographic information *(example: orthophoto maps, July 1985; field survey, May 1979, beach profiles, June 1987, etc.)*? Photo: Jan. 1991 (E), Oct 1990 (W); Maps 1992

3. What is the scale and contour interval of the following work maps?
   a. Effective FIS unknown scale unknown Contour interval
   b. Revision Request 1" = 200' scale 4 ft Contour interval

NOTE: Revised topographic information must be of equal or greater detail.

4. Attach an annotated FIRM and FBFM at the scale of the effective FIRM and FBFM showing the revised 100-year and 500-year floodplains and the 100-year floodway boundaries and how they tie into those shown on the effective FIRM and FBFM downstream and upstream of the revision or adjacent to the area of revision for coastal studies.

Attach additional pages if needed.

5. Flood Boundaries and 100-year water surface elevations:

Has the 100-year floodplain been shifted or increased or the 100-year water surface elevation increased at any location on property other than the requestor's or community's? ☐ Yes ☒ No

If yes, please give the location of shift or increase and an explanation for the increase.

Revised detailed 100-year floodplain replaces effective zone A, AE floodplain.

a. Have the affected property owners been notified of this shift or increase and the effect it will have on their property? ..... ☐ Yes ☒ No

If yes, please attach letters from these property owners stating they have no objections to the revised flood boundaries if a LOMR is being requested.

b. What is the number of insurable structures that will be impacted by this shift or increase? _____

6. Have the floodway boundaries shifted or increased at any location compared to those shown on the effective FBFM or FIRM? ..... ☐ Yes ☒ No

If yes, explain:

7. If a V-zone has been designated, has it been delineated to extend landward to the heel of the primary frontal dune? ☐ Yes ☒ No

If no, explain:

NA

8. Manual or digital map submission:

☒ Manual

☐ Digital

Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance of submission as possible.

2. EARTH FILL PLACEMENT

1. The fill is: ☐ Existing ☐ Proposed ☒ N/A

2. Has fill been/will be placed in the regulatory floodway? ..... ☐ Yes ☒ No
   If yes, please attach completed Riverine Hydraulic Analysis Form.

3. Has fill been/will be placed in floodway fringe *(area between the floodway and 100-year floodplain boundaries)*? ..... ☐ Yes ☒ No

   If yes, then complete A, B, C, and D below.

   A. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ..... ☐ Yes ☐ No

      If yes, justify steeper slopes_____

      _____

   B. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? *(Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.)* ..... ☐ Yes ☐ No

      If no, describe erosion protection provided_____

      _____

   C. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☐ Yes ☐ No

   D. Can structures conceivably be constructed on the fill at any time in the future? ☐ Yes ☐ No

   If yes, provide certification of fill compaction (item C. above) by the community's NFIP permit official, a registered professional engineer, or an accredited soils engineer.

4. Has fill been/will be placed in a V-zone? ☐ Yes ☒ No

   If yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall? ☐ Yes ☐ No

   If yes, attach the coastal structures form.

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

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Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: WASH E: Mockingbird Wash

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: US Hwy 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.283 to Station 0.311
3. This revision reflects (*check one of the following*):
   - [x] New bridge/culvert not modeled in the FIS
   - [ ] Modified bridge/culvert previously modeled in the FIS
   - [ ] New analysis of bridge/culvert previously modeled in the FIS

   (*Explain why new analysis was performed*) Previous analysis started upstream of bridge

2. BACKGROUND

Provide the following information about the structure:

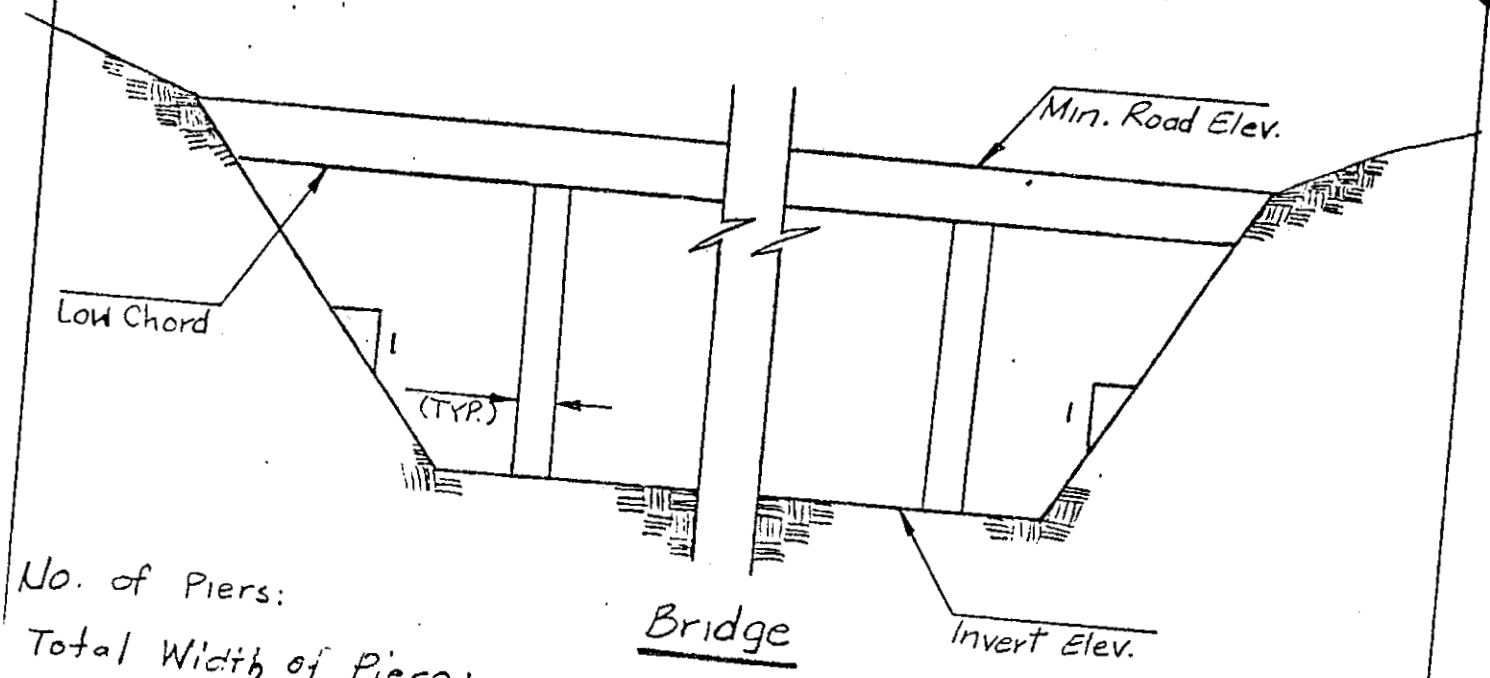
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway)
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments)
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) Manual ~~HEC-2 with~~ See attached Special Problem Report

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). (*Attach justification*)

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.

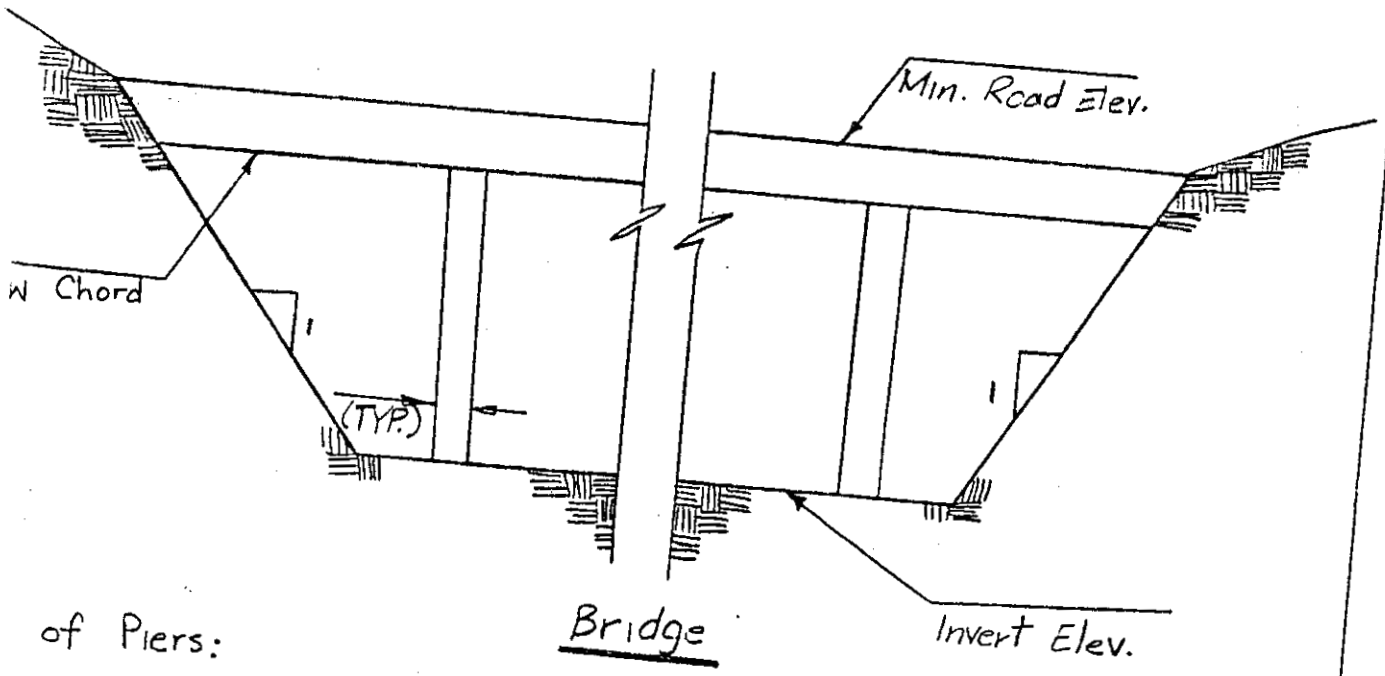


No. of Piers:

Total Width of Piers:

See Cross Section #

Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

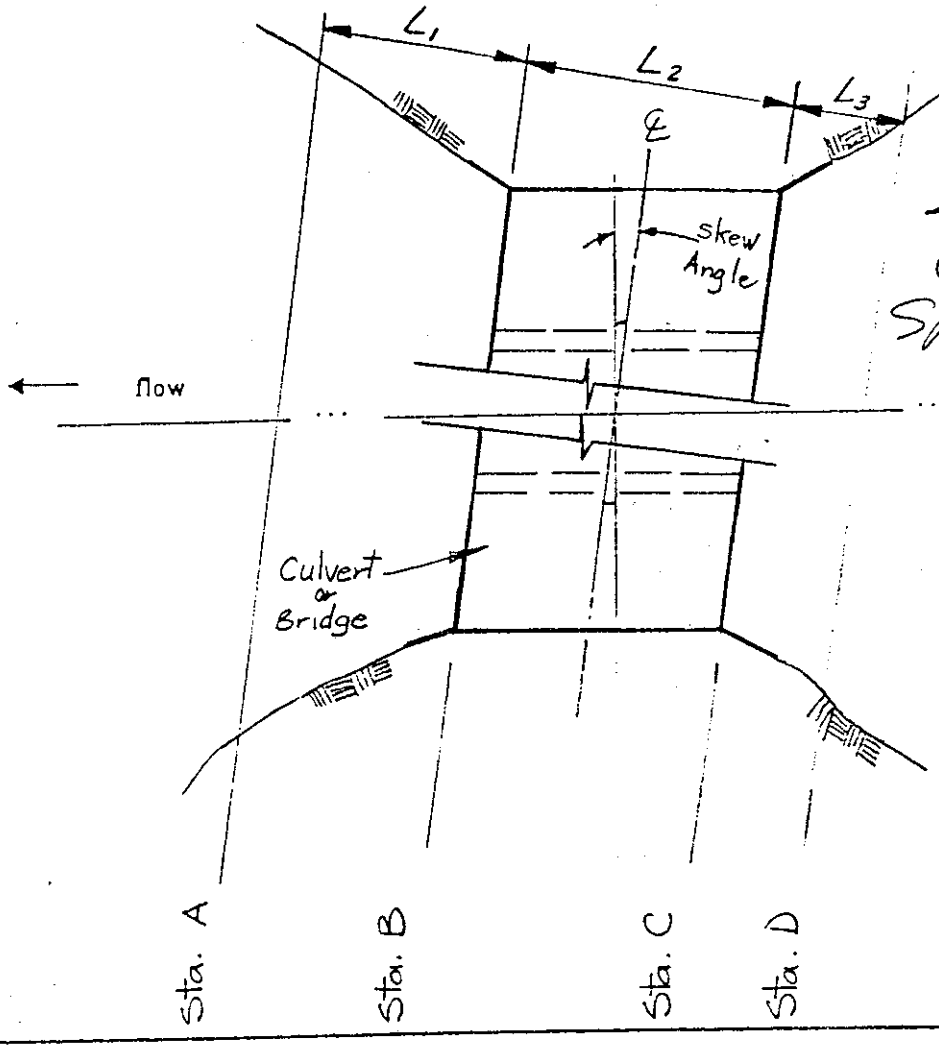


of Piers:

l Width of Piers:

See Cross Section #

Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



See manual Calcs in Special Problem Report (attached)

Bridge Width / Culvert Length:

Cross Section Stations

Sta. A =

Sta. B =

Sta. C =

Sta. D =

Skew Angle:

Reach Lengths:

L1 ft.

L2 ft.

L3 ft.

Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft) _____

Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable _____

Total culvert/bridge area (ft²) _____

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face	_____	_____
Downstream face	_____	_____

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	_____	_____
Downstream face	_____	_____

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	_____	_____
Downstream face	_____	_____

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s[illegible]cfs)	_____	_____	_____	_____

The maximum depth of flow over the roadway/railroad (ft.) ..... _____

Weir length (ft.) ..... _____

Top Widths

	Floodplain	Floodway
Upstream face	_____	_____
Downstream face	_____	_____

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	_____	_____
Downstream face	_____	_____

Loss Coefficients

Entrance loss coefficient _____

Manning's "n" value assigned to the structure(s) _____

Friction loss coefficient through structure (s) _____

Other loss coefficients (e.g., bend manhole, etc.) _____

Total loss coefficient _____

Weir coefficient _____

Pier coefficient _____

Contraction loss coefficient _____

Expansion loss coefficient _____

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B. Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

.. If the answer to either 1A or 1B is yes:

A. What is the estimated sediment *(bed material)* load?
_____cfs *(attach gradation curve)*

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) _____

Comments *(explain any unusual situations)*:

Attach analysis.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES         *
*                                       *
*  Version   4.6.2;  May 1991           *
*                                       *
*  RUN DATE    06JUL92    TIME   16:03:31  *
*****************************************
```

```
***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 06JUL92 16:03:31

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************************************
 HEC-2 WATER SURFACE PROFILES

 Version  4.6.2;  May 1991
************************************


T1      WICKENBURG ADMS - CONTRACT FCD 89-79
T2      BLACK & VEATCH PN 17676   COE & VAN LOO JN 1197-02
T3      WASH E: MOCKINGBIRD WASH          (FILE WASHE.DAT)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                                                                  1984.98

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     1                   -1                                      -1                            15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

NC    .045      .045      .030       .1        .3
QT      2      3459      3459
            CONFLUENCE OF WASH E: MOCKINGBIRD WASH
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 TU (HASSAYAMPA RIVER MILE 48.85)
                 TV (HASSAYAMPA RIVER MILE 48.95)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

            X3 RECORD: CONTAIN FLOW BETWEEN LEVEES

X1    0.241       34       960      1000         0         0         0
X3                                   921    1986.8      1017    1986.3
GR   1992.0      140.    1988.0      160.    1984.0      182.    1980.0      215.    1976.0      235.
GR   1974.3      570.    1976.0      750.    1980.3      881.    1980.7      892.    1982.3      905.
GR   1984.4      912.    1985.5      917.    1986.8      921.    1986.3      926.    1985.0      932.
GR   1983.3      938.    1981.4      942.    1980.6      960.    1980.3      974.    1980.4      983.
GR   1980.4      998.    1980.6     1000.    1980.9     1003.    1981.7     1016.    1986.3     1017.
GR   1985.3     1022.    1984.7     1032.    1982.5     1045.    1980.3     1059.    1977.7     1310.
GR   1980.0     1470.    1984.0     1495.    1988.0     1527.    1992.0     1570.
```

```
     0.045     0.045     0.020       0.6       0.8
ET                         9.1                                          978.73    1021.28
            DOWNSTREAM FACE:  4 - 10' X 8' RCB (~3' SEDIMENT)

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                       FROM MANUAL CULVERT ANALYSIS

            NOTE:  EB LANE CENTERLINE SECTION WAS USED
                   TO CREATE THE DS AND US FACE SECTION
X1   0.283        31    978.73   1021.28       225       225       225
X3      10                                                        1993.6    1993.6
X5       2    1990.7    1990.7
GR  1998.4      144.    1997.6      273.    1997.2      420.    1995.9      492.    1995.7      597.
GR  1995.7      675.    1994.1      775.    1993.6      840.    1993.6      873.    1993.6      929.
GR  1993.9      943.    1993.6      977.    1993.6    978.72    1984.6    978.73    1984.6     1000.
GR  1984.6   1021.28    1993.6   1021.29    1993.6     1044.    1993.9     1123.    1994.3     1217.
GR  1994.3     1325.    1994.9     1403.    1995.1     1491.    1995.1     1593.    1995.3     1714.
GR  1996.1     1781.    1996.5     1808.    1996.7     1839.    1997.0     1882.    1997.2     1943.
GR  1997.3     1984.

SC  4.020      0.40       2.8         0         5        10      56.5       8.1    1985.6    1984.6
ET                         9.1                                          978.73    1021.28
            UPSTREAM FACE:  4 - 10' X 8' RCB (~3' SEDIMENT)

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                       FROM MANUAL CULVERT ANALYSIS

            NOTE:  EB LANE CENTERLINE SECTION WAS USED
                   TO CREATE THE DS AND US FACE SECTION
X1   0.294        31    978.73   1021.28      56.5      56.5      56.5
X2                           2    1990.6    1993.6
X3      10                                                        1993.6    1993.6
X5       2    1993.9    1993.9
BT     -31       144    1998.4       273    1997.6       420    1997.2
BT               492    1995.9       597    1995.7       675    1995.7
BT               775    1994.1       840    1993.6       873    1993.6
BT               929    1993.6       943    1993.9       977    1993.6
BT            978.72    1993.6    978.73    1993.6      1000    1993.6
BT           1021.28    1993.6   1021.29    1993.6      1044    1993.6
BT              1123    1993.9      1217    1994.3      1325    1994.3
BT              1403    1994.9      1491    1995.1      1593    1995.1
BT              1714    1995.3      1781    1996.1      1808    1996.5
BT              1839    1996.7      1882    1997.0      1943    1997.2
BT              1984    1997.3
GR  1998.4      144.    1997.6      273.    1997.2      420.    1995.9      492.    1995.7      597.
GR  1995.7      675.    1994.1      775.    1993.6      840.    1993.6      873.    1993.6      929.
GR  1993.9      943.    1993.6      977.    1993.6    978.72    1985.6    978.73    1985.6     1000.
GR  1985.6   1021.28    1993.6   1021.29    1993.6     1044.    1993.9     1123.    1994.3     1217.
GR  1994.3     1325.    1994.9     1403.    1995.1     1491.    1995.1     1593.    1995.3     1714.
GR  1996.1     1781.    1996.5     1808.    1996.7     1839.    1997.0     1882.    1997.2     1943.
GR  1997.3     1984.
```

```
     0.045     0.045     0.020       0.6       0.8
ET               9.1       9.1                                                  973      1028
            DIVIDED HIGHWAY: MEDIAN SECTION

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                       FROM MANULA CULVERT ANALYSIS
X1   0.299        36       978      1027        25        25        25
X3      10
X5       2    1994.3    1994.3
GR  1995.3      694.    1994.6      727.    1992.4      748.    1992.2      814.    1992.1      864.
GR  1992.9      912.    1992.7      932.    1992.1      948.    1991.8      958.    1990.9      967.
GR  1988.8      970.    1987.6      974.    1987.0      978.    1986.6      984.    1986.5      986.
GR  1986.3      995.    1986.0     1000.    1986.5     1011.    1986.5     1019.    1986.9     1027.
GR  1987.9     1031.    1989.8     1036.    1990.6     1045.    1991.3     1073.    1991.3     1168.
GR  1991.3     1242.    1991.6     1302.    1991.4     1343.    1991.6     1373.    1991.6     1399.
GR  1992.4     1431.    1992.9     1452.    1993.6     1462.    1994.2     1476.    1994.5     1495.
GR    1996     1705

NC   0.045     0.045     0.020       0.6       0.8
ET                         9.1                                                 979.25   1020.75
            DOWNSTREAM FACE:  2 - 20' SPAN R.C. BRIDGE

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                       FROM MANUAL CULVERT ANALYSIS

            NOTE:  WB LANE CENTERLINE SECTION WAS USED
                   TO CREATE THE DS AND US FACE SECTION
X1   0.303        27    979.25   1020.75        25        25        25
X3      10                                                          1993.4    1993.2
X5       2    1994.3    1994.3
GR  1999.9      150.    1999.9      241.    1998.7      308.    1997.2      440.    1995.6      588.
GR  1994.9      774.    1993.6      862.    1993.5      939.    1993.5      944.    1993.4    979.24
GR  1986.0    979.25    1986.0     1000.    1986.0     1003.    1986.0     1008.    1986.0   1020.75
GR  1993.2   1020.76    1993.5     1096.    1994.2     1167.    1993.5     1238.    1994.6     1312.
GR  1995.9     1368.    1996.2     1517.    1996.2     1610.    1996.9     1805.    1997.0     1904.
GR  1997.0     1932.    1997.2     1965.

ET                         9.1                                                 979.25   1020.75
SB    1.25      1.78       2.8         0      41.5       1.5       140         0    1986.8    1986.0
            UPSTREAM FACE:  2 - 20' SPAN R.C. BRIDGE

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                       FROM MANUAL CULVERT ANALYSIS

            NOTE:  WB LANE CENTERLINE SECTION WAS USED
                   TO CREATE THE DS AND US FACE SECTION
X1   0.311        27    979.25   1020.75      41.5      41.5      41.5
X2                         1    1990.3    1993.2
X3      10                                                          1993.4    1993.2
X5       2   1994.56   1994.56
      -27       150    1999.9       241    1999.9       308    1998.7
                440    1997.2       588    1995.6       774    1994.9
BT              862    1993.6       939    1993.5       944    1993.5
```

```
                 979.24    1993.4              979.25    1993.4              1000    1993.3
                   1003    1993.2                1008    1993.2           1020.75    1993.2
BT               1020.76   1993.2                1096    1993.5              1167    1994.2
BT                  1238   1993.5                1312    1994.6              1368    1995.9
BT                  1517   1996.2                1610    1996.2              1805    1996.9
BT                  1904   1997.0                1932    1997.0              1965    1997.2
GR    1999.9        150.   1999.9     241.    1998.7      308.   1997.2     440.    1995.6      588.
GR    1994.9        774.   1993.6     862.    1993.5      939.   1993.5     944.    1993.4    979.24
GR    1986.8      979.25   1986.8    1000.    1986.8     1003.   1986.8    1008.    1986.8   1020.75
GR    1993.2     1020.76   1993.5    1098.    1994.2     1167.   1993.5    1238.    1994.6     1312.
GR    1995.9       1368.   1996.2    1517.    1996.2     1610.   1996.9    1805.    1997.0     1904.
GR    1997.0       1932.   1997.2    1965.

NC     0.045       0.045    0.030       0.6       0.8
ET                   5.1      9.1                839.     1161.                       931.      1063.
                ET RECORD: ET STATIONS 839.0 & 1161.0
                           SATISFY 1 TO 1 FLOW CONTRACTION

                MAPPED FLOODPLAIN TO CWSEL

X1     0.338         42      977      1024       150       140       140
X3        10
GR    2008.4       188.   1997.5     224.    1995.6      239.   1994.6     278.    1993.6      353.
GR    1992.7       409.   1992.4     433.    1992.1      493.   1993.5     547.    1993.2      575.
GR    1994.4       619.   1994.6     655.    1994.4      675.   1994.1     752.    1996.1      821.
GR    1995.9       879.   1994.7     931.    1994.4      961.   1993.4     969.    1992.1      977.
GR    1992.1       995.   1992.1     996.    1992.1     1000.   1992.3    1007.    1992.4     1013.
GR    1992.9      1024.   1994.9    1043.    1995.0     1063.   1995.1    1089.    1995.1     1126.
GR    1995.2      1196.   1995.3    1246.    1995.3     1318.   1997.7    1440.    1997.2     1502.
GR    1997.2      1556.   1996.2    1617.    1995.5     1643.   1995.5    1671.    2000.3     1683.
GR    2002.7      1691.   2008.2    1706.

NC     0.045       0.045    0.030       0.1       0.3
ET                   5.1      9.1                852.     1063.                       947.      1063.
                ET RECORD: STA 852. & 1063. ELIMINATE INEFFECTIVE
                           FLOW AREAS IN OVERBANKS

                MAPPED FLOODPLAIN TO CWSEL

X1     0.372         38      980      1027       180       180       180
X3        10
GR    2008.0       210.   2004.0     220.    2000.0      230.   1996.0     270.    1996.0      430.
GR    2000.0       750.   2000.0     850.    2000.0      851.   2000.0     852.    1999.9      870.
GR    1999.5       897.   1998.6     934.    1997.9      954.   1997.4     964.    1997.1      972.
GR    1996.3       976.   1995.8     980.    1995.8      992.   1995.8    1000.    1995.8     1009.
GR    1995.8      1019.   1995.8    1027.    1996.6     1034.   1999.6    1048.    2001.6     1063.
GR    2001.7      1087.   2001.6    1102.    2001.6     1139.   2001.5    1154.    2001.6     1202.
GR    2001.5      1239.   2001.5    1285.    2001.5     1351.   2001.5    1355.    2001.5     1356.
GR    2001.5      1363.   2004.0    1643.    2008.0     1665.
```

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                9.1       9.1                970.      1032.                          970.      1032.
ET RECORD: STA 970. & 1032. ELIMINATE INEFFECTIVE
           FLOW AREAS IN OVERBANKS

MAPPED FLOODPLAIN TO CWSEL

X1    0.420      20      990     1020      255      250      255
X3       10
GR   2020.0     195.   2016.0      210.  2012.0      240.  2008.0      262.  2004.0      275.
GR   2000.0     290.   2000.0      440.  2004.0      630.  2005.3      730.  2005.3      970.
GR   2004.0     972.   2000.0      990.  1999.0     1000.  2000.0     1020.  2004.0     1030.
GR   2006.5    1032.   2008.0     1540.  2012.0     1555.  2016.0     1570.  2020.0     1575.

ET                      9.1                                                  925.53    1043.76
X1    0.502      37      979     1021      410      440      430
X3       10
GR   2036.3     878.   2029.3      892.  2023.9      906.  2018.8      915.  2017.5      922.
GR   2014.4     927.   2013.3      932.  2012.3      933.  2012.3      936.  2012.3      945.
GR   2012.1     958.   2011.0      979.  2011.0      982.  2011.0      990.  2010.9     1000.
GR   2010.8    1008.   2011.8     1021.  2013.2     1030.  2014.9     1038.  2015.9     1052.
GR   2015.9    1078.   2016.2     1120.  2017.5     1155.  2017.3     1177.  2017.3     1193.
GR   2017.3    1213.   2017.3     1218.  2017.3     1224.  2017.3     1225.  2017.3     1230.
GR   2017.0    1248.   2016.2     1285.  2016.2     1317.  2016.3     1337.  2016.2     1352.
GR   2019.9    1357.   2038.2     1389.

                        9.1                                                  981.65     1220.
X1    0.563      54      986     1019      325      290      325
X3       10
GR   2044.3     919.   2038.7      932.  2027.8      948.  2024.5      974.  2021.8      981.
GR   2018.5     983.   2017.3      986.  2016.6      994.  2016.4      998.  2016.4     1000.
GR   2016.7    1013.   2017.3     1019.  2018.4     1028.  2019.5     1042.  2020.1     1054.
GR   2019.0    1064.   2018.2     1084.  2017.9     1086.  2017.8     1106.  2018.1     1107.
GR   2018.0    1121.   2019.3     1139.  2020.1     1140.  2020.7     1154.  2020.3     1155.
GR   2019.9    1158.   2018.8     1162.  2016.2     1165.  2015.5     1167.  2016.2     1169.
GR   2016.7    1171.   2017.2     1172.  2017.9     1174.  2018.1     1175.  2018.4     1178.
GR   2018.5    1180.   2019.1     1188.  2020.0     1207.  2020.9     1215.  2021.2     1225.
GR   2022.1    1237.   2022.7     1243.  2021.4     1253.  2021.0     1267.  2020.9     1277.
GR   2020.5    1285.   2020.2     1292.  2020.8     1295.  2020.8     1303.  2025.8     1312.
GR   2031.2    1322.   2034.4     1337.  2040.1     1340.  2044.1     1359.

ET                      9.1                                                  959.       1282.
X1    0.613      70      975     1013      260      275      260
X3       10
GR   2044.3     700.   2041.1      706.  2035.9      721.  2032.9      742.  2030.2      748.
GR   2027.5     752.   2027.5      770.  2027.5      792.  2027.9      807.  2028.5      815.
GR   2028.8     825.   2029.3      833.  2029.4      841.  2028.6      852.  2028.5      860.
GR   2028.3     899.   2027.6      908.  2027.5      917.  2026.5      926.  2025.8      935.
GR   2025.8     959.   2025.8      961.  2025.6      974.  2023.6      975.  2023.6      976.
GR   2023.5    1000.   2023.9     1013.  2025.8     1023.  2026.0     1044.  2026.1     1068.
GR   2026.2    1094.   2026.9     1106.  2027.5     1122.  2027.3     1129.  2027.0     1165.
GR   2026.3    1176.   2025.8     1181.  2025.5     1197.  2025.2     1204.  2025.2     1213.
GR   2025.1    1219.   2024.8     1222.  2024.2     1225.  2023.1     1226.  2022.5     1228.
GR   2022.4    1230.   2022.3     1232.  2022.5     1235.  2022.6     1239.  2022.8     1241.
```

	2023.8	1245.	2024.7	1247.	2026.4	1253.	2027.8	1260.	2028.9	1267.
	2030.7	1272.	2032.5	1277.	2032.8	1282.	2032.1	1293.	2031.7	1303.
GR	2029.8	1310.	2028.0	1315.	2025.8	1317.	2025.7	1323.	2028.6	1328.
GR	2032.6	1332.	2036.6	1340.	2040.1	1345.	2042.3	1348.	2044.3	1350.
ET			9.1						974.97	1219.
X1	0.685	48	998	1022	380	380	380			
X3	10									
GR	2060.3	900.	2056.5	910.	2053.0	921.	2051.6	930.	2050.2	934.
GR	2048.0	937.	2046.1	944.	2040.8	951.	2037.7	964.	2035.9	970.
GR	2032.5	987.	2031.8	995.	2030.6	998.	2030.2	1000.	2030.4	1016.
GR	2030.6	1022.	2031.5	1033.	2032.5	1043.	2033.6	1052.	2034.1	1065.
GR	2034.4	1075.	2035.2	1087.	2034.8	1104.	2034.5	1119.	2033.4	1134.
GR	2033.2	1144.	2032.8	1163.	2032.4	1169.	2032.0	1173.	2030.3	1180.
GR	2030.4	1189.	2032.5	1195.	2033.5	1201.	2033.7	1219.	2034.0	1248.
GR	2034.8	1266.	2035.7	1280.	2036.1	1293.	2036.1	1349.	2035.5	1353.
GR	2035.5	1357.	2030.6	1361.	2031.6	1365.	2036.8	1369.	2041.9	1371.
GR	2048.6	1385.	2055.3	1400.	2060.1	1410.				
ET			9.1						970.	1363.
X1	0.774	56	986	1021	465	440	470			
X3	10									
GR	2055.9	856.	2053.5	861.	2050.1	870.	2047.9	895.	2046.4	901.
GR	2045.2	907.	2044.7	913.	2044.8	919.	2044.8	925.	2044.8	933.
GR	2044.5	937.	2044.7	939.	2045.0	942.	2044.9	944.	2044.8	948.
	2044.8	954.	2044.9	958.	2044.9	970.	2044.5	986.	2044.1	994.
	2043.8	995.	2043.9	1000.	2043.9	1001.	2043.9	1005.	2044.7	1021.
GR	2044.8	1033.	2044.9	1048.	2045.3	1060.	2045.3	1076.	2045.1	1080.
GR	2045.2	1097.	2045.2	1111.	2045.2	1120.	2044.8	1150.	2043.8	1177.
GR	2043.0	1200.	2042.5	1218.	2041.8	1226.	2041.0	1241.	2040.0	1247.
GR	2040.9	1257.	2042.4	1264.	2043.9	1274.	2043.9	1304.	2044.3	1363.
GR	2043.4	1411.	2042.5	1429.	2041.9	1463.	2041.5	1494.	2041.1	1511.
GR	2040.5	1529.	2040.4	1544.	2040.5	1547.	2045.0	1556.	2049.3	1567.
GR	2056.5	1590.								
ET			9.1						985.	1355.39
X1	0.868	42	995	1020	520	445	500			
X3	10									
GR	2068.1	880.	2061.0	905.	2059.3	911.	2057.4	919.	2056.4	929.
GR	2056.9	931.	2056.6	939.	2056.9	950.	2056.5	955.	2055.9	961.
GR	2054.7	975.	2055.2	981.	2054.2	991.	2053.4	995.	2052.6	1000.
GR	2052.2	1003.	2052.0	1008.	2052.1	1014.	2053.3	1020.	2056.6	1033.
GR	2056.5	1051.	2056.6	1077.	2056.4	1115.	2055.5	1138.	2055.4	1171.
GR	2054.7	1204.	2053.6	1226.	2053.5	1240.	2053.5	1271.	2053.4	1299.
GR	2052.3	1319.	2050.8	1326.	2049.3	1339.	2049.9	1341.	2051.7	1353.
GR	2057.5	1357.	2061.7	1391.	2067.5	1469.	2068.1	1479.	2071.4	1487.
GR	2072.2	1497.	2072.2	1506.						
QT	2	2167	2167							
ET			9.1						802.05	1025.11

```
                Q = 2167 cfs:  FROM HEC-1 (RE17)
X1      1.012        25       989      1014       730       740       760
X3         10
GR    2092.3       768.    2089.8       772.    2082.7       779.    2080.4       783.    2078.0       788.
GR    2077.9       790.    2077.4       791.    2076.7       794.    2071.6       817.    2071.8       830.
GR    2072.2       857.    2076.2       892.    2076.3       910.    2076.6       932.    2076.0       951.
GR    2076.8       966.    2072.4       989.    2071.9      1000.    2072.0      1014.    2076.2      1030.
GR    2082.5      1048.    2085.7      1055.    2089.8      1070.    2092.2      1071.    2096.2      1075.

ET                            9.1                                                          980.40      1109.
X1      1.105        25       993      1005       490       480       490
X3         10
GR    2100.7       932.    2095.7       939.    2091.6       955.    2089.6       979.    2086.6       983.
GR    2085.3       989.    2085.0       993.    2084.4       996.    2084.3      1000.    2085.1      1005.
GR    2087.4      1009.    2087.4      1012.    2087.0      1033.    2086.9      1069.    2086.4      1109.
GR    2086.9      1140.    2086.9      1159.    2087.3      1176.    2087.3      1186.    2087.6      1203.
GR    2087.4      1213.    2087.3      1226.    2090.2      1238.    2096.5      1261.    2100.6      1268.

ET                            9.1                                                          976.93      1093.24
X1      1.186        27       989      1032       430       435       430
X3         10
GR    2116.5       944.    2114.4       948.    2112.3       952.    2108.9       959.    2106.7       963.
GR    2104.7       971.    2099.9       983.    2099.8       989.    2099.7       992.    2099.5      1000.
GR    2099.6      1017.    2099.7      1032.    2099.9      1049.    2100.1      1067.    2100.3      1075.
GR    2100.0      1088.    2104.0      1097.    2108.9      1107.    2109.9      1113.    2111.7      1117.
GR    2112.0      1120.    2112.2      1121.    2112.6      1124.    2114.6      1125.    2115.6      1127.
GR    2116.0      1133.    2116.2      1136.

ET                            9.1                                                          770.50      1016.71
X1      1.253        20       967      1002       340       340       350
X3         10
GR    2140.3       696.    2132.6       713.    2114.7       750.    2112.3       755.    2109.3       778.
GR    2108.0       802.    2108.8       826.    2109.1       862.    2109.0       919.    2108.8       939.
GR    2108.6       959.    2108.3       966.    2107.1       967.    2107.1       988.    2107.1       997.
GR    2107.1      1000.    2107.1      1002.    2109.3      1015.    2117.3      1029.    2124.2      1043.

ET                            9.1                                                          939.22      1077.77
X1      1.370        33       978      1000       610       610       620
X3         10
GR    2160.2       872.    2156.0       877.    2151.7       889.    2148.4       897.    2144.9       901.
GR    2142.2       904.    2139.2       909.    2139.0       913.    2135.3       924.    2134.9       928.
GR    2132.0       931.    2131.9       933.    2128.2       938.    2125.0       940.    2125.4       942.
GR    2124.8       943.    2124.8       948.    2124.4       958.    2123.1       978.    2123.0       992.
GR    2123.0       996.    2123.0       997.    2123.1      1000.    2123.4      1007.    2124.7      1067.
GR    2125.2      1070.    2125.5      1073.    2125.9      1076.    2126.3      1078.    2128.6      1080.
GR    2137.7      1096.    2145.1      1105.    2160.5      1115.

ET                            9.1                                                          968.65      1012.28
X1      1.461        12       998      1009       490       480       480
X3         10
GR    2160.5       949.    2142.4       967.    2140.9       969.    2139.2       971.    2137.4       976.
GR    2136.5       977.    2136.3       980.    2135.9       987.    2135.7       998.    2135.7      1000.
GR    2135.8      1009.    2160.3      1024.
```

			9.1						984.31	1011.54
X1	1.532	16	990	1004	360	390	375			
X3	10									
GR	2164.1	982.	2154.5	983.	2143.9	985.	2141.6	986.	2141.3	990.
GR	2140.8	995.	2140.8	1000.	2140.8	1001.	2141.0	1004.	2141.4	1009.
GR	2143.2	1011.	2151.2	1012.	2154.3	1013.	2156.0	1019.	2163.8	1020.
GR	2164.8	1022.								
ET			9.1						987.02	1017.90
X1	1.626	20	995	1005.5	495	495	495			
X3	10									
GR	2175.9	979.	2175.9	980.	2173.0	982.	2169.9	986.	2165.9	987.
GR	2163.3	992.	2159.8	993.	2158.2	994.	2157.0	995.	2156.1	998.
GR	2156.0	1000.	2157.0	1005.5	2157.4	1008.	2159.4	1009.	2162.1	1011.
GR	2162.4	1013.	2162.9	1014.	2169.8	1023.	2175.1	1031.	2180.1	1040.
ET			9.1						975.65	1026.21
X1	1.719	18	985	1003	500	475	490			
X3	10									
GR	2188.4	951.	2186.8	968.	2181.2	969.	2177.4	976.	2174.7	977.
GR	2173.1	981.	2172.5	985.	2172.0	986.	2172.0	991.	2172.0	997.
GR	2172.1	1000.	2172.5	1003.	2173.1	1012.	2174.1	1015.	2174.1	1016.
GR	2178.2	1028.	2184.8	1033.	2188.2	1039.				
[illegible]			9.1						855.23	1047.30
[illegible]	1.779	35	991	1016	300	320	320			
[illegible]	10									
GR	2196.1	797.	2191.7	829.	2190.1	835.	2188.1	840.	2186.0	865.
GR	2186.1	885.	2185.9	890.	2186.8	907.	2186.8	919.	2187.5	926.
GR	2187.5	939.	2187.5	944.	2187.4	956.	2186.7	964.	2185.8	967.
GR	2184.3	974.	2182.6	975.	2183.7	983.	2183.8	988.	2183.8	989.
GR	2183.8	991.	2182.7	1000.	2182.6	1001.	2182.8	1002.	2183.1	1016.
GR	2184.1	1045.	2184.8	1046.	2186.4	1047.	2187.8	1048.	2188.7	1053.
GR	2190.4	1065.	2192.4	1067.	2193.7	1071.	2194.7	1072.	2196.3	1081.
ET			9.1						954.02	1467.31
X1	1.860	50	981	1003	420	400	425			
X3	10									
GR	2212.2	918.	2209.5	925.	2207.6	931.	2204.3	941.	2202.0	944.
GR	2200.8	946.	2199.8	950.	2199.7	954.	2198.7	961.	2197.7	971.
GR	2197.3	981.	2197.3	986.	2197.3	993.	2197.3	997.	2197.3	1000.
GR	2197.3	1003.	2198.0	1013.	2198.4	1028.	2198.7	1036.	2198.5	1045.
GR	2198.5	1053.	2198.5	1069.	2198.5	1076.	2198.5	1079.	2198.5	1082.
GR	2198.5	1089.	2198.5	1102.	2199.1	1112.	2199.4	1135.	2199.7	1171.
GR	2200.0	1200.	2200.0	1229.	2199.8	1259.	2199.6	1283.	2199.1	1308.
GR	2198.4	1327.	2198.4	1339.	2198.4	1393.	2196.6	1398.	2198.0	1414.
GR	2198.7	1431.	2200.1	1482.	2201.1	1501.	2201.4	1520.	2203.0	1541.
GR	2204.0	1559.	2205.4	1562.	2206.1	1565.	2210.4	1577.	2212.1	1584.

			9.1						679.53	1081.47
X1	1.937	31	982	1020	390	280	410			
X3	10									
GR	2220.3	622.	2215.5	638.	2214.6	643.	2212.4	648.	2210.4	677.
GR	2208.8	681.	2208.7	689.	2208.2	701.	2207.7	711.	2207.6	715.
GR	2207.6	724.	2207.7	737.5	2207.8	751.	2208.9	767.	2209.0	790.
GR	2209.0	841.	2208.7	867.	2208.3	892.	2208.1	921.	2208.1	940.
GR	2208.0	964.	2208.0	982.	2207.8	1000.	2208.0	1020.	2208.2	1023.
GR	2208.3	1056.	2208.5	1059.	2208.8	1080.	2210.4	1084.	2214.4	1096.
GR	2220.6	1114.								
ET			9.1						837.56	1098.30
X1	1.977	36	982	1005.2	310	175	210			
X3	10									
GR	2224.5	765.	2222.3	769.	2221.3	772.	2220.2	776.	2219.5	781.
GR	2218.8	786.	2218.3	791.	2217.7	796.	2217.9	801.	2218.0	806.
GR	2218.0	811.	2217.7	816.	2217.6	821.	2216.9	826.	2216.7	831.
GR	2216.7	836.	2216.1	840.	2216.0	846.	2215.5	873.	2215.0	903.
GR	2215.0	928.	2215.0	955.	2214.0	982.	2213.8	1000.	2214.0	1005.2
GR	2214.8	1026.	2215.9	1034.	2216.0	1043.	2215.9	1058.	2214.8	1072.
GR	2214.3	1075.	2213.7	1078.	2213.7	1081.	2213.7	1090.	2218.7	1105.
GR	2224.6	1110.								
ET			9.1						884.24	1051.78
X1	2.045	27	977	1007.2	365	330	360			
[illegible]	10									
[illegible]	2236.1	851.	2232.6	862.	2230.5	873.	2228.3	881.	2226.0	885.
GR	2226.1	906.	2225.8	916.	2226.0	918.	2225.9	925.	2225.3	936.
GR	2224.4	942.	2224.3	952.	2224.6	960.	2224.4	966.	2223.5	969.
GR	2223.5	974.	2223.4	977.	2223.2	984.	2223.2	988.	2223.2	1000.
GR	2223.4	1007.2	2223.7	1018.	2223.8	1041.	2225.3	1048.	2229.2	1061.
GR	2233.0	1067.	2237.3	1088.						
ET			9.1						956.29	1068.19
X1	2.174	27	979	1010	640	700	680			
X3	10									
GR	2256.2	941.	2251.8	950.	2247.6	951.	2246.2	952.	2244.1	953.
GR	2239.0	959.	2238.7	979.	2238.3	996.	2238.3	1000.	2238.3	1004.
GR	2238.7	1010.	2238.8	1017.	2238.7	1018.	2238.7	1026.	2238.7	1031.
GR	2238.7	1033.	2239.0	1048.	2238.8	1054.	2239.8	1062.	2240.9	1067.
GR	2242.6	1072.	2243.3	1075.	2244.1	1088.	2246.6	1095.	2248.0	1102.
GR	2251.6	1122.	2252.3	1138.						
ET			9.1						856.47	1023.76
X1	2.229	34	985	1015	290	260	290			
X3	10									
GR	2260.3	785.	2256.9	791.	2254.7	809.	2252.4	832.	2251.5	843.
GR	2250.4	861.	2249.4	870.	2248.9	882.	2249.0	890.	2249.0	893.
GR	2248.1	900.	2248.3	916.	2248.7	927.	2248.8	947.	2248.9	959.
GR	2248.9	962.	2248.9	963.	2248.9	965.	2248.9	968.	2248.9	971.
[illegible]	2248.9	979.	2248.9	980.	2248.3	984.	2248.3	985.	2248.2	988.
[illegible]	2248.2	993.	2248.2	1000.	2248.2	1002.	2248.2	1008.	2248.2	1010.
GR	2248.2	1013.	2248.3	1015.	2252.1	1029.	2260.6	1035.		

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                        9.1                                                   989.19    1088.01
X1    2.269      28     998     1028      180      210      210
X3       10
GR   2268.3     959.  2265.9     961.  2263.1     966.  2260.7     974.  2258.1     982.
GR   2255.9     988.  2254.4     994.  2252.3     998.  2251.3    1000.  2252.3    1015.
GR   2252.6    1028.  2252.7    1030.  2252.7    1043.  2252.7    1054.  2252.7    1062.
GR   2252.9    1070.  2253.5    1074.  2254.1    1079.  2254.6    1081.  2255.3    1087.
GR   2255.9    1089.  2257.1    1091.  2258.0    1094.  2259.4    1095.  2261.3    1100.
GR   2262.1    1101.  2266.9    1112.  2268.5    1119.

ET                      9.1                                                   969.60    1355.39
X1   -0.868      42     995     1020        0        0        0
X3       10
GR   2068.1     880.  2061.0     905.  2059.3     911.  2057.4     919.  2056.4     929.
GR   2056.9     931.  2056.6     939.  2056.9     950.  2056.5     955.  2055.9     961.
GR   2054.7     975.  2055.2     981.  2054.2     991.  2053.4     995.  2052.6    1000.
GR   2052.2    1003.  2052.0    1008.  2052.1    1014.  2053.3    1020.  2056.6    1033.
GR   2056.5    1051.  2056.6    1077.  2056.4    1115.  2055.5    1138.  2055.4    1171.
GR   2054.7    1204.  2053.6    1226.  2053.5    1240.  2053.5    1271.  2053.4    1299.
GR   2052.3    1319.  2050.8    1326.  2049.3    1339.  2049.9    1341.  2051.7    1353.
GR   2057.5    1357.  2061.7    1391.  2067.5    1469.  2068.1    1479.  2071.4    1487.
GR   2072.2    1497.  2072.2    1506.

QT       2     1056     1056
ET                      9.1                                                   912.11    1066.06
                Q = 1056 cfs:  FROM HEC-1 (CE12)
X1    0.929      39    1000     1014      410      360      380
X3       10
GR   2076.5     598.  2073.2     611.  2071.5     618.  2070.9     621.  2070.9     653.
GR   2070.1     664.  2068.0     670.  2066.7     677.  2064.1     692.  2064.1     724.
GR   2063.8     744.  2063.7     751.  2063.4     764.  2063.4     773.  2063.5     780.
GR   2063.5     782.  2063.5     783.  2063.5     826.  2063.1     866.  2061.7     897.
GR   2060.8     938.  2060.4     971.  2059.7     980.  2059.2     987.  2058.5    1000.
GR   2058.5    1014.  2058.9    1020.  2060.4    1046.  2061.8    1075.  2061.9    1093.
GR   2062.1    1120.  2062.1    1147.  2062.1    1160.  2062.1    1171.  2062.1    1177.
GR   2062.1    1184.  2066.2    1193.  2068.7    1203.  2076.2    1217.

QT       2      711      711
ET                      9.1                                                   862.58    1062.56
                Q = 711 cfs:  FROM HEC-1 (E10)
X1    1.003      34     995     1006      360      415      390
X3       10
GR   2083.9     772.  2077.7     777.  2075.2     780.  2075.1     806.  2078.2     813.
GR   2080.8     818.  2083.9     824.  2084.0     832.  2080.3     833.  2080.3     839.
GR   2080.3     840.  2070.5     856.  2068.3     866.  2068.2     888.  2068.3     935.
GR   2068.2     970.  2068.3     971.  2068.1     972.  2068.1     983.  2067.9     995.
GR   2067.9    1000.  2067.9    1006.  2068.1    1007.  2068.1    1011.  2068.1    1021.
GR   2068.6    1037.  2068.6    1044.  2068.6    1045.  2068.6    1049.  2068.9    1060.
GR   2069.5    1070.  2069.9    1084.  2081.0    1094.  2084.0    1105.
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			9.1						881.28	1011.04
X1	1.094	25	995	1004	540	460	480			
X3	10									
GR	2100.2	847.	2099.2	856.	2093.7	863.	2091.0	869.	2083.9	879.
GR	2082.7	880.	2081.7	881.	2080.2	883.	2080.0	890.	2080.2	892.
GR	2080.5	899.	2080.6	914.	2080.8	927.	2081.4	935.	2081.4	948.
GR	2080.5	960.	2080.2	971.	2079.7	985.	2078.7	995.	2078.7	1000.
GR	2078.7	1004.	2080.0	1010.	2090.0	1017.	2098.8	1044.	2100.7	1050.

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV=     .100 CEHV=     .300
*SECNO  .241

3470 ENCROACHMENT STATIONS=      921.0    1017.0  TYPE=      1  TARGET=       96.000
 ELENCL=   1986.80  ELENCR=   1986.30
            CONFLUENCE OF WASH E: MOCKINGBIRD WASH
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 TU (HASSAYAMPA RIVER MILE 48.85)
                 TV (HASSAYAMPA RIVER MILE 48.95)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

            X3 RECORD: CONTAIN FLOW BETWEEN LEVEES

      .241     10.68   1984.98   1984.97   1984.98   1987.02      2.04       .00       .00   1980.60
    3459.0     635.0    2362.1     461.9      87.1     182.7      61.7        .0        .0   1980.60
       .00      7.29     12.93      7.49      .045      .030      .045      .000   1974.30    932.07
   .008985        0.        0.        0.         0         4         0       .00     84.64   1016.71


FLOW DISTRIBUTION FOR SECNO=       .24          CWSEL=   1984.98

STA=     932.     938.     942.     960.    1000.    1003.    1016.    1017.
  PER Q=      .4      1.7     16.3     68.3      3.0     10.3       .1
   AREA=     5.0     10.5     71.6    182.7     12.7     47.8      1.2
    VEL=     2.7      5.6      7.9     12.9      8.2      7.5      1.5
  DEPTH=      .8      2.6      4.0      4.6      4.2      3.7      1.6

CCHV=     .600 CEHV=     .800
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 ECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    L-BANK ELEV
 Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA      R-BANK ELEV
 TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN    SSTA
 SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID   ENDST


*SECNO  .283
 WATER EL=X5 CARD=   1990.700

3301 HV CHANGED MORE THAN HVINS


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1993.60 ELREA=      1993.60

            DOWNSTREAM FACE:  4 - 10' X 8' RCB (~3' SEDIMENT)

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                       FROM MANUAL CULVERT ANALYSIS

            NOTE:  EB LANE CENTERLINE SECTION WAS USED
                   TO CREATE THE DS AND US FACE SECTION
     .283      6.10   1990.70   1990.48      .00   1993.46      2.76      1.06       .82   1984.60
   3459.0        .0    3459.0       .0       .0     259.6        .0       1.5        .3   1984.60
     .00       .00     13.33       .00     .000      .020      .000      .000   1984.60    978.73
  .002886     225.      225.      225.        0        18         0       .00     42.55   1021.28


 DISTRIBUTION FOR SECNO=       .28          CWSEL=   1990.70

STA=     979.    1021.
  PER Q=    100.0
   AREA=    259.6
    VEL=     13.3
  DEPTH=      6.1


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    4          .020      .40      2.80       .00      5.00     10.00     56.50      8         1       1985.60   1984.60

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130, EGIC= 2001.12..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO  .294
 WATER EL=X5 CARD=   1993.900

3301 HV CHANGED MORE THAN HVINS

            UPSTREAM FACE:  4 - 10' X 8' RCB (~3' SEDIMENT)

            X5 RECORD: WATER SURFACE ELEVATION DETERMINED
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FROM MANUAL CULVERT ANALYSIS

NOTE: EB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.294	8.30	1993.90	1991.49	.00	1995.36	1.46	.09	.24	1985.60
3459.0	16.8	3435.5	6.7	40.3	353.2	18.7	2.0	.6	1985.60
.01	.42	9.73	.36	.045	.020	.045	.000	1985.60	800.99
.001020	57.	57.	57.	0	8	0	.00	322.01	1123.00

FLOW DISTRIBUTION FOR SECNO= .29 CWSEL= 1993.90

STA=	801.	840.	873.	929.	943.	977.	979.	1021.	1044.	1123.
PER Q=	.1	.1	.2	.0	.0	.0	99.3	.1	.1	
AREA=	5.9	9.9	16.8	2.1	5.1	.6	353.2	6.8	11.9	
VEL=	.3	.5	.5	.3	.3	.4	9.7	.5	.3	
DEPTH=	.2	.3	.3	.2	.2	.3	8.3	.3	.2	

CCHV= .600 CEHV= .800
*SECNO .299
WATER EL=X5 CARD= 1994.300

3470 ENCROACHMENT STATIONS= 973.0 1028.0 TYPE= 1 TARGET= 55.000
DIVIDED HIGHWAY: MEDIAN SECTION

X5 RECORD: WATER SURFACE ELEVATION DETERMINED
FROM MANULA CULVERT ANALYSIS

.299	8.30	1994.30	1991.68	.00	1995.45	1.14	.02	.19	1987.00
3459.0	105.8	3346.6	6.6	34.6	384.1	7.3	2.2	.7	1986.90
.01	3.06	8.71	.91	.045	.020	.045	.000	1986.00	973.00
.000884	25.	25.	25.	0	14	0	.00	55.00	1028.00

FLOW DISTRIBUTION FOR SECNO= .30 CWSEL= 1994.30

STA=	973.	974.	978.	1027.	1028.
PER Q=	.2	2.9	96.8	.2	
AREA=	6.6	28.0	384.1	7.3	
VEL=	.9	3.6	8.7	.9	
DEPTH=	6.6	7.0	7.8	7.3	

CCHV= .600 CEHV= .800
*SECNO .303
WATER EL=X5 CARD= 1994.300
DOWNSTREAM FACE: 2 - 20' SPAN R.C. BRIDGE

X5 RECORD; WATER SURFACE ELEVATION DETERMINED

FROM MANUAL CULVERT ANALYSIS

NOTE: WB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.303	8.30	1994.30	1992.00	.00	1995.60	1.30	.02	.12	1986.00
3459.0	88.2	3249.8	121.0	108.3	344.5	157.0	2.5	.8	1986.00
.01	.81	9.43	.77	.045	.020	.045	.000	1986.00	814.61
.000959	25.	25.	25.	0	16	0	.00	477.21	1291.82

FLOW DISTRIBUTION FOR SECNO= .30 CWSEL= 1994.30

STA=	815.	862.	939.	944.	979.	1021.	1096.	1167.	1238.	1292.
PER Q=	.2	1.4	.1	.8	94.0	2.0	.6	.6	.3	
AREA=	16.6	57.8	4.0	30.0	344.5	71.5	32.0	32.0	21.5	
VEL=	.5	.8	.9	.9	9.4	1.0	.6	.6	.6	
DEPTH=	.4	.8	.8	.9	8.3	.9	.5	.5	.4	

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.25	1.78	2.80	.00	41.50	1.50	140.00	.00	1986.80	1986.00

*SECNO .311
[illegible]ER EL=X5 CARD= 1994.560
[illegible]MINIMUM SPECIFIC ENERGY
[illegible] CRITICAL DEPTH ASSUMED
UPSTREAM FACE: 2 - 20' SPAN R.C. BRIDGE

X5 RECORD: WATER SURFACE ELEVATION DETERMINED
FROM MANUAL CULVERT ANALYSIS

NOTE: WB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.311	7.76	1994.56	1994.56	.00	1995.82	1.26	.04	.02	1986.80
3459.0	157.3	3073.5	228.1	153.9	322.1	231.4	3.1	1.3	1986.80
.01	1.02	9.54	.99	.045	.020	.045	.000	1986.80	796.86
.001073	42.	42.	42.	0	11	0	.00	512.62	1309.47

FLOW DISTRIBUTION FOR SECNO= .31 CWSEL= 1994.56

STA=	797.	862.	939.	944.	979.	1021.	1098.	1167.	1238.	1309.
PER Q=	.6	2.5	.2	1.3	88.9	3.3	1.2	1.3	.8	
AREA=	31.3	78.0	5.3	39.2	322.1	93.6	49.2	50.6	38.0	
VEL=	.7	1.1	1.1	1.2	9.5	1.2	.9	.9	.7	
DEPTH=	.5	1.0	1.1	1.1	7.8	1.2	.7	.7	.5	

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


CCHV=     .600 CEHV=     .800
*SECNO  .338
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      839.0    1161.0  TYPE=      1  TARGET=      322.000
            ET RECORD: ET STATIONS 839.0 & 1161.0
                       SATISFY 1 TO 1 FLOW CONTRACTION

            MAPPED FLOODPLAIN TO CWSEL

      .338      4.46   1996.56   1996.56       .00   1997.45       .89       .29       .22   1992.10
    3459.0     737.0    1933.9     788.1     201.5     201.5     226.5       5.3       2.7   1992.90
       .01      3.66      9.60      3.48      .045      .030      .045      .000   1992.10    839.00
   .005396      150.      140.      140.         0        11         0       .00    322.00   1161.00


FLOW DISTRIBUTION FOR SECNO=       .34          CWSEL=   1996.56

STA=      839.     879.     931.     961.     969.     977.    1024.    1043.    1063.    1089.    1126.    1161.
     Q=     1.2      5.4      6.7      2.9      5.2     55.9      6.8      3.1      3.6      4.9      4.4
  AREA=    23.7     65.6     60.4     21.3     30.5    201.5     50.6     32.2     39.3     54.1     50.3
   VEL=     1.7      2.8      3.9      4.6      5.9      9.6      4.6      3.3      3.2      3.1      3.0
 DEPTH=      .6      1.3      2.0      2.7      3.8      4.3      2.7      1.6      1.5      1.5      1.4

CCHV=     .100 CEHV=     .300
*SECNO  .372
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      852.0    1063.0  TYPE=      1  TARGET=      211.000
            ET RECORD: STA 852. & 1063. ELIMINATE INEFFECTIVE
                       FLOW AREAS IN OVERBANKS

            MAPPED FLOODPLAIN TO CWSEL

      .372      4.57   2000.37   2000.37       .00   2001.62      1.25      1.02       .11   1995.80
    3459.0     853.6    2271.1     334.3     201.4     214.9      63.3       7.6       3.8   1995.80
       .02      4.24     10.57      5.28      .045      .030      .045      .000   1995.80    852.00
   .005996      180.      180.      180.         0         5         0       .00    201.80   1053.80
```

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .37 CWSEL= 2000.37

STA=	852.	870.	897.	934.	954.	964.	972.	976.	980.	1027.	1034.	1048.	1054.
PER Q=	.3	1.0	4.4	5.2	3.9	3.9	2.6	3.4	65.7	5.6	4.0	.1	
AREA=	7.6	18.2	48.9	42.5	27.2	25.0	14.7	17.3	214.9	29.2	31.8	2.2	
VEL=	1.4	2.0	3.1	4.2	5.0	5.5	6.0	6.8	10.6	6.6	4.4	1.3	
DEPTH=	.4	.7	1.3	2.1	2.7	3.1	3.7	4.3	4.6	4.2	2.3	.4	

*SECNO .420

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 970.0 1032.0 TYPE= 1 TARGET= 62.000
ET RECORD: STA 970. & 1032. ELIMINATE INEFFECTIVE
FLOW AREAS IN OVERBANKS

MAPPED FLOODPLAIN TO CWSEL

.420	6.97	2005.97	2005.97	.00	2008.50	2.53	1.60	.38	2000.00
3459.0	481.8	2718.8	258.4	74.2	194.2	41.3	9.9	4.5	2000.00
.03	6.49	14.00	6.26	.045	.030	.045	.000	1999.00	970.00
.006638	255.	255.	250.	0	14	0	.00	61.58	1031.58

FLOW DISTRIBUTION FOR SECNO= .42 CWSEL= 2005.97

STA=	970.	972.	990.	1020.	1030.	1032.
PER Q=	.2	13.7	78.6	7.4	.1	
AREA=	2.6	71.5	194.2	39.7	1.6	
VEL=	2.4	6.6	14.0	6.4	1.9	
DEPTH=	1.3	4.0	6.5	4.0	1.0	

*SECNO .502

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

   .502      4.51   2015.31   2015.31       .00   2016.96      1.65      3.20       .09   2011.00
 3459.0    1117.3    2152.3     189.5     166.1     178.9      36.6      13.3       5.4   2011.80
   .04      6.73     12.03      5.18      .045      .030      .045      .000   2010.80    925.53
.008554     410.      430.      440.         0        14         0       .00    118.23   1043.76


FLOW DISTRIBUTION FOR SECNO=      .50        CWSEL=   2015.31

STA=     926.     927.     932.     933.     936.     945.     958.     979.    1021.    1030.    1038.    1044.
  PER Q=      .0       .8       .3      1.7      5.0      7.6     16.9     62.2      4.4      1.0       .0
   AREA=      .7      7.3      2.5      9.0     27.1     40.5     79.0    178.9     25.3     10.1      1.2
    VEL=     1.6      3.9      4.5      6.4      6.4      6.5      7.4     12.0      6.0      3.5      1.1
  DEPTH=      .5      1.5      2.5      3.0      3.0      3.1      3.8      4.3      2.8      1.3       .2

*SECNO  .563

3265 DIVIDED FLOW


3701 HV CHANGED MORE THAN HVINS

3719 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   .563      5.22   2020.72   2020.72       .00   2021.79      1.07      2.60       .06   2017.30
 3459.0      50.8    1481.2    1927.0      10.0     132.4     376.0      16.5       6.7   2017.30
   .05      5.09     11.19      5.13      .045      .030      .045      .000   2015.50    981.65
.008031     325.      325.      290.         0        11         0       .00    245.90   1294.62


FLOW DISTRIBUTION FOR SECNO=      .56        CWSEL=   2020.72

STA=     982.     986.    1019.    1028.    1042.    1084.    1106.    1121.    1139.    1167.    1171.    1178.    1207.
  PER Q=     1.5     42.8      4.5      3.1      8.0     10.8      6.6      5.2      4.8      4.2      3.5      4.8
   AREA=    10.0    132.4     25.9     24.8     65.3     62.8     40.2     37.3     32.6     18.3     20.3     42.3
    VEL=     5.1     11.2      6.0      4.3      4.2      6.0      5.7      4.8      5.0      7.9      5.9      4.0
  DEPTH=     2.3      4.0      2.9      1.8      1.6      2.9      2.7      2.1      1.2      4.6      2.9      1.5

STA=    1207.    1295.
  PER Q=      .3
   AREA=     6.1
    VEL=     1.4
  DEPTH=      .1
```

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .613

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.613	3.80	2027.30	2027.30	.00	2028.20	.90	2.10	.02	2023.60
3459.0	274.8	1453.0	1731.2	75.5	140.4	352.5	19.8	8.5	2023.90
.06	3.64	10.35	4.91	.045	.030	.045	.000	2023.50	918.83
.007649	260.	260.	275.	0	19	0	.00	335.93	1325.75

FLOW DISTRIBUTION FOR SECNO= .61 CWSEL= 2027.30

STA=	919.	959.	975.	1013.	1023.	1044.	1094.	1197.	1213.	1225.	1230.	1235.	1239.
PER Q=	5.0	2.9	42.0	3.7	3.1	5.6	4.9	4.4	4.2	4.9	5.9	4.5	
AREA=	49.1	26.4	140.4	24.5	29.3	59.7	56.0	32.5	28.3	22.3	24.6	19.0	
VEL=	3.5	3.9	10.4	5.2	3.6	3.3	3.0	4.6	5.1	7.5	8.3	8.2	
DEPTH=	1.2	1.7	3.7	2.4	1.4	1.2	.5	2.0	2.4	4.5	4.9	4.7	

	1239.	1245.	1323.	1326.
PER Q=	5.4	3.4	.1	
AREA=	25.2	28.9	2.2	
VEL=	7.4	4.1	2.3	
DEPTH=	4.2	.4	.8	

*SECNO .685

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.685	4.71	2034.91	2034.91	.00	2035.90	.99	2.82	.03	2030.60
3459.0	237.6	1258.5	1962.9	47.7	109.2	395.7	24.7	11.2	2030.60
.07	4.99	11.53	4.96	.045	.030	.045	.000	2030.20	974.97
.007205	380.	380.	380.	0	11	0	.00	285.89	1367.54

FLOW DISTRIBUTION FOR SECNO= .69 CWSEL= 2034.91

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	975.	995.	998.	1022.	1033.	1043.	1065.	1144.	1163.	1173.	1180.	1189.	1195.
PER Q=	4.8	2.1	36.4	8.4	4.8	3.2	3.5	4.5	3.7	5.1	9.1	3.7	
AREA=	36.5	11.1	109.2	42.4	29.1	30.4	43.0	36.2	24.7	26.3	41.0	20.7	
VEL=	4.6	6.4	11.5	6.9	5.7	3.6	2.8	4.3	5.1	6.6	7.7	6.2	
DEPTH=	1.8	3.7	4.5	3.9	2.9	1.4	.5	1.9	2.5	3.8	4.6	3.5	

STA=	1195.	1219.	1266.	1365.	1368.
PER Q=	3.7	3.0	3.7	.3	
AREA=	35.0	39.8	22.8	4.2	
VEL=	3.7	2.6	5.6	2.8	
DEPTH=	1.5	.8	.2	1.7	

*SECNO .774

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

3485 MINIMUM SPECIFIC ENERGY
CRITICAL DEPTH ASSUMED

.774	.91	2044.71	2044.71	.00	2045.00	.29	2.58	.07	2044.50
3459.0	.7	42.6	3415.7	1.4	18.9	785.7	31.6	15.0	2044.70
.10	.50	2.26	4.35	.045	.030	.045	.000	2043.80	912.90
.004728	465.	470.	440.	0	29	0	.00	452.82	1555.42

FLOW DISTRIBUTION FOR SECNO= .77 CWSEL= 2044.71

STA=	913.	986.	1021.	1218.	1241.	1247.	1257.	1274.	1363.	1429.	1463.	1494.	1511.
PER Q=	.0	1.2	6.4	9.7	4.3	7.3	4.3	3.1	5.5	10.3	12.8	8.6	
AREA=	1.4	18.9	76.5	70.1	25.3	42.6	37.0	60.2	72.9	85.3	93.3	57.9	
VEL=	.5	2.3	2.9	4.8	5.9	6.0	4.0	1.8	2.6	4.2	4.7	5.1	
DEPTH=	.0	.5	.4	3.0	4.2	4.3	2.2	.7	1.1	2.5	3.0	3.4	

STA=	1511.	1529.	1544.	1555.
PER Q=	11.5	11.0	4.0	
AREA=	70.4	63.9	30.5	
VEL=	5.6	6.0	4.5	
DEPTH=	3.9	4.3	2.7	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .868

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.868	3.16	2055.16	2055.16	.00	2056.22	1.06	3.31	.23	2053.40
3459.0	39.0	738.4	2681.6	12.6	67.9	361.9	38.1	18.5	2053.30
.12	3.09	10.88	7.41	.045	.030	.045	.000	2052.00	969.60
.012882	520.	500.	445.	0	20	0	.00	230.13	1355.39

FLOW DISTRIBUTION FOR SECNO= .87 CWSEL= 2055.16

STA=	970.	995.	1020.	1226.	1240.	1271.	1299.	1319.	1326.	1339.	1341.	1353.	1355.
PER Q=	1.1	21.3	3.3	3.4	7.8	7.4	8.8	6.4	21.3	3.7	15.0	.4	
AREA=	12.6	67.9	34.2	22.6	51.5	48.0	46.3	25.3	66.5	11.1	52.4	4.1	
VEL=	3.1	10.9	3.4	5.2	5.3	5.4	6.5	8.7	11.1	11.4	9.9	3.7	
DEPTH=	.5	2.7	.2	1.6	1.7	1.7	2.3	3.6	5.1	5.6	4.4	1.7	

*SECNO 1.012

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Q = 2167 cfs: FROM HEC-1 (RE17)

1.012	3.02	2074.92	2074.92	.00	2076.07	1.15	9.51	.03	2072.40
2167.0	1280.0	811.4	75.7	194.1	71.9	16.2	44.3	21.6	2072.00
.14	6.59	11.28	4.67	.045	.030	.045	.000	2071.90	802.05
.012677	730.	760.	740.	0	8	0	.00	127.96	1025.11

FLOW DISTRIBUTION FOR SECNO= 1.01 CWSEL= 2074.92

STA=	802.	817.	830.	857.	881.	989.	1014.	1025.
PER Q=	5.9	15.6	27.6	6.8	3.3	37.4	3.5	
AREA=	24.8	41.8	78.7	32.3	16.5	71.9	16.2	
VEL=	5.1	8.1	7.6	4.5	4.3	11.3	4.7	
DEPTH=	1.7	3.2	2.9	1.4	.2	2.9	1.5	

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.105
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.105	4.25	2088.55	2088.55	.00	2089.26	.71	4.95	.04	2085.00
2167.0	186.6	535.8	1444.6	31.7	47.6	349.9	48.2	23.7	2085.10
.17	5.88	11.26	4.13	.045	.030	.045	.000	2084.30	980.40
.008342	490.	490.	480.	0	14	0	.00	250.77	1231.17

FLOW DISTRIBUTION FOR SECNO= 1.11 CWSEL= 2088.55

STA=	980.	989.	993.	1005.	1033.	1069.	1109.	1140.	1159.	1176.	1203.	1226.	1231.
PER Q=	4.3	4.3	24.7	7.4	11.0	16.2	12.6	6.1	4.4	4.8	4.0	.3	
AREA=	18.1	13.6	47.6	41.0	57.6	76.0	58.9	31.3	24.6	31.2	26.1	3.2	
VEL=	5.2	6.8	11.3	3.9	4.1	4.6	4.6	4.2	3.9	3.3	3.3	2.2	
DEPTH=	2.1	3.4	4.0	1.5	1.6	1.9	1.9	1.6	1.4	1.2	1.1	.6	

*SECNO 1.186
7185 MINIMUM SPECIFIC ENERGY
CRITICAL DEPTH ASSUMED

1.186	2.83	2102.33	2102.33	.00	2103.51	1.18	4.21	.14	2099.80
2167.0	124.6	1209.4	833.0	22.2	116.9	136.3	51.7	25.5	2099.70
.18	5.60	10.34	6.11	.045	.030	.045	.000	2099.50	976.93
.011490	430.	430.	435.	0	14	0	.00	116.31	1093.24

FLOW DISTRIBUTION FOR SECNO= 1.19 CWSEL= 2102.33

STA=	977.	983.	989.	1032.	1049.	1067.	1075.	1088.	1093.
PER Q=	1.3	4.4	55.8	13.0	12.0	4.6	7.8	1.0	
AREA=	7.4	14.9	116.9	43.0	41.9	17.0	28.3	6.1	
VEL=	3.8	6.5	10.3	6.6	6.2	5.9	5.9	3.7	
DEPTH=	1.2	2.5	2.7	2.5	2.3	2.1	2.2	1.2	

*SECNO 1.253
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.253	3.18	2110.28	2110.28	.00	2111.01	.73	3.12	.05	2107.10
2167.0	1023.9	1018.6	124.4	280.1	111.2	27.9	54.5	26.9	2107.10
.20	3.66	9.16	4.47	.045	.030	.045	.000	2107.10	770.50
.007316	340.	350.	340.	0	8	0	.00	246.21	1016.71

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.25 CWSEL= 2110.28

STA=	771.	778.	802.	826.	862.	919.	939.	959.	966.	967.	1002.	1015.	1017.
PER Q=	.3	7.0	8.9	7.5	10.5	4.4	5.6	2.5	.5	47.0	5.7	.1	
AREA=	3.7	39.1	45.1	47.8	70.0	27.6	31.6	12.8	2.6	111.2	27.0	.8	
VEL=	1.7	3.9	4.3	3.4	3.2	3.5	3.8	4.2	3.9	9.2	4.6	1.6	
DEPTH=	.5	1.6	1.9	1.3	1.2	1.4	1.6	1.8	2.6	3.2	2.1	.5	

*SECNO 1.370
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.370	3.25	2126.25	2126.25	.00	2127.28	1.03	5.38	.09	2123.10
2167.0	437.2	788.3	941.5	77.6	70.7	161.8	59.6	29.6	2123.10
.22	5.63	11.15	5.82	.045	.030	.045	.000	2123.00	939.22
.010671	610.	620.	610.	0	5	0	.00	138.55	1077.77

FLOW DISTRIBUTION FOR SECNO= 1.37 CWSEL= 2126.25

STA=	939.	958.	978.	1000.	1007.	1067.	1078.
PER Q=	5.7	14.5	36.4	6.9	35.2	1.3	
AREA=	27.6	50.1	70.7	21.0	132.2	8.6	
VEL=	4.5	6.3	11.1	7.1	5.8	3.3	
DEPTH=	1.5	2.5	3.2	3.0	2.2	.8	

*SECNO 1.461

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.461	5.46	2141.16	2141.16	.00	2143.49	2.33	5.04	.39	2135.70
2167.0	1211.7	918.6	36.7	129.5	59.6	8.8	62.4	30.6	2135.80
.23	9.36	15.40	4.16	.045	.030	.045	.000	2135.70	968.65
.010156	490.	480.	480.	0	14	0	.00	43.63	1012.28

FLOW DISTRIBUTION FOR SECNO= 1.46 CWSEL= 2141.16

STA=	969.	971.	976.	977.	980.	987.	998.	1009.	1012.
PER Q=	.3	4.3	1.4	6.2	16.0	27.7	42.4	1.7	
AREA=	2.2	14.3	4.2	14.3	35.4	59.0	59.6	8.8	
VEL=	3.0	6.4	7.1	9.4	9.8	10.2	15.4	4.2	
DEPTH=	.9	2.9	4.2	4.8	5.1	5.4	5.4	2.7	

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.532

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.532	6.75	2147.55	2147.55	.00	2150.69	3.14	3.42	.24	2141.30
2167.0	270.3	1487.8	409.0	30.5	93.0	43.5	64.0	30.9	2141.00
.24	8.87	15.99	9.41	.045	.030	.045	.000	2140.80	984.31
.008372	360.	375.	390.	0	11	0	.00	27.23	1011.54

FLOW DISTRIBUTION FOR SECNO= 1.53 CWSEL= 2147.55

STA=	984.	985.	986.	990.	1004.	1009.	1011.	1012.
PER Q=	.1	1.0	11.4	68.7	15.2	3.6	.1	
AREA=	1.3	4.8	24.4	93.0	31.8	10.5	1.2	
VEL=	1.5	4.7	10.1	16.0	10.3	7.5	1.3	
DEPTH=	1.8	4.8	6.1	6.6	6.4	5.3	2.2	

0 1.626
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.626	9.89	2165.89	2165.89	.00	2169.24	3.35	3.38	.06	2157.00
2167.0	133.2	1636.2	397.6	26.0	99.4	55.9	65.9	31.3	2157.00
.25	5.13	16.47	7.12	.045	.030	.045	.000	2156.00	987.02
.005681	495.	495.	495.	0	11	0	.00	30.88	1017.90

FLOW DISTRIBUTION FOR SECNO= 1.63 CWSEL= 2165.89

STA=	987.	992.	993.	994.	995.	1006.	1008.	1009.	1011.	1013.	1014.	1018.
PER Q=	.8	.6	1.9	2.9	75.5	10.5	1.9	2.5	2.0	.8	.8	
AREA=	6.5	4.3	6.9	8.3	99.4	21.7	7.5	10.3	7.3	3.2	5.8	
VEL=	2.7	2.8	5.9	7.6	16.5	10.4	5.6	5.2	5.8	5.1	2.8	
DEPTH=	1.3	4.3	6.9	8.3	9.5	8.7	7.5	5.1	3.6	3.2	1.5	

*SECNO 1.719

3301 HV CHANGED MORE THAN HVINS

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.719	5.59	2177.59	2177.59	.00	2179.73	2.14	3.26	.12	2172.50
2167.0	261.0	1363.2	542.9	35.5	99.3	76.3	68.1	31.7	2172.50
.26	7.36	13.73	7.11	.045	.030	.045	.000	2172.00	975.65
.007971	500.	490.	475.	0	11	0	.00	50.55	1026.21

FLOW DISTRIBUTION FOR SECNO= 1.72 CWSEL= 2177.59

STA=	976.	977.	981.	985.	1003.	1012.	1015.	1016.	1026.
PER Q=	.1	4.6	7.3	62.9	16.6	4.0	1.1	3.4	
AREA=	1.5	14.7	19.1	99.3	43.1	12.0	3.5	17.8	
VEL=	1.9	6.7	8.3	13.7	8.4	7.2	6.8	4.1	
DEPTH=	1.1	3.7	4.8	5.5	4.8	4.0	3.5	1.7	

*SECNO 1.779

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.779	4.22	2186.82	2186.82	.00	2187.98	1.16	2.57	.10	2183.80
2167.0	506.2	1034.4	626.4	103.1	94.6	97.0	70.0	32.4	2183.10
.27	4.91	10.93	6.46	.045	.030	.045	.000	2182.60	855.23
.008304	300.	320.	320.	0	15	0	.00	148.64	1047.30

FLOW DISTRIBUTION FOR SECNO= 1.78 CWSEL= 2186.82

STA=	855.	907.	975.	983.	988.	991.	1016.	1045.	1047.
PER Q=	3.3	3.3	9.6	4.5	2.6	47.7	28.3	.6	
AREA=	31.5	17.8	29.4	15.4	9.1	94.6	93.4	3.7	
VEL=	2.3	4.0	7.1	6.4	6.3	10.9	6.6	3.8	
DEPTH=	.6	.3	3.7	3.1	3.0	3.8	3.2	1.6	

*SECNO 1.860

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3265 DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.860	2.40	2199.70	2199.70	.00	2200.22	.52	3.92	.06	2197.30
2167.0	203.8	491.1	1472.1	40.4	52.7	357.8	73.5	35.0	2197.30
.29	5.04	9.31	4.11	.045	.030	.045	.000	2197.30	954.02
.011020	420.	425.	400.	0	11	0	.00	412.51	1467.31

FLOW DISTRIBUTION FOR SECNO= 1.86 CWSEL= 2199.70

STA=	954.	971.	981.	1003.	1013.	1028.	1045.	1069.	1089.	1112.	1327.	1393.	1414.
PER Q=	3.5	5.9	22.7	5.3	4.7	3.3	5.2	4.3	4.1	4.7	16.3	13.8	
AREA=	18.4	22.0	52.7	20.5	22.5	19.0	28.7	23.9	24.5	42.8	85.6	49.3	
VEL=	4.1	5.9	9.3	5.6	4.5	3.7	3.9	3.9	3.7	2.4	4.1	6.1	
DEPTH=	1.1	2.2	2.4	2.0	1.5	1.1	1.2	1.2	1.1	.2	1.3	2.3	

STA=	1414.	1431.	1467.
PER Q=	4.5	1.8	
AREA=	22.9	18.1	
VEL=	4.2	2.2	
DEPTH=	1.3	.5	

*SECNO 1.937
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.937	1.59	2209.39	2209.39	.00	2209.90	.51	4.74	.00	2208.00
2167.0	1428.3	475.4	263.4	298.2	56.5	60.3	76.8	38.2	2208.00
.31	4.79	8.41	4.37	.045	.030	.045	.000	2207.80	679.53
.016988	390.	410.	280.	0	14	0	.00	401.94	1081.47

FLOW DISTRIBUTION FOR SECNO= 1.94 CWSEL= 2209.39

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	680.	711.	724.	738.	751.	767.	841.	892.	921.	940.	964.	982.	1020.
PER Q=	6.6	6.7	6.7	6.1	3.4	3.2	5.9	7.7	5.7	7.7	6.2	21.9	
AREA=	31.1	23.0	23.5	22.1	16.6	29.8	36.1	34.4	24.5	32.1	25.0	56.5	
VEL=	4.6	6.3	6.2	6.0	4.4	2.4	3.5	4.8	5.1	5.2	5.4	8.4	
DEPTH=	1.0	1.8	1.7	1.6	1.0	.4	.7	1.2	1.3	1.3	1.4	1.5	

STA=	1020.	1056.	1080.	1081.
PER Q=	9.0	3.1	.0	
AREA=	41.4	18.4	.4	
VEL=	4.7	3.6	1.8	
DEPTH=	1.1	.8	.3	

*SECNO 1.977
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.977	2.67	2216.47	2216.47	.00	2217.15	.69	3.52	.05	2214.00
2167.0	849.4	591.8	725.8	188.0	59.5	137.7	79.2	40.2	2214.00
.32	4.52	9.94	5.27	.045	.030	.045	.000	2213.80	837.56
.011472	310.	210.	175.	0	14	0	.00	260.74	1098.30

FLOW DISTRIBUTION FOR SECNO= 1.98 CWSEL= 2216.47

STA=	838.	903.	928.	955.	982.	1005.	1026.	1072.	1078.	1090.	1098.
PER Q=	9.6	7.7	8.3	13.6	27.3	11.4	5.6	3.6	10.7	2.2	
AREA=	58.7	36.6	39.6	53.1	59.5	43.0	36.9	13.1	33.2	11.5	
VEL=	3.5	4.6	4.6	5.5	9.9	5.7	3.3	5.9	7.0	4.2	
DEPTH=	.9	1.5	1.5	2.0	2.6	2.1	.8	2.2	2.8	1.4	

*SECNO 2.045
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.045	3.24	2226.44	2226.44	.00	2227.42	.99	3.59	.09	2223.40
2167.0	537.0	987.1	642.9	115.7	96.3	108.3	82.1	41.9	2223.40
.33	4.64	10.25	5.94	.045	.030	.045	.000	2223.20	884.24
.009130	365.	360.	330.	0	8	0	.00	167.54	1051.78

FLOW DISTRIBUTION FOR SECNO= 2.05 CWSEL= 2226.44

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	884.	942.	952.	960.	969.	974.	977.	1007.	1018.	1041.	1052.
PER Q=	4.5	5.0	3.7	4.6	4.4	2.7	45.6	9.2	17.4	3.1	
AREA=	36.3	20.9	15.9	19.1	14.7	9.0	96.3	31.2	61.8	15.3	
VEL=	2.7	5.2	5.0	5.2	6.5	6.5	10.3	6.4	6.1	4.4	
DEPTH=	.6	2.1	2.0	2.1	2.9	3.0	3.2	2.9	2.7	1.4	

*SECNO 2.174
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.174	3.00	2241.30	2241.30	.00	2242.51	1.21	7.13	.06	2238.70
2167.0	336.0	974.3	856.6	52.2	88.5	131.8	86.7	44.1	2238.70
.35	6.44	11.01	6.50	.045	.030	.045	.000	2238.30	956.29
.012199	640.	680.	700.	0	11	0	.00	111.90	1068.19

FLOW DISTRIBUTION FOR SECNO= 2.17 CWSEL= 2241.30

STA=	956.	979.	1010.	1017.	1026.	1031.	1048.	1054.	1062.	1068.
PER Q=	15.5	45.0	5.6	7.4	4.1	12.9	4.4	4.3	.8	
AREA=	52.2	88.5	17.9	23.4	13.0	42.0	14.4	16.0	5.0	
VEL=	6.4	11.0	6.8	6.9	6.9	6.7	6.5	5.8	3.4	
DEPTH=	2.3	2.9	2.6	2.6	2.6	2.5	2.4	2.0	.8	

*SECNO 2.229
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.229	2.48	2250.68	2250.68	.00	2251.60	.93	3.58	.03	2248.30
2167.0	1357.6	766.4	43.1	231.7	74.1	10.4	88.6	45.0	2248.30
.36	5.86	10.35	4.14	.045	.030	.045	.000	2248.20	856.47
.013081	290.	290.	260.	0	15	0	.00	167.29	1023.76

FLOW DISTRIBUTION FOR SECNO= 2.23 CWSEL= 2250.68

STA=	856.	882.	890.	900.	916.	927.	947.	959.	968.	979.	985.	1015.	1024.
PER Q=	5.3	3.5	5.5	12.6	7.0	10.4	5.7	4.1	5.0	3.5	35.4	2.0	
AREA=	25.9	13.8	19.9	39.6	23.9	38.5	21.9	16.0	19.5	12.5	74.1	10.4	
VEL=	4.4	5.4	6.0	6.9	6.3	5.8	5.6	5.5	5.5	6.1	10.3	4.1	
DEPTH=	1.0	1.7	2.0	2.5	2.2	1.9	1.8	1.8	1.8	2.1	2.5	1.2	

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 2.269
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

2.269	4.30	2255.60	2255.60	.00	2256.96	1.36	2.26	.13	2252.30
2167.0	53.3	1191.8	921.9	11.9	105.6	146.4	89.9	45.6	2252.60
.37	4.48	11.28	6.30	.045	.030	.045	.000	2251.30	989.19
.009805	180.	210.	210.	0	17	0	.00	98.82	1088.01

FLOW DISTRIBUTION FOR SECNO= 2.27 CWSEL= 2255.60

STA=	989.	998.	1028.	1043.	1054.	1062.	1070.	1079.	1088.
PER Q=	2.5	55.0	13.4	9.8	7.1	6.7	4.6	.9	
AREA=	11.9	105.6	43.6	31.9	23.2	22.4	18.6	6.6	
VEL=	4.5	11.3	6.7	6.7	6.7	6.5	5.3	2.9	
DEPTH=	1.4	3.5	2.9	2.9	2.9	2.8	2.1	.7	

*SECNO -.868
START TRIB COMP

-.868	.868	2055.163

DIVIDED FLOW

3301 HV CHANGED MORE THAN HVINS

-.868	5.86	2055.16	.00	.00	2055.58	.41	.00	2.38	2053.40
2167.0	24.4	462.6	1680.0	12.6	67.9	361.9	89.9	45.6	2053.30
.37	1.94	6.82	4.64	.045	.030	.045	.000	2049.30	969.60
.005056	0.	0.	0.	0	0	0	.00	230.13	1355.39

FLOW DISTRIBUTION FOR SECNO= -.87 CWSEL= 2055.16

STA=	970.	995.	1020.	1226.	1240.	1271.	1299.	1319.	1326.	1339.	1341.	1353.	1355.
PER Q=	1.1	21.3	3.3	3.4	7.8	7.4	8.8	6.4	21.3	3.7	15.0	.4	
AREA=	12.6	67.9	34.2	22.6	51.5	48.0	46.3	25.3	66.5	11.1	52.4	4.1	
VEL=	1.9	6.8	2.1	3.2	3.3	3.4	4.1	5.4	6.9	7.2	6.2	2.3	
DEPTH=	.5	2.7	.2	1.6	1.7	1.7	2.3	3.6	5.1	5.6	4.4	1.7	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .929
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Q = 1056 cfs: FROM HEC-1 (CE12)

.929	2.87	2061.37	2061.37	.00	2062.03	.66	2.23	.07	2058.50
1056.0	370.0	375.1	310.9	90.8	40.2	70.4	92.7	47.3	2058.50
.39	4.08	9.34	4.42	.045	.030	.045	.000	2058.50	912.11
.008726	410.	380.	360.	0	11	0	.00	153.95	1066.06

FLOW DISTRIBUTION FOR SECNO= .93 CWSEL= 2061.37

STA=	912.	938.	971.	980.	987.	1000.	1014.	1020.	1046.	1066.
PER Q=	.9	6.2	4.2	6.0	17.7	35.5	9.0	18.7	1.7	
AREA=	7.4	25.4	11.9	13.4	32.7	40.2	16.0	44.7	9.7	
VEL=	1.3	2.6	3.7	4.8	5.7	9.3	5.9	4.4	1.9	
DEPTH=	.3	.8	1.3	1.9	2.5	2.9	2.7	1.7	.5	

*SECNO 1.003
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
Q = 711 cfs: FROM HEC-1 (E10)

1.003	1.15	2069.05	2069.05	.00	2069.44	.38	4.57	.03	2067.90
711.0	474.6	101.8	134.5	109.6	12.7	34.6	94.2	48.8	2067.90
.41	4.33	8.03	3.88	.045	.030	.045	.000	2067.90	862.58
.021698	360.	390.	415.	0	18	0	.00	199.98	1062.56

FLOW DISTRIBUTION FOR SECNO= 1.00 CWSEL= 2069.05

STA=	863.	888.	935.	970.	983.	995.	1006.	1011.	1021.	1037.	1060.	1063.
PER Q=	10.9	22.3	16.6	7.9	9.0	14.3	3.3	6.3	6.1	3.2	.0	
AREA=	19.0	37.8	28.1	12.1	12.6	12.7	4.9	9.5	11.3	8.8	.2	
VEL=	4.1	4.2	4.2	4.6	5.0	8.0	4.8	4.7	3.8	2.6	.9	
DEPTH=	.7	.8	.8	.9	1.1	1.2	1.0	1.0	.7	.4	.1	

*SECNO 1.094
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.094	2.79	2081.49	2081.49	.00	2082.06	.57	6.67	.06	2078.70
711.0	416.3	228.9	65.8	114.0	25.1	13.6	96.1	50.8	2078.70
.44	3.65	9.11	4.83	.045	.030	.045	.000	2078.70	881.28
.008604	540.	480.	460.	0	20	0	.00	129.77	1011.04

ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= 1.09 CWSEL= 2081.49

STA=	881.	890.	899.	914.	927.	971.	985.	995.	1004.	1010.	1011.
PER Q=	5.5	5.3	5.8	3.8	8.6	12.4	17.1	32.2	9.1	.2	
AREA=	10.9	10.8	14.1	10.3	23.4	21.6	22.9	25.1	12.9	.8	
VEL=	3.6	3.5	2.9	2.6	2.6	4.1	5.3	9.1	5.0	1.7	
DEPTH=	1.2	1.2	.9	.8	.5	1.5	2.3	2.8	2.1	.7	

FLOODWAY DETERMINATION
1.0 FT TARGET INCREASE
T3 WASH E: MOCKINGBIRD WASH

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3							1984.98	

J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15		-1				-1			

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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV=     .100 CEHV=     .300
*SECNO  .241

3470 ENCROACHMENT STATIONS=      921.0    1017.0  TYPE=      1  TARGET=       96.000
 ELENCL=   1986.80  ELENCR=   1986.30
            CONFLUENCE OF WASH E: MOCKINGBIRD WASH
            AND HASSAYAMPA RIVER BETWEEN CROSS-SECTIONS:
                 TU (HASSAYAMPA RIVER MILE 48.85)
                 TV (HASSAYAMPA RIVER MILE 48.95)
            CROSS-SECTION DESIGNATION FROM:
                 HASSAYAMPA RIVER FLOODWAY FLOOD INSURANCE
                 STUDY, MARICOPA COUNTY, ARIZONA AND
                 UNINCORPORATED AREAS.  FEDERAL EMERGENCY
                 MANAGEMENT AGENCY, EFFECTIVE DATE
                 SEPTEMBER 4, 1991, PERFORMED BY CELLA BARR
                 ASSOCIATES UNDER CONTRACT NO. EMW-88-C-2603.

            SWSE DETERMINED BY SLOPE AREA METHOD

            X3 RECORD: CONTAIN FLOW BETWEEN LEVEES

     .241     10.68   1984.98   1984.97   1984.98   1987.02      2.04       .00       .00   1980.60
   3459.0     635.0    2362.1     461.9      87.1     182.7      61.7        .0        .0   1980.60
      .00      7.29     12.93      7.49      .045      .030      .045      .000   1974.30    932.07
  .008985        0.        0.        0.         0         4         0       .00     84.64   1016.71


CCHV=     .600 CEHV=     .800
*SECNO  .283
 WATER EL=X5 CARD=   1990.700

3301 HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      978.7    1021.3  TYPE=      1  TARGET=       42.550

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1993.60 ELREA=      1993.60
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          DOWNSTREAM FACE:  4 - 10' X 8' RCB (~3' SEDIMENT)

          X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                     FROM MANUAL CULVERT ANALYSIS

          NOTE:  EB LANE CENTERLINE SECTION WAS USED
                 TO CREATE THE DS AND US FACE SECTION
     .283      6.10   1990.70   1990.48   1990.70   1993.46      2.76      1.18       .83   1984.60
   3459.0        .0    3459.0       .0        .0     259.5        .0       1.5        .3 100000.00
     .00       .00     13.33       .00      .000      .020      .000      .000   1984.60    978.73
  .003451     225.      225.      225.         0        11         0       .00     42.55   1021.28


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    4         .020      .40       2.80      .00       5.00      10.00     56.50     8         1         1985.60   1984.60

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130, EGIC= 2001.12..MAY BE TOO LARGE IF INLET CONTROLS.
*SECNO  .294
 WATER EL=X5 CARD=   1993.900

HV CHANGED MORE THAN HVINS


3470 ENCROACHMENT STATIONS=      978.7    1021.3  TYPE=      1  TARGET=       42.550
          UPSTREAM FACE:  4 - 10' X 8' RCB (~3' SEDIMENT)

          X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                     FROM MANUAL CULVERT ANALYSIS

          NOTE:  EB LANE CENTERLINE SECTION WAS USED
                 TO CREATE THE DS AND US FACE SECTION
     .294      8.30   1993.90   1991.49   1993.90   1995.39      1.49       .13       .24   1985.60
   3459.0        .0    3459.0       .0        .0     353.2        .0       1.9        .4 100000.00
     .01       .00      9.79       .00      .000      .020      .000      .000   1985.60    978.73
  .001604      57.       57.       57.         0         8         0       .00     42.55   1021.28


CCHV=     .600 CEHV=     .800
*SECNO  .299
 WATER EL=X5 CARD=   1994.300

3470 ENCROACHMENT STATIONS=      973.0    1028.0  TYPE=      1  TARGET=       55.000
          DIVIDED HIGHWAY: MEDIAN SECTION

          X5 RECORD: WATER SURFACE ELEVATION DETERMINED
                     FROM MANULA CULVERT ANALYSIS
     .299      8.30   1994.30   1991.68   1994.30   1995.45      1.14       .03       .21   1987.00
   3459.0     105.8    3346.6       6.6      34.6     384.1       7.3       2.1        .4   1986.90
     .01      3.06      8.71       .91      .045      .020      .045      .000   1986.00    973.00
  .000884      25.       25.       25.         0        14         0       .00     55.00   1028.00
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

CCHV= .600 CEHV= .800
*SECNO .303
WATER EL=X5 CARD= 1994.300

3470 ENCROACHMENT STATIONS= 979.3 1020.8 TYPE= 1 TARGET= 41.500
DOWNSTREAM FACE: 2 - 20' SPAN R.C. BRIDGE

X5 RECORD: WATER SURFACE ELEVATION DETERMINED
FROM MANUAL CULVERT ANALYSIS

NOTE: WB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.303	8.30	1994.30	1991.99	1994.30	1995.87	1.57	.03	.34	1986.00
3459.0	.0	3459.0	.0	.0	344.4	.0	2.4	.4	100000.00
.01	.00	10.04	.00	.000	.020	.000	.000	1986.00	979.25
.001702	25.	25.	25.	0	15	0	.00	41.50	1020.75

SPECIAL BRIDGE

XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
1.25	1.78	2.80	.00	41.50	1.50	140.00	.00	1986.80	1986.00

*SECNO .311
WATER EL=X5 CARD= 1994.560

3470 ENCROACHMENT STATIONS= 979.3 1020.8 TYPE= 1 TARGET= 41.500
UPSTREAM FACE: 2 - 20' SPAN R.C. BRIDGE

X5 RECORD: WATER SURFACE ELEVATION DETERMINED
FROM MANUAL CULVERT ANALYSIS

NOTE: WB LANE CENTERLINE SECTION WAS USED
TO CREATE THE DS AND US FACE SECTION

.311	7.76	1994.56	1992.79	1994.56	1996.35	1.79	.08	.18	1986.80
3459.0	.0	3459.0	.0	.0	322.0	.0	2.7	.5	100000.00
.01	.00	10.74	.00	.000	.020	.000	.000	1986.80	979.25
.002078	42.	42.	42.	0	15	0	.00	41.50	1020.75

CCHV= .600 CEHV= .800
*SECNO .338
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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   ECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    L-BANK ELEV
            QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA      R-BANK ELEV
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN    SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID   ENDST


3470 ENCROACHMENT STATIONS=      931.0    1063.0  TYPE=      1  TARGET=      132.000
            ET RECORD: ET STATIONS 839.0 & 1161.0
                       SATISFY 1 TO 1 FLOW CONTRACTION

            MAPPED FLOODPLAIN TO CWSEL

     .338      4.60   1996.70   1996.70   1996.56   1998.24      1.54      .50      .15   1992.10
   3459.0     639.3   2384.7     435.0     118.4     207.8      88.1      3.9       .8   1992.90
     .01      5.40     11.47      4.94      .045      .030      .045     .000   1992.10    931.00
  .007395     150.      140.      140.         0        14         0      .00    132.00   1063.00


CCHV=     .100 CEHV=     .300
*SECNO  .372
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      947.0    1063.0  TYPE=      1  TARGET=      116.000
            ET RECORD: STA 852. & 1063. ELIMINATE INEFFECTIVE
                       FLOW AREAS IN OVERBANKS

            MAPPED FLOODPLAIN TO CWSEL

     .372      4.48   2000.28   2000.28   2000.37   2002.03      1.75     1.37      .06   1995.80
   3459.0     586.9   2509.5     362.7      97.6     210.6      60.9      5.5      1.3   1995.80
     .02      6.01     11.91      5.96      .045      .030      .045     .000   1995.80    947.00
  .007827     180.      180.      180.         0         8         0      .00    106.11   1053.11


*SECNO  .420

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      970.0    1032.0  TYPE=      1  TARGET=       62.000
            ET RECORD: STA 970. & 1032. ELIMINATE INEFFECTIVE
                       FLOW AREAS IN OVERBANKS

            MAPPED FLOODPLAIN TO CWSEL
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ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.420	6.98	2005.98	2005.98	2005.97	2008.50	2.53	1.83	.23	2000.00
3459.0	481.8	2718.7	258.4	74.2	194.3	41.3	7.5	1.7	2000.00
.02	6.49	14.00	6.26	.045	.030	.045	.000	1999.00	970.00
.006636	255.	255.	250.	0	14	0	.00	61.58	1031.58

*SECNO .502

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 925.5 1043.8 TYPE= 1 TARGET= 118.230

.502	4.52	2015.32	2015.32	2015.31	2016.96	1.64	3.19	.09	2011.00
3459.0	1117.5	2151.8	189.7	166.3	179.0	36.7	10.9	2.6	2011.80
.04	6.72	12.02	5.17	.045	.030	.045	.000	2010.80	925.53
.008528	410.	430.	440.	0	14	0	.00	118.23	1043.76

*SECNO .563

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 981.7 1220.0 TYPE= 1 TARGET= 238.350

.563	5.20	2020.70	2020.70	2020.72	2021.80	1.10	2.64	.05	2017.30
3459.0	50.8	1489.9	1918.3	9.9	131.6	367.6	14.0	3.8	2017.30
.05	5.15	11.32	5.22	.045	.030	.045	.000	2015.50	981.67
.008288	325.	325.	290.	0	11	0	.00	231.56	1213.23

*SECNO .613

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 959.0 1282.0 TYPE= 1 TARGET= 323.000

.613	3.90	2027.40	2027.40	2027.30	2028.37	.97	2.14	.01	2023.60
3459.0	108.8	1521.4	1828.8	28.1	144.3	364.1	17.3	5.5	2023.90
.06	3.87	10.55	5.02	.045	.030	.045	.000	2023.50	959.00
.007657	260.	260.	275.	0	19	0	.00	292.75	1257.99

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO  .685

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      975.0    1219.0  TYPE=      1  TARGET=      244.030
      .685      4.82   2035.02   2035.02   2034.91   2036.13      1.11      2.85       .04   2030.60
    3459.0     259.8    1326.6    1872.6      50.3     111.9     349.8      21.8       7.8   2030.60
       .07      5.17     11.86      5.35      .045      .030      .045      .000   2030.20    974.97
   .007371      380.      380.      380.         0        11         0       .00    233.74   1219.00


*SECNO  .774
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      970.0    1363.0  TYPE=      1  TARGET=      393.000
      .774      1.53   2045.33   2045.33   2044.71   2046.01       .67      4.23       .04   2044.50
    3459.0      27.2     250.0    3181.8      10.1      40.8     479.2      27.2      11.0   2044.70
       .09      2.68      6.13      6.64      .045      .030      .045      .000   2043.80    970.00
   .012509      465.      470.      440.         0        17         0       .00    393.00   1363.00


*SECNO  .868

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      985.0    1355.4  TYPE=      1  TARGET=      370.390
      .868      3.13   2055.13   2055.13   2055.16   2056.22      1.09      5.88       .13   2053.40
    3459.0      34.6     739.4    2685.0       9.1      67.1     356.3      32.2      14.1   2053.30
       .10      3.80     11.02      7.54      .045      .030      .045      .000   2052.00    985.00
   .013427      520.      500.      445.         0        17         0       .00    213.93   1355.37


*SECNO 1.012

3265 DIVIDED FLOW
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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      802.0    1025.1  TYPE=      1  TARGET=      223.060
            Q = 2167 cfs:  FROM HEC-1 (RE17)
    1.012      3.03   2074.93   2074.93   2074.92   2076.07      1.14      9.69       .01   2072.40
   2167.0    1280.3     810.6      76.1     195.3      72.3      16.3      38.3     17.0   2072.00
      .13      6.56     11.22      4.66      .045      .030      .045      .000   2071.90    802.05
  .012462      730.      760.      740.         0         8         0       .00    128.15   1025.11


*SECNO 1.105
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      980.4    1109.0  TYPE=      1  TARGET=      128.600
    1.105      4.81   2089.11   2089.11   2088.55   2090.23      1.11      5.08       .00   2085.00
   2167.0     260.8     688.4    1217.8      38.8      54.3     232.9      41.7      18.5   2085.10
      .15      6.72     12.67      5.23      .045      .030      .045      .000   2084.30    980.40
  .008856      490.      490.      480.         0        17         0       .00    128.60   1109.00


*SECNO 1.186
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      976.9    1093.2  TYPE=      1  TARGET=      116.310
    1.186      2.83   2102.33   2102.33   2102.33   2103.51      1.17      4.33       .02   2099.80
   2167.0     124.6    1209.2     833.2      22.3     117.1     136.5      44.7      19.7   2099.70
      .16      5.60     10.33      6.10      .045      .030      .045      .000   2099.50    976.93
  .011438      430.      430.      435.         0        14         0       .00    116.31   1093.24


*SECNO 1.253
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      770.5    1016.7  TYPE=      1  TARGET=      246.210
    1.253      3.18   2110.28   2110.28   2110.28   2111.01       .73      3.12       .04   2107.10
   2167.0    1024.0    1018.6     124.4     280.2     111.2      27.9      47.4      21.1   2107.10
      .18      3.66      9.16      4.47      .045      .030      .045      .000   2107.10    770.50
  .007313      340.      350.      340.         0         8         0       .00    246.21   1016.71
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.370
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 939.2 1077.8 TYPE= 1 TARGET= 138.550

1.370	3.25	2126.25	2126.25	2126.25	2127.28	1.03	5.38	.09	2123.10
2167.0	437.2	788.3	941.5	77.6	70.7	161.9	52.5	23.8	2123.10
.20	5.63	11.14	5.82	.045	.030	.045	.000	2123.00	939.22
.010667	610.	620.	610.	0	5	0	.00	138.55	1077.77

*SECNO 1.461

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 968.7 1012.3 TYPE= 1 TARGET= 43.630

1.461	5.46	2141.16	2141.16	2141.16	2143.49	2.33	5.03	.39	2135.70
167.0	1211.8	918.6	36.6	129.5	59.6	8.8	55.3	24.8	2135.80
.21	9.36	15.40	4.16	.045	.030	.045	.000	2135.70	968.65
.010148	490.	480.	480.	0	14	0	.00	43.63	1012.28

*SECNO 1.532

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 984.3 1011.5 TYPE= 1 TARGET= 27.230

1.532	6.75	2147.55	2147.55	2147.55	2150.69	3.14	3.42	.24	2141.30
2167.0	270.2	1487.8	408.9	30.5	93.0	43.4	56.9	25.1	2141.00
.22	8.87	16.00	9.41	.045	.030	.045	.000	2140.80	984.31
.008384	360.	375.	390.	0	11	0	.00	27.23	1011.54

*SECNO 1.626
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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   ECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
            QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
   TIME     VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE    XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=      987.0    1017.9  TYPE=      1  TARGET=      30.880
     1.626      9.88   2165.88   2165.88   2165.89   2169.24      3.36      3.39       .06   2157.00
    2167.0     133.1    1636.6     397.3      25.9      99.3      55.7      58.9      25.5   2157.00
       .23      5.14     16.49      7.13      .045      .030      .045      .000   2156.00    987.03
   .005700      495.      495.      495.         0        11         0       .00     30.86   1017.89


*SECNO 1.719

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      975.7    1026.2  TYPE=      1  TARGET=      50.560
     1.719      5.61   2177.61   2177.61   2177.59   2179.73      2.12      3.24       .12   2172.50
    2167.0     261.2    1361.9     543.9      35.7      99.7      76.8      61.1      25.9   2172.50
       .24      7.32     13.67      7.08      .045      .030      .045      .000   2172.00    975.65
   .007856      500.      490.      475.         0        11         0       .00     50.56   1026.21


*SECNO 1.779

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      855.2    1047.3  TYPE=      1  TARGET=     192.070
     1.779      4.23   2186.83   2186.83   2186.82   2187.98      1.16      2.55       .10   2183.80
    2167.0     506.9    1033.8     626.3     103.6      94.7      97.2      62.9      26.6   2183.10
       .25      4.90     10.91      6.44      .045      .030      .045      .000   2182.60    855.23
   .008256      300.      320.      320.         0        15         0       .00    148.76   1047.30


*SECNO 1.860

3265 DIVIDED FLOW
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ECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 954.0 1467.3 TYPE= 1 TARGET= 513.290

1.860	2.40	2199.70	2199.70	2199.70	2200.22	.52	3.90	.06	2197.30
2167.0	203.8	490.6	1472.6	40.5	52.8	358.6	66.4	29.2	2197.30
.27	5.04	9.30	4.11	.045	.030	.045	.000	2197.30	954.02
.010971	420.	425.	400.	0	11	0	.00	412.98	1467.31

*SECNO 1.937
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 679.5 1081.5 TYPE= 1 TARGET= 401.940

1.937	1.59	2209.39	2209.39	2209.39	2209.90	.51	4.71	.00	2208.00
2167.0	1428.5	474.9	263.6	299.2	56.6	60.5	69.8	32.4	2208.00
.29	4.77	8.39	4.36	.045	.030	.045	.000	2207.80	679.53
016837	390.	410.	280.	0	14	0	.00	401.94	1081.47

*SECNO 1.977
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 837.6 1098.3 TYPE= 1 TARGET= 260.740

1.977	2.67	2216.47	2216.47	2216.47	2217.15	.69	3.51	.05	2214.00
2167.0	849.3	591.9	725.8	187.9	59.5	137.6	72.2	34.4	2214.00
.30	4.52	9.95	5.27	.045	.030	.045	.000	2213.80	837.57
.011488	310.	210.	175.	0	14	0	.00	260.73	1098.29

*SECNO 2.045
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 884.2 1051.8 TYPE= 1 TARGET= 167.540

2.045	3.23	2226.43	2226.43	2226.44	2227.42	.99	3.60	.09	2223.40
2167.0	536.9	987.2	642.9	115.6	96.3	108.2	75.0	36.1	2223.40
.31	4.64	10.26	5.94	.045	.030	.045	.000	2223.20	884.24
.009139	365.	360.	330.	0	8	0	.00	167.53	1051.78

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 2.174
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      956.3    1068.2  TYPE=      1  TARGET=      111.900
     2.174      3.00   2241.30   2241.30   2241.30   2242.51      1.21      7.13       .06   2238.70
    2167.0     336.0     974.3     856.6      52.2      88.5     131.7      79.7      38.3   2238.70
       .34      6.44     11.01      6.50      .045      .030      .045      .000   2238.30    956.29
   .012207      640.      680.      700.         0        11         0       .00    111.90   1068.19


*SECNO 2.229
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      856.5    1023.8  TYPE=      1  TARGET=      167.290
     2.229      2.48   2250.68   2250.68   2250.68   2251.60       .92      3.57       .03   2248.30
    2167.0    1357.9     765.9      43.2     232.3      74.2      10.4      81.6      39.2   2248.30
       .35      5.85     10.32      4.13      .045      .030      .045      .000   2248.20    856.47
   .012994      290.      290.      260.         0        15         0       .00    167.29   1023.76


*SECNO 2.269
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      989.2    1088.0  TYPE=      1  TARGET=       98.820
     2.269      4.31   2255.61   2255.61   2255.60   2256.96      1.35      2.24       .13   2252.30
    2167.0      53.4    1191.5     922.1      11.9     105.7     146.6      82.9      39.8   2252.60
       .35      4.47     11.27      6.29      .045      .030      .045      .000   2251.30    989.19
   .009768      180.      210.      210.         0        17         0       .00     98.82   1088.01


*SECNO  -.868
START TRIB COMP
     -.868      .868  2055.132

3265 DIVIDED FLOW


3301 HV CHANGED MORE THAN HVINS
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 ECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    L-BANK ELEV
          QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA      R-BANK ELEV
 TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN    SSTA
 SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID   ENDST


3470 ENCROACHMENT STATIONS=      969.6    1355.4  TYPE=      1  TARGET=      385.790
    -.868     5.83  2055.13      .00  2055.16  2055.56      .43      .00     2.37  2053.40
   2167.0     23.4    462.9   1680.8     11.9     67.1    356.3     82.9     39.8  2053.30
      .35     1.97     6.90     4.72     .045     .030     .045     .000  2049.30   969.96
  .005261       0.       0.       0.        0        0        0      .00   227.46  1355.37


*SECNO  .929
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      912.1    1066.1  TYPE=      1  TARGET=      153.950
            Q = 1056 cfs:  FROM HEC-1 (CE12)
     .929     2.85  2061.35  2061.35  2061.37  2062.03      .68     2.32      .08  2058.50
   1056.0    368.3    377.3    310.4     89.2     39.9     69.5     85.6     41.4  2058.50
      .37     4.13     9.45     4.47     .045     .030     .045     .000  2058.50   912.93
  .009013     410.     380.     360.        0        8        0      .00   152.75  1065.68


 1.003
 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      862.6    1062.6  TYPE=      1  TARGET=      199.980
            Q = 711 cfs:  FROM HEC-1 (E10)
    1.003     1.16  2069.06  2069.06  2069.05  2069.44      .38     4.66      .03  2067.90
    711.0    474.6    101.7    134.6    109.9     12.7     34.7     87.1     43.0  2067.90
      .39     4.32     8.00     3.88     .045     .030     .045     .000  2067.90   862.58
  .021531     360.     390.     415.        0       18        0      .00   199.98  1062.56


*SECNO 1.094
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      881.3    1011.0  TYPE=      1  TARGET=      129.760
    1.094     2.79  2081.49  2081.49  2081.49  2082.06      .57     6.67      .06  2078.70
    711.0    416.1    229.1     65.8    113.8     25.1     13.6     89.0     44.9  2078.70
      .42     3.66     9.12     4.83     .045     .030     .045     .000  2078.70   881.28
  .008635     540.     480.     460.        0       20        0      .00   129.76  1011.04
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THIS RUN EXECUTED 06JUL92 16:04:09

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

WASH E: MOCKINGBIRD WASH

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.241	.00	.00	.00	1974.30	3459.00	1984.98	1984.97	1987.02	89.85	12.93	331.59	364.91
	.241	.00	.00	.00	1974.30	3459.00	1984.98	1984.97	1987.02	89.85	12.93	331.59	364.91
*	.283	225.00	.00	.00	1984.60	3459.00	1990.70	1990.48	1993.46	28.86	13.33	259.55	643.87
*	.283	225.00	.00	.00	1984.60	3459.00	1990.70	1990.48	1993.46	34.51	13.33	259.55	588.84
	.294	56.50	100000.00	100000.00	1985.60	3459.00	1993.90	1991.49	1995.36	10.20	9.73	412.19	1083.13
	.294	56.50	100000.00	100000.00	1985.60	3459.00	1993.90	1991.49	1995.39	16.04	9.79	353.16	863.64
*	.299	25.00	.00	.00	1986.00	3459.00	1994.30	1991.68	1995.45	8.84	8.71	425.92	1163.29
*	.299	25.00	.00	.00	1986.00	3459.00	1994.30	1991.68	1995.45	8.84	8.71	425.92	1163.29
*	.303	25.00	.00	.00	1986.00	3459.00	1994.30	1992.00	1995.60	9.59	9.43	609.77	1116.77
*	.303	25.00	.00	.00	1986.00	3459.00	1994.30	1991.99	1995.87	17.02	10.04	344.44	838.36
*	.311	41.50	100000.00	100000.00	1986.80	3459.00	1994.56	1994.56	1995.82	10.73	9.54	707.39	1056.08
*	.311	41.50	100000.00	100000.00	1986.80	3459.00	1994.56	1992.79	1996.35	20.78	10.74	322.03	758.87
*	.338	140.00	.00	.00	1992.10	3459.00	1996.56	1996.56	1997.45	53.96	9.60	629.41	470.88
*	.338	140.00	.00	.00	1992.10	3459.00	1996.70	1996.70	1998.24	73.95	11.47	414.34	402.25
*	.372	180.00	.00	.00	1995.80	3459.00	2000.37	2000.37	2001.62	59.96	10.57	479.56	446.71
*	.372	180.00	.00	.00	1995.80	3459.00	2000.28	2000.28	2002.03	78.27	11.91	369.15	390.97
*	.420	255.00	.00	.00	1999.00	3459.00	2005.97	2005.97	2008.50	66.38	14.00	309.74	424.56
*	.420	255.00	.00	.00	1999.00	3459.00	2005.98	2005.98	2008.50	66.36	14.00	309.77	424.60
*	.502	430.00	.00	.00	2010.80	3459.00	2015.31	2015.31	2016.96	85.54	12.03	381.56	373.99
*	.502	430.00	.00	.00	2010.80	3459.00	2015.32	2015.32	2016.96	85.28	12.02	381.97	374.57
*	.563	325.00	.00	.00	2015.50	3459.00	2020.72	2020.72	2021.79	80.31	11.19	518.33	385.97
	.563	325.00	.00	.00	2015.50	3459.00	2020.70	2020.70	2021.80	82.88	11.32	509.00	379.94

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.613	260.00	.00	.00	2023.50	3459.00	2027.30	2027.30	2028.20	76.49	10.35	568.43	395.51
*	.613	260.00	.00	.00	2023.50	3459.00	2027.40	2027.40	2028.37	76.57	10.55	536.41	395.30
*	.685	380.00	.00	.00	2030.20	3459.00	2034.91	2034.91	2035.90	72.05	11.53	552.53	407.50
*	.685	380.00	.00	.00	2030.20	3459.00	2035.02	2035.02	2036.13	73.71	11.86	512.00	402.89
*	.774	470.00	.00	.00	2043.80	3459.00	2044.71	2044.71	2045.00	47.28	2.26	805.98	503.03
*	.774	470.00	.00	.00	2043.80	3459.00	2045.33	2045.33	2046.01	125.09	6.13	530.14	309.28
*	.868	500.00	.00	.00	2052.00	3459.00	2055.16	2055.16	2056.22	128.82	10.88	442.38	304.76
*	.868	500.00	.00	.00	2052.00	3459.00	2055.13	2055.13	2056.22	134.27	11.02	432.47	298.52
*	1.012	760.00	.00	.00	2071.90	2167.00	2074.92	2074.92	2076.07	126.77	11.28	282.21	192.46
*	1.012	760.00	.00	.00	2071.90	2167.00	2074.93	2074.93	2076.07	124.62	11.22	283.90	194.12
*	1.105	490.00	.00	.00	2084.30	2167.00	2088.55	2088.55	2089.26	83.42	11.26	429.21	237.26
*	1.105	490.00	.00	.00	2084.30	2167.00	2089.11	2089.11	2090.23	88.56	12.67	326.06	230.27
*	1.186	430.00	.00	.00	2099.50	2167.00	2102.33	2102.33	2103.51	114.90	10.34	275.44	202.16
*	1.186	430.00	.00	.00	2099.50	2167.00	2102.33	2102.33	2103.51	114.38	10.33	275.83	202.62
*	1.253	350.00	.00	.00	2107.10	2167.00	2110.28	2110.28	2111.01	73.16	9.16	419.19	253.36
*	1.253	350.00	.00	.00	2107.10	2167.00	2110.28	2110.28	2111.01	73.13	9.16	419.25	253.41
	1.370	620.00	.00	.00	2123.00	2167.00	2126.25	2126.25	2127.28	106.71	11.15	310.21	209.78
	1.370	620.00	.00	.00	2123.00	2167.00	2126.25	2126.25	2127.28	106.67	11.14	310.24	209.81
*	1.461	480.00	.00	.00	2135.70	2167.00	2141.16	2141.16	2143.49	101.56	15.40	197.92	215.03
*	1.461	480.00	.00	.00	2135.70	2167.00	2141.16	2141.16	2143.49	101.48	15.40	197.97	215.11
*	1.532	375.00	.00	.00	2140.80	2167.00	2147.55	2147.55	2150.69	83.72	15.99	166.97	236.84
*	1.532	375.00	.00	.00	2140.80	2167.00	2147.55	2147.55	2150.69	83.84	16.00	166.89	236.66
*	1.626	495.00	.00	.00	2156.00	2167.00	2165.89	2165.89	2169.24	56.81	16.47	181.18	287.51
*	1.626	495.00	.00	.00	2156.00	2167.00	2165.88	2165.88	2169.24	57.00	16.49	180.92	287.02
*	1.719	490.00	.00	.00	2172.00	2167.00	2177.59	2177.59	2179.73	79.71	13.73	211.07	242.71
*	1.719	490.00	.00	.00	2172.00	2167.00	2177.61	2177.61	2179.73	78.56	13.67	212.13	244.48
*	1.779	320.00	.00	.00	2182.60	2167.00	2186.82	2186.82	2187.98	83.04	10.93	294.73	237.81
*	1.779	320.00	.00	.00	2182.60	2167.00	2186.83	2186.83	2187.98	82.56	10.91	295.49	238.49
*	1.860	425.00	.00	.00	2197.30	2167.00	2199.70	2199.70	2200.22	110.20	9.31	450.99	206.42
*	1.860	425.00	.00	.00	2197.30	2167.00	2199.70	2199.70	2200.22	109.71	9.30	451.80	206.89
*	1.937	410.00	.00	.00	2207.80	2167.00	2209.39	2209.39	2209.90	169.88	8.41	415.00	166.26
*	1.937	410.00	.00	.00	2207.80	2167.00	2209.39	2209.39	2209.90	168.37	8.39	416.28	167.01
*	1.977	210.00	.00	.00	2213.80	2167.00	2216.47	2216.47	2217.15	114.72	9.94	385.28	202.32
	1.977	210.00	.00	.00	2213.80	2167.00	2216.47	2216.47	2217.15	114.88	9.95	385.08	202.18

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	2.045	360.00	.00	.00	2223.20	2167.00	2226.44	2226.44	2227.42	91.30	10.25	320.27	226.79
*	2.045	360.00	.00	.00	2223.20	2167.00	2226.43	2226.43	2227.42	91.39	10.26	320.14	226.68
*	2.174	680.00	.00	.00	2238.30	2167.00	2241.30	2241.30	2242.51	121.99	11.01	272.46	196.20
*	2.174	680.00	.00	.00	2238.30	2167.00	2241.30	2241.30	2242.51	122.07	11.01	272.41	196.13
*	2.229	290.00	.00	.00	2248.20	2167.00	2250.68	2250.68	2251.60	130.81	10.35	316.20	189.47
*	2.229	290.00	.00	.00	2248.20	2167.00	2250.68	2250.68	2251.60	129.94	10.32	316.89	190.10
*	2.269	210.00	.00	.00	2251.30	2167.00	2255.60	2255.60	2256.96	98.05	11.28	263.93	218.84
*	2.269	210.00	.00	.00	2251.30	2167.00	2255.61	2255.61	2256.96	97.68	11.27	264.27	219.26
	-.868	.00	.00	.00	2049.30	2167.00	2055.16	.00	2055.58	50.56	6.82	442.38	304.76
	-.868	.00	.00	.00	2049.30	2167.00	2055.13	.00	2055.56	52.61	6.90	435.23	298.75
*	.929	380.00	.00	.00	2058.50	1056.00	2061.37	2061.37	2062.03	87.26	9.34	201.32	113.04
*	.929	380.00	.00	.00	2058.50	1056.00	2061.35	2061.35	2062.03	90.13	9.45	198.54	111.23
*	1.003	390.00	.00	.00	2067.90	711.00	2069.05	2069.05	2069.44	216.98	8.03	156.95	48.27
*	1.003	390.00	.00	.00	2067.90	711.00	2069.06	2069.06	2069.44	215.31	8.00	157.35	48.46
*	1.094	480.00	.00	.00	2078.70	711.00	2081.49	2081.49	2082.06	86.04	9.11	152.72	76.65
*	1.094	480.00	.00	.00	2078.70	711.00	2081.49	2081.49	2082.06	86.35	9.12	152.50	76.51

E: MOCKINGBIRD WASH

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	.241	3459.00	1984.98	.00	.00	.00	84.64	.00
	.241	3459.00	1984.98	.00	.00	.00	84.64	.00
*	.283	3459.00	1990.70	.00	5.72	.00	42.55	225.00
*	.283	3459.00	1990.70	.00	5.72	.00	42.55	225.00
*	.294	3459.00	1993.90	.00	3.20	.00	322.01	56.50
*	.294	3459.00	1993.90	.00	3.20	.00	42.55	56.50
*	.299	3459.00	1994.30	.00	.40	.00	55.00	25.00
*	.299	3459.00	1994.30	.00	.40	.00	55.00	25.00
*	.303	3459.00	1994.30	.00	.00	.00	477.21	25.00
*	.303	3459.00	1994.30	.00	.00	.00	41.50	25.00
*	.311	3459.00	1994.56	.00	.26	.00	512.62	41.50
*	.311	3459.00	1994.56	.00	.26	.00	41.50	41.50
*	.338	3459.00	1996.56	.00	2.00	.00	322.00	140.00
	.338	3459.00	1996.70	.14	2.14	.14	132.00	140.00
*	.372	3459.00	2000.37	.00	3.81	.00	201.80	180.00
*	.372	3459.00	2000.28	-.09	3.58	-.09	106.11	180.00
*	.420	3459.00	2005.97	.00	5.60	.00	61.58	255.00
*	.420	3459.00	2005.98	.00	5.69	.00	61.58	255.00
*	.502	3459.00	2015.31	.00	9.34	.00	118.23	430.00
*	.502	3459.00	2015.32	.00	9.34	.00	118.23	430.00
*	.563	3459.00	2020.72	.00	5.41	.00	245.90	325.00
*	.563	3459.00	2020.70	-.02	5.39	-.02	231.56	325.00
*	.613	3459.00	2027.30	.00	6.57	.00	335.93	260.00
*	.613	3459.00	2027.40	.10	6.70	.10	292.75	260.00
*	.685	3459.00	2034.91	.00	7.61	.00	285.89	380.00
*	.685	3459.00	2035.02	.11	7.62	.11	233.74	380.00
*	.774	3459.00	2044.71	.00	9.80	.00	452.82	470.00
*	.774	3459.00	2045.33	.63	10.31	.63	393.00	470.00
*	.868	3459.00	2055.16	.00	10.45	.00	230.13	500.00
*	.868	3459.00	2055.13	-.03	9.80	-.03	213.93	500.00
	1.012	2167.00	2074.92	.00	19.75	.00	127.96	760.00
*	1.012	2167.00	2074.93	.01	19.80	.01	128.15	760.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.105	2167.00	2088.55	.00	13.63	.00	250.77	490.00
*	1.105	2167.00	2089.11	.56	14.18	.56	128.60	490.00
*	1.186	2167.00	2102.33	.00	13.78	.00	116.31	430.00
*	1.186	2167.00	2102.33	.00	13.22	.00	116.31	430.00
*	1.253	2167.00	2110.28	.00	7.95	.00	246.21	350.00
*	1.253	2167.00	2110.28	.00	7.95	.00	246.21	350.00
*	1.370	2167.00	2126.25	.00	15.98	.00	138.55	620.00
*	1.370	2167.00	2126.25	.00	15.98	.00	138.55	620.00
*	1.461	2167.00	2141.16	.00	14.91	.00	43.63	480.00
*	1.461	2167.00	2141.16	.00	14.91	.00	43.63	480.00
*	1.532	2167.00	2147.55	.00	6.39	.00	27.23	375.00
*	1.532	2167.00	2147.55	.00	6.39	.00	27.23	375.00
*	1.626	2167.00	2165.89	.00	18.34	.00	30.88	495.00
*	1.626	2167.00	2165.88	-.01	18.33	-.01	30.86	495.00
*	1.719	2167.00	2177.59	.00	11.70	.00	50.55	490.00
*	1.719	2167.00	2177.61	.02	11.73	.02	50.56	490.00
	1.779	2167.00	2186.82	.00	9.23	.00	148.64	320.00
	1.779	2167.00	2186.83	.01	9.22	.01	148.76	320.00
*	1.860	2167.00	2199.70	.00	12.88	.00	412.51	425.00
*	1.860	2167.00	2199.70	.00	12.87	.00	412.98	425.00
*	1.937	2167.00	2209.39	.00	9.69	.00	401.94	410.00
*	1.937	2167.00	2209.39	.00	9.69	.00	401.94	410.00
*	1.977	2167.00	2216.47	.00	7.08	.00	260.74	210.00
*	1.977	2167.00	2216.47	.00	7.07	.00	260.73	210.00
*	2.045	2167.00	2226.44	.00	9.97	.00	167.54	360.00
*	2.045	2167.00	2226.43	.00	9.97	.00	167.53	360.00
*	2.174	2167.00	2241.30	.00	14.87	.00	111.90	680.00
*	2.174	2167.00	2241.30	.00	14.87	.00	111.90	680.00
*	2.229	2167.00	2250.68	.00	9.37	.00	167.29	290.00
*	2.229	2167.00	2250.68	.00	9.38	.00	167.29	290.00
*	2.269	2167.00	2255.60	.00	4.93	.00	98.82	210.00
*	2.269	2167.00	2255.61	.00	4.92	.00	98.82	210.00
	-.868	2167.00	2055.16	.00	-200.44	.00	230.13	.00
	-.868	2167.00	2055.13	-.03	-200.47	-.03	227.46	.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.929	1056.00	2061.37	.00	6.21	.00	153.95	380.00
*	.929	1056.00	2061.35	-.02	6.22	-.02	152.75	380.00
*	1.003	711.00	2069.05	.00	7.69	.00	199.98	390.00
*	1.003	711.00	2069.06	.00	7.71	.00	199.98	390.00
*	1.094	711.00	2081.49	.00	12.44	.00	129.77	480.00
*	1.094	711.00	2081.49	.00	12.43	.00	129.76	480.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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NOTE    SECNO=      .299  PROFILE=  2  WSEL BASED ON X5 CARD

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FLOODWAY DATA, WASH E: MOCKINGBIRD WASH
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
.241	85.	332.	10.4	1985.0	1985.0	.0
.283	43.	260.	13.3	1990.7	1990.7	.0
.294	43.	353.	9.8	1993.9	1993.9	.0
.299	55.	426.	8.1	1994.3	1994.3	.0
.303	41.	344.	10.0	1994.3	1994.3	.0
.311	41.	322.	10.7	1994.6	1994.6	.0
.338	132.	414.	8.3	1996.7	1996.6	.1
.372	106.	369.	9.4	2000.3	2000.4	-.1
.420	62.	310.	11.2	2006.0	2006.0	.0
.502	118.	382.	9.1	2015.3	2015.3	.0
.563	232.	509.	6.8	2020.7	2020.7	.0
.613	299.	536.	6.4	2027.4	2027.3	.1
.685	244.	512.	6.8	2035.0	2034.9	.1
.774	393.	530.	6.5	2045.3	2044.7	.6
.868	370.	432.	8.0	2055.2	2055.2	.0
1.012	223.	284.	7.6	2074.9	2074.9	.0
1.105	129.	326.	6.6	2089.1	2088.5	.6
1.186	116.	276.	7.9	2102.3	2102.3	.0
1.253	246.	419.	5.2	2110.3	2110.3	.0
1.370	139.	310.	7.0	2126.3	2126.3	.0
1.461	44.	198.	10.9	2141.2	2141.2	.0
1.532	27.	167.	13.0	2147.6	2147.6	.0
1.626	31.	181.	12.0	2165.9	2165.9	.0
1.719	51.	212.	10.2	2177.6	2177.6	.0
1.779	192.	295.	7.3	2186.8	2186.8	.0
1.860	513.	452.	4.8	2199.7	2199.7	.0
1.937	402.	416.	5.2	2209.4	2209.4	.0
1.977	261.	385.	5.6	2216.5	2216.5	.0
2.045	168.	320.	6.8	2226.4	2226.4	.0
2.174	112.	272.	8.0	2241.3	2241.3	.0
2.229	167.	317.	6.8	2250.7	2250.7	.0
2.269	99.	264.	8.2	2255.6	2255.6	.0
-.868	385.	435.	5.0	2055.2	2055.2	.0
.929	153.	199.	5.3	2061.4	2061.4	.0
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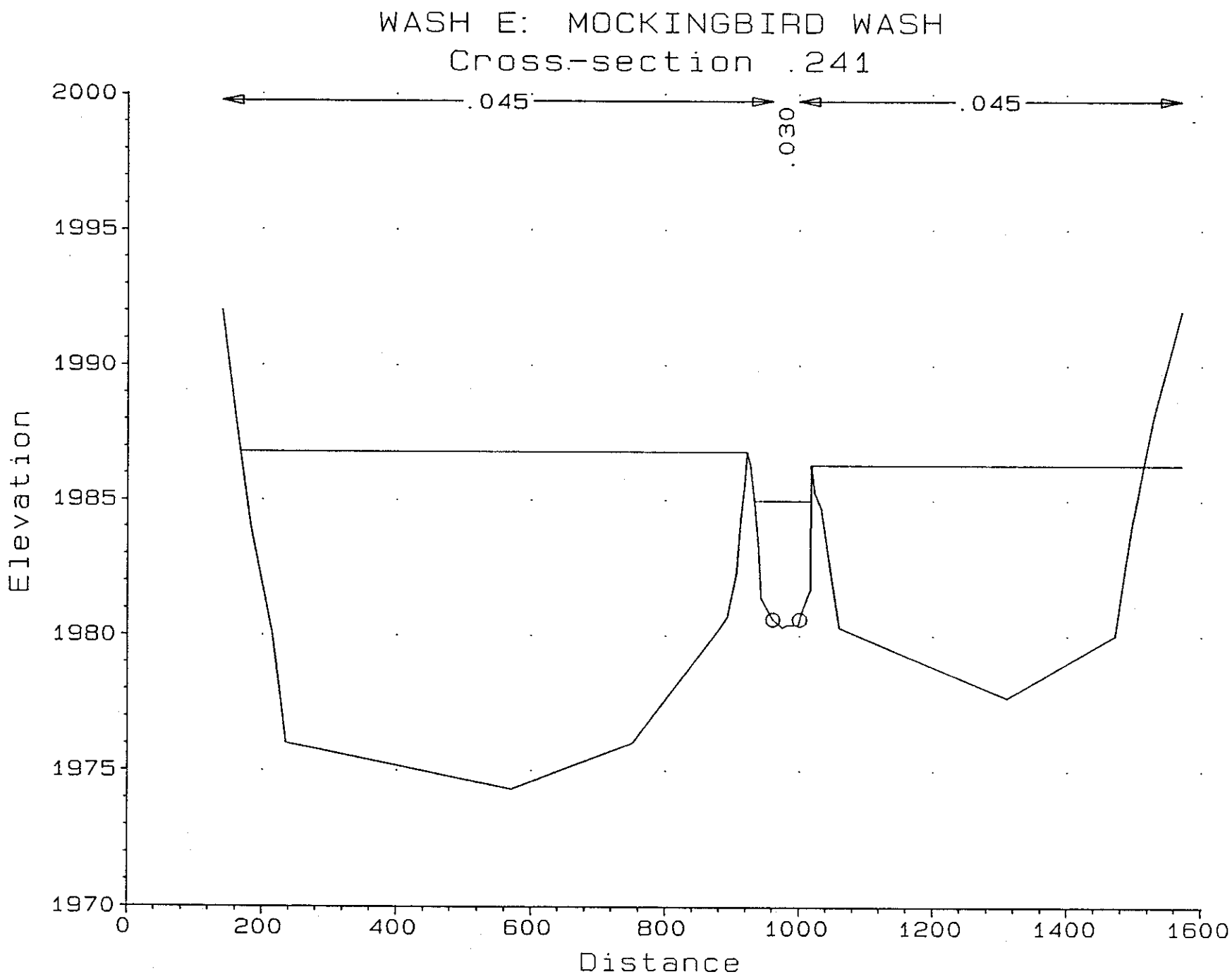
1.094	130.	152.	4.7	2081.5	2081.5	.0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Cross-section .241
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Elevation
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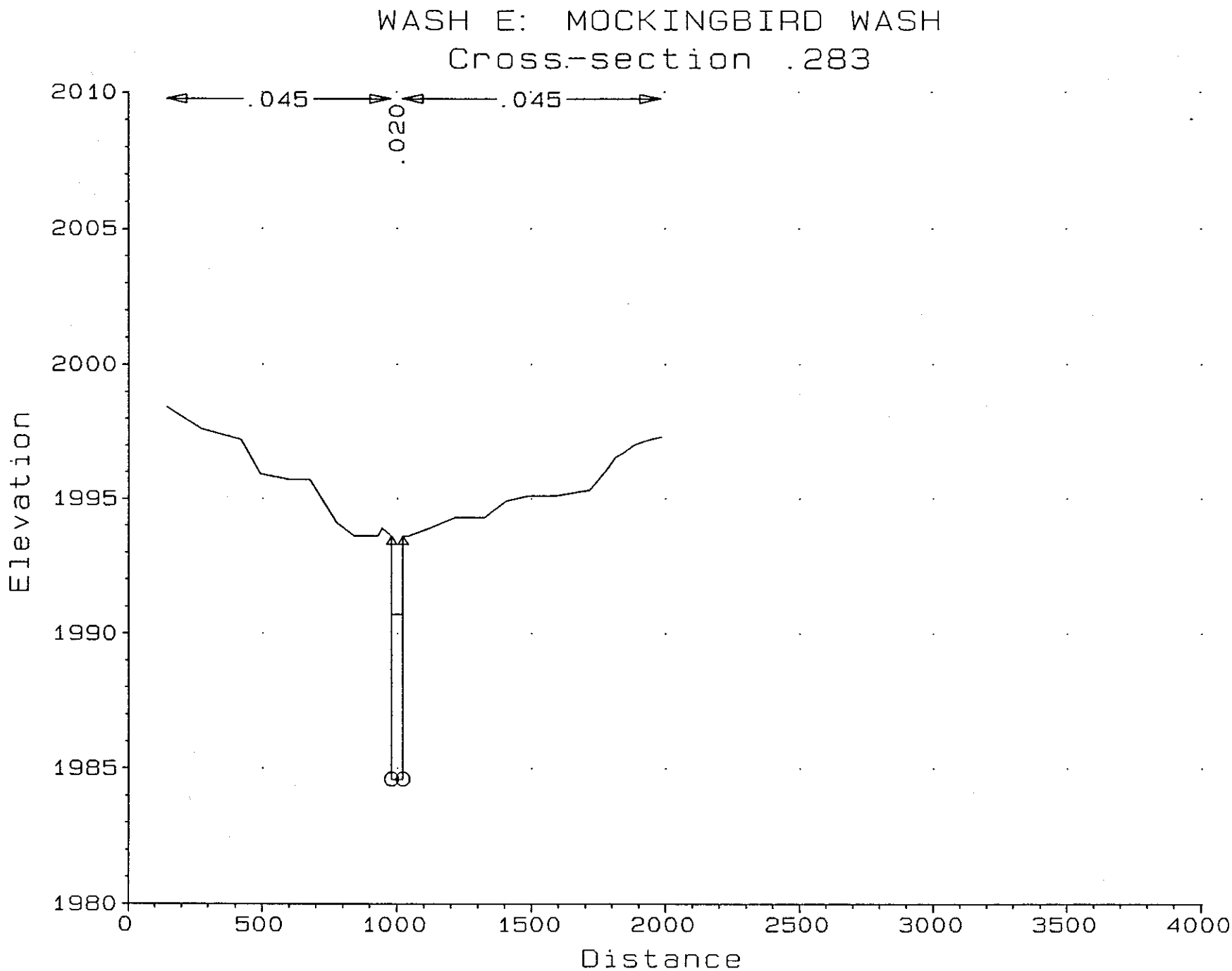
Distance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Cross-section .283
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Elevation
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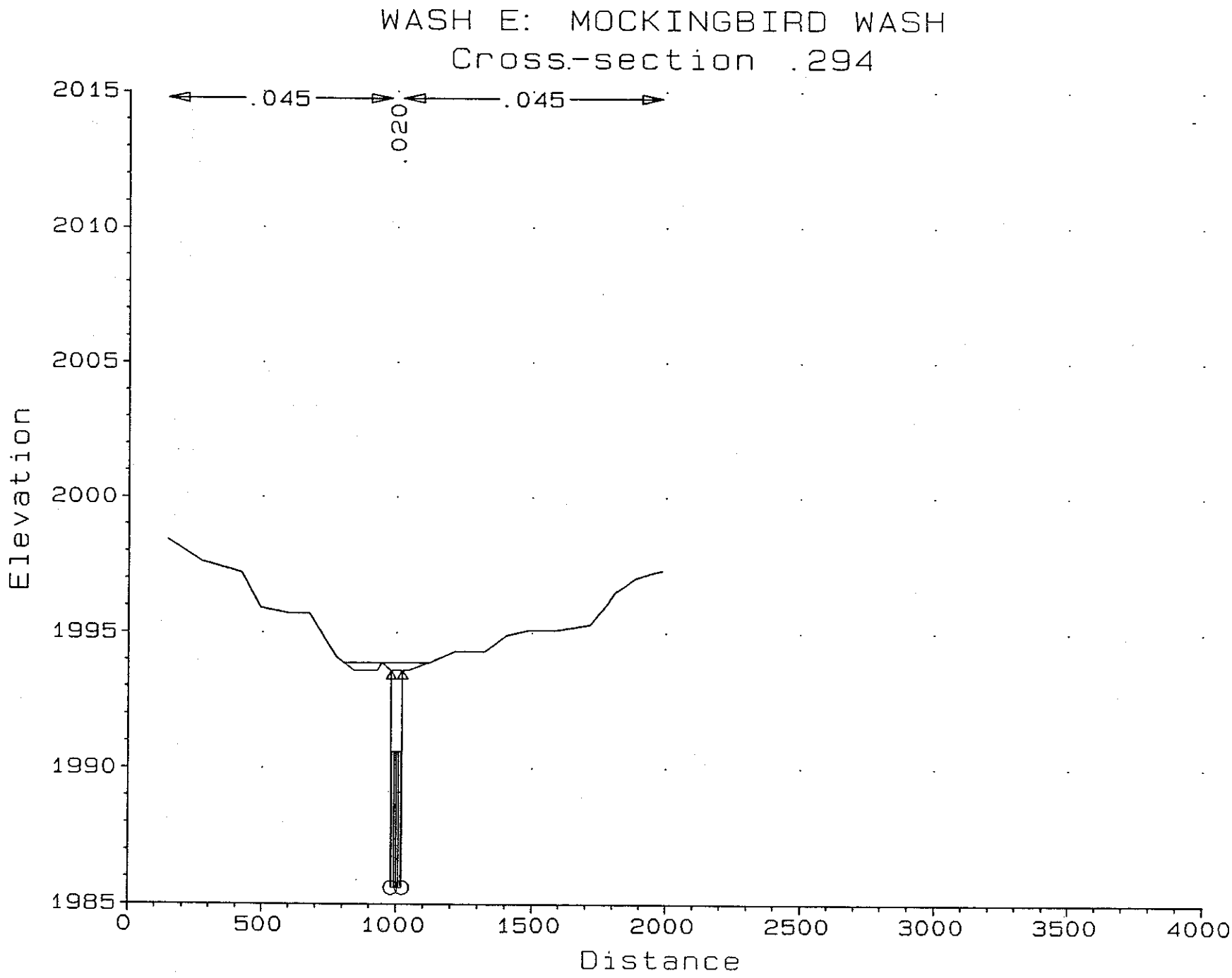
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Elevation
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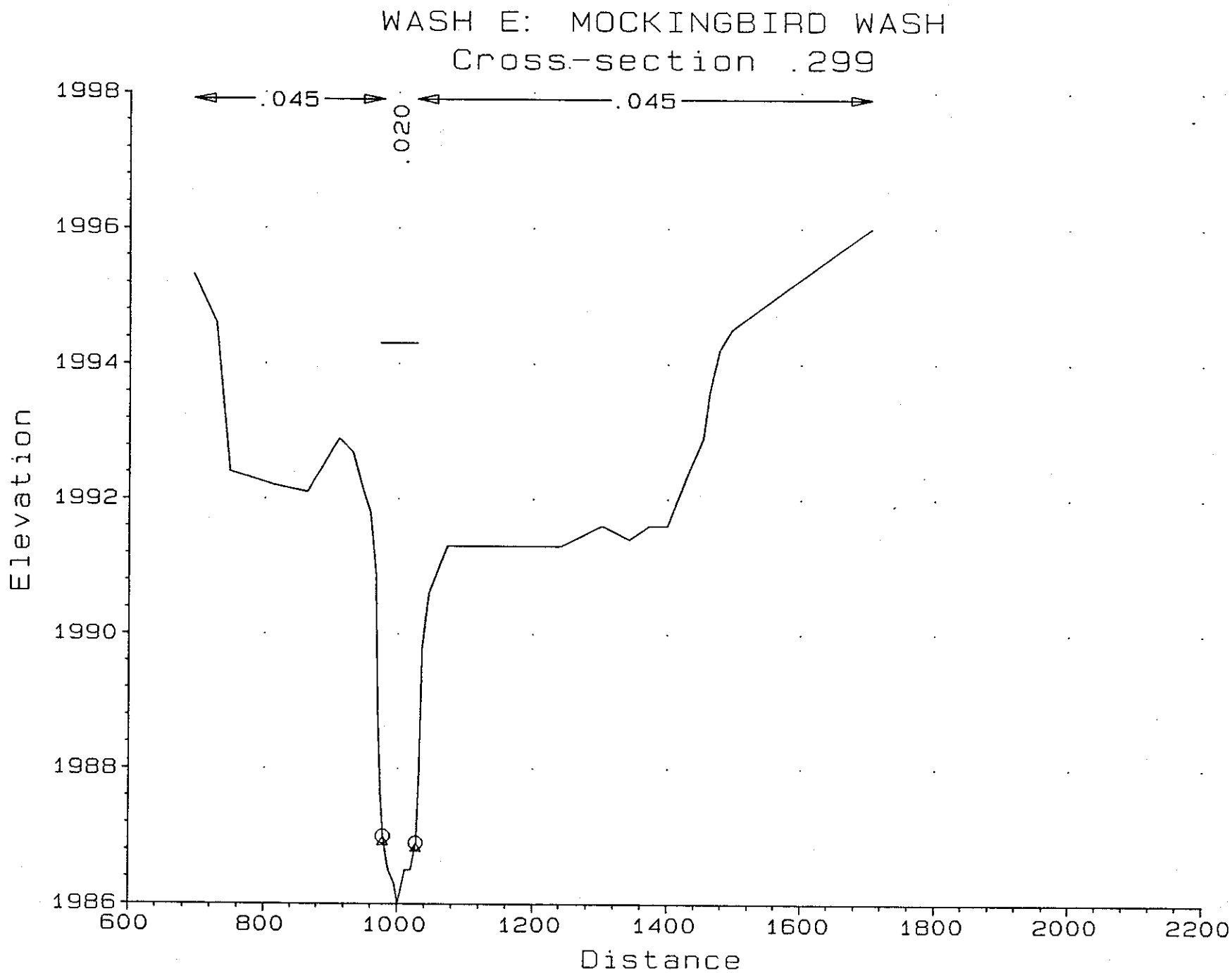
Distance


WASH E: MOCKINGBIRD WASH
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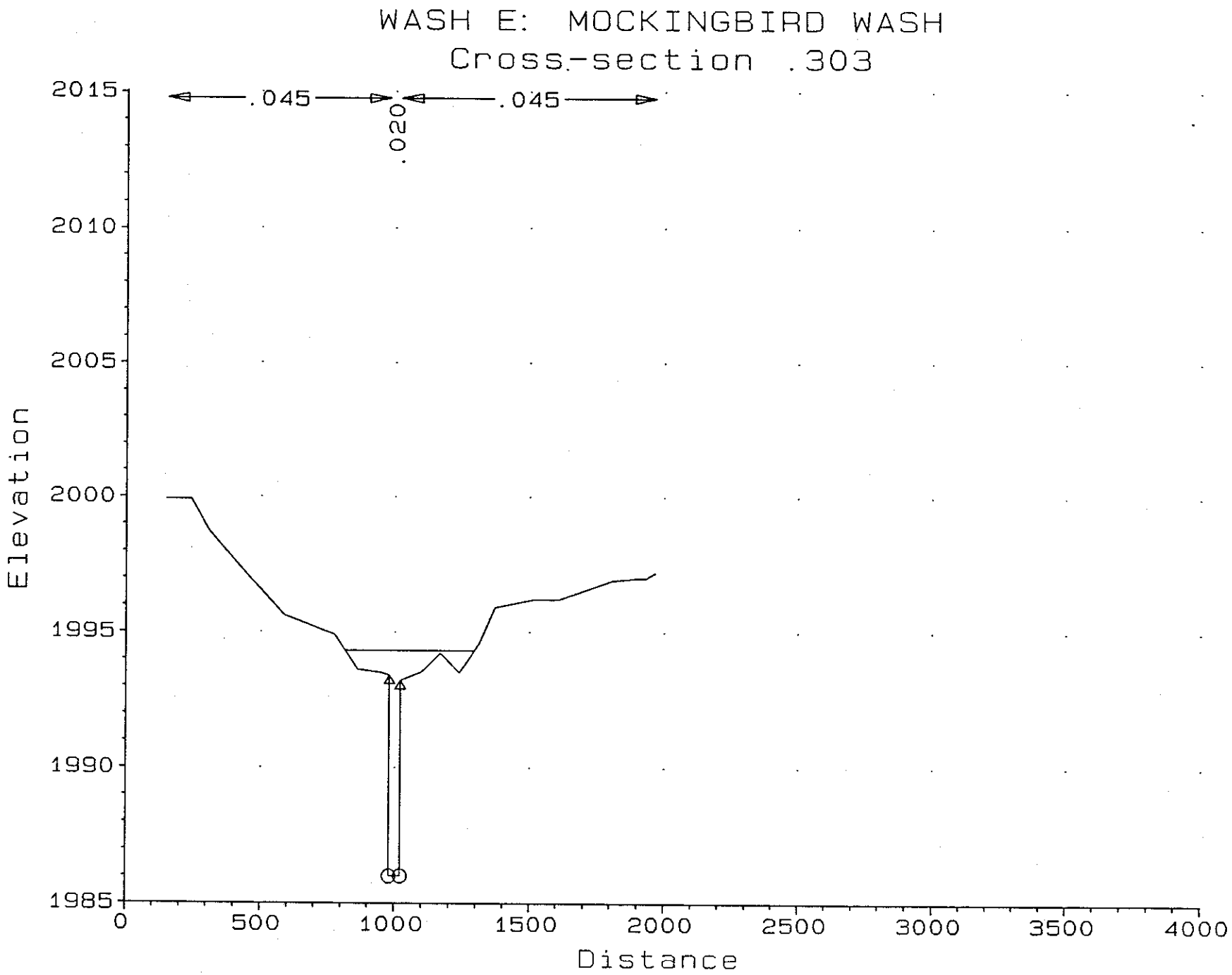
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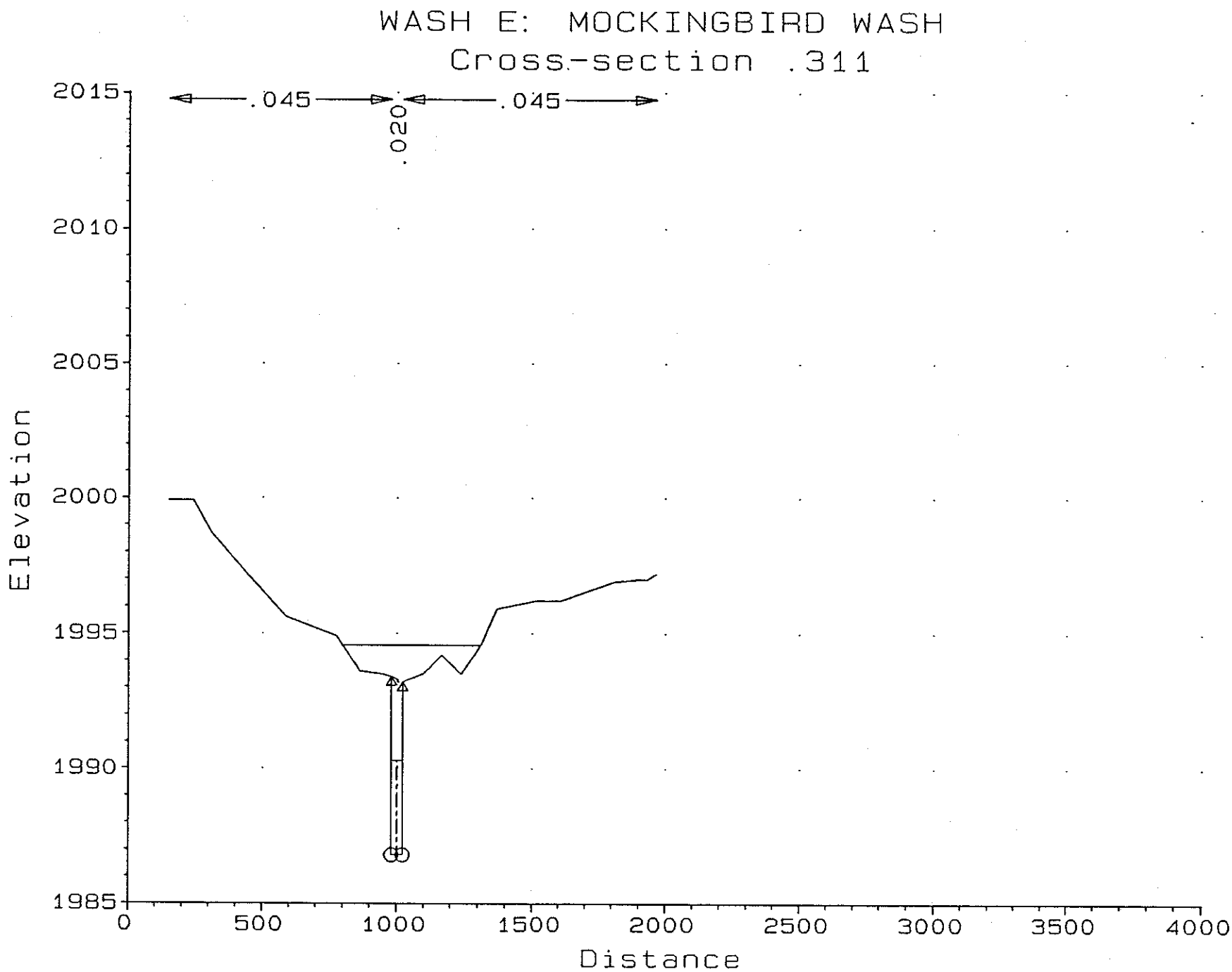
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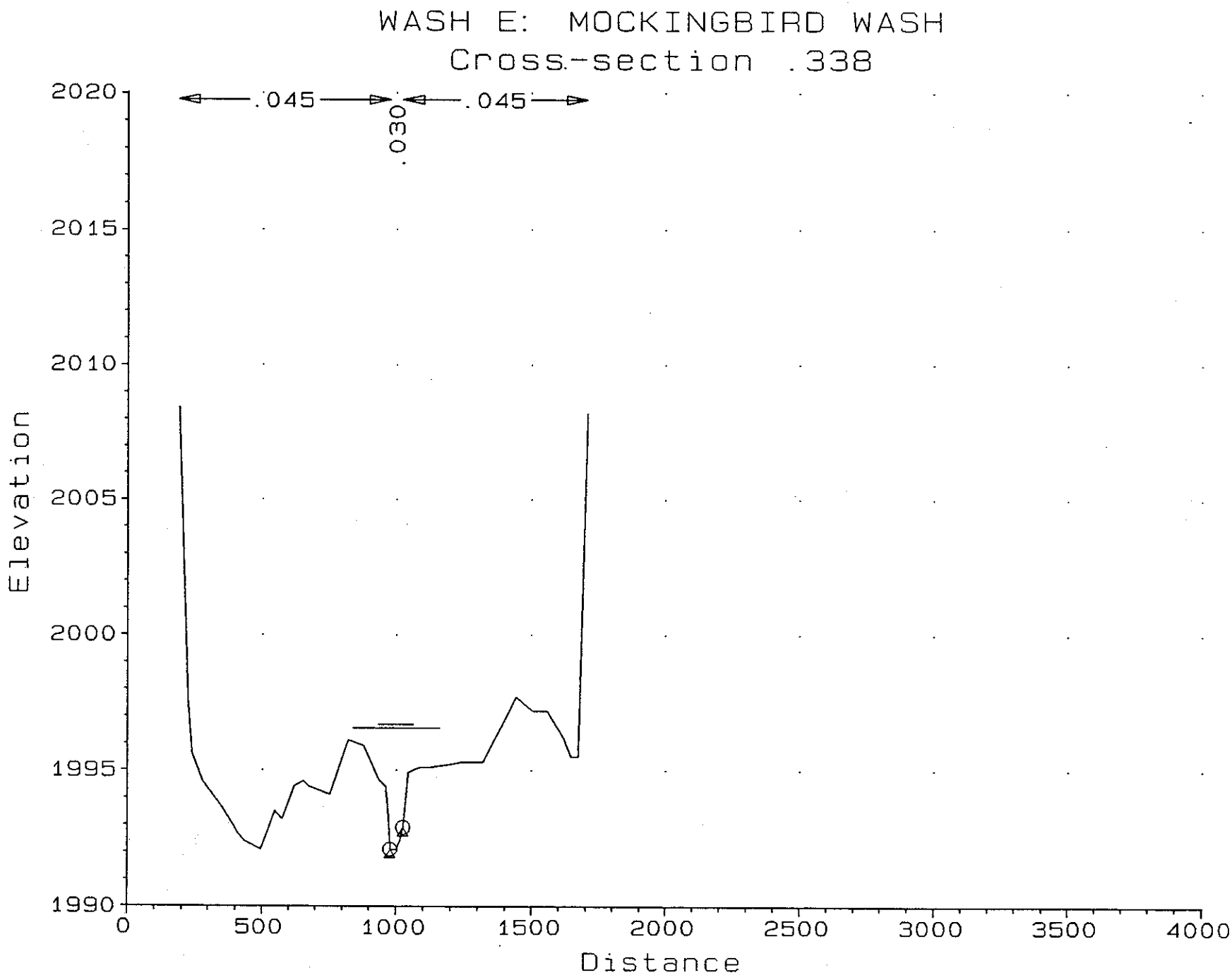
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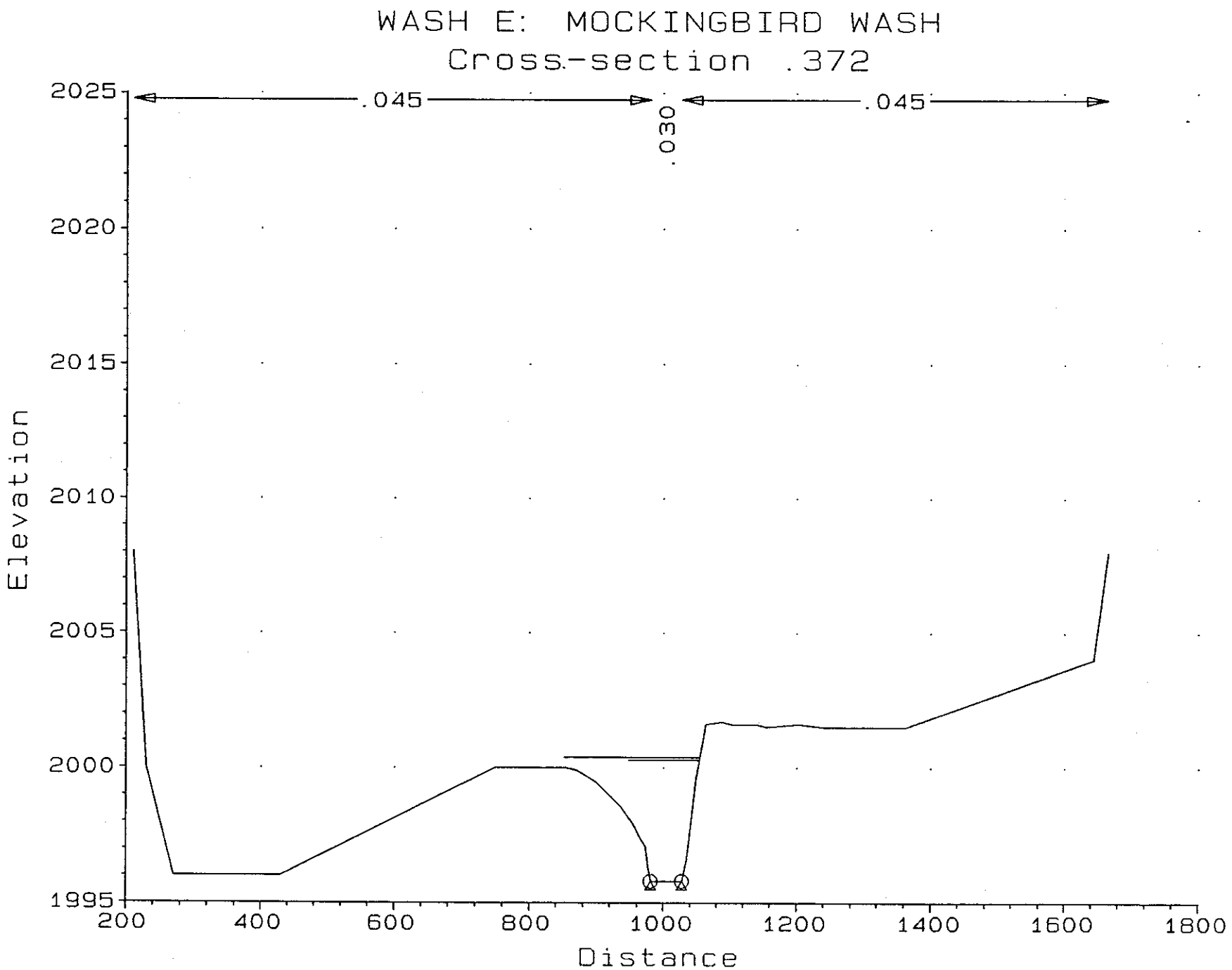
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Cross-section .372
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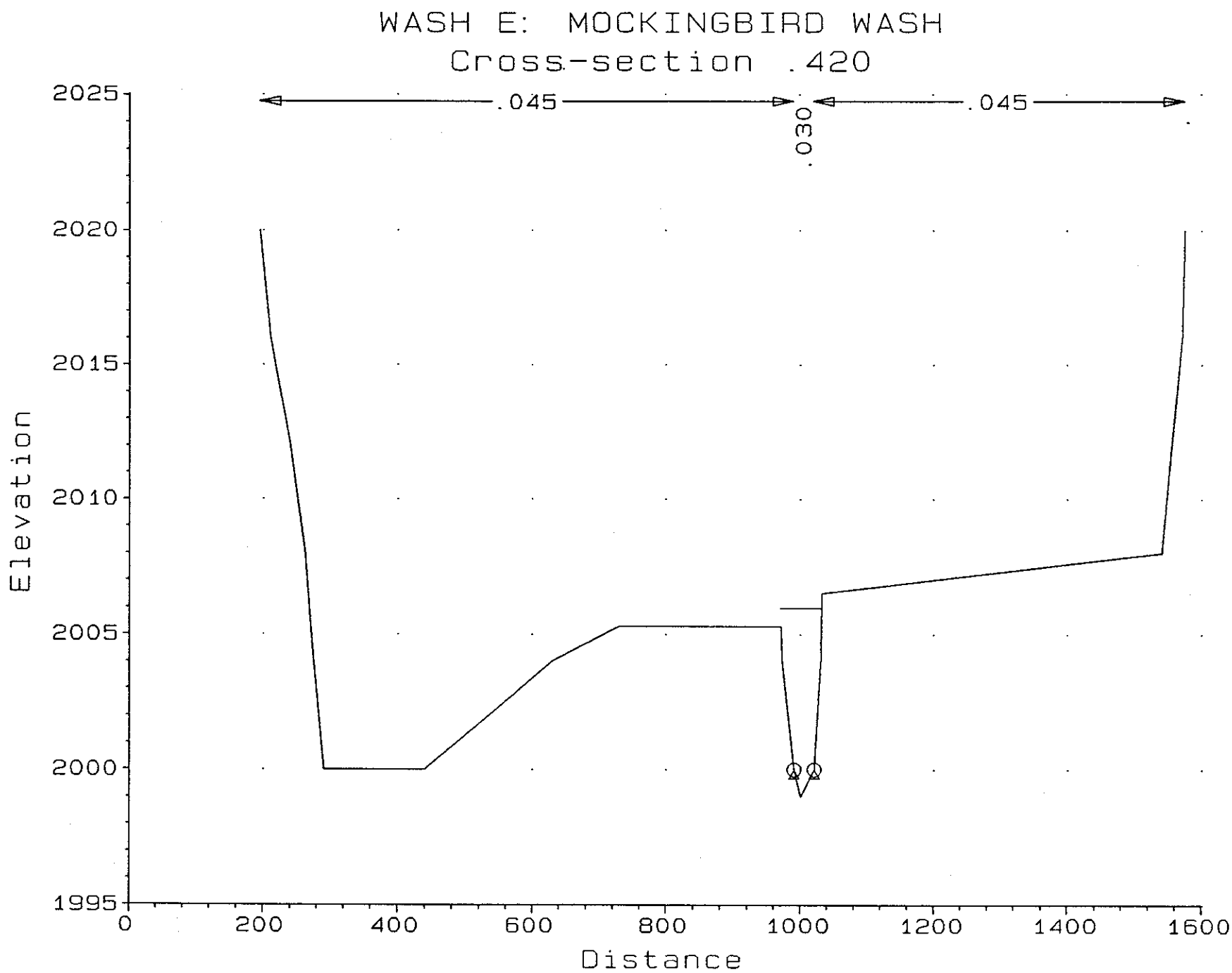
WASH E: MOCKINGBIRD WASH
Cross-section .420
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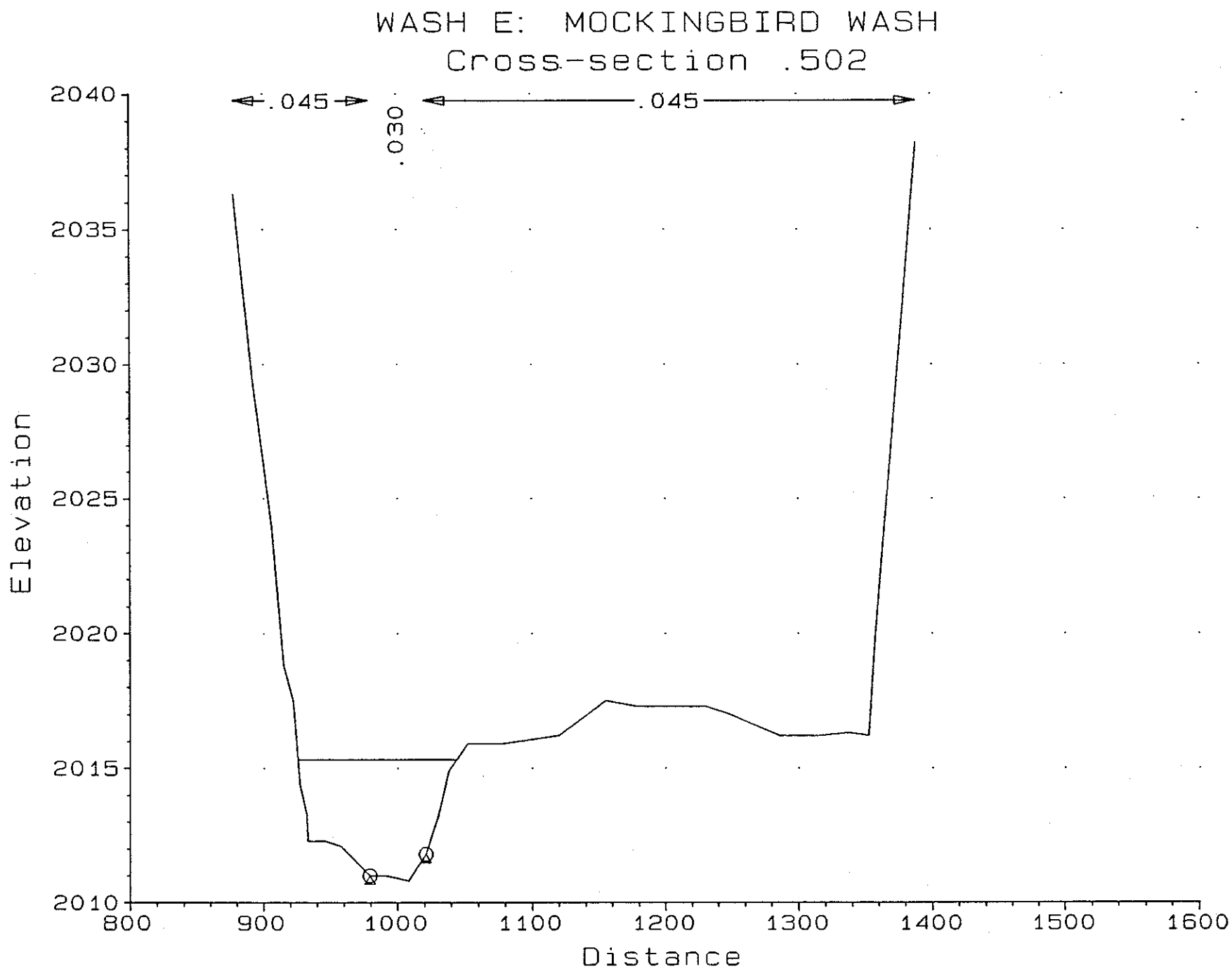
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Cross-section .502
.045
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.045
2040
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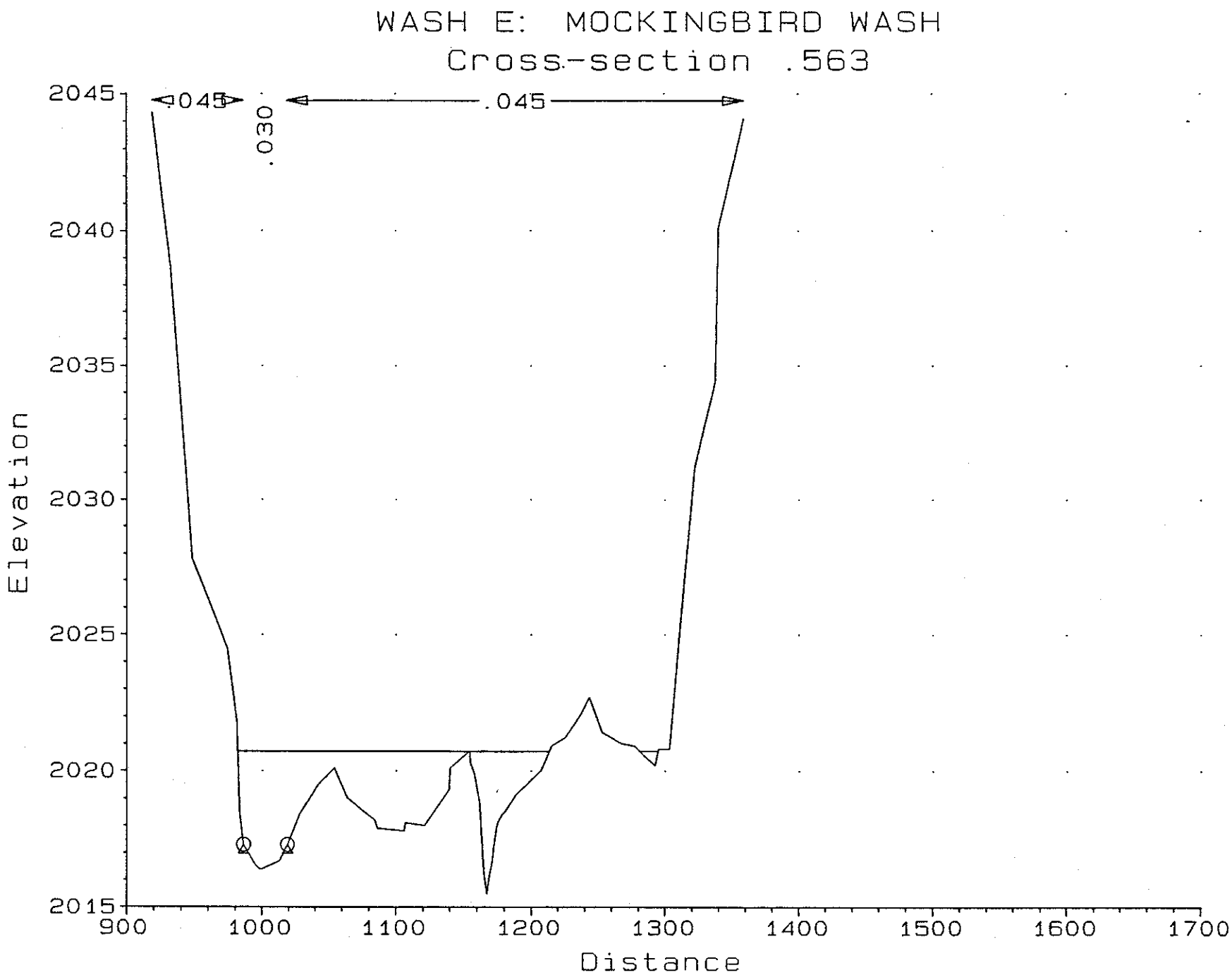
1600
Distance


WASH E: MOCKINGBIRD WASH
Cross-section .563
.045
.030
.045
2045
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Elevation
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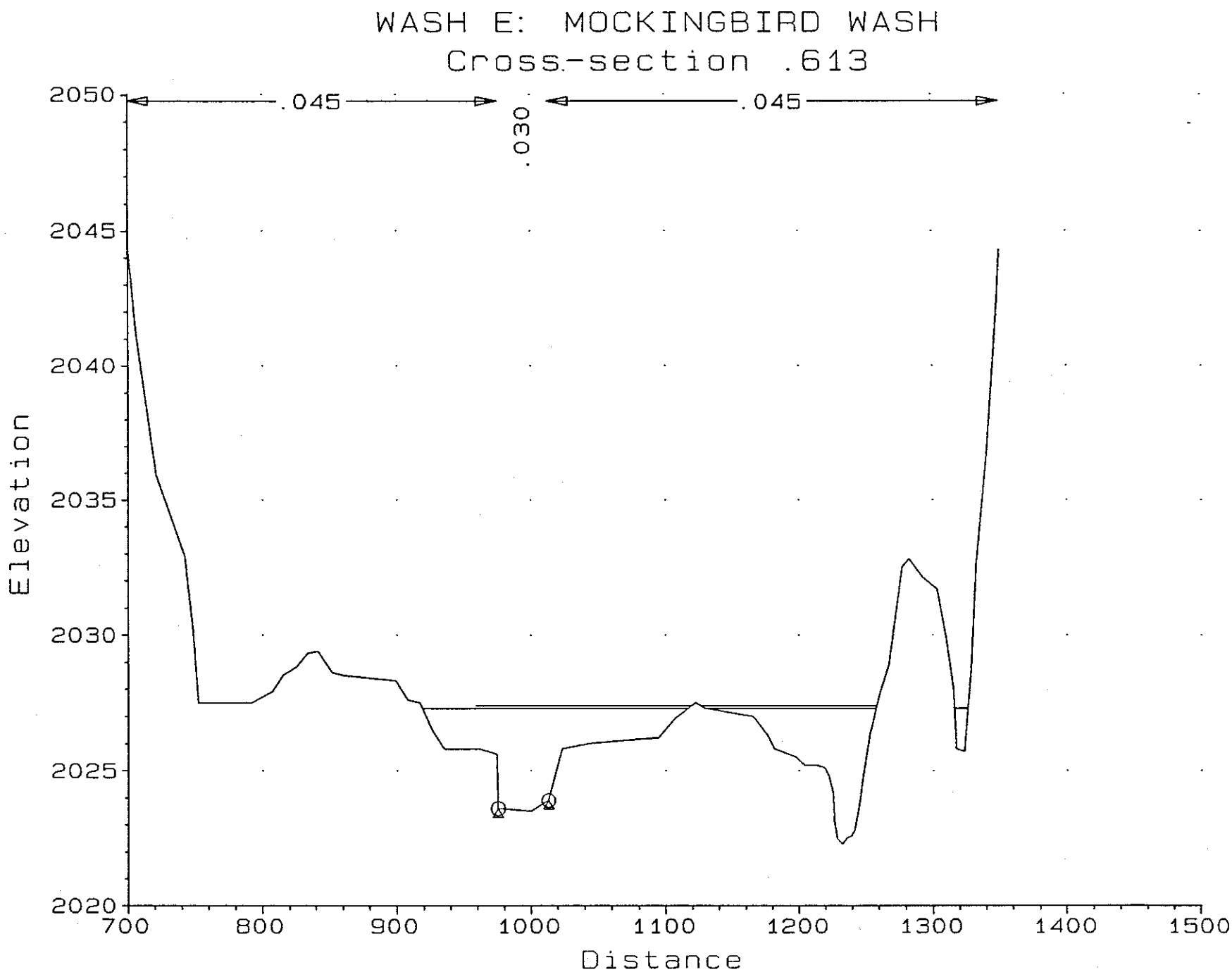
1600
1700
Distance


WASH E: MOCKINGBIRD WASH
Cross-section .613
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.030
.045
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Elevation
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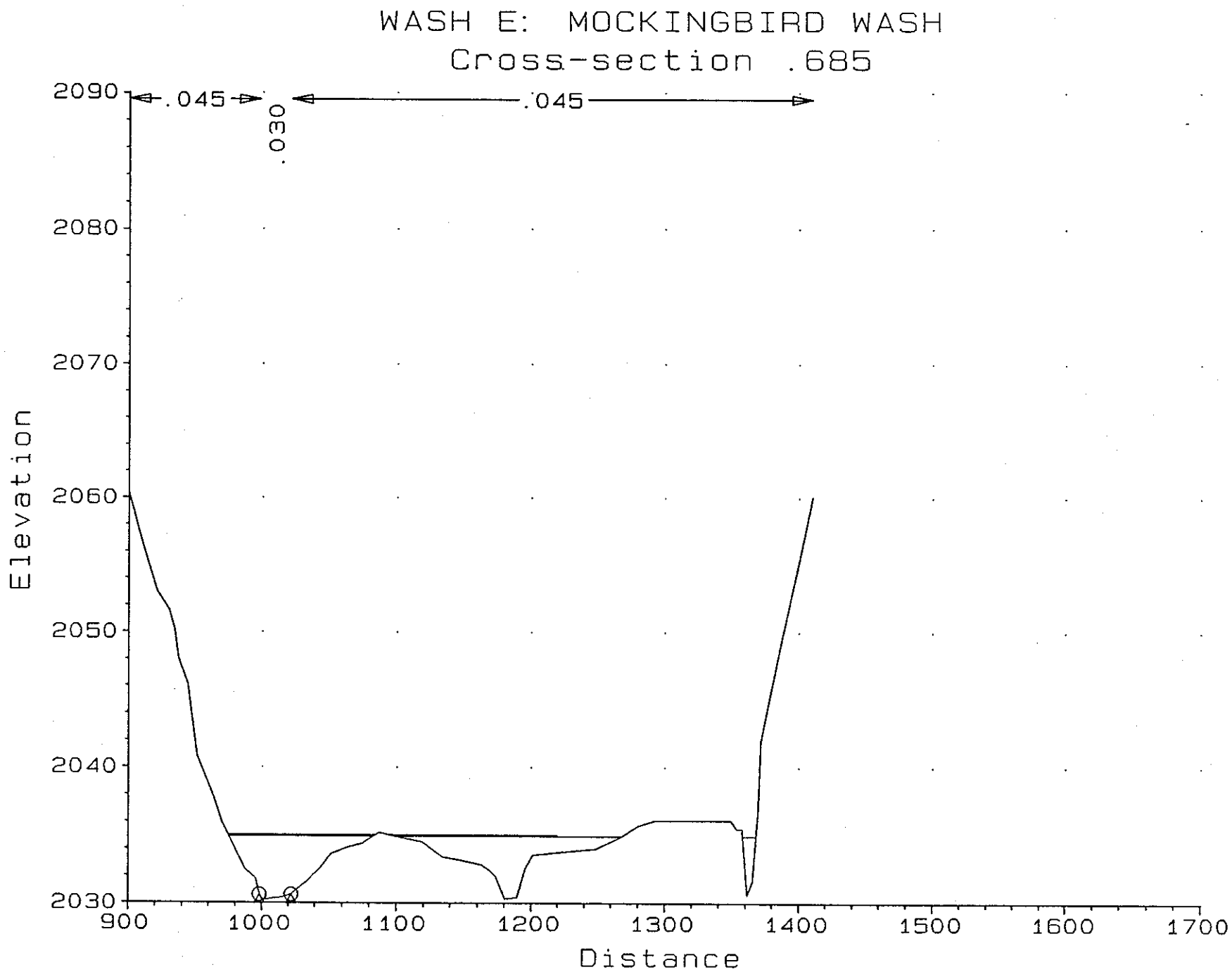
Distance


WASH E: MOCKINGBIRD WASH
Cross-section .685
.045
.030
.045
2090
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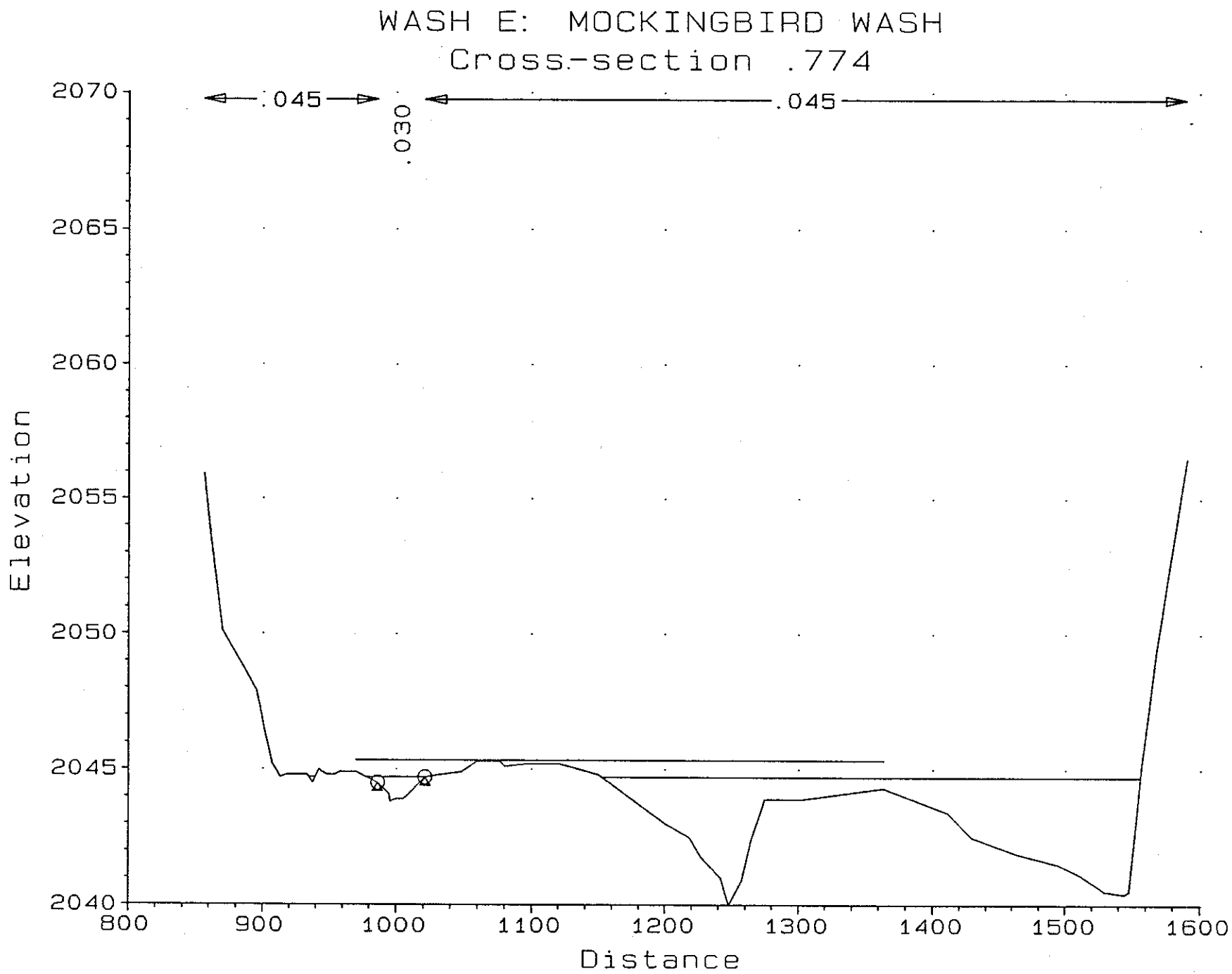
Distance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.030
.045
2070
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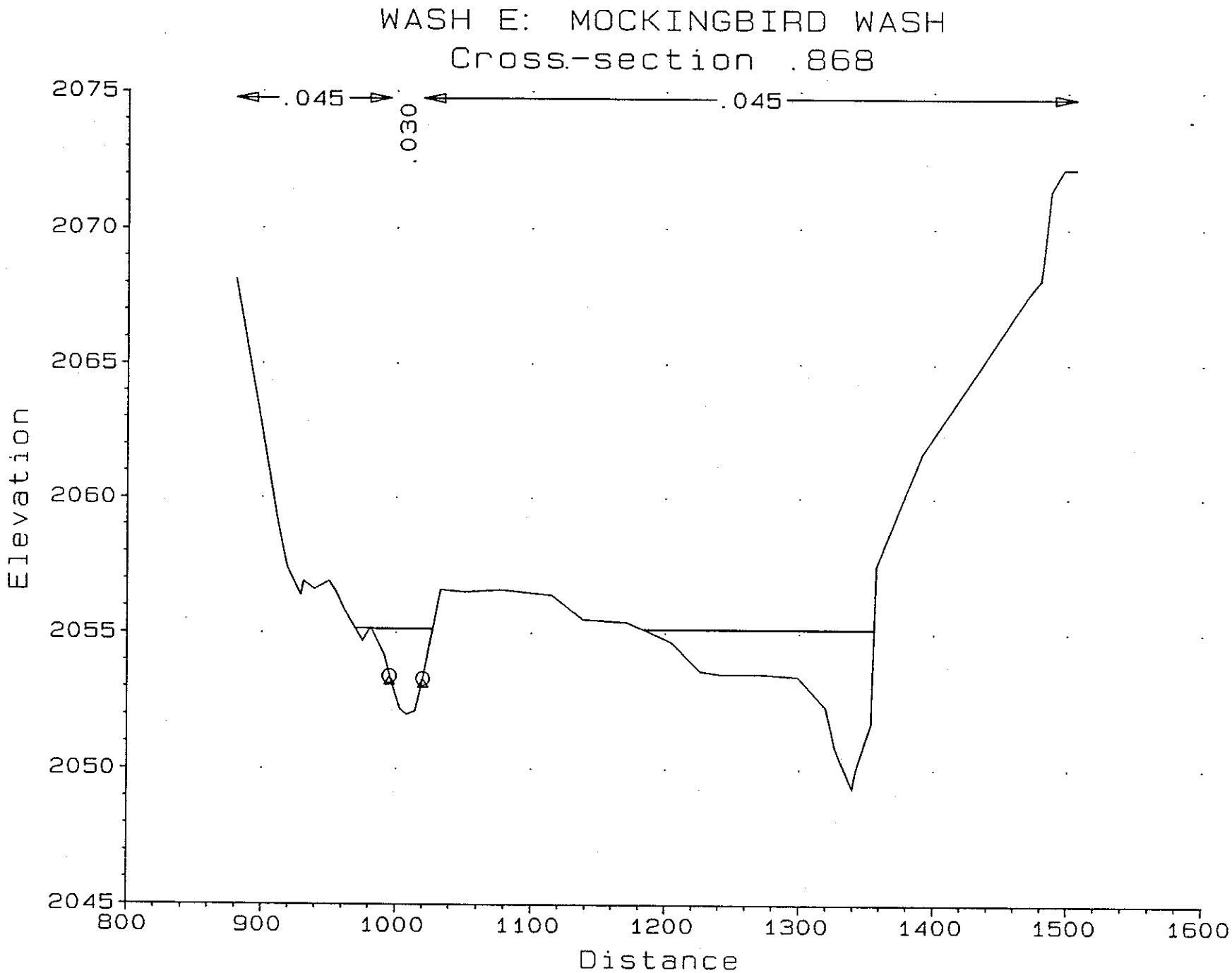
Distance


WASH E: MOCKINGBIRD WASH
Cross-section .868
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.030
.045
2075
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Elevation
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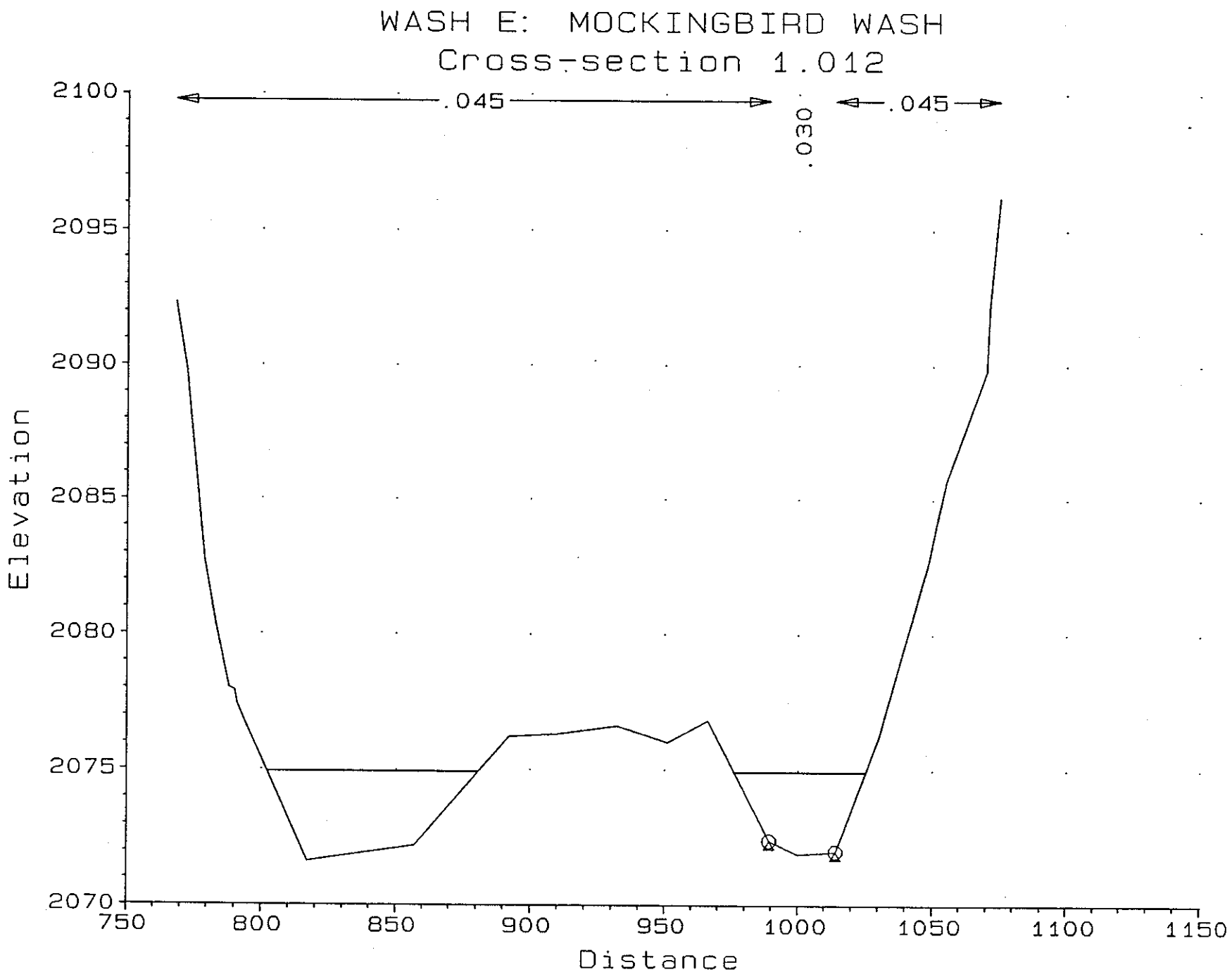
1600
Distance


WASH E: MOCKINGBIRD WASH
Cross-section 1.012
.045
.030
.045
2100
2095
2090
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2080
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Elevation
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1000
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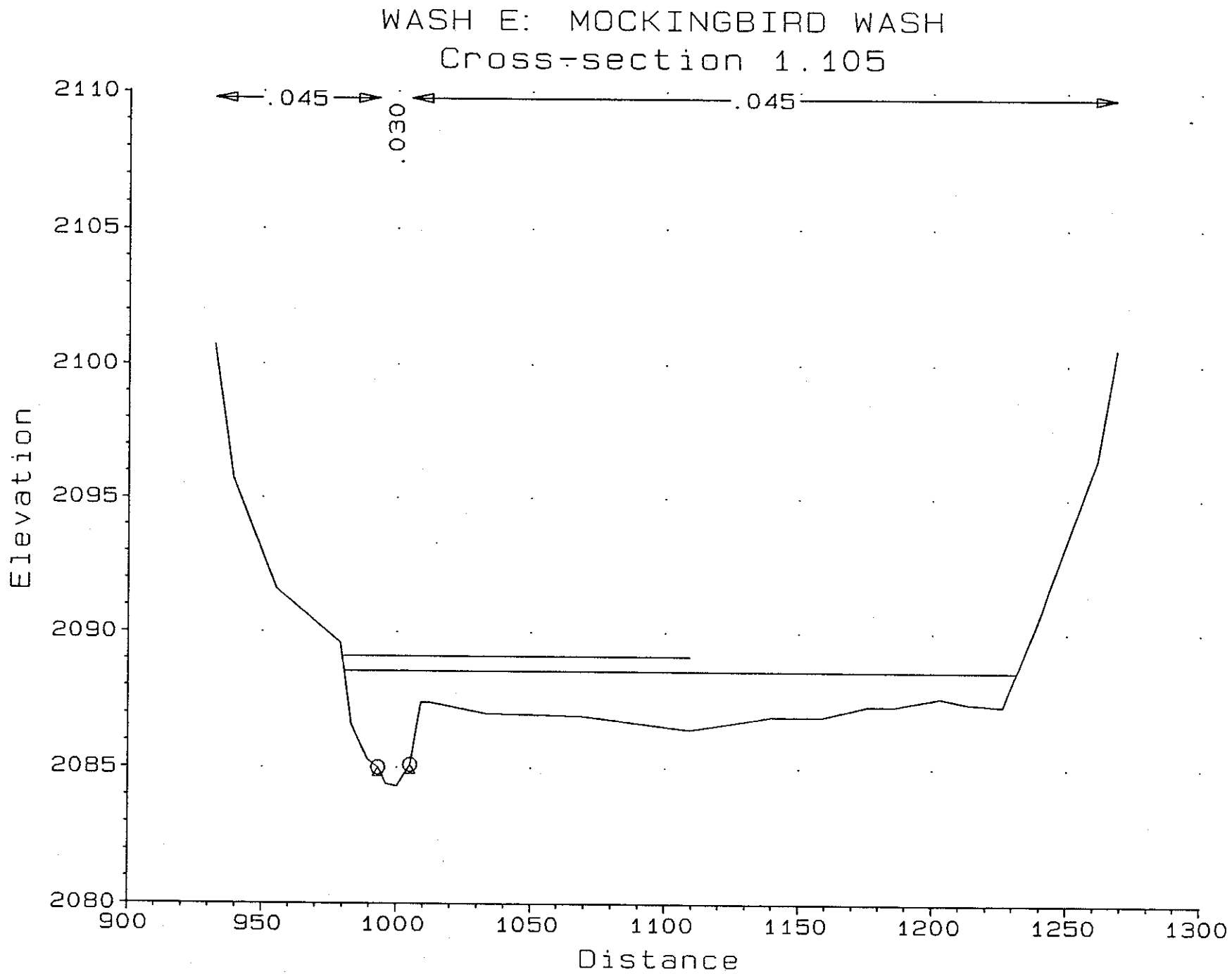
1100
1150
Distance


WASH E: MOCKINGBIRD WASH
Cross-section 1.105
.045
.030
.045
2110
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2100
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2090
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Elevation
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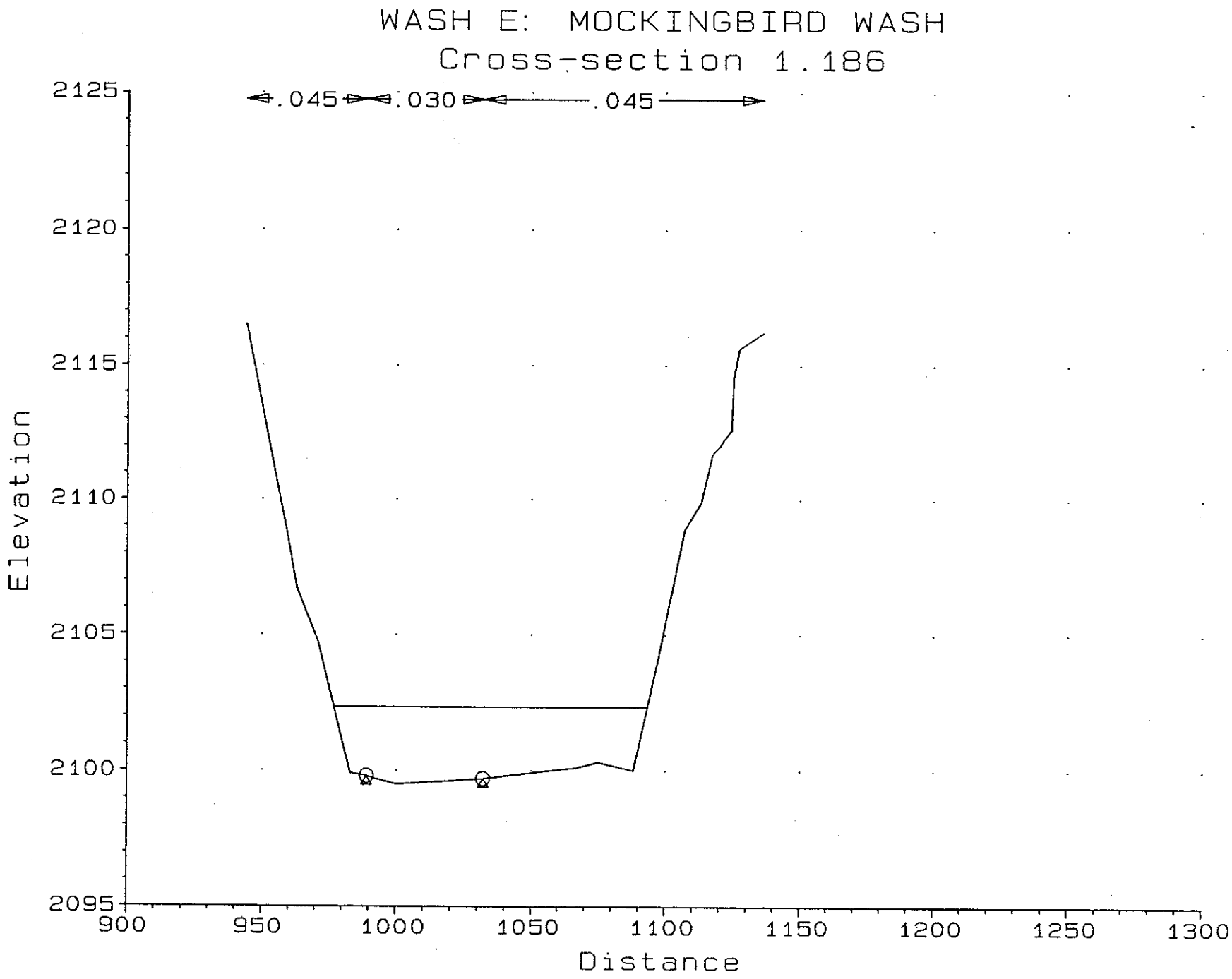
Distance


WASH E: MOCKINGBIRD WASH
Cross-section 1.186
.045
.030
.045
2125
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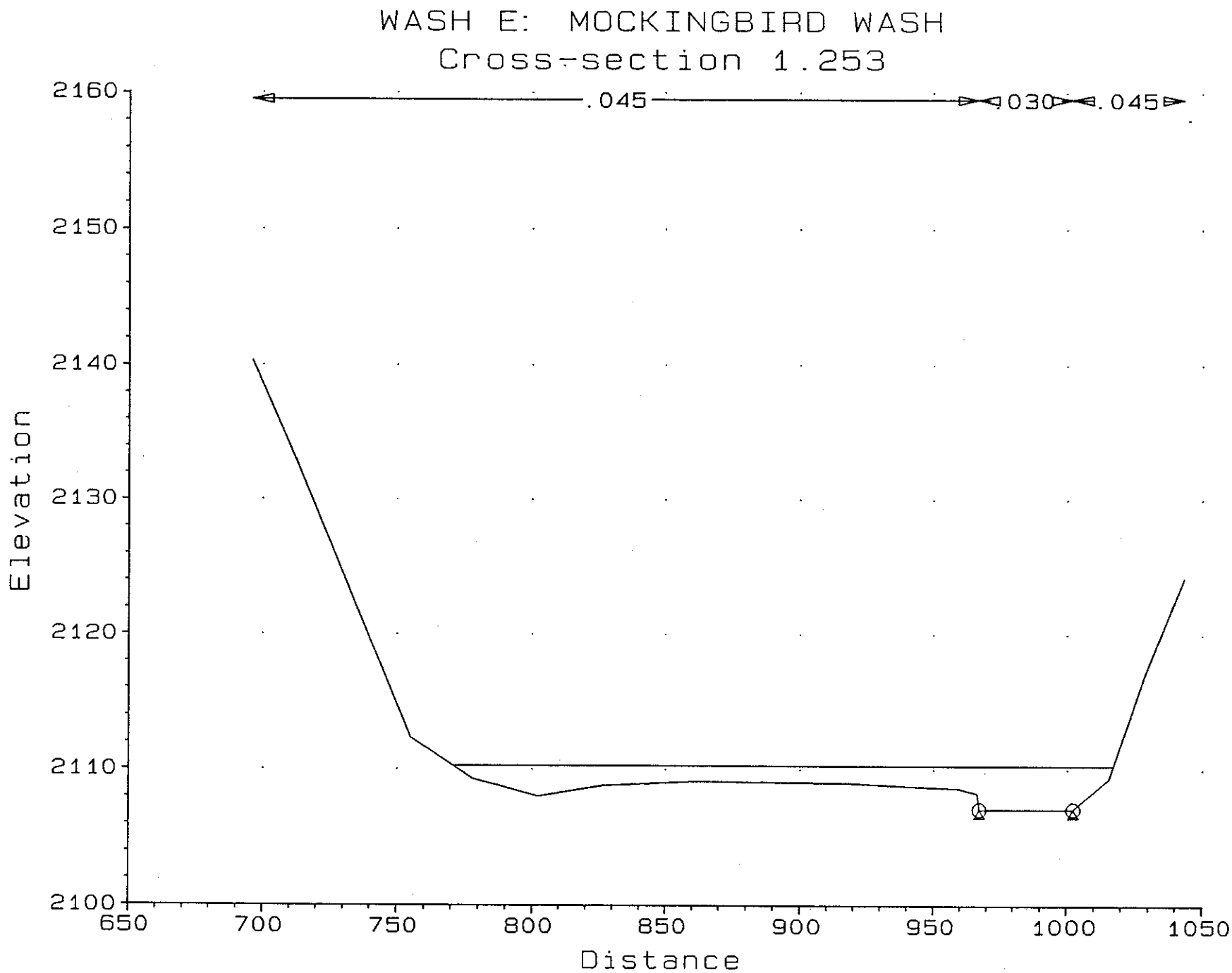
WASH E: MOCKINGBIRD WASH
Cross-section 1.253
.045
.030
.045
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2150
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2120
2110
2100
Elevation
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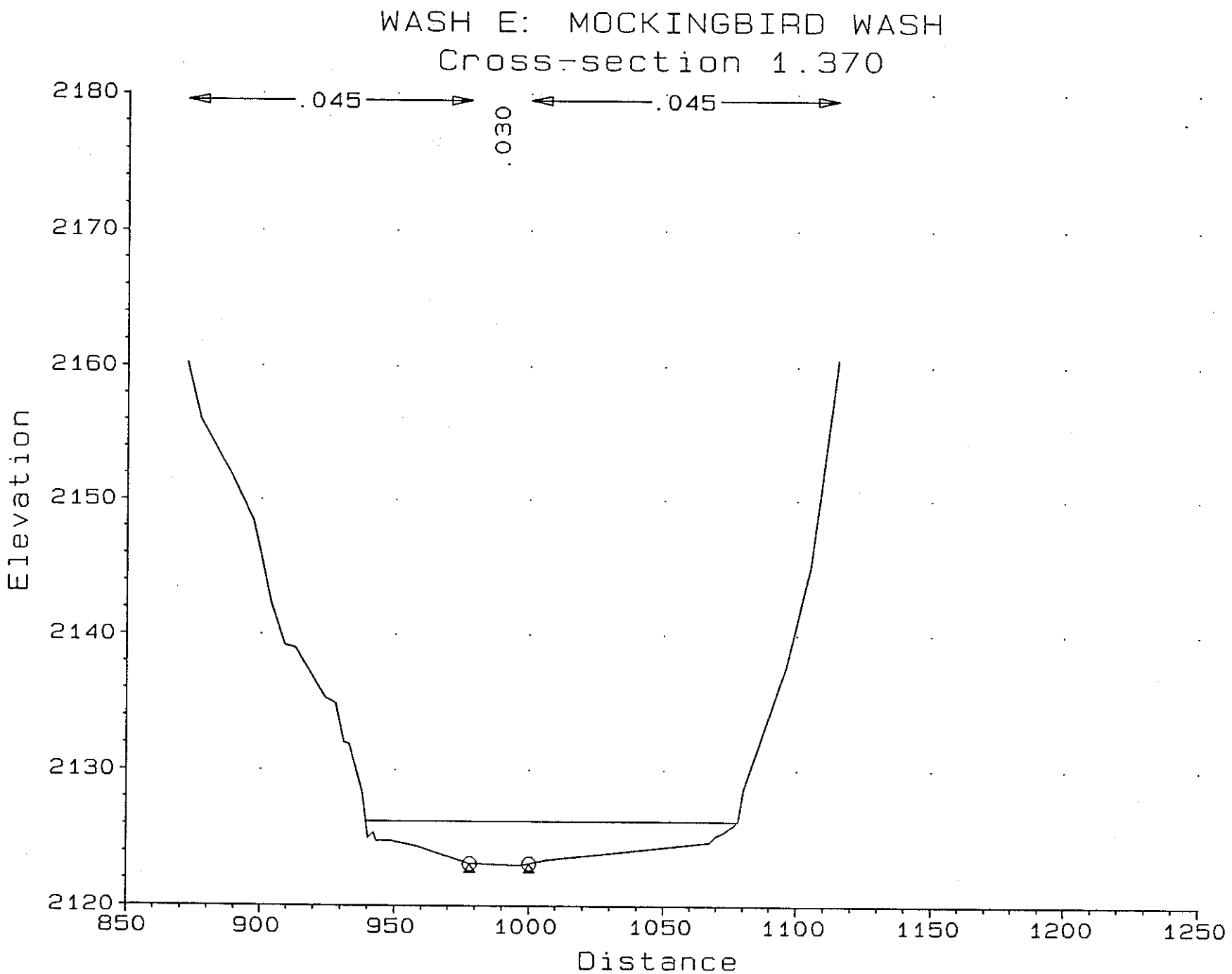
Distance


WASH E: MOCKINGBIRD WASH
Cross-section 1.370
.045
.030
.045
Elevation
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2150
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2120
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1000
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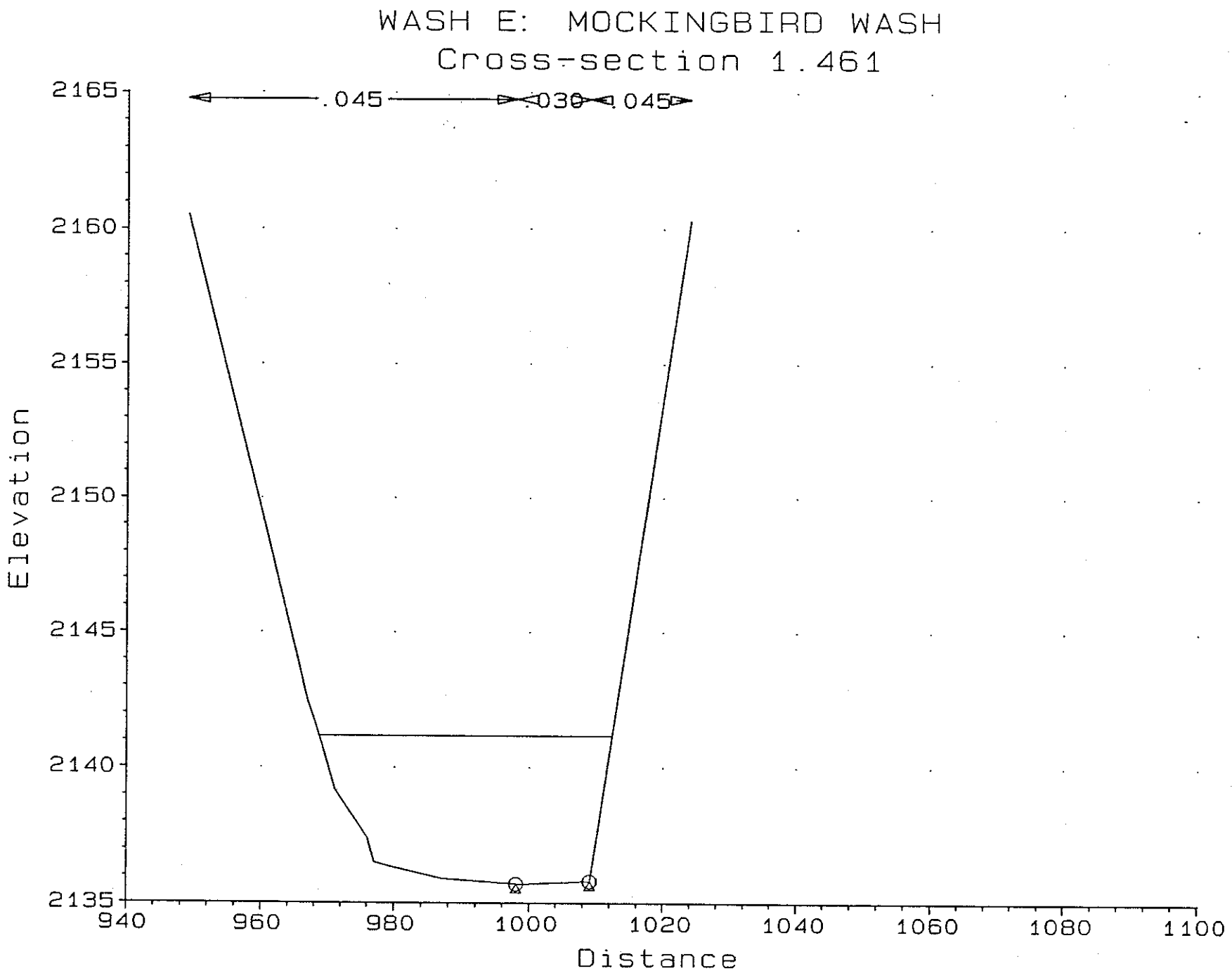
1200
1250
Distance


WASH E: MOCKINGBIRD WASH
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.045
.030
.045
2165
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Elevation
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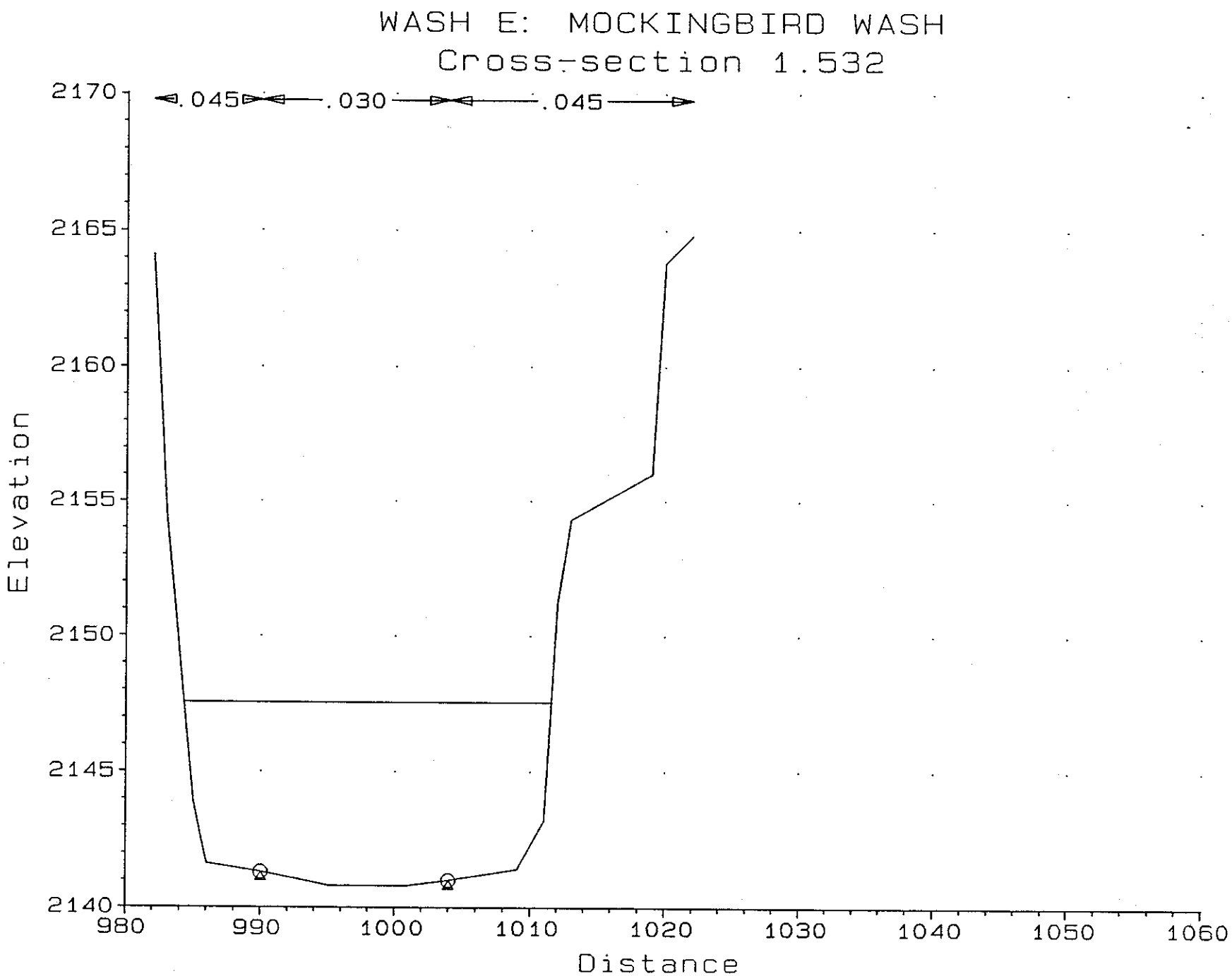
Distance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.045
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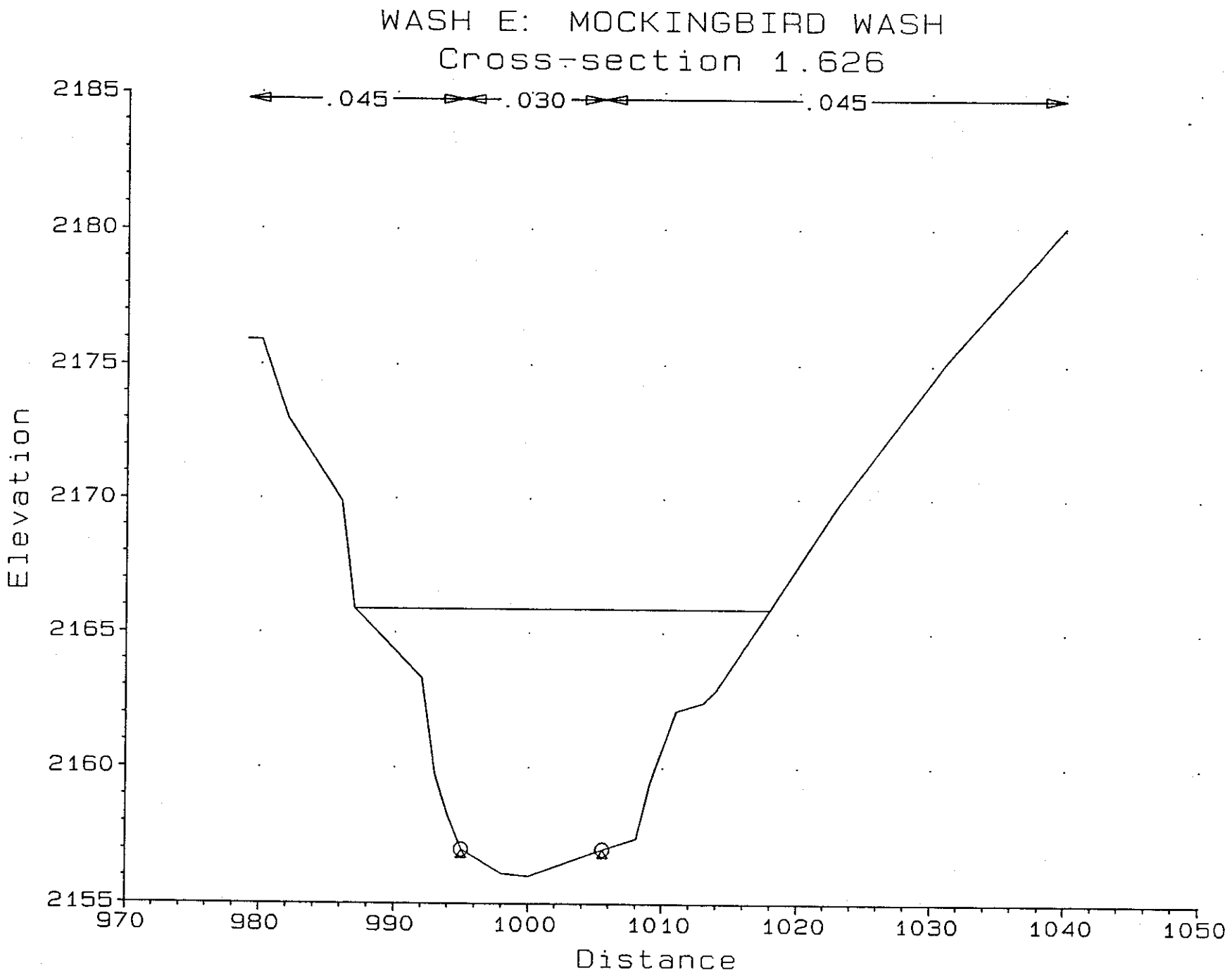
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.030
.045
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Elevation
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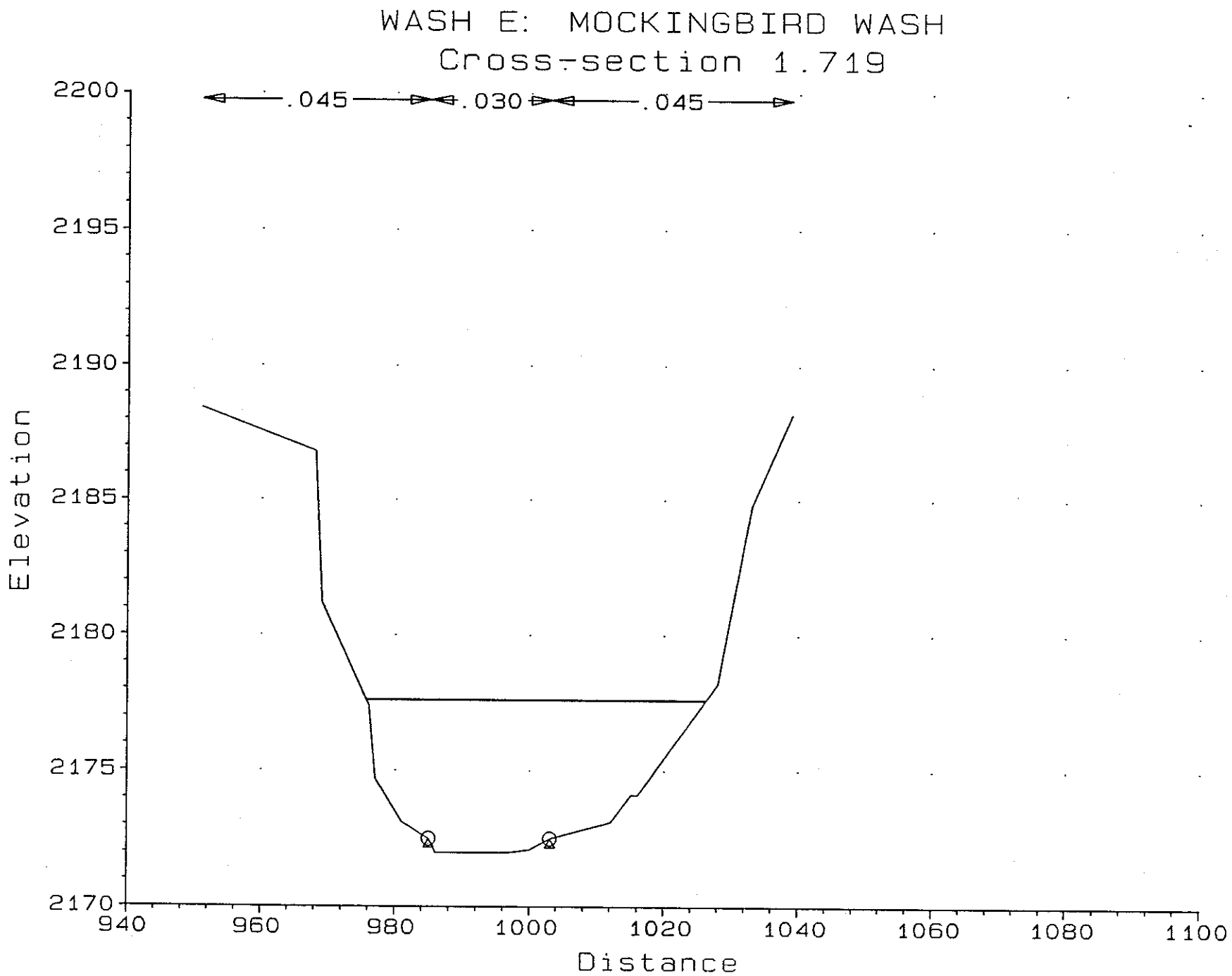
WASH E: MOCKINGBIRD WASH
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.045
2200
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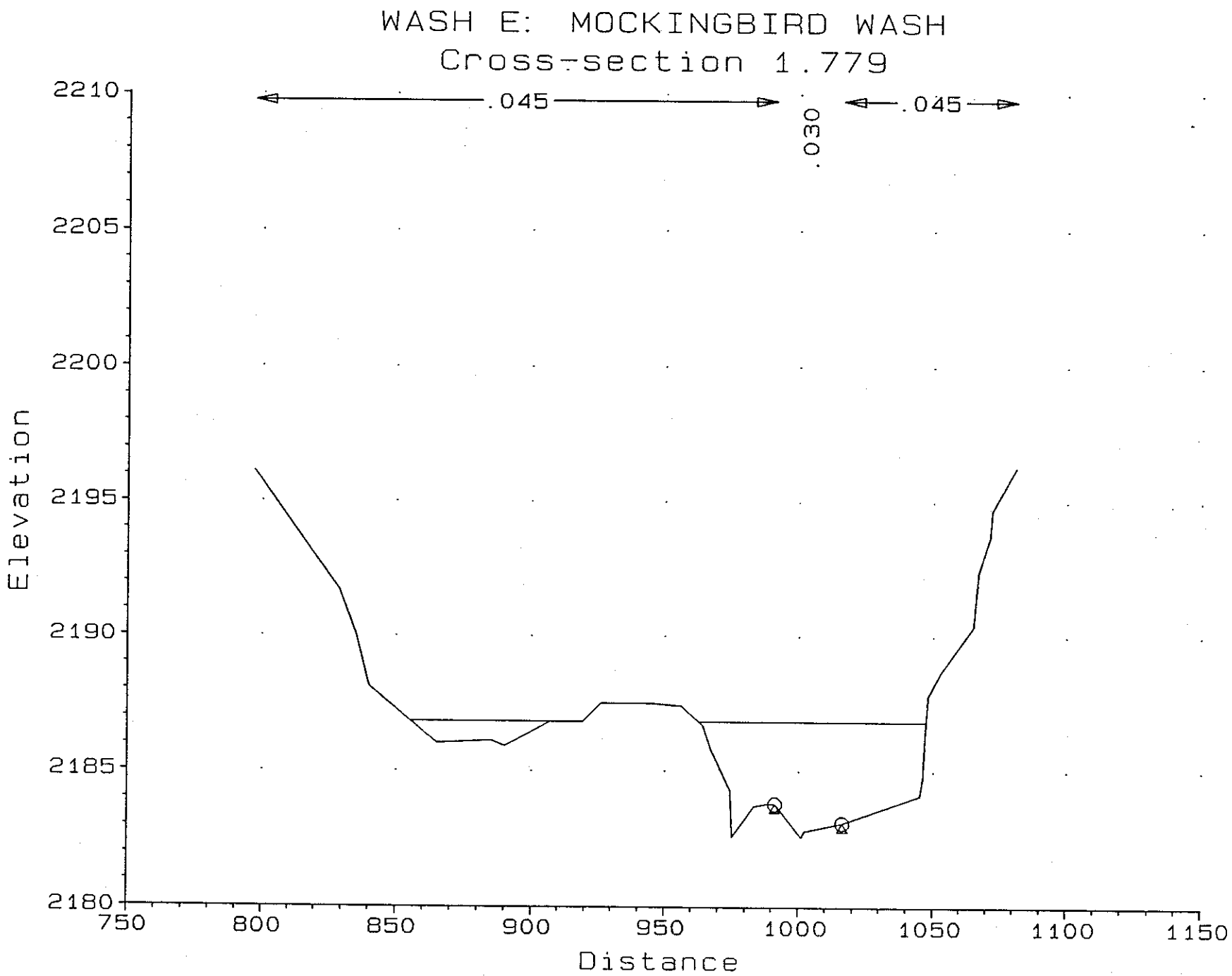
WASH E: MOCKINGBIRD WASH
Cross-section 1.779
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.030
.045
Elevation
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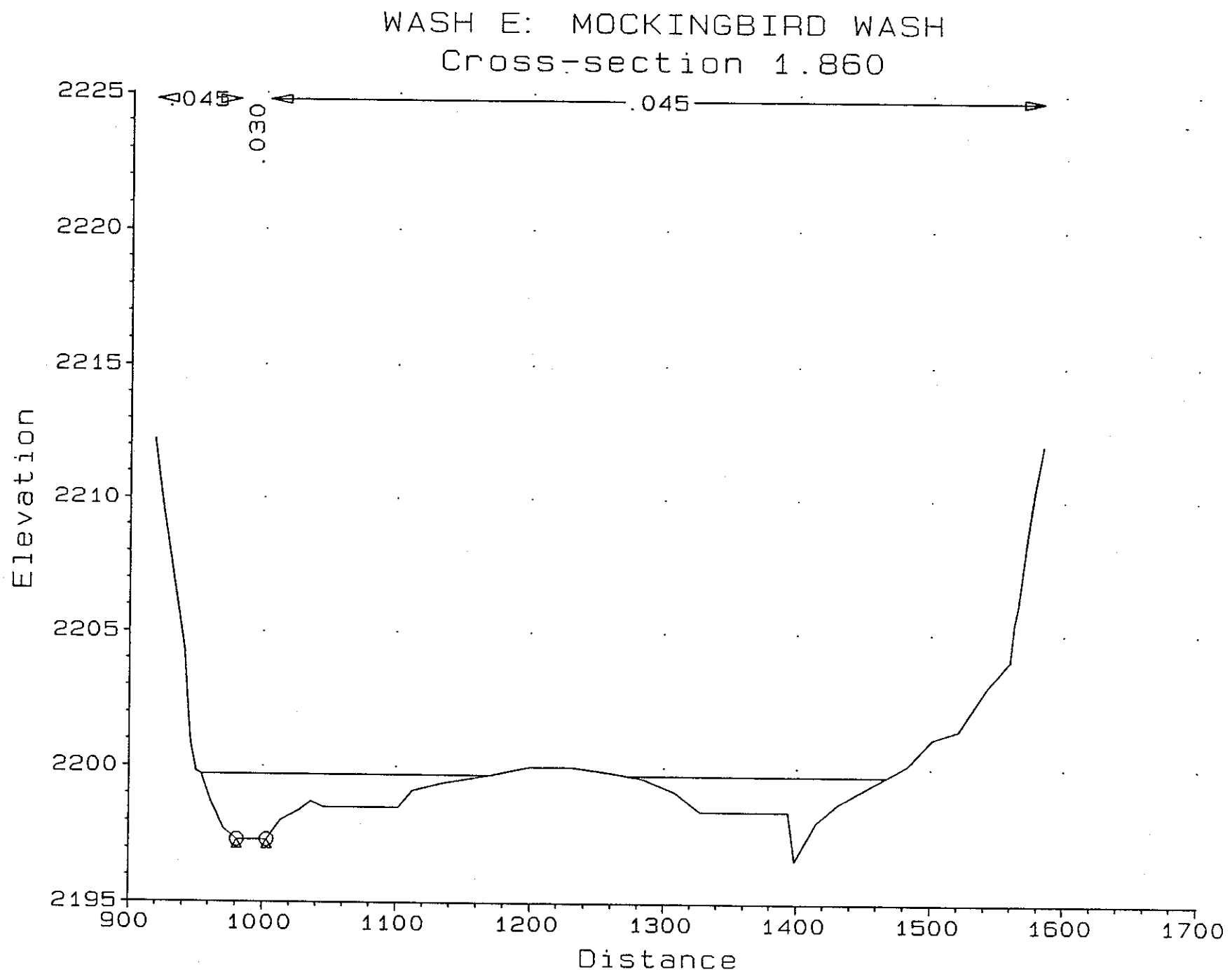
WASH E: MOCKINGBIRD WASH
Cross-section 1.860
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.030
2225
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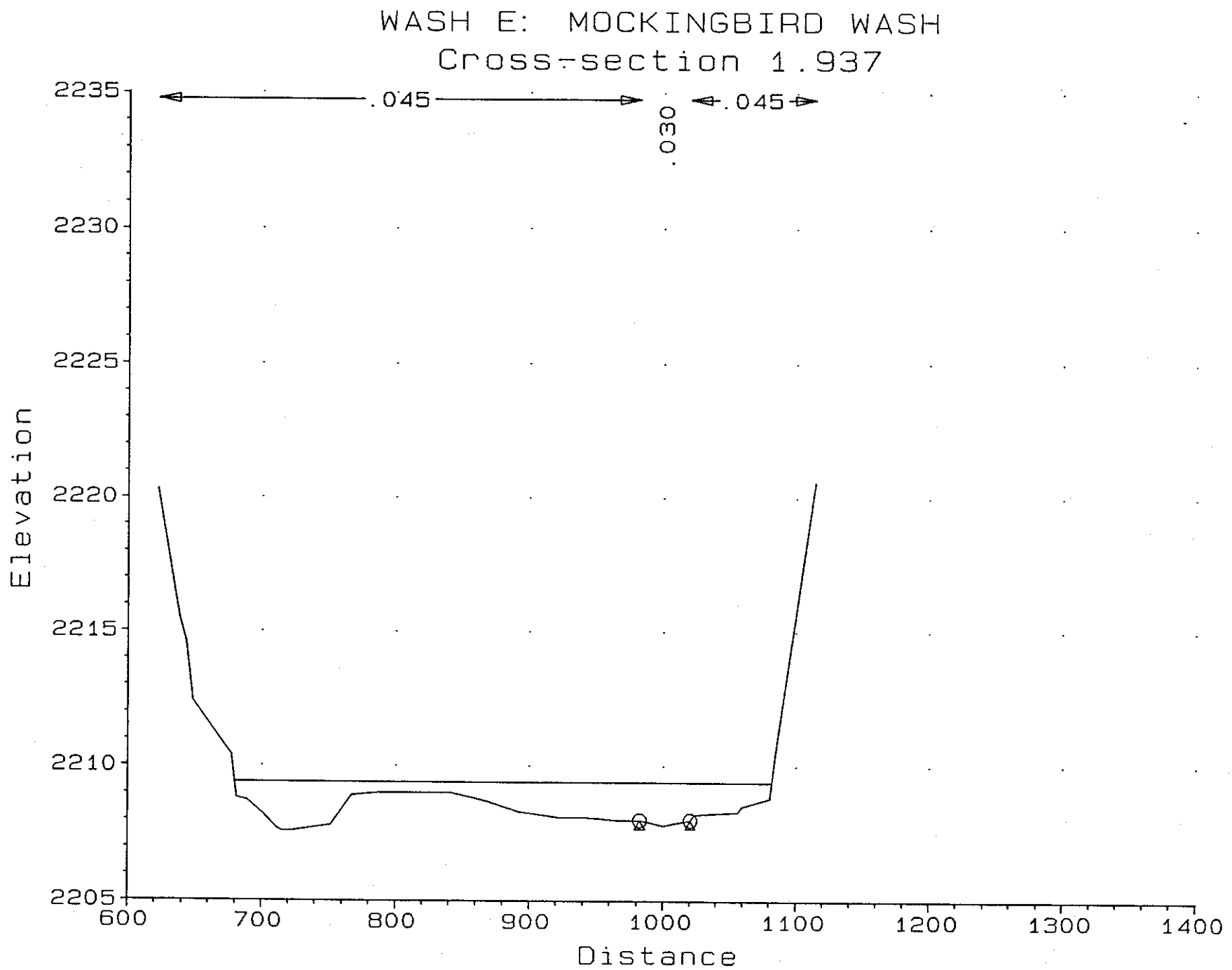
WASH E: MOCKINGBIRD WASH
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Elevation
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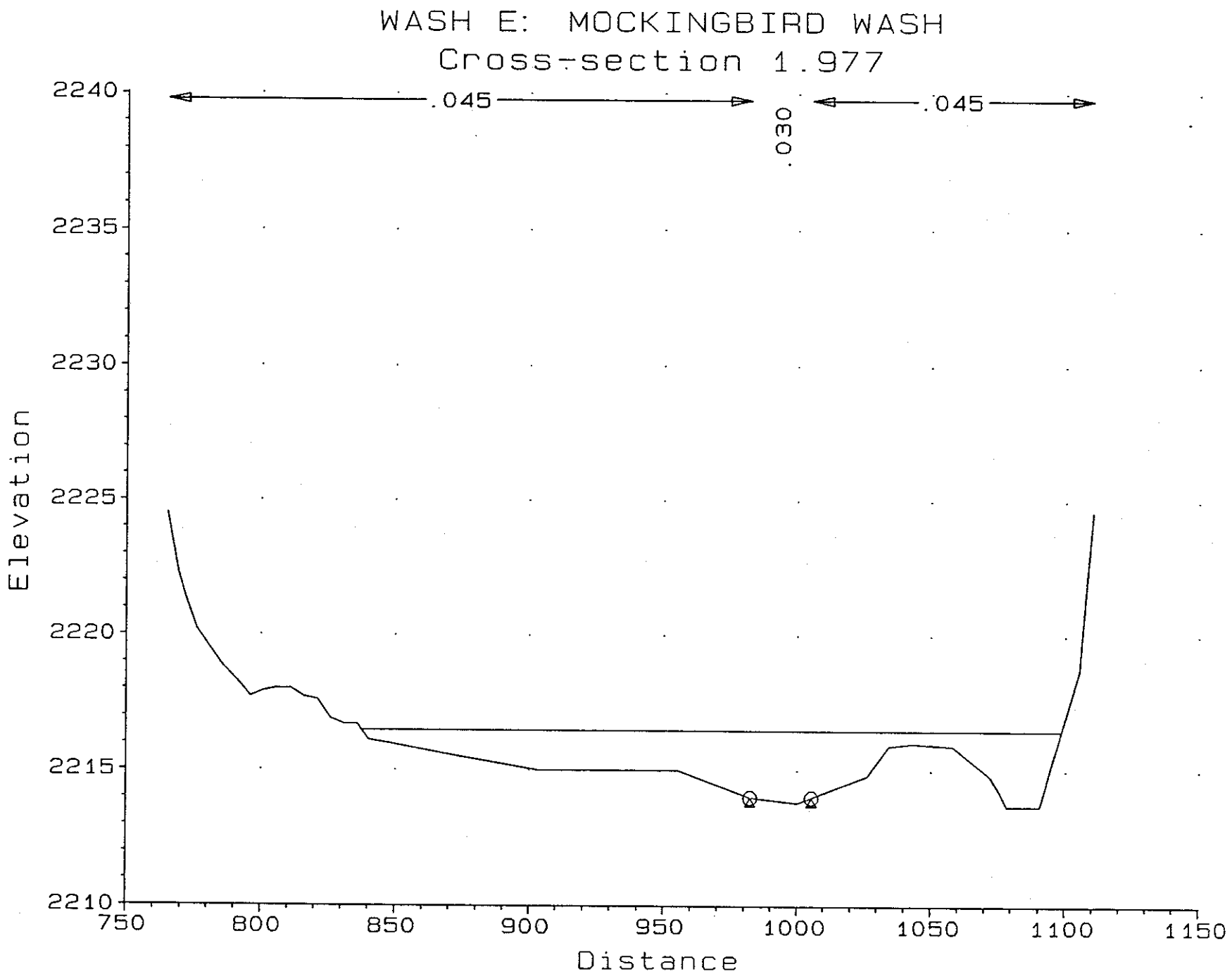
WASH E: MOCKINGBIRD WASH
Cross-section 1.977
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.030
.045
2240
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Elevation
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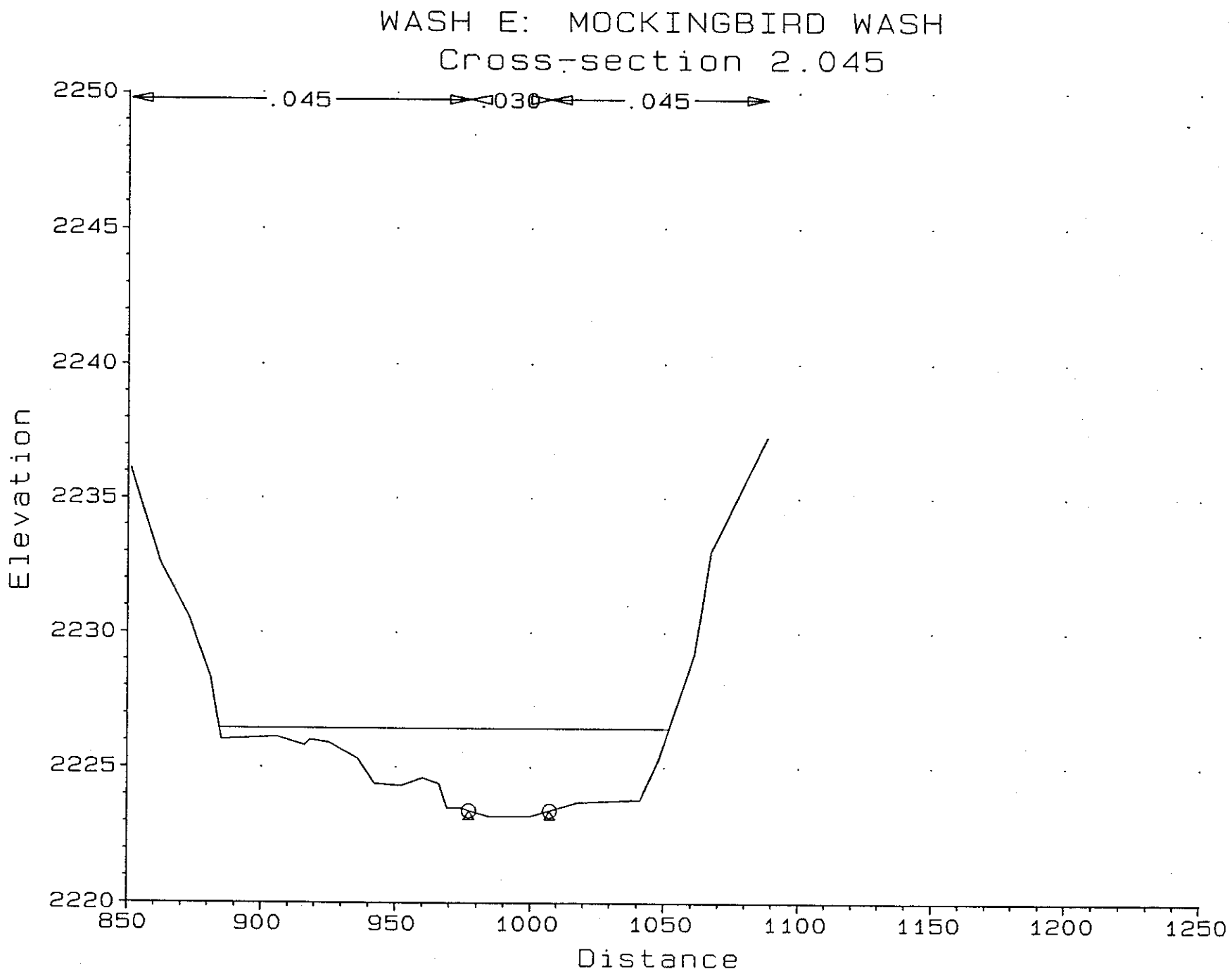
WASH E: MOCKINGBIRD WASH
Cross-section 2.045
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.030
.045
2250
2245
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2235
2230
2225
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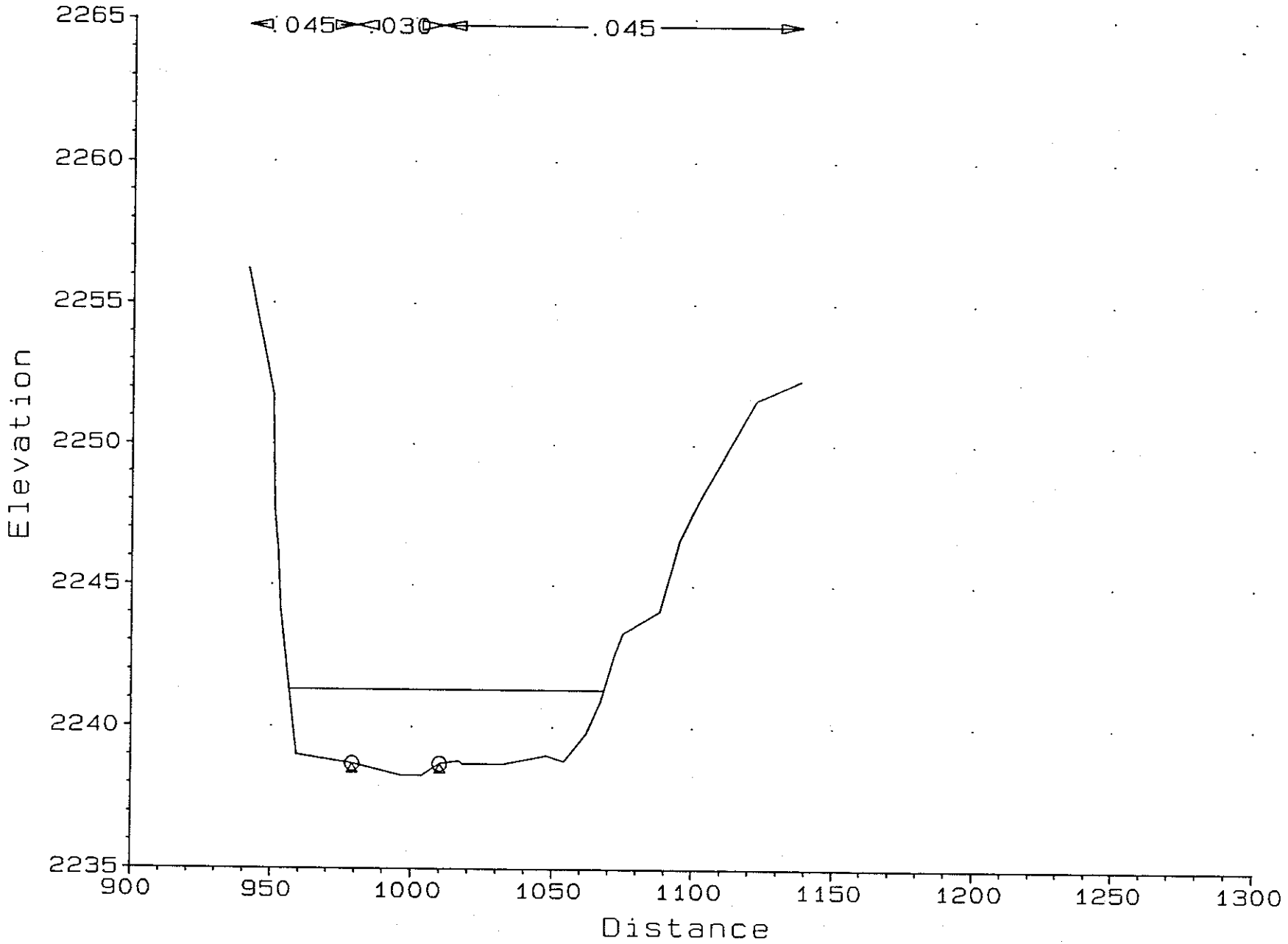
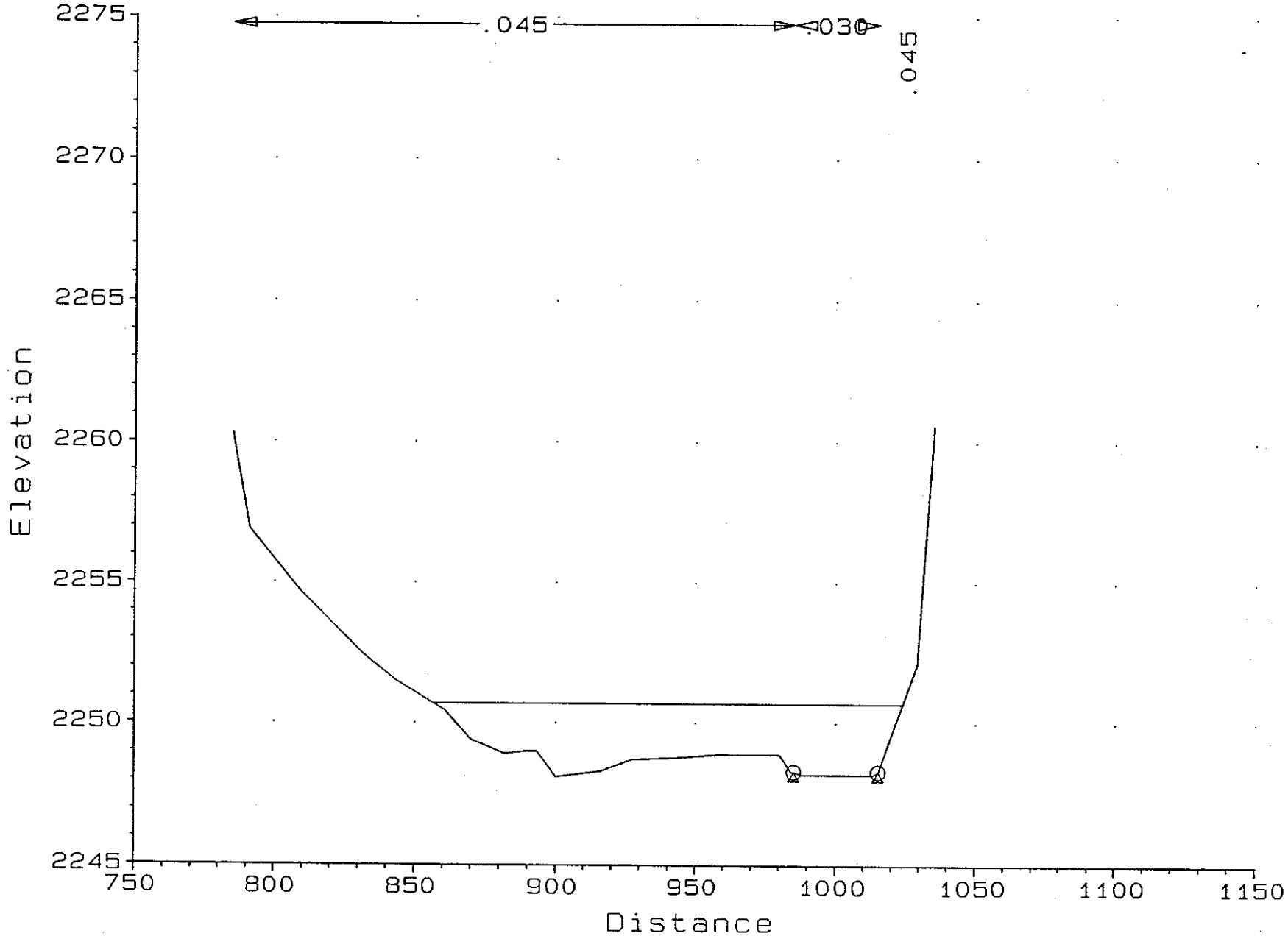
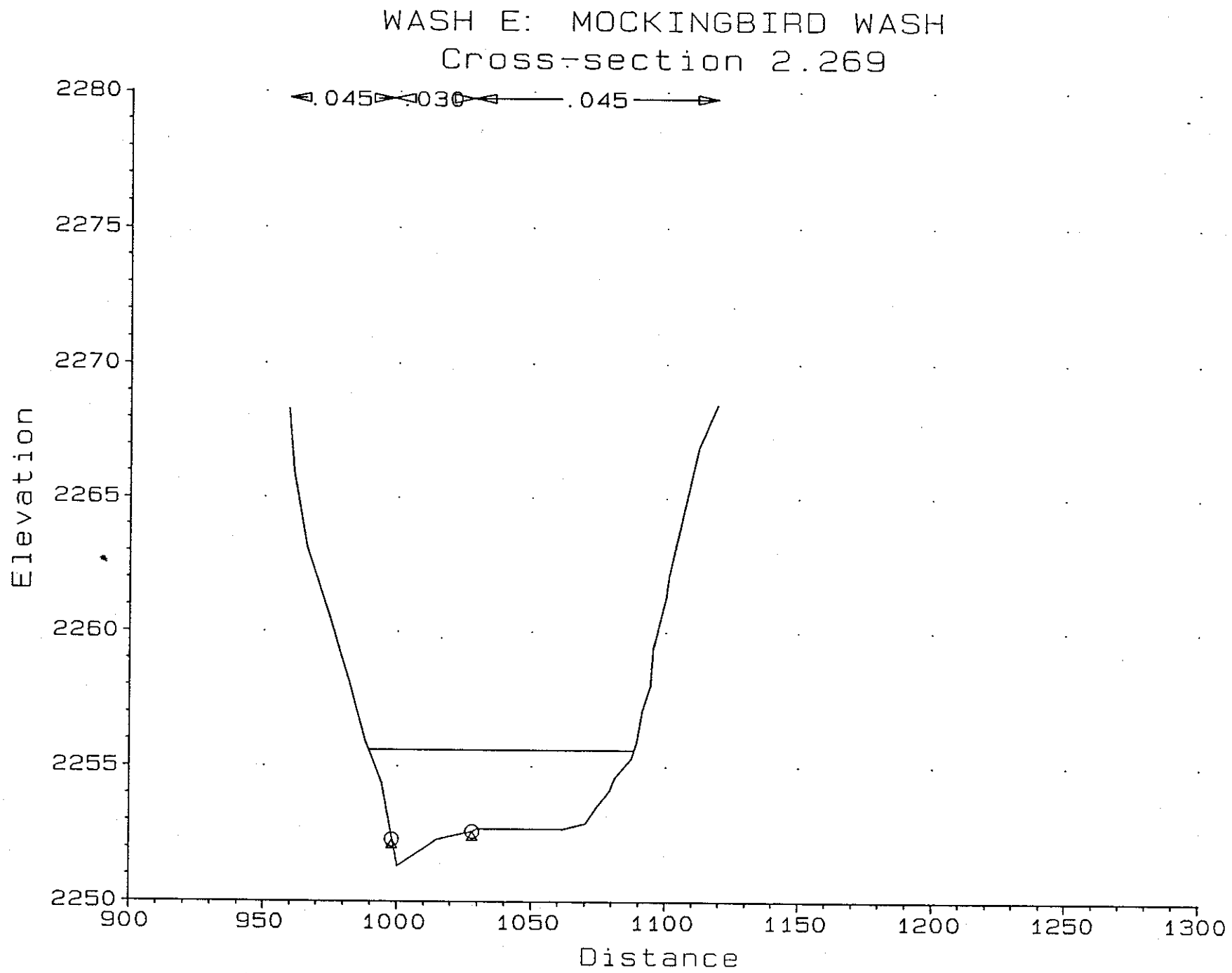
Distance

WASH E: MOCKINGBIRD WASH
Cross-section 2.174



WASH E: MOCKINGBIRD WASH
Cross-section 2.229




WASH E: MOCKINGBIRD WASH
Cross-section 2.269
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.030
.045
Elevation
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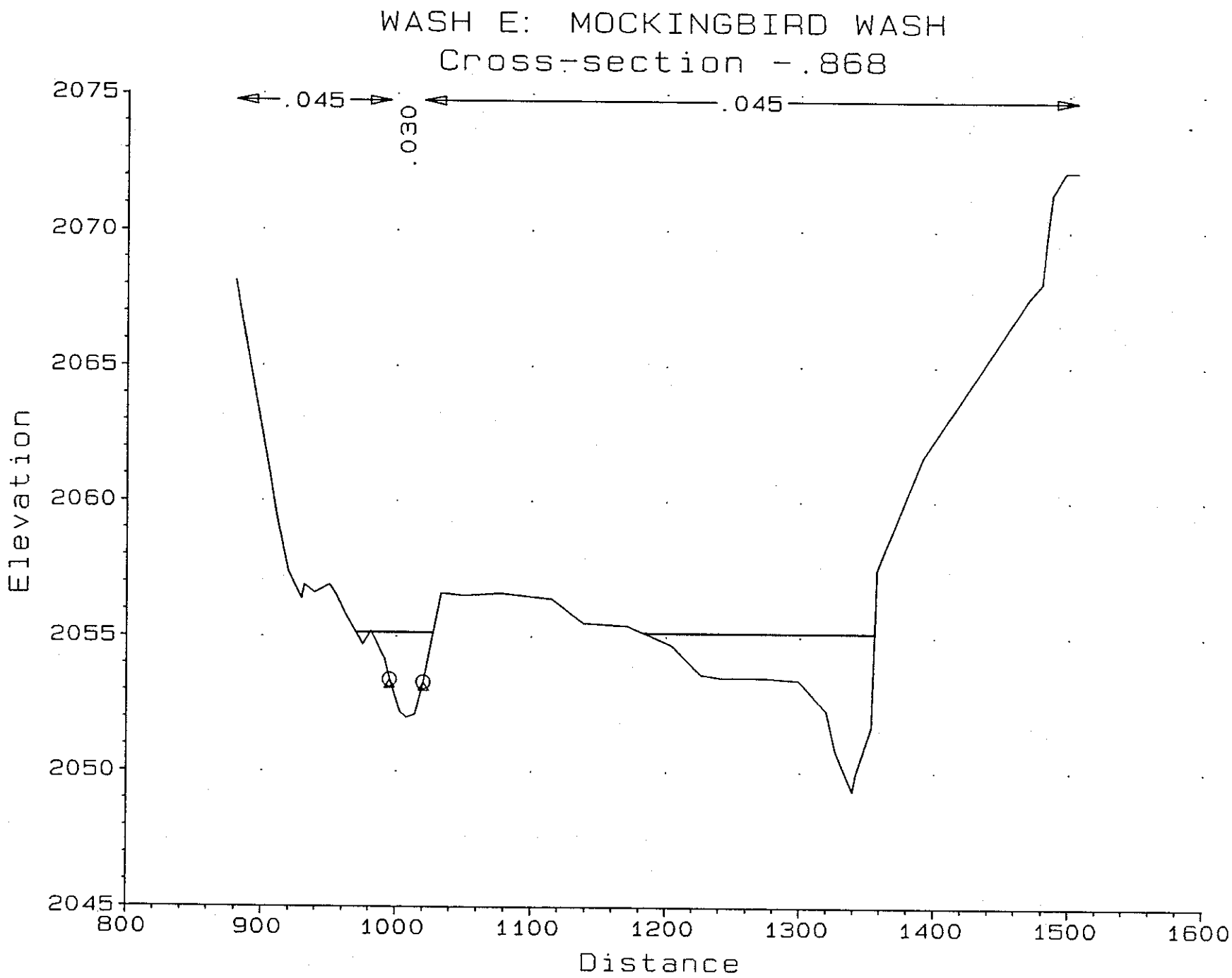
Distance


WASH E: MOCKINGBIRD WASH
Cross-section -.868
.045
.030
.045
2075
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Elevation
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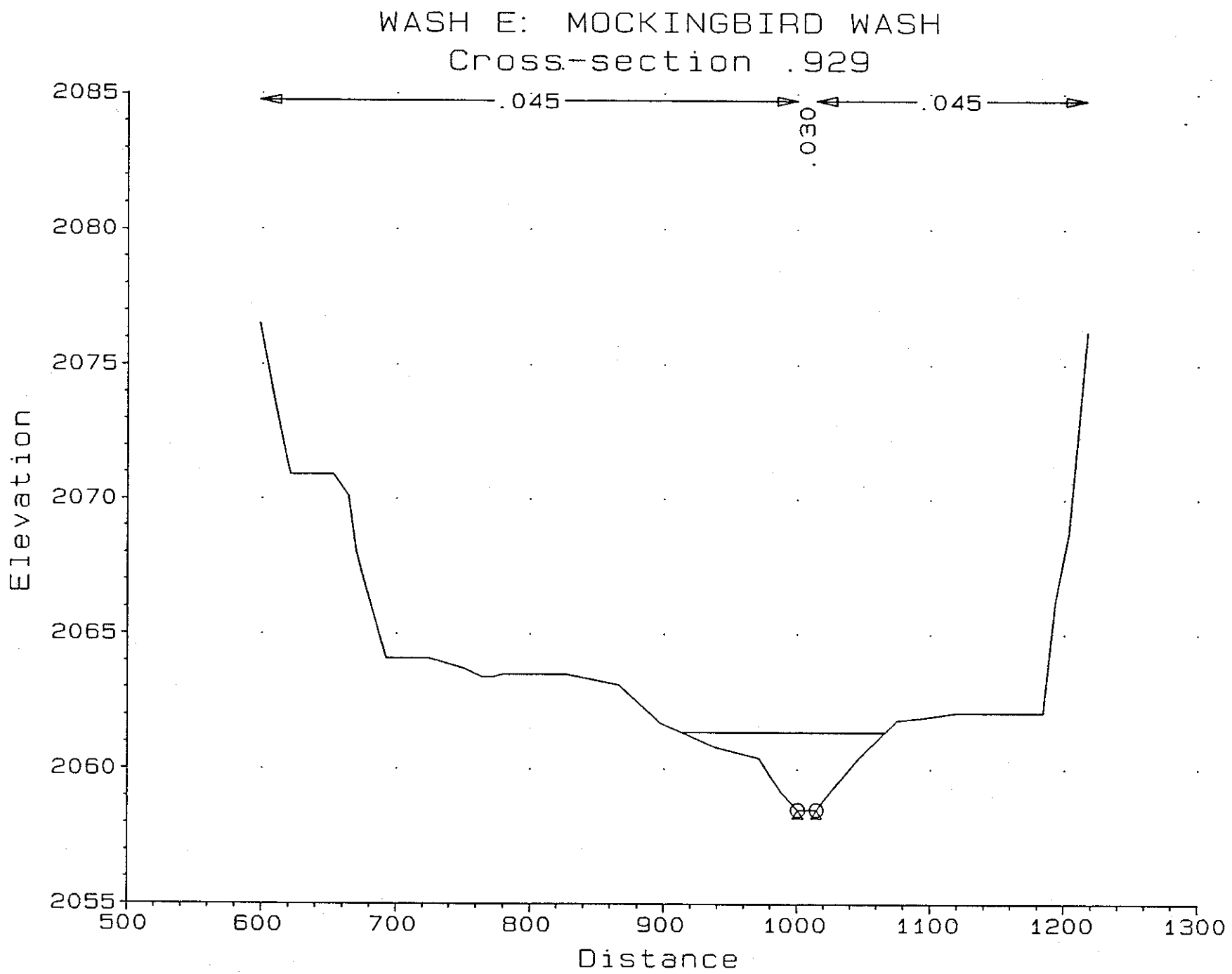
1600
Distance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Cross-section .929
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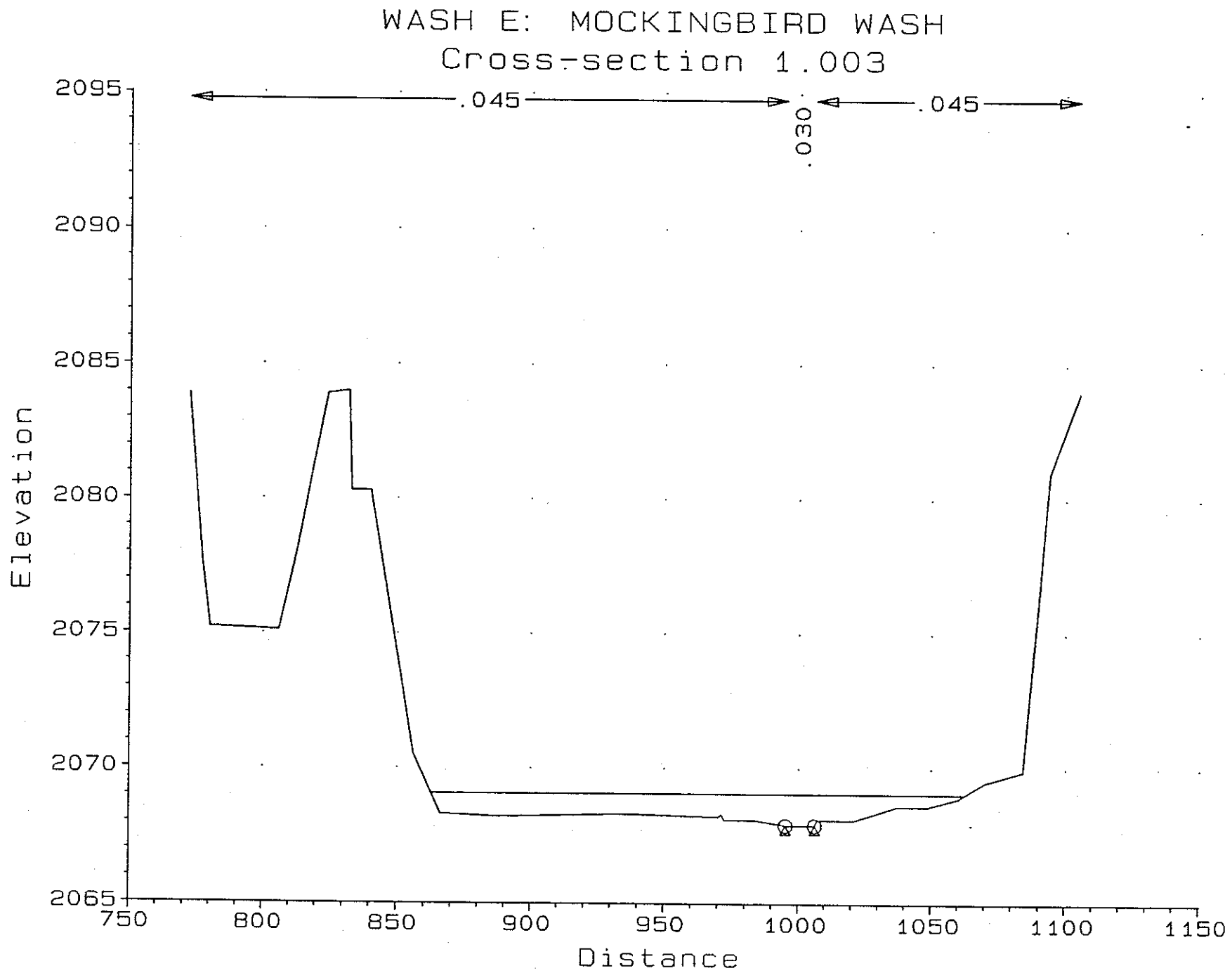
WASH E: MOCKINGBIRD WASH
Cross-section 1.003
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.030
.045
2095
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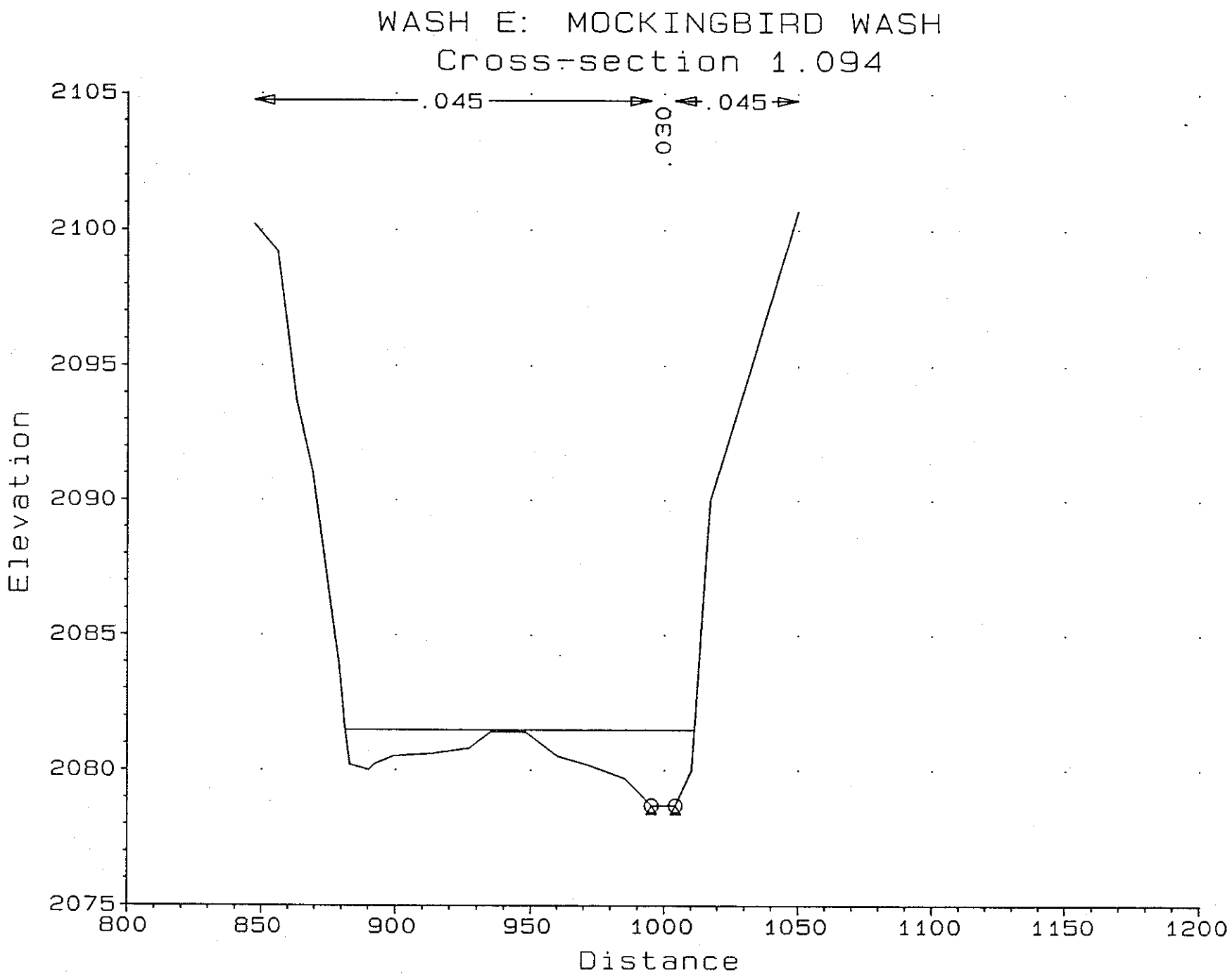
Distance


WASH E: MOCKINGBIRD WASH
Cross-section 1.094
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.045
2105
2100
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Elevation
800
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950
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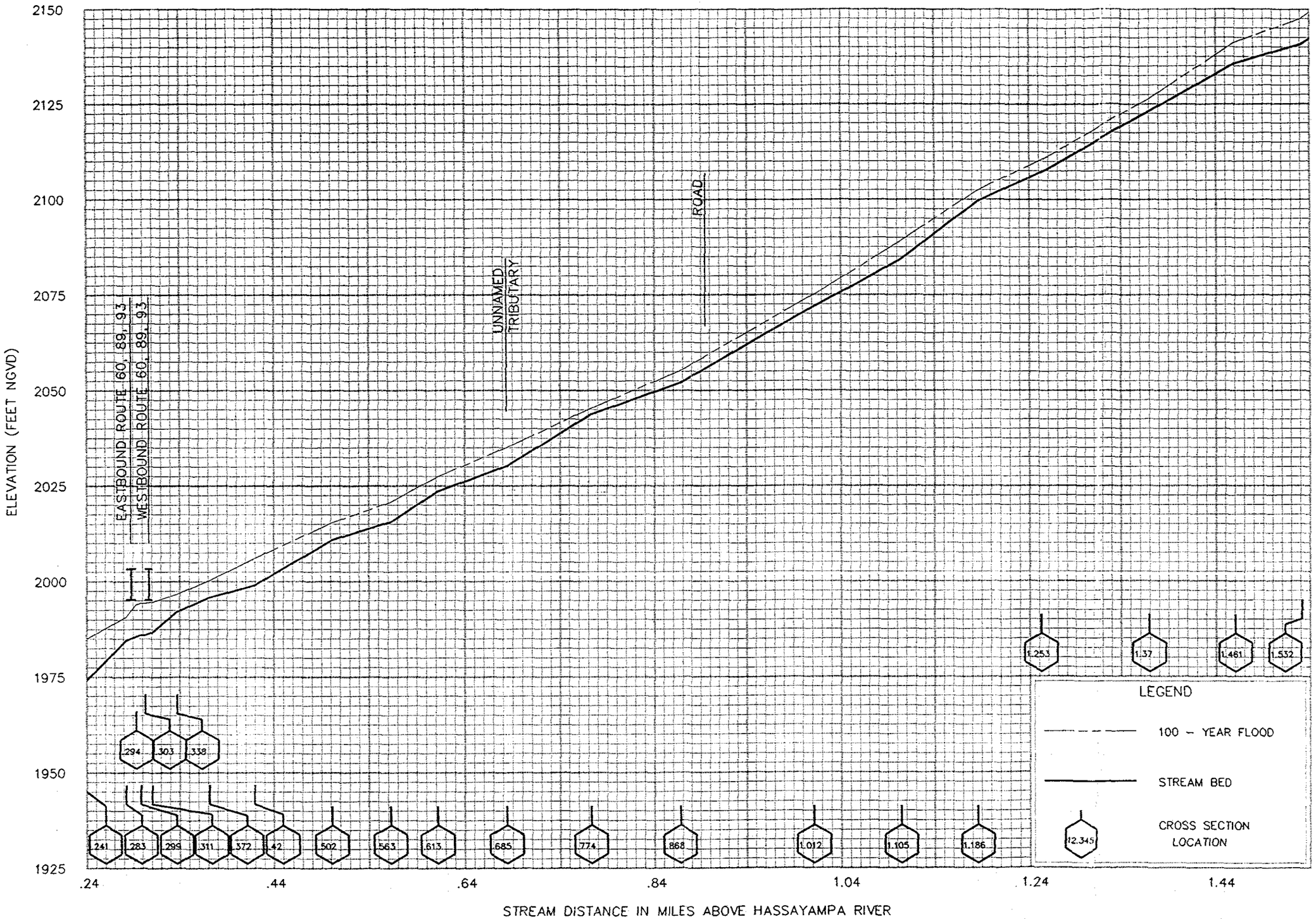
1050
1100
1150
1200
Distance

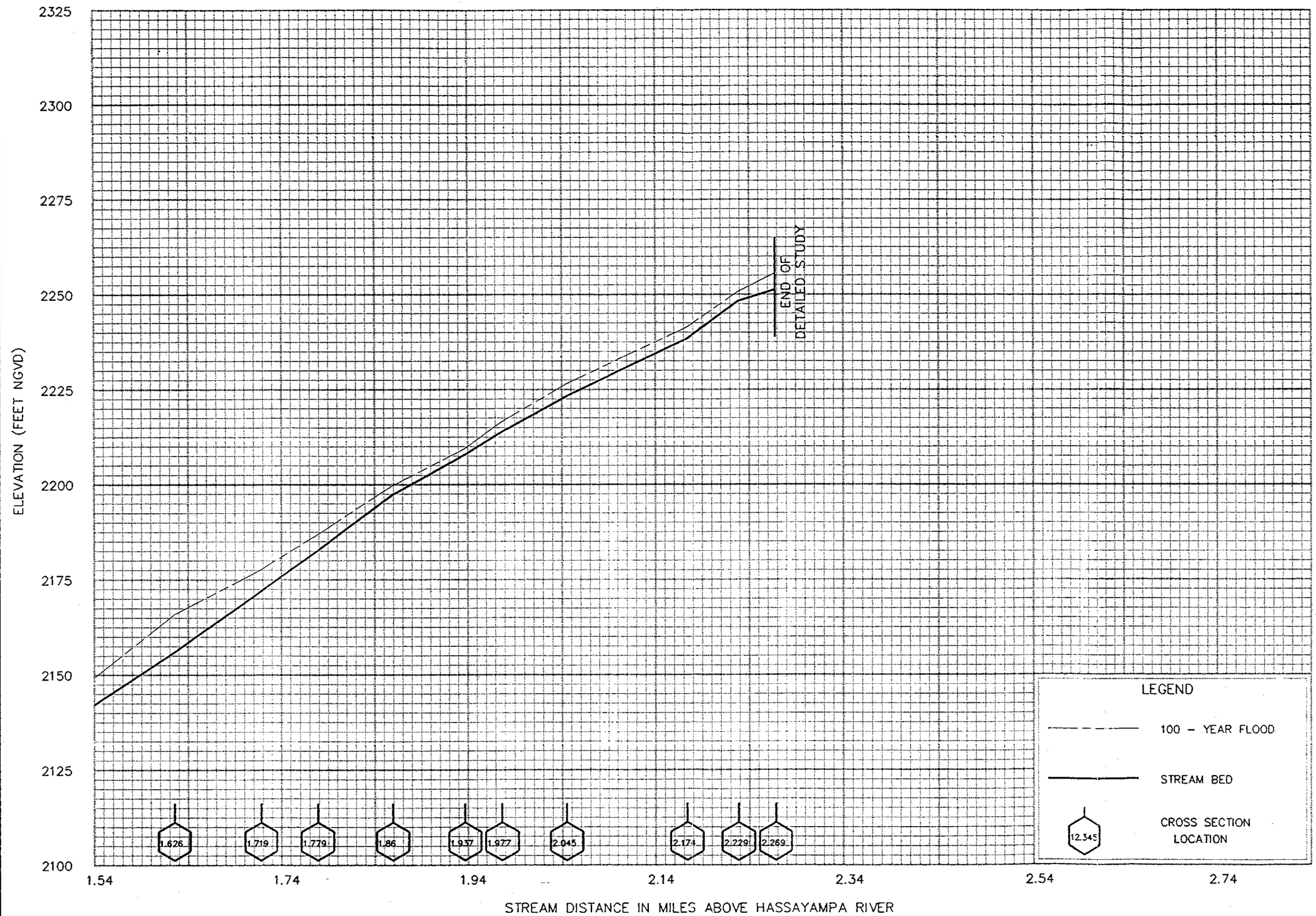


FLOOD PROFILES

MOCKINGBIRD WASH (E)

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

PC FILE:EMAIN.DWG



FLOOD PROFILES

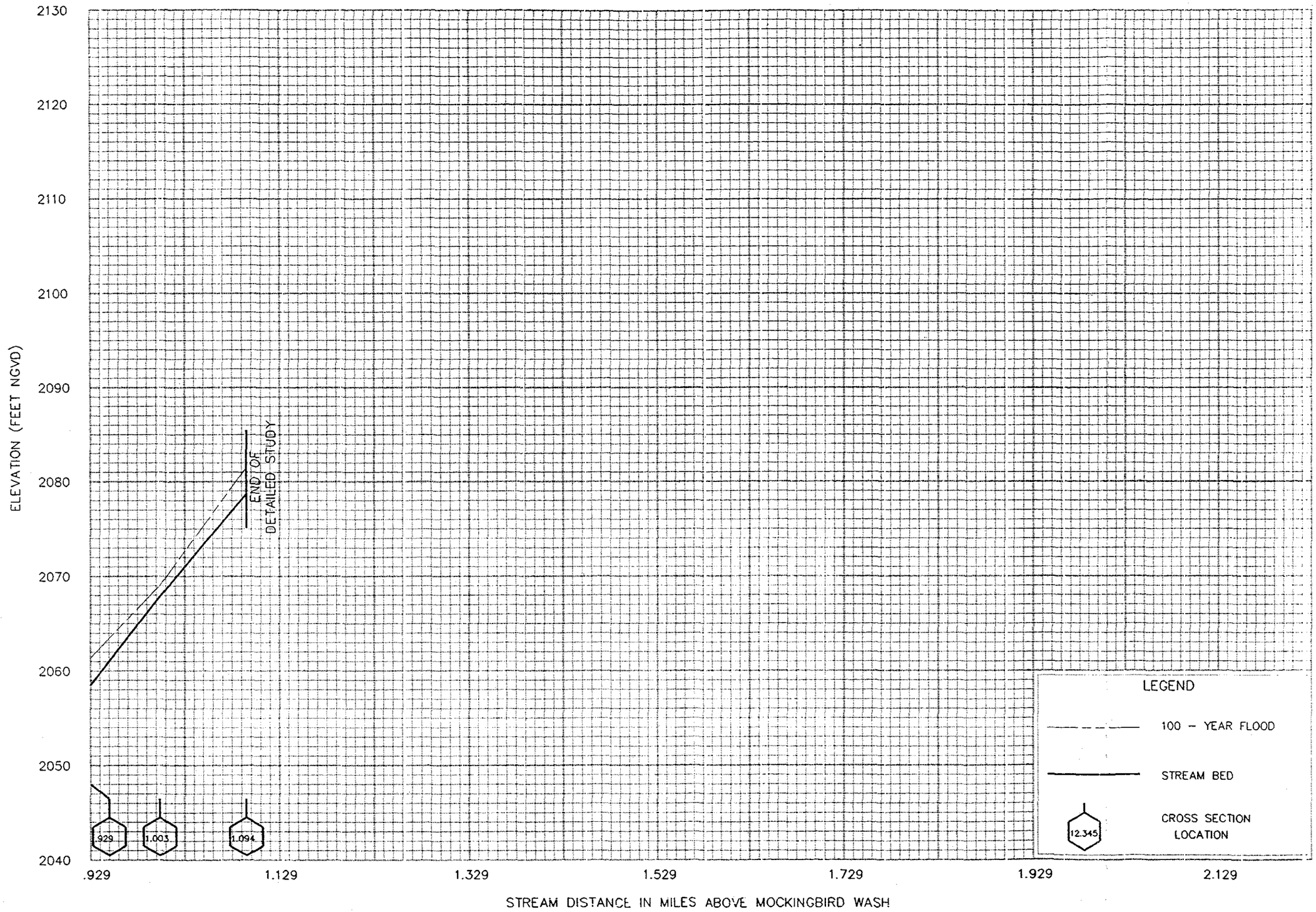
MOCKINGBIRD WASH (E)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/21/94 15:44:28 ACD-12_

PC FILE:EMAIN.DWG



FLOOD PROFILES

MOCKINGBIRD WASH TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

02/18/94 10:41:35 ACD-12_

PC FILE:ETRIB.DWG

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.5: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #1 & TRIBUTARY (Wash f)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1187\02\ADMIN\119702RP.063

May 1994

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash F:
(One form for each flooding source)

Project Name /Identifier: Wickenburg ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) HEC-1 analysis based on Flood Control District of Maricopa County Methodologies.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions.

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs):	Revised (cfs):
Confluence with Hassayampa River	0.24	—	345

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

No existing analysis or updated analysis to reflect existing conditions.

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:
N/A

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		Ver. 3.0
	Date:		02 AUG. 88
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 hours
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-Graph
7.	Loss rate method:		Green-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of Wickenburg
8.	Channel routing method:		Normal Depth
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11.	Snowmelt considerations:	☐ Yes ☐ No	☐ Yes ☒ No
12.	Model calibration:	☐ Yes ☐ No	☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE vs DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County.

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA - No flow records

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Appendix # G.5

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash F:
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS - FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.063

Upstream limit: Station 1.052

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Confluence with Hassayampa River

Upstream limit of study Station 1.052

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. *(Check all that apply)*

☐ Not studied in FIS

☐ Improved hydrologic data/analysis. Explain: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model (*e.g. duplicate effective model to corrected effective model).* Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model (Proposed Effective Model)

4. MODEL PARAMETERS *(from model used to revise 100-year water surface elevation)*

Discharges:	Upstream Limit	Downstream Limit
10-year	37	183 cfs
50-year	61	298 cfs
100-year	70	345 cfs
500-year		

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevations determined by the slope-area method.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.02 ~ 0.05

Overbanks ..... 0.06 ~ 0.07

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

Location	FIS	Revised
N/A		

Explain:

4. Describe how the cross section geometry data were determined (*e.g., field survey, topographic map, taken from previous study*) and list cross sections that were added.

Data points for cross-sections are based on photogrammetric models for the topographic maps.

5. Explain how reach lengths for channel and overbanks were determined:

All reach lengths were measured from floodplain work maps.

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☐ No

If yes, special problems report attached.

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 0.0129 ft/ft

Specify location 0.180

3. What is the distance between the cross-sections in 2 above? ..... 502 ft

Specify location 0.275

4. What is the maximum distance between cross-sections? 554

Specify location 1.052

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... 0 foot

Specify location ..... N/A

c. What is the maximum velocity? ..... 12.16 fps

Specify location 0.063

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☒ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ..... ☐ Yes ☐ No

If Yes, explain:

_____

_____

_____

7. Do 100-year water surface elevations increase at any location? ..... ☐ Yes ☐ No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet and upstream of the project at cross section_____within_____feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet and upstream of the project at cross section_____ within_____feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County / Town of Wickenburg	Wash F: Un-Named Wash (#1)	Wickenburg ADMS-FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

New Model- See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

Sheet ___ of ___

FLOODWAY DATA, WASH F : UNNAMED WASH #1
PROFILE NO. 2

STATION	------- FLOODWAY ------- WIDTH	SECTION AREA	MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
44.590	222.	190.	1.8	1856.7	1856.7	.0
.063	6.	28.	12.2	1866.4	1866.4	.0
.085	6.	50.	6.9	1870.5	1870.5	.0
.093	100.	786.	.4	1871.7	1871.7	.0
.133	82.	336.	1.0	1871.7	1871.7	.0
.180	70.	129.	2.7	1871.6	1871.6	.0
.275	28.	35.	5.2	1878.5	1878.5	.0
.379	17.	25.	7.1	1927.6	1927.6	.0
.473	61.	39.	3.4	1974.7	1974.7	.0
.568	46.	30.	4.4	1982.6	1982.6	.0
.663	31.	17.	4.2	1992.6	1992.6	.0
.758	33.	25.	2.8	2000.8	2000.8	.0
.852	21.	16.	4.4	2009.2	2009.2	.0
.947	30.	22.	3.2	2019.3	2019.3	.0
1.052	21.	19.	3.7	2028.4	2028.4	.0
-.133	82.	336.	.5	1871.7	1871.7	.0
.032	38.	34.	5.1	1874.4	1874.4	.0
.128	21.	27.	6.2	1891.3	1891.3	.0
.221	39.	36.	4.7	1911.5	1911.5	.0
.316	38.	34.	5.0	1934.4	1934.4	.0
.411	36.	32.	5.4	1952.6	1952.6	.0

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash F.

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: US. Highway 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.063 to Station 0.085
3. This revision reflects (*check one of the following*):
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (*Explain why new analysis was performed*) _____

2. BACKGROUND

Provide the following information about the structure:

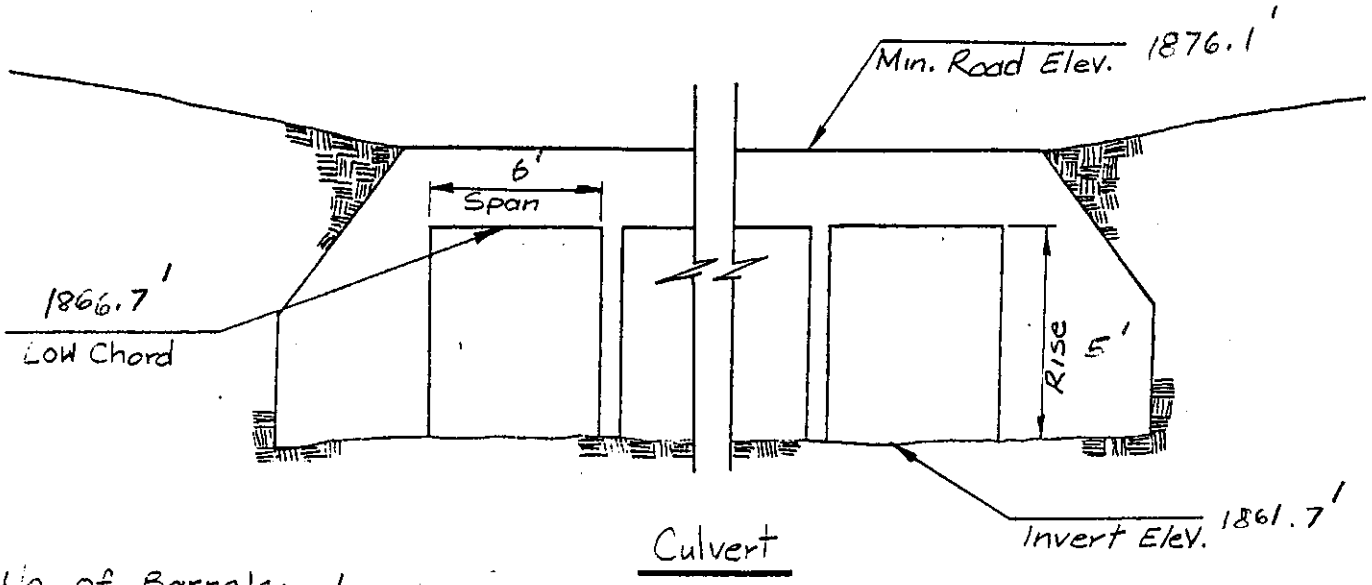
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) One 6'x5' x 132.75' concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls, no inlet top edge level.
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine

   If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). (*Attach justification*)

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.

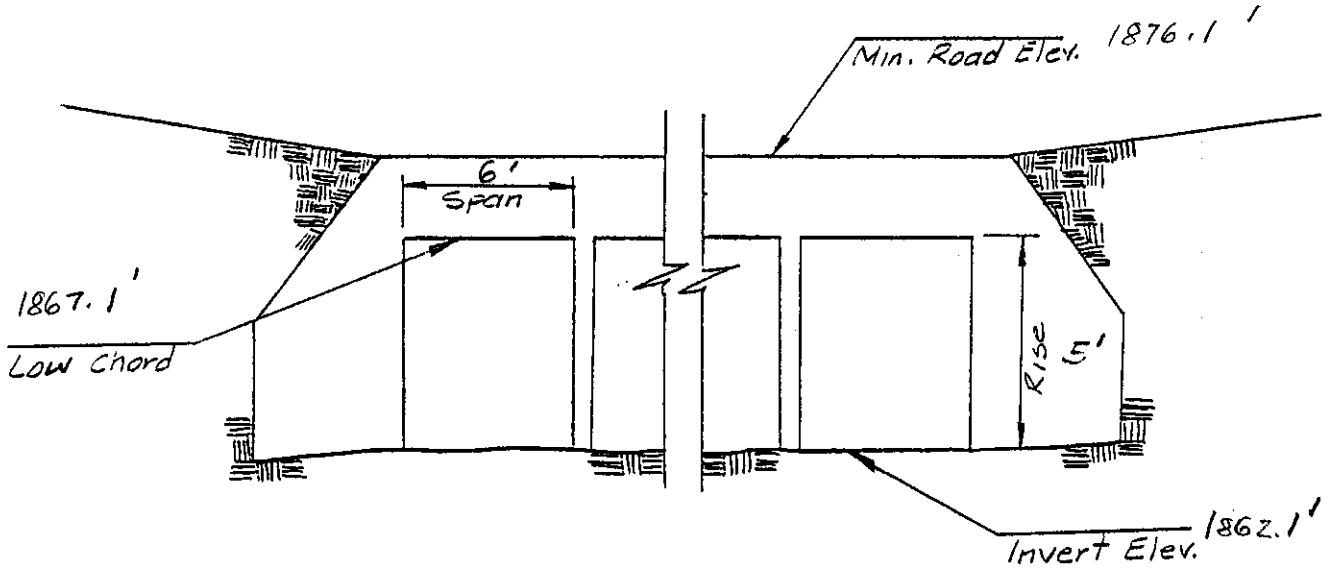


No. of Barrels: 1

Culvert Size: 6'x5'x 138.75'

See Cross Section # 0.063

Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

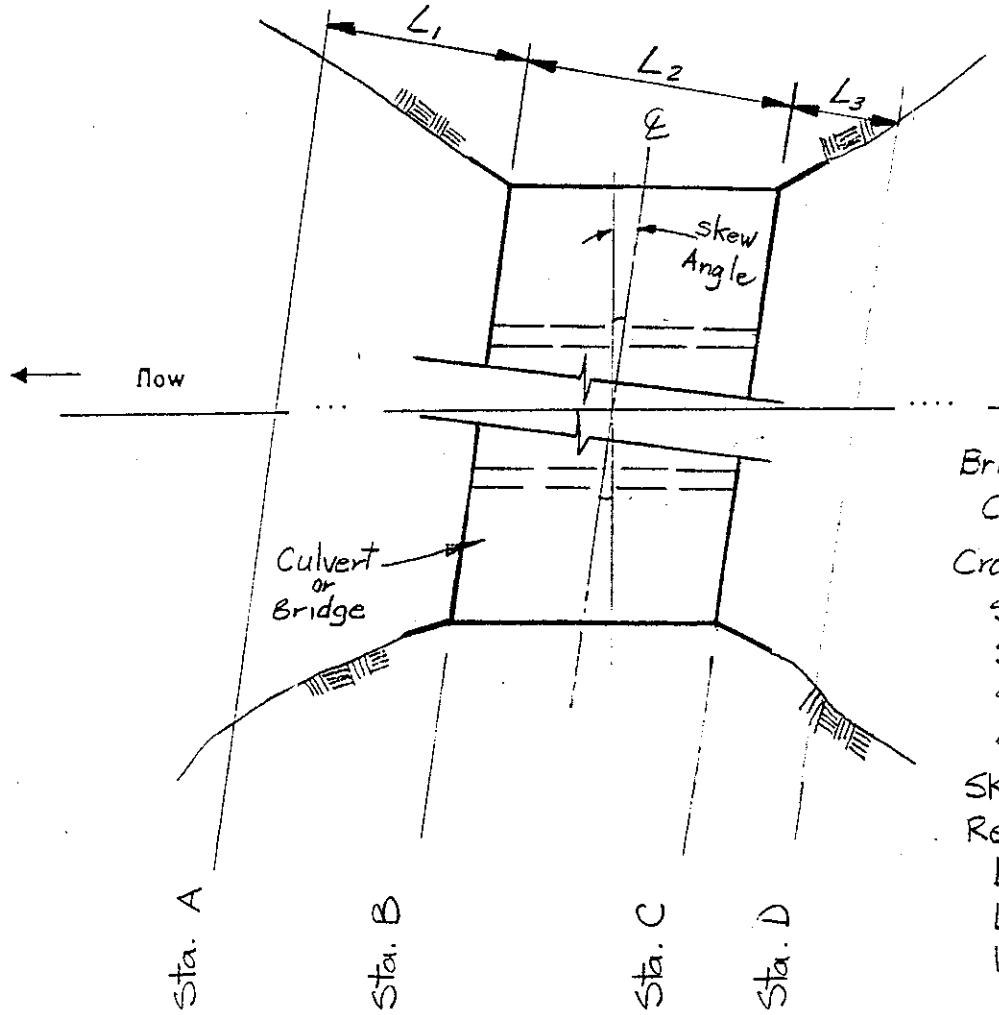


No of Barrels: 1

Culvert Size: 6'x5'x 138.75'

See Cross Section # 0.085

Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Bridge Width / Culvert Length: 139'

Cross Section Stations

Sta. A = 44.59

Sta. B = 0.063

Sta. C = 0.055

Sta. D = 0.093

Skew Angle: 0

Reach Lengths:

L_1 = 330 ft.

L_2 = 139 ft.

L_3 = 42 ft.

Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	139 ft
Calculated culvert/bridge area (ft^2) by the hydraulic model, if applicable	30 ft^2
Total culvert/bridge area (ft^2)	30 ft^2

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face (STA 0.085)	1877.0	1876.1
Downstream face (STA 0.063)	1866.7	1866.7

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1878.9	1876.1
Downstream face	1878.9	1876.1

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1870.49	1871.23
Downstream face	1866.36	1868.65

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	345	—	345 cfs

The maximum depth of flow over the roadway/railroad (ft.) 0

Weir length (ft.) 0

(*) Hassayampa River Floodplain

Top Widths

	Floodplain	Floodway
Upstream face	390'	9'
Downstream face	(*)	7.2'

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	9'	340'
Downstream face	7.2'	7.2'

3. ANALYSIS (Cont'd)

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	–
Other loss coefficients (e.g., bend manhole, etc.)	–
Total loss coefficient	–
Weir coefficient	2.90
Pier coefficient	–
Contraction loss coefficient	0.60
Expansion loss coefficient	0.50

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

.. If the answer to either 1A or 1B is yes:

A. What is the estimated sediment *(bed material)* load?
_____cfs *(attach gradation curve)*

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Method I of encroachment is used where encroachment stations are defined by ET but encroachment elevations are defined in X3 (i.e., ELLEA & ELREA) for effective flow calculations.

Comments *(explain any unusual situations)*:

Attach analysis.

```
*****************************************
*  HEC-2 WATER SURFACE PROFILES          *
*                                        *
*  Version   4.6.2;  May 1991            *
*                                        *
*  RUN DATE    12AUG92    TIME   07:20:32 *
*****************************************
```

```
***************************************
*  U.S. ARMY CORPS OF ENGINEERS       *
*  HYDROLOGIC ENGINEERING CENTER      *
*  609 SECOND STREET, SUITE D         *
*  DAVIS, CALIFORNIA 95616-4687       *
*          (916) 756-1104             *
***************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 12AUG92 07:20:32

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


T1      WICKENBURG ADMS - CONTRACT FCDMC 89-79
T2      BLACK & VEATCH PN 17676:  COE & VAN LOO JN 1197-02
T3      WASH F : UNNAMED WASH #1

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0      .0027        0         0         0     1860.0       0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1         0        -1         0         0         0        -1         0         0        15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

QT        2       345       345
NC     .070      .070      .035       .1        .3
NH        4      .035    1119.4      .07    1346.4      .035    1504.6       .07    1960.2
          HASSAYAMPA RIVER FIS SECTION (CBA 1988, NO DATUM CHANGE)
          CONFLUENCE WITH WASH F - UNNAMED WASH # 1, AN EAST TRIBUTARY
          NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
X1    44.59        18    1346.4    1504.6     440.0     520.0     500.0
GR   1874.4    1000.0    1877.8    1119.4    1875.0    1140.8    1860.2    1226.8    1864.1    1272.1
GR   1855.0    1299.5    1856.7    1346.4    1856.0    1425.9    1855.0    1434.2    1855.0    1463.5
GR   1855.0    1490.0    1856.5    1504.6    1858.0    1597.8    1856.8    1623.4    1856.9    1714.6
GR   1861.3    1744.4    1862.1    1781.8    1983.0    1960.2

NC     .070      .070      .020       .6        .8
ET                         9.1                                                        996.8      1004
          DOWNSTREAM BRIDGE SECTION (6' X 5' X 138.75' CBC)
          0 - 1' SEDIMENT ON BOTTOM
X1    0.063         6     996.9    1003.1       250       330       330
X3       10                                                        1877.0    1876.1
GR   1877.0      949.    1866.7     996.9    1861.7      997.    1861.7     1003.    1866.7    1003.1
GR   1877.1     1051.

SC     1.02       .40       2.9         0         5         6     138.8       8.1    1862.1    1861.7
ET                         9.1                                                        995      1004
          UPSTREAM BRIDGE SECTION
    0.085        31       997      1003       139       139       139
XE                           2    1867.1   1880.04
X3       10                                                        1877.0    1876.1
BT       -9     568.    1879.5                591.    1879.4                704    1878.9
BT              896.    1877.0                957.    1877.0               1000.    1877.1
```

BT	1003.	1877.1	1161.	1877.3	1265.	1876.1

```
     1894.6      528.    1883.6      546.    1879.5      568.    1874.5      591.    1873.7      634.
GR   1873.4      704.    1872.4      751.    1870.8      773.    1872.8      792.    1870.8      807.
GR   1864.0      823.    1862.7      875.    1862.7      896.    1862.3      957.    1862.2      997.
GR   1862.2      999.    1862.2     1000.    1862.2     1003.    1862.1     1049.    1872.0     1052.
GR   1871.0     1076.    1871.0     1099.    1868.4     1111.    1863.2     1127.    1864.7     1148.
GR   1865.1     1161.    1872.3     1209.    1874.4     1230.    1876.1     1265.    1882.4    1370.0
GR   1898.4     1430.

NC    .070      .070     .035        .6       .8
ET              9.1      9.1                                     950       1050      950       1050
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
X1   0.093       28     1000      1049       42       42       42
X3      10
GR   1896.2      528.    1885.2      546.    1876.1      591.    1875.3      634.    1875.0      704.
GR   1874.0      751.    1872.4      773.    1874.4      792.    1872.4      807.    1865.6      823.
GR   1864.3      875.    1864.3      896.    1863.9      957.    1863.8      999.    1863.8     1000.
GR   1863.7     1049.    1873.6     1052.    1872.6     1076.    1872.6     1099.    1870.0     1111.
GR   1864.8     1127.    1866.3     1148.    1866.7     1161.    1873.9     1209.    1876.0     1230.
GR   1880.0     1265.    1884.0    1370.0    1900.0     1430.

NC    .070      .070     .035        .1       .3
ET                       9.1                                                         965       1048
          FIRST TRIBUTARY SECTION;  TRIBUTARY MODELED WITH THIS RUN
     0.133        9      979      1030      200      220      211
     1880.0      944.    1866.5      979.    1866.4     1000.    1866.4     1002.    1866.9     1030.
GR   1872.2     1049.    1873.9     1061.    1875.3     1074.    1880.0     1083.

ET                       9.1                                                         981       1052
X1   0.180       18      990      1000      240      270      248
GR   1880.0      970.    1873.2      978.    1868.0      990.    1868.0      995.    1868.0     1000.
GR   1869.8     1018.    1872.8     1075.    1875.1     1143.    1875.2     1162.    1874.6     1189.
GR   1874.4     1226.    1872.7     1244.    1873.1     1251.    1873.5     1255.    1875.1     1273.
GR   1874.7     1302.    1876.1     1322.    1880.0     1340.

QT       2      180      180
ET                       9.1                                                         976       1006
X1   0.275        9      992      1004      520      470      502
GR   1892.0      949.    1888.2      960.    1877.9      978.    1877.0      992.    1876.6     1000.
GR   1876.6     1002.    1878.2     1004.    1880.5     1012.    1888.0     1029.

ET                       9.1                                                        989.5       1007
X1   0.379       10      993      1006      549      549      549
GR   1936.0      975.    1931.6      977.    1926.6      993.    1924.7      999.    1925.0     1000.
GR   1927.1     1006.    1930.6     1012.    1937.3     1031.    1935.3     1055.    1933.6     1065.

NC    .060      .060     .035        .1       .3
QT       2      130      130
ET                       9.1                                                         976       1039
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    0.473      24     986    1000     500     490     496
GR 1988.1     855.  1985.1    875.  1981.0    906.  1977.6    936.  1975.4    969.
GR 1973.8     986.  1972.8    996.  1973.1    997.  1973.6   1000.  1974.4   1005.
GR 1974.1    1024.  1974.7   1039.  1976.8   1058.  1977.6   1071.  1977.5   1083.
GR 1975.4    1115.  1975.4   1142.  1977.0   1176.  1978.9   1206.  1980.2   1243.
GR 1981.1    1273.  1982.7   1297.  1982.8   1312.  1982.2   1328.

ET                    9.1                                                970    1016
X1   0.568      18     984    1009     510     502     502
GR 1995.9     885.  1988.9    917.  1983.2    958.  1982.0    984.  1981.2    998.
GR 1981.4    1000.  1982.4   1009.  1983.3   1035.  1985.0   1061.  1985.7   1095.
GR 1986.3    1122.  1985.8   1135.  1984.4   1165.  1984.6   1182.  1988.1   1211.
GR 1990.0    1239.  1990.9   1258.  1988.4   1270.

QT     2      70      70
ET                    9.1                                                981    1014
X1   0.663      14     984    1013     502     502     502
X3    10
GR 2007.9     888.  2004.2    893.  1997.7    926.  1992.7    945.  1993.1    972.
GR 1992.4     984.  1991.5    999.  1991.6   1000.  1992.6   1013.  1993.7   1027.
GR 1994.5    1060.  1995.4   1102.  1998.0   1137.  2000.0   1162.

NC  .060    .060    .050      .1      .3
ET                    9.1                                                972    1012
X1   0.758      12     972    1011     502     502     502
    2012.0     898.  2010.2    924.  2005.2    950.  2001.1    972.  1999.2    997.
    1999.6    1000.  2001.0   1011.  2002.1   1040.  2004.4   1059.  2009.9   1091.
GR 2009.7    1102.  2009.8   1120.

ET                    9.1                                                979    1001
X1   0.852      12     985    1000     496     496     496
GR 2020.0     902.  2013.2    929.  2011.1    956.  2009.4    978.  2008.7    985.
GR 2007.7     995.  2009.0   1000.  2010.4   1005.  2011.5   1020.  2012.5   1046.
GR 2015.1    1066.  2019.9   1112.

ET                    9.1                                                982    1013
X1   0.947      11     988    1010     496     496     496
GR 2028.1     917.  2025.0    941.  2021.7    964.  2018.6    988.  2018.2   1000.
GR 2018.1    1002.  2019.0   1010.  2020.2   1019.  2021.7   1048.  2022.9   1071.
GR 2028.1    1152.

ET                    9.1                                                984    1006
X1   1.052       9     988    1003     554     554     554
GR 2035.9     959.  2033.2    965.  2027.5    988.  2027.3   1000.  2027.3   1003.
GR 2028.2    1005.  2031.4   1012.  2034.2   1038.  2036.5   1068.

QT     2     170     170
NC  .070    .070    .035      .1      .3
ET                    9.1                                                965    1048
```

TRIBUTARY TO WASH F

X1	-0.133	9	979	1030	250	230	211			
GR	1880.0	944.	1866.5	979.	1866.4	1000.	1866.4	1002.	1866.9	1030.
GR	1872.2	1049.	1873.9	1061.	1875.3	1074.	1880.0	1083.		
ET			9.1						1225.9	1265
X1	0.032	11	1226	1255	290	210	248			
GR	1875.1	1143.	1875.2	1162.	1874.6	1189.	1874.4	1226.	1872.7	1244.
GR	1873.1	1251.	1873.5	1255.	1875.1	1273.	1874.7	1302.	1876.1	1322.
GR	1880.0	1340.								
ET			9.1						984	1005
X1	0.128	11	986	1000	502	502	502			
GR	1900.1	972.	1889.9	986.	1889.2	987.	1890.0	999.	1890.2	1000.
GR	1891.5	1006.	1892.8	1012.	1892.7	1040.	1894.1	1052.	1896.6	1074.
GR	1900.1	1095.								
ET			9.1						973	1013
X1	0.221	12	991	1008	496	496	496			
GR	1924.0	938.	1914.0	957.	1911.2	976.	1910.4	991.	1909.9	1000.
GR	1909.8	1002.	1910.8	1008.	1912.8	1020.	1916.4	1034.	1918.4	1055.
GR	1919.2	1072.	1921.8	1079.						
ET			9.1						966	1005
X1	0.316	9	981	1000	502	502	502			
	1940.1	930.	1936.0	947.	1934.2	968.	1933.6	981.	1932.4	995.
	1933.5	1000.	1935.8	1011.	1936.5	1027.	1936.3	1049.		
ET			9.1						968	1006
X1	0.411	10	969	1000	502	502	502			
GR	1960.0	962.	1952.3	969.	1951.0	990.	1952.0	1000.	1952.2	1002.
GR	1953.5	1013.	1954.0	1032.	1954.8	1044.	1958.1	1060.	1960.1	1077.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
1490 NH CARD USED
*SECNO 44.590

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION (CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH F - UNNAMED WASH # 1, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

44.590	1.69	1856.69	1855.95	1860.00	1856.75	.06	.00	.00	1856.70
345.0	42.8	302.0	.3	43.7	144.9	1.1	.0	.0	1856.50
.00	.98	2.08	.23	.070	.035	.070	.000	1855.00	1294.41
.002685	440.	500.	520.	0	21	7	.00	220.53	1516.39

W DISTRIBUTION FOR SECNO= 44.59 CWSEL= 1856.69

STA=	1294.	1300.	1346.	1505.	1516.
PER Q=	1.2	11.2	87.5	.1	
AREA=	4.3	39.4	144.9	1.1	
VEL=	.9	1.0	2.1	.2	
DEPTH=	.8	.8	.9	.1	

CCHV= .600 CEHV= .800
*SECNO .063

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1877.00 ELREA= 1876.10

DOWNSTREAM BRIDGE SECTION (6' X 5' X 138.75' CBC)
0 - 1' SEDIMENT ON BOTTOM

.063	4.66	1866.36	1866.36	.00	1868.65	2.30	1.60	1.79	1866.70
345.0	.0	345.0	.0	.0	28.4	.0	.8	.8	1866.70
.01	.00	12.16	.00	.000	.020	.000	.000	1861.70	996.91
.011771	250.	330.	330.	0	17	0	.00	6.19	1003.09

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .06 CWSEL= 1866.36

STA= 997. 1003.
PER Q= 100.0
AREA= 28.4
VEL= 12.2
DEPTH= 4.6

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.020	.40	2.90	.00	5.00	6.00	138.80	8	1	1862.10	1861.70

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO .085

CIAL CULVERT INLET CONTROL
EGIC = 1871.234 EGOC = 1869.675 PCWSE= 1866.356 ELTRD= 1880.040

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.77

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1871.23	1869.67	2.58	0.	345.	6.930	30.0	1880.04	0.

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1877.00 ELREA= 1876.10

UPSTREAM BRIDGE SECTION

.085	8.29	1870.49	.00	.00	1871.23	.75	2.58	.00	1862.20
345.0	.0	345.0	.0	.0	49.8	.0	.9	.8	1862.20
.01	.00	6.93	.00	.000	.020	.000	.000	1862.20	997.00
.000518	139.	139.	139.	2	0	0	.00	6.00	1003.00

N DISTRIBUTION FOR SECNO= .09 CWSEL= 1870.49

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


STA=     997.    1003.
  PER Q=    100.0
   AREA=     49.8
    VEL=      6.9
  DEPTH=      8.3

CCHV=     .600 CEHV=     .800
*SECNO  .093

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  6.37


3470 ENCROACHMENT STATIONS=      950.0    1050.0  TYPE=      1  TARGET=      100.000
         ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
         SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
         WSEL AND THE TOPOGRAPHY.
     .093      7.98   1871.68   1864.61       .00   1871.68       .00       .00       .44   1863.80
    345.0     110.4     234.2        .4     390.9     388.4       6.3       1.3        .9   1863.70
      .04       .28       .60       .06      .070      .035      .070      .000   1863.70    950.00
  .000013       42.       42.       42.         2        20         0       .00    100.00   1050.00


FLOW DISTRIBUTION FOR SECNO=       .09          CWSEL=   1871.68

STA=     950.     957.     999.    1000.    1049.    1050.
  PER Q=      2.8     28.5       .7     67.9       .1
   AREA=     54.3    328.7      7.9    388.4      6.3
    VEL=       .2       .3       .3       .6       .1
  DEPTH=      7.8      7.8      7.9      7.9      6.3

CCHV=     .100 CEHV=     .300
*SECNO  .133

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .37

         FIRST TRIBUTARY SECTION;  TRIBUTARY MODELED WITH THIS RUN
     .133      5.27   1871.67   1867.67       .00   1871.69       .02       .01       .01   1866.50
    345.0      12.8     317.6      14.6      34.7     260.7      40.8       4.0       1.3   1866.90
      .09       .37      1.22       .36      .070      .035      .070      .000   1866.40    965.60
  .000093      200.      211.      220.         2        20         0       .00     81.51   1047.10
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .13 CWSEL= 1871.67

STA=	966.	979.	1030.	1047.
PER Q=	3.7	92.1	4.2	
AREA=	34.7	260.7	40.8	
VEL=	.4	1.2	.4	
DEPTH=	2.6	5.1	2.4	

*SECNO .180

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .18

.180	3.58	1871.58	1870.57	.00	1871.83	.25	.07	.07	1868.00
345.0	23.0	187.3	134.7	14.8	35.8	78.2	5.3	1.8	1868.00
.11	1.56	5.24	1.72	.070	.035	.070	.000	1868.00	981.74
.002780	240.	248.	270.	2	11	0	.00	70.03	1051.77

FLOW DISTRIBUTION FOR SECNO= .18 CWSEL= 1871.58

STA=	982.	990.	1000.	1018.	1052.
PER Q=	6.7	54.3	30.0	9.0	
AREA=	14.8	35.8	48.2	30.0	
VEL=	1.6	5.2	2.2	1.0	
DEPTH=	1.8	3.6	2.7	.9	

*SECNO .275
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.275	1.90	1878.50	1878.50	.00	1879.13	.64	2.16	.12	1877.00
180.0	40.4	139.5	.1	15.0	19.6	.2	6.2	2.3	1878.20
.13	2.70	7.13	.72	.070	.035	.070	.000	1876.60	976.96
.015651	520.	502.	470.	0	11	0	.00	28.07	1005.03

FLOW DISTRIBUTION FOR SECNO= .28 CWSEL= 1878.50

STA=	977.	978.	992.	1004.	1005.
PER Q=	.2	22.3	77.5	.1	
AREA=	.3	14.7	19.6	.2	
VEL=	1.1	2.7	7.1	.7	
DEPTH=	.3	1.0	1.6	.1	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .379
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.379	2.89	1927.59	1927.59	.00	1928.45	.86	8.46	.07	1926.60
180.0	2.5	177.3	.2	1.6	23.6	.2	6.6	2.6	1927.10
.15	1.58	7.52	.93	.070	.035	.070	.000	1924.70	989.84
.015168	549.	549.	549.	0	14	0	.00	17.00	1006.84

FLOW DISTRIBUTION FOR SECNO= .38 CWSEL= 1927.59

STA=	990.	993.	1006.	1007.
PER Q=	1.4	98.5	.1	
AREA=	1.6	23.6	.2	
VEL=	1.6	7.5	.9	
DEPTH=	.5	1.8	.2	

CCHV= .100 CEHV= .300
*SECNO .473

HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.473	1.87	1974.67	1974.67	.00	1975.02	.35	6.34	.05	1973.80
130.0	5.7	102.6	21.7	4.0	19.3	15.2	7.0	3.0	1973.60
.18	1.44	5.31	1.43	.060	.035	.060	.000	1972.80	976.81
.010328	500.	496.	490.	0	14	0	.00	61.32	1038.13

FLOW DISTRIBUTION FOR SECNO= .47 CWSEL= 1974.67

STA=	977.	986.	1000.	1005.	1024.	1038.
PER Q=	4.4	78.9	4.9	8.5	3.3	
AREA=	4.0	19.3	3.3	7.9	4.0	
VEL=	1.4	5.3	1.9	1.4	1.1	
DEPTH=	.4	1.4	.7	.4	.3	

*SECNO .568
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	OLOB	OCH	OROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.568	1.44	1982.64	1982.64	.00	1983.03	.39	6.37	.01	1982.00
130.0	6.4	123.0	.6	4.4	23.8	.8	7.4	3.7	1982.40
.21	1.45	5.17	.75	.060	.035	.060	.000	1981.20	970.23
.015932	510.	502.	502.	0	15	0	.00	45.57	1015.80

FLOW DISTRIBUTION FOR SECNO= .57 CWSEL= 1982.64

STA=	970.	984.	1009.	1016.
PER Q=	4.9	94.6	.5	
AREA=	4.4	23.8	.8	
VEL=	1.5	5.2	.8	
DEPTH=	.3	1.0	.1	

*SECNO .663
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1992.40 ELREA= 1992.60

.663	1.06	1992.56	1992.56	.00	1992.85	.29	8.86	.01	1992.40
70.0	.2	69.8	.0	.2	16.3	.0	7.6	4.1	1992.60
.24	.69	4.29	.00	.060	.035	.000	.000	1991.50	981.18
.021646	502.	502.	502.	0	19	0	.00	31.36	1012.54

FLOW DISTRIBUTION FOR SECNO= .66 CWSEL= 1992.56

STA=	981.	984.	1013.
PER Q=	.2	99.8	
AREA=	.2	16.3	
VEL=	.7	4.3	
DEPTH=	.1	.6	

CCHV= .100 CEHV= .300
*SECNO .758

.758	1.55	2000.75	2000.43	.00	2000.87	.12	8.01	.02	2001.10
70.0	.0	70.0	.0	.0	25.3	.0	7.9	4.5	2001.00
.29	.00	2.77	.00	.000	.050	.000	.000	1999.20	976.51
.012239	502.	502.	502.	6	8	0	.00	32.58	1009.09

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .76 CWSEL= 2000.75

STA= 977. 1011.
PER Q= 100.0
AREA= 25.3
VEL= 2.8
DEPTH= .8

*SECNO .852

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .68

.852	1.52	2009.21	2009.13	.00	2009.55	.33	8.61	.06	2008.70
70.0	2.2	67.8	.0	1.3	14.5	.1	8.1	4.8	2009.00
.32	1.63	4.68	.04	.060	.050	.060	.000	2007.70	979.84
.026516	496.	496.	496.	4	11	0	.00	20.93	1000.77

FLOW DISTRIBUTION FOR SECNO= .85 CWSEL= 2009.21

STA= 980. 985. 1000. 1001.
PER Q= 3.1 96.9 .0
AREA= 1.3 14.5 .1
VEL= 1.6 4.7 .0
DEPTH= .3 1.0 .1

*SECNO .947

.947	1.21	2019.31	2019.10	.00	2019.49	.17	9.93	.02	2018.60
70.0	3.1	66.6	.3	2.0	19.5	.4	8.3	5.1	2019.00
.36	1.55	3.42	.90	.060	.050	.060	.000	2018.10	982.45
.015641	496.	496.	496.	5	14	0	.00	29.92	1012.38

FLOW DISTRIBUTION FOR SECNO= .95 CWSEL= 2019.31

STA= 982. 988. 1010. 1012.
PER Q= 4.4 95.1 .5
AREA= 2.0 19.5 .4
VEL= 1.6 3.4 .9
DEPTH= .4 .9 .2

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         OLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO 1.052
     1.052      1.12   2028.42   2028.23       .00   2028.66       .24      9.15       .02   2027.50
      70.0       3.3      63.5       3.2       1.7      15.7       1.4       8.6       5.4   2027.30
       .40      1.92      4.05      2.28      .060      .050      .060      .000   2027.30    984.27
   .017481      554.      554.      554.         6        15         0       .00     21.23   1005.49


FLOW DISTRIBUTION FOR SECNO=      1.05          CWSEL=   2028.42

STA=     984.     988.    1003.    1005.    1005.
  PER Q=      4.7     90.7      4.6       .0
   AREA=      1.7     15.7      1.4       .1
    VEL=      1.9      4.0      2.4       .0
  DEPTH=       .5      1.0       .7       .1

CCHV=     .100 CEHV=     .300
*SECNO  -.133
START TRIB COMP
     -.133      .133  1871.670
        TRIBUTARY TO WASH F
     -.133      5.27   1871.67       .00       .00   1871.68       .01       .01      9.16   1866.50
     170.0       6.3     156.5       7.2      34.7     260.7      40.8       9.5       5.7   1866.90
       .51       .18       .60       .18      .070      .035      .070      .000   1866.40    965.60
   .000023      250.      211.      230.         0         0         0       .00     81.51   1047.10


FLOW DISTRIBUTION FOR SECNO=      -.13          CWSEL=   1871.67

STA=     966.     979.    1030.    1047.
  PER Q=      3.7     92.1      4.2
   AREA=     34.7    260.7     40.8
    VEL=       .2       .6       .2
  DEPTH=      2.6      5.1      2.4

*SECNO  .032
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
      .032      1.65   1874.35   1874.35       .00   1874.83       .48       .02       .14   1874.40
     170.0        .0     163.5       6.5        .0      28.8       4.1      10.5       6.0   1873.50
       .52       .00      5.68      1.59      .000      .035      .070      .000   1872.70   1226.52
   .017731      290.      248.      210.         0        17         0       .00     38.05   1264.57
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .03 CWSEL= 1874.35

STA=	1227.	1255.	1265.
PER Q=	96.2	3.8	
AREA=	28.8	4.1	
VEL=	5.7	1.6	
DEPTH=	1.0	.4	

*SECNO .128
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.128	2.08	1891.28	1891.28	.00	1892.03	.75	8.07	.08	1889.90
170.0	2.3	163.2	4.5	1.3	23.1	2.7	10.9	6.3	1890.20
.54	1.74	7.08	1.68	.070	.035	.070	.000	1889.20	984.11
.014635	502.	502.	502.	0	11	0	.00	20.88	1004.98

FLOW DISTRIBUTION FOR SECNO= .13 CWSEL= 1891.28

STA=	984.	986.	1000.	1005.
PER Q=	1.3	96.0	2.7	
AREA=	1.3	23.1	2.7	
VEL=	1.7	7.1	1.7	
DEPTH=	.7	1.6	.5	

*SECNO .221
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.221	1.74	1911.54	1911.54	.00	1912.06	.52	7.16	.02	1910.40
170.0	23.1	144.8	2.1	11.4	23.3	1.6	11.2	6.7	1910.80
.56	2.02	6.22	1.29	.070	.035	.070	.000	1909.80	973.72
.014248	496.	496.	496.	0	15	0	.00	38.70	1012.42

FLOW DISTRIBUTION FOR SECNO= .22 CWSEL= 1911.54

STA=	974.	976.	991.	1008.	1012.
PER Q=	.2	13.4	85.2	1.2	
AREA=	.4	11.0	23.3	1.6	
VEL=	.8	2.1	6.2	1.3	
DEPTH=	.2	.7	1.4	.4	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .316
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.316	1.96	1934.36	1934.36	.00	1934.90	.53	6.94	.00	1933.60
170.0	9.0	158.5	2.5	6.2	26.2	1.8	11.6	7.1	1933.50
.59	1.45	6.05	1.39	.070	.035	.070	.000	1932.40	966.07
.013417	502.	502.	502.	0	8	0	.00	38.06	1004.14

FLOW DISTRIBUTION FOR SECNO= .32 CWSEL= 1934.36

STA=	966.	968.	981.	1000.	1004.
PER Q=	.0	5.2	93.3	1.5	
AREA=	.2	6.0	26.2	1.8	
VEL=	.5	1.5	6.1	1.4	
DEPTH=	.1	.5	1.4	.4	

*SECNO .411
7185 MINIMUM SPECIFIC ENERGY
[illegible]20 CRITICAL DEPTH ASSUMED

.411	1.57	1952.57	1952.57	.00	1953.05	.48	7.76	.01	1952.30
170.0	.0	167.8	2.2	.0	30.1	1.5	12.0	7.5	1952.00
.61	.03	5.57	1.42	.070	.035	.070	.000	1951.00	968.75
.017989	502.	502.	502.	0	15	0	.00	36.40	1005.16

FLOW DISTRIBUTION FOR SECNO= .41 CWSEL= 1952.57

STA=	969.	969.	1000.	1002.	1005.
PER Q=	.0	98.7	1.0	.3	
AREA=	.0	30.1	.9	.6	
VEL=	.0	5.6	1.7	.9	
DEPTH=	.1	1.0	.5	.2	

T1 FLOODWAY DETERMINATION

T3 WASH F: UNNAMED WASH # 1

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	.0027	0	0	0	1860.0	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	-1	0	0	0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
1490 NH CARD USED
*SECNO 44.590

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION (CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH F - UNNAMED WASH # 1, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

44.590	1.69	1856.69	1855.95	1860.00	1856.75	.06	.00	.00	1856.70
345.0	42.8	302.0	.3	43.7	144.9	1.1	.0	.0	1856.50
.00	.98	2.08	.23	.070	.035	.070	.000	1855.00	1294.41
.002685	440.	500.	520.	0	21	7	.00	220.53	1516.39

V= .600 CEHV= .800
CNO .063

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 996.8 1004.0 TYPE= 1 TARGET= 7.200

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1877.00 ELREA= 1876.10

DOWNSTREAM BRIDGE SECTION (6' X 5' X 138.75' CBC)
0 - 1' SEDIMENT ON BOTTOM

.063	4.66	1866.36	1866.36	1866.36	1868.65	2.30	1.60	1.79	1866.70
345.0	.0	345.0	.0	.0	28.4	.0	.8	.8	1866.70
.01	.00	12.16	.00	.000	.020	.000	.000	1861.70	996.91
.011771	250.	330.	330.	0	17	0	.00	6.19	1003.09

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.020	.40	2.90	.00	5.00	6.00	138.80	8	1	1862.10	1861.70

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5140, NORMAL DEPTH EXCEEDS CULVERT HEIGHT
*SECNO .085

SPECIAL CULVERT INLET CONTROL
EGIC = 1871.234 EGOC = 1869.675 PCWSE= 1866.356 ELTRD= 1880.040

3301 HV CHANGED MORE THAN HVINS

[illegible]2 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 4.77

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1871.23	1869.67	2.58	0.	345.	6.930	30.0	1880.04	0.

3470 ENCROACHMENT STATIONS= 995.0 1004.0 TYPE= 1 TARGET= 9.000

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1877.00 ELREA= 1876.10

UPSTREAM BRIDGE SECTION

.085	8.29	1870.49	.00	1870.49	1871.23	.75	2.58	.00	1862.20
345.0	.0	345.0	.0	.0	49.8	.0	.9	.8	1862.20
.01	.00	6.93	.00	.000	.020	.000	.000	1862.20	997.00
.000518	139.	139.	139.	2	0	0	.00	6.00	1003.00

CCHV= .600 CEHV= .800
*SECNO .093

3301 HV CHANGED MORE THAN HVINS

WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 6.37

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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=      950.0    1050.0  TYPE=      1  TARGET=      100.000
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
    .093      7.98   1871.68   1864.61   1871.68   1871.68       .00       .00       .44   1863.80
   345.0     110.4     234.2        .4     390.9     388.4       6.3       1.3        .9   1863.70
     .04       .28       .60       .06      .070      .035      .070      .000   1863.70    950.00
  .000013      42.       42.       42.         2        20         0       .00    100.00   1050.00


CCHV=     .100 CEHV=     .300
*SECNO  .133

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .37


3470 ENCROACHMENT STATIONS=      965.0    1048.0  TYPE=      1  TARGET=       83.000
        FIRST TRIBUTARY SECTION;  TRIBUTARY MODELED WITH THIS RUN
    .133      5.27   1871.67   1867.67   1871.67   1871.69       .02       .01       .01   1866.50
   345.0      12.8     317.6      14.6      34.7     260.7      40.8       4.0       1.3   1866.90
     .09       .37      1.22       .36      .070      .035      .070      .000   1866.40    965.60
  .000093     200.      211.      220.         2        20         0       .00     81.50   1047.10


*SECNO  .180

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .18


3470 ENCROACHMENT STATIONS=      981.0    1052.0  TYPE=      1  TARGET=       71.000
    .180      3.58   1871.58   1870.57   1871.58   1871.83       .25       .07       .07   1868.00
   345.0      23.0     187.3     134.7      14.8      35.8      78.2       5.3       1.8   1868.00
     .11      1.56      5.24      1.72      .070      .035      .070      .000   1868.00    981.74
  .002781     240.      248.      270.         2        11         0       .00     70.02   1051.76


*SECNO  .275
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      976.0    1006.0  TYPE=      1  TARGET=       30.000
    .275      1.90   1878.50   1878.50   1878.50   1879.13       .64      2.16       .12   1877.00
   180.0      40.4     139.5        .1      15.0      19.6        .2       6.2       2.3   1878.20
     .13      2.70      7.13       .72      .070      .035      .070      .000   1876.60    976.96
  015651      520.      502.      470.         0        11         0       .00     28.07   1005.03
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .379
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 989.5 1007.0 TYPE= 1 TARGET= 17.500

.379	2.89	1927.59	1927.59	1927.59	1928.45	.86	8.41	.07	1926.60
180.0	2.5	177.3	.2	1.6	23.7	.2	6.6	2.6	1927.10
.15	1.58	7.49	.93	.070	.035	.070	.000	1924.70	989.82
.014984	549.	549.	549.	0	14	0	.00	17.03	1006.85

CCHV= .100 CEHV= .300
*SECNO .473

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 976.0 1039.0 TYPE= 1 TARGET= 63.000

.473	1.87	1974.67	1974.67	1974.67	1975.02	.35	6.28	.05	1973.80
130.0	5.7	102.5	21.8	4.0	19.3	15.3	7.0	3.0	1973.60
.18	1.43	5.30	1.43	.060	.035	.060	.000	1972.80	976.78
.010246	500.	496.	490.	0	14	0	.00	61.40	1038.19

*SECNO .568
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 970.0 1016.0 TYPE= 1 TARGET= 46.000

.568	1.45	1982.65	1982.65	1982.64	1983.03	.38	6.13	.01	1982.00
130.0	6.7	122.6	.7	4.6	24.3	.9	7.4	3.7	1982.40
.21	1.44	5.05	.79	.060	.035	.060	.000	1981.20	970.00
.014796	510.	502.	502.	0	15	0	.00	46.00	1016.00

*SECNO .663
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 981.0 1014.0 TYPE= 1 TARGET= 33.000

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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      OCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA=      1992.40 ELREA=      1992.60

     .663      1.07   1992.57   1992.57   1992.56   1992.85       .28      8.38       .01   1992.40
    70.0        .2      69.8        .0        .2      16.4        .0       7.7       4.1   1992.60
     .24       .69      4.27       .00      .060      .035      .000      .000   1991.50    981.13
  .021313     502.      502.      502.         0        19         0       .00     31.45   1012.58


CCHV=     .100 CEHV=     .300
*SECNO  .758

3470 ENCROACHMENT STATIONS=      972.0    1012.0  TYPE=      1  TARGET=      40.000
     .758      1.55   2000.75   2000.43   2000.75   2000.87       .12      8.01       .02   2001.10
    70.0        .0      70.0        .0        .0      25.2        .0       7.9       4.5   2001.00
     .29       .00      2.78       .00      .000      .050      .000      .000   1999.20    976.55
  .012383     502.      502.      502.         6         8         0       .00     32.51   1009.07


SECNO  .852

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .69


3470 ENCROACHMENT STATIONS=      979.0    1001.0  TYPE=      1  TARGET=      22.000
     .852      1.52   2009.22   2009.13   2009.21   2009.55       .33      8.61       .06   2008.70
    70.0       2.2      67.8        .0       1.4      14.6        .1       8.1       4.8   2009.00
     .32      1.62      4.66       .04      .060      .050      .060      .000   2007.70    979.80
  .026093     496.      496.      496.         4        11         0       .00     20.98   1000.78


*SECNO  .947

3470 ENCROACHMENT STATIONS=      982.0    1013.0  TYPE=      1  TARGET=      31.000
     .947      1.21   2019.31   2019.10   2019.31   2019.49       .18      9.92       .02   2018.60
    70.0       3.1      66.6        .3       2.0      19.4        .4       8.3       5.1   2019.00
     .36      1.56      3.43       .90      .060      .050      .060      .000   2018.10    982.47
  .015826     496.      496.      496.         5        14         0       .00     29.88   1012.35


*SECNO 1.052

3470 ENCROACHMENT STATIONS=      984.0    1006.0  TYPE=      1  TARGET=      22.000
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 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST

   1.052      1.13   2028.43   2028.23   2028.42   2028.66       .24      9.16       .02   2027.50
    70.0       3.3      63.5       3.2       1.7      15.7       1.4       8.6       5.4   2027.30
     .40      1.91      4.03      2.27      .060      .050      .060      .000   2027.30    984.25
 .017287      554.      554.      554.         6        15         0       .00     21.25   1005.50


CCHV=     .100 CEHV=     .300
*SECNO  -.133
START TRIB COMP
     -.133      .133  1871.670

3470 ENCROACHMENT STATIONS=      965.0    1048.0  TYPE=      1  TARGET=      83.000
         TRIBUTARY TO WASH F
    -.133      5.27   1871.67       .00   1871.67   1871.68       .01       .01      9.17   1866.50
    170.0       6.3     156.5       7.2      34.7     260.7      40.8       9.5       5.7   1866.90
      .51       .18       .60       .18      .070      .035      .070      .000   1866.40    965.60
 .000023      250.      211.      230.         0         0         0       .00     81.51   1047.10


SECNO  .032
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=     1225.9    1265.0  TYPE=      1  TARGET=      39.100
     .032      1.67   1874.37   1874.37   1874.35   1874.83       .46       .02       .14   1874.40
    170.0        .0     163.3       6.7        .0      29.3       4.2      10.5       6.0   1873.50
      .52       .00      5.57      1.57      .000      .035      .070      .000   1872.70   1226.33
 .016809      290.      248.      210.         0        17         0       .00     38.45   1264.78


*SECNO  .128
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      984.0    1005.0  TYPE=      1  TARGET=      21.000
     .128      2.10   1891.30   1891.30   1891.28   1892.03       .73      7.72       .08   1889.90
    170.0       2.3     163.1       4.6       1.3      23.3       2.8      10.9       6.3   1890.20
      .54      1.72      7.00      1.67      .070      .035      .070      .000   1889.20    984.08
 .014133      502.      502.      502.         0        11         0       .00     20.92   1005.00


*SECNO  .221
7185 MINIMUM SPECIFIC ENERGY
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 973.0 1013.0 TYPE= 1 TARGET= 40.000

.221	1.74	1911.54	1911.54	1911.54	1912.06	.52	7.05	.02	1910.40
170.0	23.1	144.8	2.1	11.4	23.3	1.6	11.3	6.7	1910.80
.57	2.02	6.23	1.29	.070	.035	.070	.000	1909.80	973.72
.014278	496.	496.	496.	0	15	0	.00	38.69	1012.41

*SECNO .316
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 966.0 1005.0 TYPE= 1 TARGET= 39.000

.316	1.97	1934.37	1934.37	1934.36	1934.90	.53	6.93	.00	1933.60
170.0	9.0	158.5	2.5	6.2	26.2	1.8	11.7	7.1	1933.50
.59	1.45	6.05	1.39	.070	.035	.070	.000	1932.40	966.06
.013368	502.	502.	502.	0	8	0	.00	38.08	1004.14

*SECNO .411
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 968.0 1006.0 TYPE= 1 TARGET= 38.000

.411	1.57	1952.57	1952.57	1952.57	1953.05	.48	7.77	.01	1952.30
170.0	.0	167.8	2.2	.0	30.0	1.5	12.0	7.5	1952.00
.62	.03	5.59	1.42	.070	.035	.070	.000	1951.00	968.75
.018136	502.	502.	502.	0	15	0	.00	36.38	1005.13

THIS RUN EXECUTED 12AUG92 07:20:38

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HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

WASH F : UNNAMED WASH #1

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	44.590	.00	.00	.00	1855.00	345.00	1856.69	1855.95	1856.75	26.85	2.08	189.69	66.57
	44.590	.00	.00	.00	1855.00	345.00	1856.69	1855.95	1856.75	26.85	2.08	189.69	66.57
*	.063	330.00	.00	.00	1861.70	345.00	1866.36	1866.36	1868.65	117.71	12.16	28.37	31.80
*	.063	330.00	.00	.00	1861.70	345.00	1866.36	1866.36	1868.65	117.71	12.16	28.37	31.80
	.085	139.00	1880.04	1867.10	1862.20	345.00	1870.49	.00	1871.23	5.18	6.93	49.78	151.61
*	.085	139.00	1880.04	1867.10	1862.20	345.00	1870.49	.00	1871.23	5.18	6.93	49.78	151.61
*	.093	42.00	.00	.00	1863.70	345.00	1871.68	1864.61	1871.68	.13	.60	785.62	966.02
*	.093	42.00	.00	.00	1863.70	345.00	1871.68	1864.61	1871.68	.13	.60	785.62	966.02
*	.133	211.00	.00	.00	1866.40	345.00	1871.67	1867.67	1871.69	.93	1.22	336.17	356.83
*	.133	211.00	.00	.00	1866.40	345.00	1871.67	1867.67	1871.69	.93	1.22	336.17	356.83
*	.180	248.00	.00	.00	1868.00	345.00	1871.58	1870.57	1871.83	27.80	5.24	128.74	65.44
*	.180	248.00	.00	.00	1868.00	345.00	1871.58	1870.57	1871.83	27.81	5.24	128.73	65.43
*	.275	502.00	.00	.00	1876.60	180.00	1878.50	1878.50	1879.13	156.51	7.13	34.68	14.39
*	.275	502.00	.00	.00	1876.60	180.00	1878.50	1878.50	1879.13	156.51	7.13	34.68	14.39
*	.379	549.00	.00	.00	1924.70	180.00	1927.59	1927.59	1928.45	151.68	7.52	25.36	14.62
*	.379	549.00	.00	.00	1924.70	180.00	1927.59	1927.59	1928.45	149.84	7.49	25.47	14.70
*	.473	496.00	.00	.00	1972.80	130.00	1974.67	1974.67	1975.02	103.28	5.31	38.49	12.79
*	.473	496.00	.00	.00	1972.80	130.00	1974.67	1974.67	1975.02	102.46	5.30	38.64	12.84
*	.568	502.00	.00	.00	1981.20	130.00	1982.64	1982.64	1983.03	159.32	5.17	28.96	10.30
*	.568	502.00	.00	.00	1981.20	130.00	1982.65	1982.65	1983.03	147.96	5.05	29.84	10.69
*	.663	502.00	.00	.00	1991.50	70.00	1992.56	1992.56	1992.85	216.46	4.29	16.51	4.76
	.663	502.00	.00	.00	1991.50	70.00	1992.57	1992.57	1992.85	213.13	4.27	16.61	4.79

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.758	502.00	.00	.00	1999.20	70.00	2000.75	2000.43	2000.87	122.39	2.77	25.29	6.33
	.758	502.00	.00	.00	1999.20	70.00	2000.75	2000.43	2000.87	123.83	2.78	25.18	6.29
*	.852	496.00	.00	.00	2007.70	70.00	2009.21	2009.13	2009.55	265.16	4.68	15.90	4.30
*	.852	496.00	.00	.00	2007.70	70.00	2009.22	2009.13	2009.55	260.93	4.66	15.99	4.33
	.947	496.00	.00	.00	2018.10	70.00	2019.31	2019.10	2019.49	156.41	3.42	21.83	5.60
	.947	496.00	.00	.00	2018.10	70.00	2019.31	2019.10	2019.49	158.26	3.43	21.74	5.56
	1.052	554.00	.00	.00	2027.30	70.00	2028.42	2028.23	2028.66	174.81	4.05	18.82	5.29
	1.052	554.00	.00	.00	2027.30	70.00	2028.43	2028.23	2028.66	172.87	4.03	18.89	5.32
	-.133	211.00	.00	.00	1866.40	170.00	1871.67	.00	1871.68	.23	.60	336.18	356.84
	-.133	211.00	.00	.00	1866.40	170.00	1871.67	.00	1871.68	.23	.60	336.18	356.84
*	.032	248.00	.00	.00	1872.70	170.00	1874.35	1874.35	1874.83	177.31	5.68	32.86	12.77
*	.032	248.00	.00	.00	1872.70	170.00	1874.37	1874.37	1874.83	168.09	5.57	33.56	13.11
*	.128	502.00	.00	.00	1889.20	170.00	1891.28	1891.28	1892.03	146.35	7.08	27.06	14.05
*	.128	502.00	.00	.00	1889.20	170.00	1891.30	1891.30	1892.03	141.33	7.00	27.41	14.30
*	.221	496.00	.00	.00	1909.80	170.00	1911.54	1911.54	1912.06	142.48	6.22	36.32	14.24
*	.221	496.00	.00	.00	1909.80	170.00	1911.54	1911.54	1912.06	142.78	6.23	36.30	14.23
	.316	502.00	.00	.00	1932.40	170.00	1934.36	1934.36	1934.90	134.17	6.05	34.18	14.68
*	.316	502.00	.00	.00	1932.40	170.00	1934.37	1934.37	1934.90	133.68	6.05	34.23	14.70
*	.411	502.00	.00	.00	1951.00	170.00	1952.57	1952.57	1953.05	179.89	5.57	31.68	12.68
*	.411	502.00	.00	.00	1951.00	170.00	1952.57	1952.57	1953.05	181.36	5.59	31.59	12.62

H F : UNNAMED WASH #1

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	44.590	345.00	1856.69	.00	.00	-3.31	220.53	.00
	44.590	345.00	1856.69	.00	.00	-3.31	220.53	.00
*	.063	345.00	1866.36	.00	9.67	.00	6.19	330.00
*	.063	345.00	1866.36	.00	9.67	.00	6.19	330.00
*	.085	345.00	1870.49	.00	4.13	.00	6.00	139.00
*	.085	345.00	1870.49	.00	4.13	.00	6.00	139.00
*	.093	345.00	1871.68	.00	1.19	.00	100.00	42.00
*	.093	345.00	1871.68	.00	1.19	.00	100.00	42.00
*	.133	345.00	1871.67	.00	-.01	.00	81.51	211.00
*	.133	345.00	1871.67	.00	-.01	.00	81.50	211.00
*	.180	345.00	1871.58	.00	-.09	.00	70.03	248.00
*	.180	345.00	1871.58	.00	-.09	.00	70.02	248.00
	.275	180.00	1878.50	.00	6.92	.00	28.07	502.00
	.275	180.00	1878.50	.00	6.92	.00	28.07	502.00
*	.379	180.00	1927.59	.00	49.09	.00	17.00	549.00
*	.379	180.00	1927.59	.01	49.10	.01	17.03	549.00
*	.473	130.00	1974.67	.00	47.08	.00	61.32	496.00
*	.473	130.00	1974.67	.00	47.07	.00	61.40	496.00
*	.568	130.00	1982.64	.00	7.97	.00	45.57	502.00
*	.568	130.00	1982.65	.02	7.99	.02	46.00	502.00
*	.663	70.00	1992.56	.00	9.93	.00	31.36	502.00
*	.663	70.00	1992.57	.00	9.91	.00	31.45	502.00
	.758	70.00	2000.75	.00	8.19	.00	32.58	502.00
	.758	70.00	2000.75	.00	8.19	.00	32.51	502.00
*	.852	70.00	2009.21	.00	8.46	.00	20.93	496.00
*	.852	70.00	2009.22	.01	8.47	.01	20.98	496.00
	.947	70.00	2019.31	.00	10.10	.00	29.92	496.00
	.947	70.00	2019.31	.00	10.09	.00	29.88	496.00
	1.052	70.00	2028.42	.00	9.11	.00	21.23	554.00
	1.052	70.00	2028.43	.00	9.12	.00	21.25	554.00
	-.133	170.00	1871.67	.00	-156.75	.00	81.51	211.00
	-.133	170.00	1871.67	.00	-156.76	.00	81.51	211.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	.032	170.00	1874.35	.00	2.68	.00	38.05	248.00
*	.032	170.00	1874.37	.02	2.70	.02	38.45	248.00
*	.128	170.00	1891.28	.00	16.93	.00	20.88	502.00
*	.128	170.00	1891.30	.02	16.93	.02	20.92	502.00
*	.221	170.00	1911.54	.00	20.26	.00	38.70	496.00
*	.221	170.00	1911.54	.00	20.24	.00	38.69	496.00
*	.316	170.00	1934.36	.00	22.83	.00	38.06	502.00
*	.316	170.00	1934.37	.00	22.83	.00	38.08	502.00
*	.411	170.00	1952.57	.00	18.21	.00	36.40	502.00
*	.411	170.00	1952.57	.00	18.20	.00	36.38	502.00

SUMMARY OF ERRORS AND SPECIAL NOTES

```
CAUTION SECNO=      .063  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .063  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .063  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .063  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .085  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .085  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .093  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .093  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .133  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .133  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .180  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .180  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .275  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .275  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .275  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .275  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .379  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .379  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .379  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .379  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .473  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .473  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .473  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .473  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .568  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .568  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .568  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .568  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .663  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .663  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .663  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .663  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .852  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .852  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .032  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .032  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .032  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .032  PROFILE=  2  MINIMUM SPECIFIC ENERGY

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CAUTION SECNO=   .411  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=   .411  PROFILE=  2  MINIMUM SPECIFIC ENERGY
```

FLOODWAY DATA, WASH F : UNNAMED WASH #1
PROFILE NO. 2

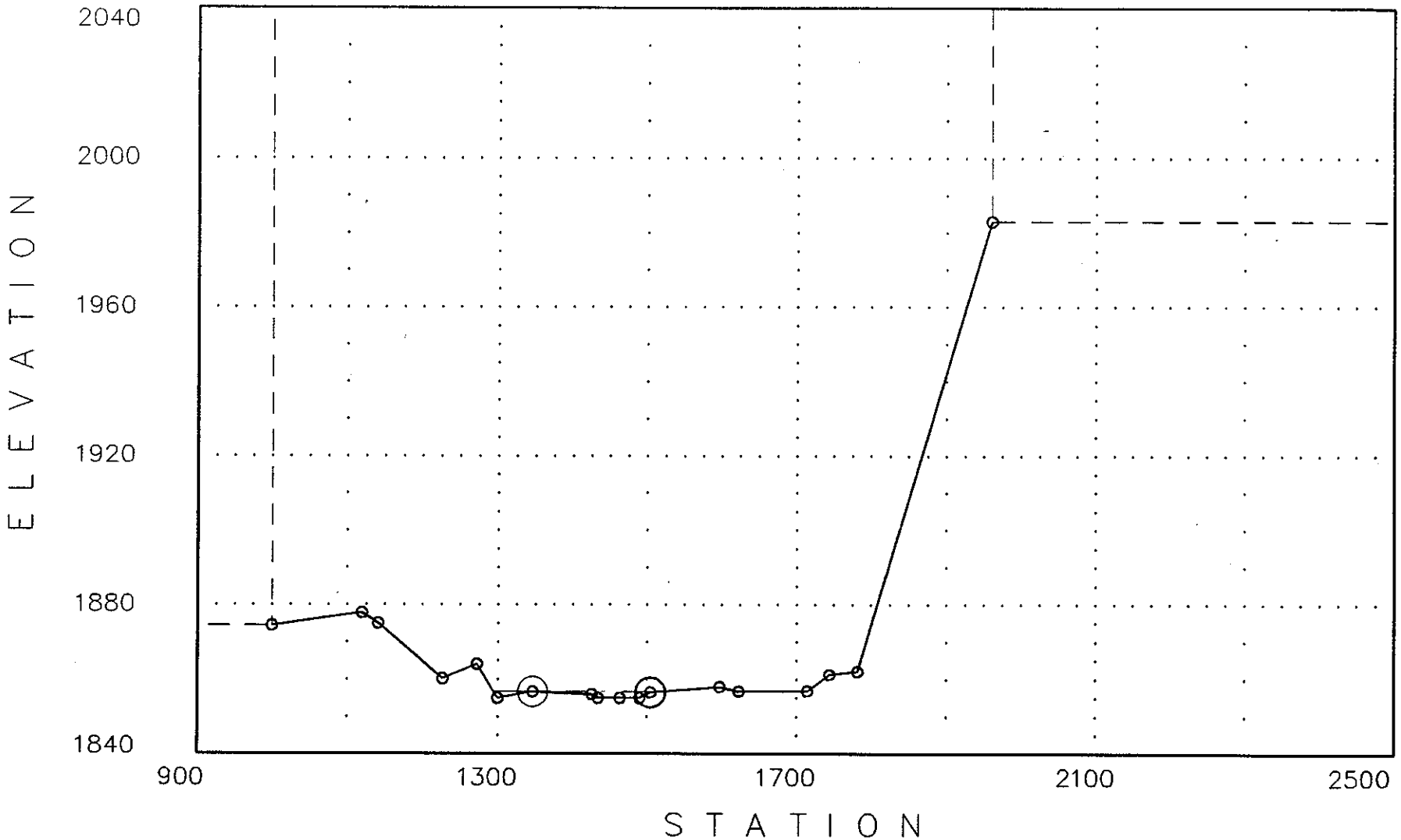
STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
44.590	222.	190.	1.8	1856.7	1856.7	.0
.063	6.	28.	12.2	1866.4	1866.4	.0
.085	6.	50.	6.9	1870.5	1870.5	.0
.093	100.	786.	.4	1871.7	1871.7	.0
.133	82.	336.	1.0	1871.7	1871.7	.0
.180	70.	129.	2.7	1871.6	1871.6	.0
.275	28.	35.	5.2	1878.5	1878.5	.0
.379	17.	25.	7.1	1927.6	1927.6	.0
.473	61.	39.	3.4	1974.7	1974.7	.0
.568	46.	30.	4.4	1982.6	1982.6	.0
.663	31.	17.	4.2	1992.6	1992.6	.0
.758	33.	25.	2.8	2000.8	2000.8	.0
.852	21.	16.	4.4	2009.2	2009.2	.0
.947	30.	22.	3.2	2019.3	2019.3	.0
1.052	21.	19.	3.7	2028.4	2028.4	.0
-.133	82.	336.	.5	1871.7	1871.7	.0
.032	38.	34.	5.1	1874.4	1874.4	.0
.128	21.	27.	6.2	1891.3	1891.3	.0
.221	39.	36.	4.7	1911.5	1911.5	.0
.316	38.	34.	5.0	1934.4	1934.4	.0
.411	36.	32.	5.4	1952.6	1952.6	.0

<<<<<< Cross Section: 44.59: (FN = washf.o) >>>>>>

Q1= 345 WS1= 1856.69

Q2= 345 WS2= 1856.69

Manning-n values specified with a 'NH' or 'NV' Card:

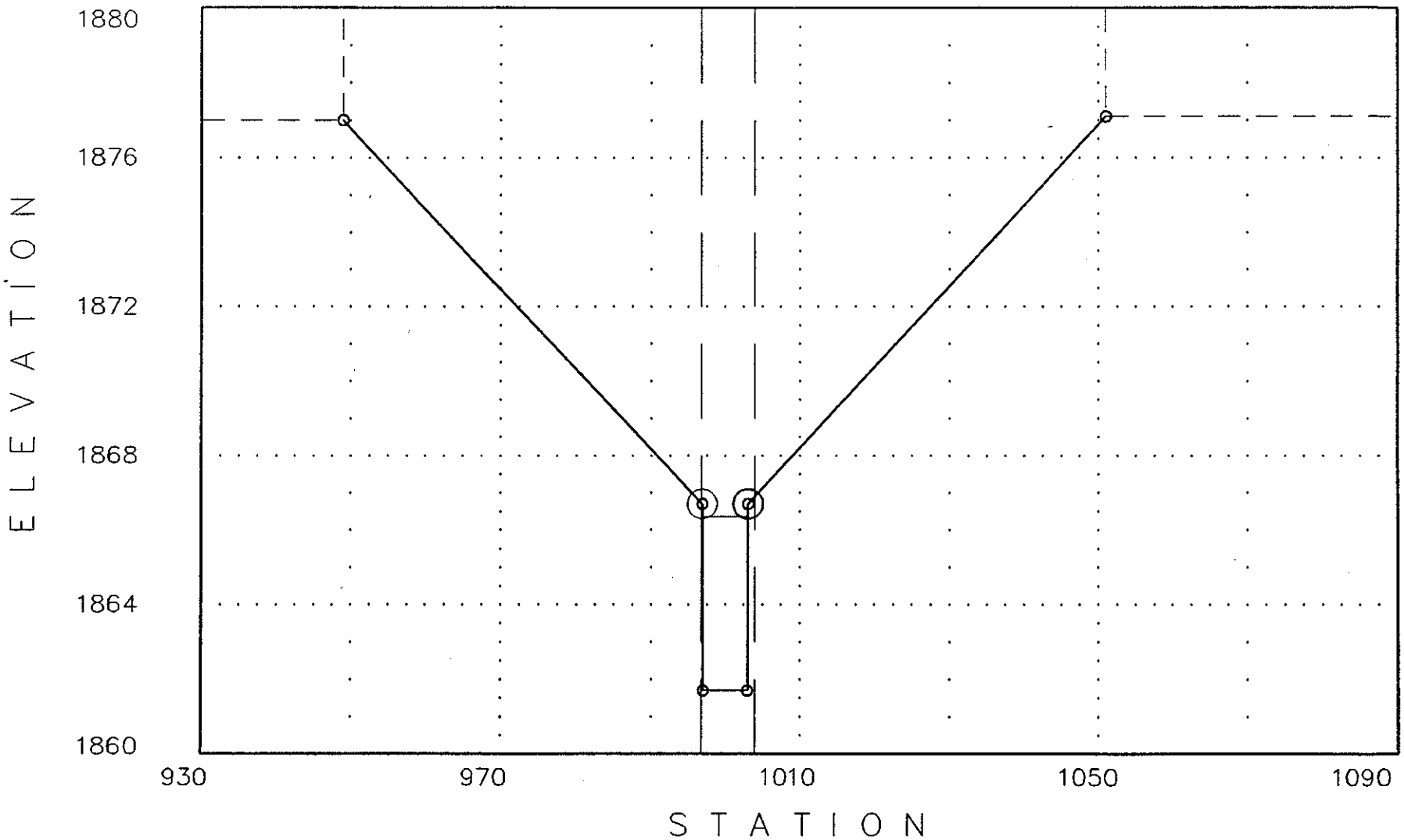


08-12-1992

<<<<<< Cross Section: .063: (FN = washf.o) >>>>>>

Q1= 345 WS1= 1866.36
Q2= 345 WS2= 1866.36

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07

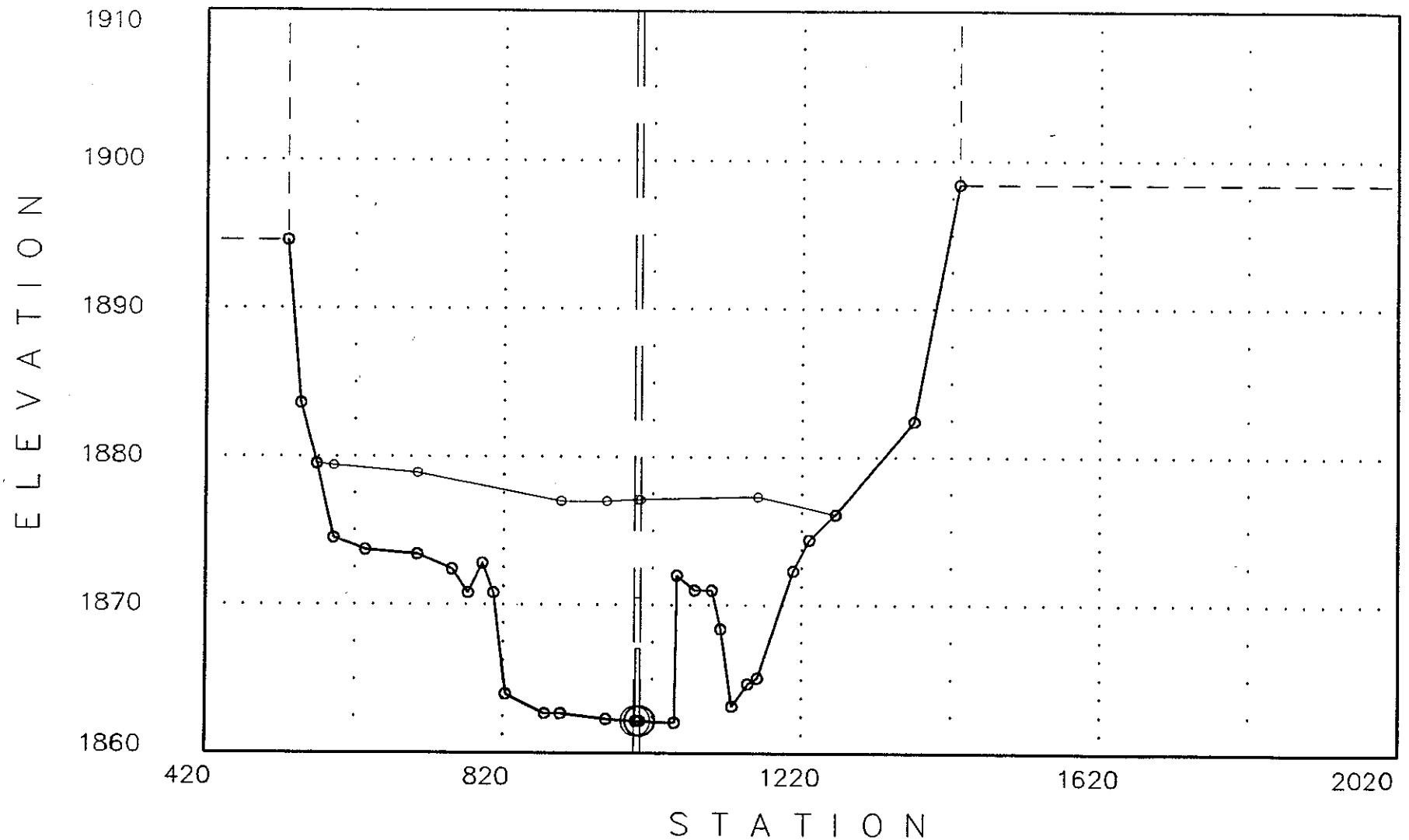


06-12-1992

<<<<<< Cross Section: .085: (FN = washf.o) >>>>>>

Q1= 345 WS1= 1870.49
Q2= 345 WS2= 1870.49

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07 SPECIAL CULVERT

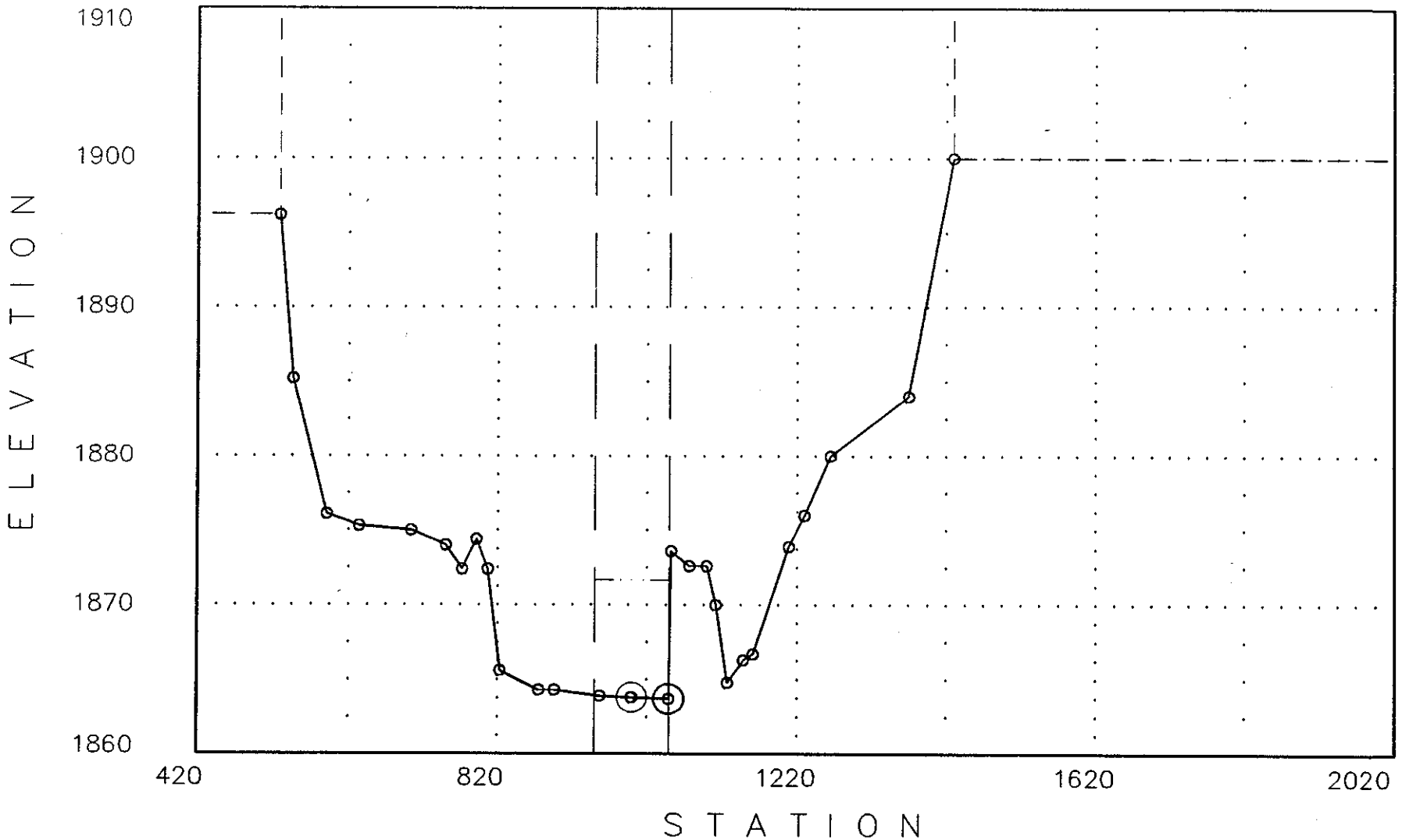


08-12-1992

<<<<<< Cross Section: .093: (FN = washf.o) >>>>>>

Q1= 345 WS1= 1871.68
Q2= 345 WS2= 1871.68

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

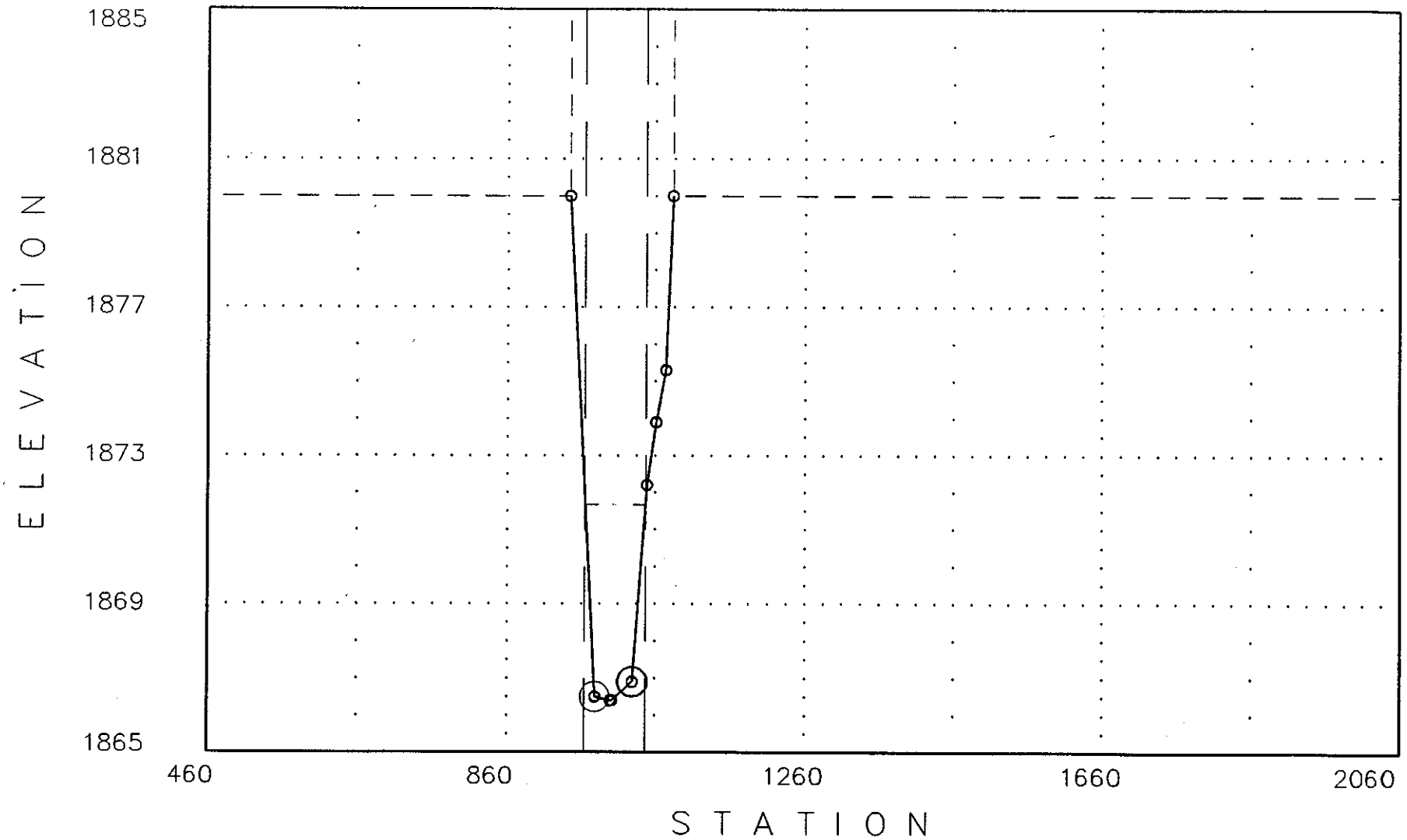


08-12-1992

<<<<<< Cross Section: .133: (FN = washf.o) >>>>>>

Q1= 345 WS1= 1871.67
Q2= 345 WS2= 1871.67

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

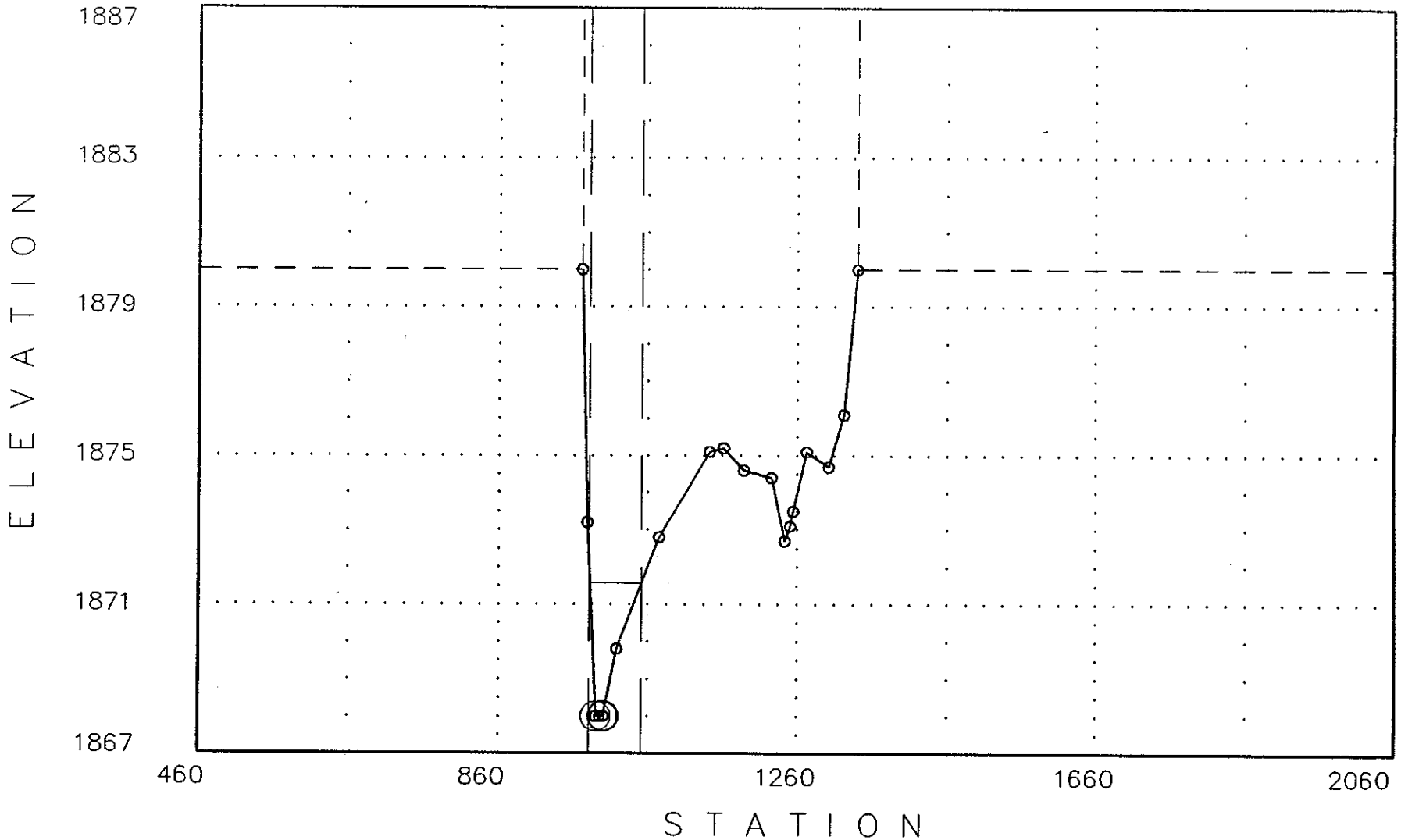


08-12-1992

<<<<<< Cross Section: .18: (FN = washf.o) >>>>>>

Q1= 345 WS1= 1871.58
Q2= 345 WS2= 1871.58

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07



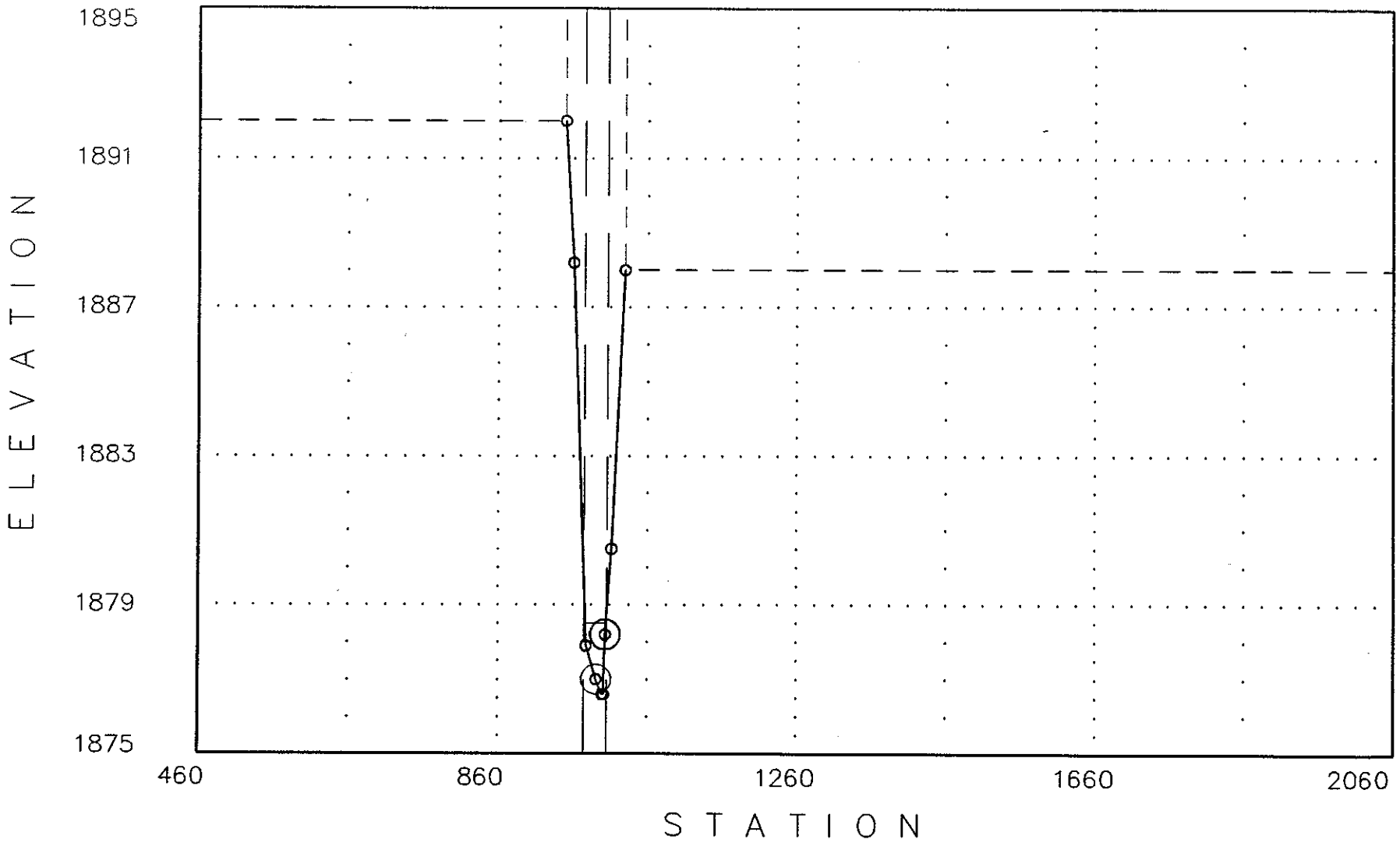
08-12-1992

<<<<<< Cross Section: .275: (FN = washf.o) >>>>>>

Q1= 180 WS1= 1878.5

Q2= 180 WS2= 1878.5

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07



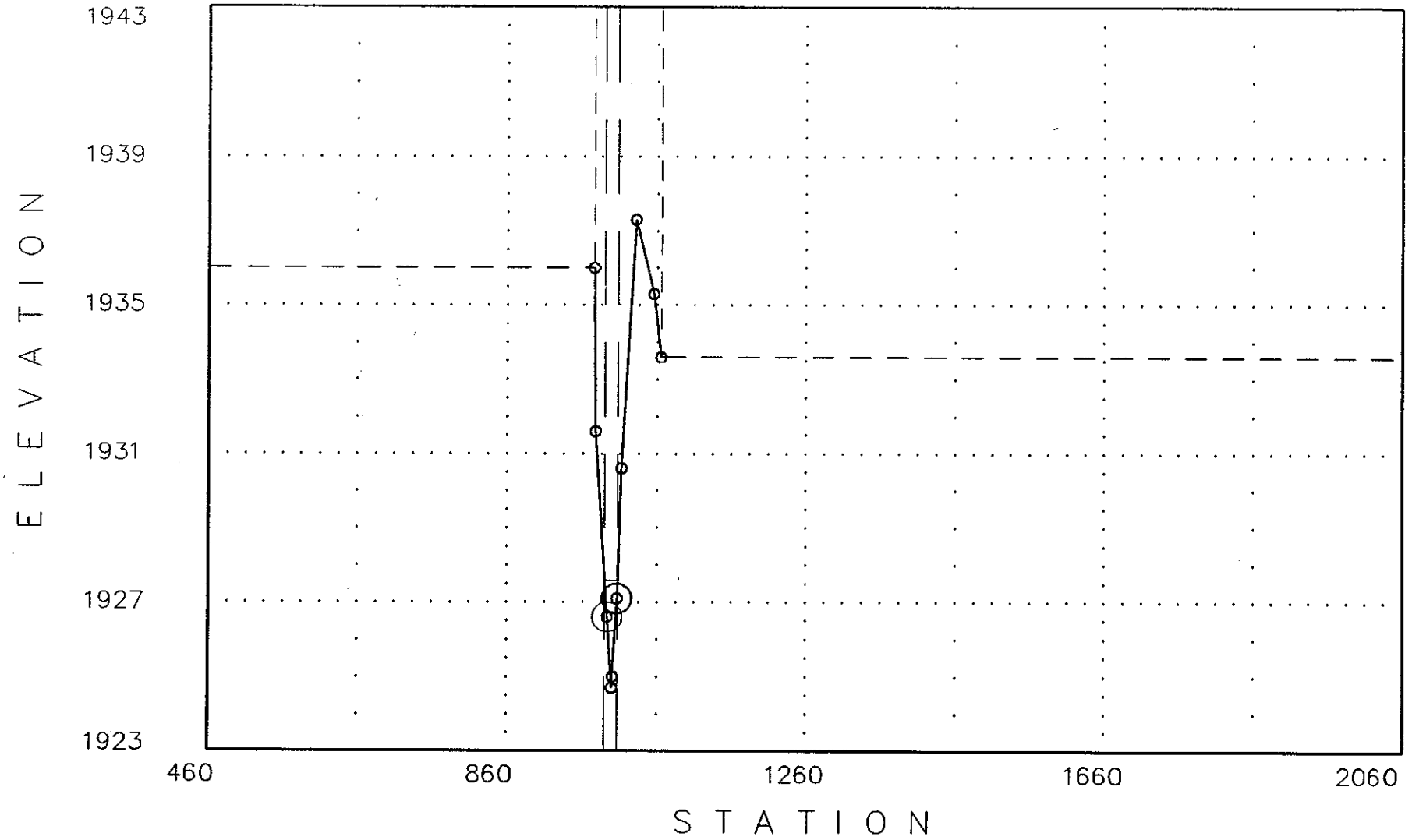
08-12-1992

<<<<<< Cross Section: .379: (FN = washf.o) >>>>>>

Q1= 180 WS1= 1927.59

Q2= 180 WS2= 1927.59

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

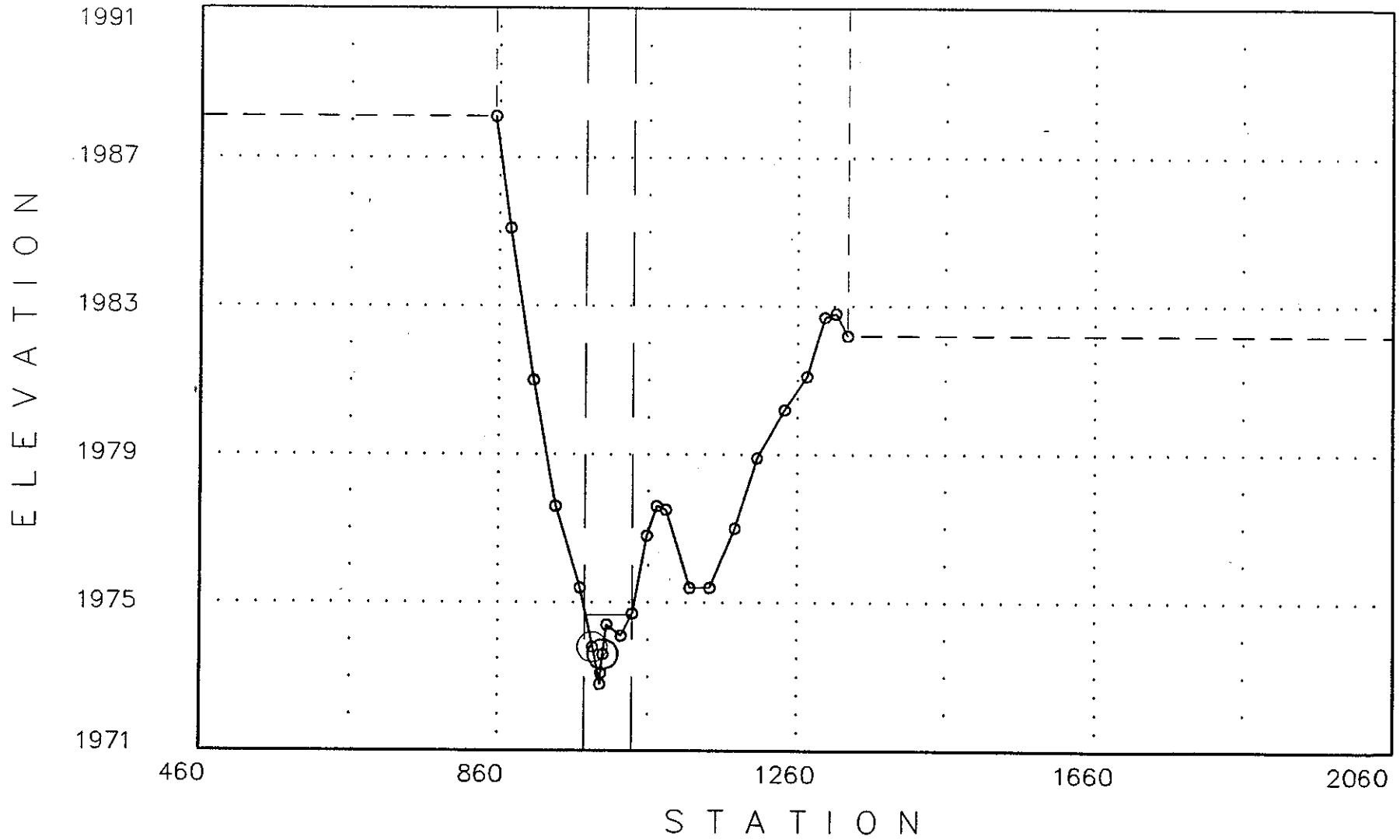


08-12-1992

<<<<<< Cross Section: .473: (FN = washf.o) >>>>>>

Q1= 130 WS1= 1974.67
Q2= 130 WS2= 1974.67

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

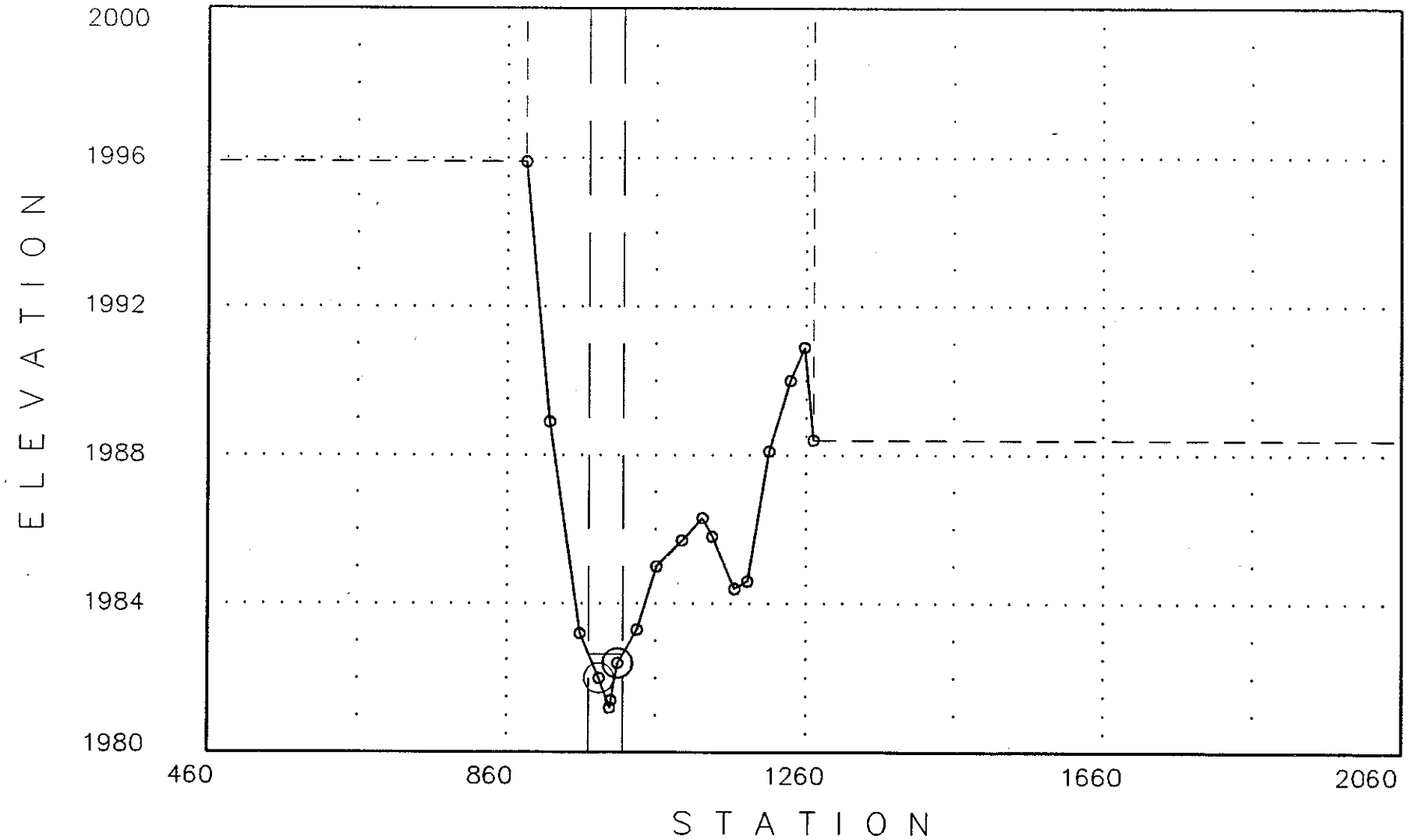


08-12-1992

<<<<<< Cross Section: .568: (FN = washf.o) >>>>>>

Q1= 130 WS1= 1982.64
Q2= 130 WS2= 1982.65

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06



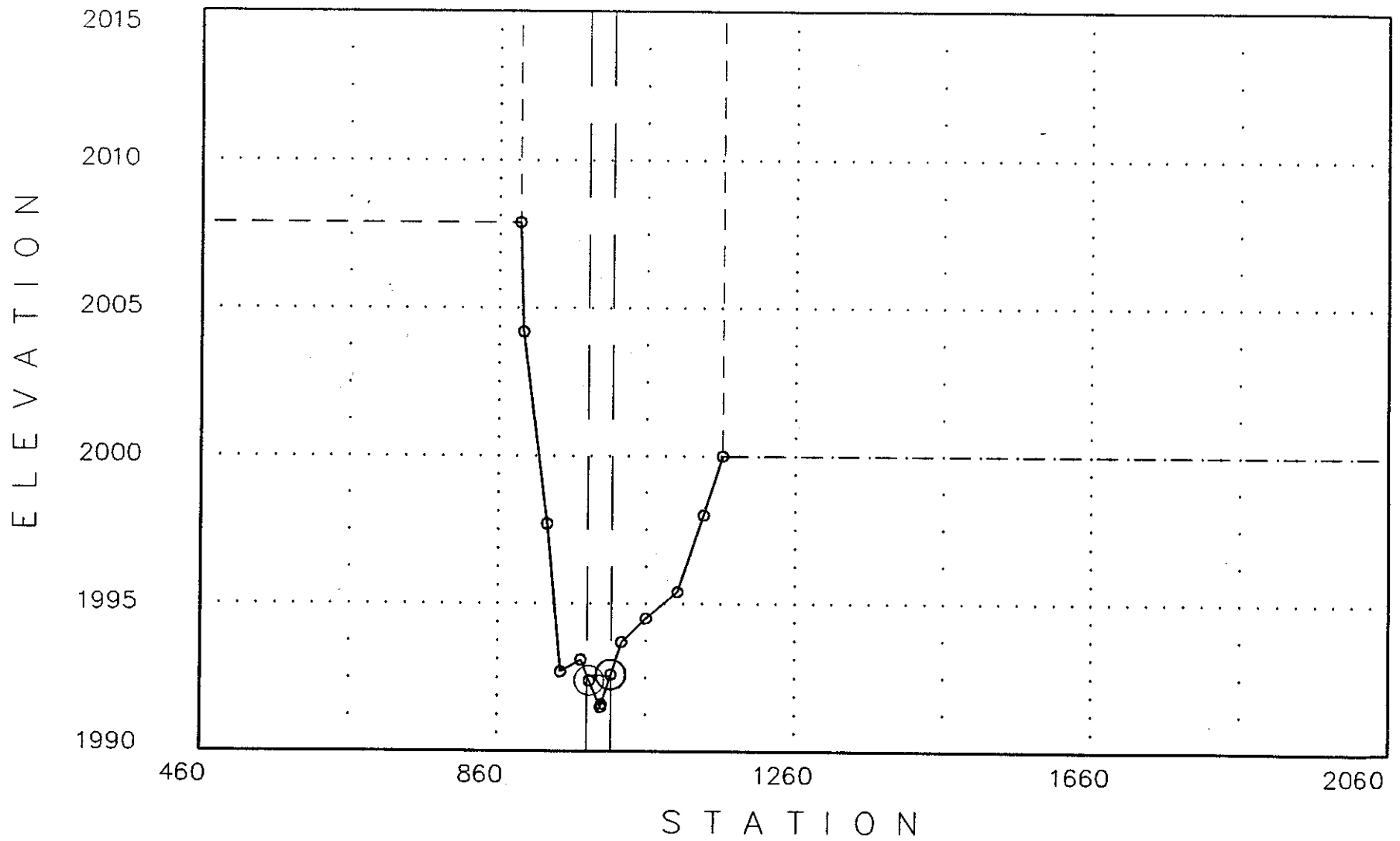
08-12-1992

<<<<<< Cross Section: .663: (FN = washf.o) >>>>>>

Q1= 70 WS1= 1992.56

Q2= 70 WS2= 1992.57

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

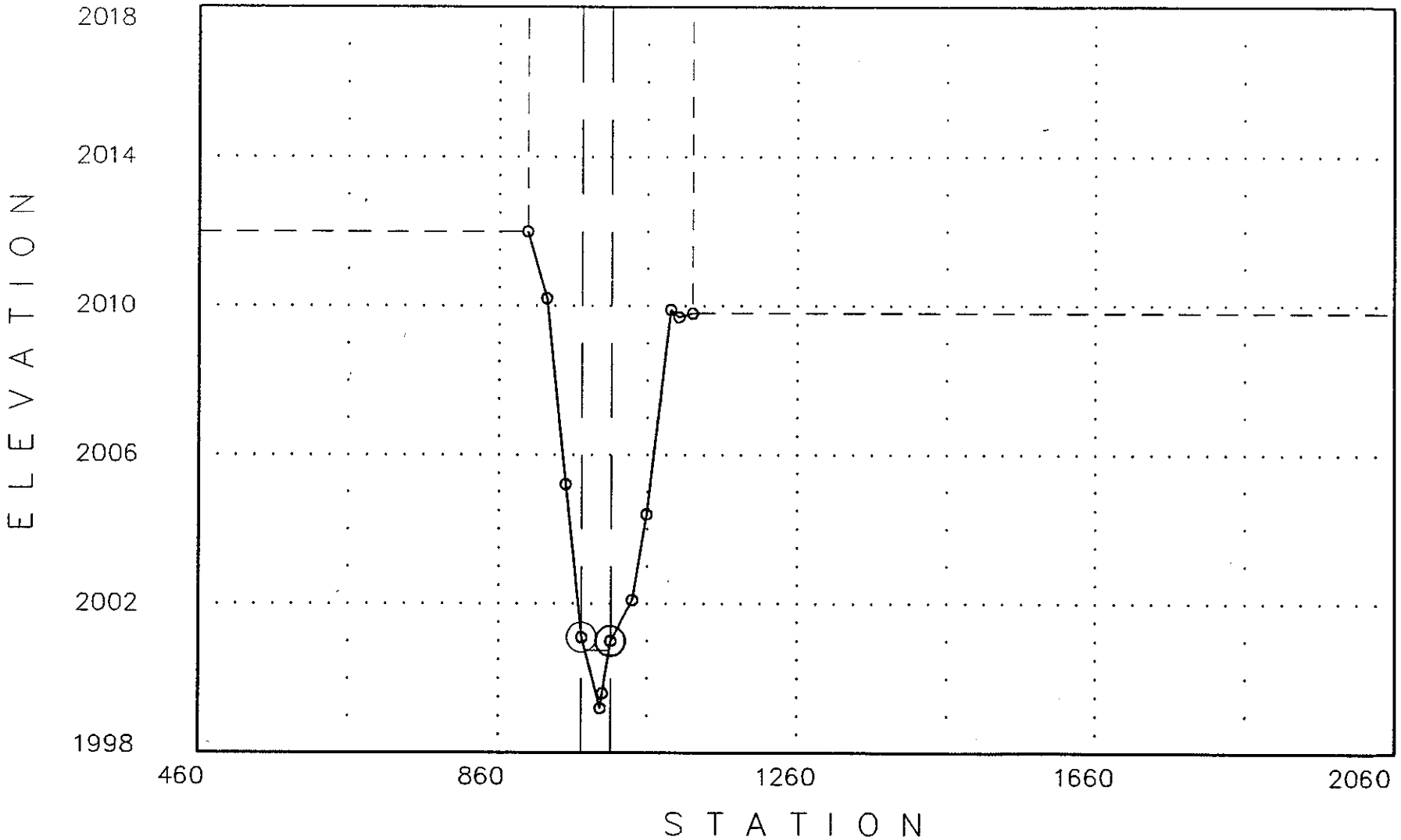


08-12-1992

<<<<<< Cross Section: .758: (FN = washf.o) >>>>>>

Q1= 70 WS1= 2000.75
Q2= 70 WS2= 2000.75

Manning-n's: n-lob = .06 n-ch = .05 n-rob = .06

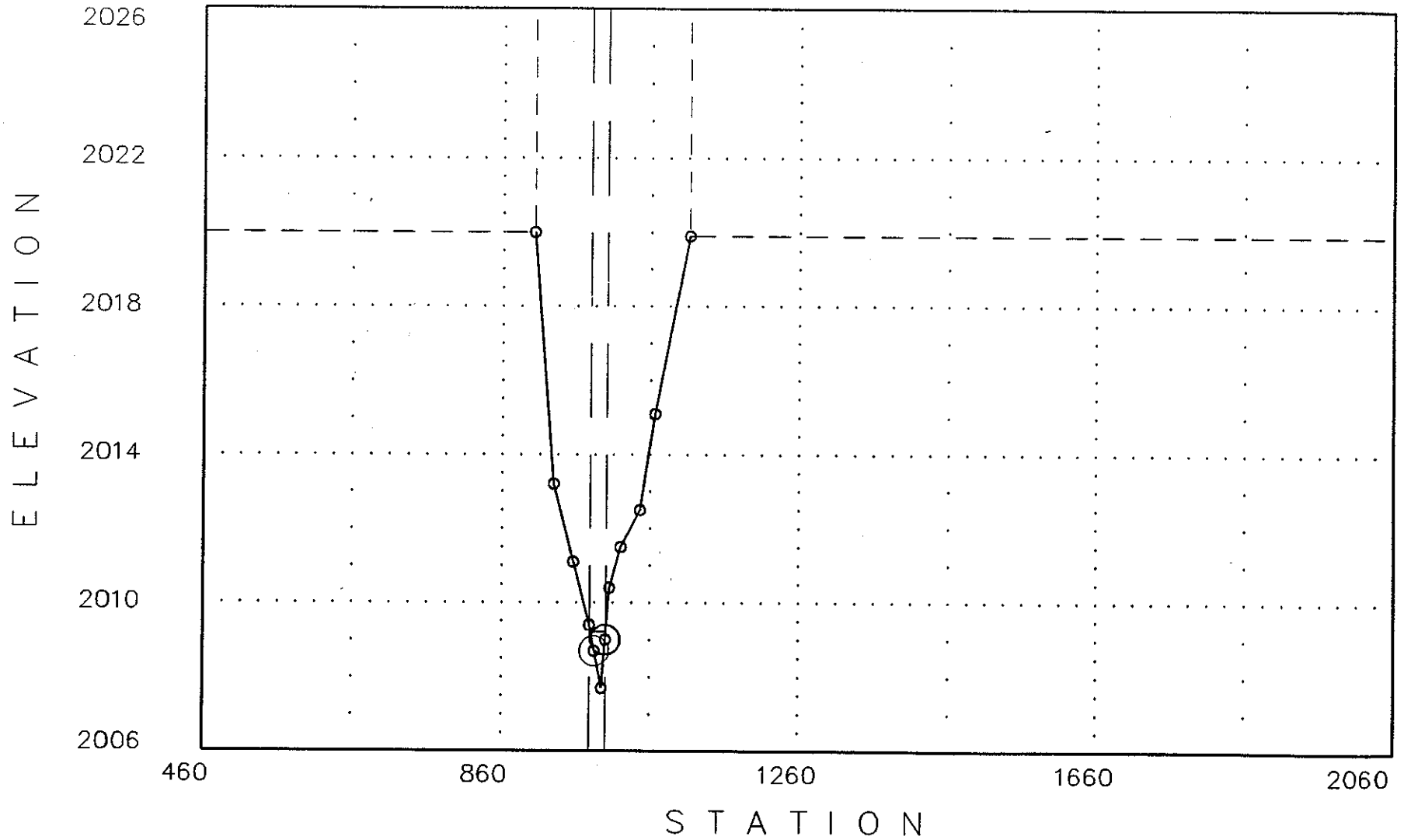


08-12-1992

<<<<<< Cross Section: .852: (FN = washf.o) >>>>>>

Q1= 70 WS1= 2009.21
Q2= 70 WS2= 2009.22

Manning-n's: n-lob = .06 n-ch = .05 n-rob = .06

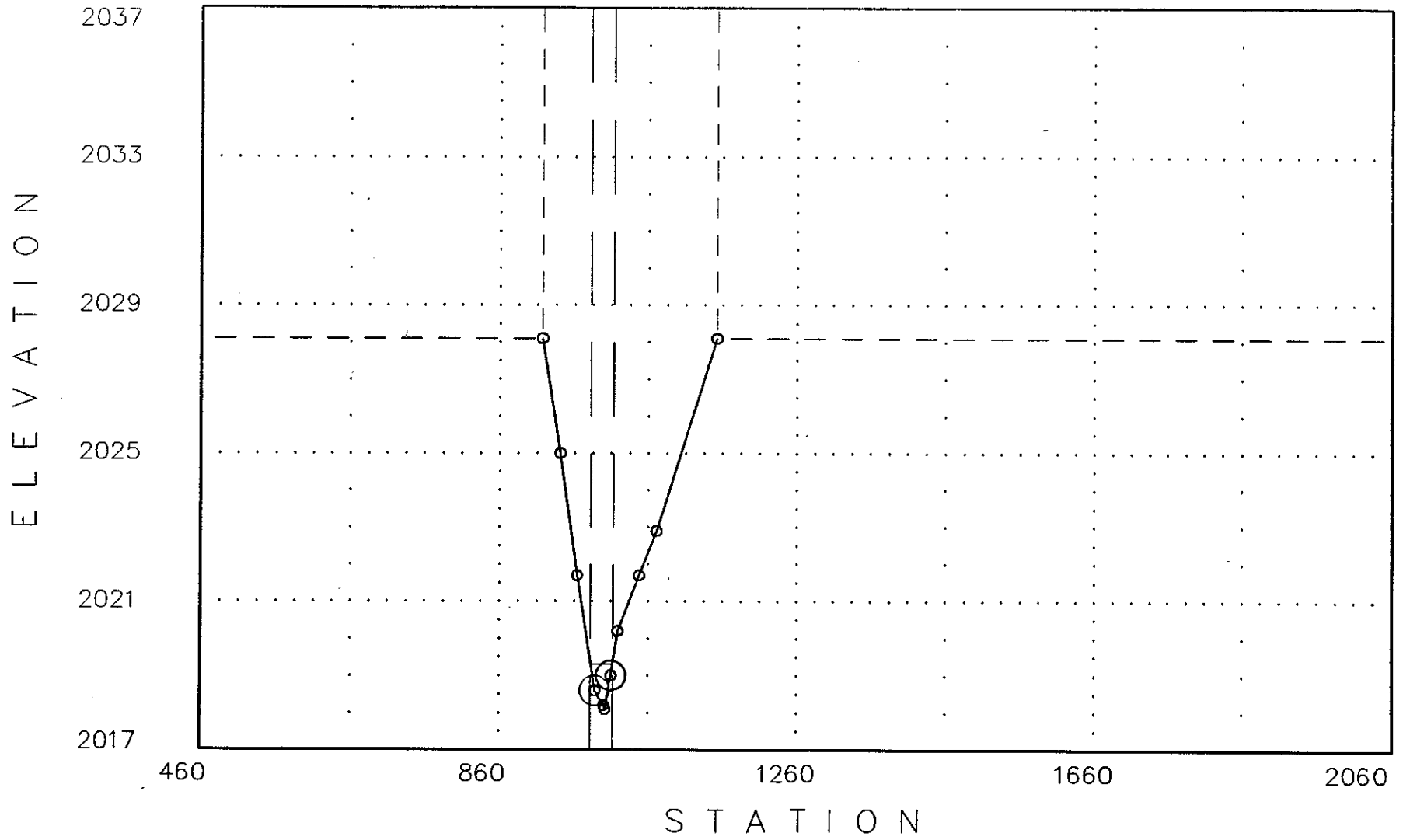


08-12-1992

<<<<<< Cross Section: .947: (FN = washf.o) >>>>>>

Q1= 70 WS1= 2019.31
Q2= 70 WS2= 2019.31

Manning-n's: n-lob = .06 n-ch = .05 n-rob = .06

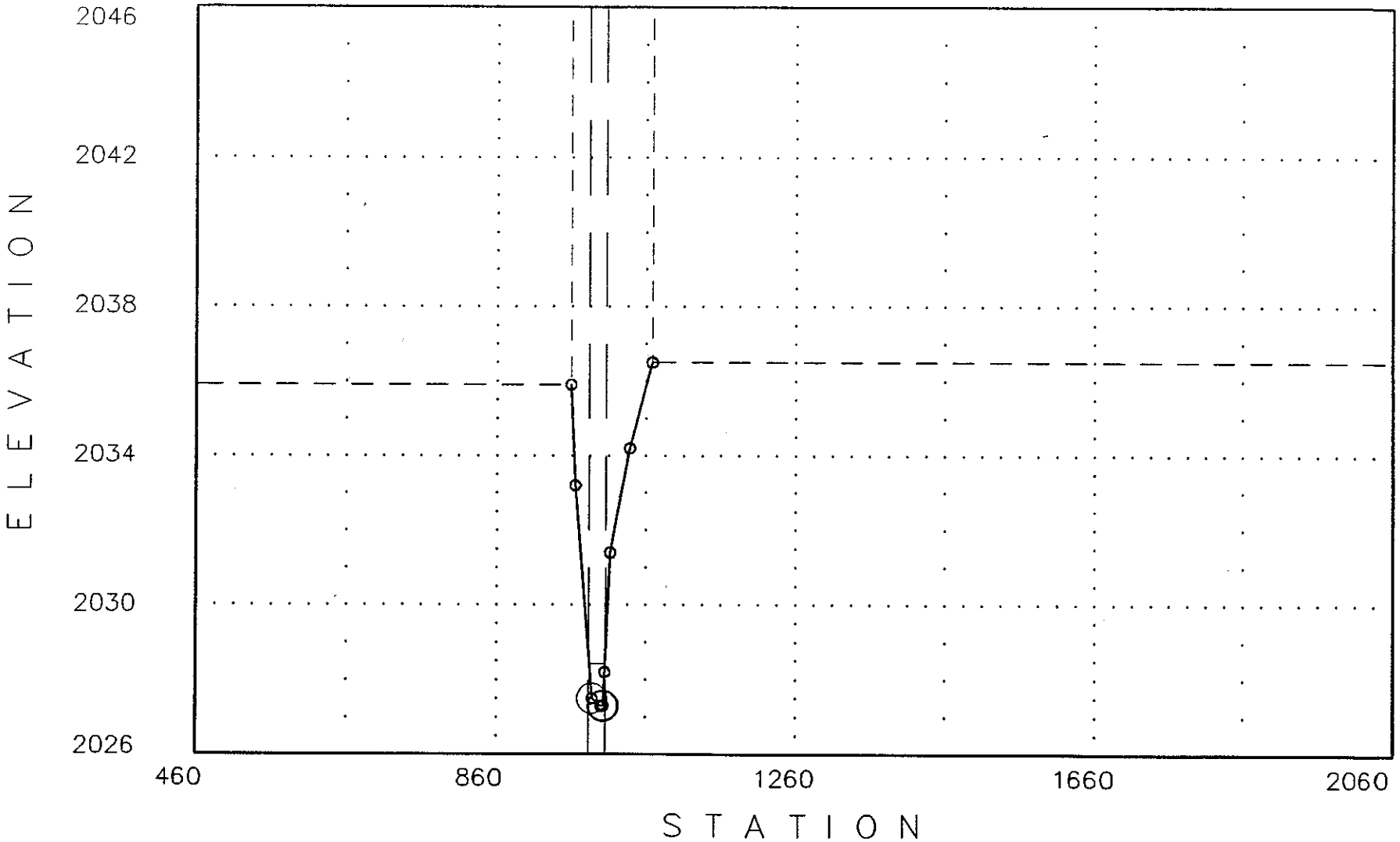


08-12-1992

<<<<<< Cross Section: 1.052: (FN = washf.o) >>>>>>

Q1= 70 WS1= 2028.42
Q2= 70 WS2= 2028.43

Manning-n's: n-lob = .06 n-ch = .05 n-rob = .06



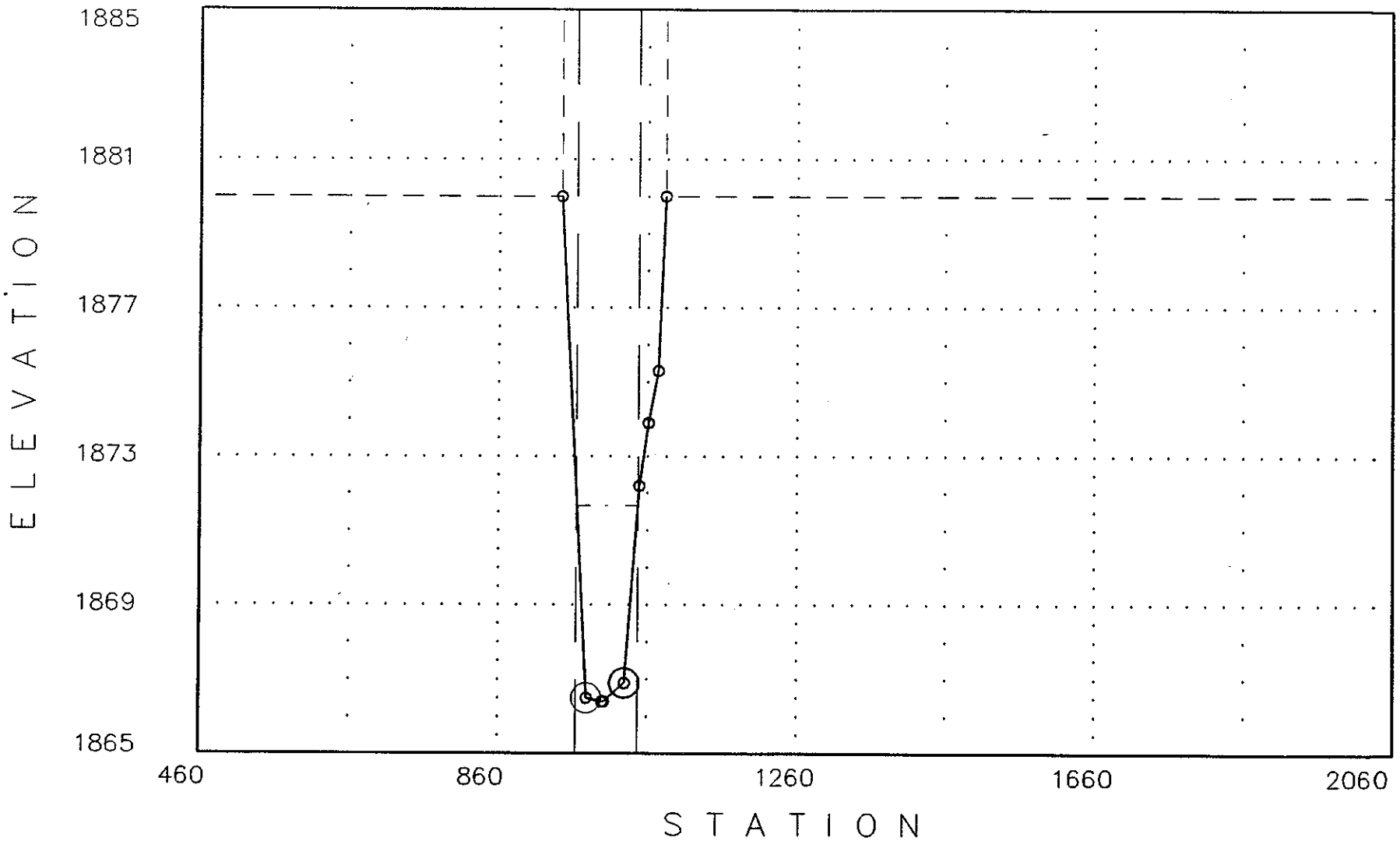
08-12-1992

<<<<<< Cross Section: -.133: (FN = washf.o) >>>>>>

Q1= 170 WS1= 1871.67

Q2= 170 WS2= 1871.67

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

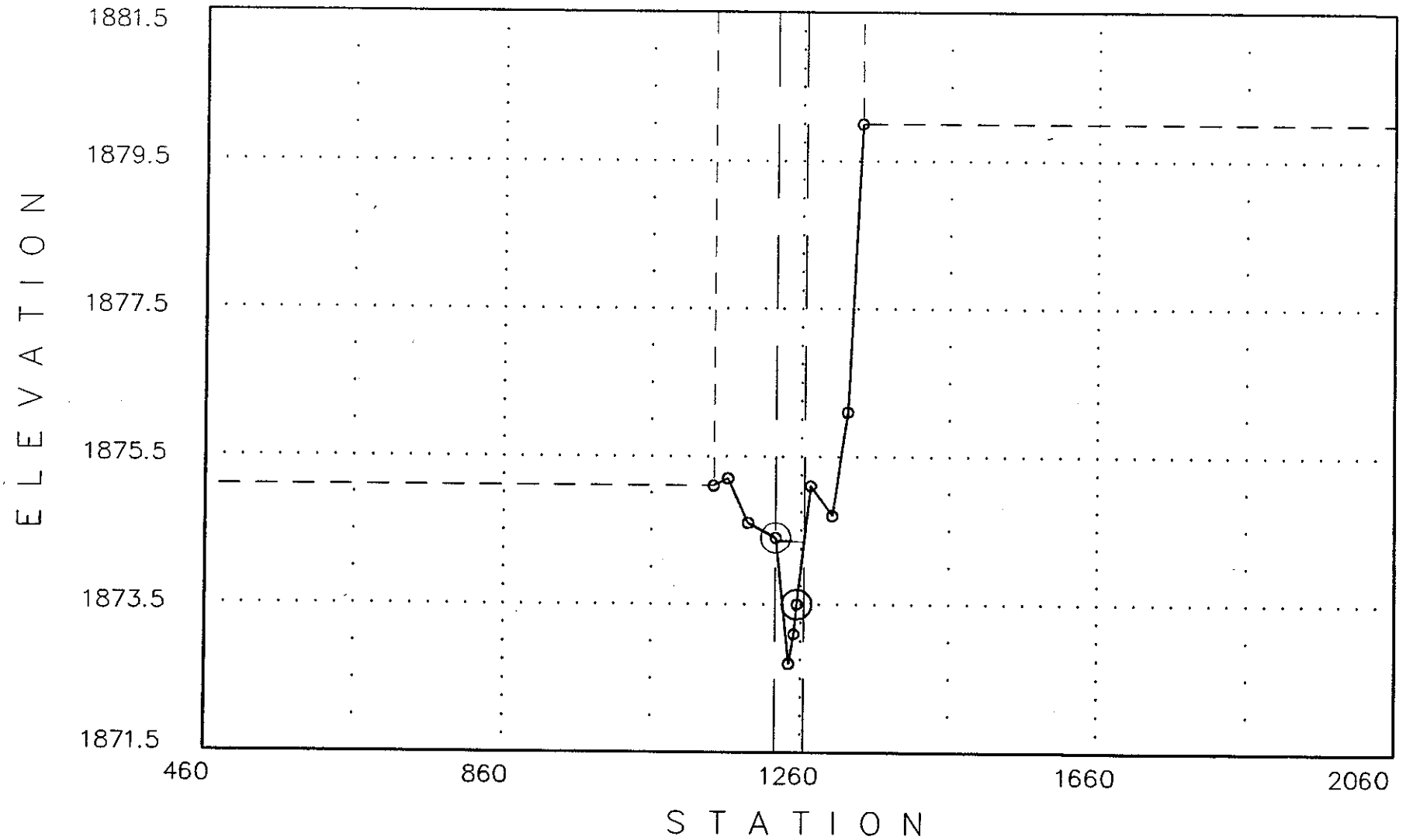


08-12-1992

<<<<<< Cross Section: .032: (FN = washf.o) >>>>>>

Q1= 170 WS1= 1874.35 — — —
Q2= 170 WS2= 1874.37 - — -

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

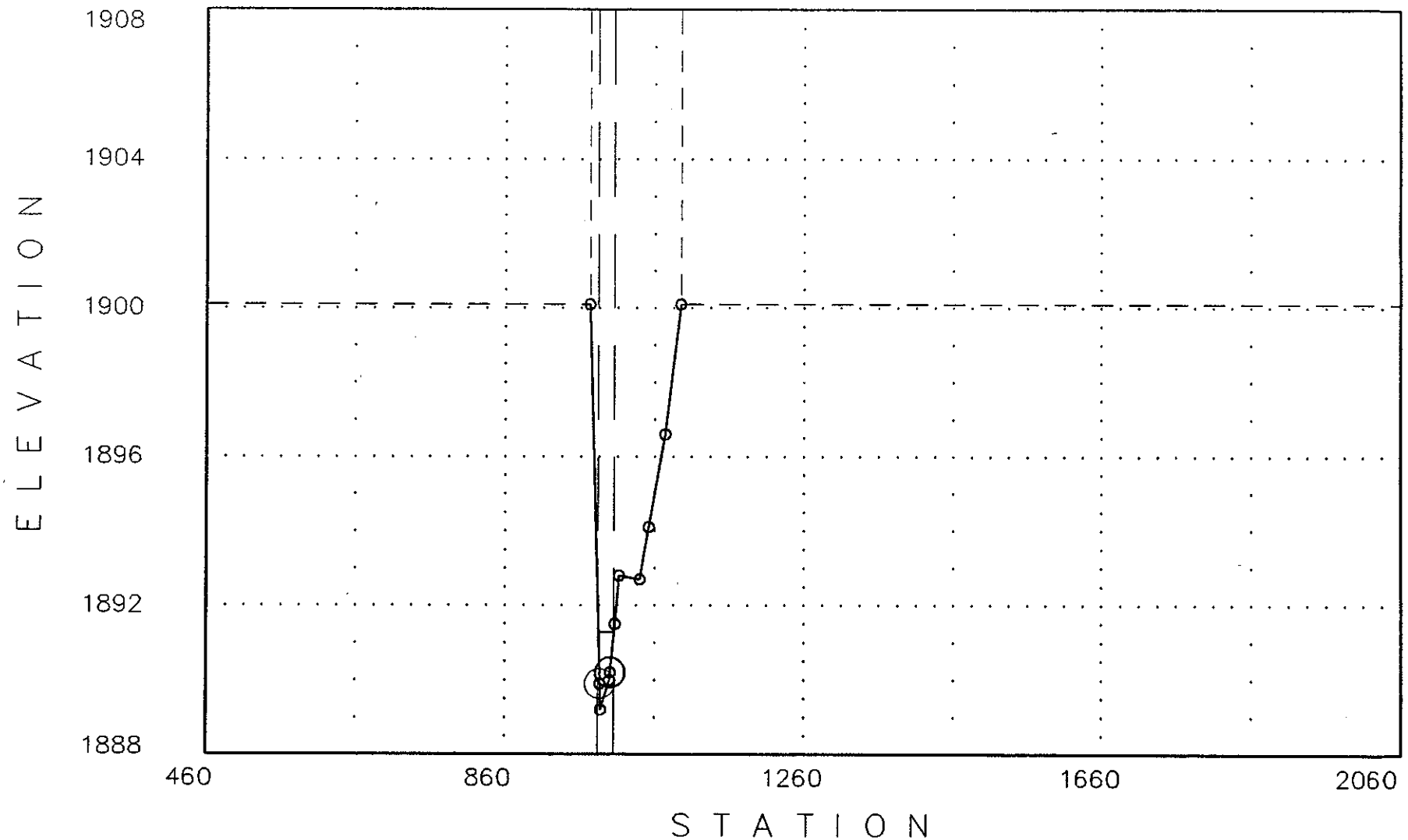


08-12-1992

<<<<<< Cross Section: .128: (FN = washf.o) >>>>>>

Q1= 170 WS1= 1891.28
Q2= 170 WS2= 1891.3

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

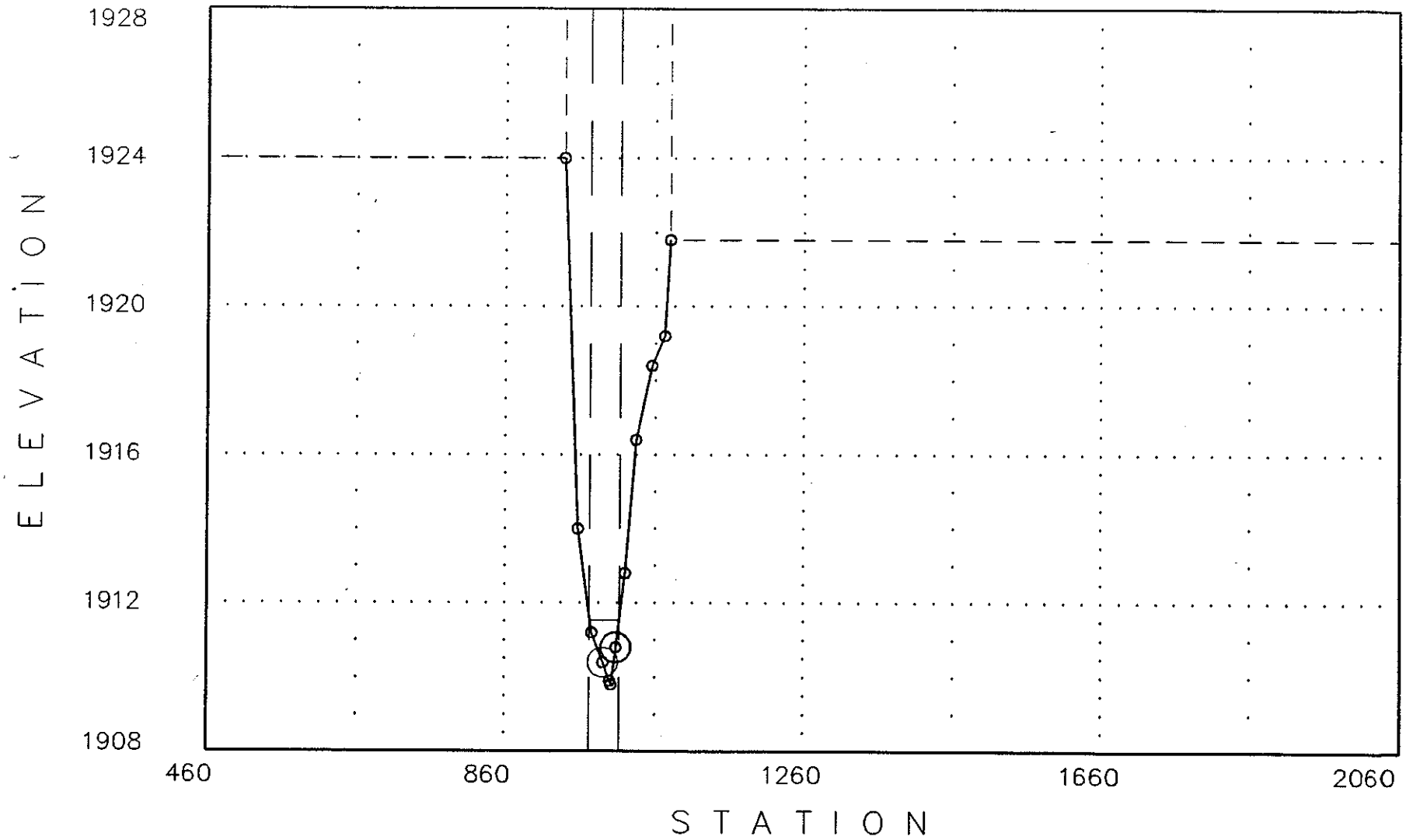


08-12-1992

<<<<<< Cross Section: .221: (FN = washf.o) >>>>>>

Q1= 170 WS1= 1911.54
Q2= 170 WS2= 1911.54

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07



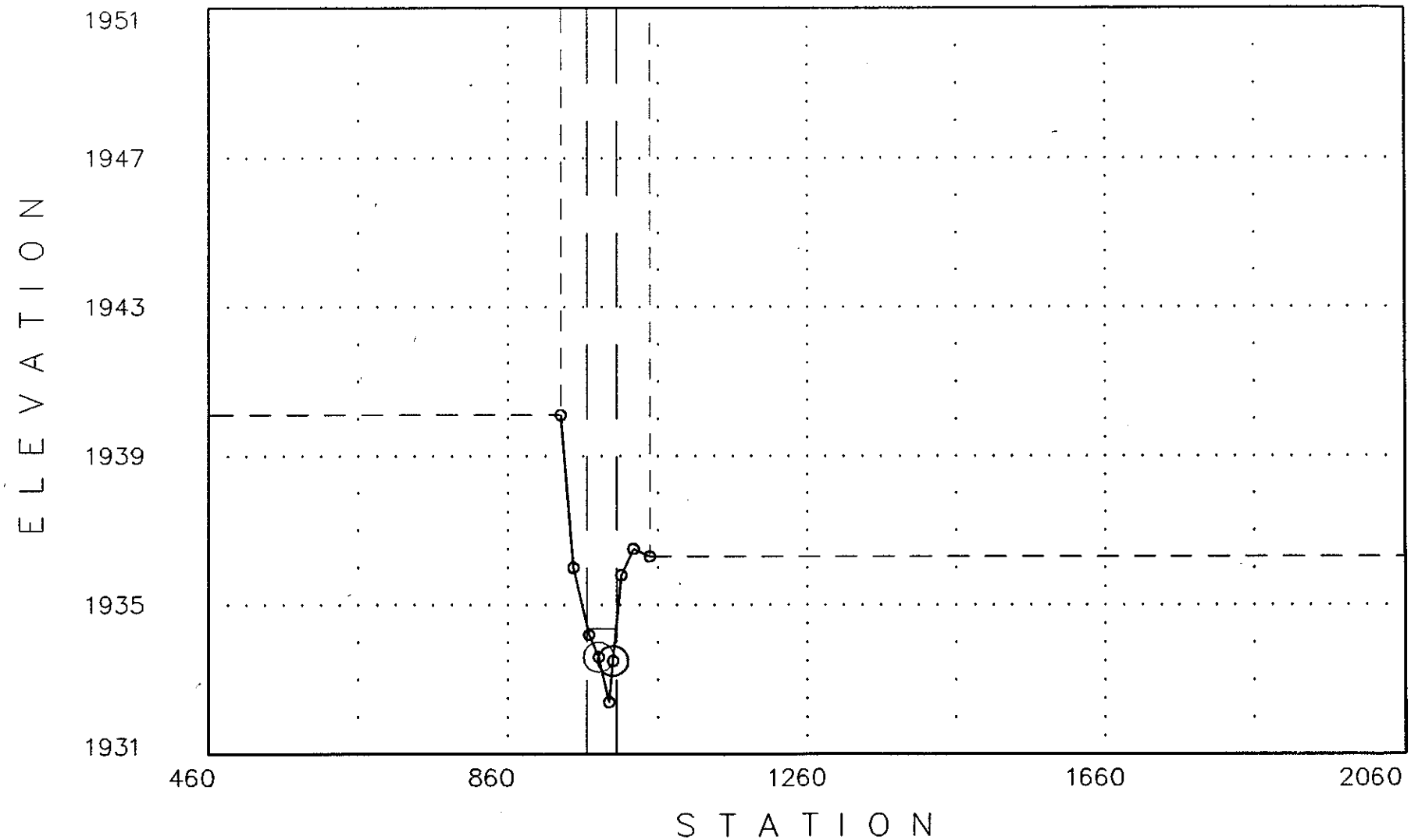
08-12-1992

<<<<<< Cross Section: .316: (FN = washf.o) >>>>>>

Q1= 170 WS1= 1934.36

Q2= 170 WS2= 1934.37

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07

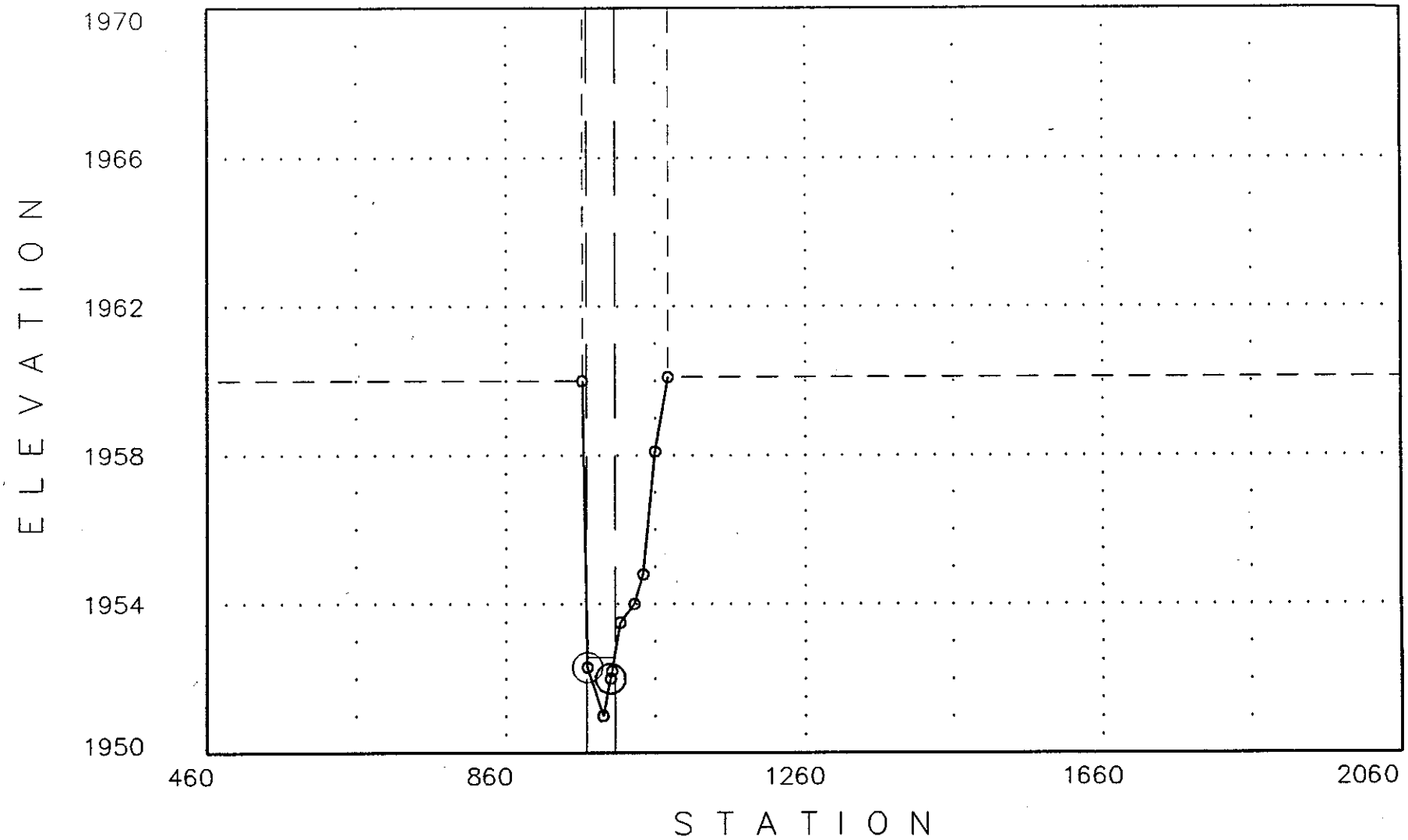


08-12-1992

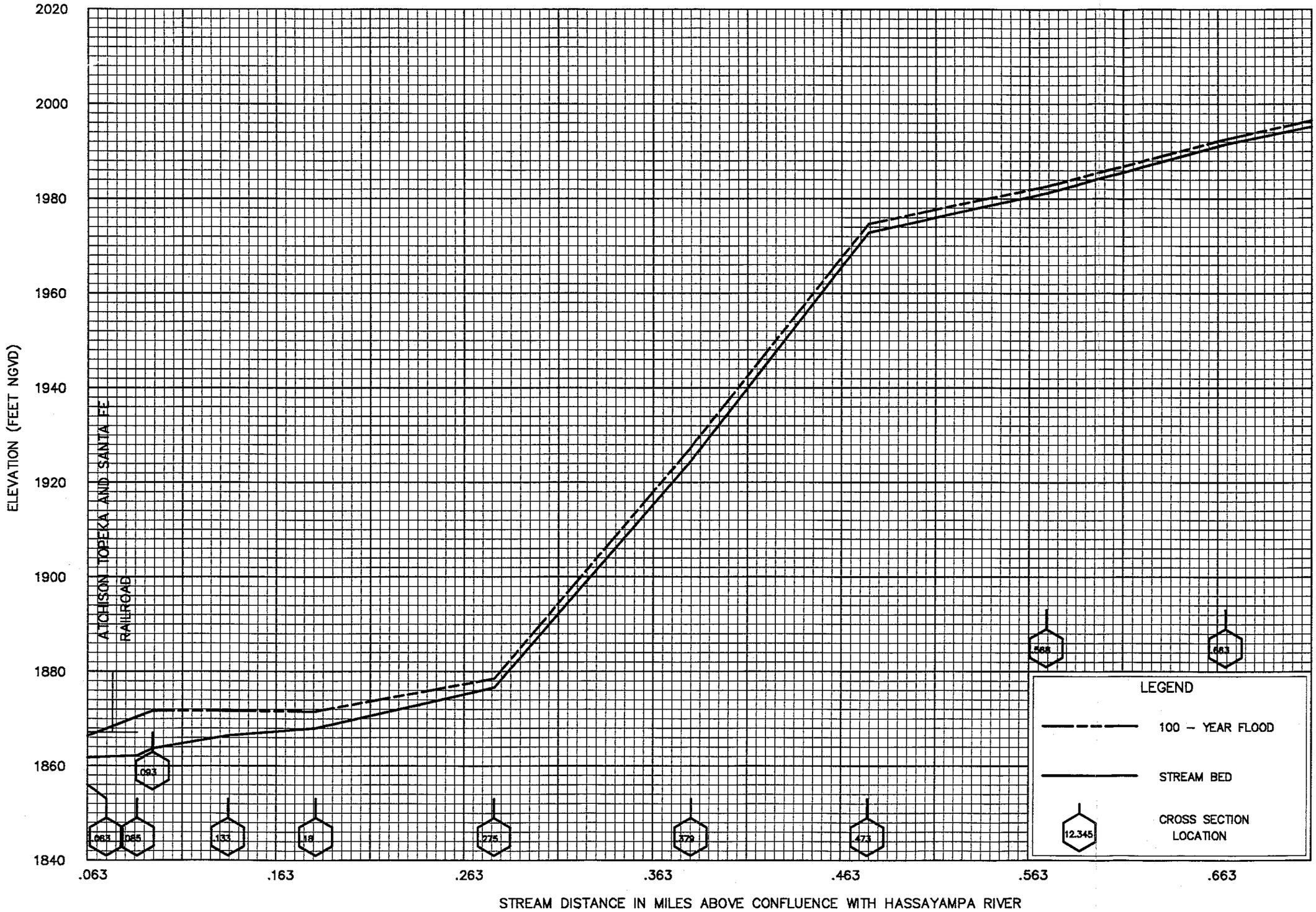
<<<<<< Cross Section: .411: (FN = washf.o) >>>>>>

Q1= 170 WS1= 1952.57
Q2= 170 WS2= 1952.57

Manning-n's: n-lob = .07 n-ch = .035 n-rob = .07



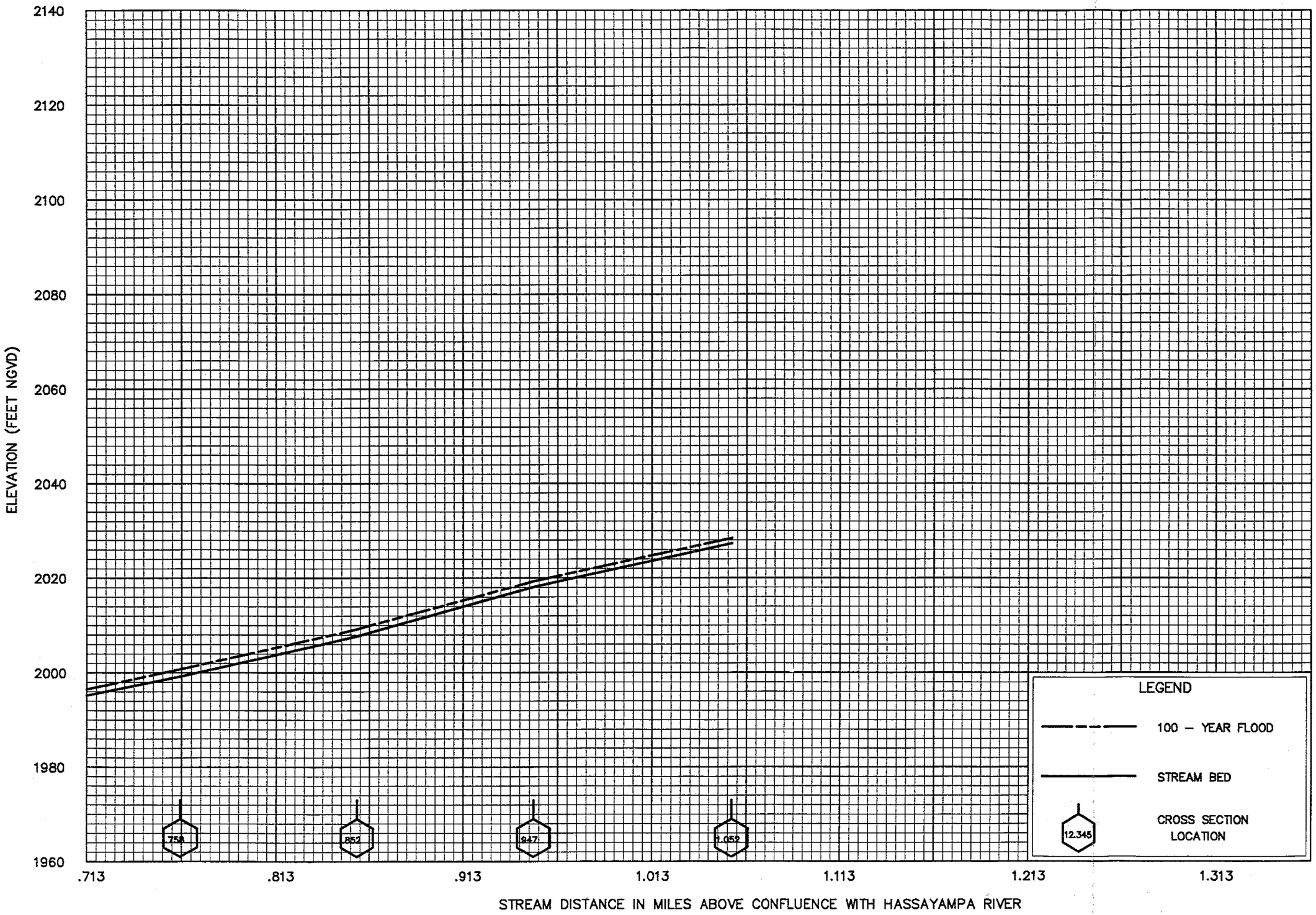
08-12-1992



FLOOD PROFILES

UN–NAMED WASH #1 (WASH F)

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

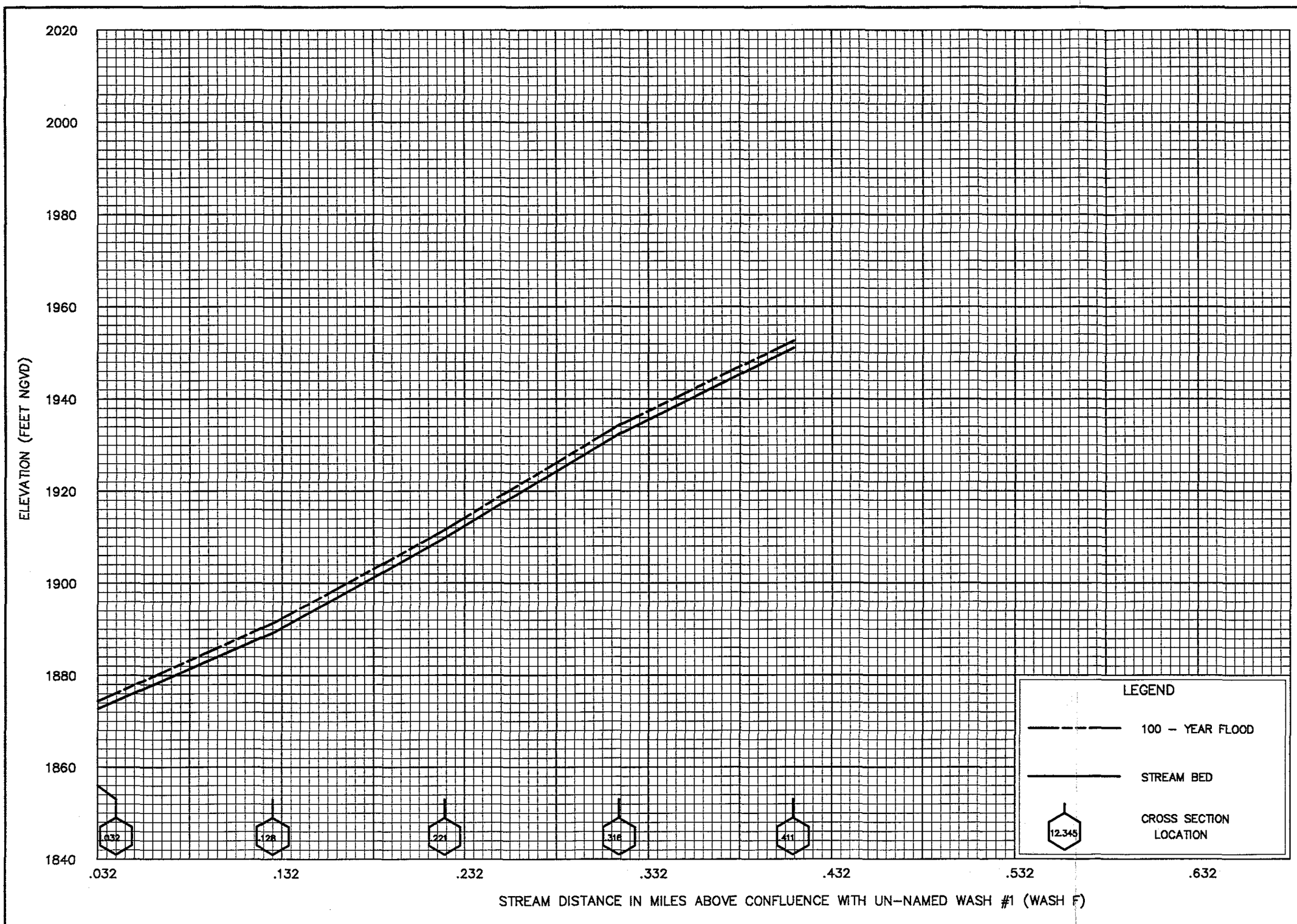


FLOOD PROFILES

UN–NAMED WASH #1 (WASH F)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



FLOOD PROFILES

TRIBUTARY TO UN-NAMED WASH #1 (WASH F)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.6: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #2 (Wash g)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1197\02\ADMIN\119702RP.063

May 1994

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash G:
(One form for each flooding source)

Project Name /Identifier: Wickenburg ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) HEC-1 analysis based on Flood Control District of Maricopa County Methodologies.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions.

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
Confluence with Hassayampa River	0.40		526

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

No existing analysis or updated analysis to reflect existing conditions.

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

ATTACHMENT A: STATISTICAL ANALYSIS OF GAGE RECORDS

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability*	☐ Yes ☐ No
11. Comparison of results with other analyses	☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:
NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

	FIS:		Revised:	
5. Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6 Percent of watershed urbanization	_____		_____	
7. Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
. Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		Ver. 3.0
	Date:		02 AUG. 88
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 hours
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-Graph
7.	Loss rate method:		Green-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of Wickenburg
8.	Channel routing method:		Normal Depth
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE vs DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County.

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA - No flow records

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Appendix # 6.6

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash G:
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS - FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.097

Upstream limit: Station 1.131

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Confluence with Hassayampa River

Upstream limit of study Station 1.131

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. *(Check all that apply)*

☐ Not studied in FIS

☐ Improved hydrologic data/analysis. Explain: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

3. RIVERINE HYDRAULIC ANALYSIS FORM
Models Submitted

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model (Proposed Effective Model)

4. MODEL PARAMETERS *(from model used to revise 100-year water surface elevation)*

1. Discharges:

	Upstream Limit	Downstream Limit
10-year	78 cfs	274 cfs
50-year	129 cfs	453 cfs
100-year	150 cfs	526 cfs
500-year	—	—

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevations determined by the slope-area method.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.020 ~ 0.040

Overbanks ..... 0.045 ~ 0.070

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

Location	FIS	Revised
N/A		

Explain:

4. Describe how the cross section geometry data were determined (*e.g., field survey, topographic map, taken from previous study*) and list cross sections that were added.

Data points for cross-sections are based on photogrammetric models for the topographic maps.

5. Explain how reach lengths for channel and overbanks were determined:

All reach lengths were measured from floodplain work maps.

5. RESULTS (from model used to revise 100-year water surface elevations)

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☐ No

If yes, special problems report attached.

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 0.0141 ft/ft

Specify location 0.181

3. What is the distance between the cross-sections in 2 above? ..... 401 ft

Specify location 0.257

4. What is the maximum distance between cross-sections? ..... 533 ft

Specify location 1.131

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1 foot

b. What is the maximum surcharge for the revised conditions? ..... 0 foot

Specify location ..... N/A

c. What is the maximum velocity? ..... 14.24 fps

Specify location 0.097

Explain:

d. Are there any negeative surcharge values at any cross-section ☐ Yes ☒ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge.

Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ..... ☐ Yes ☐ No

If Yes, explain:

_____

_____

_____

7. Do 100-year water surface elevations increase at any location? ..... ☐ Yes ☐ No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet and upstream of the project at cross section_____within_____feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet and upstream of the project at cross section_____ within_____feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County / Town of Wickenburg	Wash G: Un-Named Wash (#2)	Wickenburg ADMS-FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

New Model- See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FLOODWAY DATA, WASH G : UNNAMED WASH #
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
45.350	255.	224.	2.4	1875.3	1875.3	.0
.097	6.	37.	14.2	1883.1	1883.1	.0
.124	143.	833.	.6	1895.1	1895.1	.0
.140	153.	1696.	.3	1895.1	1895.1	.0
.181	50.	329.	1.6	1895.1	1895.1	.0
.257	24.	56.	7.5	1899.0	1899.0	.0
.306	31.	64.	6.5	1904.8	1904.8	.0
.314	20.	55.	7.7	1915.9	1915.9	.0
.403	27.	56.	7.6	1934.5	1934.5	.0
.498	25.	57.	7.4	1949.2	1949.2	.0
.593	43.	71.	5.9	1963.5	1963.5	.0
.688	32.	55.	6.5	1974.5	1974.5	.0
.784	50.	66.	5.4	1985.1	1985.1	.0
.879	54.	56.	5.2	1993.4	1993.4	.0
.960	57.	40.	3.8	2001.8	2001.8	.0
1.030	37.	32.	4.7	2009.4	2009.4	.0
1.131	41.	37.	4.1	2021.7	2021.7	.0

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash G

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. Highway 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.097 to Station 0.124
3. This revision reflects (*check one of the following*):
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (*Explain why new analysis was performed*) _____

2. BACKGROUND

Provide the following information about the structure:

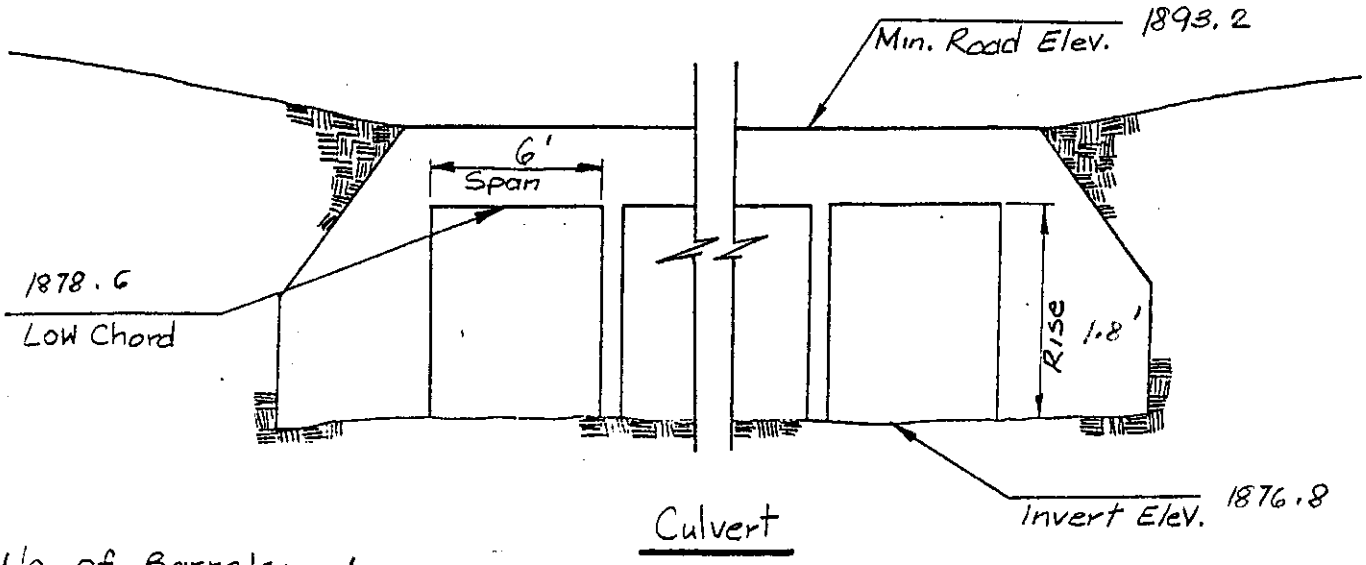
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) One 6' x 5' x 141.67' concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30°-75° wing walls with square top edge, sloping embankments and vertical abutments) 30°-75° wing walls; no inlet top edge bevel
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). (*Attach justification*)

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.

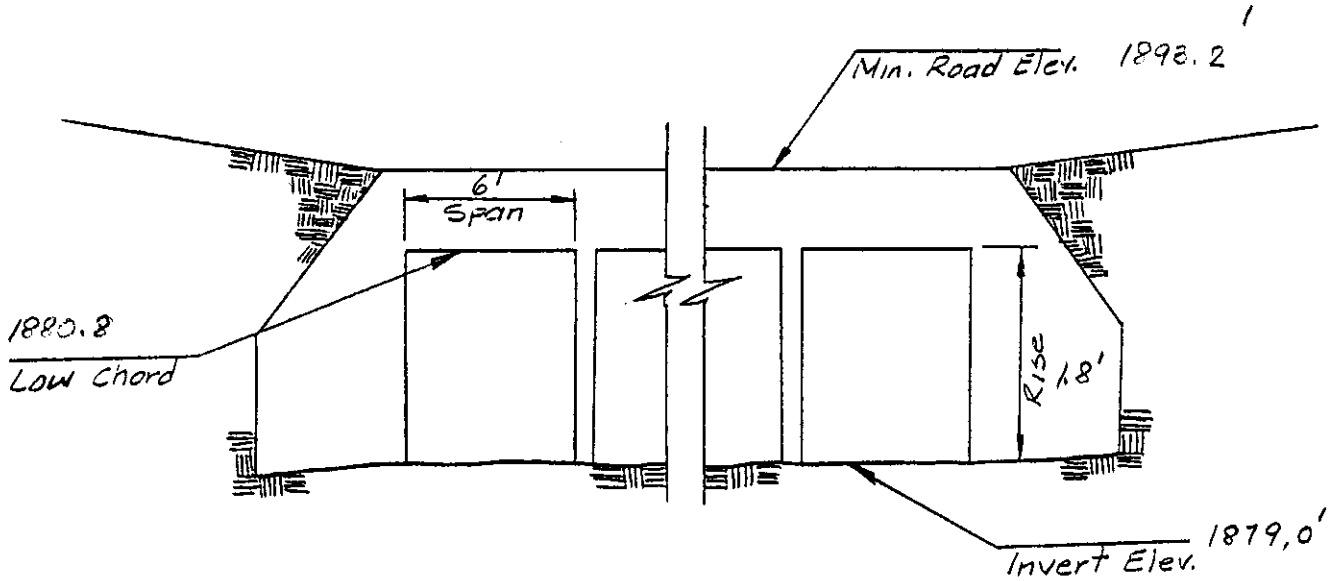


No. of Barrels: 1

Culvert Size: 6' x 5' x 141.67'

See Cross Section # 0.097

Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.

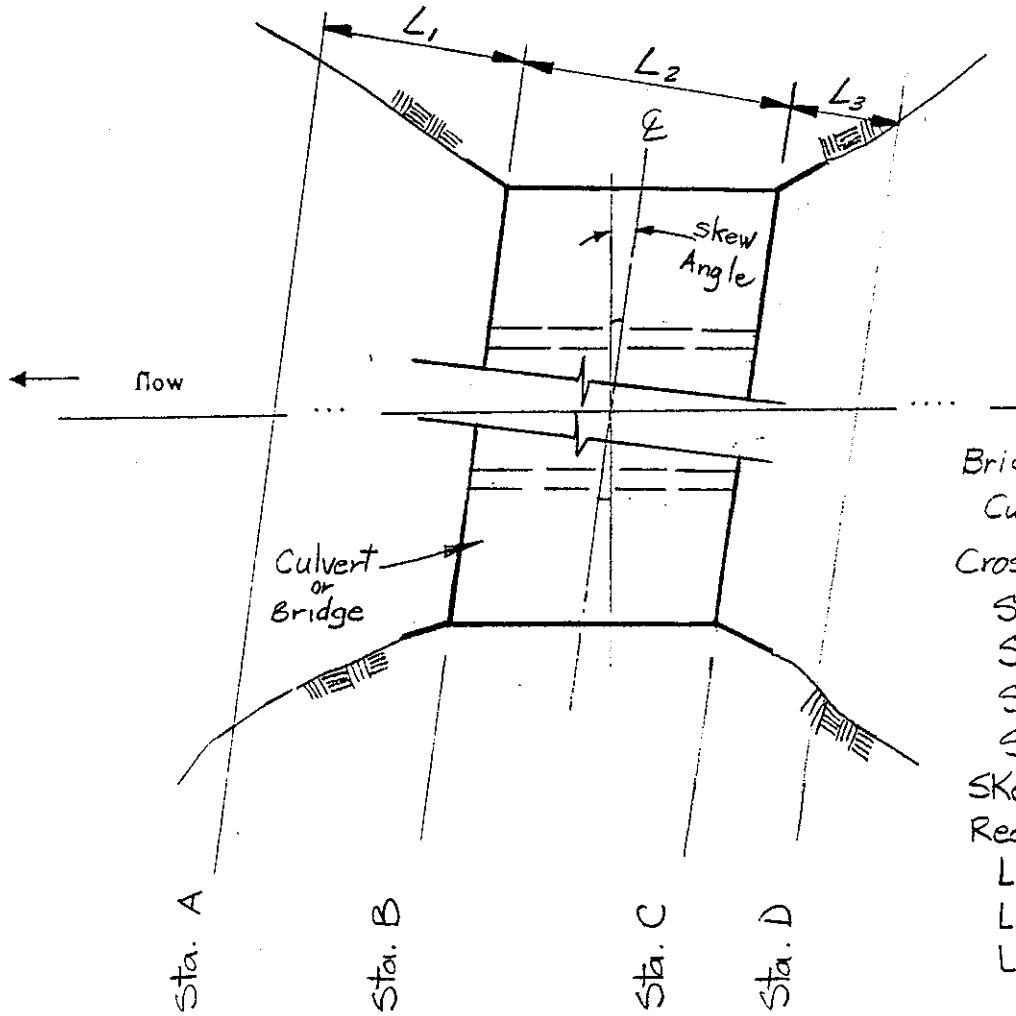


No of Barrels: 1

Culvert Size: 6' x 5' x 141.67'

See Cross Section # 0.124

Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Bridge Width / Culvert Length: 141.7'

Cross Section Stations

Sta. A = 43.35

Sta. B = 0.097

Sta. C = 0.124

Sta. D = 0.140

Skew Angle: 0

Reach Lengths:

L1 = 310 ft.

L2 = 143 ft.

L3 = 84 ft.

Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	141.7'
Calculated culvert/bridge area (ft^2) by the hydraulic model, if applicable	10.8 ft^2
Total culvert/bridge area (ft^2)	10.8 ft^2

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face (STA 0.124)	1894.3'	1893.2'
Downstream face (STA 0.097)	1893'	1893.0

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1894.3'	1893.2'
Downstream face	1894.3'	1893.2'

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1895.05'	1895.1'
Downstream face	1888.06'	1886.21'

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	—	149	372	526 (≈ 521)

The maximum depth of flow over the roadway/railroad (ft.) ..... 1.85'

Weir length (ft.) ..... 136'

Top Widths

	Floodplain	Floodway
Upstream face	143'	143'
Downstream face	*	6.1'

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	143'	143'
Downstream face	6.0'	*

* Hassayampa River Floodplain

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	—
Other loss coefficients (e.g., bend manhole, etc.)	—
Total loss coefficient	—
Weir coefficient	2.90
Pier coefficient	—
Contraction loss coefficient	0.600
Expansion loss coefficient	0.800

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

   B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

.. If the answer to either 1A or 1B is yes:

A. What is the estimated sediment *(bed material)* load?
_____cfs *(attach gradation curve)*

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Method I is used where encroachment stations are defined by ET and the encroachment elevations are defined in X3 (i.e., ELLEA & ELREA) for effective flow calculations.

Comments *(explain any unusual situations)*:

Attach analysis.

```
*******************************************
*  HEC-2 WATER SURFACE PROFILES           *
*                                         *
*  Version   4.6.2;  May 1991             *
*                                         *
   RUN DATE    12AUG92    TIME   08:25:35 *
*******************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                 X
X     X  X        X     X           X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 12AUG92 08:25:36

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


T1      WICKENBURG ADMS - CONTRACT FCDMC 89-79
T2      BLACK & VEATCH PN 17676:  COE & VAN LOO JN 1197-02
T3      WASH G : UNNAMED WASH # 2        (WG8A)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0      .0044        0         0         0    1875.36      0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1         0        -1         0         0         0        -1         0         0         15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

NC     .045      .070      .035        .1        .3
QT        2       526       526
          HASSAYAMPA RIVER FIS SECTION 45.35(CBA 1988, NO DATUM CHANGE)
          CONFLUENCE WITH WASH G - UNNAMED WASH # 2, AN EAST TRIBUTARY
          NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
X1    45.35        21    1462.4    1652.4         0         0         0
GR   1911.9    1000.0    1915.3    1015.8    1890.4    1057.7    1892.0    1157.6    1876.3    1216.3
GR   1877.0    1282.6    1878.4    1348.3    1876.3    1434.9    1874.3    1462.4    1874.3    1504.9
GR   1875.5    1546.7    1874.4    1580.1    1874.1    1628.7    1873.6    1652.4    1874.3    1675.8
GR   1876.6    1735.4    1876.9    1808.8    1888.3    1842.7    1888.6    1860.9    1918.9    1891.7
GR   1932.9    1912.7

NC     .070      .070      .020        .6        .8
ET                          9.1                                                       964.5     970.6
          DOWNSTREAM BRIDGE SECTION (6' X 5' X 141.67' CBC)
          3' SEDIMENT ON BOTTOM
X1     .097         4     964.6     970.5       220       410       310
X3       10                                                        1894.3    1893.2
GR   1893.0     964.5    1876.8     964.6    1876.8     970.5    1893.0     970.6

ET                         9.11                                                 977.      1120.
SC   1.020      0.40       2.9         0       1.8         6     141.7       8.1      1879    1876.8
          UPSTREAM BRIDGE SECTION
X1   0.124        14     994.6    1000.6       143       143       143
                            2    1880.8    1893.9
X3       10                                                        1894.3    1893.2
BT      -11       978    1894.3               986    1894.3               987    1894.3
BT             994.6    1894.3              1000.6    1894.3              1008    1894.3
BT              1020    1894.3                1030    1894.3              1043    1894.3
```

BT	1078	1894.3	1114	1893.2

	1908.2	965.	1903.4	969.	1894.3	978.	1887.5	986	1886.5	987.
GR	1879.0	994.6	1879.0	1000.6	1886.6	1008.	1887.6	1020.	1888.4	1030.
GR	1889.5	1043.	1891.4	1078.	1893.2	1114.	1908.0	1162.		
NC	.070	.070	.040							
ET			9.1						958.	1112.
X1	0.140	14	983	1005	60	110	84			
GR	1908.1	924.	1900.6	938.	1898.4	955.	1887.7	967.	1882.2	983.
GR	1881.2	986.	1881.4	1000.	1881.4	1002.	1881.7	1005.	1881.7	1030.
GR	1881.4	1057.	1883.5	1079.	1886.6	1093.	1908.1	1139.		
NC	.070	.070	.040	.1	.3					
ET			9.1						965.	1017.
X1	0.181	7	981	992	250	230	216			
GR	1900.1	957.	1886.7	981.	1885.7	983.	1885.7	992.	1886.3	1000.
GR	1886.6	1005.	1900.1	1023.						
NC	.060	.060	.040	.1	.3					
QT	2	420	420							
ET			9.1						988.	1013.
X1	0.257	7	994	1004	401	401	401			
GR	1912.1	963.	1896.5	993.	1895.7	994.	1895.7	1000.	1895.7	1004.
GR	1898.3	1011.	1912.0	1041.						
ET			9.1						991.	1022.
	0.306	9	996	1002	270	290	280			
	1920.1	972.	1911.4	982.	1902.1	995.	1901.4	996.	1901.3	1002.
GR	1902.5	1007.	1903.9	1020.	1909.3	1031.	1919.9	1043.		
ET			9.1						990.	1010.
X1	0.314	8	997	1002	30	42	42			
GR	1927.8	961.	1921.2	982.	1912.2	996.	1911.5	997.	1911.4	1002.
GR	1913.1	1005.	1922.2	1021.	1928.0	1039.				
ET			9.1						989.	1018.
X1	0.403	7	993	1008	470	470	470			
GR	1940.2	984.	1932.5	992.	1931.5	993.	1932.2	1008.	1932.8	1010.
GR	1934.7	1018.	1940.1	1036.						
ET			9.1						985.	1011.
X1	0.498	6	994	1000	502	502	502			
GR	1960.0	959.	1946.6	992.	1945.8	994.	1945.8	1000.	1946.6	1005.
GR	1960.2	1033.								
ET			9.1						980.	1023.
X1	0.593	10	991	1000	510	490	502			
GR	1972.0	938.	1965.8	954.	1964.5	974.	1962.4	987.	1961.4	991
GR	1960.4	995.	1960.9	1000.	1961.3	1003.	1962.5	1019.	1972.2	1056.

QT	2	360	360							
ET			9.1						978.	1011.
X1	0.688	13	988	1000	490	502	502			
GR	2000.0	810.	1992.1	829.	1983.4	867.	1979.7	901.	1978.4	937.
GR	1977.4	964.	1973.9	982.	1972.7	988.	1971.5	994.	1972.2	1000.
GR	1973.1	1008.	1989.1	1038.	2000.0	1084.				
NC	.060	.060	.035							
ET			9.1						970.	1021.
X1	0.784	11	983	1000	507	507	507			
GR	2000.0	948.	1986.0	964.	1983.3	983.	1982.8	998.	1983.1	1000.
GR	1983.8	1006.	1984.9	1015.	1985.9	1033.	1988.4	1045.	1991.5	1080.
GR	1996.0	1109.								
QT	2	290	290							
ET			9.1						966.	1021.
X1	0.879	18	972	1000	500	502	502			
GR	2000.0	836.	1998.7	840.	2000.1	854.	2000.3	871.	1997.4	887.
GR	1995.3	904.	1994.3	938.	1993.7	965.	1992.7	972.	1991.7	979.
GR	1992.0	994.	1992.3	1000.	1992.4	1005.	1993.7	1025.	1994.5	1055.
GR	1995.6	1078.	1996.7	1105.	1999.7	1125.				
QT	2	150	150							
ET			9.1						952.	1009.
	0.960	12	987	1005	438	438	428			
	2012.0	918.	2003.7	934.	2001.2	958.	2001.1	987.	2000.3	997.
GR	2000.7	1000.	2001.3	1005.	2001.8	1009.	2003.2	1024.	2004.6	1050.
GR	2005.0	1073.	2012.0	1100.						
ET			9.1						973.	1011.
X1	1.030	14	979	1002	370	370	370			
GR	2020.1	828.	2018.5	830.	2014.2	845.	2013.3	879.	2012.0	906.
GR	2012.0	942.	2010.1	970.	2008.4	979.	2008.4	991.	2008.4	1000.
GR	2008.4	1002.	2009.2	1010.	2012.5	1021.	2019.9	1042.		
ET			9.1						984.	1026.
X1	1.131	10	994	1003	533	533	533			
GR	2025.9	950.	2024.6	966.	2021.1	988.	2020.2	994.	2020.2	1000.
GR	2020.2	1003.	2021.5	1022.	2023.3	1053.	2025.5	1081.	2028.1	1103.

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 45.350

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION 45.35(CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH G - UNNAMED WASH # 2, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

45.350	1.75	1875.35	1874.90	1875.36	1875.44	.10	.00	.00	1874.30
526.0	10.7	444.5	70.8	7.5	165.7	46.8	.0	.0	1873.60
.00	1.43	2.68	1.51	.045	.035	.070	.000	1873.60	1448.03
.004460	0.	0.	0.	0	19	3	.00	244.75	1702.88

FLOW DISTRIBUTION FOR SECNO= 45.35 CWSEL= 1875.35

A=	1448.	1462.	1652.	1676.	1703.
PER Q=	2.0	84.5	11.0	2.5
AREA=	7.5	165.7	32.6	14.2
VEL=	1.4	2.7	1.8	.9
DEPTH=	.5	.9	1.4	.5

CCHV= .600 CEHV= .800
*SECNO .097

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1894.30 ELREA= 1893.20

DOWNSTREAM BRIDGE SECTION (6' X 5' X 141.67' CBC)
3' SEDIMENT ON BOTTOM

.097	6.26	1883.06	1883.06	.00	1886.21	3.15	1.18	2.44	1876.80
526.0	.0	526.0	.0	.0	36.9	.0	1.0	.9	1876.80
.01	.00	14.24	.00	.000	.020	.000	.000	1876.80	964.60
.003186	220.	310.	410.	0	20	0	.00	5.90	970.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .10 CWSEL= 1883.06

STA=	965.	971.
PER Q=	100.0	
AREA=	36.9	
VEL=	14.2	
DEPTH=	6.3	

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.020	.40	2.90	.00	1.80	6.00	141.70	8	1	1879.00	1876.80

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130, EGIC= 1971.77..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 2034.04 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
SECNO .124

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 1895.10

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 10.40

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1971.77	2034.04	8.89	372.	149.	2.566	10.8	1893.90	136.

UPSTREAM BRIDGE SECTION

.124	16.05	1895.05	.00	.00	1895.10	.05	8.89	.00	1879.00
526.0	57.0	247.1	221.9	135.1	96.3	601.7	2.4	1.2	1879.00
.03	.42	2.57	.37	.070	.020	.070	.000	1879.00	977.26
.000029	143.	143.	143.	2	0	0	.00	142.75	1120.01

FLOW DISTRIBUTION FOR SECNO= .12 CWSEL= 1895.05

STA=	977.	986.	987.	995.	1001.	1008.	1020.	1030.	1043.	1078.	1114.	1120.
PER Q=	1.6	.6	8.7	47.0	8.3	8.3	5.7	5.8	9.8	4.3	.1	
AREA=	33.5	8.1	93.5	96.3	90.7	95.4	70.5	79.3	161.1	99.1	5.6	
VEL=	.2	.4	.5	2.6	.5	.5	.4	.4	.3	.2	.1	
DEPTH=	3.8	8.1	12.3	16.1	12.3	8.0	7.1	6.1	4.6	2.8	.9	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .140

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.22

.140	13.93	1895.13	1882.81	.00	1895.13	.00	.00	.03	1882.20
526.0	41.4	156.3	328.4	193.8	302.1	1200.3	5.3	1.5	1881.70
.11	.21	.52	.27	.070	.040	.070	.000	1881.20	958.67
.000006	60.	84.	110.	2	24	0	.00	152.58	1111.25

FLOW DISTRIBUTION FOR SECNO= .14 CWSEL= 1895.13

STA=	959.	967.	983.	1005.	1030.	1057.	1079.	1093.	1111.
PER Q=	.6	7.3	29.7	18.7	20.6	14.9	6.4	1.9	
AREA=	31.0	162.9	302.1	335.7	366.6	278.9	141.1	77.8	
VEL=	.1	.2	.5	.3	.3	.3	.2	.1	
DEPTH=	3.7	10.2	13.7	13.4	13.6	12.7	10.1	4.3	

CCHV= .100 CEHV= .300
*SECNO .181

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .15

.181	9.39	1895.09	1888.68	.00	1895.15	.06	.00	.02	1886.70
526.0	51.3	267.2	207.6	63.0	102.3	164.0	10.6	2.1	1885.70
.14	.81	2.61	1.27	.070	.040	.070	.000	1885.70	965.97
.000260	250.	216.	230.	2	17	0	.00	50.35	1016.32

FLOW DISTRIBUTION FOR SECNO= .18 CWSEL= 1895.09

STA=	966.	981.	992.	1000.	1005.	1016.
PER Q=	9.7	50.8	20.6	11.8	7.1	
AREA=	63.0	102.3	72.7	43.2	48.0	
VEL=	.8	2.6	1.5	1.4	.8	
DEPTH=	4.2	9.3	9.1	8.6	4.2	

CCHV= .100 CEHV= .300
*SECNO .257

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.257	3.29	1898.99	1898.99	.00	1900.21	1.22	.27	.35	1895.70
420.0	33.5	323.3	63.1	8.8	32.9	14.4	12.4	2.4	1895.70
.16	3.80	9.84	4.38	.060	.040	.060	.000	1895.70	988.22
.014359	401.	401.	401.	0	22	0	.00	24.28	1012.50

FLOW DISTRIBUTION FOR SECNO= .26 CWSEL= 1898.99

STA=	988.	993.	994.	1004.	1011.	1013.
PER Q=	4.5	3.5	77.0	14.9	.2	
AREA=	5.9	2.9	32.9	13.9	.5	
VEL=	3.2	5.1	9.8	4.5	1.4	
DEPTH=	1.2	2.9	3.3	2.0	.3	

*SECNO .306
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.306	3.48	1904.78	1904.78	.00	1905.80	1.03	4.17	.02	1901.40
420.0	33.1	214.0	172.9	8.0	20.6	35.6	12.8	2.6	1901.30
.17	4.12	10.41	4.85	.060	.040	.060	.000	1901.30	991.26
.015216	270.	280.	290.	0	8	0	.00	30.52	1021.78

FLOW DISTRIBUTION FOR SECNO= .31 CWSEL= 1904.78

STA=	991.	995.	996.	1002.	1007.	1020.	1022.
PER Q=	3.9	4.0	51.0	20.8	20.1	.3	
AREA=	5.0	3.0	20.6	14.4	20.5	.8	
VEL=	3.2	5.6	10.4	6.1	4.1	1.6	
DEPTH=	1.3	3.0	3.4	2.9	1.6	.4	

*SECNO .314
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.314	4.47	1915.87	1915.87	.00	1917.37	1.50	.59	.14	1911.50
420.0	67.2	261.9	90.9	14.5	22.1	17.6	12.8	2.6	1911.40
.17	4.63	11.84	5.15	.060	.040	.060	.000	1911.40	990.28
.013984	30.	42.	42.	0	11	0	.00	19.59	1009.88

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .31 CWSEL= 1915.87

STA=	990.	996.	997.	1002.	1005.	1010.
PER Q=	9.8	6.2	62.3	16.3	5.3	
AREA=	10.5	4.0	22.1	10.9	6.8	
VEL=	3.9	6.5	11.8	6.3	3.3	
DEPTH=	1.8	4.0	4.4	3.6	1.4	

*SECNO .403
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.403	3.04	1934.54	1934.54	.00	1935.67	1.14	7.01	.04	1931.50
420.0	17.2	365.2	37.6	4.7	40.3	10.4	13.4	2.9	1932.20
.19	3.67	9.06	3.61	.060	.040	.060	.000	1931.50	989.88
.015953	470.	470.	470.	0	19	0	.00	27.43	1017.31

FLOW DISTRIBUTION FOR SECNO= .40 CWSEL= 1934.54

STA=	990.	992.	993.	1008.	1010.	1017.
PER Q=	1.3	2.8	86.9	4.7	4.2	
AREA=	2.2	2.5	40.3	4.1	6.3	
VEL=	2.5	4.6	9.1	4.9	2.8	
DEPTH=	1.0	2.5	2.7	2.0	.9	

*SECNO .498
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.498	3.42	1949.22	1949.22	.00	1950.42	1.21	8.23	.02	1945.80
420.0	69.5	224.6	125.9	14.5	20.5	22.2	14.1	3.2	1945.80
.20	4.80	10.95	5.68	.060	.040	.060	.000	1945.80	985.55
.016872	502.	502.	502.	0	8	0	.00	24.84	1010.39

FLOW DISTRIBUTION FOR SECNO= .50 CWSEL= 1949.22

STA=	986.	992.	994.	1000.	1005.	1010.
PER Q=	7.4	9.2	53.5	23.9	6.0	
AREA=	8.4	6.0	20.5	15.1	7.1	
VEL=	3.7	6.4	11.0	6.7	3.6	
DEPTH=	1.3	3.0	3.4	3.0	1.3	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .593
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.593	3.13	1963.53	1963.53	.00	1964.36	.83	8.17	.04	1961.40
420.0	35.8	227.2	157.0	10.4	24.9	35.3	14.8	3.5	1960.90
.22	3.43	9.13	4.44	.060	.040	.060	.000	1960.40	980.02
.015892	510.	502.	490.	0	11	0	.00	42.89	1022.92

FLOW DISTRIBUTION FOR SECNO= .59 CWSEL= 1963.53

STA=	980.	987.	991.	1000.	1003.	1019.	1023.
PER Q=	2.0	6.6	54.1	9.7	26.7	.9	
AREA=	3.9	6.5	24.9	7.3	26.0	2.0	
VEL=	2.1	4.2	9.1	5.6	4.3	2.0	
DEPTH=	.6	1.6	2.8	2.4	1.6	.5	

*SECNO .688
7185 MINIMUM SPECIFIC ENERGY
[illegible]0 CRITICAL DEPTH ASSUMED

.688	3.01	1974.51	1974.51	.00	1975.40	.89	7.89	.02	1972.70
360.0	26.5	260.0	73.5	8.2	30.4	16.7	15.5	4.0	1972.20
.24	3.22	8.55	4.39	.060	.040	.060	.000	1971.50	978.86
.015586	490.	502.	502.	0	8	0	.00	31.78	1010.64

FLOW DISTRIBUTION FOR SECNO= .69 CWSEL= 1974.51

STA=	979.	982.	988.	1000.	1008.	1011.
PER Q=	.4	7.0	72.2	19.2	1.2	
AREA=	1.0	7.3	30.4	14.9	1.9	
VEL=	1.4	3.5	8.5	4.7	2.3	
DEPTH=	.3	1.2	2.5	1.9	.7	

*SECNO .784
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.784	2.32	1985.12	1985.12	.00	1985.86	.74	7.05	.02	1983.30
360.0	30.3	274.3	55.5	11.7	35.4	17.5	16.2	4.4	1983.10
.26	2.59	7.74	3.18	.060	.035	.060	.000	1982.80	970.17
.012496	507.	507.	507.	0	15	0	.00	48.86	1019.02

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .78 CWSEL= 1985.12

STA=	970.	983.	1000.	1006.	1015.	1019.
PER Q=	8.4	76.2	10.8	4.5	.1	
AREA=	11.7	35.4	10.0	7.0	.4	
VEL=	2.6	7.7	3.9	2.3	.6	
DEPTH=	.9	2.1	1.7	.8	.1	

*SECNO .879
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.879	1.72	1993.42	1993.42	.00	1994.00	.57	6.68	.02	1992.70
290.0	2.7	255.4	31.9	1.8	39.7	13.4	16.9	5.0	1992.30
.29	1.50	6.43	2.38	.060	.035	.060	.000	1991.70	966.95
.014421	500.	502.	502.	0	15	0	.00	53.76	1020.71

FLOW DISTRIBUTION FOR SECNO= .88 CWSEL= 1993.42

STA=	967.	972.	1000.	1005.	1021.
PER Q=	.9	88.1	5.7	5.2	
AREA=	1.8	39.7	5.4	8.0	
VEL=	1.5	6.4	3.1	1.9	
DEPTH=	.4	1.4	1.1	.5	

*SECNO .960
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.960	1.48	2001.78	2001.78	.00	2002.14	.36	6.49	.02	2001.10
150.0	45.4	103.4	1.2	20.0	18.6	.9	17.4	5.6	2001.30
.31	2.27	5.56	1.23	.060	.035	.060	.000	2000.30	952.39
.016504	438.	428.	438.	0	15	0	.00	56.48	1008.87

FLOW DISTRIBUTION FOR SECNO= .96 CWSEL= 2001.78

STA=	952.	958.	987.	1005.	1009.
PER Q=	1.5	28.8	68.9	.8	
AREA=	1.6	18.4	18.6	.9	
VEL=	1.4	2.3	5.6	1.2	
DEPTH=	.3	.6	1.0	.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.030
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.030	1.03	2009.43	2009.43	.00	2009.87	.44	6.14	.02	2008.40
150.0	5.7	132.5	11.8	2.8	23.7	5.1	17.7	6.0	2008.40
.33	2.03	5.59	2.30	.060	.035	.060	.000	2008.40	973.55
.016684	370.	370.	370.	0	19	0	.00	37.22	1010.77

FLOW DISTRIBUTION FOR SECNO= 1.03 CWSEL= 2009.43

STA=	974.	979.	1002.	1010.	1011.
PER Q=	3.8	88.3	7.9	.0	
AREA=	2.8	23.7	5.0	.1	
VEL=	2.0	5.6	2.3	.0	
DEPTH=	.5	1.0	.6	.1	

*SECNO 1.131
7185 MINIMUM SPECIFIC ENERGY
[illegible]20 CRITICAL DEPTH ASSUMED

1.131	1.48	2021.68	2021.68	.00	2022.13	.44	8.22	.00	2020.20
150.0	20.0	88.3	41.7	7.3	13.4	16.1	18.1	6.5	2020.20
.36	2.75	6.61	2.58	.060	.035	.060	.000	2020.20	984.33
.014314	533.	533.	533.	0	11	0	.00	40.84	1025.17

FLOW DISTRIBUTION FOR SECNO= 1.13 CWSEL= 2021.68

STA=	984.	988.	994.	1003.	1022.	1025.
PER Q=	.9	12.4	58.8	27.7	.1	
AREA=	1.1	6.2	13.4	15.8	.3	
VEL=	1.3	3.0	6.6	2.6	.6	
DEPTH=	.3	1.0	1.5	.8	.1	

FLOODWAY DETERMINATION

T2

T3 WASH G: UNNAMED WASH # 2

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	0	0	0	0	1875.36	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	-1	0	0	0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS
0

CCHV= .100 CEHV= .300
*SECNO 45.350

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION 45.35(CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH G - UNNAMED WASH # 2, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

45.350	1.76	1875.36	1874.90	1875.36	1875.46	.10	.00	.00	1874.30
526.0	10.9	444.5	70.6	7.7	168.3	47.6	.0	.0	1873.60
.00	1.41	2.64	1.49	.045	.035	.070	.000	1873.60	1447.83
.004257	0.	0.	0.	0	18	0	.00	246.31	1703.27

HV= .600 CEHV= .800
SECNO .097

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 964.5 970.6 TYPE= 1 TARGET= 6.100

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE, ELLEA= 1894.30 ELREA= 1893.20

DOWNSTREAM BRIDGE SECTION (6' X 5' X 141.67' CBC)
3' SEDIMENT ON BOTTOM

.097	6.26	1883.06	1883.06	1883.06	1886.21	3.15	1.16	2.44	1876.80
526.0	.0	526.0	.0	.0	36.9	.0	1.0	.9	1876.80
.01	.00	14.25	.00	.000	.020	.000	.000	1876.80	964.60
.003189	220.	310.	410.	0	20	0	.00	5.90	970.50

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	1	.020	.40	2.90	.00	1.80	6.00	141.70	8	1	1879.00	1876.80

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

5130, EGIC= 1971.77..MAY BE TOO LARGE IF INLET CONTROLS.
5135, EGOC= 2034.04 ..MAY BE TOO LARGE IF OUTLET CONTROLS.
*SECNO .124
BTCARD, BRIDGE STENCL= 977.00 STENCR= 1120.00

SPECIAL CULVERT OUTLET CONTROL + WEIR FLOW EG = 1895.10

3301 HV CHANGED MORE THAN HVINS

2 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 10.41

SPECIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1971.77	2034.04	8.89	372.	149.	2.566	10.8	1893.90	136.

3470 ENCROACHMENT STATIONS= 977.0 1120.0 TYPE= 1 TARGET= 143.000
UPSTREAM BRIDGE SECTION

.124	16.05	1895.05	.00	1895.05	1895.10	.05	8.89	.00	1879.00
526.0	57.0	247.1	221.9	135.1	96.3	601.7	2.4	1.2	1879.00
.03	.42	2.57	.37	.070	.020	.070	.000	1879.00	977.26
.000029	143.	143.	143.	2	0	0	.00	142.74	1120.00

*SECNO .140

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.22

3470 ENCROACHMENT STATIONS= 958.0 1112.0 TYPE= 1 TARGET= 154.000

.140	13.93	1895.13	1882.81	1895.13	1895.13	.00	.00	.03	1882.20
526.0	41.4	156.3	328.4	193.8	302.1	1200.3	5.3	1.5	1881.70
.11	.21	.52	.27	.070	.040	.070	.000	1881.20	958.67
000006	60.	84.	110.	2	24	0	.00	152.58	1111.25

CCHV= .100 CEHV= .300

```
 SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
 Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
 TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
 SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


*SECNO  .181

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .15


3470 ENCROACHMENT STATIONS=      965.0    1017.0  TYPE=      1  TARGET=       52.000
      .181      9.39   1895.09   1888.68   1895.09   1895.15       .06       .00       .02   1886.70
     526.0      51.3     267.2     207.6      63.0     102.3     164.0      10.6       2.1   1885.70
       .14       .81      2.61      1.27      .070      .040      .070      .000   1885.70    965.97
   .000260      250.      216.      230.         2        17         0       .00     50.34   1016.32


CCHV=     .100 CEHV=     .300
*SECNO  .257

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      988.0    1013.0  TYPE=      1  TARGET=       25.000
      .257      3.29   1898.99   1898.99   1898.99   1900.21      1.21       .27       .34   1895.70
     420.0      33.6     323.2      63.2       8.9      32.9      14.5      12.4       2.4   1895.70
       .16      3.79      9.82      4.37      .060      .040      .060      .000   1895.70    988.21
   .014257      401.      401.      401.         0        22         0       .00     24.31   1012.51


*SECNO  .306
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      991.0    1022.0  TYPE=      1  TARGET=       31.000
      .306      3.48   1904.78   1904.78   1904.78   1905.80      1.03      4.15       .02   1901.40
     420.0      33.1     214.0     172.9       8.0      20.6      35.7      12.8       2.6   1901.30
       .17      4.12     10.41      4.85      .060      .040      .060      .000   1901.30    991.26
   .015201      270.      280.      290.         0         8         0       .00     30.53   1021.78


*SECNO  .314
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      990.0    1010.0  TYPE=      1  TARGET=       20.000
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.314	4.50	1915.90	1915.90	1915.87	1917.37	1.47	.58	.13	1911.50
420.0	67.5	261.3	91.2	14.7	22.3	17.9	12.8	2.6	1911.40
.17	4.59	11.73	5.11	.060	.040	.060	.000	1911.40	990.24
.013615	30.	42.	42.	0	11	0	.00	19.69	1009.93

*SECNO .403
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 989.0 1018.0 TYPE= 1 TARGET= 29.000

.403	3.04	1934.54	1934.54	1934.54	1935.67	1.13	6.89	.03	1931.50
420.0	17.2	365.1	37.7	4.7	40.4	10.5	13.4	2.9	1932.20
.19	3.66	9.04	3.60	.060	.040	.060	.000	1931.50	989.88
.015843	470.	470.	470.	0	14	0	.00	27.45	1017.33

*SECNO .498
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 985.0 1011.0 TYPE= 1 TARGET= 26.000

.498	3.41	1949.21	1949.21	1949.22	1950.42	1.21	8.23	.02	1945.80
420.0	69.4	224.7	125.8	14.4	20.5	22.1	14.1	3.2	1945.80
.20	4.81	10.98	5.70	.060	.040	.060	.000	1945.80	985.57
.016986	502.	502.	502.	0	8	0	.00	24.81	1010.38

*SECNO .593
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 980.0 1023.0 TYPE= 1 TARGET= 43.000

.593	3.14	1963.54	1963.54	1963.53	1964.36	.82	8.10	.04	1961.40
420.0	36.1	226.5	157.3	10.6	25.0	35.6	14.8	3.6	1960.90
.22	3.41	9.05	4.41	.060	.040	.060	.000	1960.40	980.00
.015532	510.	502.	490.	0	11	0	.00	42.97	1022.97

*SECNO .688
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 978.0 1011.0 TYPE= 1 TARGET= 33.000

.688	3.01	1974.51	1974.51	1974.51	1975.40	.89	7.81	.02	1972.70
360.0	26.4	260.1	73.5	8.2	30.4	16.7	15.6	4.0	1972.20
.24	3.23	8.56	4.39	.060	.040	.060	.000	1971.50	978.87
.015640	490.	502.	502.	0	8	0	.00	31.76	1010.64

*SECNO .784
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 970.0 1021.0 TYPE= 1 TARGET= 51.000

.784	2.35	1985.15	1985.15	1985.12	1985.86	.71	6.85	.02	1983.30
360.0	30.8	273.0	56.2	12.1	36.0	18.0	16.3	4.5	1983.10
.26	2.55	7.59	3.11	.060	.035	.060	.000	1982.80	970.00
.011789	507.	507.	507.	0	15	0	.00	49.58	1019.58

ECNO .879
5 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 966.0 1021.0 TYPE= 1 TARGET= 55.000

.879	1.74	1993.44	1993.44	1993.42	1994.00	.56	6.36	.01	1992.70
290.0	2.8	254.9	32.2	1.9	40.1	13.7	17.0	5.1	1992.30
.29	1.49	6.35	2.36	.060	.035	.060	.000	1991.70	966.85
.013896	500.	502.	502.	0	19	0	.00	54.08	1020.93

*SECNO .960
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 952.0 1009.0 TYPE= 1 TARGET= 57.000

.960	1.49	2001.79	2001.79	2001.78	2002.14	.35	6.31	.02	2001.10
150.0	45.5	103.3	1.2	20.1	18.6	.9	17.4	5.6	2001.30
.31	2.27	5.54	1.23	.060	.035	.060	.000	2000.30	952.38
.016385	438.	428.	438.	0	15	0	.00	56.51	1008.88

*SECNO 1.030
7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 973.0 1011.0 TYPE= 1 TARGET= 38.000

1.030	1.03	2009.43	2009.43	2009.43	2009.87	.44	6.12	.03	2008.40
150.0	5.7	132.5	11.8	2.8	23.7	5.1	17.7	6.0	2008.40
.33	2.03	5.59	2.30	.060	.035	.060	.000	2008.40	973.55
.016684	370.	370.	370.	0	19	0	.00	37.22	1010.77

*SECNO 1.131
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 984.0 1026.0 TYPE= 1 TARGET= 42.000

1.131	1.48	2021.68	2021.68	2021.68	2022.13	.44	8.22	.00	2020.20
150.0	20.0	88.2	41.7	7.3	13.4	16.1	18.2	6.5	2020.20
.36	2.75	6.61	2.58	.060	.035	.060	.000	2020.20	984.33
.014299	533.	533.	533.	0	11	0	.00	40.84	1025.17

THIS RUN EXECUTED 12AUG92 08:25:41

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

WASH G : UNNAMED WASH #

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	45.350	.00	.00	.00	1873.60	526.00	1875.35	1874.90	1875.44	44.60	2.68	219.96	78.76
	45.350	.00	.00	.00	1873.60	526.00	1875.36	1874.90	1875.46	42.57	2.64	223.61	80.62
*	.097	310.00	.00	.00	1876.80	526.00	1883.06	1883.06	1886.21	31.86	14.24	36.93	93.19
*	.097	310.00	.00	.00	1876.80	526.00	1883.06	1883.06	1886.21	31.89	14.25	36.92	93.14
	.124	143.00	1893.90	1880.80	1879.00	526.00	1895.05	.00	1895.10	.29	2.57	833.12	969.46
*	.124	143.00	1893.90	1880.80	1879.00	526.00	1895.05	.00	1895.10	.29	2.57	833.12	969.46
*	.140	84.00	.00	.00	1881.20	526.00	1895.13	1882.81	1895.13	.06	.52	1696.18	2154.65
*	.140	84.00	.00	.00	1881.20	526.00	1895.13	1882.81	1895.13	.06	.52	1696.18	2154.64
*	.181	216.00	.00	.00	1885.70	526.00	1895.09	1888.68	1895.15	2.60	2.61	329.28	326.20
*	.181	216.00	.00	.00	1885.70	526.00	1895.09	1888.68	1895.15	2.60	2.61	329.28	326.20
*	.257	401.00	.00	.00	1895.70	420.00	1898.99	1898.99	1900.21	143.59	9.84	56.10	35.05
*	.257	401.00	.00	.00	1895.70	420.00	1898.99	1898.99	1900.21	142.57	9.82	56.25	35.18
*	.306	280.00	.00	.00	1901.30	420.00	1904.78	1904.78	1905.80	152.16	10.41	64.22	34.05
*	.306	280.00	.00	.00	1901.30	420.00	1904.78	1904.78	1905.80	152.01	10.41	64.25	34.06
*	.314	42.00	.00	.00	1911.40	420.00	1915.87	1915.87	1917.37	139.84	11.84	54.28	35.52
*	.314	42.00	.00	.00	1911.40	420.00	1915.90	1915.90	1917.37	136.15	11.73	54.86	36.00
*	.403	470.00	.00	.00	1931.50	420.00	1934.54	1934.54	1935.67	159.53	9.06	55.41	33.25
*	.403	470.00	.00	.00	1931.50	420.00	1934.54	1934.54	1935.67	158.43	9.04	55.55	33.37
*	.498	502.00	.00	.00	1945.80	420.00	1949.22	1949.22	1950.42	168.72	10.95	57.14	32.33
*	.498	502.00	.00	.00	1945.80	420.00	1949.21	1949.21	1950.42	169.86	10.98	57.00	32.23
*	.593	502.00	.00	.00	1960.40	420.00	1963.53	1963.53	1964.36	158.92	9.13	70.65	33.32
	.593	502.00	.00	.00	1960.40	420.00	1963.54	1963.54	1964.36	155.32	9.05	71.26	33.70

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	.688	502.00	.00	.00	1971.50	360.00	1974.51	1974.51	1975.40	155.86	8.55	55.38	28.84
*	.688	502.00	.00	.00	1971.50	360.00	1974.51	1974.51	1975.40	156.40	8.56	55.31	28.79
*	.784	507.00	.00	.00	1982.80	360.00	1985.12	1985.12	1985.86	124.96	7.74	64.60	32.20
*	.784	507.00	.00	.00	1982.80	360.00	1985.15	1985.15	1985.86	117.89	7.59	66.12	33.16
*	.879	502.00	.00	.00	1991.70	290.00	1993.42	1993.42	1994.00	144.21	6.43	54.93	24.15
*	.879	502.00	.00	.00	1991.70	290.00	1993.44	1993.44	1994.00	138.96	6.35	55.71	24.60
*	.960	428.00	.00	.00	2000.30	150.00	2001.78	2001.78	2002.14	165.04	5.56	39.56	11.68
*	.960	428.00	.00	.00	2000.30	150.00	2001.79	2001.79	2002.14	163.85	5.54	39.67	11.72
*	1.030	370.00	.00	.00	2008.40	150.00	2009.43	2009.43	2009.87	166.84	5.59	31.62	11.61
*	1.030	370.00	.00	.00	2008.40	150.00	2009.43	2009.43	2009.87	166.84	5.59	31.62	11.61
*	1.131	533.00	.00	.00	2020.20	150.00	2021.68	2021.68	2022.13	143.14	6.61	36.76	12.54
*	1.131	533.00	.00	.00	2020.20	150.00	2021.68	2021.68	2022.13	142.99	6.61	36.78	12.54

SH G : UNNAMED WASH #

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	45.350	526.00	1875.35	.00	.00	-.01	244.75	.00
	45.350	526.00	1875.36	.01	.00	.00	246.31	.00
*	.097	526.00	1883.06	.00	7.71	.00	5.90	310.00
*	.097	526.00	1883.06	.00	7.70	.00	5.90	310.00
*	.124	526.00	1895.05	.00	11.99	.00	142.75	143.00
*	.124	526.00	1895.05	.00	12.00	.00	142.74	143.00
*	.140	526.00	1895.13	.00	.08	.00	152.58	84.00
*	.140	526.00	1895.13	.00	.08	.00	152.58	84.00
*	.181	526.00	1895.09	.00	-.04	.00	50.35	216.00
*	.181	526.00	1895.09	.00	-.04	.00	50.34	216.00
*	.257	420.00	1898.99	.00	3.90	.00	24.28	401.00
*	.257	420.00	1898.99	.01	3.90	.01	24.31	401.00
	.306	420.00	1904.78	.00	5.79	.00	30.52	280.00
	.306	420.00	1904.78	.00	5.78	.00	30.53	280.00
*	.314	420.00	1915.87	.00	11.10	.00	19.59	42.00
*	.314	420.00	1915.90	.03	11.13	.03	19.69	42.00
*	.403	420.00	1934.54	.00	18.66	.00	27.43	470.00
*	.403	420.00	1934.54	.01	18.64	.01	27.45	470.00
*	.498	420.00	1949.22	.00	14.68	.00	24.84	502.00
*	.498	420.00	1949.21	-.01	14.67	-.01	24.81	502.00
*	.593	420.00	1963.53	.00	14.31	.00	42.89	502.00
*	.593	420.00	1963.54	.01	14.33	.01	42.97	502.00
*	.688	360.00	1974.51	.00	10.98	.00	31.78	502.00
*	.688	360.00	1974.51	.00	10.97	.00	31.76	502.00
*	.784	360.00	1985.12	.00	10.61	.00	48.86	507.00
*	.784	360.00	1985.15	.03	10.65	.03	49.58	507.00
*	.879	290.00	1993.42	.00	8.30	.00	53.76	502.00
*	.879	290.00	1993.44	.01	8.28	.01	54.08	502.00
*	.960	150.00	2001.78	.00	8.36	.00	56.48	428.00
*	.960	150.00	2001.79	.00	8.35	.00	56.51	428.00
*	1.030	150.00	2009.43	.00	7.65	.00	37.22	370.00
*	1.030	150.00	2009.43	.00	7.64	.00	37.22	370.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	1.131	150.00	2021.68	.00	12.25	.00	40.84	533.00
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SUMMARY OF ERRORS AND SPECIAL NOTES

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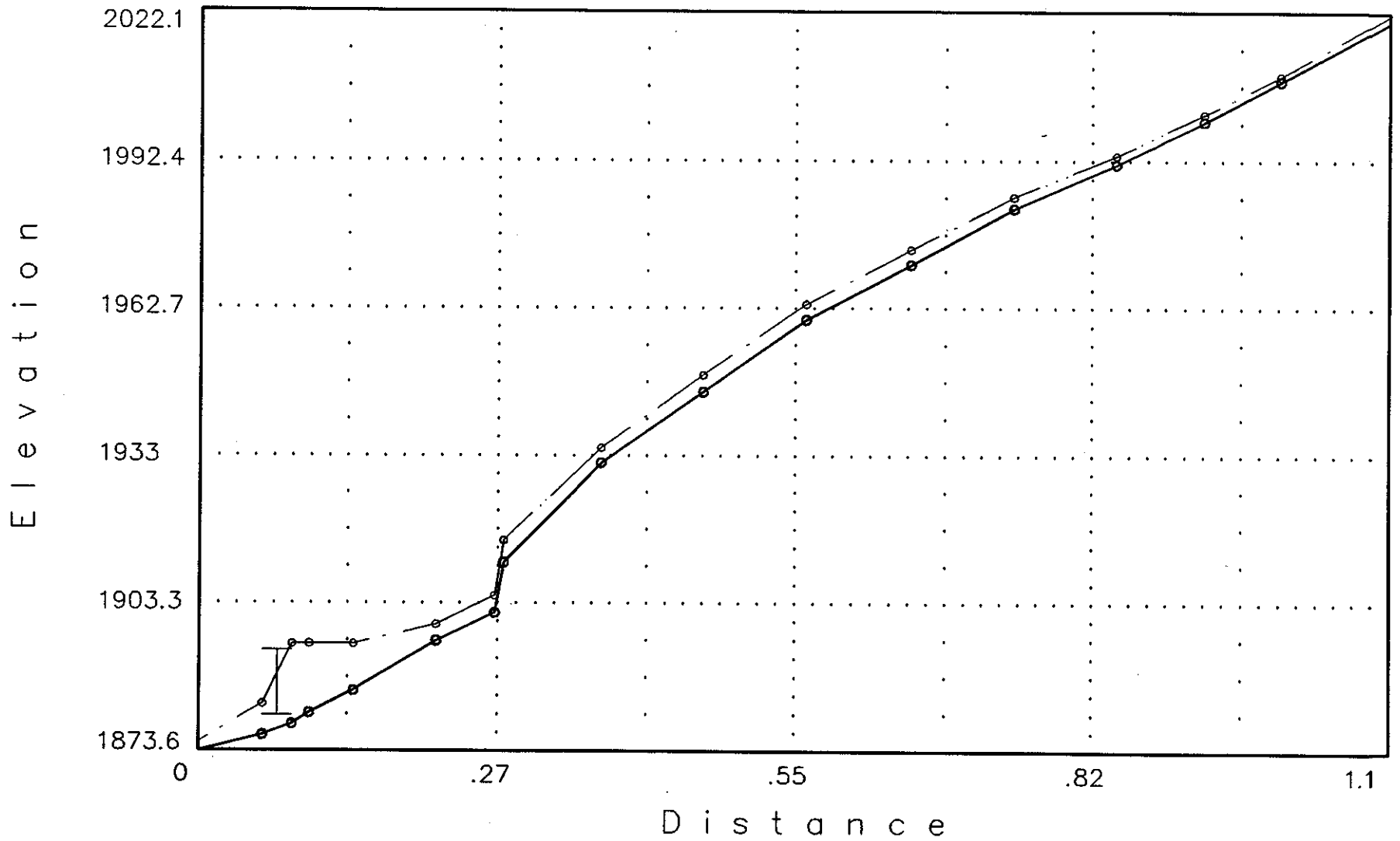
FLOODWAY DATA, WASH G : UNNAMED WASH #
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
45.350	255.	224.	2.4	1875.3	1875.3	.0
.097	6.	37.	14.2	1883.1	1883.1	.0
.124	143.	833.	.6	1895.1	1895.1	.0
.140	153.	1696.	.3	1895.1	1895.1	.0
.181	50.	329.	1.6	1895.1	1895.1	.0
.257	24.	56.	7.5	1899.0	1899.0	.0
.306	31.	64.	6.5	1904.8	1904.8	.0
.314	20.	55.	7.7	1915.9	1915.9	.0
.403	27.	56.	7.6	1934.5	1934.5	.0
.498	25.	57.	7.4	1949.2	1949.2	.0
.593	43.	71.	5.9	1963.5	1963.5	.0
.688	32.	55.	6.5	1974.5	1974.5	.0
.784	50.	66.	5.4	1985.1	1985.1	.0
.879	54.	56.	5.2	1993.4	1993.4	.0
.960	57.	40.	3.8	2001.8	2001.8	.0
1.030	37.	32.	4.7	2009.4	2009.4	.0
1.131	41.	37.	4.1	2021.7	2021.7	.0

<<<<<< WS ELEV. & BED ELEV. vs DISTANCE(mi) >>>>>>

Profile No. 1
Profile No. 2

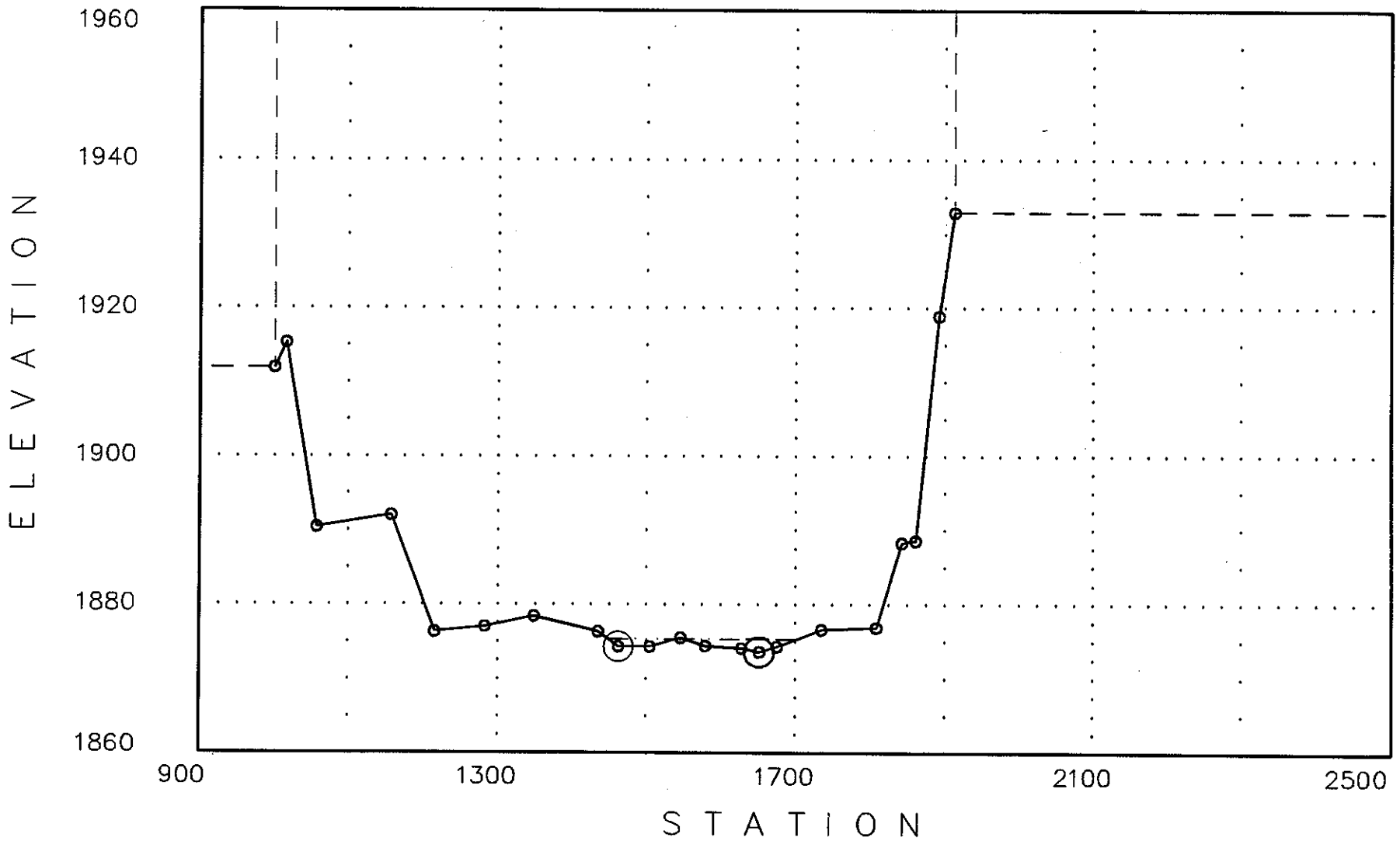
(FN=washg.o)



<<<<<< Cross Section: 45.35: (FN = washg.o) >>>>>>

Q1= 526 WS1= 1875.35
Q2= 526 WS2= 1875.36

Manning-n's: n-lob = .045 n-ch = .035 n-rob = .07

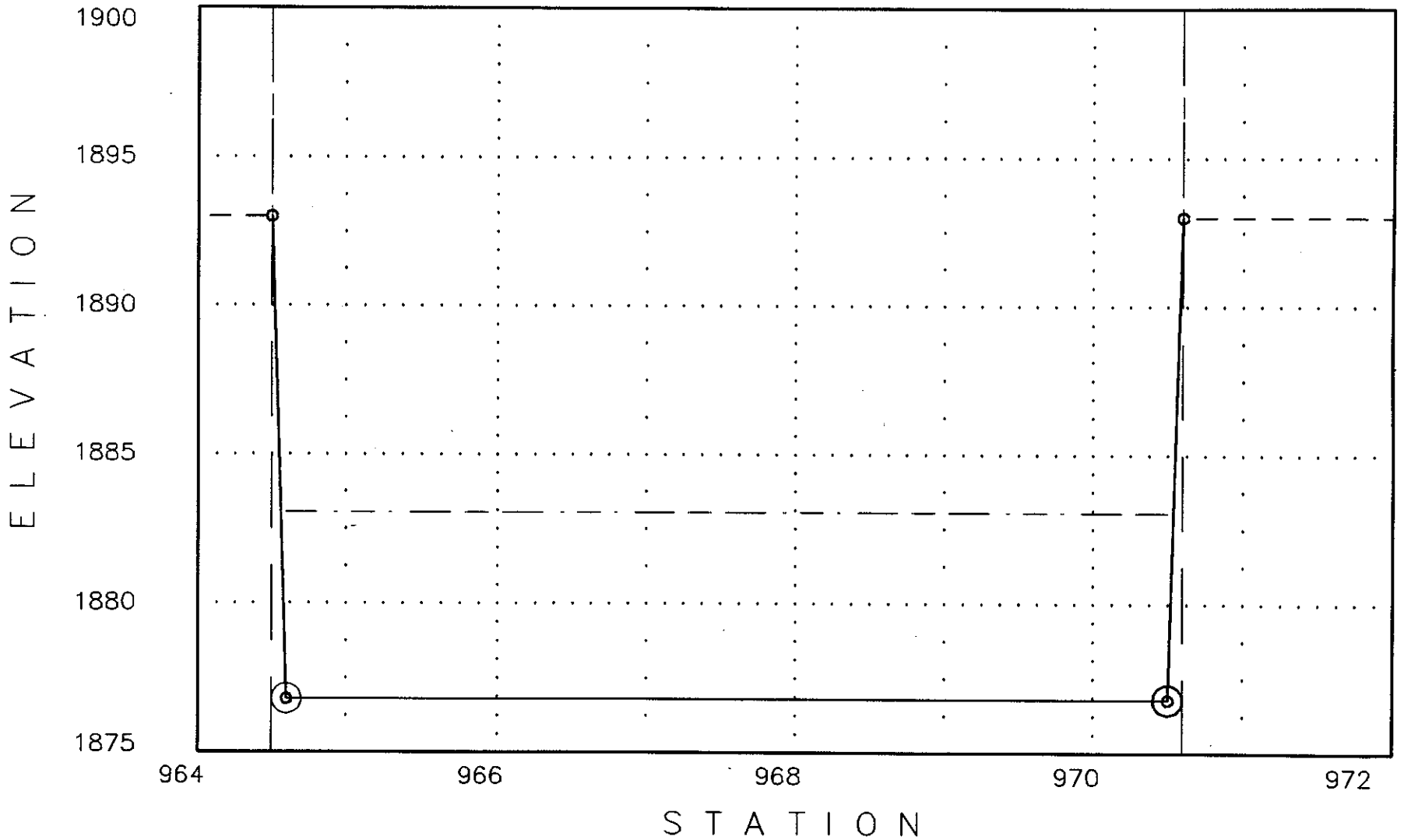


08-12-1992

<<<<<< Cross Section: .097: (FN = washg.o) >>>>>>

Q1= 526 WS1= 1883.06
Q2= 526 WS2= 1883.06

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07



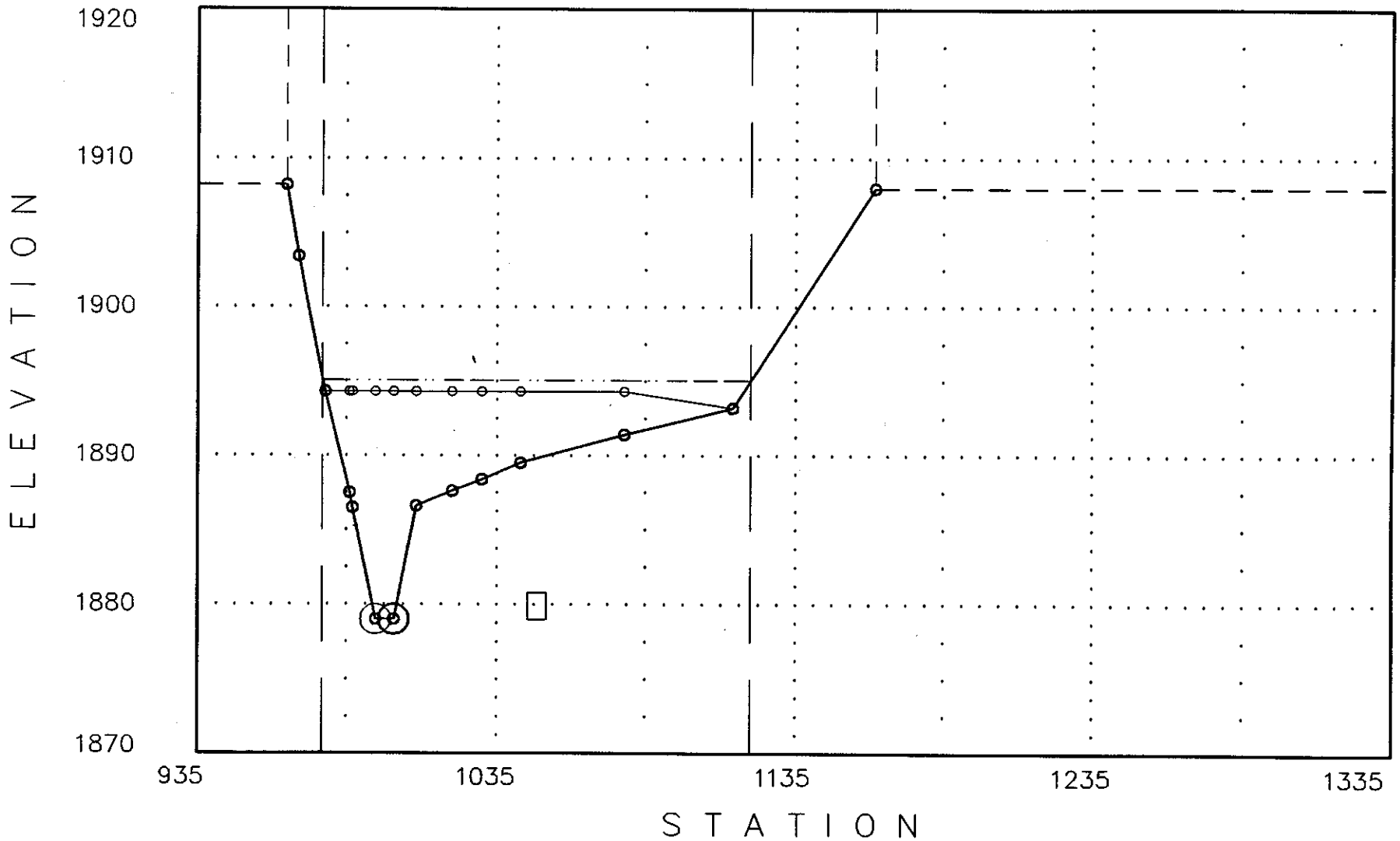
08-12-1992

<<<<<< Cross Section: .124: (FN = washg.o) >>>>>>

Q1= 526 WS1= 1895.05
Q2= 526 WS2= 1895.05

Manning-n's: n-lob = .07 n-ch = .02 n-rob = .07

SPECIAL CULVERT



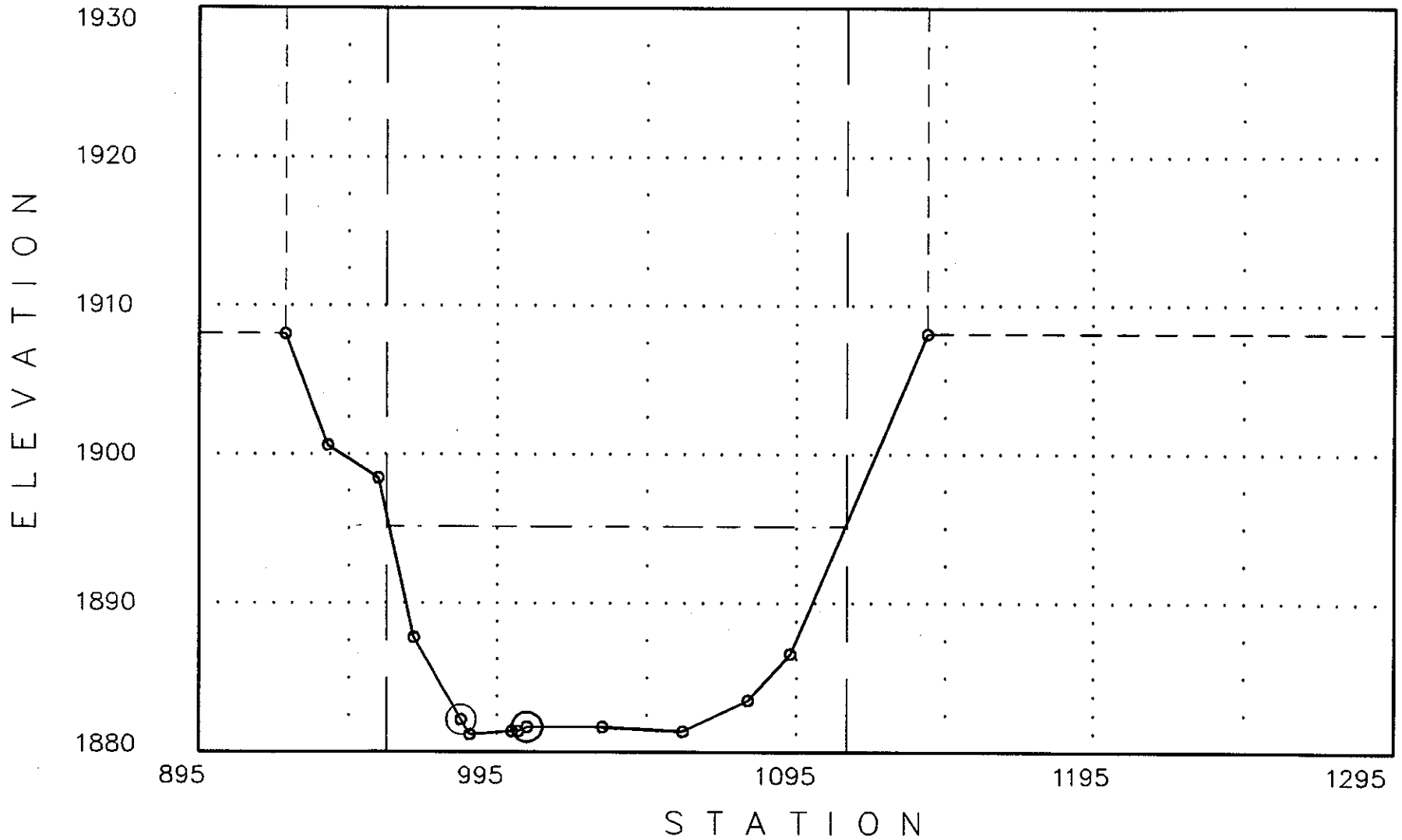
08-12-1992

<<<<<< Cross Section: .14: (FN = washg.o) >>>>>>

Q1= 526 WS1= 1895.13

Q2= 526 WS2= 1895.13

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

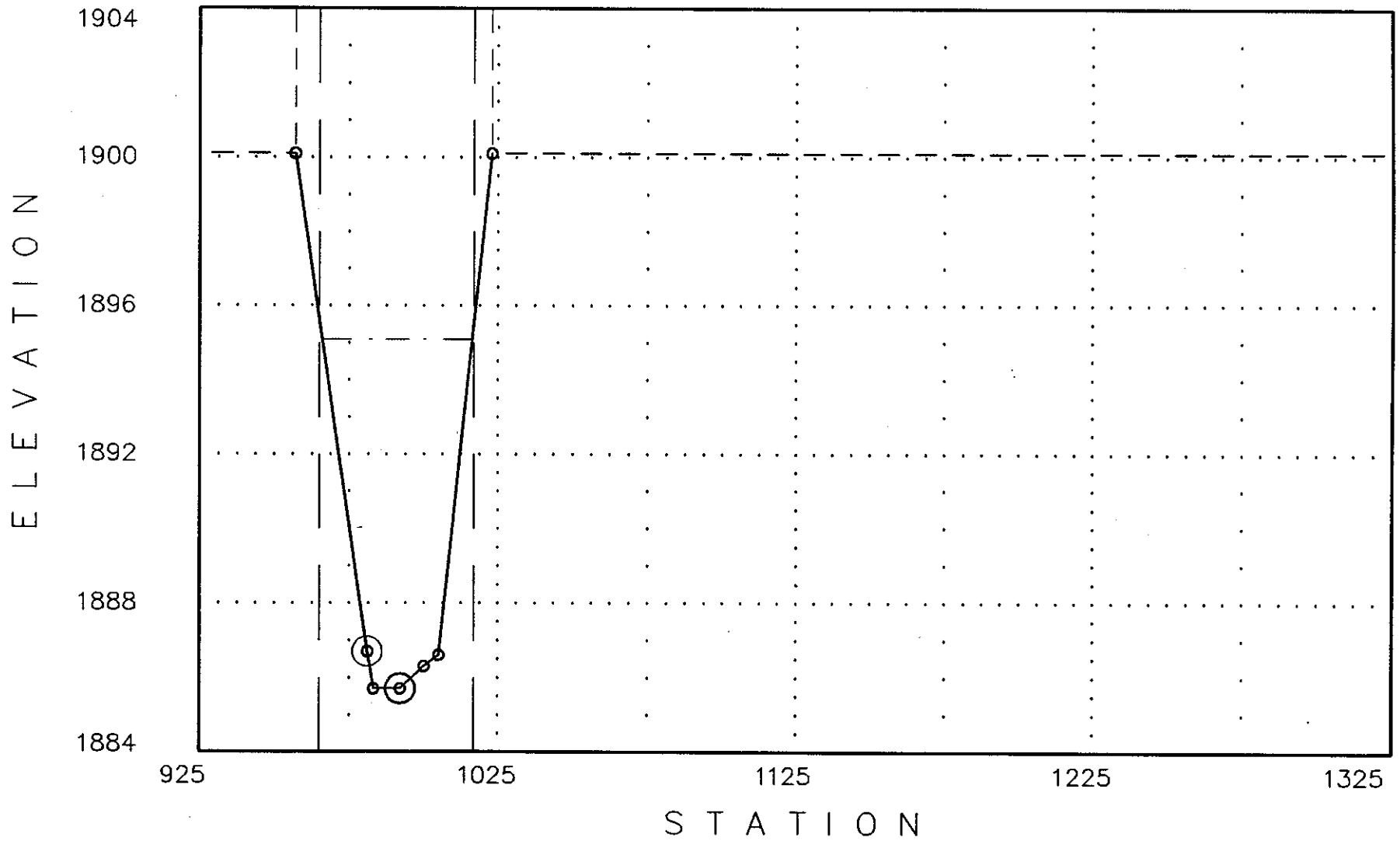


08-12-1992

<<<<<< Cross Section: .181: (FN = washg.o) >>>>>>

Q1= 526 WS1= 1895.09
Q2= 526 WS2= 1895.09

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

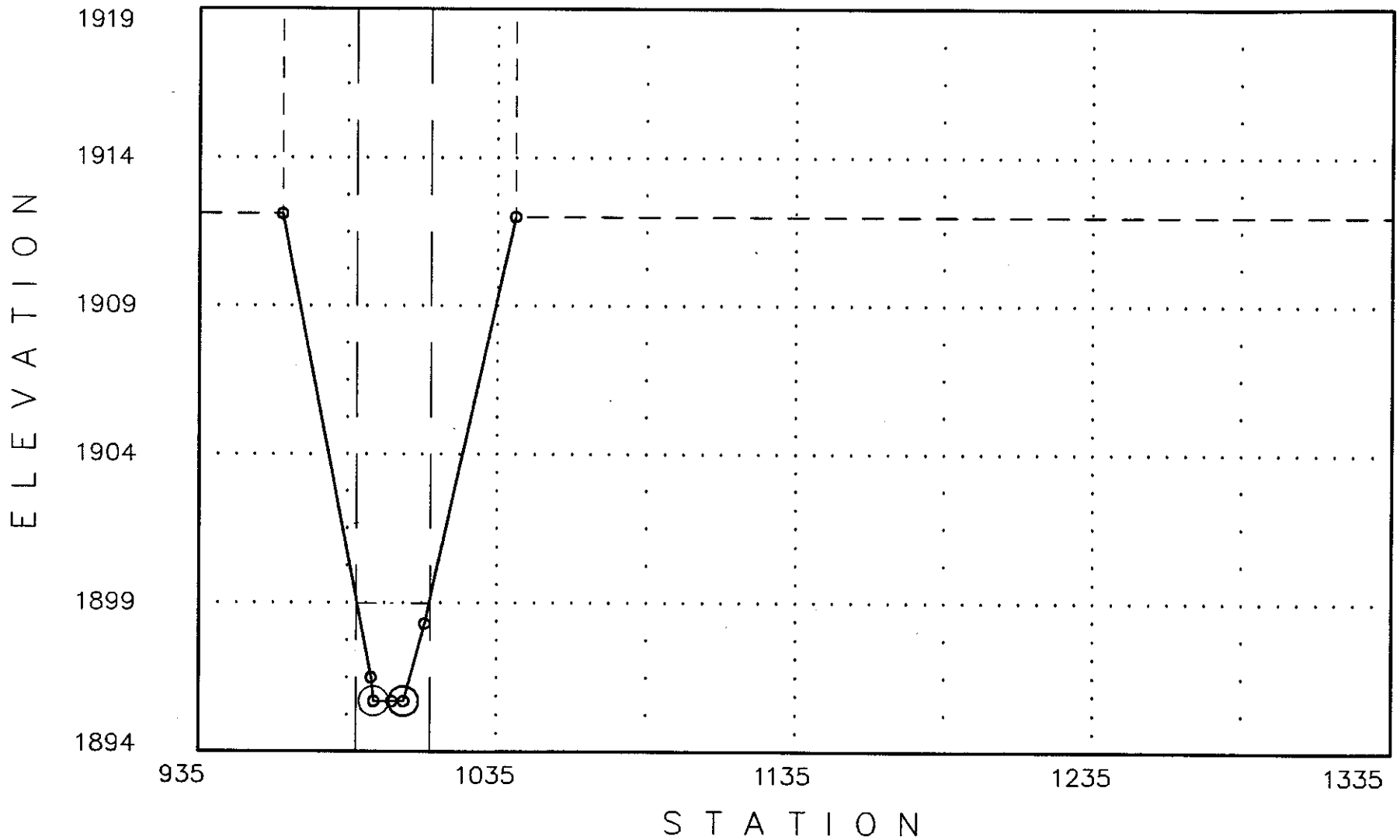


08-12-1992

<<<<<< Cross Section: .257: (FN = washg.o) >>>>>>

Q1= 420 WS1= 1898.99
Q2= 420 WS2= 1898.99

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

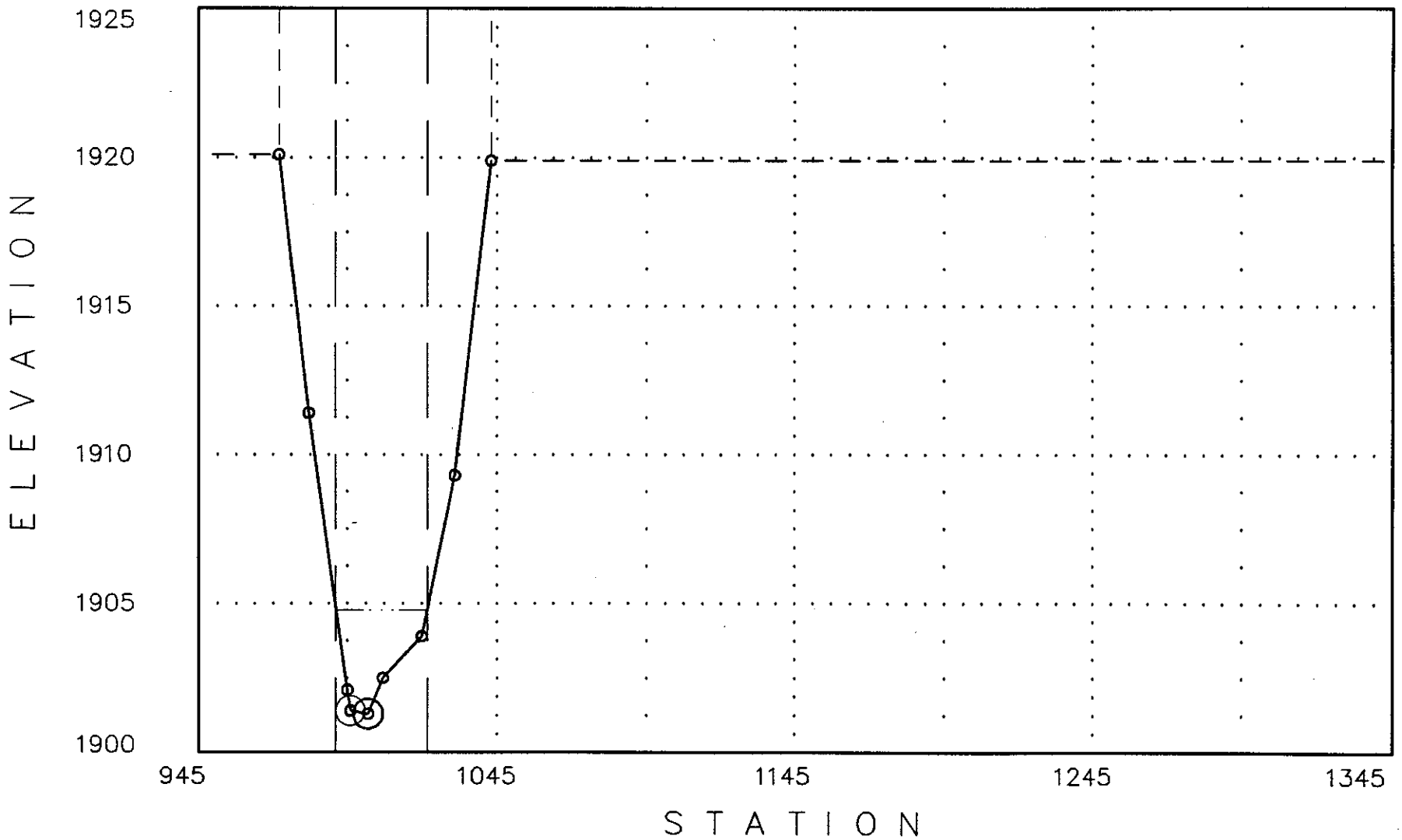


08-12-1992

<<<<<< Cross Section: .306: (FN = washg.o) >>>>>>

Q1= 420 WS1= 1904.78
Q2= 420 WS2= 1904.78

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

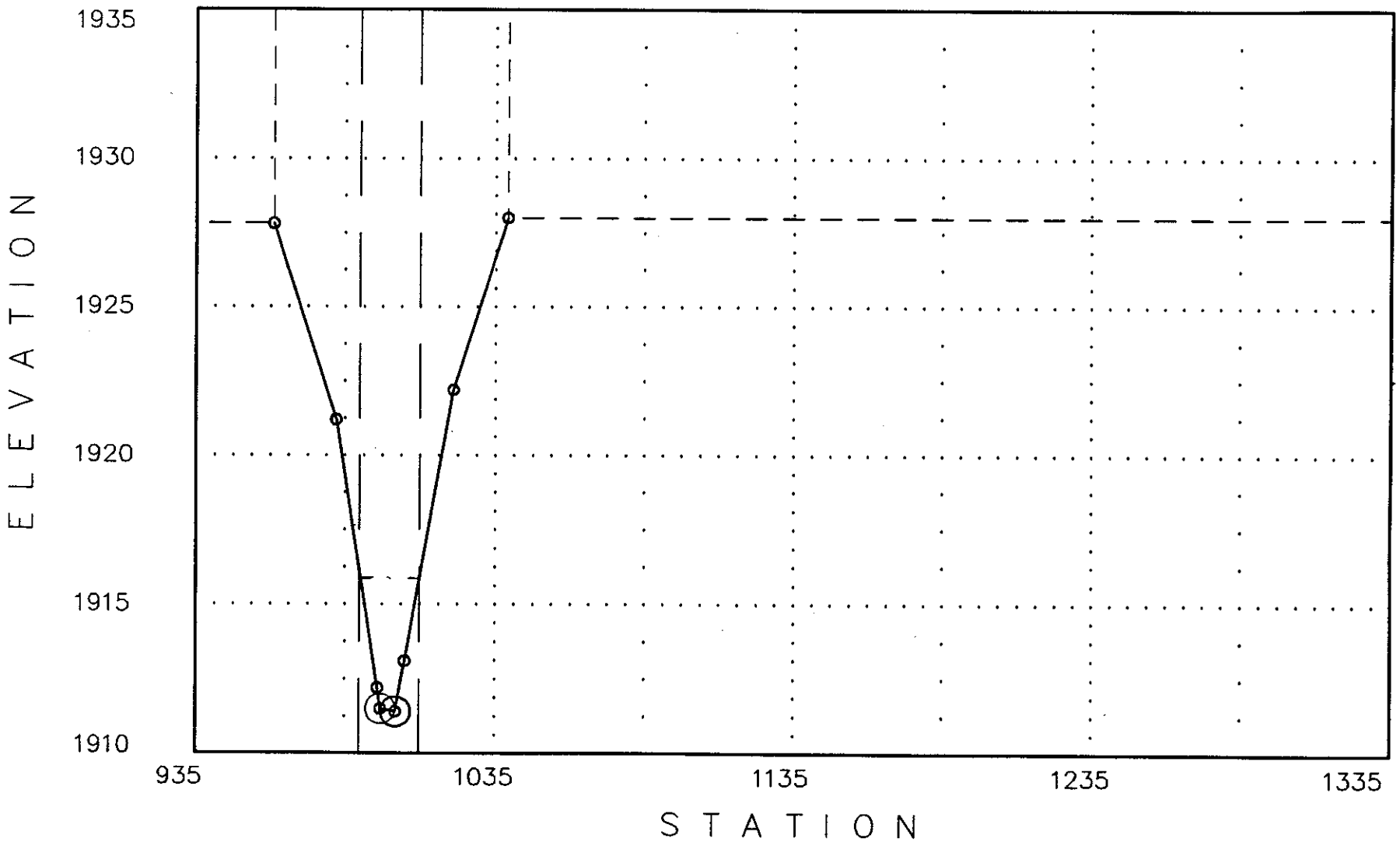


08-12-1992

<<<<<< Cross Section: .314: (FN = washg.o) >>>>>>

Q1= 420 WS1= 1915.87
Q2= 420 WS2= 1915.9

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

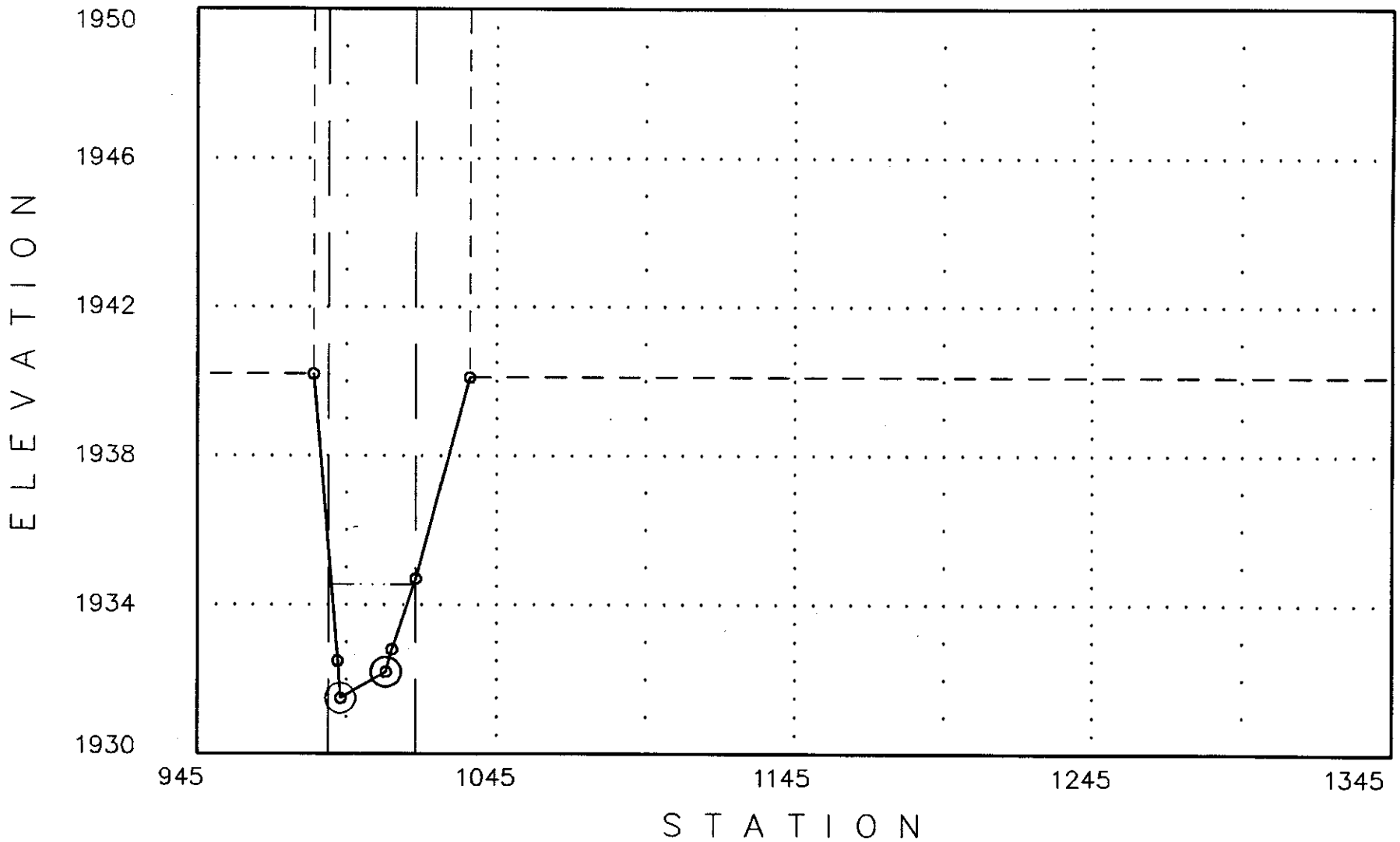


08-12-1992

<<<<<< Cross Section: .403: (FN = washg.o) >>>>>>

Q1= 420 WS1= 1934.54
Q2= 420 WS2= 1934.54

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06



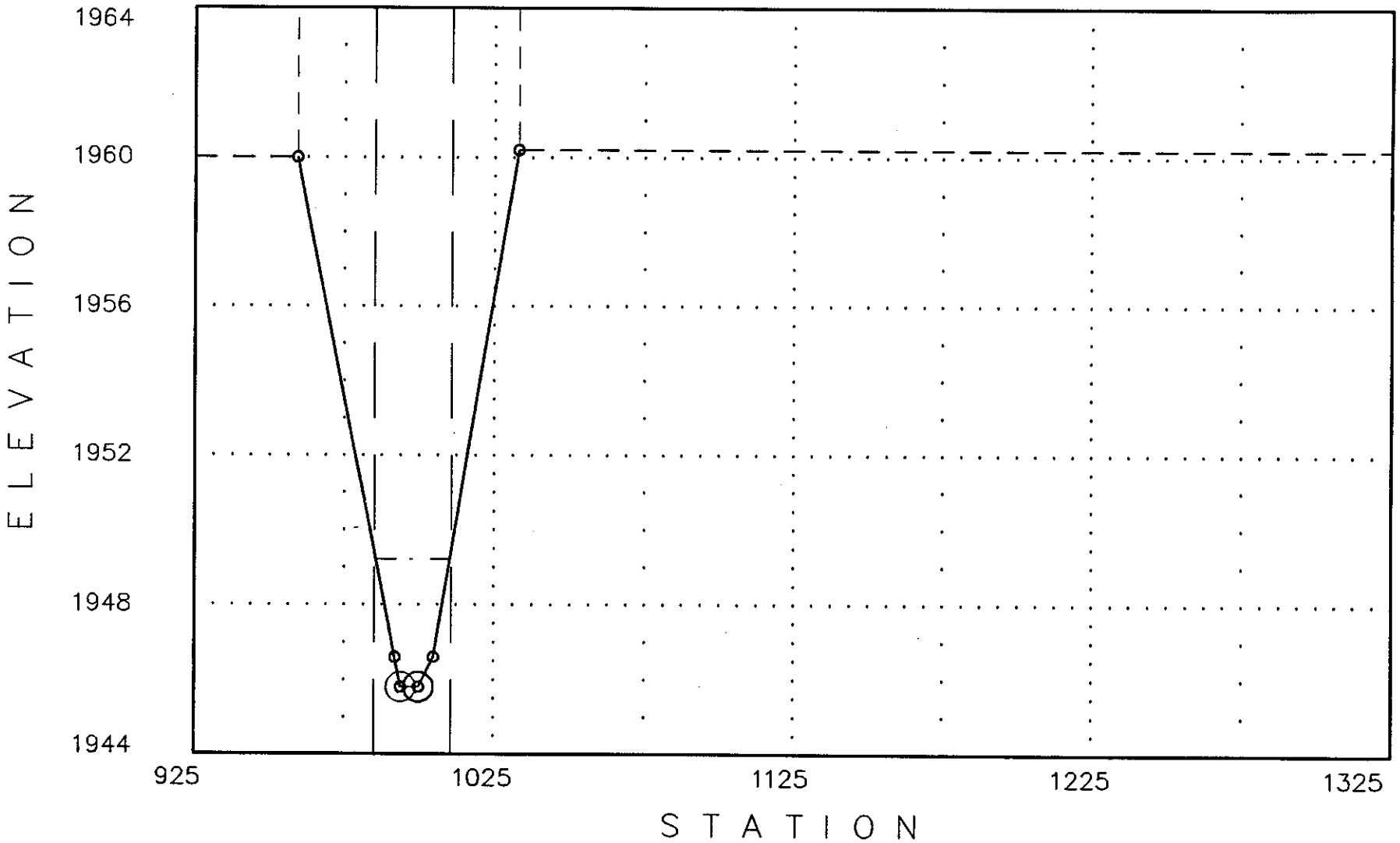
08-12-1992

<<<<<< Cross Section: .498: (FN = washg.o) >>>>>>

Q1= 420 WS1= 1949.22

Q2= 420 WS2= 1949.21

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

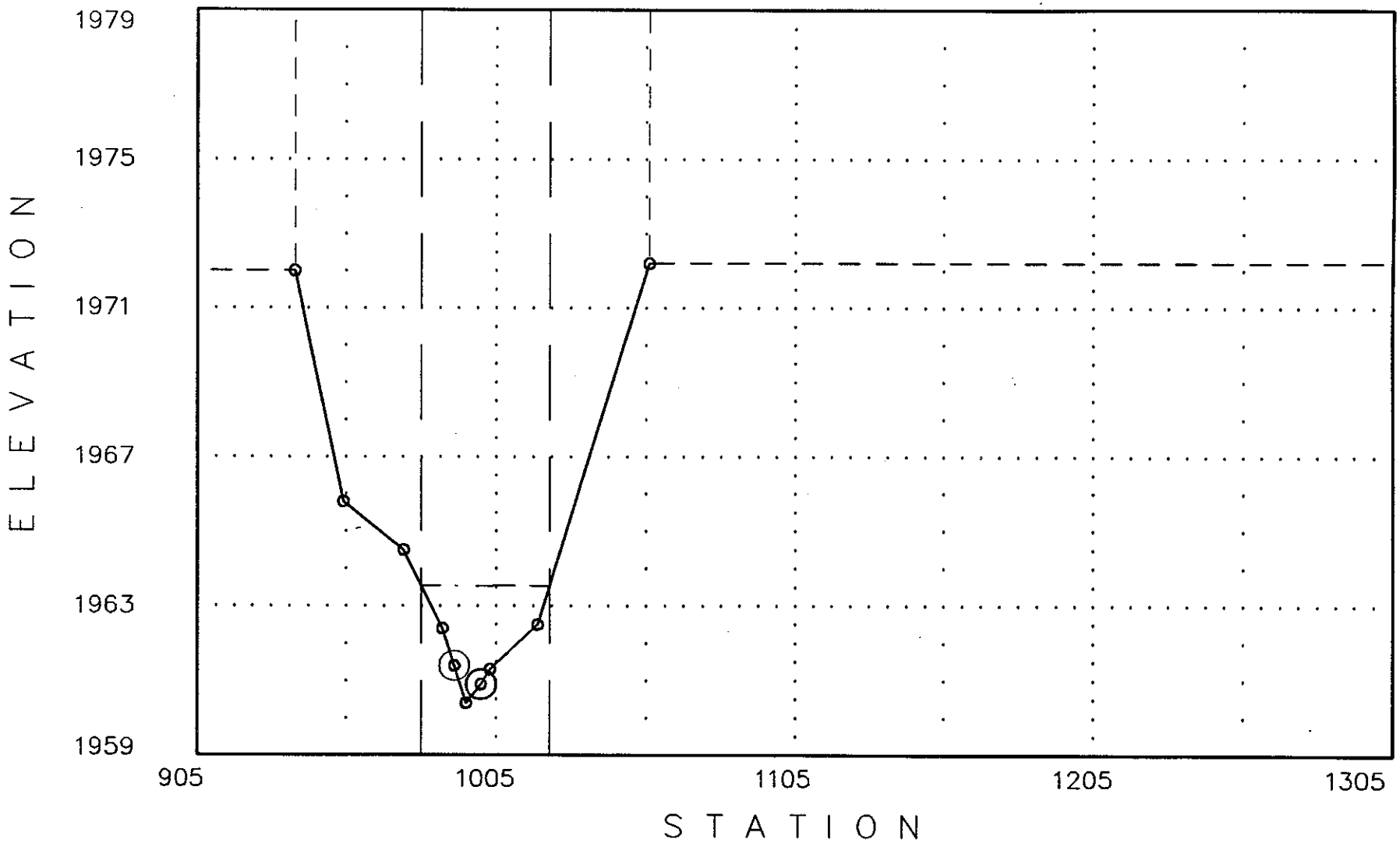


08-12-1992

<<<<<< Cross Section: .593: (FN = washg.o) >>>>>>

Q1= 420 WS1= 1963.53
Q2= 420 WS2= 1963.54

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06



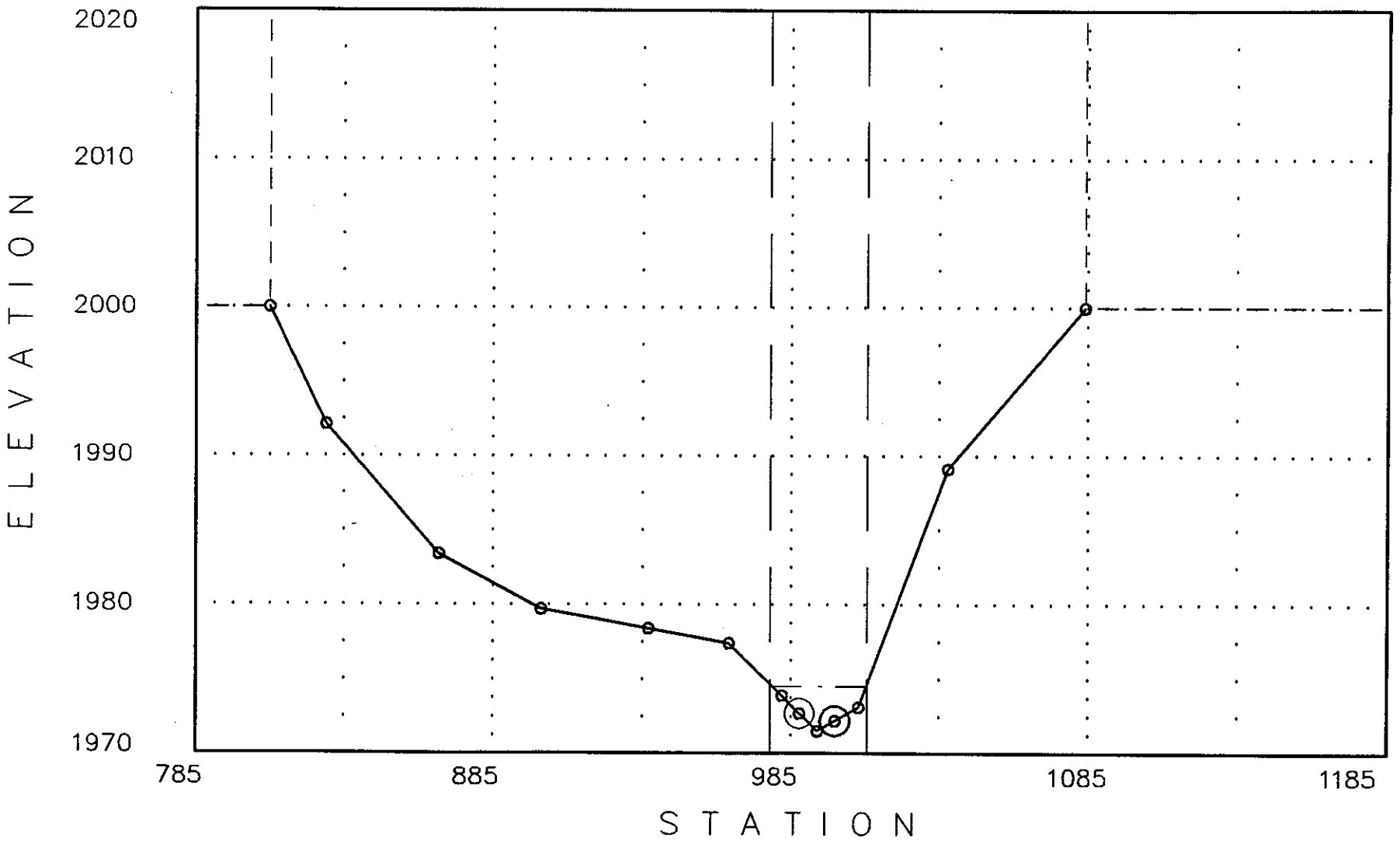
08-12-1992

<<<<<< Cross Section: .688: (FN = washg.o) >>>>>>

Q1= 360 WS1= 1974.51

Q2= 360 WS2= 1974.51

Manning-n's: n-lob = .06 n-ch = .04 n-rob = .06

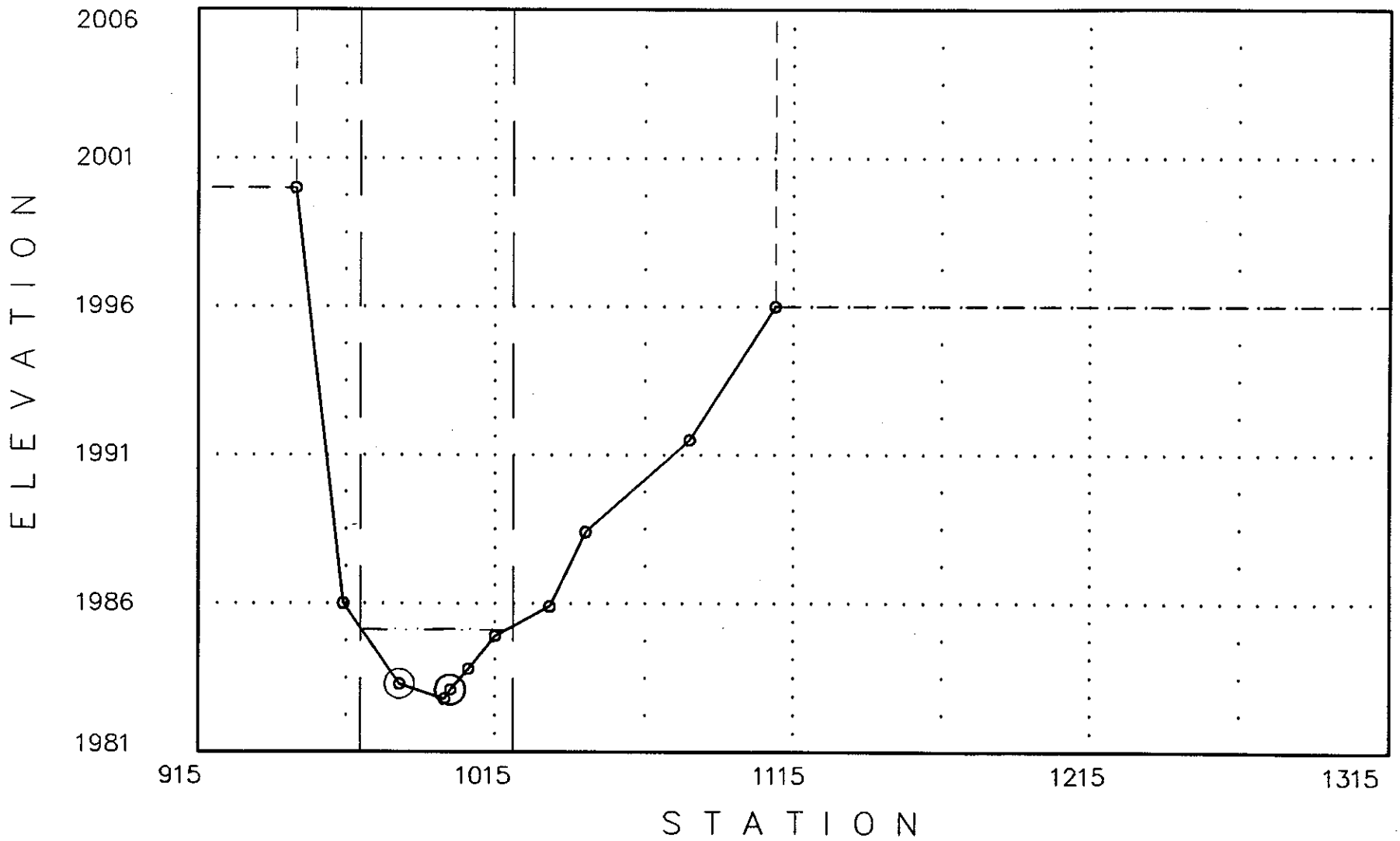


08-12-1992

<<<<<< Cross Section: .784: (FN = washg.o) >>>>>>

Q1= 360 WS1= 1985.12
Q2= 360 WS2= 1985.15

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

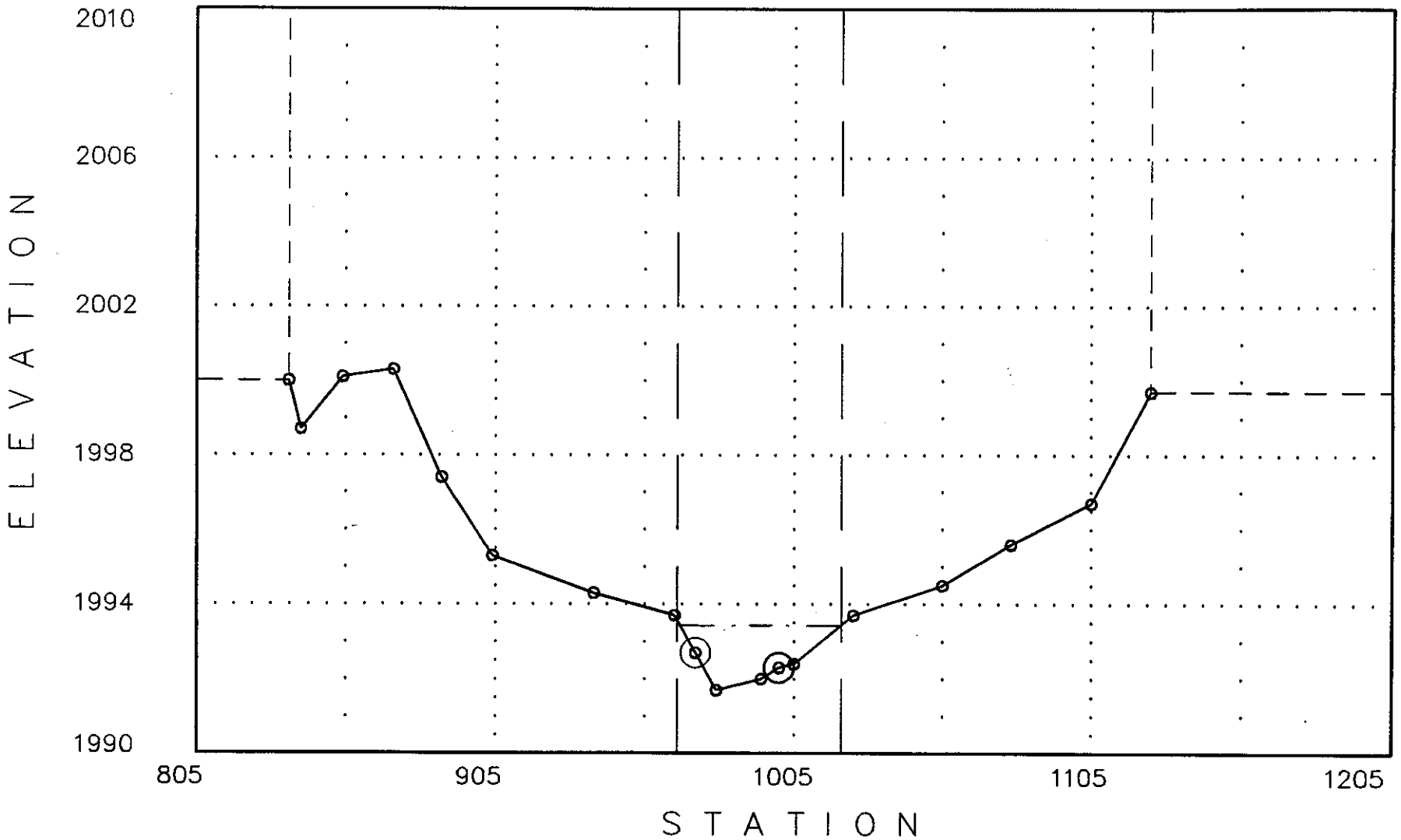


08-12-1992

<<<<<< Cross Section: .879: (FN = washg.o) >>>>>>

Q1= 290 WS1= 1993.42
Q2= 290 WS2= 1993.44

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

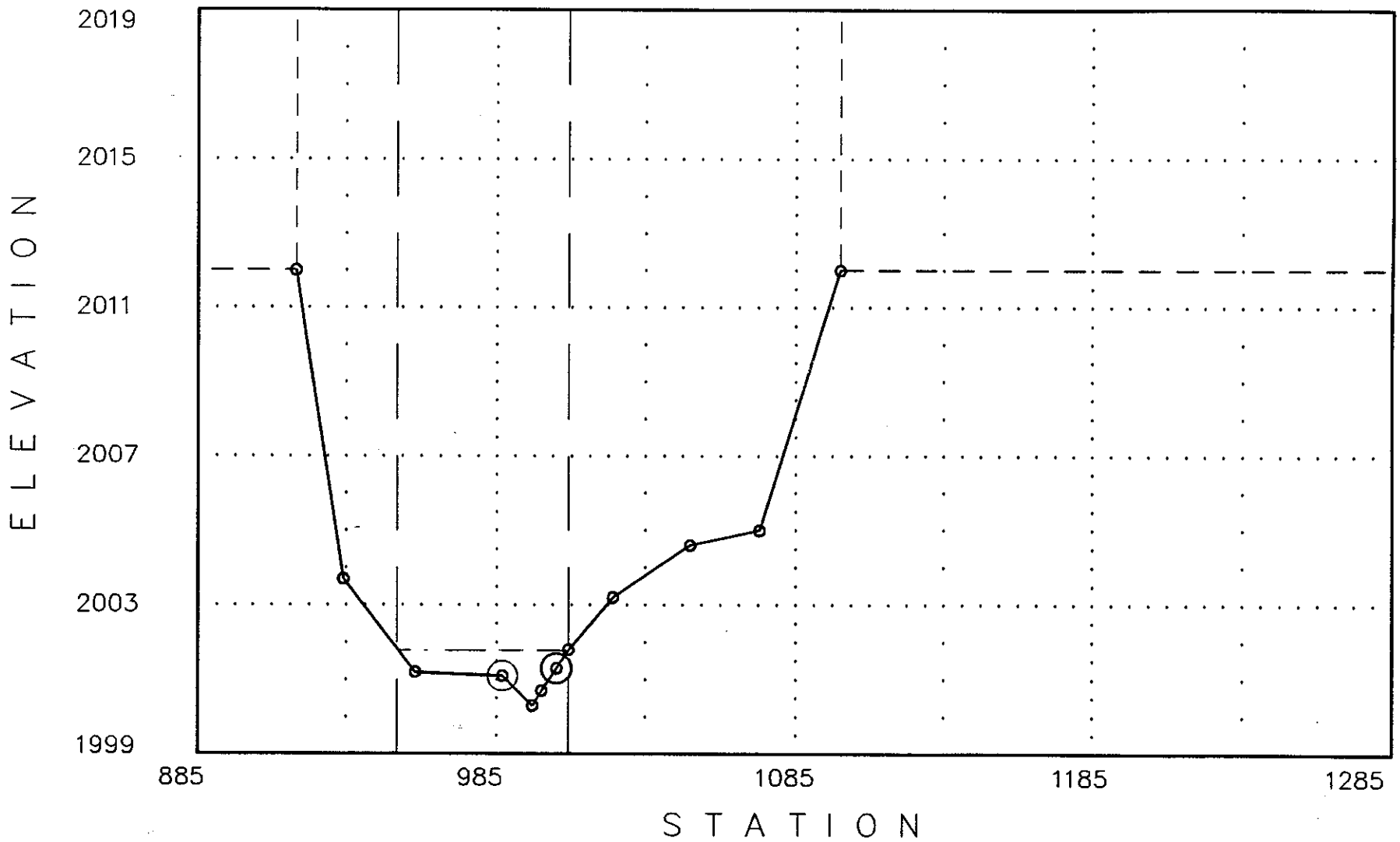


08-12-1992

<<<<<< Cross Section: .96: (FN = washg.o) >>>>>>

Q1= 150 WS1= 2001.78
Q2= 150 WS2= 2001.79

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

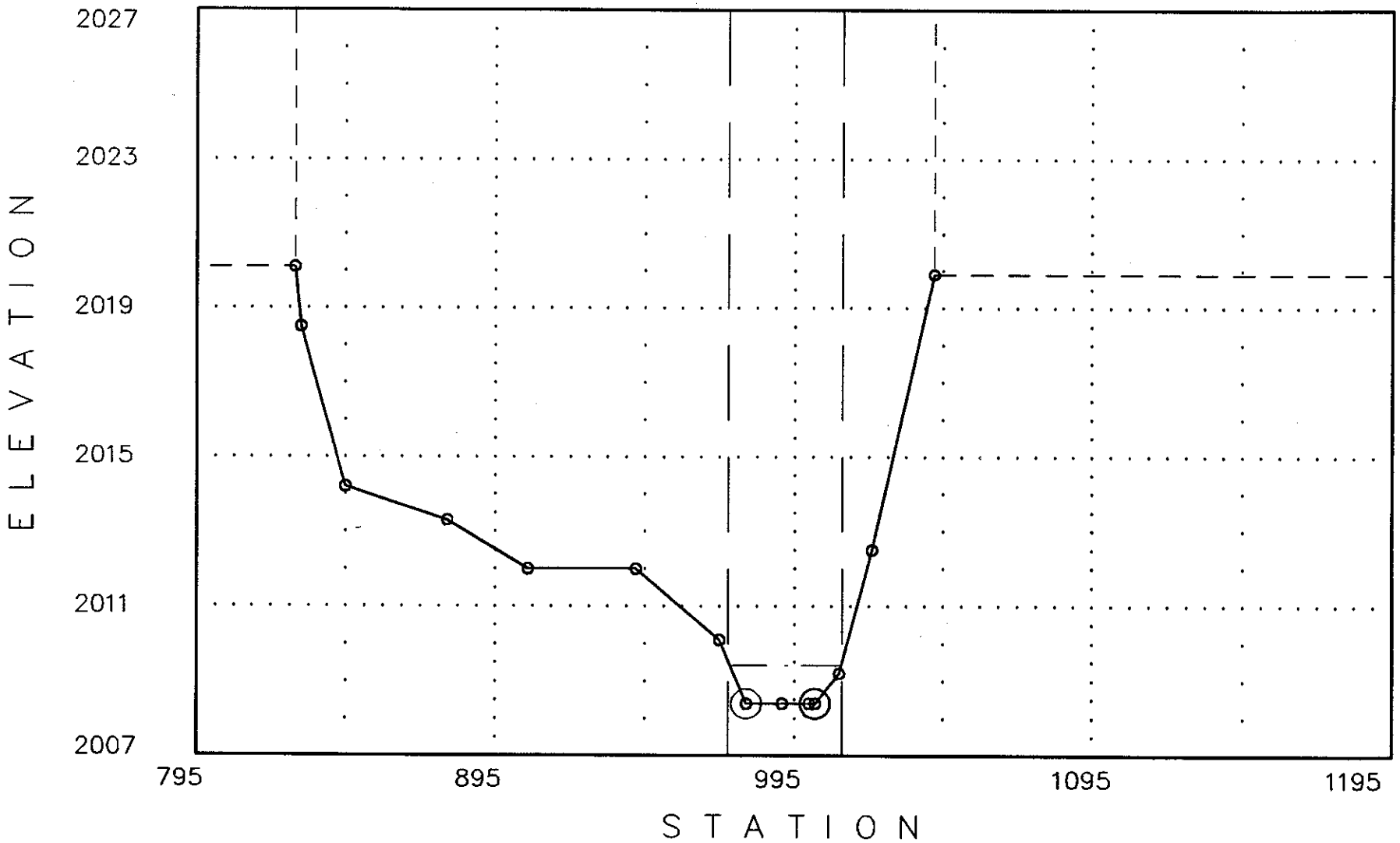


08-12-1992

<<<<<< Cross Section: 1.03: (FN = washg.o) >>>>>>

Q1= 150 WS1= 2009.43
Q2= 150 WS2= 2009.43

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06

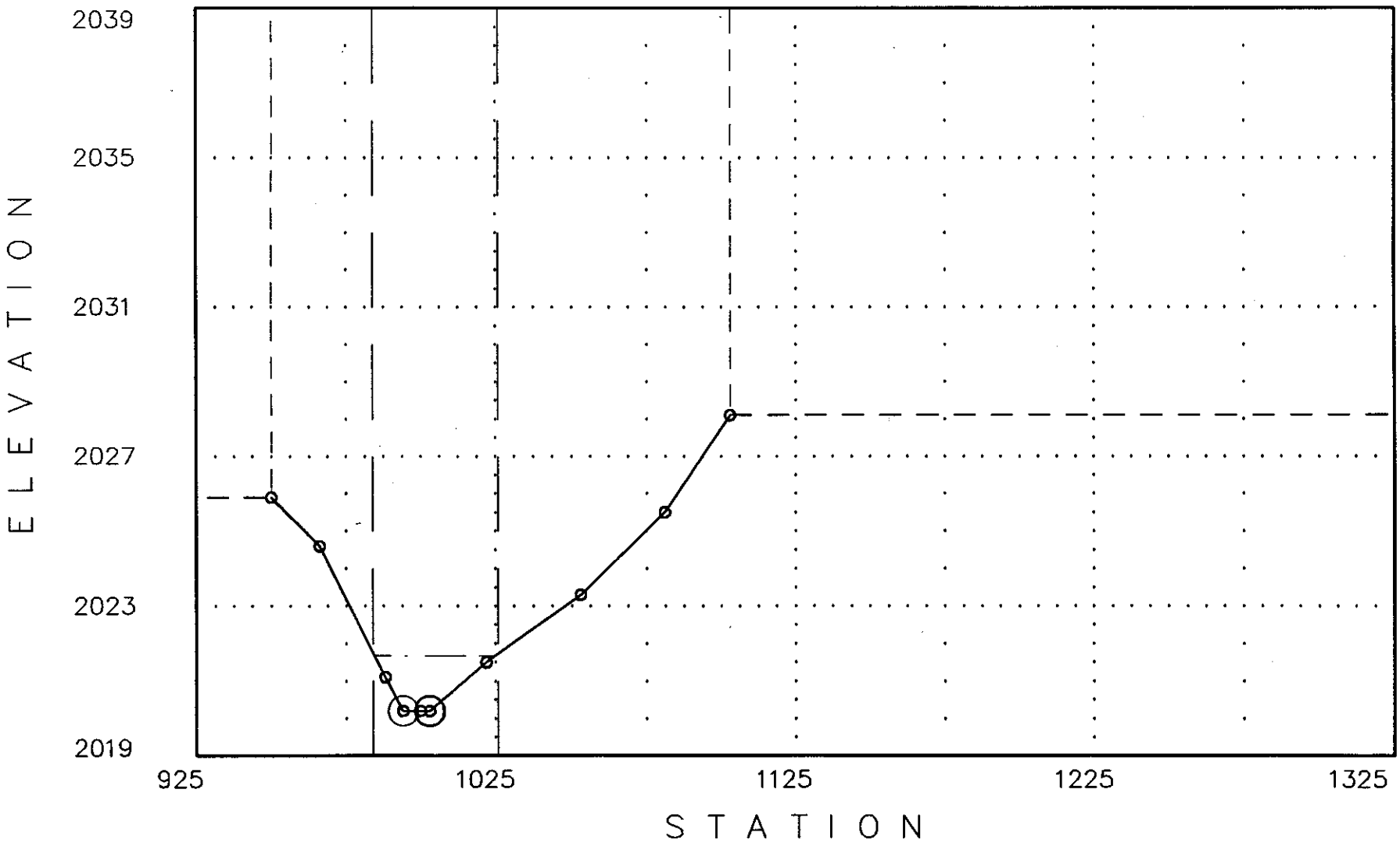


08-12-1992

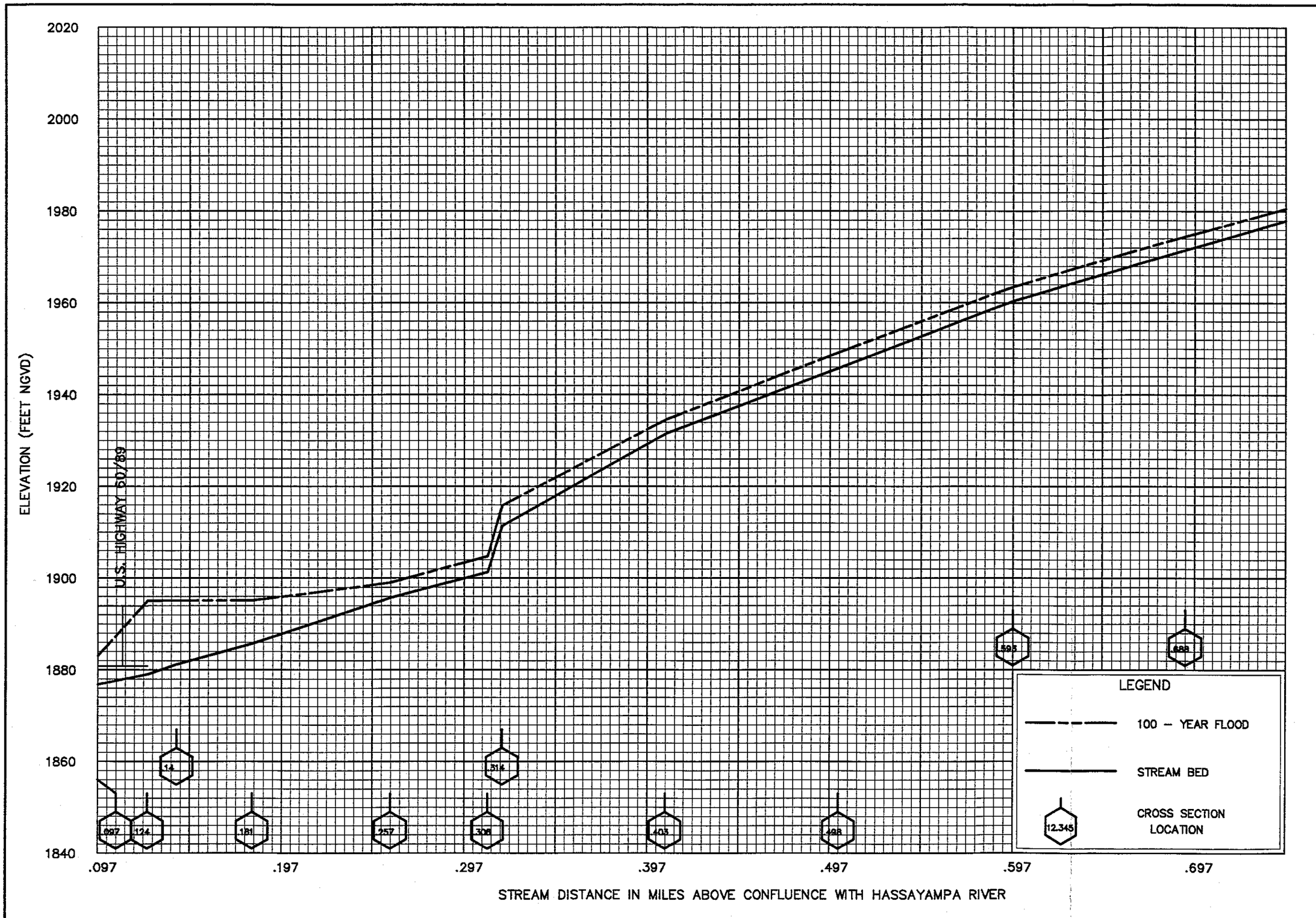
<<<<<< Cross Section: 1.131: (FN = washg.o) >>>>>>

Q1= 150 WS1= 2021.68
Q2= 150 WS2= 2021.68

Manning-n's: n-lob = .06 n-ch = .035 n-rob = .06



08-12-1992

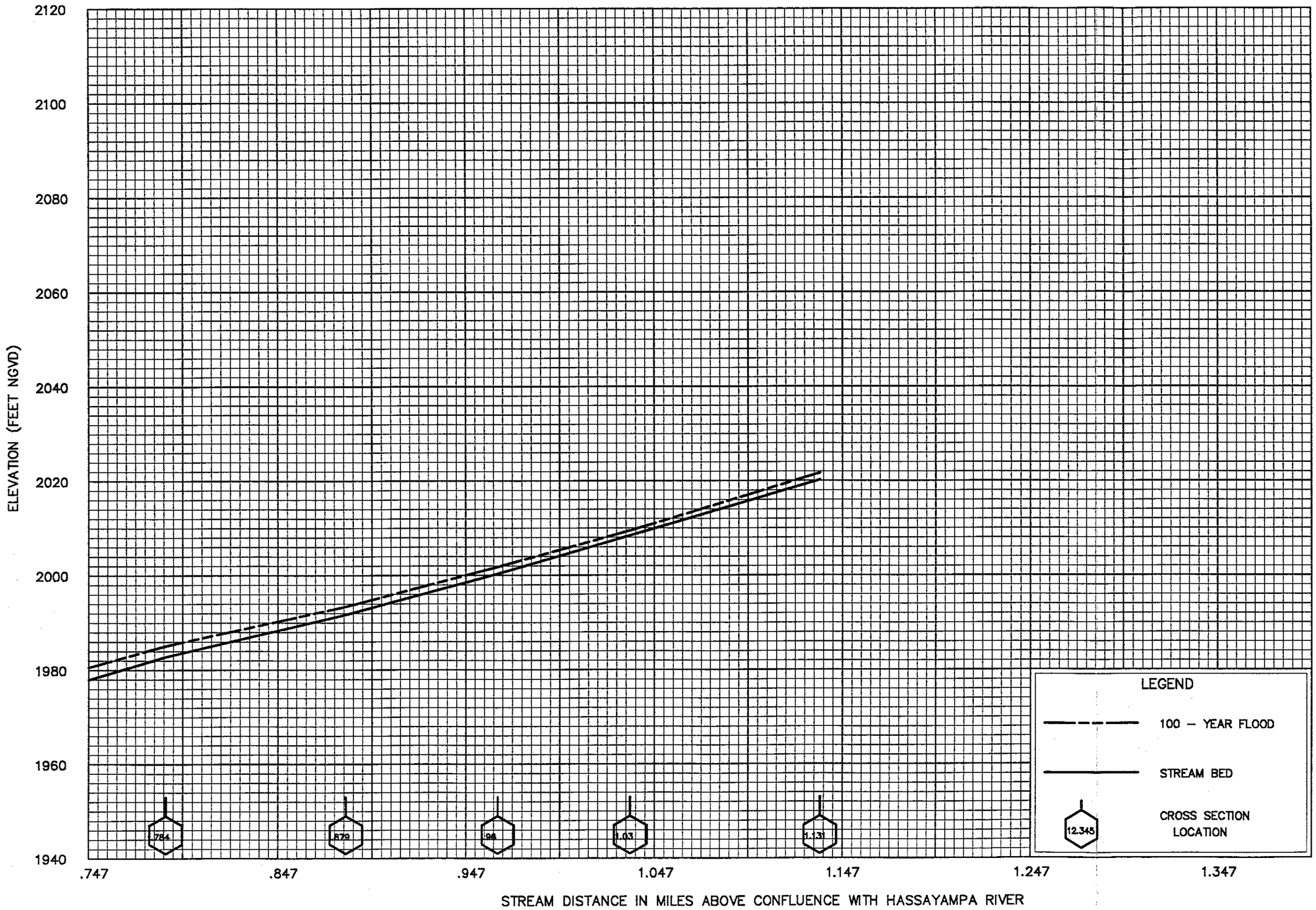


FLOOD PROFILES

UN–NAMED WASH #2 (WASH G)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



FLOOD PROFILES

UN–NAMED WASH #2 (WASH G)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

Flood Control District of Maricopa County
Contract FCD 89-79

WICKENBURG AREA DRAINAGE MASTER STUDY

TECHNICAL DOCUMENTATION REPORT

Appendix 6.7: HEC-2 Models & Cross Section Plots for East Area Wash UNNAMED WASH #3 (Wash h)

Submitted to the
Federal Emergency Management Agency
on Behalf of the
Flood Control District of Maricopa County

N:\1197\02\ADMIN\119702RP.063

May 1994

FEDERAL EMERGENCY MANAGEMENT AGENCY **HYDROLOGIC ANALYSIS FORM**	*O.M.B. Burden No. 3067-0148* *Expires July 31, 1994*	*FEMA USE ONLY*

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 3.67 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash H:
(One form for each flooding source)

Project Name /Identifier: Wickenburg ADMS FCD 89-79

1. HYDROLOGIC ANALYSIS IN FIS

☐ Approximate study stream (Zone A)
☒ Detailed study stream (briefly explain methodology) HEC-1 analysis based on Flood Control District of Maricopa County Methodologies.

2. REASON FOR NEW HYDROLOGIC ANALYSIS

☐ No existing analysis
☐ Improved data *(see data revision on page 3)*
☐ Changed physical conditions of watershed *(explain)*

☐ Alternative methodology *(justify why the revised model is better than model used in the effective FIS)*

☐ Evaluation of proposed conditions (CLOMRs only) (explain)

☒ Other No existing analysis or analysis being updated to reflect existing conditions.

If a computer program/model was used in revising the hydrologic analysis, please provide a diskette with the input files for the 10-, 50-, 100 - and 500-year recurrence intervals.

Only the 100-year recurrence interval need be included for SFHAs designated as Zone A.

3. APPROVAL OF ANALYSIS

☒ Approval of hydrologic analysis, including the resulting peak discharge value (s) has been provided by the appropriate local, state, or Federal Agency. (i.e., Flood Control District of Maricopa County)
Attach evidence of approval.

☐ Approval of the hydrologic analysis is not required by any local, State, or Federal Agency.

Stream: _____

Comparison of 100-year Discharges

Location:	Drainage area (Sq mi.)	FIS (cfs) :	Revised (cfs) :
Confluence with Hassayampa River	1.76		1631

Note: When revised discharges are not significantly different than FIS discharges, FEMA may require a confidence limits analysis on attachment D at a later date to complete the review.

As is often the case with revision requests, only a portion of a stream may actually be revised or be affected by a revision. Therefore, transition to the unrevised portion is important to maintain the continuity of the study. NFIP regulations stipulate that such a transition must be assured. What is the transition from the proposed discharges to the effective discharges? Please explain how the transition was made *(attach separate sheet if necessary)*

No existing analysis or updated analysis to reflect existing conditions.

ATTACH A COMPLETED REVIEW OF RESULTS PAGE FOR EACH FLOODING SOURCE.

Is the new hydrologic analysis being developed solely to revise the flow values presented in the FIS *(i.e. no changed hydraulic conditions)*? ☐ Yes ☒ No

If yes, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

FEMA does not normally revise NFIP maps solely due to insignificant flow changes where changes in 100-year water surface elevation are less than 1.0 foot.

5. HISTORICAL FLOODING INFORMATION

Is historical data available for the flooding source? ☐ Yes ☒ No

If yes, provide the following:

Location along flooding source: _____

Maximum peak discharge: _____ cfs

Second highest peak discharge: _____ cfs

Source of information: _____

6. GAGE RECORD INFORMATION

Location of nearest gage to project site *(along flooding source or similar watershed; specify)*

NA

Gaging Station: _____

Drainage area at gage: _____ mi^2

Number of years of data: _____

7. DATA REVISION

Please use the following table to list all the data and/or parameters affected by this request and identify them as new data (*New*) or as revising existing data (*Revised*). *(If necessary, attach a separate sheet.)*

Data Parameter	New	Revised	Data Source
NA	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

- Data source can be from a Federal, State, or local government agency, or from a private source. Some State and local governments may have less strict data requirements than Federal agencies, in which case the hydrologic data may not be accepted by FEMA unless it is demonstrated that the data give a better estimate of the flood discharge.
- Attach documentation corroborating each data source *(i.e., certified statement, report, bibliographical reference to a published document)*. In the case of a published document or a government report, providing copies of the cover and pertinent pages may be helpful.

8. METHODOLOGY FOR NEW ANALYSIS

☐ Statistical Analysis of Gage Records (*use Attachment A*)

☐ Regional Regression Equations *(use Attachment B)*

☒ Precipitation/Runoff Model *(use Attachment C)*

☐ Other *(specify; attach backup computations and supporting data)* _____

Gaging Station: NA

Gage Location (latitude and longitude): _____

	FIS:	Revised:
1. Number of years of data		
Systematic		
Historical		
2. Homogeneous data	☐ Yes ☐ No	☐ Yes ☐ No
3. Data adjustments	☐ Yes ☐ No	☐ Yes ☐ No
4. Number of high outliers		
Low outliers		
Zero events		
5. Generalized skew		
6. Station skew		
7. Adopted skew		
8. Probability distribution used (justify if log-Pearson III was not used)		
9. Transfer equations to ungaged sites		☐ Yes ☐ No

If yes, specify method

_____

_____

_____

10. Expected probability* ☐ Yes ☐ No

11. Comparison of results with other analyses ☐ Yes ☐ No

If yes, describe comparison

_____

_____

_____

*FEMA does not accept expected probability analyses for the purpose of reflecting flood hazard information in a FIS.

If any data is not available, indicate by N/A.

Attach analysis including plot of flood frequency curve.

1. Bibliographical Reference:
NA

(Attach a copy of title page, table of contents, and pertinent pages including equations.)

2. Gaged or ungaged stream: _____

3. Hydrologic region(s): _____
Attach backup map.

4. Provide parameters, values, and source of data used to define parameters.

		FIS:		Revised:	
5.	Urbanized conditions calculations	☐ Yes	☐ No	☐ Yes	☐ No
6	Percent of watershed urbanization	_____		_____	
7.	Is the watershed controlled?	☐ Yes	☐ No	☐ Yes	☐ No
.	Comparison with other analyses	☐ Yes	☐ No	☐ Yes	☐ No

If the answer to 5, 7, or 8 is yes, explain methodology in Comments.

If data is not available, indicate by N/A.

Comments

Attach computation and supporting maps, delineating the watershed boundary and drainage area divides.

		FIS:	Revised
1.	Method or model used:		HEC-1
	Version:		Ver. 3.0
	Date:		02 AUG. 88
2.	Source of rainfall depth:		NOAA Atlas 2
3.	Source of rainfall distribution:		SCS TYPE II
4.	Rainfall duration:		24 hours
5.	Areal adjustment to precipitation (%):		NWS HYDRO-40
6.	Hydrograph development method:		S-Graph
7.	Loss rate method:		Green-AMPT
	Source of soils information:		SCS
	Source of land use information		Town of Wickenburg
8.	Channel routing method:		Normal Depth
9.	Reservoir routing:	☐ Yes ☐ No	☐ Yes ☒ No
10.	Baseflow considerations:	☐ Yes ☐ No	☐ Yes ☒ No

If yes, explain how baseflow was determined:

11. Snowmelt considerations: ☐ Yes ☐ No ☐ Yes ☒ No

12. Model calibration: ☐ Yes ☐ No ☒ Yes ☐ No

If yes, explain how calibration was performed Computed discharges were compared with DISCHARGE vs DRAINAGE AREA curves and envelopes prepared by the Flood Control District of Maricopa County.

13. Future land use condition: ☐ Yes ☒ No

If yes, explain why

NOTE: FEMA policy is to base flooding on existing conditions.
If data is not available, indicate by N/A.

Attach precipitation/runoff model, hydrologic model schematic, curve number calculations, time of concentration calculations, and supporting maps, delineating the watershed boundary and drainage area divides.

Stream: NA - No flow records

Select one location for Confidence Limits Evaluation (*describe location*): _____

_____

Discharges for selected location:

Exceedance Probability		FIS	Revised
10%	(10-year)	_____ cfs	_____ cfs
2%	(50-year)	_____ cfs	_____ cfs
1%	(100-year)	_____ cfs	_____ cfs
0.2%	(500-year)	_____ cfs	_____ cfs

1% (100-year) Flood Confidence Intervals

90% Confidence Interval: 5% limit _____ cfs

95% limit _____ cfs

50% Confidence Interval: 25% limit _____ cfs

75% limit _____ cfs

If the value of the 100-year frequency flood in the FIS is beyond the 50% confidence interval but within the 90% confidence interval, does the 100-year water surface elevation change by 1.0 foot or more? ☐ Yes ☐ No

An example of confidence limits analysis can be found in Appendix 9 of Bulletin 17B.

Attach Confidence Limits Analysis.

Appendix # 6.7

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE HYDRAULIC ANALYSIS FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County/Town of Wickenburg

Flooding Source: Wash H:
(One form for each flooding source)

Project Name/Identifier: Wickenburg ADMS - FCD 89-79

1. REACH TO BE REVISED

Downstream limit: Station 0.083

Upstream limit: Station 1.866

2. EFFECTIVE FIS

☐ Not studied

☐ Studied by approximate methods

Downstream limit of study _____

Upstream limit of study _____

☒ Studied by detailed methods

Downstream limit of study Confluence with Hassayampa River

Upstream limit of study Station 1.866

☐ Floodway delineated

Downstream limit of Floodway _____

Upstream limit of Floodway _____

3. HYDRAULIC ANALYSIS

Why is the hydraulic analysis different from that used to develop the FIRM. *(Check all that apply)*

☐ Not studied in FIS

☐ Improved hydrologic data/analysis. Explain: _____

☐ Improved hydraulic analysis. Explain: _____

☐ Flood control structure. Explain: _____

☐ Other. Explain: _____

Full input and output listings along with files on diskette *(if available)* for each of the models listed below and summary of the source of input parameters used in the models must be provided. The summary must include a complete description of any changes made from model to model *(e.g. duplicate effective model to corrected effective model)*. Only the Duplicate Effective and the Revised or Post-Project Conditions models must be submitted. See instructions for directions on when other models may be required. Only the 100-year flood profile is required for SFHAs with a Zone A designation. For areas which do not have detailed flooding, a hydraulic model is not required; however BFE's may not be added to the revised FIRM.

☐ Duplicate Effective Model — Natural ☐ Floodway ☐

Copies of the hydraulic analysis used in the effective FIS, referred to as the effective models *(10-, 50-, 100-, and 500-year multi-profile runs and the floodway run)* must be obtained and then reproduced on the requestor's equipment to produce the duplicate effective model. This is required to assure that the effective model input data has been transferred correctly to the requestor's equipment and to assure that the revised data will be integrated into the effective data to provide a continuous FIS model upstream and downstream of the revised reach.

☐ Corrected Effective Model — Natural ☐ Floodway ☐

The corrected effective model is the model that corrects any errors that occur in the duplicate effective model, adds any additional cross sections to the duplicate effective model, or incorporates more detailed topographic information than that used in the currently effective model. The corrected effective model must not reflect any man-made physical changes since the date of the effective model. An error could be a technical error in the modeling procedures, or any construction in the floodplain that occurred prior to the date of the effective model but was not incorporated into the effective model.

☐ Existing or Pre-Project Conditions Model — Natural ☐ Floodway ☐

The duplicate effective or corrected model is modified to produce the existing or pre-project conditions model to reflect any modifications that have occurred within the floodplain since the date of the effective model but prior to the construction of the project for which the revision is being requested. If no modification has occurred since the date of the effective model, then this model would be identical to the corrected effective or duplicate effective model.

☐ Revised or Post-Project Conditions Model — Natural ☐ Floodway ☐

The existing or pre-project conditions model *(or duplicate effective or corrected effective model, as appropriate)* is revised to reflect revised or post-project conditions. This model must incorporate any physical changes to the floodplain since the effective model was produced as well as the effects of the project. When the request is for proposed project this model should reflect proposed conditions.

☒ Other: Please attach a sheet describing all other models or calculations submitted. — Natural ☒ Floodway ☒

New Model (Proposed Effective Model)

4. MODEL PARAMETERS *(from model used to revise 100-year water surface elevation)*

Discharges:	Upstream Limit	Downstream Limit
10-year	982 cfs	896
50-year	1521 cfs	1394
100-year	1742 cfs	1631
500-year	—	—

Attach diagram showing changes in 100-year discharge

2. Explain how the starting water surface elevations were determined Starting water surface elevations determined by the slope-area method.

3. Give range of friction loss coefficients (*Manning's "N"*) Channel ..... 0.02 ~ 0.04

Overbanks ..... 0.05 ~ 0.07

If friction loss coefficients are different anywhere along the revised reach from those used to develop the FIRM, give location, value used in the effective FIS, and revised values and an explanation as to how the revised values were determined.

Location	FIS	Revised

Explain:

4. Describe how the cross section geometry data were determined *(e.g., field survey, topographic map, taken from previous study)* and list cross sections that were added.

Data points for cross-sections are based on photogrammetric models for the topographic maps.

5. Explain how reach lengths for channel and overbanks were determined:

All reach lengths were measured from floodplain work maps.

5. RESULTS (*from model used to revise 100-year water surface elevations*)

1. Do the results indicate:

a. Water surface elevations higher than end points of cross sections? ..... ☐ Yes ☒ No

b. Supercritical depth? ..... ☐ Yes ☒ No

c. Critical depth? ..... ☒ Yes ☐ No

d. Other unique situations ..... ☐ Yes ☐ No

If yes, special problems report attached.

If yes to any of the above, attach an explanation that discusses the situation and how it is presented on the profiles, tables, and maps.

2. What is the maximum change in energy gradient between cross-sections? ..... 0.0167 ft/ft

Specify location 0.135

3. What is the distance between the cross-sections in 2 above? ..... 359 ft

Specify location 0.203

4. What is the maximum distance between cross-sections? ..... 591 ft.

Specify location 0.960

5. Floodway determination

a. What is the maximum surcharge allowed by the community or State? ..... 1.0 foot

b. What is the maximum surcharge for the revised conditions? ..... 0.3 foot

Specify location 0.135

c. What is the maximum velocity? ..... 10.75 fps

Specify location 0.392

Explain:

d. Are there any negeative surcharge values at any cross-section ☑ Yes ☐ No

If yes, the floodway may need to widen. If it is not widened, please explain and indicate the maximum negative surcharge. Negative Surcharge of -0.2 ft occurs at highway due to culvert computations.

Is the discharge value used to determine the floodway anywhere different from that used to determine the natural 100-year flood elevations? ..... ☐ Yes ☐ No

If Yes, explain:

_____

_____

_____

7. Do 100-year water surface elevations increase at any location? ..... ☐ Yes ☐ No

If yes, please attach a list of the locations where the increases occur, state whether or not the increases are located on the requestor's property, and provide an explanation of the reason for the increases.

_____

_____

_____

Please attach a completed comparison table entitled: Water Surface Elevation Check (See page 6)

6. REVISED FIRM/FBFM AND FLOOD PROFILES

A. The revised water surface elevations tie into those computed by the effective FIS Model *(10-, 50-, 100-, and 500-year)*, downstream of the project at cross-section_____ within_____feet and upstream of the project at cross section_____within_____feet.

B. The revised floodway elevations tie into those computed by the effective FIS model, dowstream of the project at cross section_____within_____feet and upstream of the project at cross section_____ within_____feet.

C. Attach profiles, at the same vertical and horizontal scale as the profiles in the effective FIS report, showing stream bed and profiles of all floods studied (without encroachment). Also, label all cross sections, road crossings (including low chord and top-of-road data), culverts, tributaries, corporate limits, and study limits. If channel distance has changed, the stationing should be revised for all profile sheets.

D. Attach a Floodway Data Table showing data for each cross section listed in the published Floodway Data Table in the FIS report.

Proceed to Riverine /Coastal Mapping Form

FEDERAL EMERGENCY MANAGMENT AGENCY

WATER SURFACE ELEVATION CHECK

COMMUNITY NAME	FLOODIND SOURCE	PROJECT NAME /IDENTIFIER
Unincorporated Maricopa County / Town of Wickenburg	Wash	Wickenburg ADMS - FCD 89-79

	EFFECTIVE			DUPLICATE EFFECTIVE			CORRECTED EFFECTIVE			EXISTING/PRE-PROJECT			REVISED/PROJECT		
SECNO	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]	NCWSEL[1]	FCWSEL[2]	SURC.[3]

COMMENTS:

New Model - See following Floodway Data Table

1-100-year (natural) Water Surface Elevation 2-Encroachment (floodway) Water Surface Elevation 3-Surcharge Value

Include all cross sections in the models between tie-in points. Any interpolated values should be indicated in parentheses.

FLOODWAY DATA, WASH H:UNNAMED WASH #3
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WATER SURFACE ELEVATION WITHOUT FLOODWAY	DIFFERENCE
45.630	420.	510.	3.2	1883.4	1883.4	.0
.083	80.	204.	8.0	1891.5	1891.5	.0
.110	80.	456.	3.6	1897.9	1898.1	-.2
.135	308.	1737.	.9	1898.6	1898.3	.3
.203	262.	357.	4.7	1899.3	1899.3	.0
.298	132.	275.	6.0	1911.6	1911.6	.0
.392	57.	175.	9.5	1923.0	1923.0	.0
.487	134.	237.	7.0	1933.1	1933.1	.0
.573	77.	200.	8.3	1942.9	1942.9	.0
.669	171.	297.	5.6	1953.2	1953.2	.0
.738	201.	297.	5.6	1959.5	1959.5	.0
.848	242.	362.	4.7	1969.7	1969.7	.0
.960	222.	367.	4.6	1977.4	1977.4	.0
1.043	173.	296.	5.8	1985.1	1985.1	.0
1.143	238.	376.	4.5	1995.0	1995.0	.0
1.237	327.	354.	4.8	2002.9	2002.9	.0
1.339	238.	361.	4.7	2011.1	2011.1	.0
1.434	191.	305.	5.6	2020.4	2020.4	.0
1.529	417.	457.	3.7	2026.5	2026.5	.0
1.583	337.	388.	4.4	2030.8	2030.8	.0
1.674	185.	362.	4.7	2037.7	2037.7	.0
1.767	271.	357.	4.8	2046.0	2046.0	.0
1.866	254.	359.	4.8	2052.0	2052.0	.0

FEDERAL EMERGENCY MANAGEMENT AGENCY BRIDGE/CULVERT FORM	O.M.B. Burden No. 3067-0148 Expires July 31, 1994	FEMA USE ONLY

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

Community Name: Unincorporated Maricopa County / Town of Wickenburg

Flooding Source: Wash H:

Project Name/Identifier: Wickenburg ADMS FCD 89-79

1. IDENTIFIER

1. Name of roadway, railroad, etc.: U.S. Highway 60-89
2. Location of bridge/culvert along flooding source (in terms of stream distance or cross-section identifier): Station 0.083 to Station 0.110
3. This revision reflects *(check one of the following)*:
   - ☒ New bridge/culvert not modeled in the FIS
   - ☐ Modified bridge/culvert previously modeled in the FIS
   - ☐ New analysis of bridge/culvert previously modeled in the FIS

   (Explain why new analysis was performed)

2. BACKGROUND

Provide the following information about the structure:

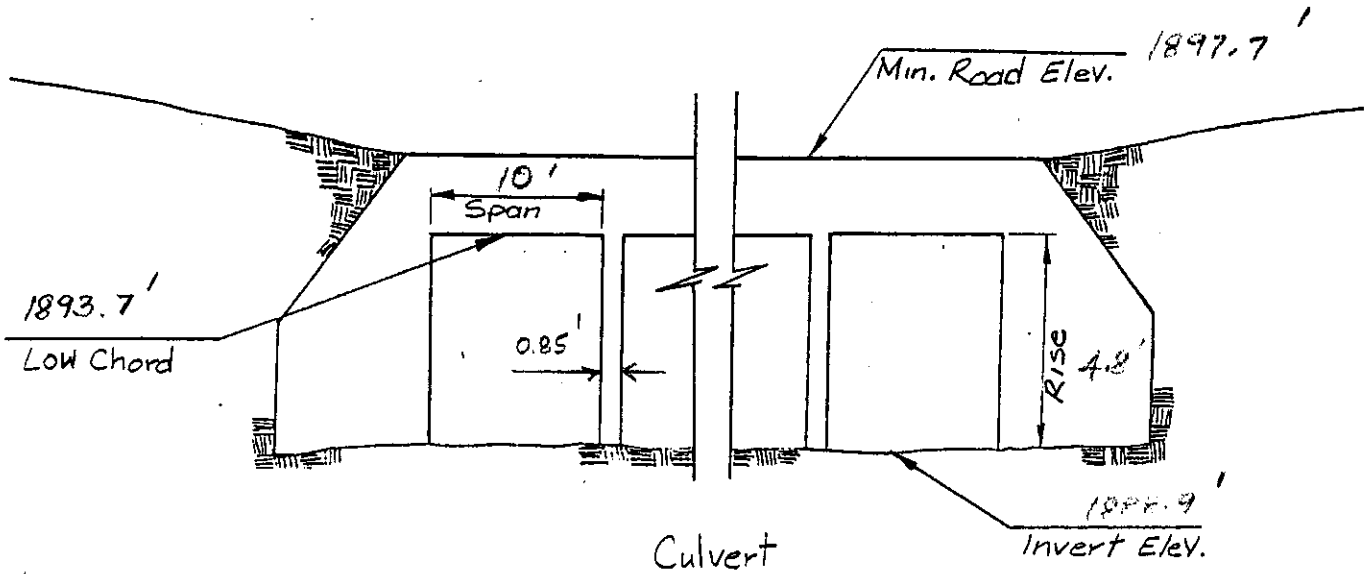
1. Dimension, material, and shape (e.g. two 10 x 5 feet reinforced concrete box culvert; three 30-foot span bridge with 2 rows of two 3- foot diameter circular piers; 40-foot wide ogee shape spillway) three 10' x 5' x 116' concrete box culvert
2. Entrance geometry of culvert/type of bridge opening (e.g. 30° - 75° wing walls with square top edge, sloping embankments and vertical abutments) 30° - 75° wing walls; no inlet top edge bevel
3. Hydraulic model used to analyze the structure (*e.g., HEC-2 with special bridge routine, WSPRO, HY8*) HEC-2 with special culvert routine.

If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structure(s). *(Attach justification)*

Note: If any items do not apply to submitted hydraulic analysis, indicate by N/A

* One form per new/revised bridge/culvert

Sketch the downstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, minimum top of road elevation, and ineffective flow widths.



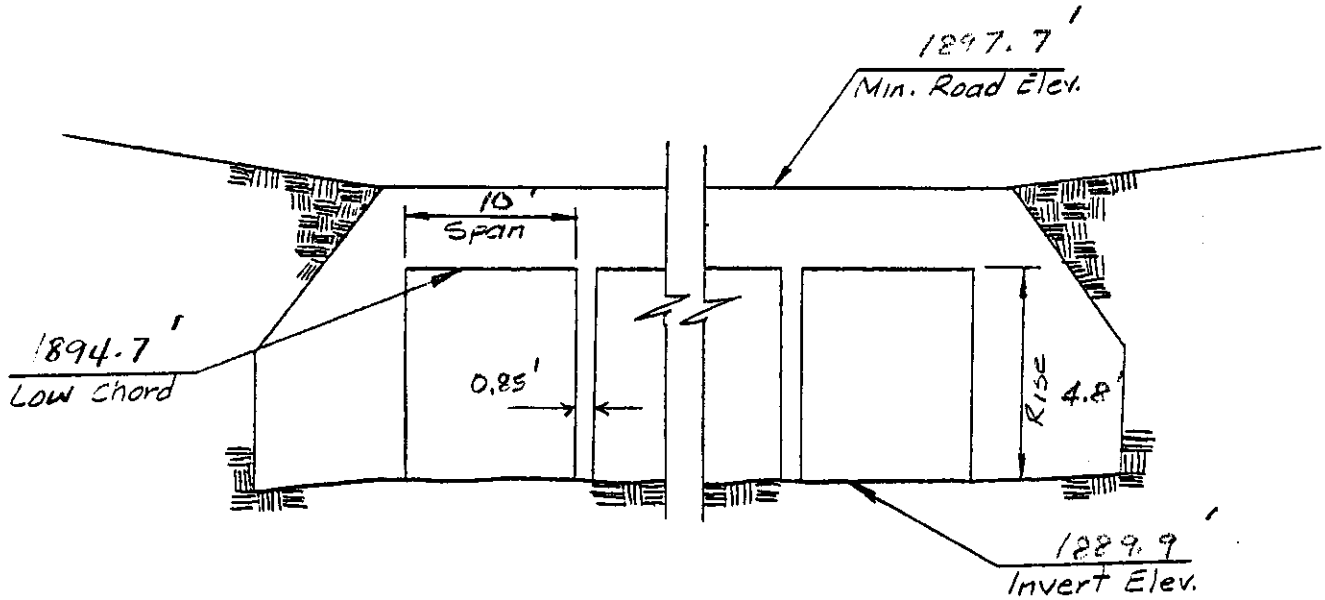
Culvert

No. of Barrels: 3

Culvert Size: 10' x 5' x 116'

See Cross Section # 0.088

Sketch the upstream face of the structure together with the road profile. Show, at a minimum, the maximum low chord elevation, invert elevation, and minimum top of road elevation.



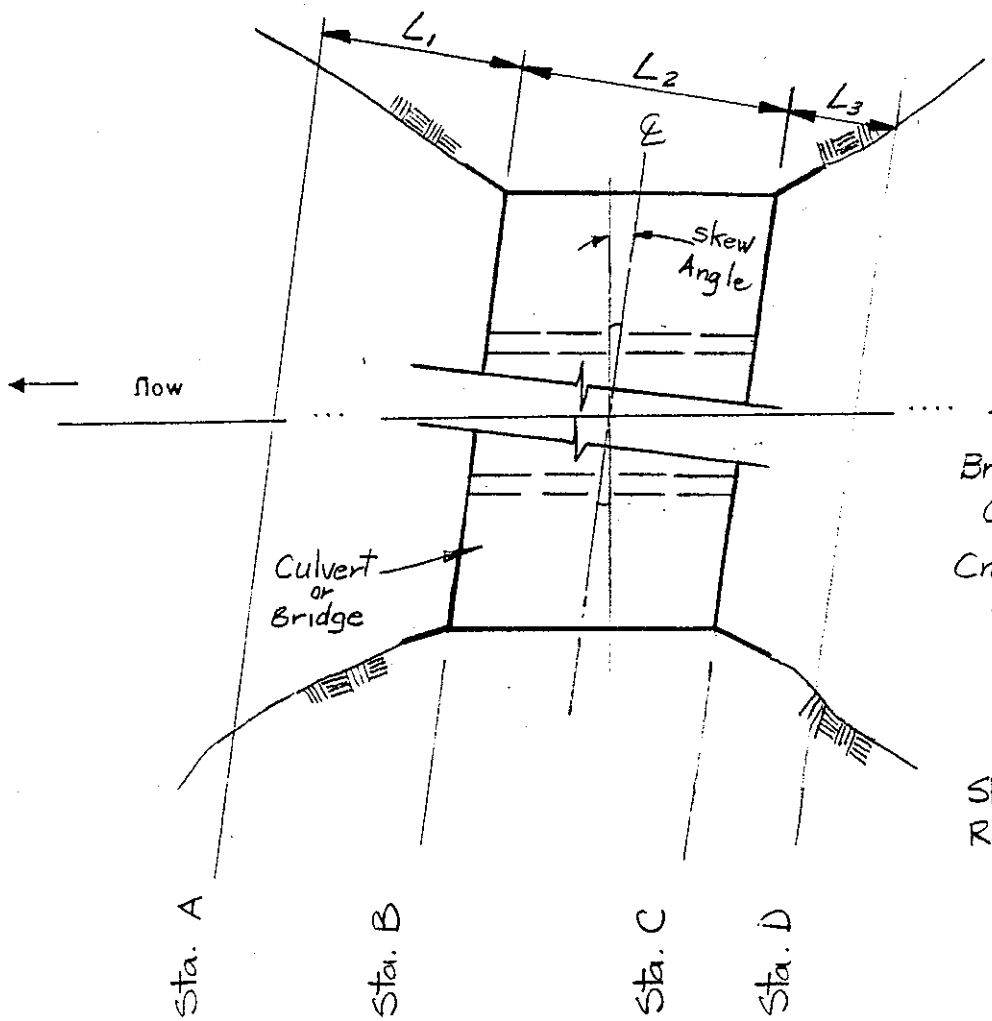
No of Barrels: 3

Culvert

Culvert Size: 10' x 5' x 116'

See Cross Section # 0.110

Sketch the plan view of the structure(s) Show, at a minimum, the skew angle, cross-section locations, distances between cross sections, and length of structure (s).



Bridge Width / Culvert Length: 116'

Cross Section Stations

Sta. A = 45.63

Sta. B = 0.083

Sta. C = 0.110

Sta. D = 0.135

Skew Angle: 0

Reach Lengths:

L1 = 530 ft.

L2 = 143 ft.

L3 = 132 ft.

Attach plans of the structure (s) certified by a registered Professional Engineer.

Culvert length or bridge width (ft)	116'
Calculated culvert/bridge area (ft²) by the hydraulic model, if applicable	144 ft²
Total culvert/bridge area (ft²)	144 ft²

Elevations Above Which Flow is Effective for Overbanks

	Left Overbank	Right Overbank
Upstream face (STA 0.110)	1897.7	1897.7
Downstream face (STA 0.022)	1894.6	1891.5

Minimum Top of Road Elevation

	Left Overbank	Right Overbank
Upstream face	1897.7	1897.7
Downstream face	1897.7	1897.7

100-Year Elevations	Water Surface Elevations	Energy Gradient Elevations
Upstream face	1897.87	1898.33
Downstream face	1891.53	1892.89

Discharge	Low Flow	Pressure Flow	Weir Flow	Total Flow
Amount of flow through/over the structure (s) (cfs)	–	1567	59	1631 (≈ 1626)

The maximum depth of flow over the roadway/railroad (ft.) ..... 0.17'

Weir length (ft.) ..... 80'

Top Widths

	Floodplain	Floodway
Upstream face	760'	80
Downstream face	(*)	80

Top Widths

	Effective Flow	Effective and Ineffective Flow
Upstream face	290	760'
Downstream face	290	(*)

(*) Hassayampa River Floodplain

Loss Coefficients

Entrance loss coefficient	0.40
Manning's "n" value assigned to the structure(s)	0.020
Friction loss coefficient through structure (s)	–
Other loss coefficients (e.g., bend manhole, etc.)	–
Total loss coefficient	–
Weir coefficient	2.90
Pier coefficient	–
Contraction loss coefficient	0.60
Expansion loss coefficient	0.80

4. SEDIMENT TRANSPORT CONSIDERATIONS

1. A. Is there any indication from historical records that sediment transport *(including scour and deposition)* can affect the 100-year water surface elevations? ..... ☐ Yes ☐ No

B Based on the conditions *(such as geomorphology, vegetative cover and development of the watershed and stream bed, and bank conditions)*, is there a potential for debris and sediment transport *(including scour and deposition)* to affect the 100-year water surface elevations and/or conveyance capacity through the bridge/culvert? ..... ☐ Yes ☐ No

.. If the answer to either 1A or 1B is yes:

A. What is the estimated sediment *(bed material)* load?
_____cfs *(attach gradation curve)*

Explain method used to estimate the sediment transport and the depth of scour and/or deposition NA - Sediment transport not considered in analysis.

B. Will sediment accumulate anywhere through the bridge/culvert? ☐ Yes ☐ No

If yes, explain the impact on the conveyance capacity through the bridge/culvert? _____

5. FLOODWAY ANALYSIS

Explain method of bridge encroachment (floodway run) Type I of method encroachment is used where encroachment stations are defined by ET (ie. STENCL & STENCR) and encroachment elevations are defined by X3 (i.e. ELLEA & ELREA) for effective flow calculations.

Comments *(explain any unusual situations)*:

Attach analysis.

```
*********************************************
*  HEC-2 WATER SURFACE PROFILES             *
*                                           *
*  Version   4.6.2;  May 1991               *
*                                           *
*  RUN DATE    01JUL92    TIME   15:37:37   *
*********************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS        *
*  HYDROLOGIC ENGINEERING CENTER       *
*  609 SECOND STREET, SUITE D          *
*  DAVIS, CALIFORNIA 95616-4687        *
*          (916) 756-1104              *
****************************************
```

```
X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

THIS RUN EXECUTED 01JUL92 15:37:37

```
************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
************************************


T1        WICKENBURG ADMS: MARICOPA COUNTY - CONTRACT FCDMC 89-79
T2        BLACK & VEATCH PN 17676:  COE & VAN LOO JN 1197-02
T3        WASH H:UNNAMED WASH #3          (WH6J.O)

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0     .0035         0         0         0   1894.42         0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1         0        -1         0         0         0        -1         0         0         15


J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150       200

NC     .050      .050      .040        .1        .3
QT        2      1631      1631
          HASSAYAMPA RIVER FIS SECTION 45.63(CBA 1988, NO DATUM CHANGE)
          CONFLUENCE WITH WASH H - UNNAMED WASH # 3, AN EAST TRIBUTARY
          NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA
X1    45.63        16    1418.8    1594.3
GR   1902.0     920.0    1889.7    1000.0    1889.7    1012.2    1893.6    1165.5    1884.1    1248.9
GR   1883.3    1314.8    1883.5    1418.8    1885.8    1433.8    1881.2    1461.2    1880.6    1555.1
GR   1880.5    1563.7    1882.0    1594.3    1882.1    1725.0    1893.4    1769.6    1893.4    1783.1
GR   1920.8    1819.7

NC     .065      .065      .020        .6        .8
ET               7.1       9.1                                   850      1140       960      1040
          THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS SECTION
          CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION,
          UNLESS OTHERWISE NOTED.
          DUE TO THE CONFIGURATION AND OTHER HYDROLOGIC CHARACTERISTICS
          OF THE WATERSHED, THE PEAK DISCHARGE MAY DECREASE AT VARIOUS
          LOCATIONS ALONG THE WASH.
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
          DOWNSTREAM BRIDGE SECTION 3(10' X  5' X 116' CBC)
          .2' TO 1.5' OF SEDIMENT ON BOTTOM
   0.083        28       975      1024       410       700       530
X3       10
GR   1894.4     794.    1893.9     820.    1891.1     843.    1890.6     867.    1889.7     941.
GR   1889.6     975.    1887.8     981.    1887.6     997.    1887.6    1000.    1887.7    1014.
GR   1891.5    1024.    1889.7    1045.    1891.2    1109.    1891.7    1142.    1892.2    1166.
```

GR	1891.2	1185.	1890.1	1207.	1890.0	1241.	1889.6	1283.	1889.1	1308.

```
     1889.3     1324.     1895.7     1354.     1896.4     1383.     1895.3     1394.     1895.9     1410.
GR   1906.5     1444.     1908.5     1467.     1908.8     1503.

ET               7.11      9.11                                    850       1140       960       1040
SC     3.02      0.40       2.9                4.8        10        116        8.1     1889.9     1888.9
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
          UPSTREAM BRIDGE SECTION
          ESTIMATED CBC INVERTS : 1889.7 & 1887.4
          SPECIFIED INVERTS TO REFLECT SEDIMENT: 1889.9 & 1888.9
          TOTAL AREA OF BOX 150 sf: EFFECTIVE ENTRANCE AREA: 144 sf
X1     .110        29       979       1009       143        143        143
X2                          2      1894.7     1897.8
X3       10                                                          1897.8     1897.8
BT      -11       711     1900.0                735      1897.7                 773     1897.8
BT                851     1897.8                968      1898.0                 988     1897.9
BT               1000     1897.8               1128      1898.6                1265     1897.7
BT               1352     1899.2               1475      1900.7
GR   1900.0      706.     1897.6      711.     1895.4      717.     1893.8     735.     1894.8      773.
GR   1895.6      802.     1894.6      812.     1895.4      851.     1895.0     934.     1894.1      968.
GR   1893.1      979.     1890.0      988.     1889.8     1000.     1889.8    1002.     1891.9     1009.
GR   1892.9     1023.     1892.6     1091.     1894.7     1128.     1894.8    1168.     1894.2     1191.
GR   1892.9     1220.     1892.2     1265.     1890.4     1307.     1891.1    1352.     1890.9     1403.
GR   1891.2     1432.     1895.5     1454.     1900.0     1475.     1900.9    1492.

     .070       .070      .040        .6         .8
ET               7.1       9.1                                     850       1256       948       1256
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
          STRUCTURE BLOCKED OUT WITH GR POINTS
X1    0.135        29       960       1019        90        180        132
GR   1904.0      667.     1897.6      689.     1893.0      714.     1892.1     752.     1893.0      795.
GR   1892.5      827.     1892.5      862.     1892.3      900.     1900.0    900.1     1900.0      917.
GR   1900.0     941.9     1892.8      942.     1894.2      948.     1894.1     960.     1891.8      967.
GR   1891.4      975.     1891.3      988.     1892.9      999.     1893.0    1000.     1894.1     1019.
GR   1892.9     1037.     1892.9     1061.     1892.6     1092.     1892.6    1123.     1892.8     1179.
GR   1892.6     1217.     1893.9     1242.     1905.9     1277.     1908.1    1299.

QT       2      1660      1660
NC    .070       .070      .040        .1         .3
ET               7.1       9.1                                     948       1210       948       1210
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
          WSEL AND THE TOPOGRAPHY.
X1    0.203        23       949       1005       330        410        359
GR   1912.0      802.     1908.4      805.     1907.3      821.     1905.0     846.     1899.0      865.
GR   1897.5      886.     1896.8      919.     1897.5      949.     1896.7     978.     1897.7     1005.
GR   1898.5     1018.     1898.2     1025.     1898.0     1030.     1897.8    1034.     1897.5     1047.
GR   1898.1     1065.     1898.2     1088.     1898.2     1130.     1898.2    1171.     1898.3     1201.
     1900.7     1223.     1902.8     1229.     1912.0     1255.
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ET			9.1						945	1078
X1	0.298	16	1023	1051	570	460	502			
GR	1924.0	887.	1917.8	903.	1913.1	933.	1910.2	957.	1910.9	977.
GR	1910.2	992.	1910.2	1000.	1910.2	1002.	1909.7	1016.	1907.6	1023.
GR	1906.5	1039.	1907.4	1051.	1909.5	1058.	1910.9	1073.	1913.5	1090.
GR	1919.9	1121.								
ET			9.1						958	1031
X1	0.392	9	989	1028	450	510	496			
GR	1932.2	955.	1925.2	964.	1919.4	989.	1919.1	1009.	1919.2	1015.
GR	1919.5	1028.	1926.8	1033.	1929.0	1052.	1932.2	1061.		
ET			9.1						892	1026
X1	0.487	14	984	1019	530	450	502			
GR	1944.0	853.	1937.5	872.	1931.8	898.	1930.6	917.	1930.8	924.
GR	1933.2	935.	1933.9	955.	1933.0	968.	1931.4	973.	1929.8	984.
GR	1929.3	999.	1929.3	1000.	1930.0	1019.	1944.0	1050.		
ET			9.1						966	1044
X1	0.573	14	1000	1035	465	450	454			
GR	1952.0	924.	1947.3	929.	1944.2	950.	1943.1	963.	1942.1	979.
GR	1941.2	991.	1938.9	1000.	1938.9	1018.	1938.9	1020.	1939.2	1035.
GR	1942.8	1043.	1947.9	1061.	1951.4	1090.	1952.0	1104.		
			9.1						921	1093
	0.669	16	984	1019	540	400	507			
GR	1960.1	896.	1957.0	906.	1953.4	921.	1951.6	931.	1953.1	949.
GR	1952.8	964.	1951.2	978.	1950.2	984.	1949.6	1000.	1949.5	1019.
GR	1952.3	1025.	1952.5	1046.	1950.6	1071.	1951.1	1085.	1951.9	1087.
GR	1960.0	1122.								
ET			9.1						839	1041
X1	0.738	27	1006	1036	270	410	364			
GR	1968.2	695.	1967.8	720.	1968.7	740.	1969.1	766.	1966.5	784.
GR	1964.5	802.	1960.5	824.	1959.5	839.	1958.7	854.	1957.3	872.
GR	1956.6	893.	1958.6	909.	1957.4	921.	1958.0	935.	1958.3	954.
GR	1958.7	968.	1959.7	979.	1960.5	992.	1959.0	1000.	1956.7	1006.
GR	1956.6	1020.	1956.6	1022.	1957.5	1036.	1960.3	1042.	1962.0	1058.
GR	1964.1	1084.	1968.2	1105.						
QT	2	1700	1700							
ET		7.1	9.1				966	1209	966	1209
X1	0.848	23	971	1000	510	580	581			
GR	1992.1	929.	1966.9	971.	1966.9	986.	1967.6	1000.	1969.1	1013.
GR	1968.6	1038.	1968.3	1132.	1967.6	1199.	1972.2	1219.	1972.5	1230.
GR	1973.2	1239.	1973.2	1244.	1971.9	1268.	1969.5	1283.	1970.6	1305.
GR	1971.6	1337.	1971.2	1356.	1969.0	1367.	1968.8	1380.	1969.8	1413.
GR	1972.2	1460.	1973.9	1490.	1980.1	1548.				

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ET                      9.1                                                 803      1026
X1   0.960       21     987     1022     590     490     591
GR   1988.1     641.   1985.9   652.   1983.7   682.   1982.2   707.   1980.0   728.
GR   1979.6     746.   1980.5   779.   1980.0   793.   1976.7   807.   1975.4   831.
GR   1975.3     886.   1976.5   911.   1976.4   940.   1977.3   954.   1977.1   968.
GR   1975.1     987.   1974.1  1005.   1973.8  1010.   1973.6  1014.   1974.8  1022.
GR   1988.1    1042.

ET                      9.1                                                 843      1017
X1   1.043       17     969     1010     360     444     438
GR   1996.0     720.   1991.6   728.   1990.6   754.   1989.8   791.   1989.2   821.
GR   1986.2     833.   1984.5   850.   1983.5   882.   1982.8   908.   1983.5   934.
GR   1984.1     952.   1983.1   969.   1982.1   994.   1983.4  1010.   1985.4  1018.
GR   1988.2    1038.   1995.9  1059.

ET                      9.1                                                 963      1202
X1   1.143       18     967     1000     525     495     528
GR   2000.1     957.   1991.6   967.   1991.6   980.   1991.6  1000.   1994.2  1007.
GR   1993.6    1020.   1994.1  1051.   1994.2  1067.   1993.9  1109.   1993.1  1149.
GR   1992.7    1173.   1993.8  1188.   1995.2  1204.   1997.5  1233.   1999.3  1273.
GR   2001.1    1307.   2001.8  1333.   2008.0  1371.

ET               7.1    9.1                             699     1037     699      1037
X1   1.237       26     995     1033     520     350     496
     2007.9     581.   2004.5   595.   2001.9   617.   2003.7   629.   2004.0   651.
     2002.4     660.   2003.3   674.   2004.4   684.   2004.1   699.   2002.3   715.
GR   2000.8     727.   2002.1   743.   2001.9   764.   2000.7   791.   2001.9   836.
GR   2001.7     875.   2001.5   901.   2002.9   906.   2002.9   946.   2002.6   972.
GR   2002.7     995.   2002.2  1000.   2001.0  1010.   1999.6  1022.   2000.3  1033.
GR   2008.1    1042.

ET                      9.1                                                 970      1209
X1   1.339       21     974     1014     400     500     539
GR   2019.9     924.   2017.2   933.   2013.8   951.   2012.8   967.   2009.7   974.
GR   2007.8     985.   2007.6   993.   2007.9  1000.   2008.2  1006.   2010.6  1014.
GR   2010.1    1025.   2010.0  1040.   2009.9  1045.   2009.4  1120.   2009.7  1159.
GR   2009.9    1184.   2011.3  1212.   2013.0  1238.   2015.0  1262.   2017.4  1289.
GR   2020.0    1315.

ET               7.1    9.1                             827     1019     827      1019
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THE LOW AREA IN THE LEFT OVERBANK IS THE CONFLUENCE OF A SMALL TRIBUTARY TO WASH H AND ANY FLOW FROM WASH H THE COULD GET OVER THE RISE BETWEEN THIS OVERBANK AND THE MAIN CHANNEL WILL BE INEFFECTIVE FLOW. THE RIGHT OVERBANK ALSO HAS A TRIBUTARY FLOW CONFLUENCE. THE RIGHT BANK OF THE MAIN CHANNEL IS LOWER THAN THE COMPUTED WATER SURFACE AND FLOW FROM WASH H COULD SPREAD INTO THE RIGHT OVERBANK, HOWEVER, IT WILL BE INEFFECTIVE FLOW WITH THE RIGHT OVERBANK AREA.

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     ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
     SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
     WSEL AND THE TOPOGRAPHY.
X1    1.434      24     972    1011     560     290     502
GR   2024.2     680.  2020.9    723.  2020.0     757.  2021.3     787.  2022.1     815.
GR   2020.0     831.  2020.2    877.  2019.2     886.  2019.2     918.  2019.2     943.
GR   2018.3     962.  2017.0    972.  2016.7     999.  2016.7    1000.  2016.8    1011.
GR   2019.5    1019.  2019.7   1037.  2018.2    1074.  2017.9    1100.  2017.5    1126.
GR   2017.8    1174.  2018.5   1220.  2020.2    1262.  2024.0    1322.

ET                     9.1                                              585    1003
X1    1.529      16     952    1000     400     525     502
GR   2032.3     546.  2027.4    551.  2026.7     580.  2025.3     614.  2025.1     652.
GR   2024.1     677.  2025.3    690.  2025.3     743.  2025.6     803.  2026.3     862.
GR   2025.8     901.  2025.2    952.  2023.9     974.  2024.2     998.  2024.2    1000.
GR    2040.    1020

ET                     9.1                                              670    1008
X1    1.583      18     967     996     225     290     285
GR   2040.1     632.  2032.9    649.  2030.6     672.  2028.9     690.  2027.5     701.
GR   2030.5     718.  2030.1    740.  2029.9     765.  2030.2     810.  2029.6     850.
GR   2029.7     895.  2029.6    929.  2028.8     967.  2029.0     996.  2029.7    1003.
GR   2030.7    1007.  2032.1   1020.  2036.0    1028.

ET                     9.1                                              905    1090
     1.674      16     978    1017     370     470     480
     2040.1     901.  2035.1    910.  2036.4     926.  2036.3     963.  2035.6     978.
GR   2035.0     988.  2035.1   1000.  2035.2    1017.  2036.6    1030.  2034.9    1069.
GR   2036.1    1082.  2035.5   1123.  2036.2    1174.  2037.1    1213.  2038.2    1246.
GR   2039.8    1269.

ET                     9.1                                              762    1034
X1    1.767      18    1000    1030     550     490     491
GR   2051.9     701.  2049.3    718.  2047.5     742.  2046.2     755.  2045.0     799.
GR   2046.4     824.  2045.8    855.  2044.7     878.  2044.7     901.  2044.0     921.
GR   2044.8     941.  2043.7    988.  2043.0    1000.  2042.7    1006.  2042.6    1012.
GR   2042.9    1025.  2043.5   1030.  2055.6    1045.

QT       2    1742    1742
ET                     9.1                                              943    1198
X1    1.866      21     962    1003     300     530     523
GR   2056.0     886.  2053.2    907.  2052.9     928.  2052.0     944.  2051.5     951.
GR   2050.3     962.  2048.3    986.  2048.4     992.  2048.7    1000.  2048.9    1003.
GR   2050.8    1012.  2049.7   1040.  2051.2    1058.  2051.2    1059.  2051.9    1106.
GR   2050.9    1135.  2049.7   1159.  2051.7    1186.  2052.7    1221.  2052.9    1241.
GR   2056.1    1265.
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 45.630

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION 45.63(CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH H - UNNAMED WASH # 3, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

45.630	2.86	1883.36	1882.62	1894.42	1883.55	.19	.00	.00	1883.50
1631.0	.2	1267.0	363.8	1.2	334.0	174.7	.0	.0	1882.00
.00	.17	3.79	2.08	.050	.040	.050	.000	1880.50	1309.64
.003465	0.	0.	0.	0	20	8	.00	319.40	1729.98

FLOW DISTRIBUTION FOR SECNO= 45.63 CWSEL= 1883.36

STA=	1310.	1347.	1594.	1725.	1730.
PER Q=	.0	77.7	22.1	.2	
AREA=	1.2	334.0	171.6	3.1	
VEL=	.2	3.8	2.1	1.3	
DEPTH=	.0	2.3	1.3	.6	

CCHV= .600 CEHV= .800
*SECNO .083

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 850.0 1140.0 TYPE= 1 TARGET= 290.000
THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS SECTION
CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION,
UNLESS OTHERWISE NOTED.
DUE TO THE CONFIGURATION AND OTHER HYDROLOGIC CHARACTERISTICS
OF THE WATERSHED, THE PEAK DISCHARGE MAY DECREASE AT VARIOUS
LOCATIONS ALONG THE WASH.
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT

```
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
        DOWNSTREAM BRIDGE SECTION 3(10' X  5' X 116' CBC)
        .2' TO 1.5' OF SEDIMENT ON BOTTOM
     .083      3.93   1891.53   1891.53      .00   1892.27      .74      1.50      .44   1889.60
   1631.0     255.1    1275.2     100.7    179.2     163.8     92.5       6.0      3.9   1891.50
     .02      1.42      7.78      1.09     .065      .020     .065      .000   1887.60    850.00
  .002254     410.      530.      700.        0        18        0       .00    280.96   1130.96


FLOW DISTRIBUTION FOR SECNO=       .08          CWSEL=   1891.53

STA=     850.     867.     941.     975.    1024.    1045.    1109.    1131.
  PER Q=       .7      8.5      6.5     78.2      1.2      4.9       .1
   AREA=     12.8    102.3     64.0    163.8     19.6     69.3      3.7
    VEL=       .9      1.3      1.7      7.8      1.0      1.1       .3
  DEPTH=       .8      1.4      1.9      3.3       .9      1.1       .2


SPECIAL CULVERT

SC  CUNO      CUNV      ENTLC     COFQ      RDLEN     RISE      SPAN      CULVLN    CHRT      SCL       ELCHU     ELCHD
    3         .020      .40       2.90      .00       4.80      10.00     116.00    8         1         1889.90   1888.90

CHART  8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE  1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO  .110
BTCARD, BRIDGE STENCL=     850.00   STENCR=    1140.00

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG =   1898.20

3301 HV CHANGED MORE THAN HVINS


3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =  3.69

SPECIAL CULVERT

    EGIC      EGOC       H4      QWEIR     QCULV      VCH      ACULV     ELTRD     WEIRLN
  1898.71   1897.57     5.93       89.     1546.    3.596      144.0   1897.80      215.



3470 ENCROACHMENT STATIONS=      850.0    1140.0  TYPE=      1  TARGET=      290.000
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
        UPSTREAM BRIDGE SECTION
        ESTIMATED CBC INVERTS : 1889.7 & 1887.4
        SPECIFIED INVERTS TO REFLECT SEDIMENT: 1889.9 & 1888.9
        TOTAL AREA OF BOX 150 sf: EFFECTIVE ENTRANCE AREA: 144 sf
     .110      8.30   1898.10       .00       .00   1898.20       .10      5.93       .00   1893.10
   1631.0     266.9     808.0     556.1     413.6     224.7     648.8       8.9      4.8   1891.90
     .04       .65      3.60       .86     .065      .020     .065      .000   1889.80    850.00
  .000166     143.      143.      143.        2         0         0       .00    290.00   1140.00
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

FLOW DISTRIBUTION FOR SECNO= .11 CWSEL= 1898.10

STA=	850.	851.	934.	968.	979.	1009.	1023.	1091.	1128.	1140.
PER Q=	.0	8.8	5.1	2.4	49.5	4.6	20.1	8.0	1.4	
AREA=	2.7	240.7	120.7	49.5	224.7	79.8	363.8	164.6	40.6	
VEL=	.2	.6	.7	.8	3.6	.9	.9	.8	.6	
DEPTH=	2.7	2.9	3.5	4.5	7.5	5.7	5.3	4.4	3.4	

CCHV= .600 CEHV= .800
*SECNO .135

3265 DIVIDED FLOW

3470 ENCROACHMENT STATIONS= 850.0 1256.0 TYPE= 1 TARGET= 406.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.
STRUCTURE BLOCKED OUT WITH GR POINTS

.135	6.97	1898.27	1893.78	.00	1898.28	.01	.02	.05	1894.10
1631.0	244.6	468.4	918.0	370.2	342.9	1236.6	14.4	5.9	1894.10
.09	.66	1.37	.74	.070	.040	.070	.000	1891.30	850.00
.000131	90.	132.	180.	0	17	0	.00	362.87	1254.72

FLOW DISTRIBUTION FOR SECNO= .14 CWSEL= 1898.27

STA=	850.	900.	960.	1019.	1037.	1061.	1092.	1123.	1179.	1217.	1242.	1255.
PER Q=	12.3	2.7	28.7	3.6	5.9	7.9	8.3	14.6	9.9	5.5	.7	
AREA=	291.9	78.3	342.9	85.7	128.7	170.9	175.5	311.4	211.3	125.3	27.7	
VEL=	.7	.6	1.4	.7	.7	.8	.8	.8	.8	.7	.4	
DEPTH=	5.8	1.3	5.8	4.8	5.4	5.5	5.7	5.6	5.6	5.0	2.2	

CCHV= .100 CEHV= .300
*SECNO .203

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3470 ENCROACHMENT STATIONS= 948.0 1210.0 TYPE= 1 TARGET= 262.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

.203	2.58	1899.28	1899.28	.00	1899.90	.63	.17	.18	1897.50
1660.0	3.7	950.7	705.7	1.8	119.2	231.2	24.6	8.7	1897.70
.10	2.04	7.98	3.05	.070	.040	.070	.000	1896.70	948.00
.016867	330.	359.	410.	0	22	0	.00	261.94	1209.94

FLOW DISTRIBUTION FOR SECNO= .20 CWSEL= 1899.28

STA=	948.	949.	1005.	1025.	1047.	1065.	1088.	1130.	1171.	1201.	1210.
PER Q=	.2	57.3	3.8	7.1	5.7	4.7	7.9	7.7	5.2	.4	
AREA=	1.8	119.2	21.8	32.5	26.6	25.9	45.2	44.1	30.8	4.4	
VEL=	2.0	8.0	2.9	3.6	3.6	3.0	2.9	2.9	2.8	1.7	
DEPTH=	1.8	2.1	1.1	1.5	1.5	1.1	1.1	1.1	1.0	.5	

CNO .298

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.298	5.09	1911.59	1911.59	.00	1912.72	1.13	5.98	.15	1907.60
1660.0	268.6	1245.8	145.6	101.5	128.2	44.3	28.2	11.0	1907.40
.12	2.65	9.72	3.29	.070	.040	.070	.000	1906.50	945.54
.009032	570.	502.	460.	0	14	0	.00	131.94	1077.48

FLOW DISTRIBUTION FOR SECNO= .30 CWSEL= 1911.59

STA=	946.	957.	977.	992.	1000.	1002.	1016.	1023.	1051.	1058.	1073.	1077.
PER Q=	.8	2.6	1.9	1.7	.4	3.9	5.0	75.0	5.6	3.1	.1	
AREA=	7.9	20.7	15.5	11.1	2.8	22.9	20.5	128.2	21.9	20.8	1.5	
VEL=	1.6	2.1	2.1	2.5	2.5	2.8	4.0	9.7	4.2	2.5	1.0	
DEPTH=	.7	1.0	1.0	1.4	1.4	1.6	2.9	4.6	3.1	1.4	.3	

*SECNO .392

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.392	3.86	1922.96	1922.96	.00	1924.65	1.69	5.58	.17	1919.40
1660.0	101.4	1548.2	10.4	27.3	144.0	4.1	30.7	12.0	1919.50
.14	3.71	10.75	2.53	.070	.040	.070	.000	1919.10	973.66
.014682	450.	496.	510.	0	15	0	.00	56.71	1030.37

FLOW DISTRIBUTION FOR SECNO= .39 CWSEL= 1922.96

STA=	974.	989.	1028.	1030.
PER Q=	6.1	93.3	.6	
AREA=	27.3	144.0	4.1	
VEL=	3.7	10.8	2.5	
DEPTH=	1.8	3.7	1.7	

*SECNO .487

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

.487	3.81	1933.11	1933.11	.00	1934.34	1.23	7.18	.05	1929.80
1660.0	390.2	1236.2	33.6	101.4	122.9	10.7	33.1	12.9	1930.00
.15	3.85	10.06	3.14	.070	.040	.070	.000	1929.30	892.04
.013759	530.	502.	450.	0	5	0	.00	101.97	1025.88

FLOW DISTRIBUTION FOR SECNO= .49 CWSEL= 1933.11

STA=	892.	898.	917.	924.	935.	973.	984.	1019.	1026.
PER Q=	.4	8.4	4.5	2.0	.6	7.6	74.5	2.0	
AREA=	3.9	36.2	16.9	12.2	4.6	27.6	122.9	10.7	
VEL=	1.8	3.8	4.5	2.7	2.2	4.6	10.1	3.1	
DEPTH=	.7	1.9	2.4	1.2	.1	2.5	3.5	1.6	

*SECNO .573
7185 MINIMUM SPECIFIC ENERGY

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

3720 CRITICAL DEPTH ASSUMED

.573	4.00	1942.90	1942.90	.00	1944.39	1.49	6.02	.08	1938.90
1660.0	169.2	1438.3	52.5	45.8	137.8	15.2	35.4	13.9	1939.20
.17	3.69	10.44	3.45	.070	.040	.070	.000	1938.90	966.18
.012697	465.	454.	450.	0	8	0	.00	77.18	1043.36

FLOW DISTRIBUTION FOR SECNO= .57 CWSEL= 1942.90

STA=	966.	979.	991.	1000.	1035.	1043.
PER Q=	.4	2.5	7.3	86.6	3.2	
AREA=	5.1	15.0	25.7	137.8	15.2	
VEL=	1.3	2.8	4.7	10.4	3.5	
DEPTH=	.4	1.3	2.9	3.9	1.9	

*SECNO .669

3301 HV CHANGED MORE THAN HVINS

[illegible]5 MINIMUM SPECIFIC ENERGY
[illegible]0 CRITICAL DEPTH ASSUMED

.669	3.73	1953.23	1953.23	.00	1954.16	.94	5.97	.06	1950.20
1660.0	158.9	1128.9	372.3	59.7	123.1	113.9	38.1	15.3	1949.50
.18	2.66	9.17	3.27	.070	.040	.070	.000	1949.50	921.95
.011384	540.	507.	400.	0	11	0	.00	170.79	1092.74

FLOW DISTRIBUTION FOR SECNO= .67 CWSEL= 1953.23

STA=	922.	931.	949.	964.	978.	984.	1019.	1025.	1046.	1071.	1085.	1087.	1093.
PER Q=	.9	2.0	.2	2.7	3.8	68.0	3.1	2.1	8.1	8.1	.6	.4	
AREA=	7.4	15.8	4.2	17.2	15.2	123.1	14.0	17.4	42.0	33.3	3.5	3.8	
VEL=	2.0	2.1	1.0	2.6	4.2	9.2	3.7	2.0	3.2	4.0	3.1	1.7	
DEPTH=	.8	.9	.3	1.2	2.5	3.5	2.3	.8	1.7	2.4	1.7	.7	

*SECNO .738

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST
.738	2.89	1959.49	1959.49	.00	1960.31	.81	4.85	.01	1956.70
1660.0	876.8	771.7	11.5	213.0	79.8	4.3	40.4	16.5	1957.50
.20	4.12	9.67	2.69	.070	.040	.070	.000	1956.60	839.11
.018389	270.	364.	410.	0	15	0	.00	180.53	1040.27

FLOW DISTRIBUTION FOR SECNO= .74 CWSEL= 1959.49

STA=	839.	872.	893.	909.	921.	935.	954.	1006.	1036.	1040.
PER Q=	6.6	17.3	8.0	4.1	6.4	5.4	5.0	46.5	.7	
AREA=	32.8	53.4	30.3	17.9	25.1	25.5	27.9	79.8	4.3	
VEL=	3.4	5.4	4.4	3.7	4.2	3.5	3.0	9.7	2.7	
DEPTH=	1.0	2.5	1.9	1.5	1.8	1.3	.5	2.7	1.0	

*SECNO .848

3470 ENCROACHMENT STATIONS= 966.0 1209.0 TYPE= 1 TARGET= 243.000

.848	2.79	1969.69	1969.68	.00	1970.35	.66	10.03	.02	1966.90
1700.0	20.3	703.3	976.4	6.4	75.8	279.3	44.6	19.2	1967.60
.23	3.15	9.28	3.50	.070	.040	.070	.000	1966.90	966.36
.017362	510.	581.	580.	2	11	0	.00	241.69	1208.05

FLOW DISTRIBUTION FOR SECNO= .85 CWSEL= 1969.69

STA=	966.	971.	1000.	1013.	1038.	1132.	1199.	1208.
PER Q=	1.2	41.4	3.4	3.0	21.9	27.5	1.6	
AREA=	6.4	75.8	17.3	20.8	115.8	116.0	9.4	
VEL=	3.1	9.3	3.4	2.5	3.2	4.0	2.8	
DEPTH=	1.4	2.6	1.3	.8	1.2	1.7	1.0	

*SECNO .960

.960	3.83	1977.43	1977.32	.00	1978.08	.65	7.73	.00	1975.10
1700.0	774.1	913.5	12.4	252.3	109.2	5.2	49.2	22.1	1974.80
.25	3.07	8.37	2.39	.070	.040	.070	.000	1973.60	803.90
.011189	590.	591.	490.	4	11	0	.00	222.06	1025.96

FLOW DISTRIBUTION FOR SECNO= .96 CWSEL= 1977.43

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	804.	807.	831.	886.	911.	940.	954.	968.	987.	1022.	1026.
PER Q=	.1	5.4	24.7	6.7	3.7	.7	.2	4.0	53.7	.7	
AREA=	1.1	33.2	114.5	38.3	28.5	8.1	3.2	25.3	109.2	5.2	
VEL=	1.1	2.8	3.7	3.0	2.2	1.6	.8	2.7	8.4	2.4	
DEPTH=	.4	1.4	2.1	1.5	1.0	.6	.2	1.3	3.1	1.3	

*SECNO 1.043
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.043	3.01	1985.11	1985.11	.00	1985.95	.84	5.74	.06	1983.10
1700.0	756.7	928.3	15.0	188.5	100.5	5.8	52.1	23.8	1983.40
.27	4.02	9.24	2.57	.070	.040	.070	.000	1982.10	843.91
.018756	360.	438.	444.	0	15	0	.00	172.93	1016.84

FLOW DISTRIBUTION FOR SECNO= 1.04 CWSEL= 1985.11

STA=	844.	850.	882.	908.	934.	952.	969.	1010.	1017.
PER Q=	.1	6.5	13.6	13.6	4.8	5.8	54.6	.9	
AREA=	1.9	35.5	50.9	50.9	23.6	25.7	100.5	5.8	
VEL=	1.3	3.1	4.6	4.6	3.5	3.8	9.2	2.6	
DEPTH=	.3	1.1	2.0	2.0	1.3	1.5	2.5	.9	

*SECNO 1.143
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.143	3.37	1994.97	1994.97	.00	1995.69	.72	7.28	.01	1991.60
1700.0	17.5	968.5	714.0	6.7	111.3	257.7	56.1	26.2	1991.60
.29	2.61	8.70	2.77	.070	.040	.070	.000	1991.60	963.03
.010838	525.	528.	495.	0	8	0	.00	238.38	1201.41

FLOW DISTRIBUTION FOR SECNO= 1.14 CWSEL= 1994.97

STA=	963.	967.	1000.	1007.	1020.	1051.	1067.	1109.	1149.	1173.	1188.	1201.
PER Q=	1.0	57.0	2.9	1.9	4.9	1.5	4.8	9.9	10.5	4.8	.7	
AREA=	6.7	111.3	14.5	14.0	34.8	13.2	38.8	58.9	49.8	25.9	7.9	
VEL=	2.6	8.7	3.4	2.3	2.4	1.9	2.1	2.9	3.6	3.2	1.5	
DEPTH=	1.7	3.4	2.1	1.1	1.1	.8	.9	1.5	2.1	1.7	.6	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.237
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 699.0 1037.0 TYPE= 1 TARGET= 338.000

1.237	3.32	2002.92	2002.92	.00	2003.53	.61	6.89	.01	2002.70
1700.0	993.4	694.6	12.0	270.4	79.6	4.0	59.9	29.2	2000.30
.31	3.67	8.72	3.03	.070	.040	.070	.000	1999.60	709.50
.020709	520.	496.	350.	0	5	0	.00	326.52	1036.02

FLOW DISTRIBUTION FOR SECNO= 1.24 CWSEL= 2002.92

STA=	709.	727.	743.	764.	791.	836.	875.	901.	995.	1033.	1036.
PER Q=	3.8	5.4	3.3	10.8	18.0	8.5	7.4	1.2	40.9	.7	
AREA=	18.1	23.5	19.3	43.7	72.9	43.6	34.3	14.9	79.6	4.0	
VEL=	3.5	3.9	2.9	4.2	4.2	3.3	3.7	1.4	8.7	3.0	
DEPTH=	1.0	1.5	.9	1.6	1.6	1.1	1.3	.2	2.1	1.3	

ECNO 1.339

1.339	3.52	2011.12	2011.08	.00	2011.80	.68	8.25	.02	2009.70
1700.0	4.3	928.5	767.2	2.3	109.1	249.4	63.8	32.1	2010.60
.34	1.88	8.51	3.08	.070	.040	.070	.000	2007.60	970.80
.014000	400.	539.	500.	1	8	0	.00	237.57	1208.37

FLOW DISTRIBUTION FOR SECNO= 1.34 CWSEL= 2011.12

STA=	971.	974.	1014.	1025.	1040.	1045.	1120.	1159.	1184.	1208.
PER Q=	.3	54.6	1.0	2.5	1.0	21.0	12.2	5.9	1.6	
AREA=	2.3	109.1	8.5	16.0	5.8	110.1	61.2	33.0	14.8	
VEL=	1.9	8.5	2.1	2.6	2.8	3.2	3.4	3.0	1.8	
DEPTH=	.7	2.7	.8	1.1	1.2	1.5	1.6	1.3	.6	

*SECNO 1.434
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 827.0 1019.0 TYPE= 1 TARGET= 192.000
THE LOW AREA IN THE LEFT OVERBANK IS THE CONFLUENCE OF A SMALL
TRIBUTARY TO WASH H AND ANY FLOW FROM WASH H THE COULD GET OVER

THE RISE BETWEEN THIS OVERBANK AND THE MAIN CHANNEL WILL
BE INEFFECTIVE FLOW. THE RIGHT OVERBANK ALSO HAS A TRIBUTARY
FLOW CONFLUENCE. THE RIGHT BANK OF THE MAIN CHANNEL IS LOWER
THAN THE COMPUTED WATER SURFACE AND FLOW FROM WASH H COULD
SPREAD INTO THE RIGHT OVERBANK, HOWEVER, IT WILL BE INEFFECTIVE
FLOW WITH THE RIGHT OVERBANK AREA.
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

1.434	3.70	2020.40	2020.40	.00	2021.32	.92	5.50	.07	2017.00
1700.0	401.2	1238.6	60.2	147.4	139.5	18.0	67.0	34.2	2016.80
.35	2.72	8.88	3.35	.070	.040	.070	.000	2016.70	827.98
.010433	560.	502.	290.	0	8	0	.00	191.01	1019.00

FLOW DISTRIBUTION FOR SECNO= 1.43 CWSEL= 2020.40

STA=	828.	831.	877.	886.	918.	943.	962.	972.	1011.	1019.
PER Q=	.0	.8	.6	5.5	4.3	5.6	6.8	72.9	3.5	
AREA=	.6	13.6	6.3	38.3	29.9	31.3	27.5	139.5	18.0	
VEL=	.7	1.0	1.7	2.4	2.4	3.0	4.2	8.9	3.4	
DEPTH=	.2	.3	.7	1.2	1.2	1.6	2.7	3.6	2.2	

*SECNO 1.529

1.529	2.56	2026.46	2026.43	.00	2026.89	.43	5.52	.05	2025.20
1700.0	930.7	761.9	7.4	349.5	104.2	3.2	70.9	37.1	2024.20
.38	2.66	7.31	2.30	.070	.040	.070	.000	2023.90	585.91
.013787	400.	502.	525.	2	18	0	.00	416.95	1002.86

FLOW DISTRIBUTION FOR SECNO= 1.53 CWSEL= 2026.46

STA=	586.	614.	652.	677.	690.	743.	803.	862.	901.	952.	1000.	1003.
PER Q=	1.7	8.2	10.3	4.9	9.9	8.9	2.8	1.3	6.9	44.8	.4	
AREA=	16.2	47.8	46.4	22.8	61.3	60.4	29.9	15.9	48.8	104.2	3.2	
VEL=	1.7	2.9	3.8	3.6	2.7	2.5	1.6	1.4	2.4	7.3	2.3	
DEPTH=	.6	1.3	1.9	1.8	1.2	1.0	.5	.4	1.0	2.2	1.1	

*SECNO 1.583

1.583	3.26	2030.76	2030.70	.00	2031.23	.46	4.33	.01	2028.80
1700.0	1192.2	462.7	45.1	321.9	54.2	12.2	73.2	39.1	2029.00
.40	3.70	8.53	3.69	.070	.040	.070	.000	2027.50	670.30
.022878	225.	285.	290.	2	11	0	.00	337.36	1007.65

FLOW DISTRIBUTION FOR SECNO= 1.58 CWSEL= 2030.76

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

STA=	670.	690.	701.	718.	765.	810.	850.	895.	929.	967.	996.	1008.
PER Q=	3.5	10.0	8.2	4.2	4.9	6.0	10.3	7.8	15.2	27.2	2.7	
AREA=	18.5	28.3	30.1	29.6	32.4	34.8	50.4	38.1	59.7	54.2	12.2	
VEL=	3.2	6.0	4.7	2.4	2.6	2.9	3.5	3.5	4.3	8.5	3.7	
DEPTH=	.9	2.6	1.8	.6	.7	.9	1.1	1.1	1.6	1.9	1.1	

*SECNO 1.674

3470 ENCROACHMENT STATIONS= 905.0 1090.0 TYPE= 1 TARGET= 185.000

1.674	2.85	2037.75	2037.44	.00	2038.29	.54	7.04	.02	2035.60
1700.0	381.1	785.5	533.5	116.5	100.8	144.4	76.7	41.5	2035.20
.42	3.27	7.79	3.70	.070	.040	.070	.000	2034.90	905.24
.012419	370.	480.	470.	4	15	0	.00	184.75	1090.00

FLOW DISTRIBUTION FOR SECNO= 1.67 CWSEL= 2037.75

STA=	905.	910.	926.	963.	978.	1017.	1030.	1069.	1082.	1090.
PER Q=	1.0	7.0	8.9	5.5	46.2	5.0	17.1	6.9	2.4	
AREA=	6.3	31.9	51.5	26.9	100.8	23.9	77.7	29.1	13.6	
VEL=	2.6	3.7	2.9	3.5	7.8	3.5	3.7	4.0	3.0	
DEPTH=	1.3	2.0	1.4	1.8	2.6	1.8	2.0	2.2	1.7	

*SECNO 1.767

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.767	3.39	2045.99	2045.99	.00	2046.75	.75	6.55	.06	2043.00
1700.0	816.8	874.0	9.2	253.2	95.1	3.9	81.0	44.1	2043.50
.44	3.23	9.19	2.39	.070	.040	.070	.000	2042.60	762.55
.013183	550.	491.	490.	0	11	0	.00	242.31	1033.09

FLOW DISTRIBUTION FOR SECNO= 1.77 CWSEL= 2045.99

STA=	763.	799.	817.	855.	878.	901.	921.	941.	988.	1000.	1030.	1033.
PER Q=	1.6	.8	.0	2.0	5.1	6.6	6.2	17.0	8.7	51.4	.5	
AREA=	18.1	8.8	1.0	17.1	29.8	32.9	31.9	82.0	31.7	95.1	3.9	
VEL=	1.5	1.5	.5	2.0	2.9	3.4	3.3	3.5	4.7	9.2	2.4	
DEPTH=	.5	.5	.0	.7	1.3	1.6	1.6	1.7	2.6	3.2	1.2	

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.866
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

1.866	3.73	2052.03	2052.03	.00	2052.77	.74	5.86	.00	2050.30
1742.0	33.3	1066.9	641.8	14.5	125.3	219.8	84.6	46.5	2048.90
.46	2.30	8.51	2.92	.070	.040	.070	.000	2048.30	943.38
.011875	300.	523.	530.	0	8	0	.00	254.33	1197.72

FLOW DISTRIBUTION FOR SECNO= 1.87 CWSEL= 2052.03

STA=	943.	962.	1003.	1012.	1040.	1058.	1135.	1159.	1186.	1198.
PER Q=	1.9	61.2	4.3	9.8	5.1	3.8	8.0	5.8	.1	
AREA=	14.5	125.3	19.7	50.0	28.5	42.0	41.6	36.0	2.0	
VEL=	2.3	8.5	3.8	3.4	3.1	1.6	3.3	2.8	.7	
DEPTH=	.8	3.1	2.2	1.8	1.6	.5	1.7	1.3	.2	

FLOODWAY DETERMINATION

T2

T3 WASH H:UNNAMED WASH #3

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	0	3	0	0	.0035	0	0	0	1894.42	0
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15	0	-1	0	0	0	-1	0	0	0

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 2

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV= .100 CEHV= .300
*SECNO 45.630

3265 DIVIDED FLOW

HASSAYAMPA RIVER FIS SECTION 45.63(CBA 1988, NO DATUM CHANGE)
CONFLUENCE WITH WASH H - UNNAMED WASH # 3, AN EAST TRIBUTARY
NON COINCIDENT WITH 100 YEAR DISCHARGE IN HASSAYAMPA

45.630	2.86	1883.36	1882.62	1894.42	1883.55	.19	.00	.00	1883.50
1631.0	.2	1267.0	363.8	1.2	334.0	174.7	.0	.0	1882.00
.00	.17	3.79	2.08	.050	.040	.050	.000	1880.50	1309.64
.003465	0.	0.	0.	0	20	8	.00	319.40	1729.98

CCHV= .600 CEHV= .800
*SECNO .083

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 960.0 1040.0 TYPE= 1 TARGET= 80.000
THE POINT OF INTERSECTION OF THE THALWEG WITH A CROSS SECTION
CORRESPONDS TO STATION 1000.00 OF THE CROSS SECTION,
UNLESS OTHERWISE NOTED.
DUE TO THE CONFIGURATION AND OTHER HYDROLOGIC CHARACTERISTICS
OF THE WATERSHED, THE PEAK DISCHARGE MAY DECREASE AT VARIOUS
LOCATIONS ALONG THE WASH.
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.
DOWNSTREAM BRIDGE SECTION 3(10' X 5' X 116' CBC)
.2' TO 1.5' OF SEDIMENT ON BOTTOM

.083	3.93	1891.53	1891.53	1891.53	1892.89	1.37	1.88	.94	1889.60
1631.0	54.3	1565.2	11.5	28.6	163.6	11.4	4.7	2.7	1891.50
.02	1.90	9.57	1.01	.065	.020	.065	.000	1887.60	960.00
.003409	410.	530.	700.	0	16	0	.00	80.00	1040.00

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

SPECIAL CULVERT

SC	CUNO	CUNV	ENTLC	COFQ	RDLEN	RISE	SPAN	CULVLN	CHRT	SCL	ELCHU	ELCHD
	3	.020	.40	2.90	.00	4.80	10.00	116.00	8	1	1889.90	1888.90

CHART 8 - BOX CULVERT WITH FLARED WINGWALLS; NO INLET TOP EDGE BEVEL
SCALE 1 - WINGWALLS FLARED 30 TO 75 DEGREES

*SECNO .110
BTCARD, BRIDGE STENCL= 960.00 STENCR= 1040.00

SPECIAL CULVERT INLET CONTROL + WEIR FLOW, EG = 1898.33

3301 HV CHANGED MORE THAN HVINS

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 2.64

CIAL CULVERT

EGIC	EGOC	H4	QWEIR	QCULV	VCH	ACULV	ELTRD	WEIRLN
1898.71	1897.57	5.43	59.	1567.	6.042	144.0	1897.80	80.

3470 ENCROACHMENT STATIONS= 960.0 1040.0 TYPE= 1 TARGET= 80.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.
UPSTREAM BRIDGE SECTION
ESTIMATED CBC INVERTS : 1889.7 & 1887.4
SPECIFIED INVERTS TO REFLECT SEDIMENT: 1889.9 & 1888.9
TOTAL AREA OF BOX 150 sf: EFFECTIVE ENTRANCE AREA: 144 sf

.110	8.07	1897.87	.00	1898.10	1898.33	.46	5.43	.00	1893.10
1631.0	89.7	1315.7	225.6	76.3	217.8	161.7	5.7	2.9	1891.90
.02	1.18	6.04	1.40	.065	.020	.065	.000	1889.80	960.00
.000488	143.	143.	143.	2	0	0	.00	80.00	1040.00

CCHV= .600 CEHV= .800
*SECNO .135

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.85

3470 ENCROACHMENT STATIONS= 948.0 1256.0 TYPE= 1 TARGET= 308.000
ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
WSEL AND THE TOPOGRAPHY.

```
        STRUCTURE BLOCKED OUT WITH GR POINTS
     .135      7.31   1898.61   1893.95   1898.27   1898.63       .02       .04       .27   1894.10
   1631.0      29.8     538.1    1063.1      53.6     363.6    1319.5       9.8       3.6   1894.10
     .06       .56      1.48       .81      .070      .040      .070      .000   1891.30    948.00
  .000142      90.      132.      180.         2        20         0       .00    307.74   1255.74


CCHV=     .100 CEHV=     .300
*SECNO  .203

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      948.0    1210.0  TYPE=      1  TARGET=      262.000
        ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
        SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
        WSEL AND THE TOPOGRAPHY.
     .203      2.59   1899.29   1899.29   1899.28   1899.90       .61       .19       .18   1897.50
   1660.0       3.6     946.0     710.3       1.8     120.1     234.8      19.3       6.2   1897.70
     .08      2.01      7.87      3.02      .070      .040      .070      .000   1896.70    948.00
  .016244      330.      359.      410.         0        19         0       .00    262.00   1210.00


SECNO  .298

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      945.0    1078.0  TYPE=      1  TARGET=      133.000
     .298      5.09   1911.59   1911.59   1911.59   1912.72      1.13      5.86       .15   1907.60
   1660.0     269.8    1244.2     145.9     102.1     128.4      44.5      22.9       8.5   1907.40
     .10      2.64      9.69      3.28      .070      .040      .070      .000   1906.50    945.47
  .008960      570.      502.      460.         0        14         0       .00    132.06   1077.53


*SECNO  .392

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      958.0    1031.0  TYPE=      1  TARGET=       73.000
     .392      3.86   1922.96   1922.96   1922.96   1924.65      1.69      5.55       .17   1919.40
   1660.0     101.4    1548.2      10.4      27.3     144.0       4.1      25.4       9.5   1919.50
     .11      3.71     10.75      2.53      .070      .040      .070      .000   1919.10    973.65
  .014677      450.      496.      510.         0        15         0       .00     56.72   1030.37
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO .487

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 892.0 1026.0 TYPE= 1 TARGET= 134.000

.487	3.82	1933.12	1933.12	1933.11	1934.34	1.21	7.12	.05	1929.80
1660.0	391.9	1234.3	33.7	102.3	123.4	10.8	27.8	10.4	1930.00
.13	3.83	10.00	3.12	.070	.040	.070	.000	1929.30	892.00
.013518	530.	502.	450.	0	5	0	.00	102.34	1025.91

*SECNO .573
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 966.0 1044.0 TYPE= 1 TARGET= 78.000

.573	4.02	1942.92	1942.92	1942.90	1944.39	1.47	5.91	.08	1938.90
1660.0	170.6	1436.4	52.9	46.5	138.5	15.4	30.1	11.4	1939.20
.14	3.67	10.37	3.44	.070	.040	.070	.000	1938.90	966.00
.012441	465.	454.	450.	0	8	0	.00	77.43	1043.43

*SECNO .669

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 921.0 1093.0 TYPE= 1 TARGET= 172.000

.669	3.73	1953.23	1953.23	1953.23	1954.16	.93	5.89	.05	1950.20
1660.0	159.2	1128.1	372.6	59.9	123.3	114.1	32.9	12.8	1949.50
.16	2.66	9.15	3.26	.070	.040	.070	.000	1949.50	921.93
.011331	540.	507.	400.	0	11	0	.00	170.82	1092.75

*SECNO .738

3265 DIVIDED FLOW

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 839.0 1041.0 TYPE= 1 TARGET= 202.000

.738	2.89	1959.49	1959.49	1959.49	1960.31	.81	4.84	.01	1956.70
1660.0	876.8	771.8	11.5	213.0	79.8	4.3	35.2	14.0	1957.50
.18	4.12	9.67	2.69	.070	.040	.070	.000	1956.60	839.12
.018400	270.	364.	410.	0	15	0	.00	180.52	1040.27

*SECNO .848

3470 ENCROACHMENT STATIONS= 966.0 1209.0 TYPE= 1 TARGET= 243.000

.848	2.79	1969.69	1969.68	1969.69	1970.35	.66	10.03	.02	1966.90
1700.0	20.3	703.2	976.5	6.4	75.8	279.4	39.4	16.7	1967.60
.20	3.15	9.28	3.50	.070	.040	.070	.000	1966.90	966.36
.017354	510.	581.	580.	2	11	0	.00	241.69	1208.05

*SECNO .960

3470 ENCROACHMENT STATIONS= 803.0 1026.0 TYPE= 1 TARGET= 223.000

.960	3.83	1977.43	1977.32	1977.43	1978.08	.65	7.73	.00	1975.10
1700.0	774.1	913.5	12.4	252.2	109.2	5.2	44.0	19.6	1974.80
.23	3.07	8.37	2.39	.070	.040	.070	.000	1973.60	803.90
.011191	590.	591.	490.	4	11	0	.00	222.06	1025.96

*SECNO 1.043
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 843.0 1017.0 TYPE= 1 TARGET= 174.000

1.043	3.01	1985.11	1985.11	1985.11	1985.95	.83	5.72	.05	1983.10
1700.0	757.4	927.5	15.0	189.1	100.7	5.9	46.9	21.3	1983.40
.25	4.01	9.21	2.56	.070	.040	.070	.000	1982.10	843.86
.018601	360.	438.	444.	0	15	0	.00	173.00	1016.86

*SECNO 1.143
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

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SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     L-BANK ELEV
Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA       R-BANK ELEV
TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST


3470 ENCROACHMENT STATIONS=      963.0    1202.0  TYPE=      1  TARGET=      239.000
     1.143      3.37   1994.97   1994.97   1994.97   1995.69       .72      7.24       .01   1991.60
    1700.0      17.5     968.1     714.4       6.7     111.4     258.0      50.9      23.7   1991.60
       .27      2.61      8.69      2.77      .070      .040      .070      .000   1991.60    963.03
   .010815      525.      528.      495.         0         8         0       .00    238.40   1201.43


*SECNO 1.237
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      699.0    1037.0  TYPE=      1  TARGET=      338.000
     1.237      3.32   2002.92   2002.92   2002.92   2003.53       .61      6.88       .01   2002.70
    1700.0     993.3     694.7      12.0     270.2      79.6       4.0      54.7      26.7   2000.30
       .29      3.68      8.73      3.03      .070      .040      .070      .000   1999.60    709.50
   .020737      520.      496.      350.         0         5         0       .00    326.52   1036.02


CNO 1.339

3470 ENCROACHMENT STATIONS=      970.0    1209.0  TYPE=      1  TARGET=      239.000
     1.339      3.52   2011.12   2011.09   2011.12   2011.80       .68      8.25       .02   2009.70
    1700.0       4.3     928.3     767.4       2.3     109.2     249.5      58.5      29.6   2010.60
       .32      1.88      8.50      3.08      .070      .040      .070      .000   2007.60    970.80
   .013984      400.      539.      500.         3         8         0       .00    237.58   1208.38


*SECNO 1.434
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      827.0    1019.0  TYPE=      1  TARGET=      192.000
          THE LOW AREA IN THE LEFT OVERBANK IS THE CONFLUENCE OF A SMALL
          TRIBUTARY TO WASH H AND ANY FLOW FROM WASH H THE COULD GET OVER
          THE RISE BETWEEN THIS OVERBANK AND THE MAIN CHANNEL WILL
          BE INEFFECTIVE FLOW.  THE RIGHT OVERBANK ALSO HAS A TRIBUTARY
          FLOW CONFLUENCE.   THE RIGHT BANK OF THE MAIN CHANNEL IS LOWER
          THAN THE COMPUTED WATER SURFACE AND FLOW FROM WASH H COULD
          SPREAD INTO THE RIGHT OVERBANK, HOWEVER, IT WILL BE INEFFECTIVE
          FLOW WITH THE RIGHT OVERBANK AREA.
          ET-DATA USED TO SET LIMITS OF EFFECTIVE FLOW AREA AT CURRENT
          SECTION: THEREFORE, FLOODPLAIN LIMITS ARE BASED ON THE COMPUTED
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      WSEL AND THE TOPOGRAPHY.
   1.434      3.70   2020.40   2020.40   2020.40   2021.32       .92      5.49       .07   2017.00
  1700.0     401.2    1238.6      60.2     147.4     139.5      18.0      61.8      31.7   2016.80
     .33      2.72      8.88      3.35      .070      .040      .070      .000   2016.70    827.98
 .010433      560.      502.      290.         0         8         0       .00    191.01   1019.00


*SECNO 1.529

3470 ENCROACHMENT STATIONS=      585.0    1003.0  TYPE=      1  TARGET=      418.000
   1.529      2.56   2026.46   2026.41   2026.46   2026.89       .43      5.52       .05   2025.20
  1700.0     930.8     761.8       7.4     349.6     104.2       3.2      65.6      34.6   2024.20
     .36      2.66      7.31      2.30      .070      .040      .070      .000   2023.90    585.90
 .013775      400.      502.      525.         2        20         0       .00    416.95   1002.86


*SECNO 1.583

3470 ENCROACHMENT STATIONS=      670.0    1008.0  TYPE=      1  TARGET=      338.000
   1.583      3.26   2030.76   2030.70   2030.76   2031.23       .46      4.33       .01   2028.80
  1700.0    1192.0     462.8      45.1     321.7      54.2      12.2      67.9      36.6   2029.00
     .37      3.71      8.54      3.69      .070      .040      .070      .000   2027.50    670.30
 .022927      225.      285.      290.         2        11         0       .00    337.34   1007.65


*SECNO 1.674

3470 ENCROACHMENT STATIONS=      905.0    1090.0  TYPE=      1  TARGET=      185.000
   1.674      2.85   2037.75   2037.44   2037.75   2038.29       .54      7.04       .02   2035.60
  1700.0     381.1     785.4     533.5     116.6     100.8     144.4      71.5      39.0   2035.20
     .40      3.27      7.79      3.69      .070      .040      .070      .000   2034.90    905.24
 .012402      370.      480.      470.         4        15         0       .00    184.76   1090.00


*SECNO 1.767

3265 DIVIDED FLOW

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS=      762.0    1034.0  TYPE=      1  TARGET=      272.000
   1.767      3.41   2046.01   2046.01   2045.99   2046.75       .73      6.45       .06   2043.00
  1700.0     821.1     869.7       9.3     257.0      95.6       3.9      75.8      41.6   2043.50
     .42      3.19      9.10      2.37      .070      .040      .070      .000   2042.60    762.00
 .012811      550.      491.      490.         0        11         0       .00    244.12   1033.11
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SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 1.866
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

3470 ENCROACHMENT STATIONS= 943.0 1198.0 TYPE= 1 TARGET= 255.000

1.866	3.73	2052.03	2052.03	2052.03	2052.77	.74	5.78	.00	2050.30
1742.0	33.2	1067.4	641.4	14.5	125.3	219.5	79.4	44.1	2048.90
.44	2.30	8.52	2.92	.070	.040	.070	.000	2048.30	943.41
.011908	300.	523.	530.	0	8	0	.00	254.24	1197.66

THIS RUN EXECUTED 01JUL92 15:37:47

****
HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

WASH H:UNNAMED WASH #3

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	45.630	.00	.00	.00	1880.50	1631.00	1883.36	1882.62	1883.55	34.65	3.79	509.91	277.09
	45.630	.00	.00	.00	1880.50	1631.00	1883.36	1882.62	1883.55	34.65	3.79	509.91	277.09
*	.083	530.00	.00	.00	1887.60	1631.00	1891.53	1891.53	1892.27	22.54	7.78	435.53	343.55
*	.083	530.00	.00	.00	1887.60	1631.00	1891.53	1891.53	1892.89	34.09	9.57	203.65	279.34
	.110	143.00	1897.80	1894.70	1889.80	1631.00	1898.10	.00	1898.20	1.66	3.60	1287.06	1266.90
*	.110	143.00	1897.80	1894.70	1889.80	1631.00	1897.87	.00	1898.33	4.88	6.04	455.72	738.51
	.135	132.00	.00	.00	1891.30	1631.00	1898.27	1893.78	1898.28	1.31	1.37	1949.73	1425.58
*	.135	132.00	.00	.00	1891.30	1631.00	1898.61	1893.95	1898.63	1.42	1.48	1736.71	1368.34
*	.203	359.00	.00	.00	1896.70	1660.00	1899.28	1899.28	1899.90	168.67	7.98	352.13	127.82
*	.203	359.00	.00	.00	1896.70	1660.00	1899.29	1899.29	1899.90	162.44	7.87	356.80	130.24
*	.298	502.00	.00	.00	1906.50	1660.00	1911.59	1911.59	1912.72	90.32	9.72	273.91	174.67
*	.298	502.00	.00	.00	1906.50	1660.00	1911.59	1911.59	1912.72	89.60	9.69	274.93	175.37
*	.392	496.00	.00	.00	1919.10	1660.00	1922.96	1922.96	1924.65	146.82	10.75	175.40	137.00
*	.392	496.00	.00	.00	1919.10	1660.00	1922.96	1922.96	1924.65	146.77	10.75	175.42	137.02
*	.487	502.00	.00	.00	1929.30	1660.00	1933.11	1933.11	1934.34	137.59	10.06	234.96	141.52
*	.487	502.00	.00	.00	1929.30	1660.00	1933.12	1933.12	1934.34	135.18	10.00	236.54	142.78
*	.573	454.00	.00	.00	1938.90	1660.00	1942.90	1942.90	1944.39	126.97	10.44	198.85	147.32
*	.573	454.00	.00	.00	1938.90	1660.00	1942.92	1942.92	1944.39	124.41	10.37	200.48	148.83
*	.669	507.00	.00	.00	1949.50	1660.00	1953.23	1953.23	1954.16	113.84	9.17	296.74	155.58
*	.669	507.00	.00	.00	1949.50	1660.00	1953.23	1953.23	1954.16	113.31	9.15	297.34	155.95
	.738	364.00	.00	.00	1956.60	1660.00	1959.49	1959.49	1960.31	183.89	9.67	297.12	122.41
	.738	364.00	.00	.00	1956.60	1660.00	1959.49	1959.49	1960.31	184.00	9.67	297.05	122.38

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	.848	581.00	.00	.00	1966.90	1700.00	1969.69	1969.68	1970.35	173.62	9.28	361.53	129.02
	.848	581.00	.00	.00	1966.90	1700.00	1969.69	1969.68	1970.35	173.54	9.28	361.59	129.05
	.960	591.00	.00	.00	1973.60	1700.00	1977.43	1977.32	1978.08	111.89	8.37	366.62	160.71
	.960	591.00	.00	.00	1973.60	1700.00	1977.43	1977.32	1978.08	111.91	8.37	366.59	160.70
*	1.043	438.00	.00	.00	1982.10	1700.00	1985.11	1985.11	1985.95	187.56	9.24	294.80	124.13
*	1.043	438.00	.00	.00	1982.10	1700.00	1985.11	1985.11	1985.95	186.01	9.21	295.64	124.65
*	1.143	528.00	.00	.00	1991.60	1700.00	1994.97	1994.97	1995.69	108.38	8.70	375.71	163.29
*	1.143	528.00	.00	.00	1991.60	1700.00	1994.97	1994.97	1995.69	108.15	8.69	376.03	163.47
*	1.237	496.00	.00	.00	1999.60	1700.00	2002.92	2002.92	2003.53	207.09	8.72	353.93	118.13
*	1.237	496.00	.00	.00	1999.60	1700.00	2002.92	2002.92	2003.53	207.37	8.73	353.74	118.05
	1.339	539.00	.00	.00	2007.60	1700.00	2011.12	2011.08	2011.80	140.00	8.51	360.83	143.68
	1.339	539.00	.00	.00	2007.60	1700.00	2011.12	2011.09	2011.80	139.84	8.50	360.98	143.76
*	1.434	502.00	.00	.00	2016.70	1700.00	2020.40	2020.40	2021.32	104.33	8.88	304.85	166.44
*	1.434	502.00	.00	.00	2016.70	1700.00	2020.40	2020.40	2021.32	104.33	8.88	304.85	166.44
	1.529	502.00	.00	.00	2023.90	1700.00	2026.46	2026.43	2026.89	137.87	7.31	456.94	144.78
	1.529	502.00	.00	.00	2023.90	1700.00	2026.46	2026.41	2026.89	137.75	7.31	457.09	144.85
	1.583	285.00	.00	.00	2027.50	1700.00	2030.76	2030.70	2031.23	228.78	8.53	388.40	112.39
	1.583	285.00	.00	.00	2027.50	1700.00	2030.76	2030.70	2031.23	229.27	8.54	388.11	112.27
	1.674	480.00	.00	.00	2034.90	1700.00	2037.75	2037.44	2038.29	124.19	7.79	361.68	152.55
	1.674	480.00	.00	.00	2034.90	1700.00	2037.75	2037.44	2038.29	124.02	7.79	361.83	152.65
*	1.767	491.00	.00	.00	2042.60	1700.00	2045.99	2045.99	2046.75	131.83	9.19	352.17	148.06
*	1.767	491.00	.00	.00	2042.60	1700.00	2046.01	2046.01	2046.75	128.11	9.10	356.50	150.20
*	1.866	523.00	.00	.00	2048.30	1742.00	2052.03	2052.03	2052.77	118.75	8.51	359.62	159.86
*	1.866	523.00	.00	.00	2048.30	1742.00	2052.03	2052.03	2052.77	119.08	8.52	359.19	159.64

WASH H:UNNAMED WASH #3

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	45.630	1631.00	1883.36	.00	.00	-11.06	319.40	.00
	45.630	1631.00	1883.36	.00	.00	-11.06	319.40	.00
*	.083	1631.00	1891.53	.00	8.17	.00	280.96	530.00
*	.083	1631.00	1891.53	.00	8.17	.00	80.00	530.00
*	.110	1631.00	1898.10	.00	6.57	.00	290.00	143.00
*	.110	1631.00	1897.87	-.23	6.34	-.23	80.00	143.00
	.135	1631.00	1898.27	.00	.17	.00	362.87	132.00
*	.135	1631.00	1898.61	.35	.75	.35	307.74	132.00
*	.203	1660.00	1899.28	.00	1.01	.00	261.94	359.00
*	.203	1660.00	1899.29	.02	.68	.02	262.00	359.00
*	.298	1660.00	1911.59	.00	12.31	.00	131.94	502.00
*	.298	1660.00	1911.59	.01	12.30	.01	132.06	502.00
	.392	1660.00	1922.96	.00	11.37	.00	56.71	496.00
	.392	1660.00	1922.96	.00	11.37	.00	56.72	496.00
*	.487	1660.00	1933.11	.00	10.15	.00	101.97	502.00
*	.487	1660.00	1933.12	.02	10.16	.02	102.34	502.00
*	.573	1660.00	1942.90	.00	9.79	.00	77.18	454.00
*	.573	1660.00	1942.92	.02	9.80	.02	77.43	454.00
*	.669	1660.00	1953.23	.00	10.33	.00	170.79	507.00
*	.669	1660.00	1953.23	.00	10.31	.00	170.82	507.00
*	.738	1660.00	1959.49	.00	6.27	.00	180.53	364.00
*	.738	1660.00	1959.49	.00	6.26	.00	180.52	364.00
	.848	1700.00	1969.69	.00	10.19	.00	241.69	581.00
	.848	1700.00	1969.69	.00	10.19	.00	241.69	581.00
	.960	1700.00	1977.43	.00	7.75	.00	222.06	591.00
	.960	1700.00	1977.43	.00	7.74	.00	222.06	591.00
*	1.043	1700.00	1985.11	.00	7.68	.00	172.93	438.00
*	1.043	1700.00	1985.11	.00	7.68	.00	173.00	438.00
*	1.143	1700.00	1994.97	.00	9.86	.00	238.38	528.00
	1.143	1700.00	1994.97	.00	9.86	.00	238.40	528.00
*	1.237	1700.00	2002.92	.00	7.95	.00	326.52	496.00
*	1.237	1700.00	2002.92	.00	7.94	.00	326.52	496.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.339	1700.00	2011.12	.00	8.20	.00	237.57	539.00
	1.339	1700.00	2011.12	.00	8.20	.00	237.58	539.00
*	1.434	1700.00	2020.40	.00	9.28	.00	191.01	502.00
*	1.434	1700.00	2020.40	.00	9.28	.00	191.01	502.00
	1.529	1700.00	2026.46	.00	6.06	.00	416.95	502.00
	1.529	1700.00	2026.46	.00	6.06	.00	416.95	502.00
	1.583	1700.00	2030.76	.00	4.31	.00	337.36	285.00
	1.583	1700.00	2030.76	.00	4.31	.00	337.34	285.00
	1.674	1700.00	2037.75	.00	6.98	.00	184.75	480.00
	1.674	1700.00	2037.75	.00	6.99	.00	184.76	480.00
*	1.767	1700.00	2045.99	.00	8.25	.00	242.31	491.00
*	1.767	1700.00	2046.01	.02	8.26	.02	244.12	491.00
*	1.866	1742.00	2052.03	.00	6.04	.00	254.33	523.00
*	1.866	1742.00	2052.03	.00	6.02	.00	254.24	523.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=      .083  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .083  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .083  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .083  PROFILE=  2  MINIMUM SPECIFIC ENERGY

WARNING SECNO=      .110  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=      .110  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=      .135  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=      .203  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .203  PROFILE=  1  MINIMUM SPECIFIC ENERGY
CAUTION SECNO=      .203  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      .203  PROFILE=  2  MINIMUM SPECIFIC ENERGY

CAUTION SECNO=      .298  PROFILE=  1  CRITICAL DEPTH ASSUMED
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CAUTION SECNO=      1.866  PROFILE=  2  CRITICAL DEPTH ASSUMED
CAUTION SECNO=      1.866  PROFILE=  2  MINIMUM SPECIFIC ENERGY
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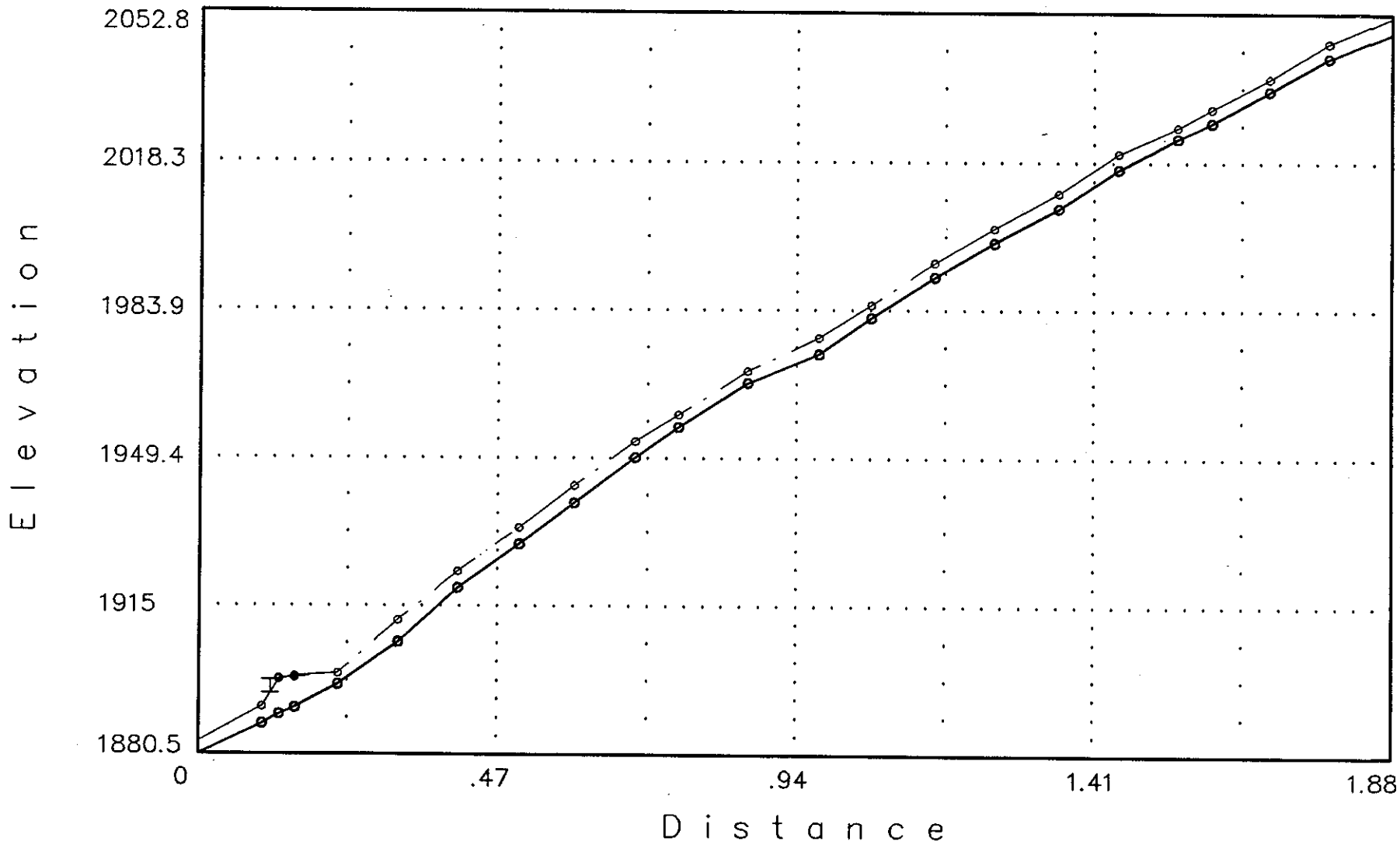
FLOODWAY DATA, WASH H:UNNAMED WASH #3
PROFILE NO. 2

STATION	FLOODWAY WIDTH	FLOODWAY SECTION AREA	FLOODWAY MEAN VELOCITY	WATER SURFACE ELEVATION WITH FLOODWAY	WITHOUT FLOODWAY	DIFFERENCE
45.630	420.	510.	3.2	1883.4	1883.4	.0
.083	80.	204.	8.0	1891.5	1891.5	.0
.110	80.	456.	3.6	1897.9	1898.1	-.2
.135	308.	1737.	.9	1898.6	1898.3	.3
.203	262.	357.	4.7	1899.3	1899.3	.0
.298	132.	275.	6.0	1911.6	1911.6	.0
.392	57.	175.	9.5	1923.0	1923.0	.0
.487	134.	237.	7.0	1933.1	1933.1	.0
.573	77.	200.	8.3	1942.9	1942.9	.0
.669	171.	297.	5.6	1953.2	1953.2	.0
.738	201.	297.	5.6	1959.5	1959.5	.0
.848	242.	362.	4.7	1969.7	1969.7	.0
.960	222.	367.	4.6	1977.4	1977.4	.0
1.043	173.	296.	5.8	1985.1	1985.1	.0
1.143	238.	376.	4.5	1995.0	1995.0	.0
1.237	327.	354.	4.8	2002.9	2002.9	.0
1.339	238.	361.	4.7	2011.1	2011.1	.0
1.434	191.	305.	5.6	2020.4	2020.4	.0
1.529	417.	457.	3.7	2026.5	2026.5	.0
1.583	337.	388.	4.4	2030.8	2030.8	.0
1.674	185.	362.	4.7	2037.7	2037.7	.0
1.767	271.	357.	4.8	2046.0	2046.0	.0
1.866	254.	359.	4.8	2052.0	2052.0	.0

<<<<<< WS ELEV. & BED ELEV. vs DISTANCE(mi) >>>>>>

Profile No. 1
Profile No. 2

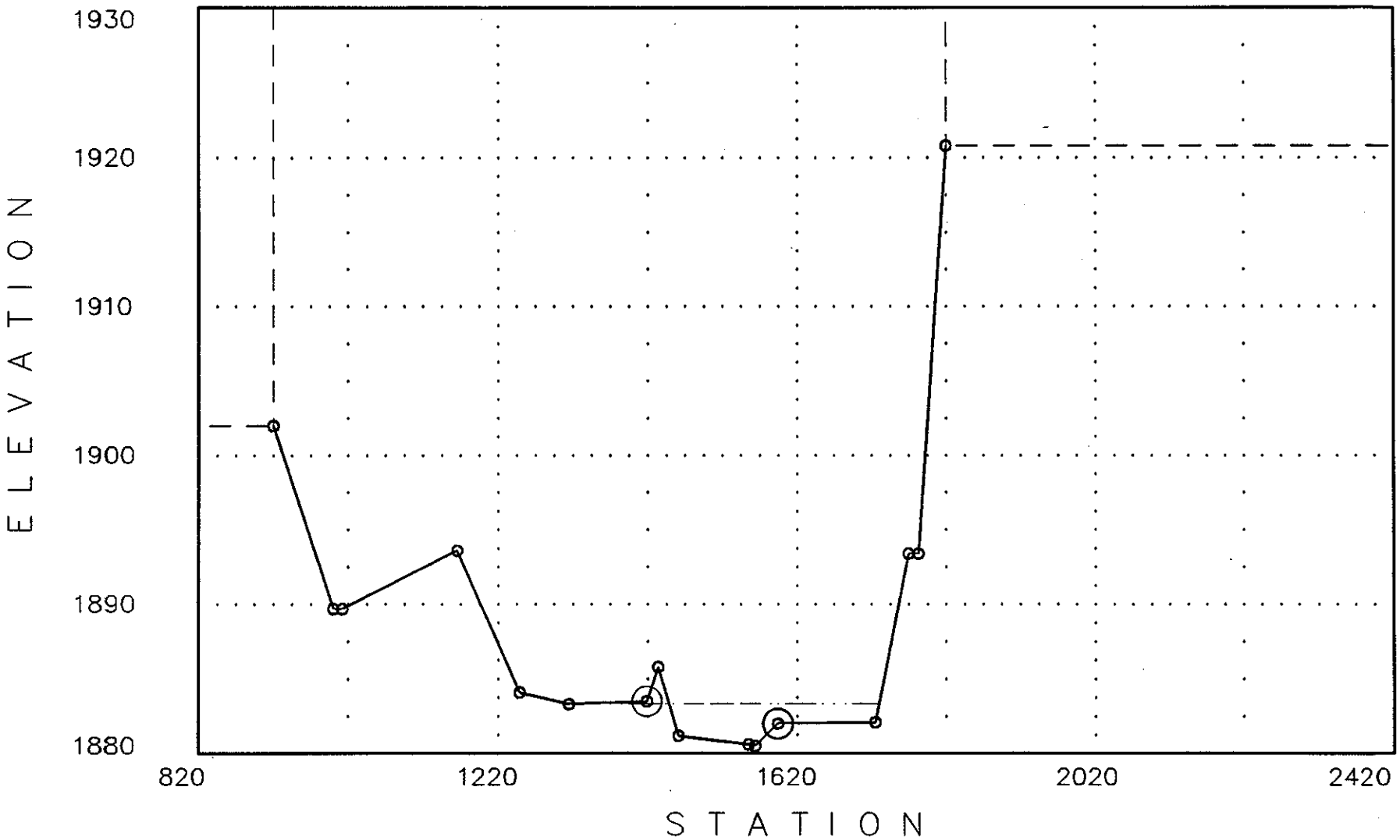
(FN=WASHH.0)



<<<<<< Cross Section: 45.63: (FN = washh.o) >>>>>>

Q1= 1631 WS1= 1883.36
Q2= 1631 WS2= 1883.36

Manning-n's: n-lob = .05 n-ch = .04 n-rob = .05



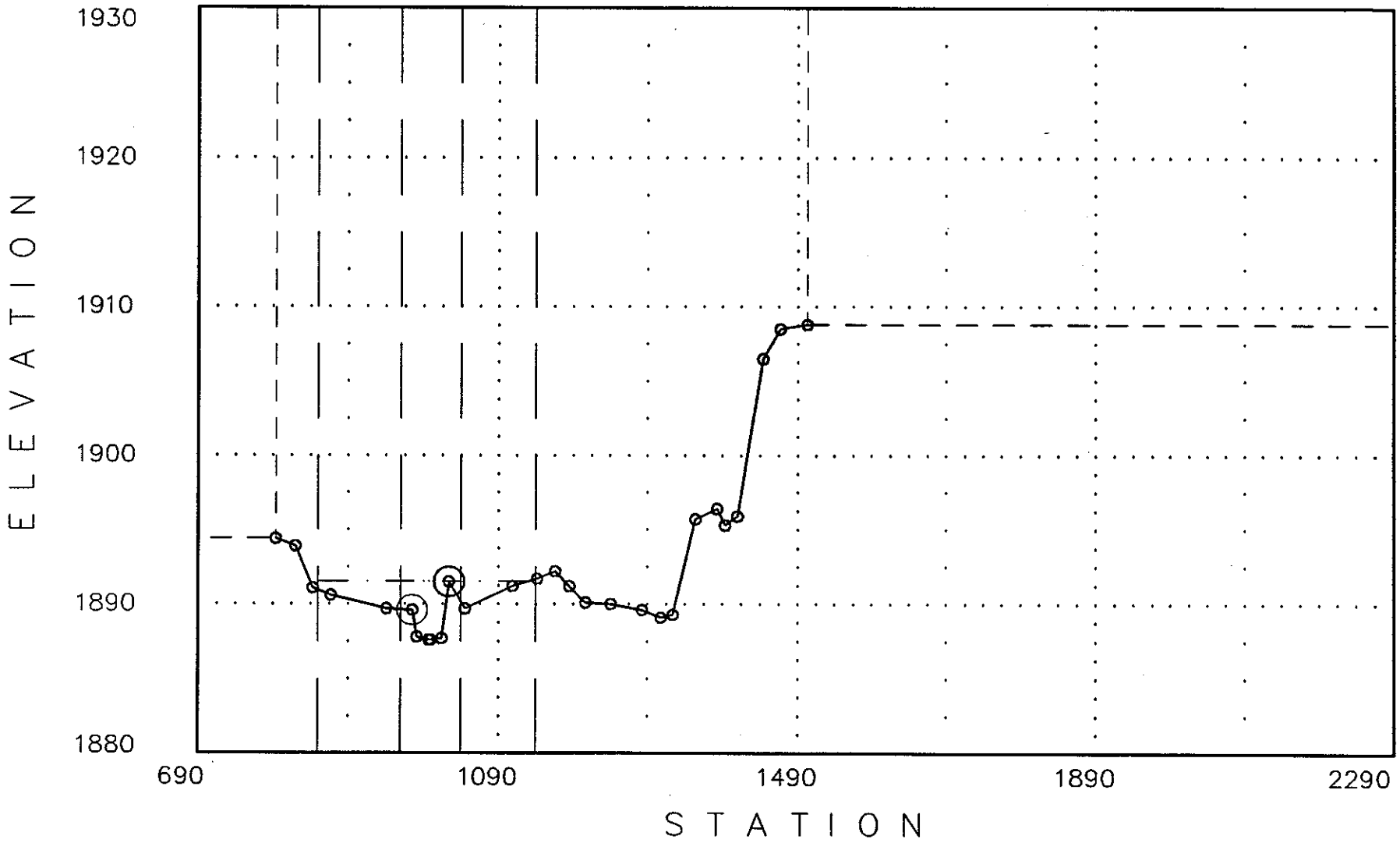
08-12-1992

<<<<<< Cross Section: .083: (FN = washh.o) >>>>>>

Q1= 1631 WS1= 1891.53

Q2= 1631 WS2= 1891.53

Manning-n's: n-lob = .065 n-ch = .02 n-rob = .065

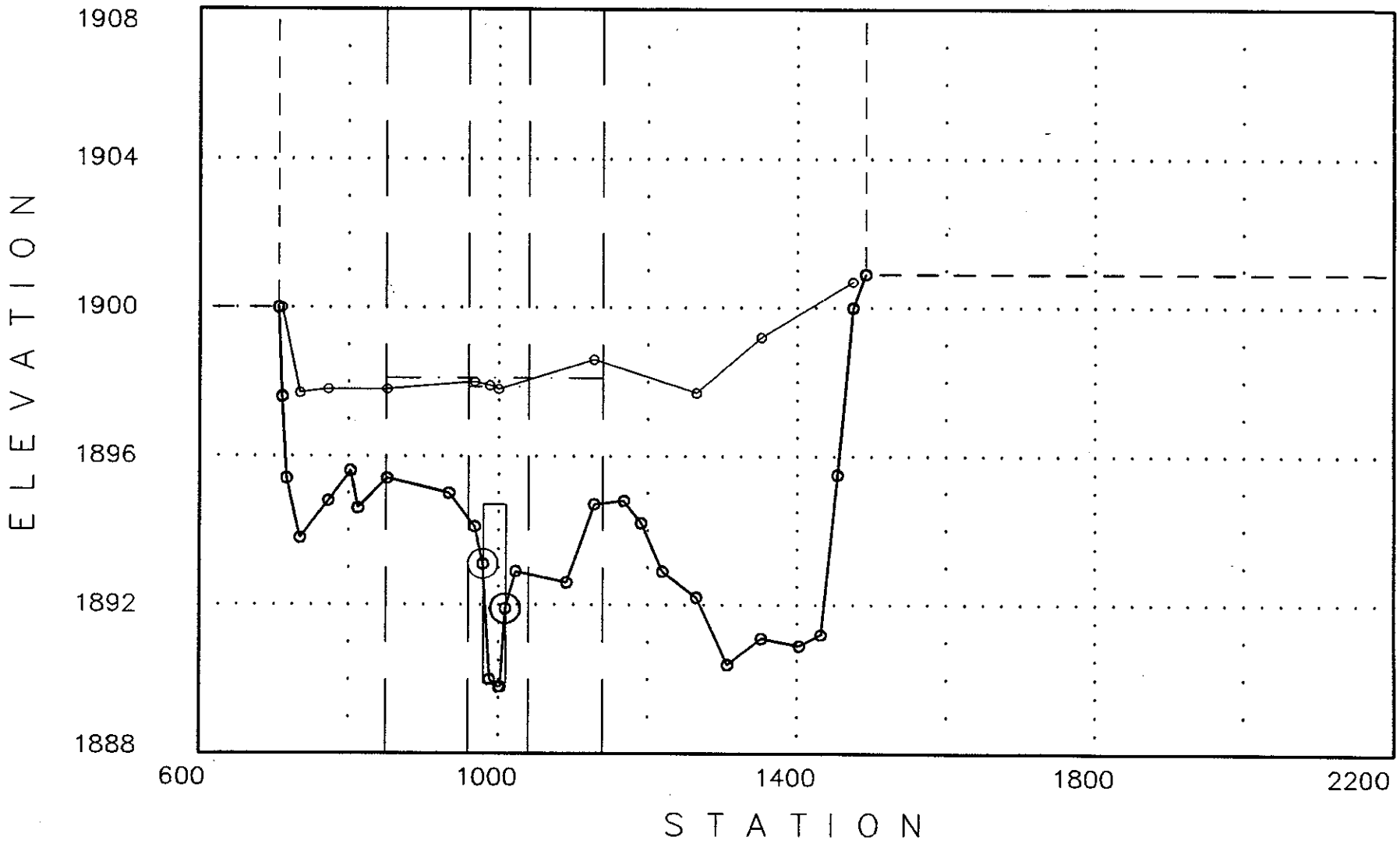


08-12-1992

<<<<<< Cross Section: .11: (FN = washh.o) >>>>>>

Q1= 1631 WS1= 1898.1
Q2= 1631 WS2= 1897.87

Manning-n's: n-lob = .065 n-ch = .02 n-rob = .065 SPECIAL CULVERT

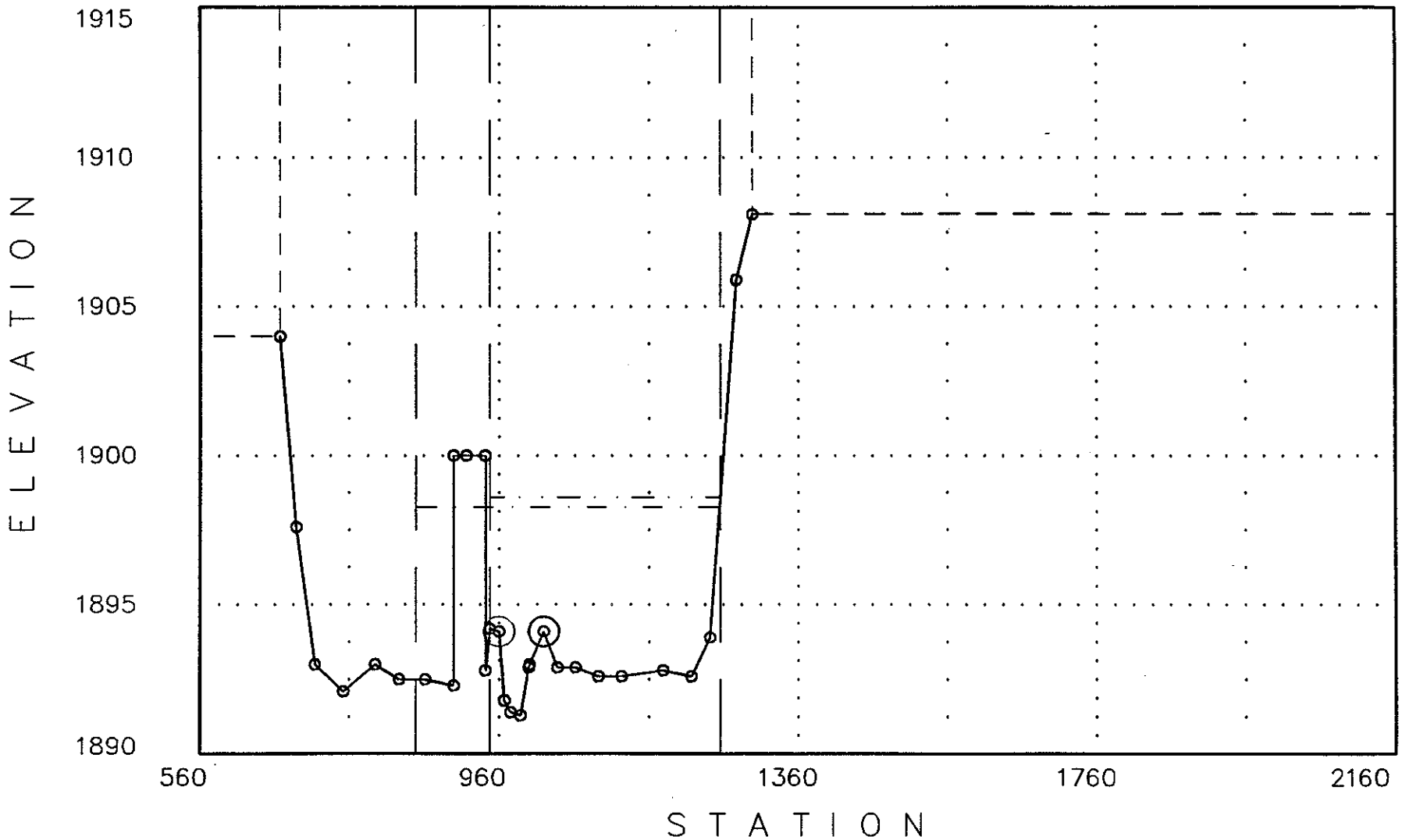


08-12-1992

<<<<<< Cross Section: .135: (FN = washh.o) >>>>>>

Q1= 1631 WS1= 1898.27
Q2= 1631 WS2= 1898.61

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07



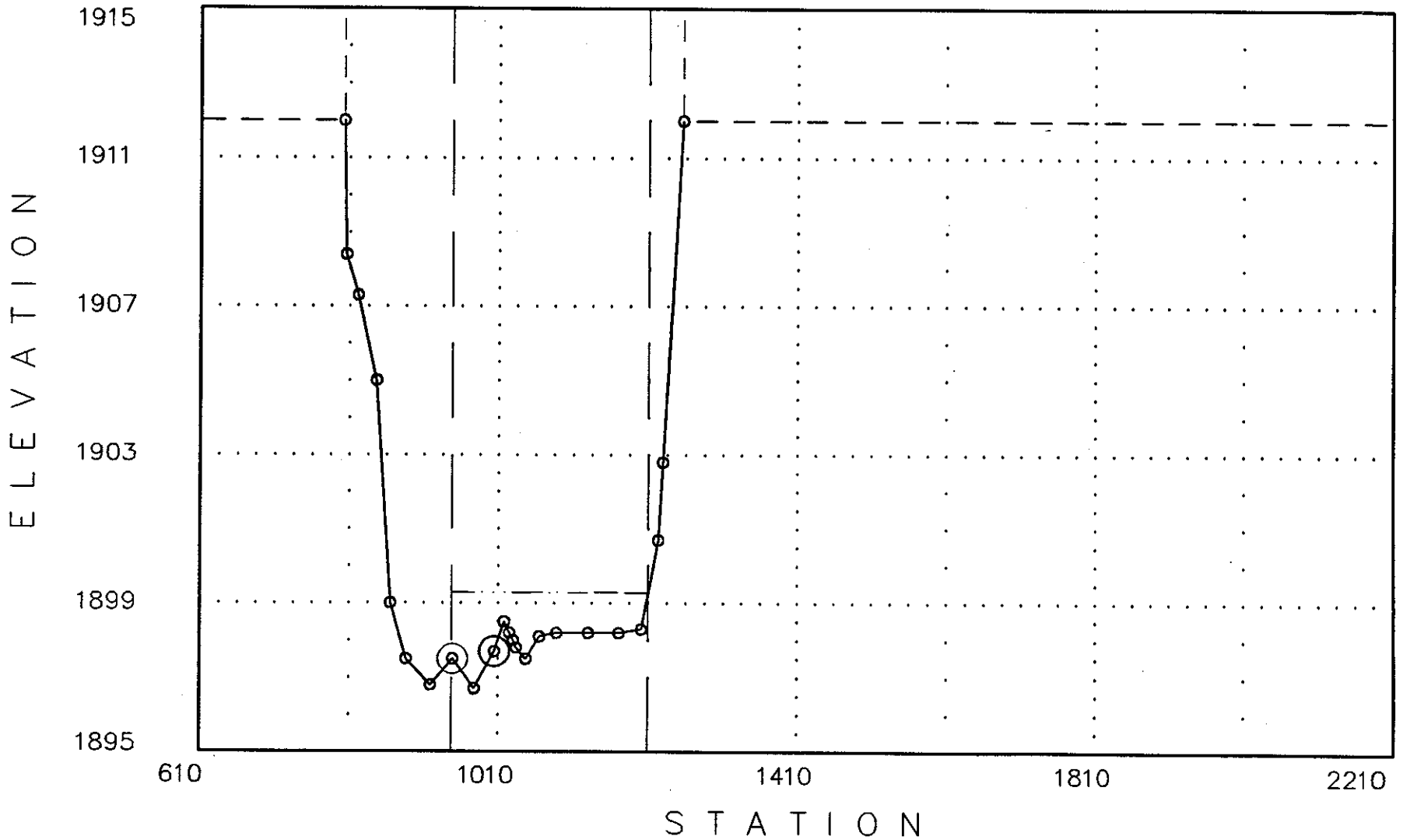
08-12-1992

<<<<<< Cross Section: .203: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1899.28

Q2= 1660 WS2= 1899.29

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

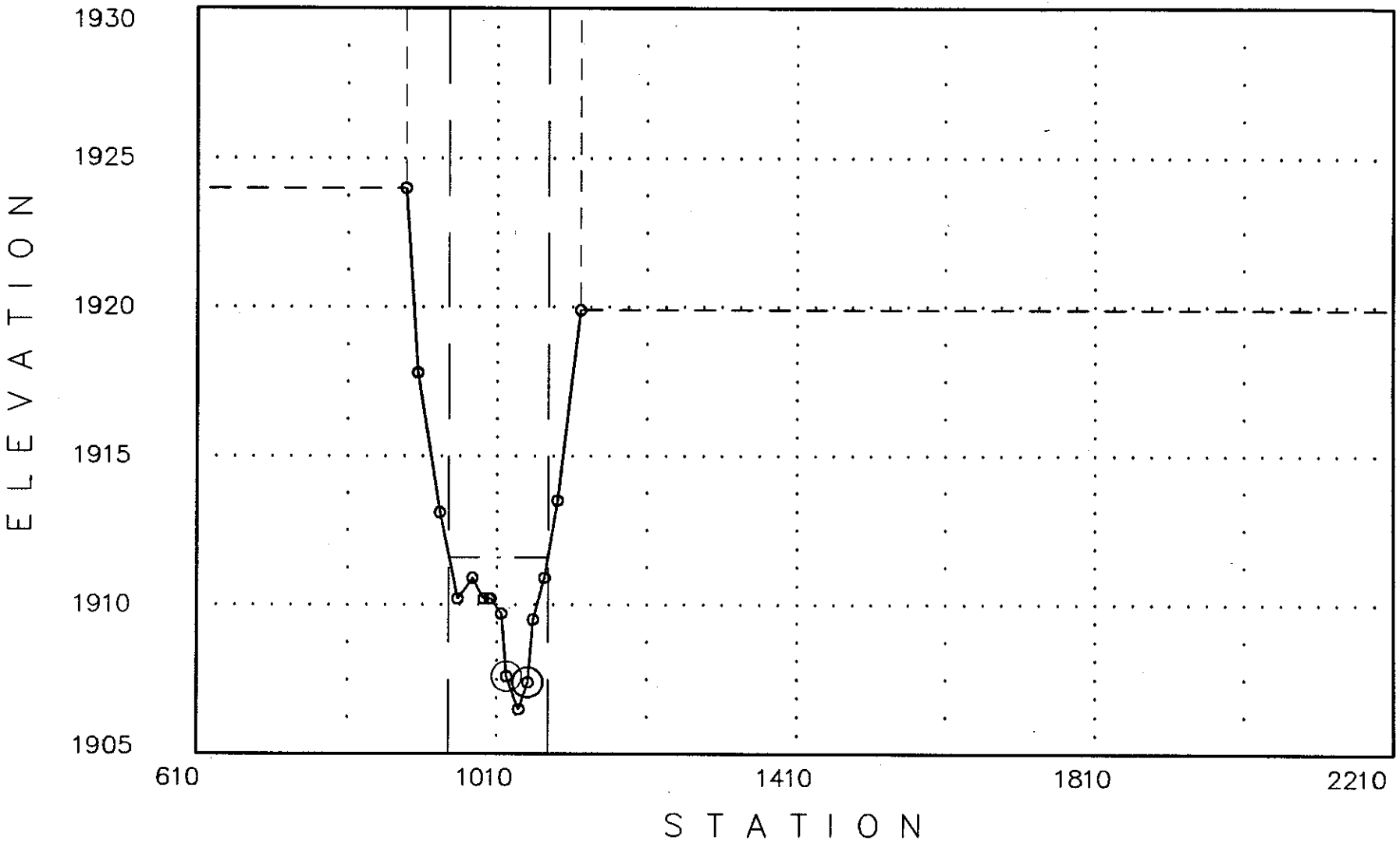


08-12-1992

<<<<<< Cross Section: .298: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1911.59
Q2= 1660 WS2= 1911.59

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

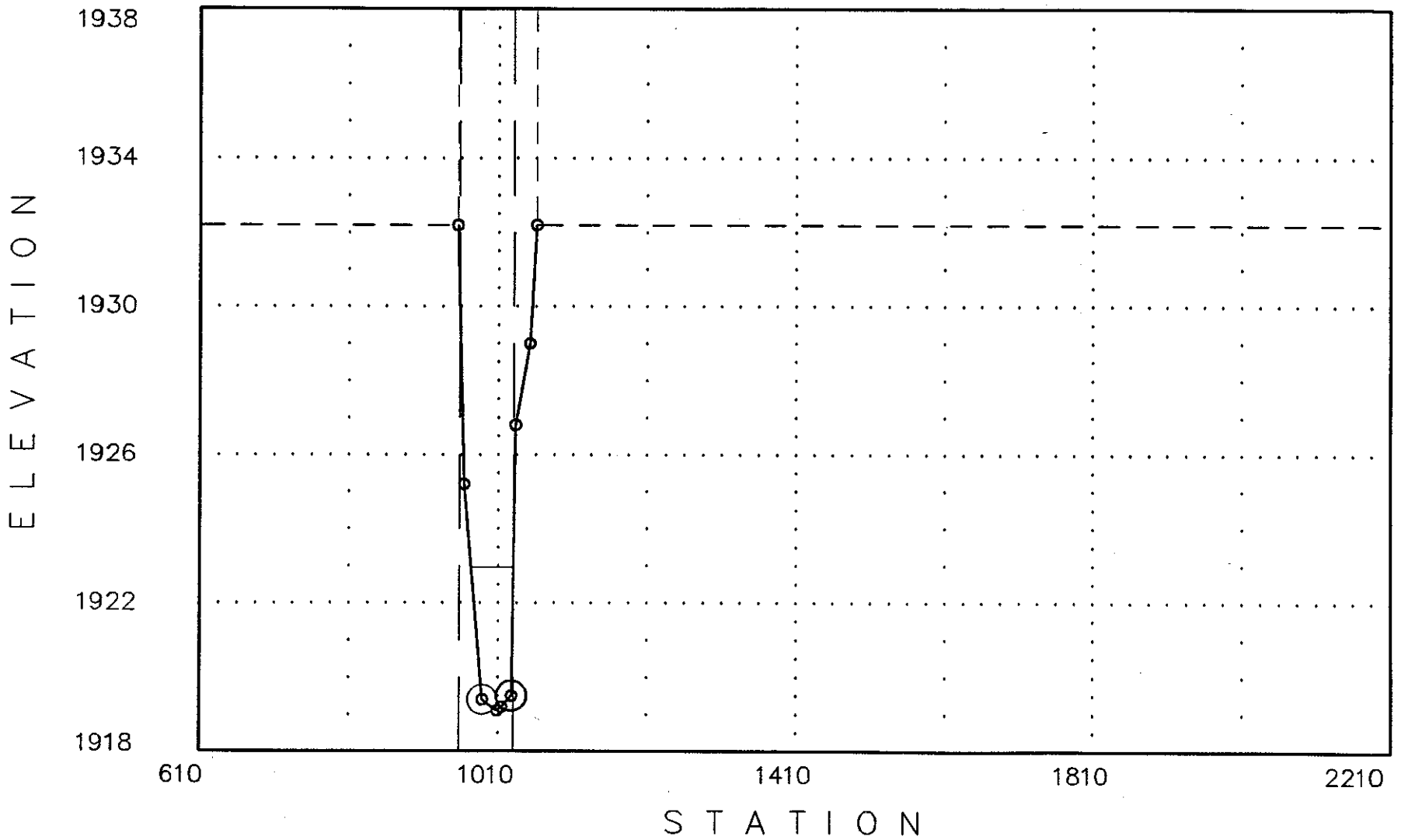


08-12-1992

<<<<<< Cross Section: .392: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1922.96
Q2= 1660 WS2= 1922.96

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

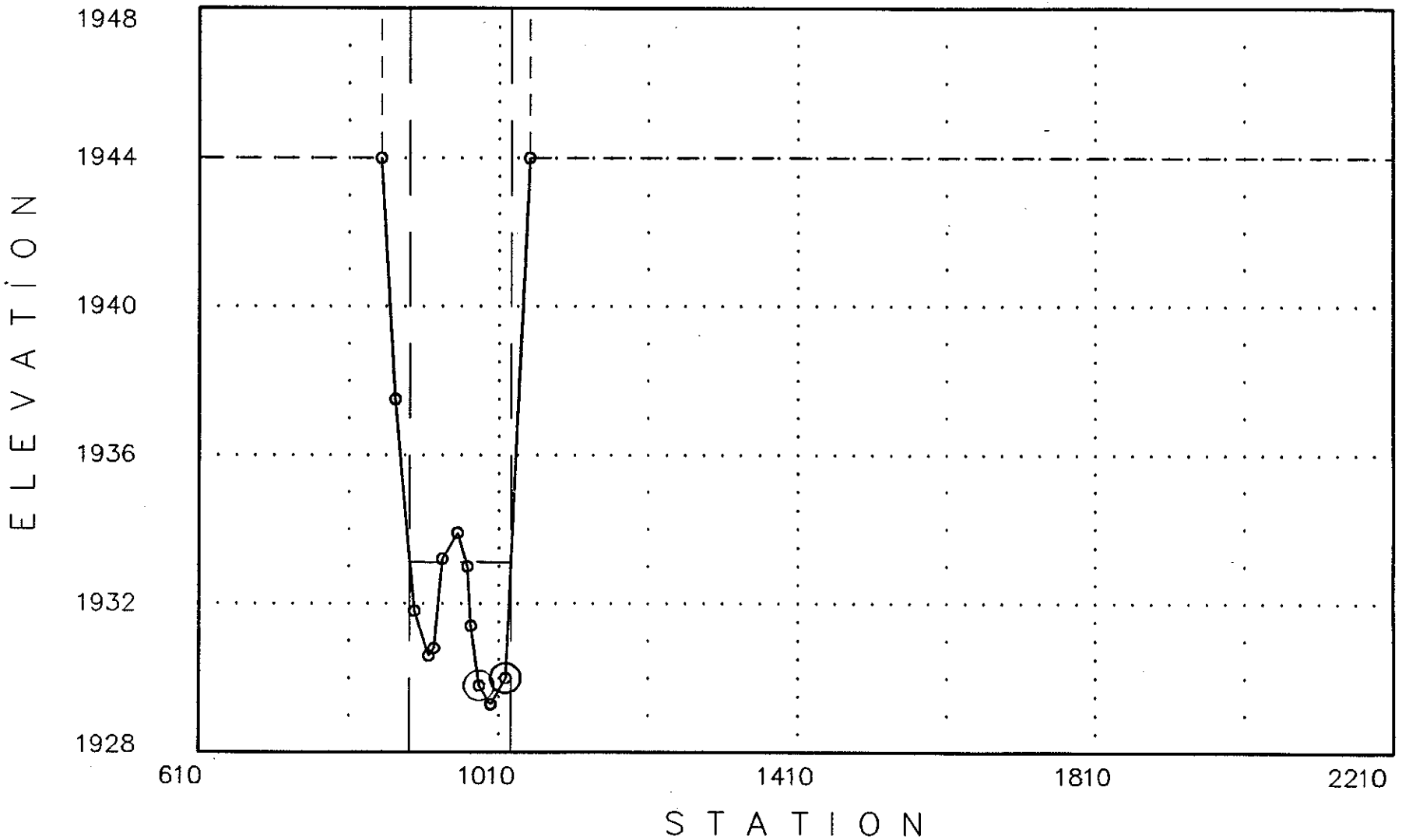


08-12-1992

<<<<<< Cross Section: .487: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1933.11
Q2= 1660 WS2= 1933.12

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

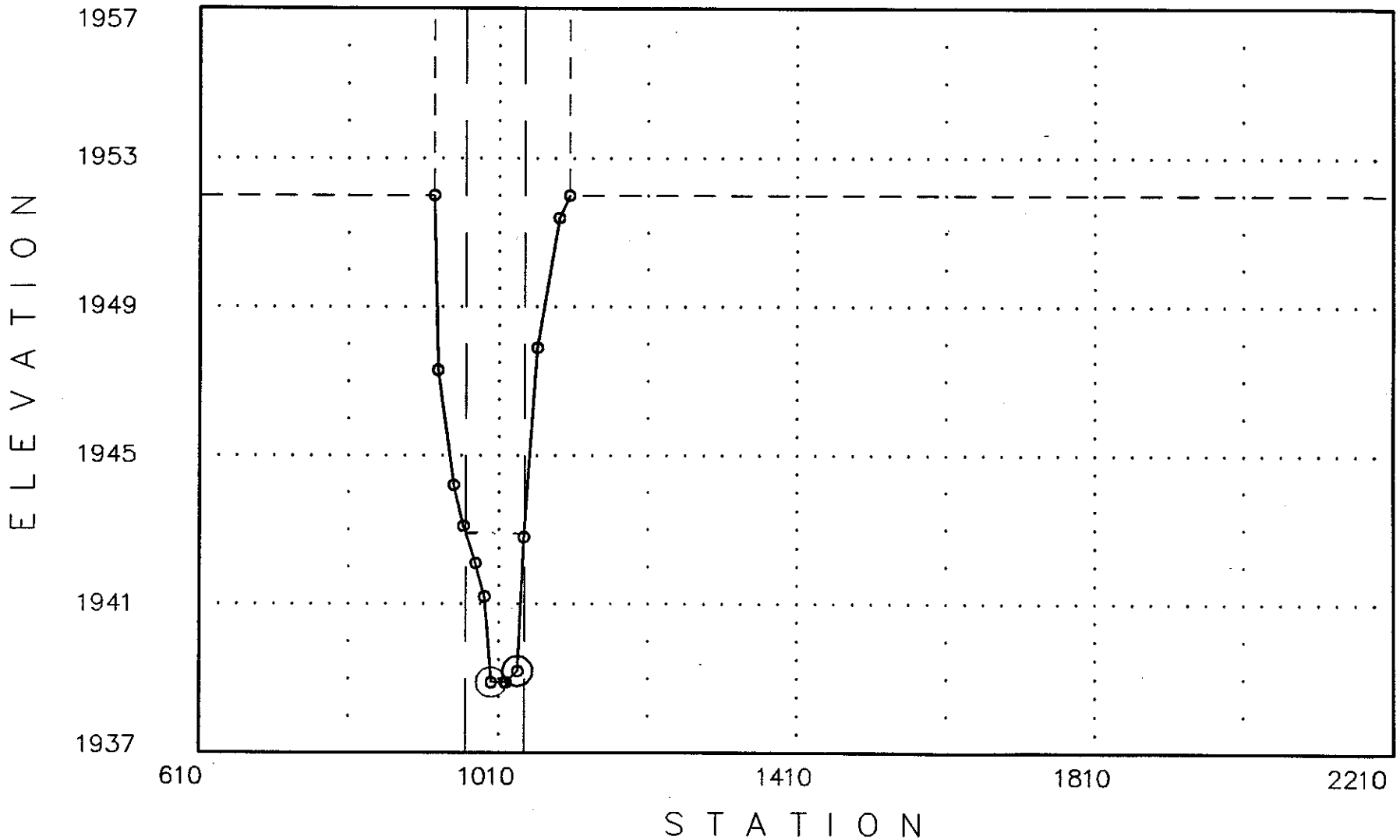


08-12-1992

<<<<<< Cross Section: .573: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1942.9
Q2= 1660 WS2= 1942.92

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07



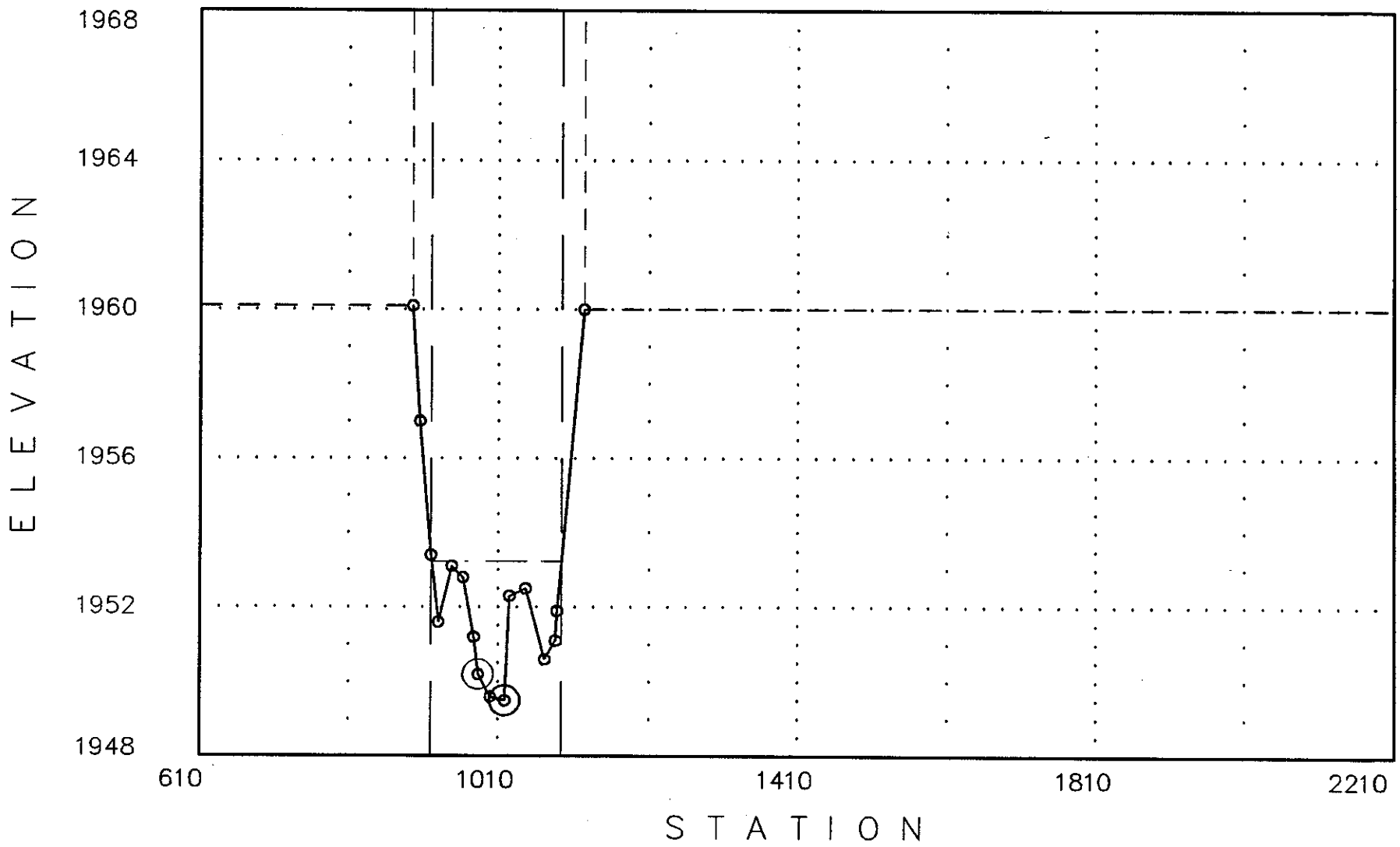
08-12-1992

<<<<<< Cross Section: .669: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1953.23

Q2= 1660 WS2= 1953.23

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

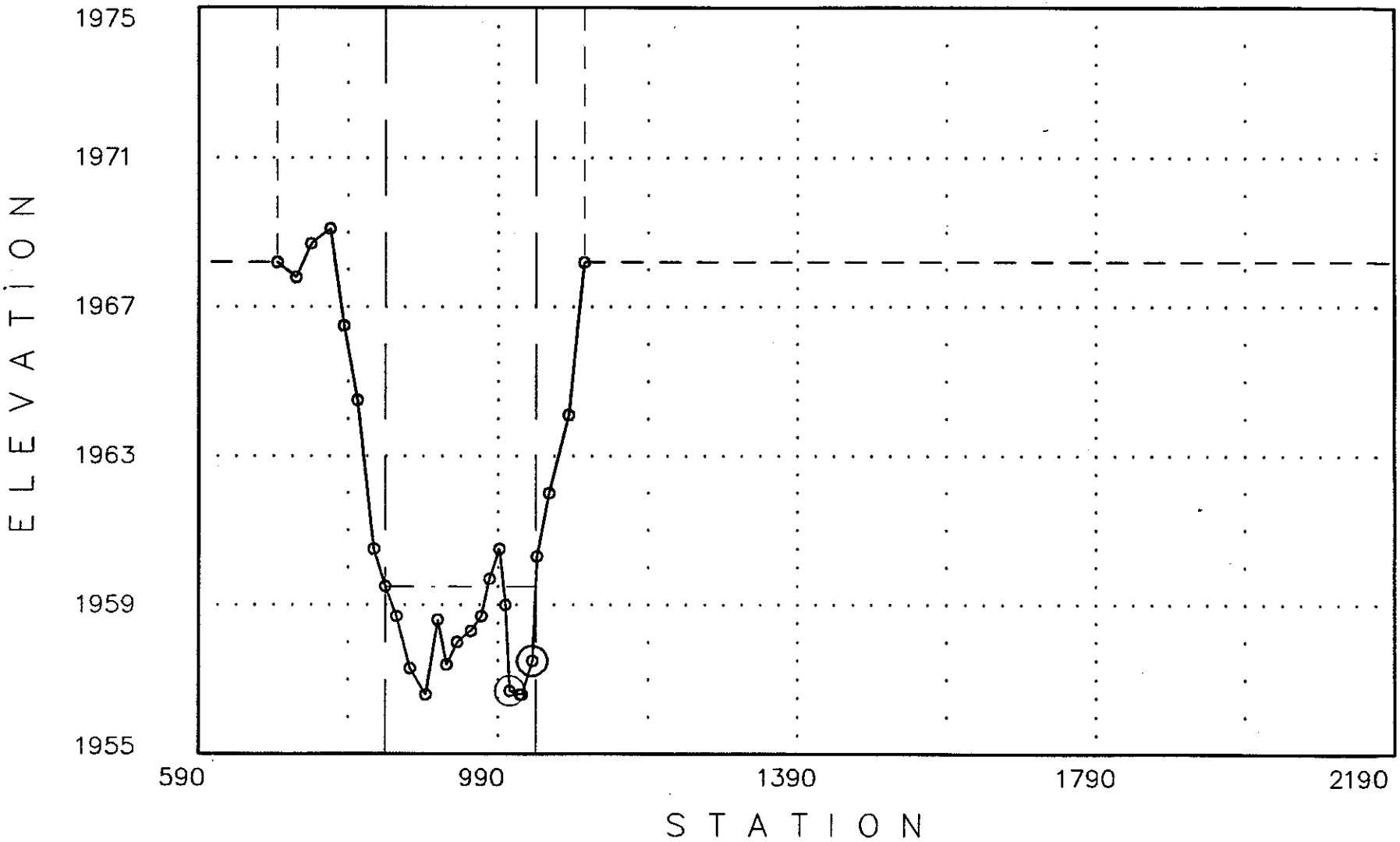


08-12-1992

<<<<<< Cross Section: .738: (FN = washh.o) >>>>>>

Q1= 1660 WS1= 1959.49
Q2= 1660 WS2= 1959.49

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

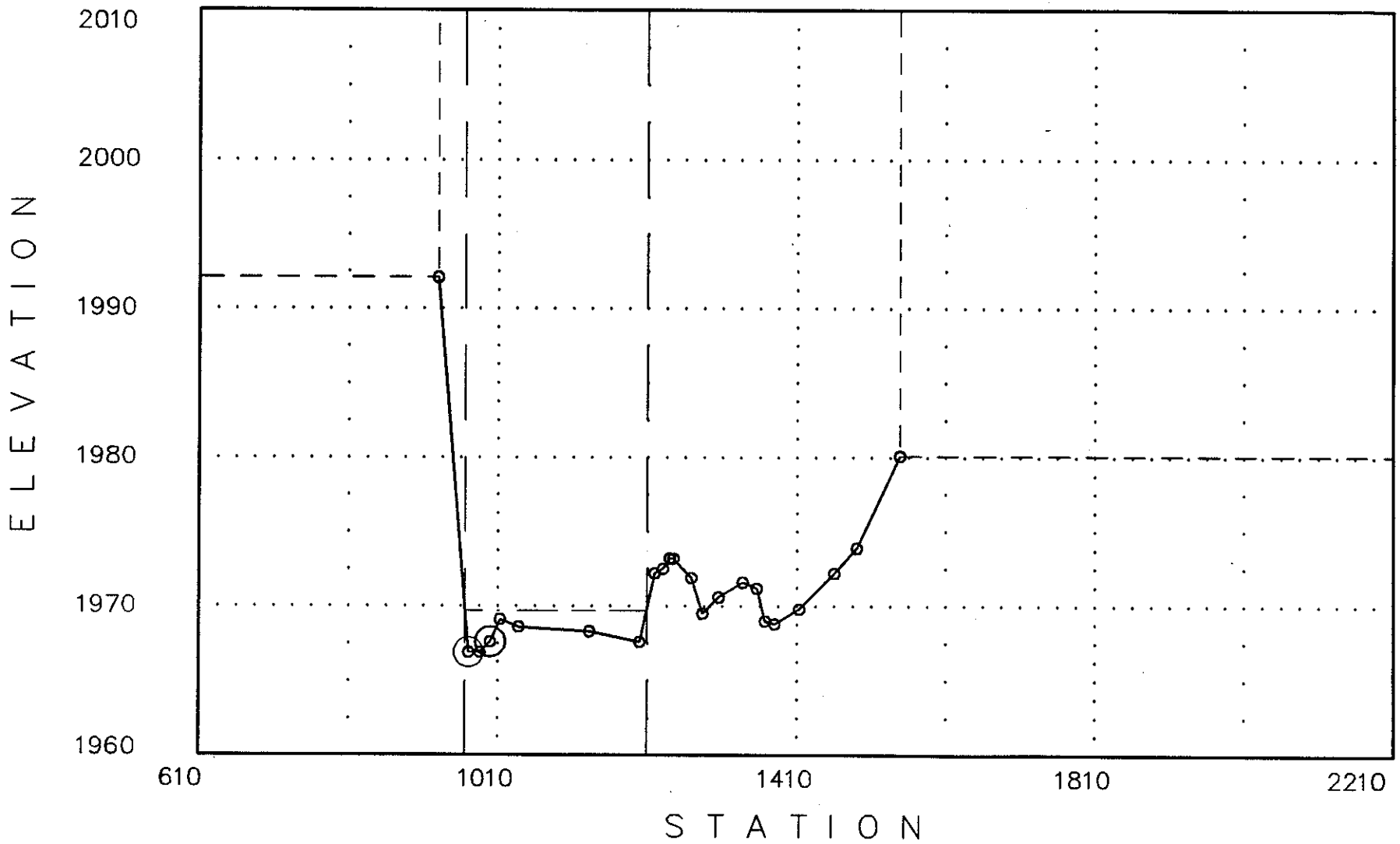


08-12-1992

<<<<<< Cross Section: .848: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 1969.69
Q2= 1700 WS2= 1969.69

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

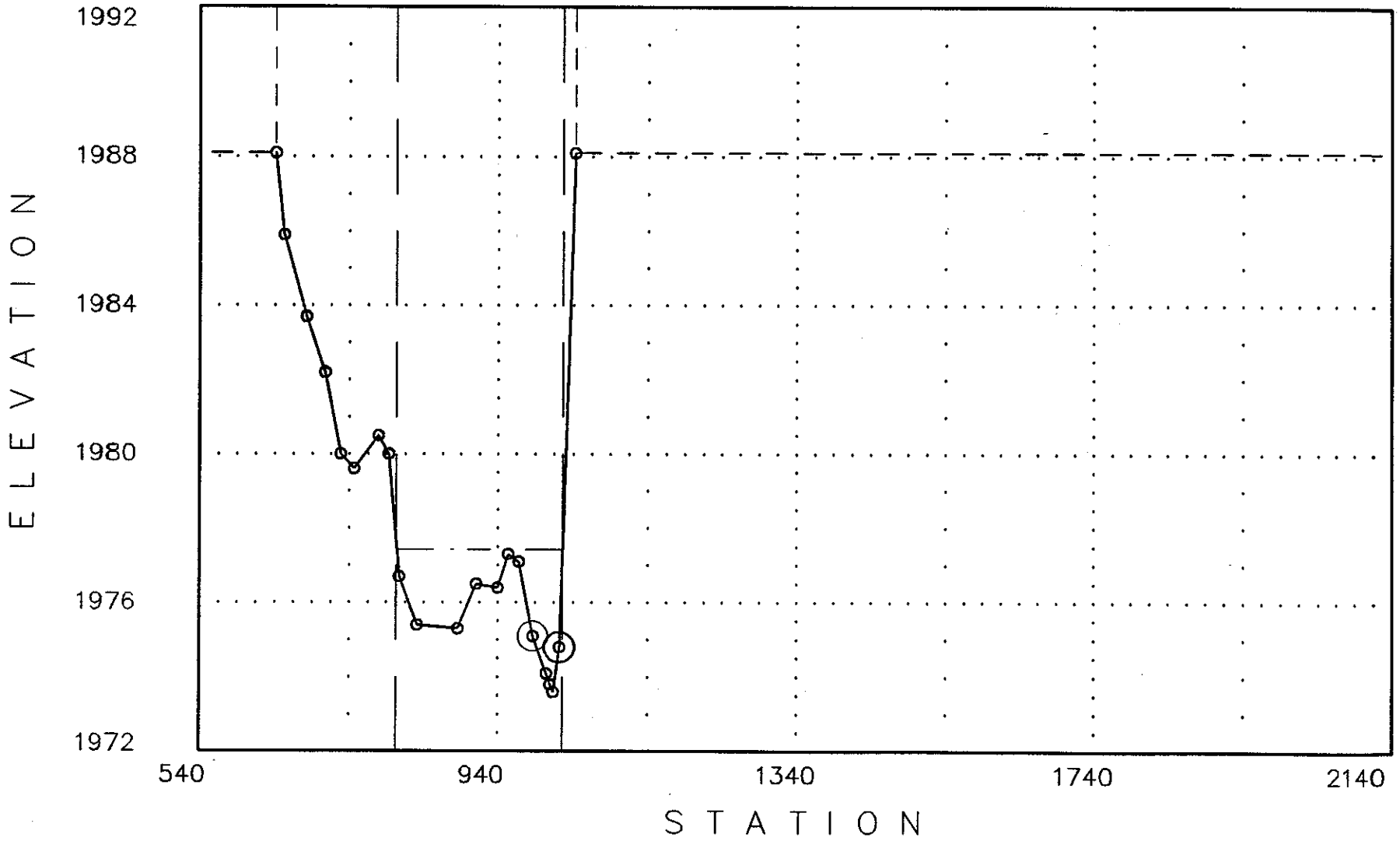


08-12-1992

<<<<<< Cross Section: .96: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 1977.43
Q2= 1700 WS2= 1977.43

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

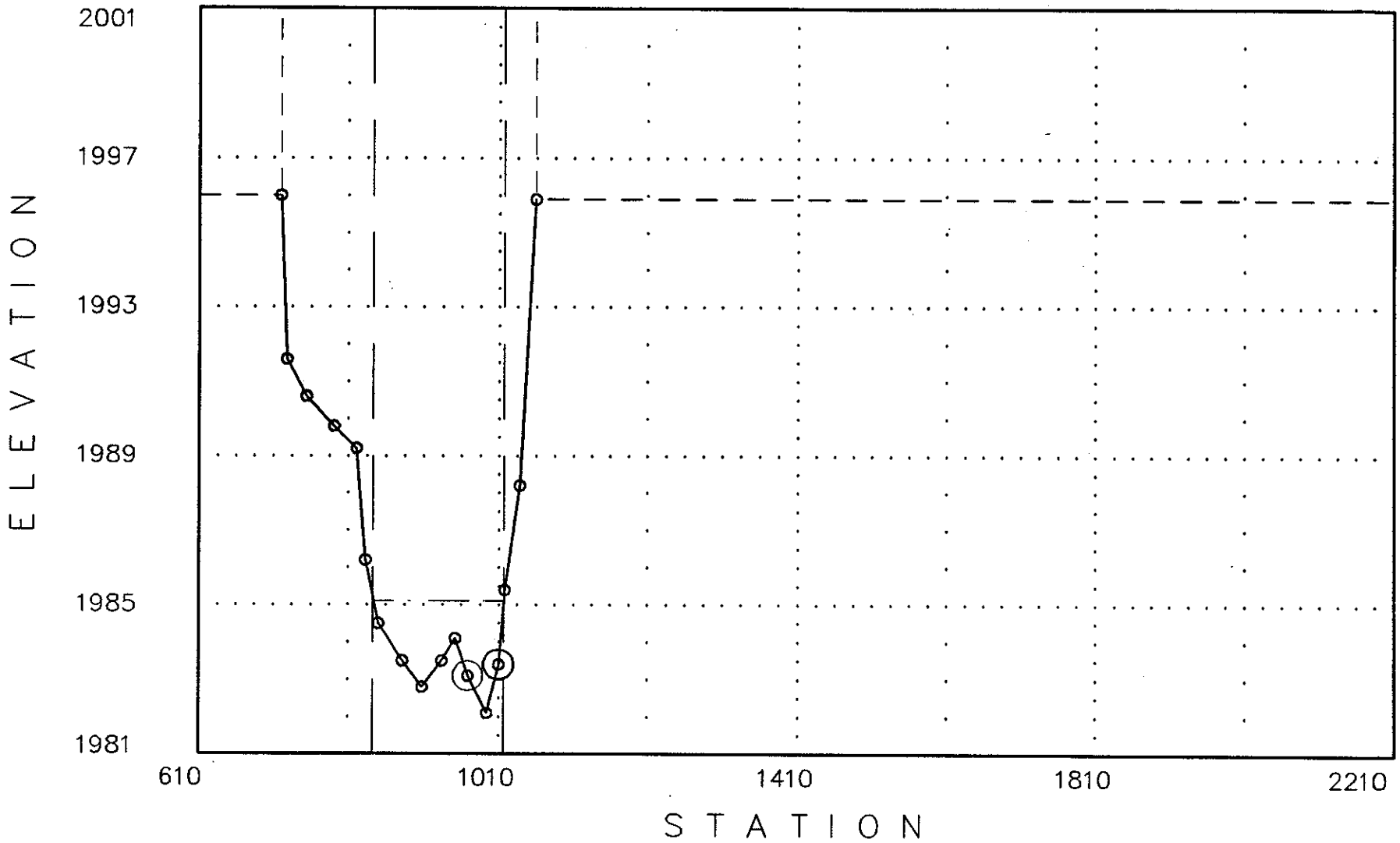


08-12-1992

<<<<<< Cross Section: 1.043: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 1985.11
Q2= 1700 WS2= 1985.11

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

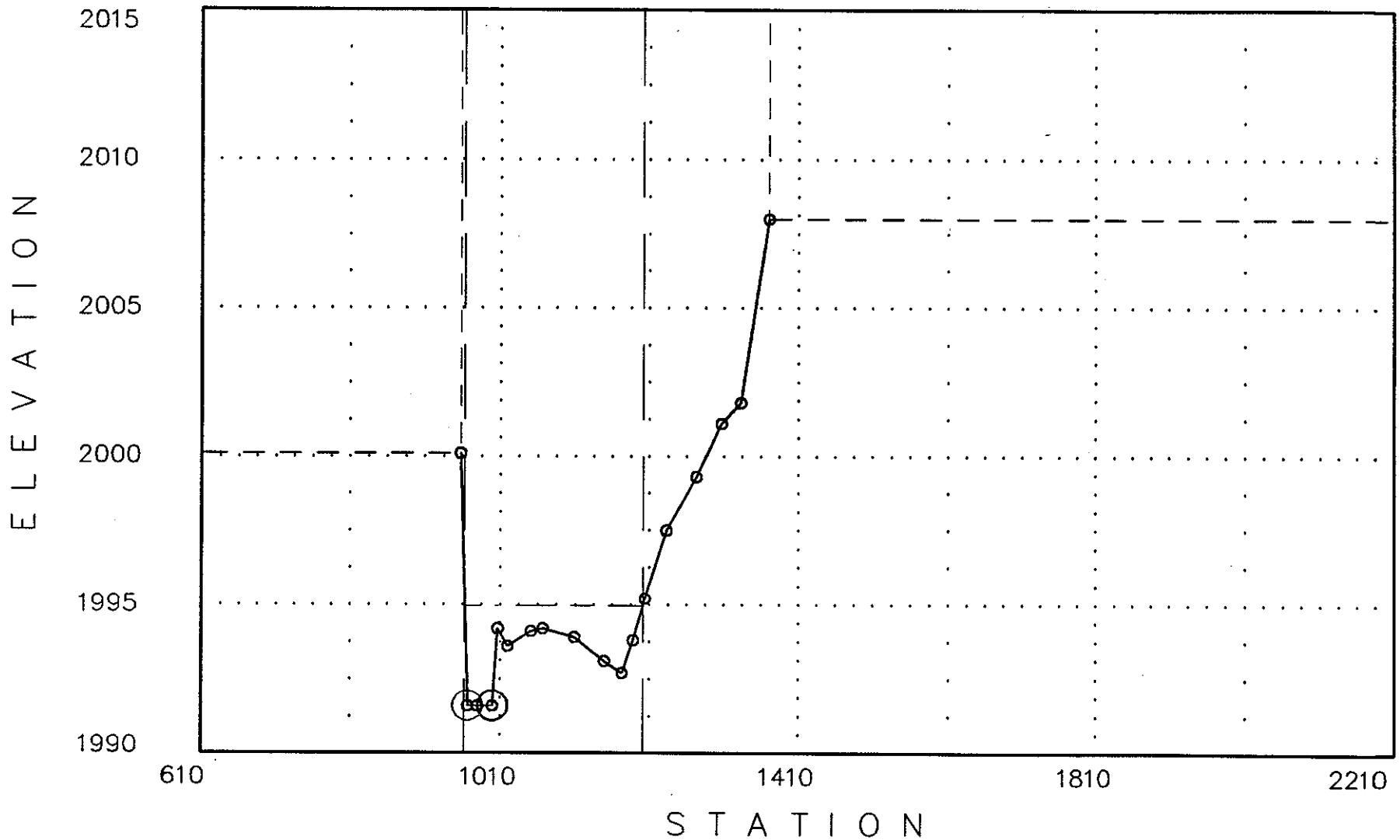


08-12-1992

<<<<<< Cross Section: 1.143: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 1994.97
Q2= 1700 WS2= 1994.97

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

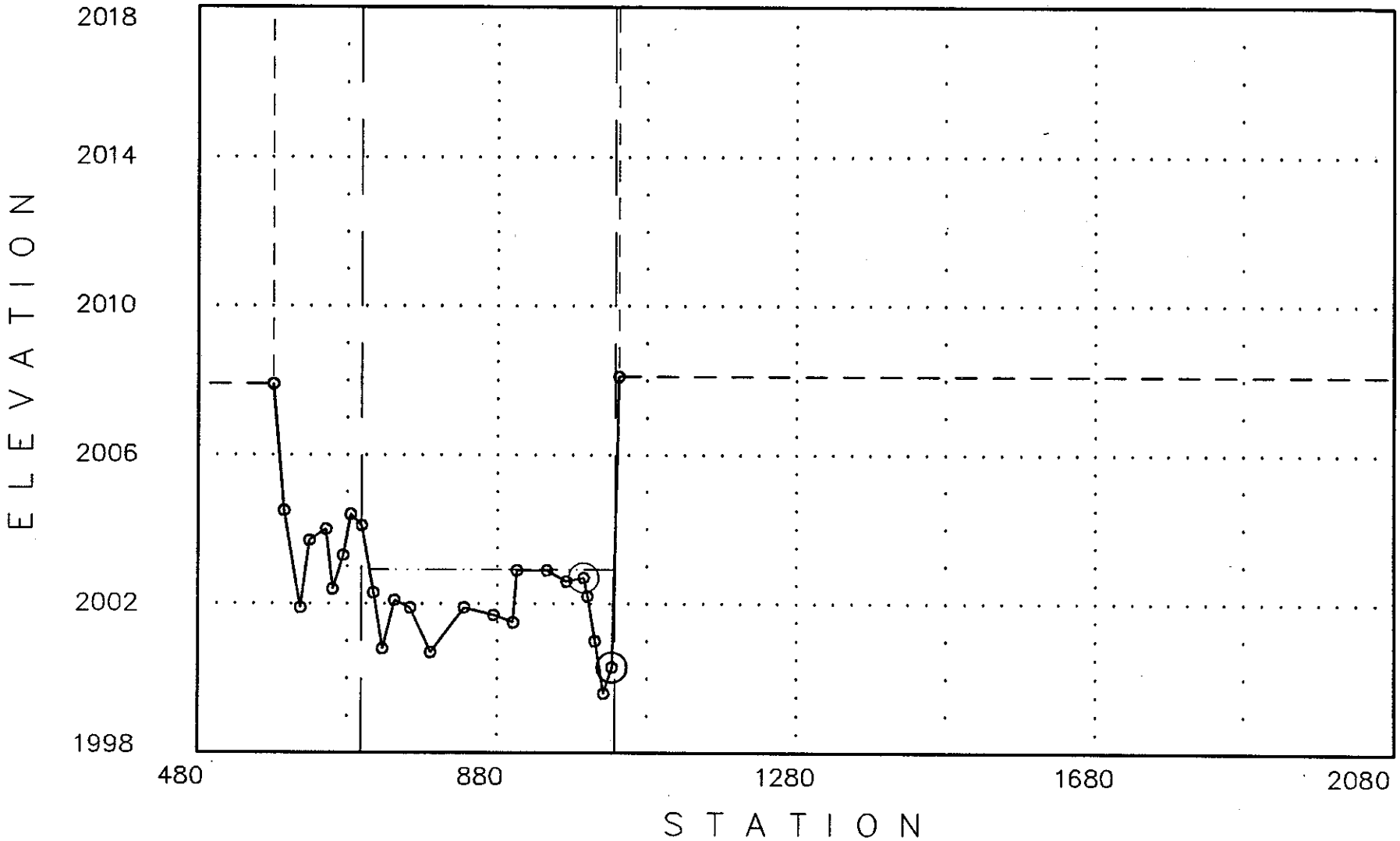


08-12-1992

<<<<<< Cross Section: 1.237: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2002.92
Q2= 1700 WS2= 2002.92

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

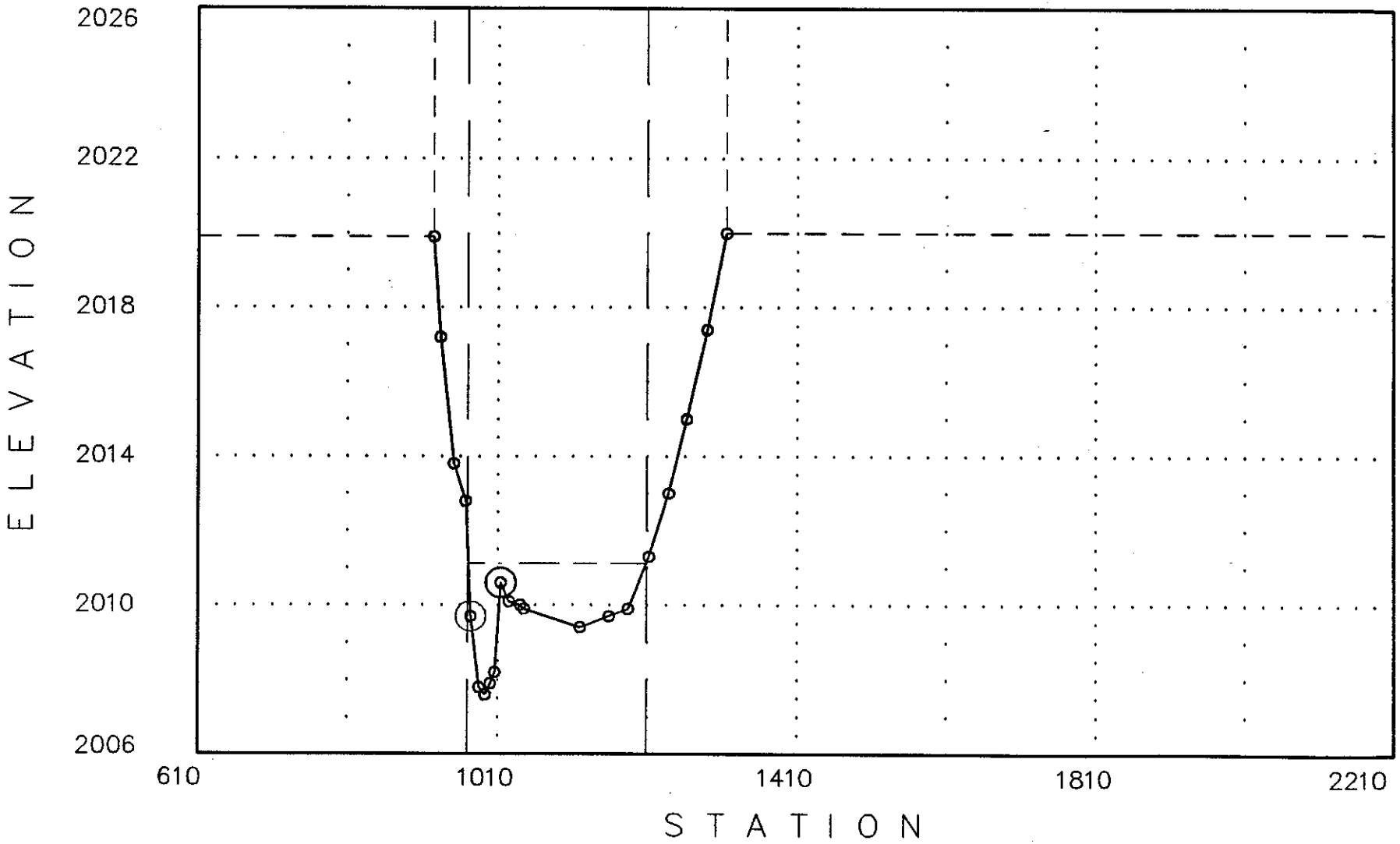


08-12-1992

<<<<<< Cross Section: 1.339: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2011.12
Q2= 1700 WS2= 2011.12

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

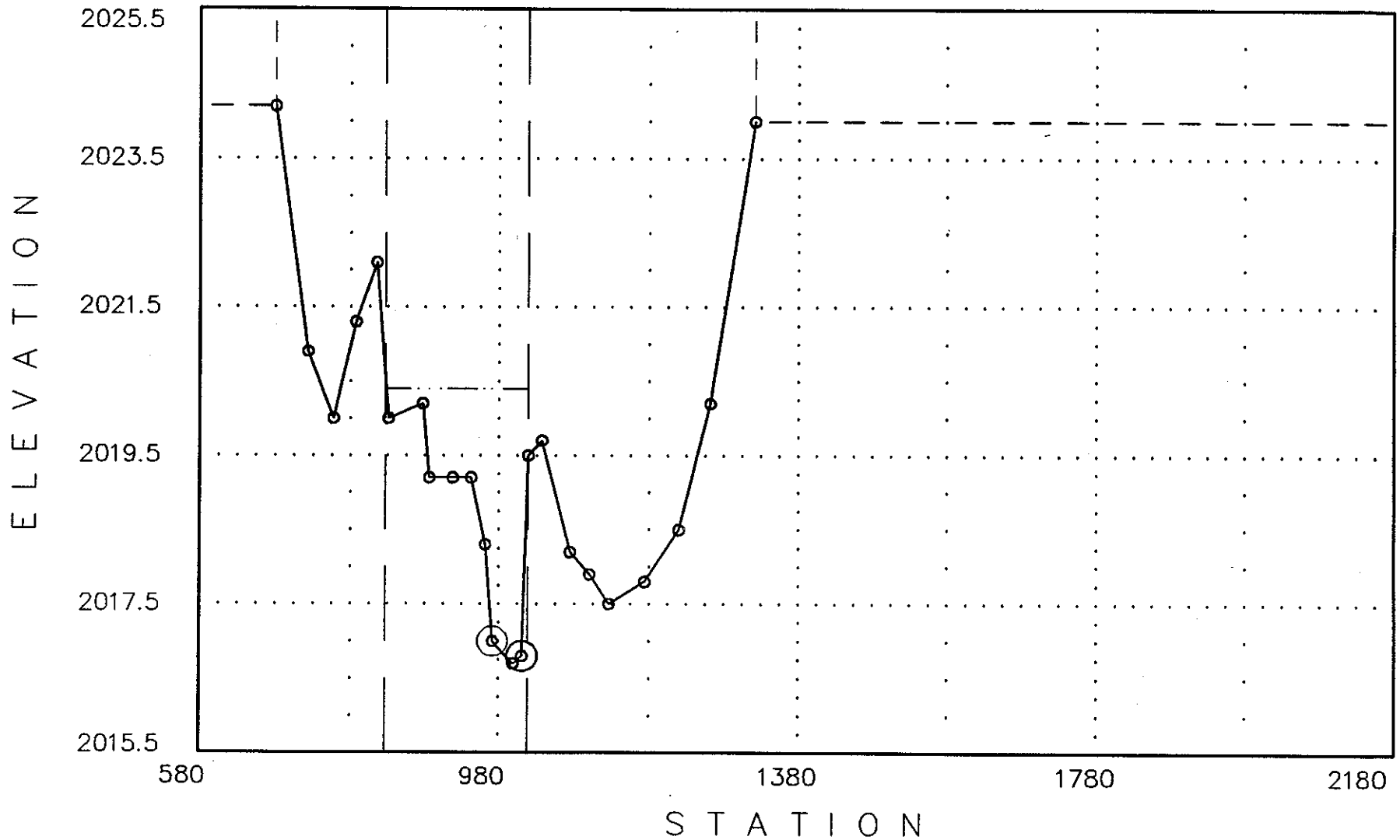


08-12-1992

<<<<<< Cross Section: 1.434: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2020.4
Q2= 1700 WS2= 2020.4

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

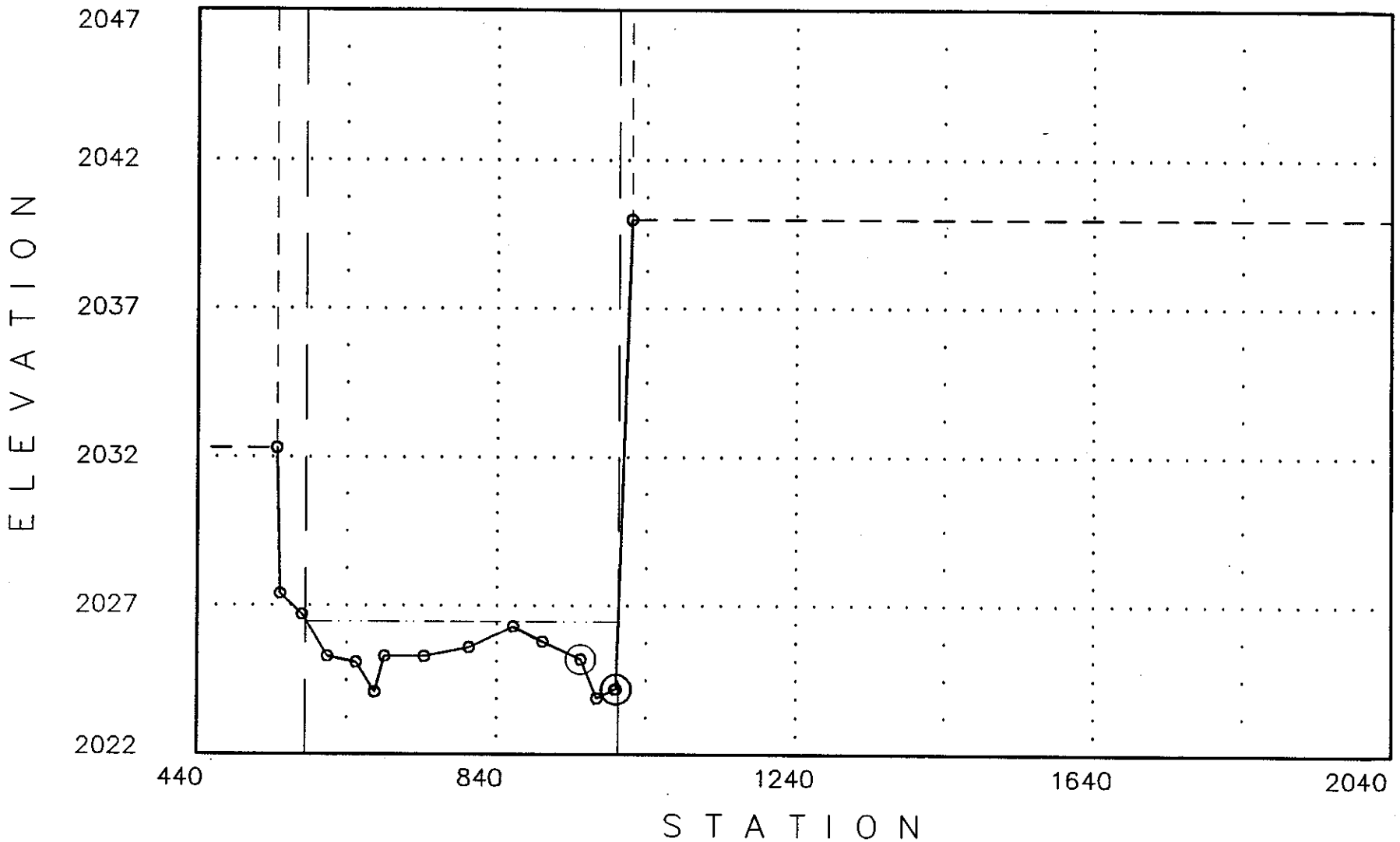


08-12-1992

<<<<<< Cross Section: 1.529: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2026.46
Q2= 1700 WS2= 2026.46

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

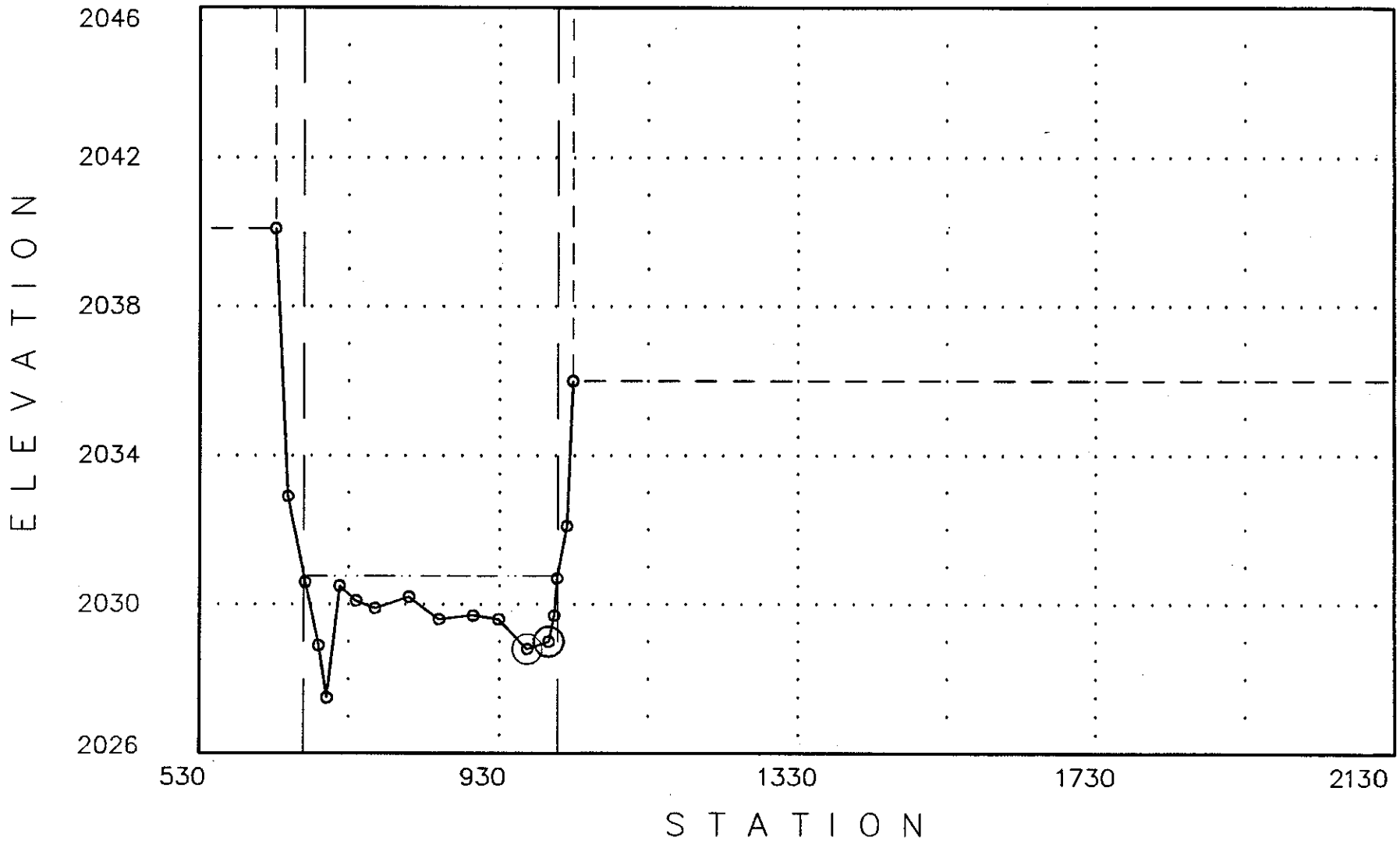


08-12-1992

<<<<<< Cross Section: 1.583: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2030.76
Q2= 1700 WS2= 2030.76

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

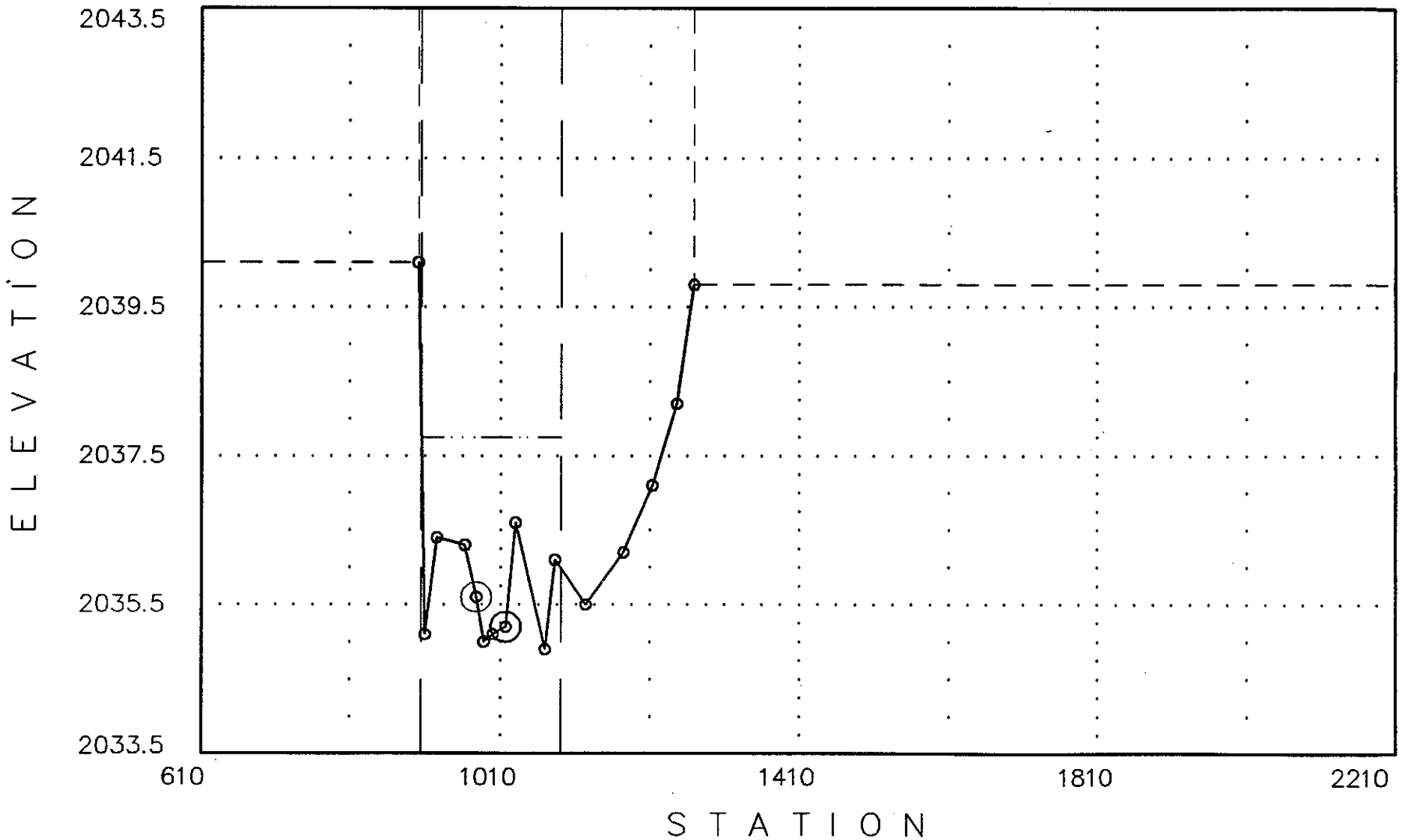


08-12-1992

<<<<<< Cross Section: 1.674: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2037.75
Q2= 1700 WS2= 2037.75

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

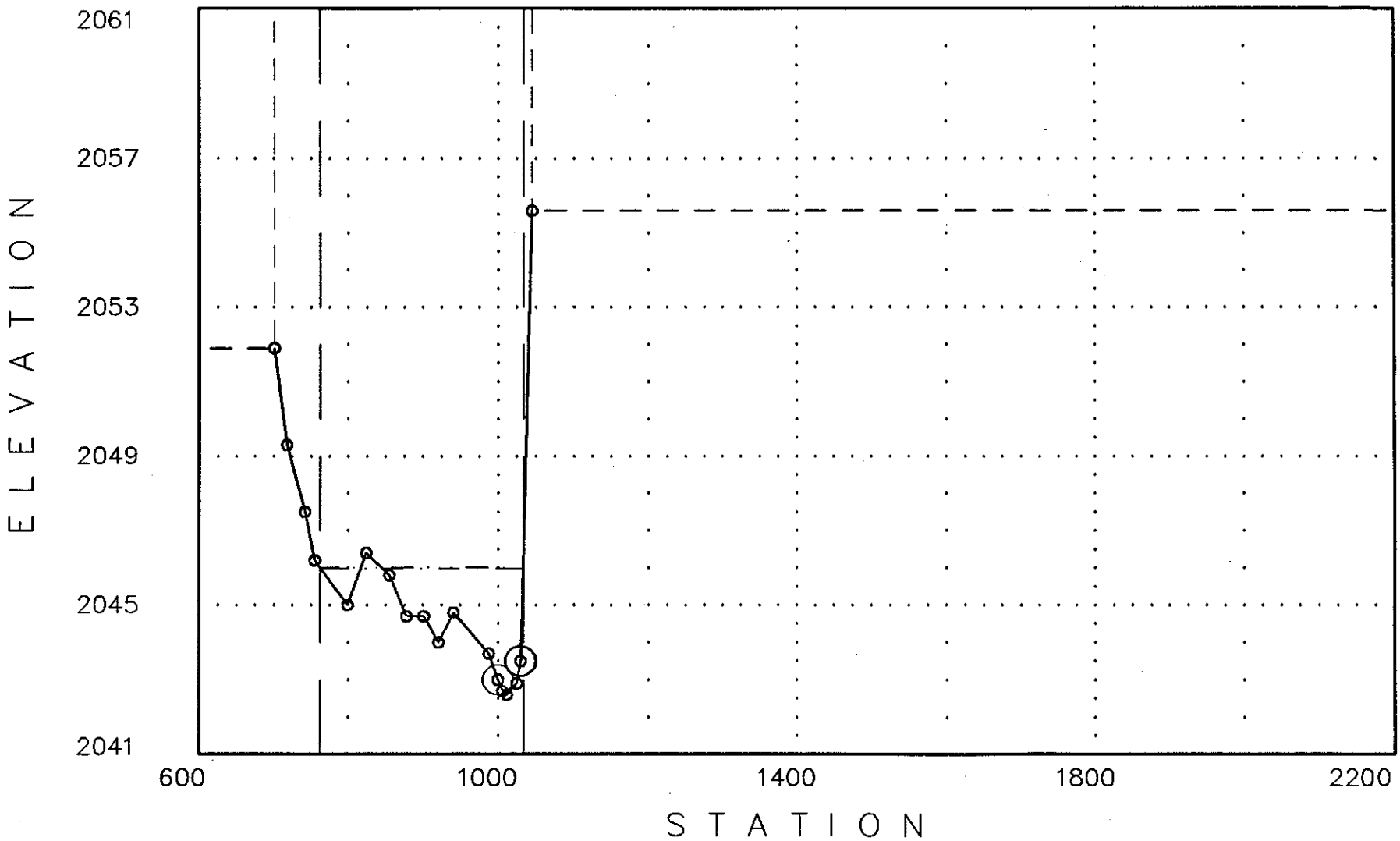


08-12-1992

<<<<<< Cross Section: 1.767: (FN = washh.o) >>>>>>

Q1= 1700 WS1= 2045.99
Q2= 1700 WS2= 2046.01

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07

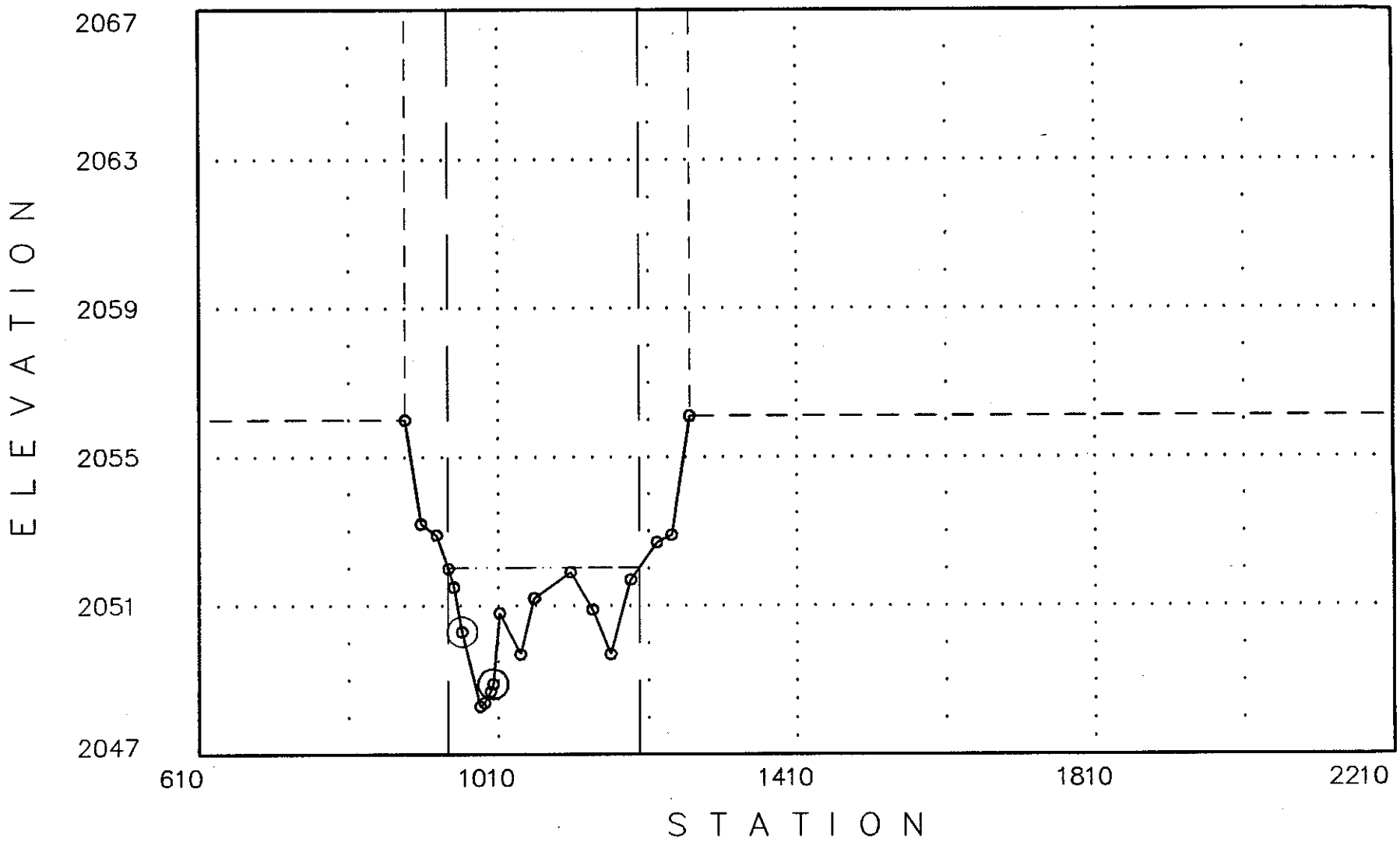


08-12-1992

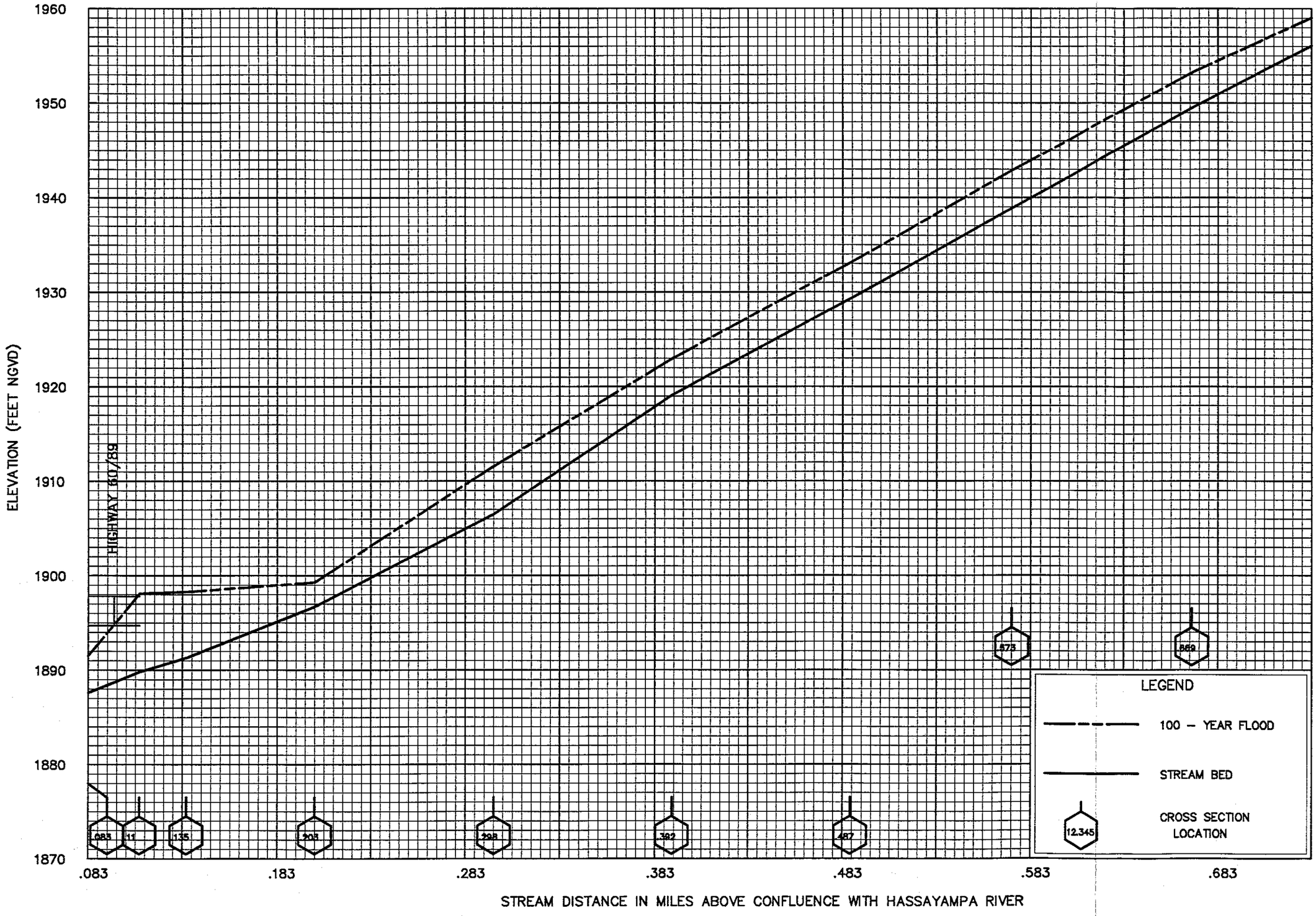
<<<<<< Cross Section: 1.866: (FN = washh.o) >>>>>>

Q1= 1742 WS1= 2052.03
Q2= 1742 WS2= 2052.03

Manning-n's: n-lob = .07 n-ch = .04 n-rob = .07



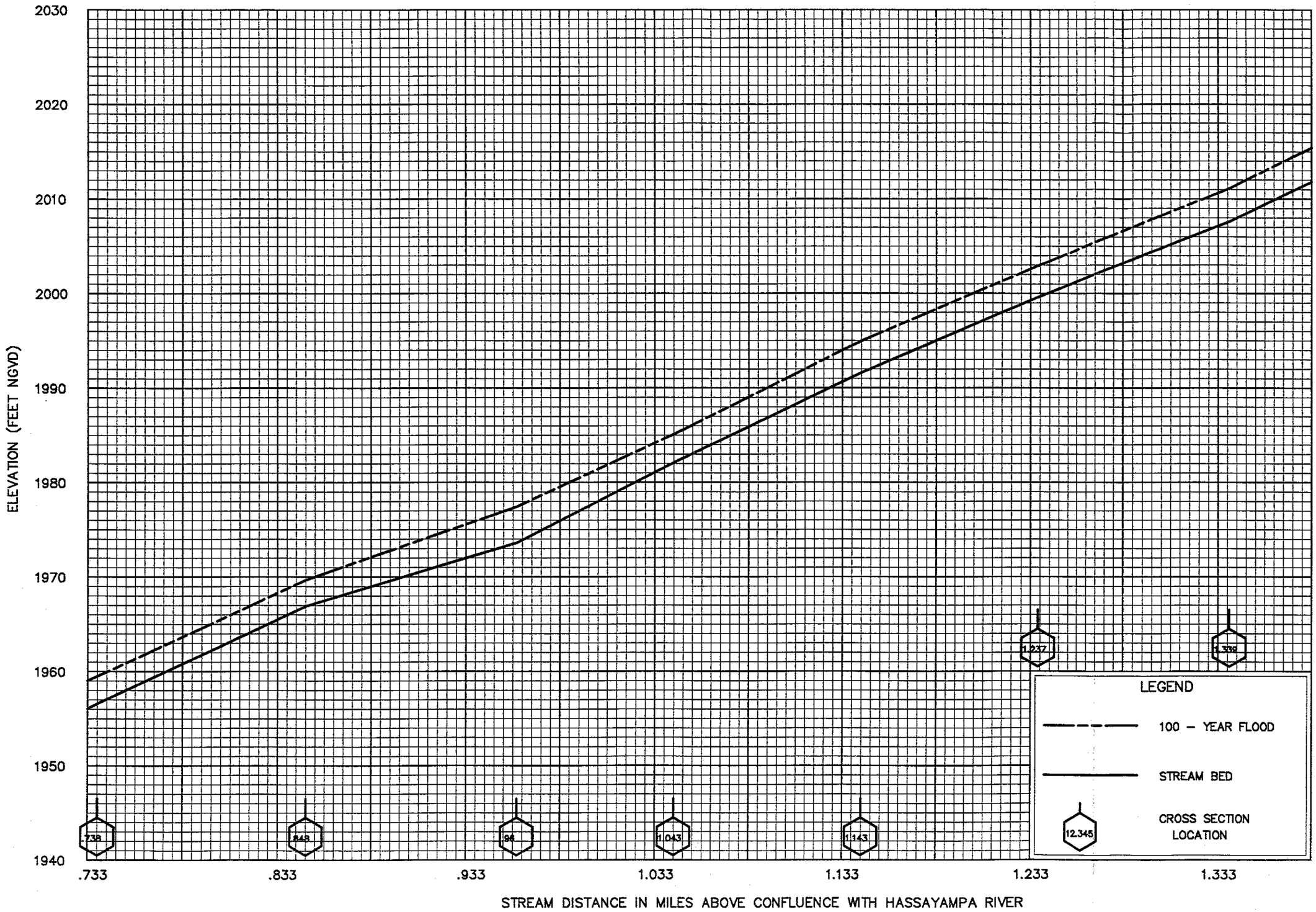
08-12-1992



FLOOD PROFILES

WASH H: UN-NAMED WASH #3

FEDERAL EMERGENCY MANAGEMENT AGENCY
MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

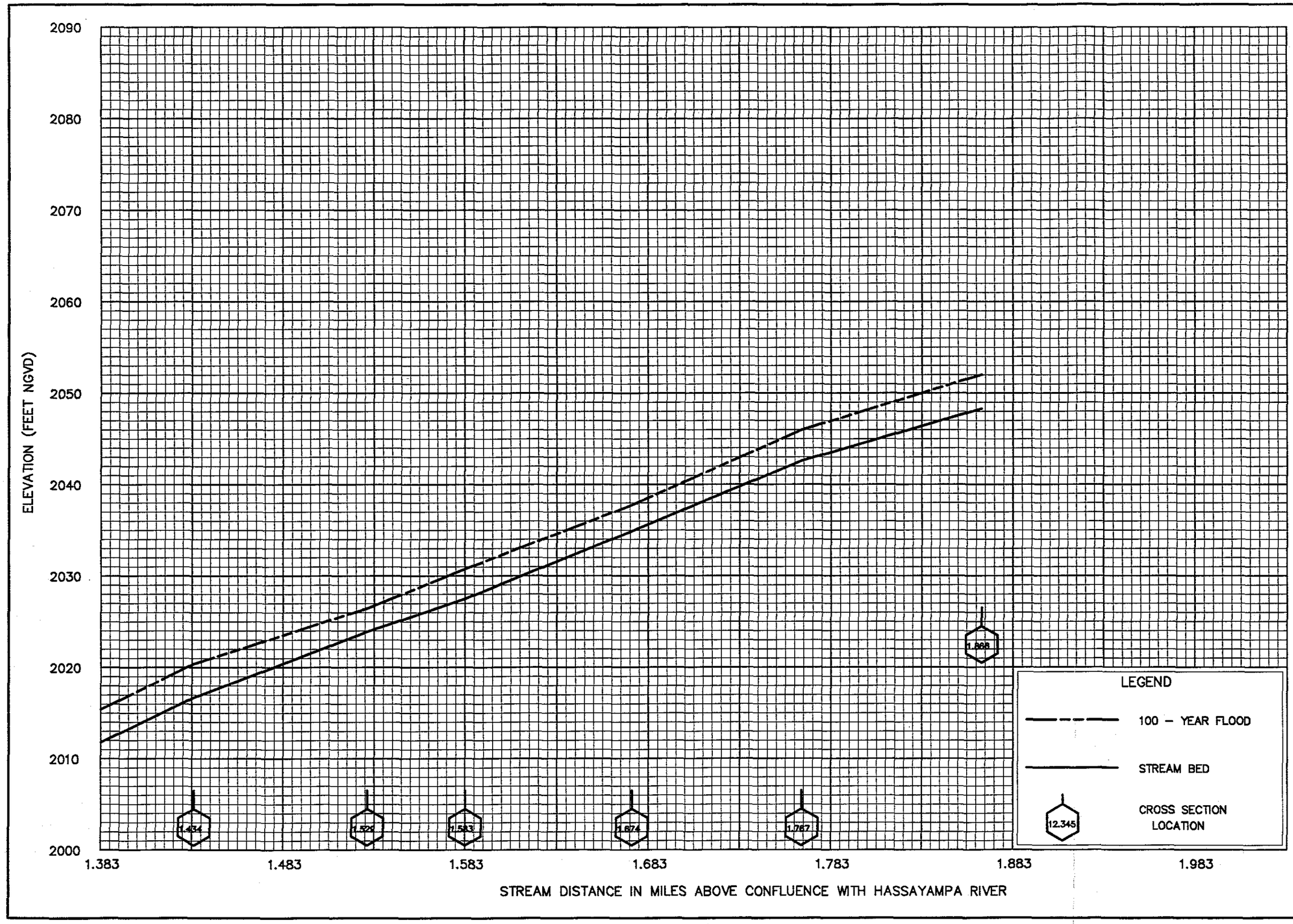


FLOOD PROFILES

WASH H: UN–NAMED WASH #3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS



FLOOD PROFILES

WASH H: UN-NAMED WASH #3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ
AND INCORPORATED AREAS

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION (FT. NGVD)	DESCRIPTION OF LOCATION
RM93	1,993.78	U.S. Geological Survey standard disk 2.4 miles southeast of Wickenburg, approximately 100 feet west of the Atchison, Topeka and Santa Fe Railroad, marked M 24 1933
RM94	1,989.29	Mortar metal post in centerline of headwall on south side of Atchison, Topeka and Santa Fe Railroad, 2.3 miles southeast of Wickenburg. U.S. Geological Survey designation RM 118
RM411	2,058.80	At Wickenburg, 0.4 mile south of the Atchison, Topeka and Santa Fe Railroad station, 600 feet south of wooden 140, 55 feet west of the centerline of the track, and in the center of a residence yard. A standard disc stamped N 24 1933 and set on the top of a concrete post
RM600	2,026.18	Chiselled 2" x 2" "+" on southwest corner of railroad bridge at Cameron Wash
RM601	2,024.84	Chiselled 2" x 2" "+" on top of 2" x 1" concrete headwall on the northwest corner of Catamite Wash bridge on State Route 93, approximately 0.4 mile north of mile post 112
RM602	2,180.67	Chiselled "X" on top of north and south of the northeast corner of cattle guard on Kalito Road (40.051) from south entrance to Cemetery, approximately 0.6 mile south of the intersection of Kalito Road and Whipple Street in Wickenburg
*RM603	2,142.71	Brass cap set in a rock, stamped U.S. Coast and Geodetic Survey HABS 1924, approximately 2 miles north of Wickenburg, 800 feet east of the east bank of the Hassayampa River, shown as triangulation station 3141 on the U.S. Department of Interior Geological Survey, Wickenburg Quadrangle
RM604	2,084.75	Brass cap stamped A.D.O.T. ELEV. 2085.34 STA. 910 + 46.56 1963, set in top of 1" x 33" x 18" headwall on the west side of Highway 89 approximately 300 feet south of Ranson Road, Wickenburg
RM605	2,053.02	Chiselled 2" x 2" "+" on southeast corner of concrete slab at top of a section of a cargo to a hay storage shelter that is the farthest north of 3 and areas of it on a north south direction at Double Thoroughbred Farm, Inc., located at the intersection of the east end of Cameronia Street and Weaver Street in Wickenburg
RM606	2,011.18	Brass cap stamped A.D.O.T., Bks 938 + 88, Elev. 2011.47 1967, on top of a 1" x 7" x 8.5" high box culvert on the east side of Route 93, where Turkeyback Wash crosses under the highway, 0.75 mile north of north end of a median and 4.50 miles north of mile post 112, brass cap is approximately 15" below highway elevation
RM607	2,012.02	Brass cap stamped Arizona Highway Department, STA. & ELEV. set on 8" x 10" x 2" high headwall at north end of a cattleguard crossing at the entrance to Rock House Ranch, located approximately 165 feet north of entrance to Foothills Trailer Park on a driveway that is parallel to and on the west side of Highway 93. Foothills Trailer Park entrance is west from the median crossing on Highway 93 that is 0.40 mile north of mile post 114

*OUTSIDE CORPORATE LIMITS

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A — No base flood elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99 — To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
- ZONE V — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- ZONE X — Areas determined to be outside 500-year flood plain.
- ZONE D — Areas in which flood hazards are undetermined.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet*

D — D — Cross Section Line

(EL 987) — Base Flood Elevation In Feet Where Uniform Within Zone*

RM7 × — Elevation Reference Mark

*Referenced to the National Geodetic Vertical Datum of 1929

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Areas of special flood hazard (100-year flood) include Zones A, A1-30, AE, AH, AO, A99, V, V1-30 + zD VE

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Coastal base flood elevations apply only landward of the shoreline.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of the map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

MAP REPOSITORY

Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP:

APRIL 15, 1988

EFFECTIVE DATE (S) OF REVISION (S) TO THIS PANEL:

Map revised September 29, 1989 to change base flood elevations and special flood hazard areas, to add base flood elevations and special flood hazard areas, to change zone designations, to reflect updated topographic information, to incorporate previously issued letters of map revision and map amendment, and to update map format.

Map revised September 4, 1991 to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to change zone designations, to update map format, to add roads and road names and to incorporate previously issued letter of map revision.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

N

APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 255 OF 4350

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	0255	F
WICKENBURG, TOWN OF	040056	0255	F

RECEIVED

OCT 9 1991

MAP NUMBER
04013C0255 F

MAP REVISED:
SEPTEMBER 4, 1991

Federal Emergency Management Agency