Skunk Creek Above 83rd Ave. Maintenance Issues

SKUNK CREEK

ABOVE

83RD AVENUE

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

SKUNK CREEK ABOVE 83RD AVENUE

SUMMARY

PROBLEM: In 1995 while doing maintenance on this reach of the channel, there was a possible 404 violation. See memo dated August 1, 1995 from Catsby Moore (copy attached). By not continuing with the maintenance, there are now two problems that are reason for concern in this reach of Skunk Creek.

1. One of the concerns is the fact that the SPF flood, under present conditions, will exceed the channel design. This is caused by allowing vegetation to grow within the channel and changes that are occurring to the channel bottom. Both cause the channel to have a reduced conveyance capacity from that for which it was designed.

2. The other major concern, is the fact that the banks are beginning to slough. This has two effects, one which is the possible loss of the bank, and the other is the filling of the channel, which as stated in 1 above, causes a decrease in channel conveyance capacity.

ANALYSIS:

1. On August 23, 1995, Tim Murphy prepared a Memorandum (copy attached) outlining a preliminary study on the affects of allowing the vegetation to grow within the channel. This vegetation growth would cause an increase in the roughness coefficient "n". He found that if dense growth were allowed for a 16 foot width in the channel, it would increase the "n" of 0.032, used in the Coe & Van Loo model "SCSPF", to 0.036. Tim then developed model "SCSPF-N" which used the value of n = 0.036. He found that this would cause the channel to be exceeded in the vicinity of section 55.00.

Based on the above analysis, it was decided that an investigation to determine if there had been any change in the cross sectional area, needed to be made. On march 27, 1997 Joe Tram and Russ Cruff made a survey of cross sections 35.00, 37.00, 38.32, 40.05, 43.00, and 46.92. These results were plotted along with those used in the HEC-2 model "SCSPF", developed by Coe & Van Loo in 1989. Some of the cross sections show a change either in fill in the channel bottom or fill near the banks. The fill along the banks is probably due to bank sloughing. A HEC-2 model "SCSPFA-N" was developed by modifying the cross section GR data, in model "SCSPF-N", for those cross sections that were surveyed on March 27, 1997. Due to the changes in the channel it was found that the water surface elevations rose nearly an additional 0.3 foot.

Profiles of the water surface elvations for the three(3) above models were plotted. The comparison of the three for the left bank at cross section 55.00 is as follows:

Model = SCSPF	Freeboard =	1.0 foot
= SCSPF-N	=	0.1 foot
= SCSPFA-N	=	-0.1foot

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2. Next it was decided to see what affect the Wildlife Habitat Area may be having on the velocities of the flow within the channel. Thus, making an attempt to determine the stability of the unlined channel banks. To do this it was necessary to develop model "SCSPF-RI", which is model "SCSPF" modified to add the 100-, 50-, and 10-year recurrence interval flows. From this model "SCSPF&RI" was developed. It was developed by modifying cross sections 30.00, 31.75, 33.00, and 35.00. The modification used the area encompassed by the Wildlife Habitat Area as the main channel and used the areas between it and the banks as the overflow areas. This way a velocity distribution across the channel could be computed by the HEC-2 model. For these cross sections n = 0.080 was used for the main channel (Wildlife Habitat Area) and n = 0.035 was used for the overbank areas.

RESULTS: The above analysis show that the items of concern could become major problems.

1. From the above analysis, it can be seen that the lack of vegetation control and channel cleaning in this area will cause the channel to no longer be able to convey the SPF flows for which it was designed. Both the increase in channel roughness caused by increased vegetation and the change in the channel geometry are causing the conveyance capacity of the channel to decrease. It also indicates, that the longer it goes without a solution to the problem, that the worse the condition will become. The fill, in the bottom along this reach, is probably due to three main causes:

a.) The fact that the banks are Sloughing, causing the lower portion of the channel to become narrower, thus making for less channel conveyance.

b.) The higher roughness in the channel due to vegetation will cause the average velocities above the Wildlife Habitat Area to be lower.

c.) The Wildlife Habitat Area between the 83rd Avenue bridge and section 37.00 causes the velocities in the center of the channel to be somewhat lower and those near the banks to be higher than would occur if the Wildlife Habitat area were not there.

Thus, the affects of b and c will be for the sediment to have a tendency to deposit in this reach.

2. The increase in velocities near the banks in the area of the Wildlife Habitat Area is considerable. This causes the toe of the banks to scour, causing sloughing of the banks. The plots attached, for cross sections 30.00, 31.75, 33.00, and 35.00 at the Wildlife Habitat Area show the velocity distribution across the channel in this area. It can be seen that the velocities approach 17, 14, 11, and 8 feet per second for the SPF, 100-, 50-, and 10-year flows respectively. These are considerably greater than the velocities of 13, 12, 9, and 6 feet per second for the sections upstream, which are not affected by the split flow situation of the Wildlife Habitat Area.

RECOMMENDATIONS: The channel between the bridge at 83rd Avenue and the drop structure at section 68.69 needs to be considered for stabilization and maintenance to maintain the integrity of the channel. Following are ideas for some items that need to be considered:

1.) The banks need to be stabilized to prevent the sloughing.
2.) The channel needs to be excavated in the areas where fill has occurred.
3.) The vegetation growth above the Wildlife Habitat Area needs to be reduced to the level considered in the channel design. There are willows beginning to grow in the channel, that if not removed or kept under control, will in the future, cause significant blockage of the channel.
4.) There needs to be a method put into effect, by which the Wildlife Habitat Area is kept to the limits that were anticipated in the design of the channel. Any increase, either in size or density will decrease the conveyance capacity of the channel.

R.W. Cruff, P.E.
April 30, 1997

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PLANNING AND PROJECT MANAGEMENT DIVISION
INTEROFFICE MEMO

TO: Tom Johnson
CC: Dan Sagramoso
Stan Smith
Ed Raleigh

FROM: Catesby Moore

DATE: 8/01/95

SUBJECT: Follow-up on 404 Violation upstream of 83rd Avenue in Skunk Creek

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I have spoken with the Regulatory Branch of the Corps of Engineers and was provided with the following information. It is their opinion that a violation of 404 has in fact occurred. They have contacted Terry Witherspoon of their Construction Branch, who conducted the COE inspection of the project. He asserts that he pointed out the cat-tail marsh "could be a problem," and that he did not propose any solutions. I will be getting a copy of his written inspection report. Apparently, the two COE branches will support each other on this one.

What will happen next, is that the District will receive a letter stating that a violation has occurred and outlining the steps needed to correct the problem. They will request aerial photographs showing the pre-violation condition, and ground photographs showing the after violation condition. They will require an assessment of the damage, a plan to correct the damage and a plan on how not to repeat this problem in the future.

I propose to proceed as follows. I understand that Ed Raleigh's group is conducting a hydrologic study of the area to determine how much vegetation can be tolerated in the channel bottom. After the hydrologic study is completed, I will prepare a vegetation management plan similar to the one we developed for use in New River (see attached).

Armed with this plan and the COE operating manual for the ACDC, as well as the Environmental Impact Statement the COE prepared for the Phoenix area and vicinity projects, we will seek and obtain a 404 permit to maintain the channel according to written maintenance guidelines.

In order to avoid such excitement in the future, I suggest several courses of action that are in keeping with the strategic plan.

First, educate the work control center on environmental regulations. I consider these personnel to be key in determining potential environmental liability. Secondary training should be conducted to the O&M workforce as a whole, but we need to provide work control center staff with more in-depth training. Following training, I would anticipate that work control center staff could identify potential conflicts and contact the environmental personnel in planning team two for assistance. Additionally, because the work control center is responsible for scheduling annual work, they could arrange for up front permitting and clearance of environmental issues.

Second, develop a working task force to prioritize structures for 404 permitting. There are three possible groupings for structures:

Group One: Can maintain without a 404 permit. These include concrete lined structures, structures that do not accept flows from waters of the US or replace waters of the US, and structures that are limited to accepting urbanized flows (48th Street Drain and Old Cross Cut Canal). Additionally, where the work we wish to do is less than one acre, we are exempt from 404.

Group two: Structures that are waters of the US and the expected impact of maintenance is between 1 and 10 acres, we will obtain 404 permit coverage under a Nationwide permit. I think we can expect that for each of our structures that we will need to perform a similar

engineering work to determine just what the tolerance limits are.

Group three: Structures that are waters of the US and expected impact of maintenance is more than 10 acres. These will have to be covered under an individual permit. The COE has graciously agreed to cover all of the big structures under one permit. This will cut down on the paper work considerably.

The permitting process is paperwork intensive and will require some research to locate the pertinent information.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Interoffice Memorandum

DATE: August 23, 1995

TO: Catesby Moore

VIA: Pedro Calza
Ed Raleigh

FROM: Tim Murphy

SUBJECT: Skunk Creek, preliminary analysis on leaving some vegetation in the channel bottom

Based upon my preliminary modeling it looks like the maximum width the vegetation can be and still keep the SPF discharge within the channel is 16 feet.

The critical cross section for the containment of flow is 55.00. With a width of 16 feet for the vegetation the computed water surface elevation (CWSEL) for cross section 55.00 is 1187.0, and the elevation of the top of the bank is 1187.1.

Cross section 43.00 is of some concern, flow appears to extend across the maintenance road on this cross section, it is however contained. I'm not sure if this is a problem or not because in the previous modeling done by Coe & Van Loo, flow also appears to cross the maintenance road. For some reason their SPF delineation doesn't match with their HEC-2 results. I used their results and replotted their SPF delineation along with our revised delineation (n = 0.036) to show the horizontal magnitude of the change.

To do this modeling with the vegetation left in the channel I developed a composite n value for the channel. For the area of the cattails I used an n value of 0.100 and a width of 16 feet, for the rest of the channel I used Coe & Van Loo's value of 0.032. This resulted in a composite n value for the channel of 0.036. I've attached a copy of these calculations and a plot of cross section 55.00.

I've included a summary printout of our revised model (n = 0.036) with 16 feet of vegetation left in the channel and one for the Coe & Van Loo model (n = 0.032). I've also included a table comparing the computed water surface elevations and top width for the two models.

I only revised the Manning's n value between the upstream end of the habitat mitigation area (cross section 37.00) and the upstream drop structure (cross section 68.69).

Cross Section No.	Computed Water Surface Elevation			Top Width		
	CVL n = .032	Revised n = .036	Difference	CVL n = .032	Revised n = .036	Difference
37.00	1181.79	1181.79	0.00	316.26	316.26	0.00
38.32	1182.05	1182.14	0.09	314.70	315.04	0.34
40.05	1182.80	1183.09	0.29	318.32	320.29	1.97
43.00	1183.53	1184.02	0.49	320.55	334.08	13.53
46.92	1184.23	1184.90	0.67	296.23	298.63	2.40
50.90	1185.36	1186.13	0.77	304.79	308.82	4.03
55.00	1186.13	1186.99	0.86	304.32	308.34	4.02
60.00	1187.13	1188.06	0.93	307.00	310.49	3.49
64.00	1187.66	1188.70	1.04	289.23	294.02	4.79
65.45	1188.26	1189.30	1.04	311.45	314.76	3.31
66.90	1188.69	1189.71	1.02	310.29	313.96	3.67
67.90	1188.79	1189.84	1.05	304.61	307.54	2.93
68.69	1188.90	1189.95	1.05	299.71	302.87	3.16
68.70	1189.17	1189.21	0.04	300.35	300.47	0.12

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|              S U M P O            |
|                                   |
|   Interactive Summary Printout    |
|   for MS/PC-DOS micro computers   |
|              May 1991             |
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NOTE - Asterisk (*) at left of profile number indicates message in summary of errors list

Skunk Creek, SPF discharge, Manning's based upon 16 feet of vegetation in the channel.

Summary Printout

	SECNO	Q	CWSEL	DEPTH	K*XNCH	VCH	XLBEL	RBEL
	15.25	55000.00	1167.13	12.13	32.00	16.98	1180.00	1171.00
	17.00	55000.00	1169.70	14.40	32.00	13.99	1173.00	1172.70
	19.00	55000.00	1170.51	14.81	32.00	13.52	1174.00	1174.00
	20.85	55000.00	1171.86	15.96	32.00	11.26	1173.00	1175.00
	22.00	55000.00	1172.21	16.11	32.00	10.83	1174.00	1174.00
	23.90	55000.00	1172.34	15.84	32.00	11.57	1175.00	1175.00
	24.89	55000.00	1172.48	15.68	32.00	11.68	1175.00	1175.00
*	24.90	55000.00	1172.90	10.10	32.00	17.83	1175.00	1175.00
	25.40	55000.00	1174.67	11.77	32.00	15.20	1175.00	1175.00
	26.70	55000.00	1175.76	12.56	32.00	14.24	1176.40	1176.40
	27.80	55000.00	1176.47	12.97	32.00	15.26	1177.10	1177.10
	29.60	55000.00	1178.39	14.49	32.00	12.28	1179.30	1179.30
*	30.00	55000.00	1178.77	14.77	50.00	11.73	1180.00	1180.00
	31.75	55000.00	1180.49	17.09	50.00	8.80	1181.30	1181.30
	33.00	55000.00	1180.61	16.51	50.00	10.28	1183.00	1181.50
	35.00	55000.00	1181.18	15.28	50.00	11.65	1183.00	1182.10
	37.00	55000.00	1181.79	14.89	40.00	12.66	1183.00	1182.70
	38.32	55000.00	1182.14	14.64	36.00	13.12	1184.00	1183.00
	40.05	55000.00	1183.09	16.59	36.00	12.20	1188.00	1183.70
	43.00	55000.00	1184.02	17.32	36.00	11.81	1188.00	1184.50
	46.92	55000.00	1184.90	17.30	36.00	12.22	1189.00	1186.80
	50.90	55000.00	1186.13	18.13	36.00	11.43	1191.00	1187.00
	55.00	55000.00	1186.99	17.99	36.00	11.35	1192.00	1187.10
	60.00	55000.00	1188.06	18.36	36.00	11.06	1194.00	1189.00
	64.00	55000.00	1188.70	18.20	36.00	11.81	1195.00	1190.00
	65.45	55000.00	1189.30	18.30	36.00	11.09	1195.90	1191.00
	66.90	55000.00	1189.71	18.51	36.00	10.71	1197.00	1191.00
	67.90	55000.00	1189.84	18.54	36.00	10.94	1197.50	1191.00
	68.69	55000.00	1189.95	18.55	36.00	11.01	1198.00	1192.00
*	68.70	55000.00	1189.21	10.81	32.00	18.07	1198.00	1192.00
	69.10	55000.00	1190.47	11.97	32.00	16.32	1198.20	1193.00
	70.10	55000.00	1190.98	12.18	32.00	16.31	1198.60	1193.60
	71.80	55000.00	1191.98	12.68	32.00	15.97	1199.00	1193.20
	73.50	55000.00	1193.40	13.70	32.00	14.55	1200.00	1194.80
	76.32	55000.00	1194.59	14.69	32.00	13.98	1201.00	1196.00
	81.00	55000.00	1196.12	15.62	32.00	13.59	1202.00	1199.00
	84.70	55000.00	1197.97	16.77	32.00	10.97	1202.60	1198.90

SECNO - Idenifying cross section number.
Q - Total flow in the cross section.
CWSEL - Computed water surface elevation.
DEPTH - Depth of flow.
K*XNCH - Manning's n for the channel area (times 1,000).
VCH - Mean velocity in the channel.
XLBEL - Left bank elevation.
RBEL - Right bank elevation.

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|              S U M P O            |
|                                   |
|   Interactive Summary Printout    |
|   for MS/PC-DOS micro computers   |
|              May 1991             |
*-----------------------------------*
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NOTE - Asterisk (*) at left of profile number indicates message in summary of errors list

Skunk Creek, SPF discharge, Coe & Van Loo model no vegetation in the channel above the habitat mitigation area.

Summary Printout

	SECNO	Q	CWSEL	DEPTH	K*XNCH	VCH	XLBEL	RBEL
	15.25	55000.00	1167.13	12.13	32.00	16.98	1180.00	1171.00
	17.00	55000.00	1169.70	14.40	32.00	13.99	1173.00	1172.70
	19.00	55000.00	1170.51	14.81	32.00	13.52	1174.00	1174.00
	20.85	55000.00	1171.86	15.96	32.00	11.26	1173.00	1175.00
	22.00	55000.00	1172.21	16.11	32.00	10.83	1174.00	1174.00
	23.90	55000.00	1172.34	15.84	32.00	11.57	1175.00	1175.00
	24.89	55000.00	1172.48	15.68	32.00	11.68	1175.00	1175.00
*	24.90	55000.00	1172.90	10.10	32.00	17.83	1175.00	1175.00
	25.40	55000.00	1174.67	11.77	32.00	15.20	1175.00	1175.00
	26.70	55000.00	1175.76	12.56	32.00	14.24	1176.40	1176.40
	27.80	55000.00	1176.47	12.97	32.00	15.26	1177.10	1177.10
	29.60	55000.00	1178.39	14.49	32.00	12.28	1179.30	1179.30
*	30.00	55000.00	1178.77	14.77	50.00	11.73	1180.00	1180.00
	31.75	55000.00	1180.49	17.09	50.00	8.80	1181.30	1181.30
	33.00	55000.00	1180.61	16.51	50.00	10.28	1183.00	1181.50
	35.00	55000.00	1181.18	15.28	50.00	11.65	1183.00	1182.10
	37.00	55000.00	1181.79	14.89	40.00	12.66	1183.00	1182.70
	38.32	55000.00	1182.05	14.55	32.00	13.21	1184.00	1183.00
	40.05	55000.00	1182.80	16.30	32.00	12.45	1188.00	1183.70
	43.00	55000.00	1183.53	16.83	32.00	12.24	1188.00	1184.50
	46.92	55000.00	1184.23	16.63	32.00	12.78	1189.00	1186.80
	50.90	55000.00	1185.36	17.36	32.00	12.02	1191.00	1187.00
	55.00	55000.00	1186.13	17.13	32.00	12.00	1192.00	1187.10
	60.00	55000.00	1187.13	17.43	32.00	11.74	1194.00	1189.00
	64.00	55000.00	1187.66	17.16	32.00	12.64	1195.00	1190.00
	65.45	55000.00	1188.26	17.26	32.00	11.87	1195.90	1191.00
	66.90	55000.00	1188.69	17.49	32.00	11.42	1197.00	1191.00
	67.90	55000.00	1188.79	17.49	32.00	11.69	1197.50	1191.00
	68.69	55000.00	1188.90	17.50	32.00	11.76	1198.00	1192.00
*	68.70	55000.00	1189.17	10.77	32.00	18.14	1198.00	1192.00
	69.10	55000.00	1190.50	12.00	32.00	16.29	1198.20	1193.00
	70.10	55000.00	1190.99	12.19	32.00	16.30	1198.60	1193.60
	71.80	55000.00	1191.99	12.69	32.00	15.96	1199.00	1193.20
	73.50	55000.00	1193.40	13.70	32.00	14.55	1200.00	1194.80
	76.32	55000.00	1194.59	14.69	32.00	13.98	1201.00	1196.00
	81.00	55000.00	1196.12	15.62	32.00	13.59	1202.00	1199.00
	84.70	55000.00	1197.97	16.77	32.00	10.97	1202.60	1198.90

SECNO - Identifying cross section number.
Q - Total flow in the cross section.
CWSEL - Computed water surface elevation.
DEPTH - Depth of flow.
K*XNCH - Manning's n for the channel area (times 1,000).
VCH - Mean velocity in the channel.
XLBEL - Left bank elevation.
RBEL - Right bank elevation.

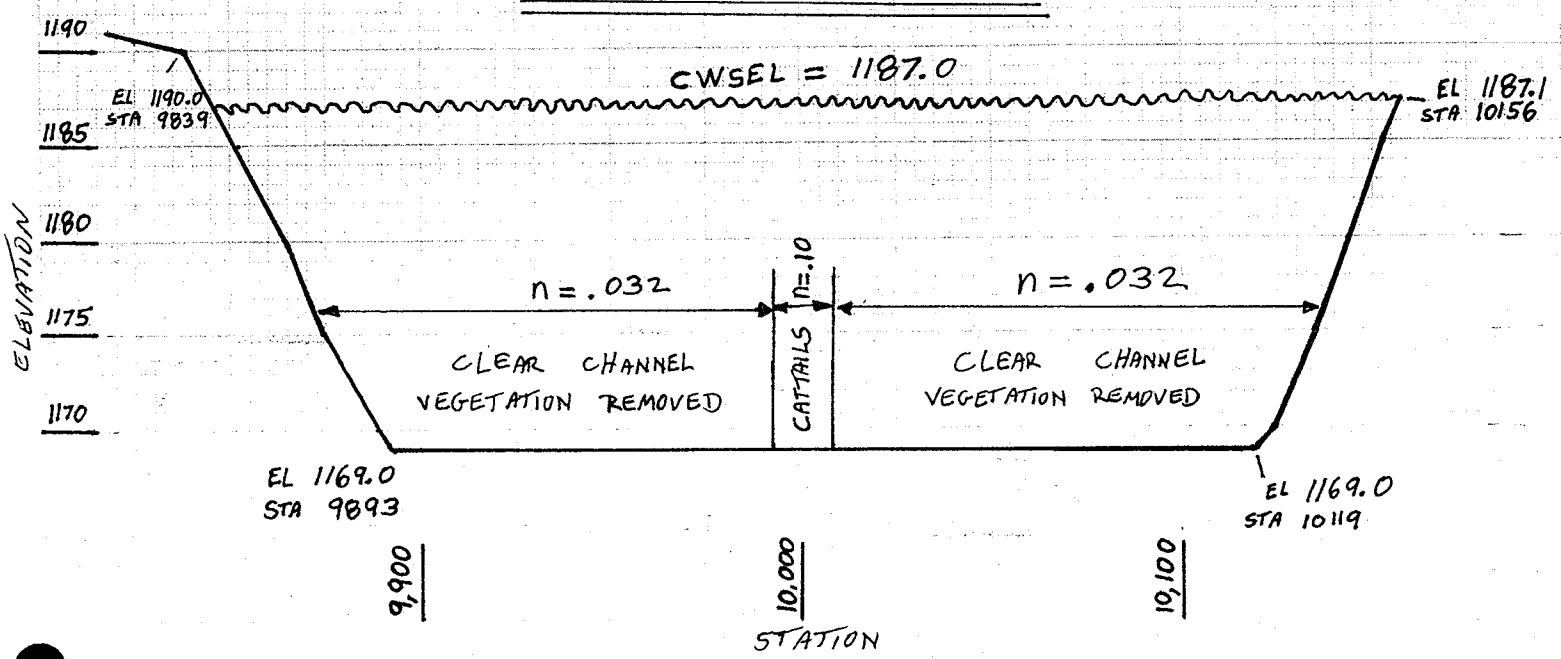
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT SKUNK CREEK PAGE ____ OF ____

DETAIL COMPOSITE n VALUE COMPUTED TMM DATE 8-22-95

CHECKED BY ____ DATE ____

CROSS SECTION 55.00



DETERMINE THE COMPOSITE MANNING'S "n" VALUE

$$n = \left[\sum_i (P_i n_i^{1.5}) / (P_T) \right]^{0.67}$$

PAGE 5-53 HYDRAULICS MANUAL
P = WETTED PERIMETER

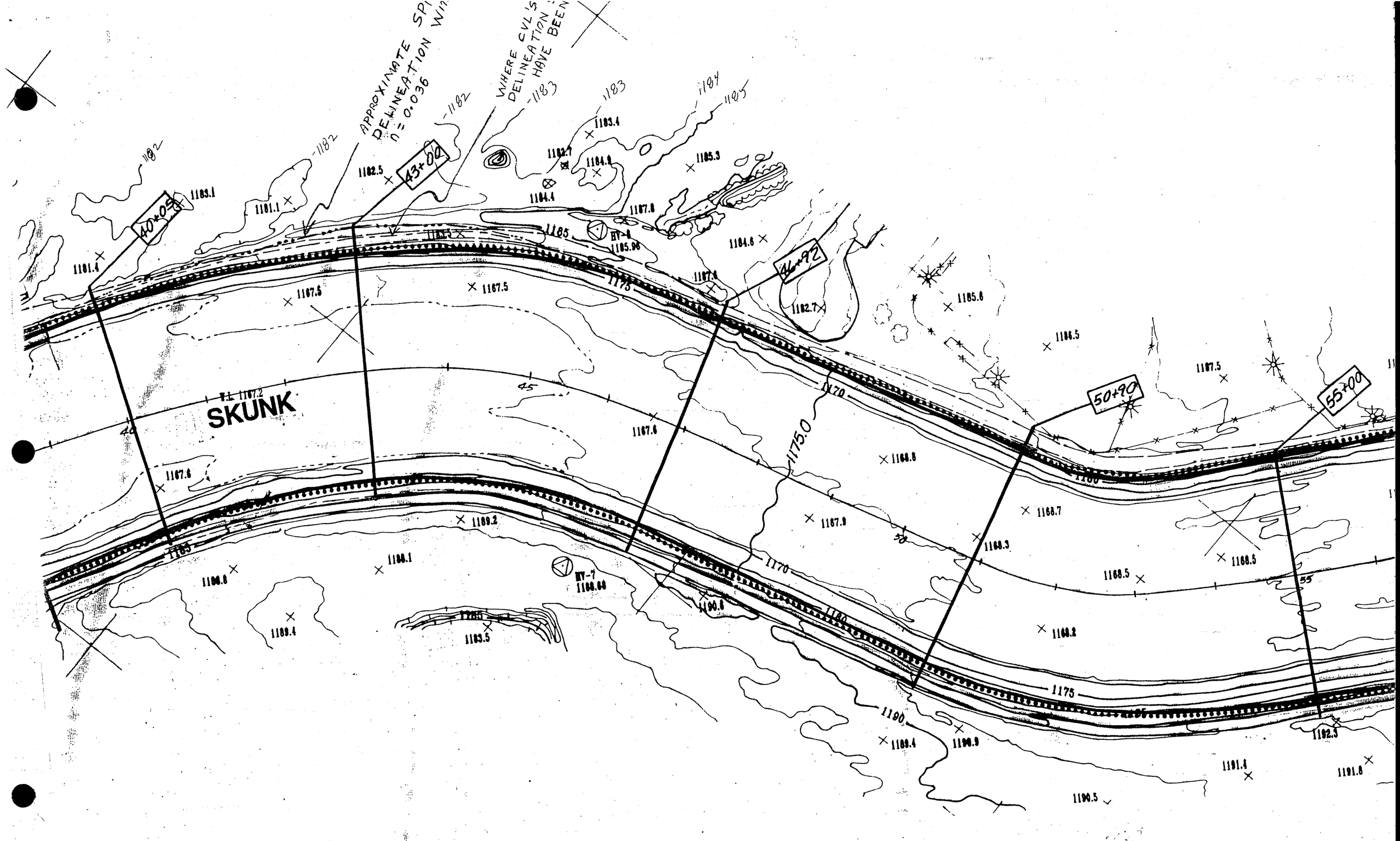
$$P_T = (10119 - 9893) + \left((1187-1169)^2 + (10155.8-10119)^2\right)^{1/2} + \left((1187-1169)^2 + (9893-9847.4)^2\right)^{1/2}$$

$$P_T = 226 + 41 + 49 = \underline{316} \text{ FT}$$

$$n = \left[\frac{(316-16)(.032)^{1.5} + (16)(.1)^{1.5}}{316} \right]^{0.67}$$

$$n = \left[\frac{1.7173 + .50596}{316} \right]^{0.67}$$

$$\underline{\underline{n = 0.036}}$$


APPROXIMATE SPI
DELINEATION WI
n = 0.036
WHERE CVL'S
DELINEATION
HAVE BEEN
40+05
43+00
44+92
50+90
55+00
SKUNK
F.L. 1167.2
HV-6
HV-7
1185.96
1184.60
1175.0
1170
1175
1180
1190
1185
1165
1167.5
1167.6
1168.8
1167.9
1168.7
1168.3
1168.5
1168.2
1186.5
1187.5
1185.8
1184.6
1185.3
1184.4
1183.4
1182.7
1182.5
1181.1
1181.4
1189.2
1188.1
1188.0
1189.4
1183.5
1190.6
1189.4
1190.9
1190.5
1191.4
1191.8
1192.3

MEMORANDUM

DATE: April 21, 1997

TO: Joe Tram

FROM: Russ Cruff

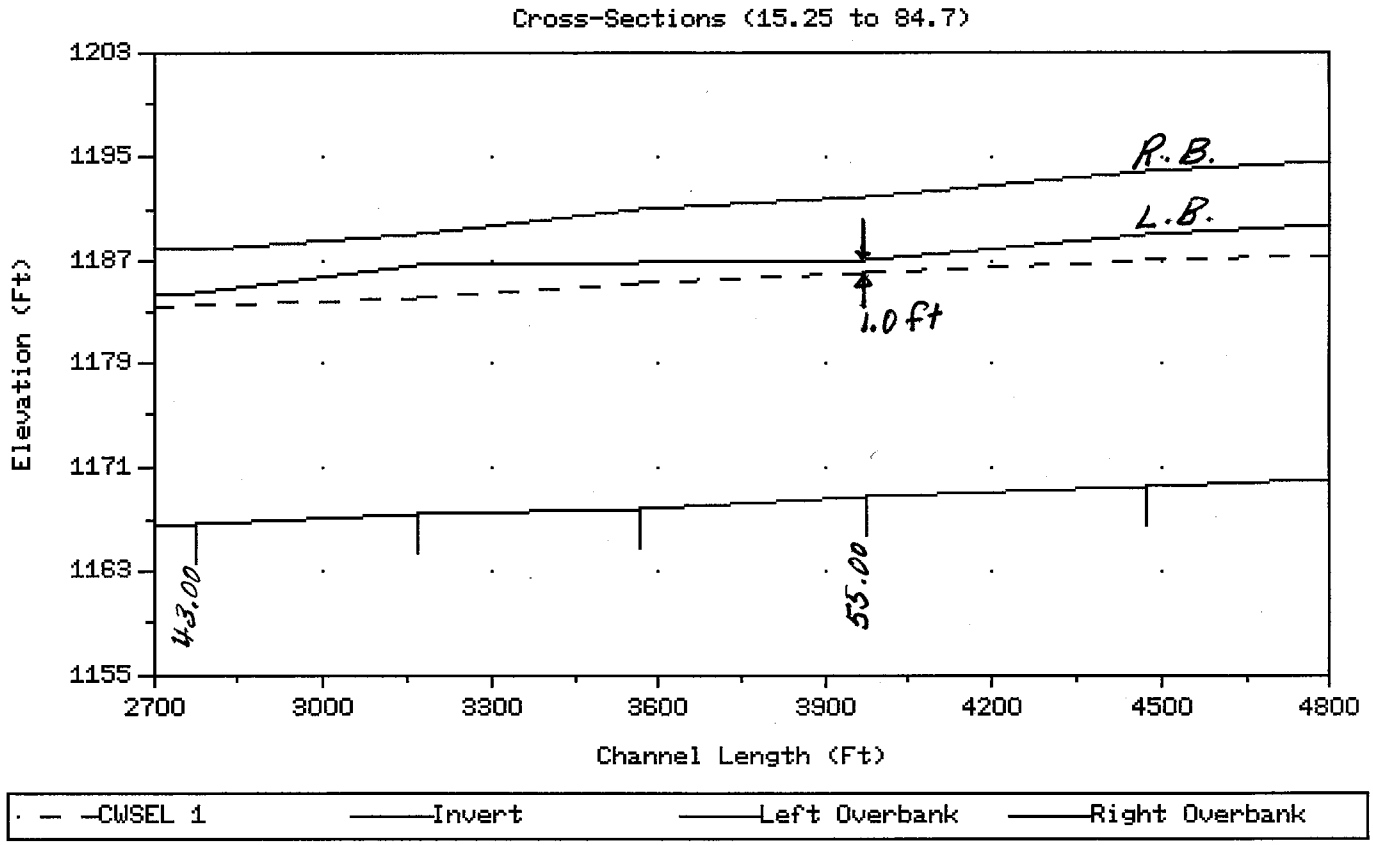
SUBJECT: SKUNK CREEK ABOVE 83RD AVENUE

Enclosed are profile plots of the Skunk Creek channel above 83rd Avenue, ran at three different scales. These profiles were run for the original Coe & Van Loo model (SCSPF), the model (SCSPF-N) developed by Tim Murphy, which raises the "n" TO 0.036 for the model. This represents a narrow strip of heavy growth in the channel. The third model (SCSPFA-N) uses Tim's model, for increased "n" values and modifies the cross sections that were resurveyed.

In all of these runs, the left bank at cross section 55.00 is the one that will overflow first. Thus, the following gives the freeboard for each case at cross section 55.00.

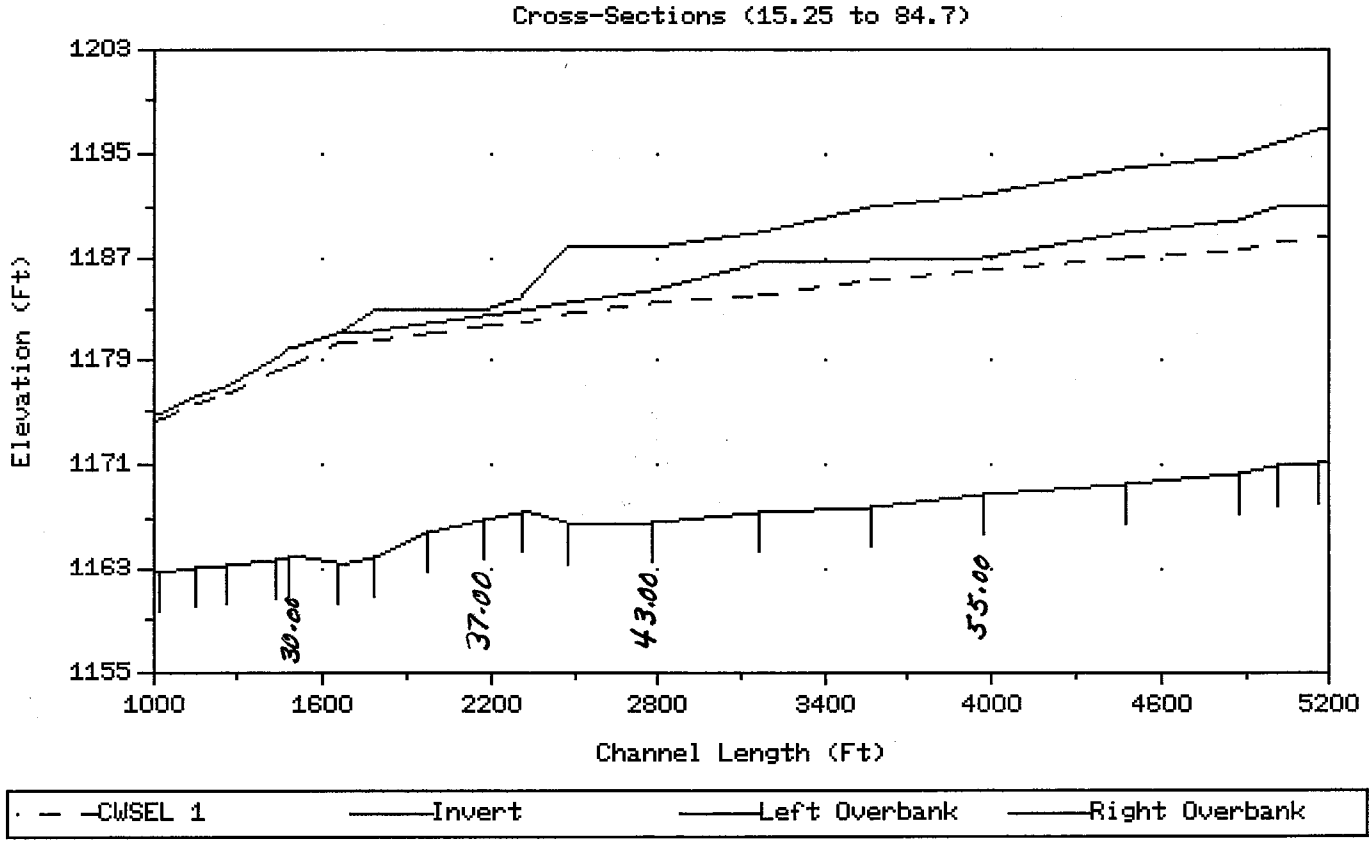
Model	Freeboard
SCSPF	1.0 FEET
SCSPF-N	0.1
SCSPFA-N	-0.1

SKUNK CREEK ABOVE 83RD AVENUE



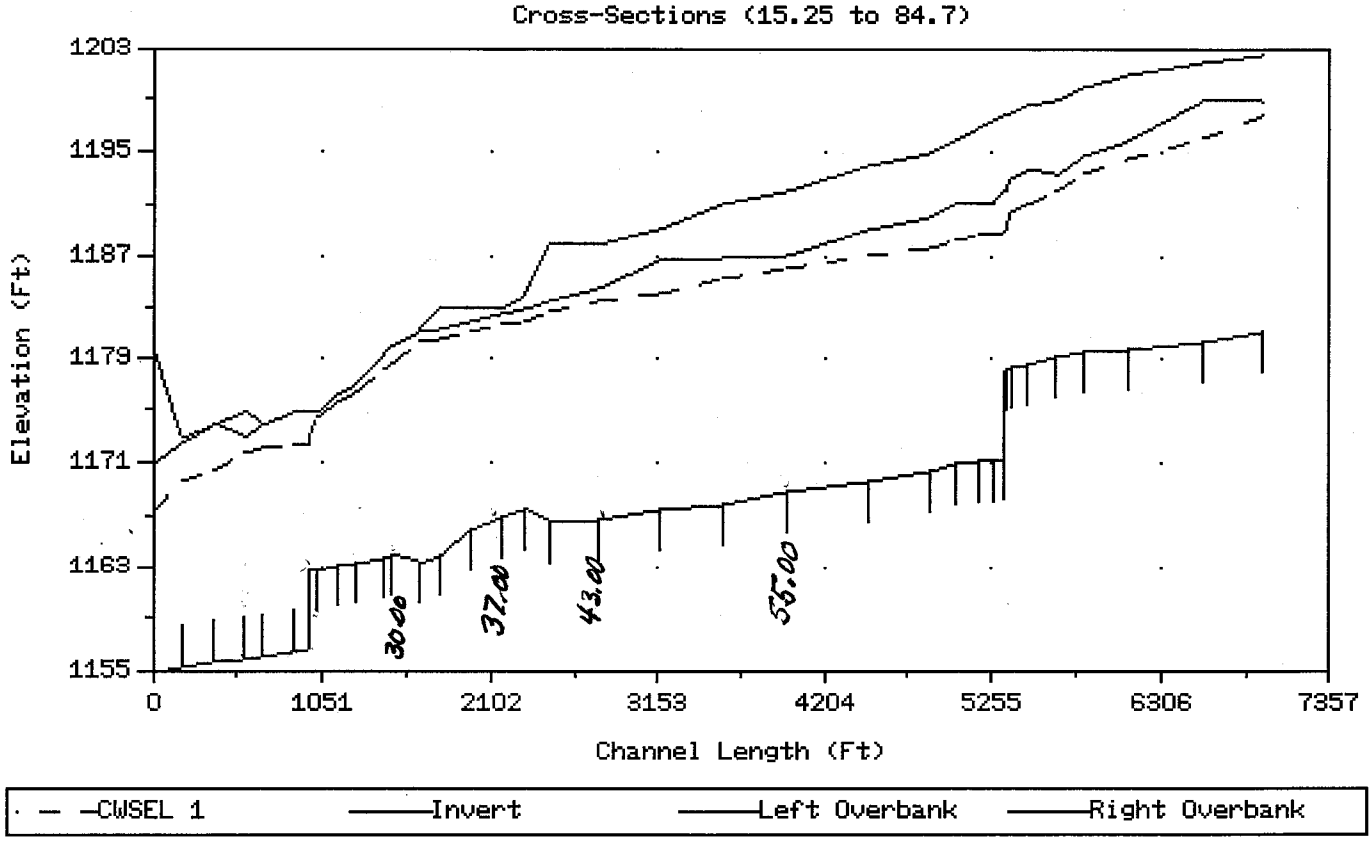
Model = SCSPF (Original Coe & Van Loo Model)

SKUNK CREEK ABOVE 83RD AVENUE



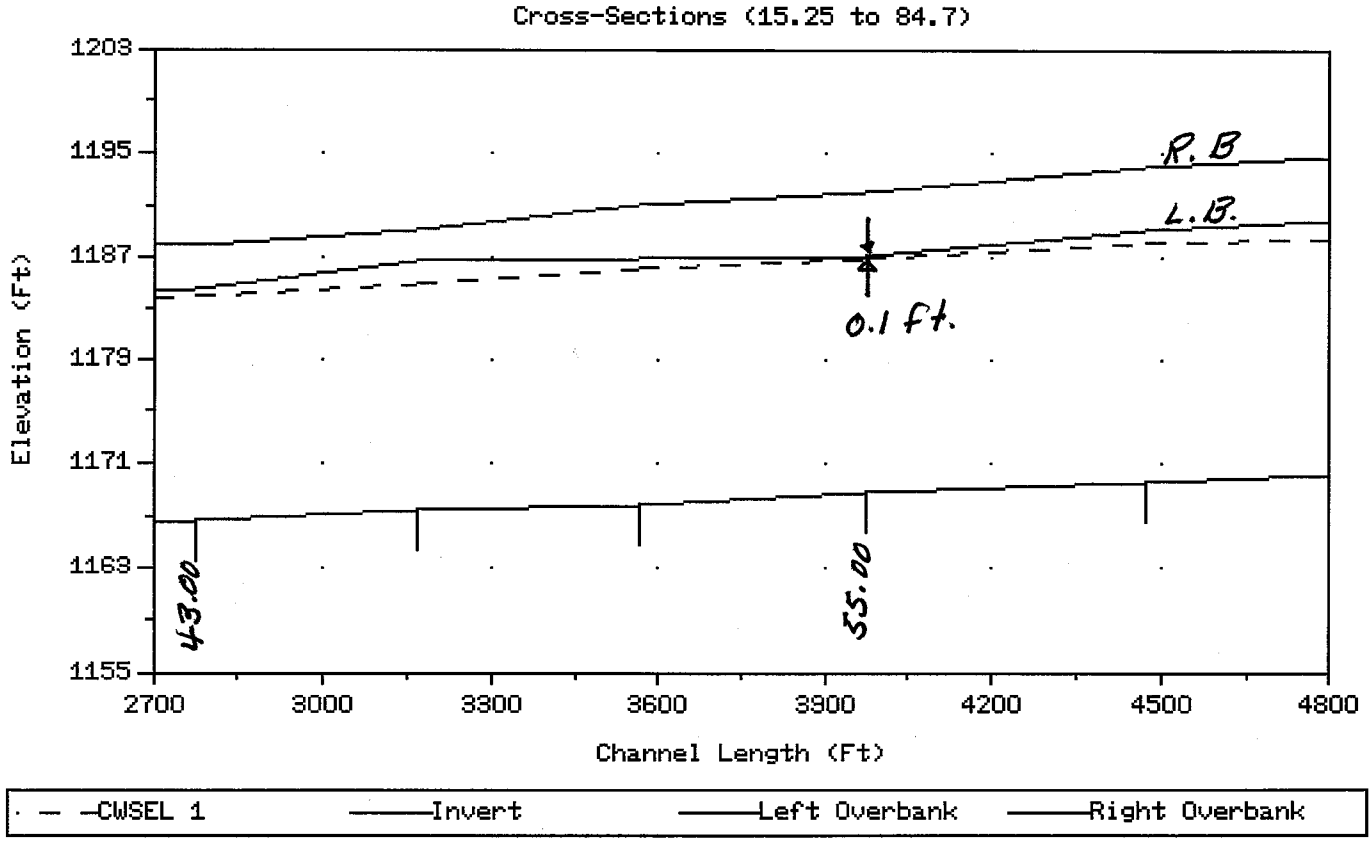
Model = SCSPF (Original Coe & Van Loo Model)

SKUNK CREEK ABOVE 83RD AVENUE



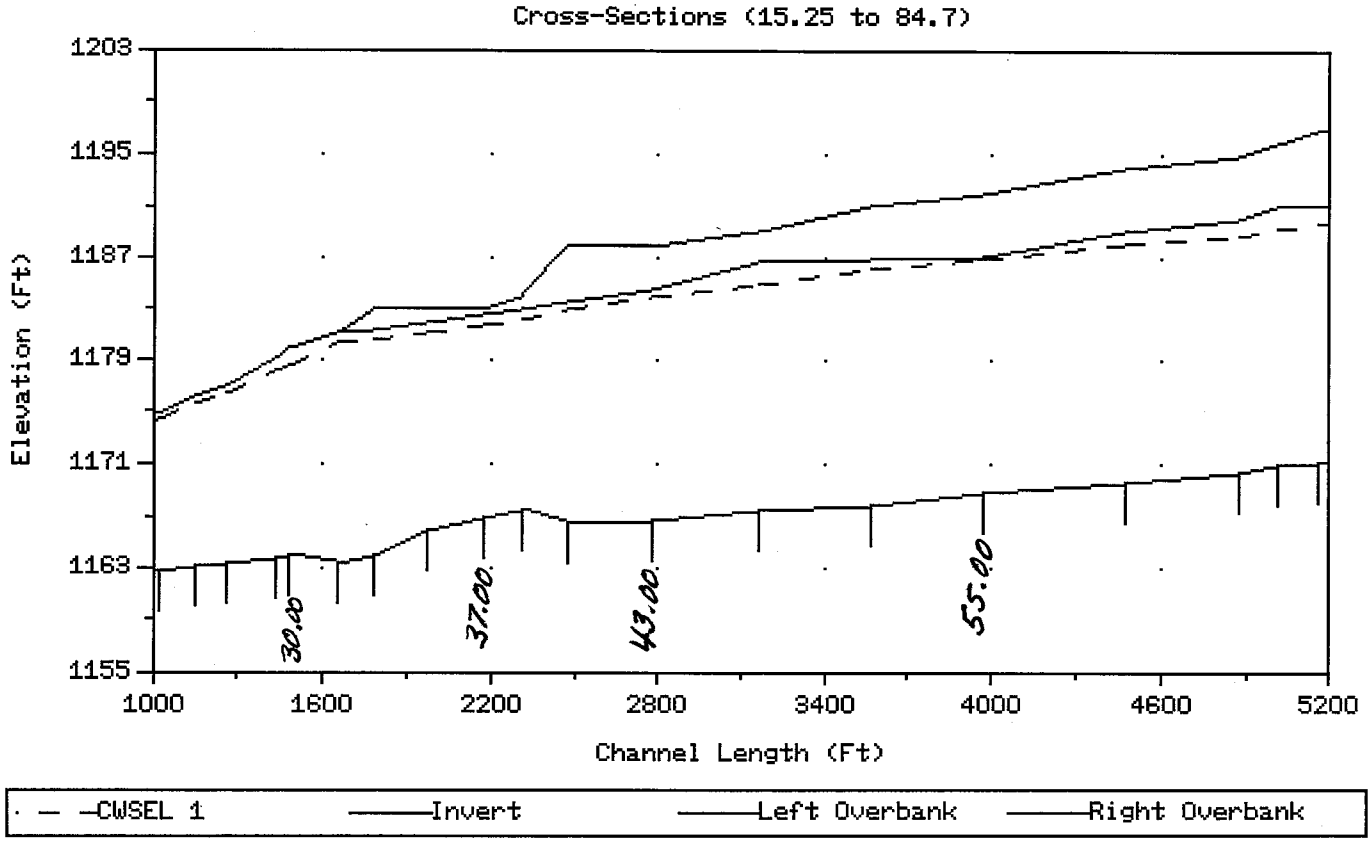
Model = SCSPF (Original Coe & Van Loo Model)

SKUNK CREEK ABOVE 83RD AVENUE



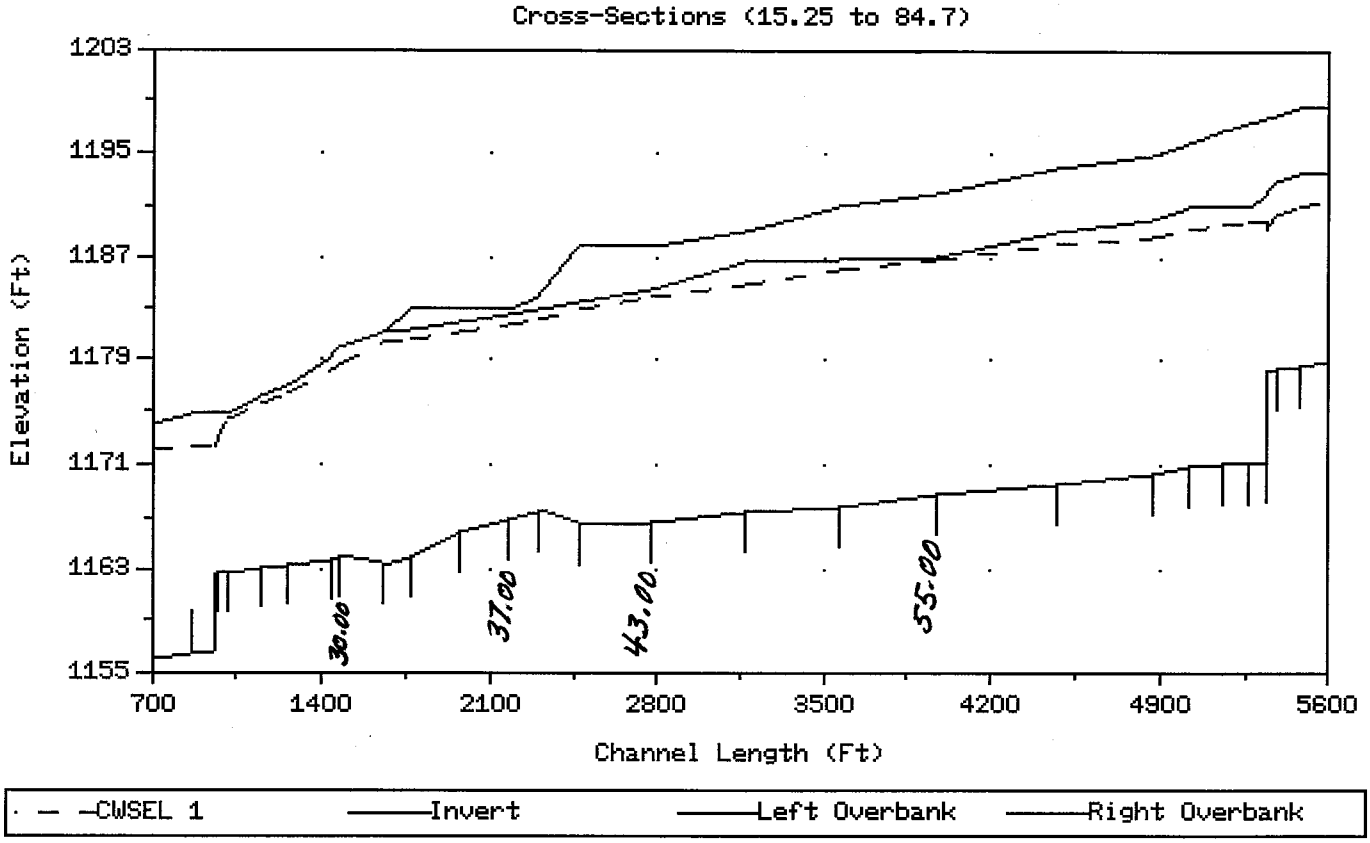
Model = SCSPF-N (Modify "n" for Growth in Channel)

SKUNK CREEK ABOVE 83RD AVENUE



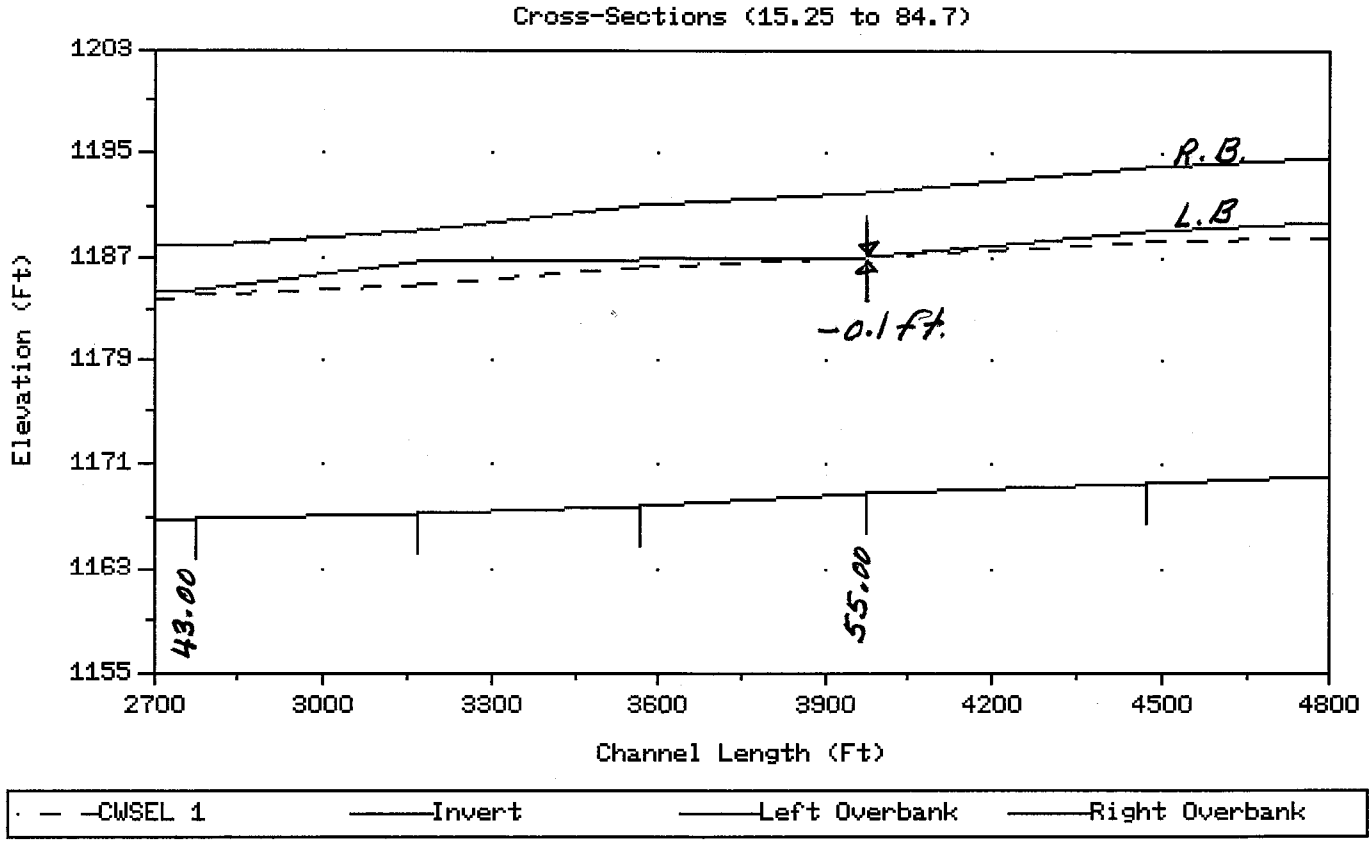
Model = SCSPF-N (Modify "n" for Growth in channel)

SKUNK CREEK ABOVE 83RD AVENUE



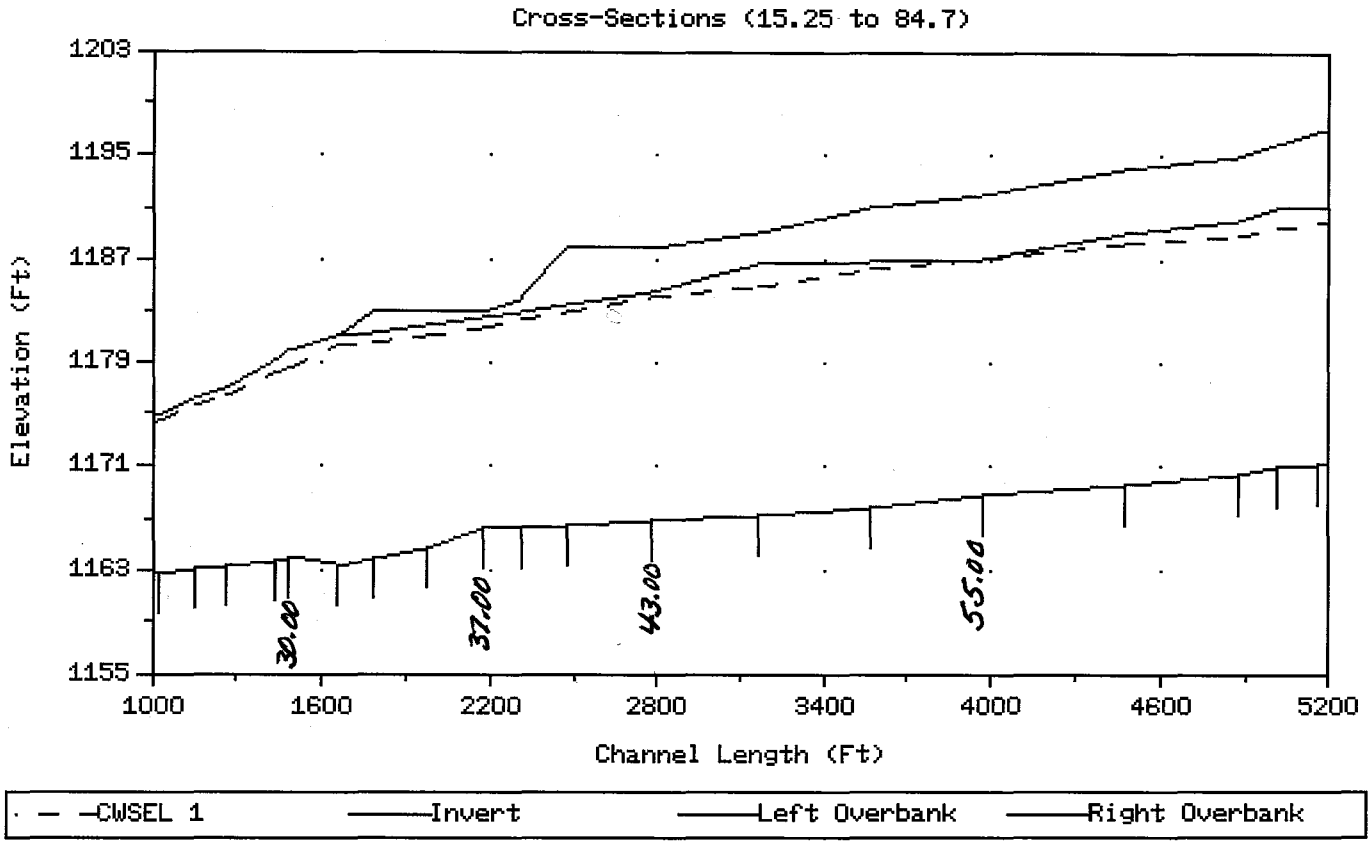
Model = SCSPF-N (Modify "n" for growth in Channel)

SKUNK CREEK ABOVE 83RD AVENUE



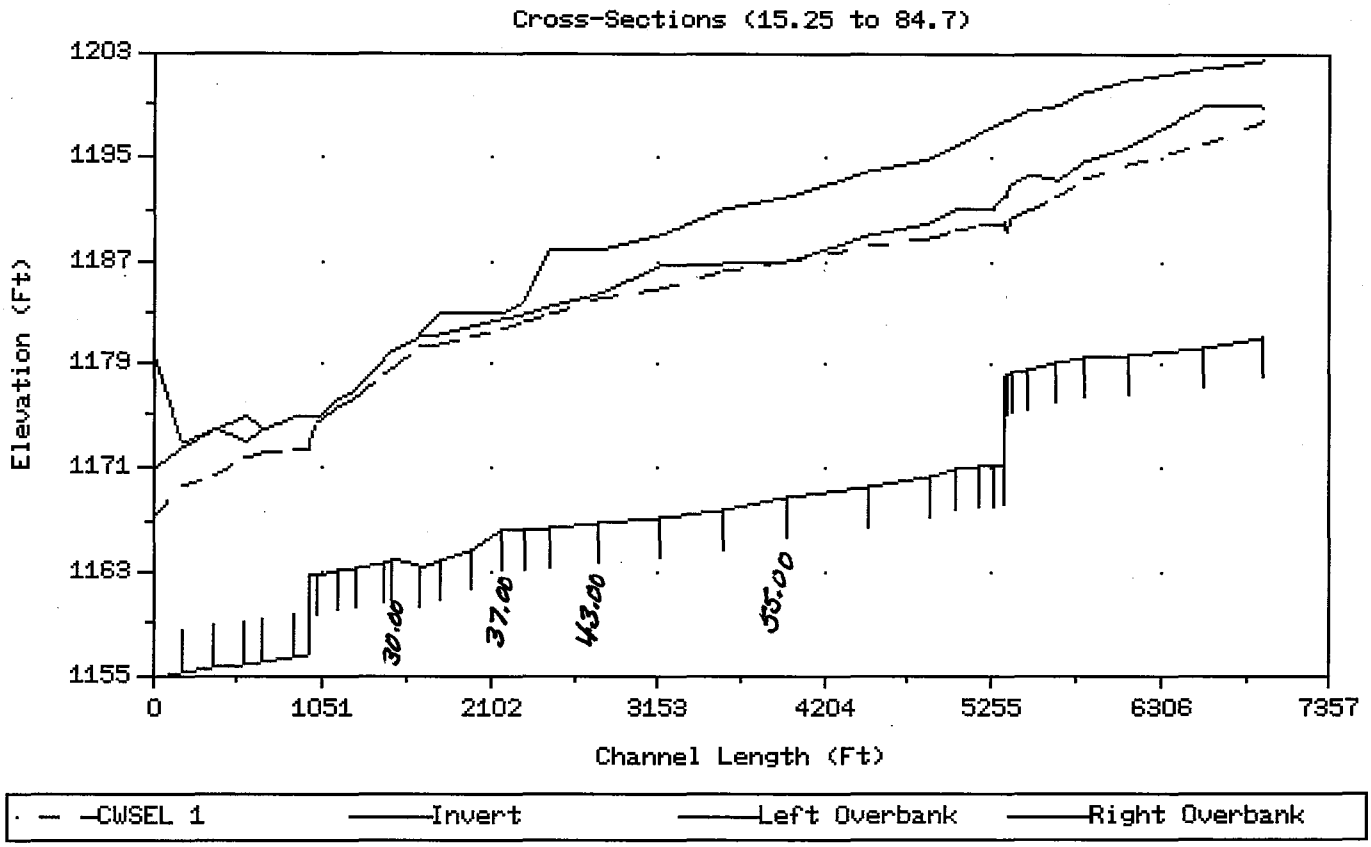
Model = SCSPFA-N (Modify "n" & X-Sections)

SKUNK CREEK ABOVE 83RD AVENUE



Model = SCSPFA-N (Modify "n" & X-Sections)

SKUNK CREEK ABOVE 83RD AVENUE

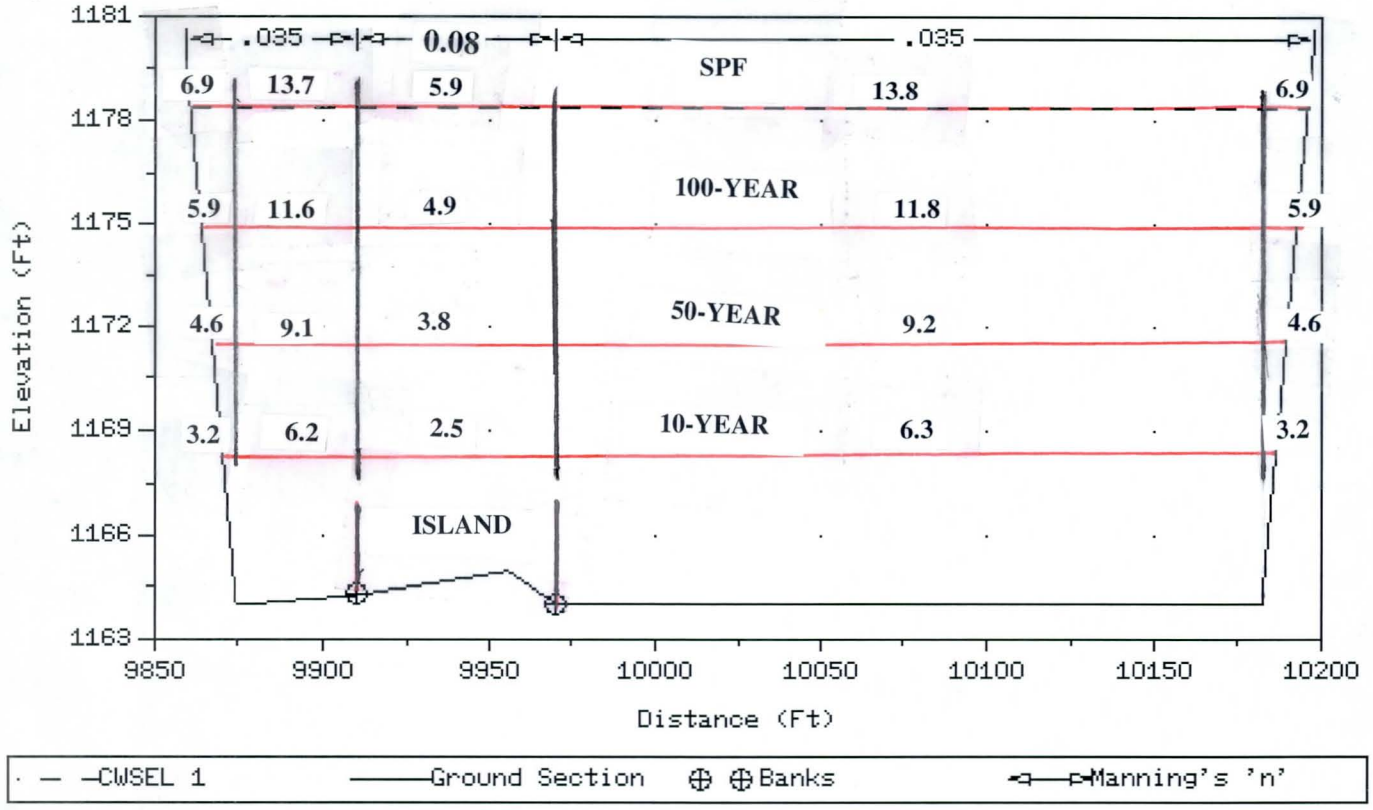


Model = SCSPFA-N (Modify "n" & X-sections)

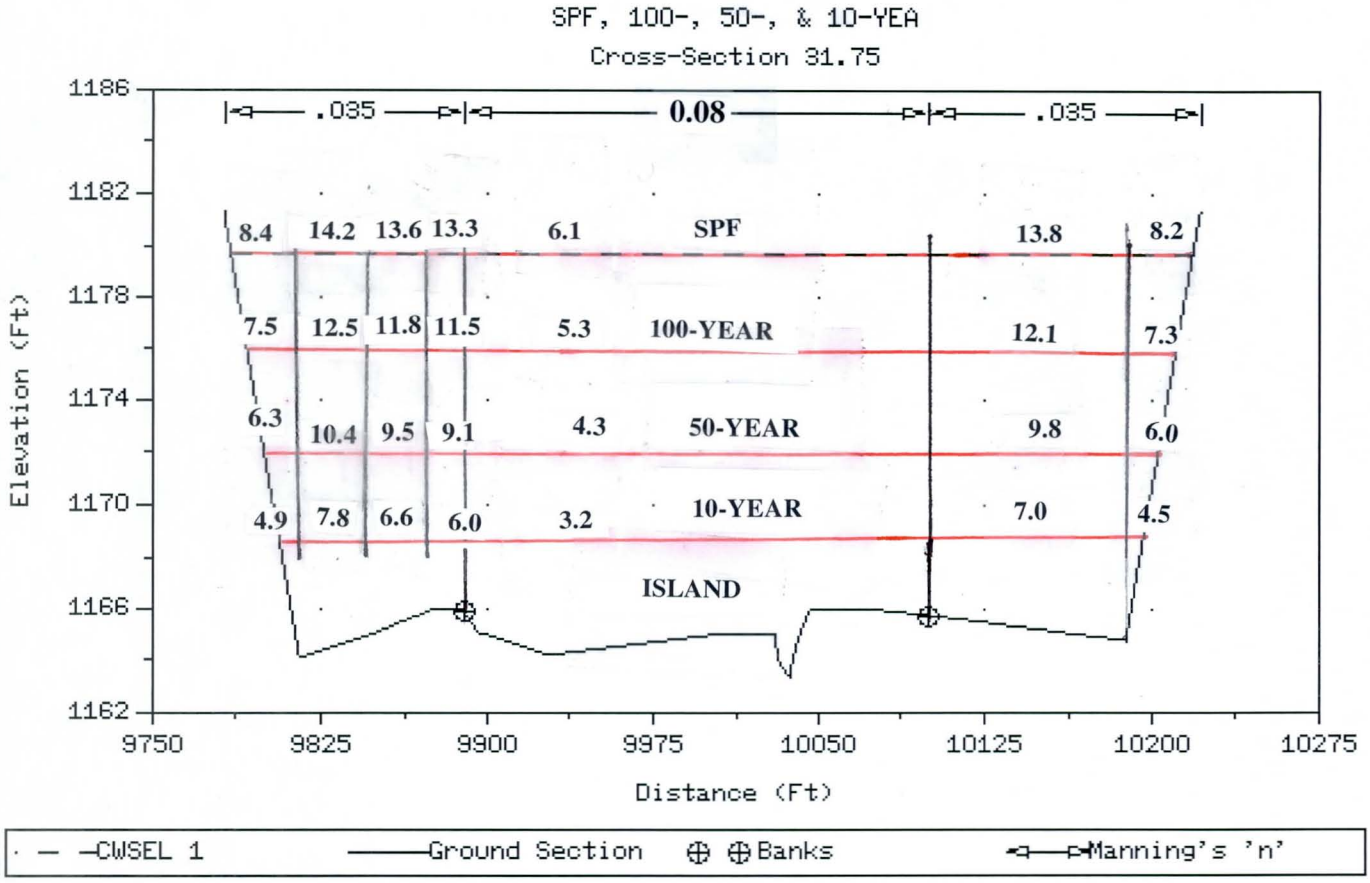
VELOCITY, FPS

SPF, 100-, 50-, & 10-YEA

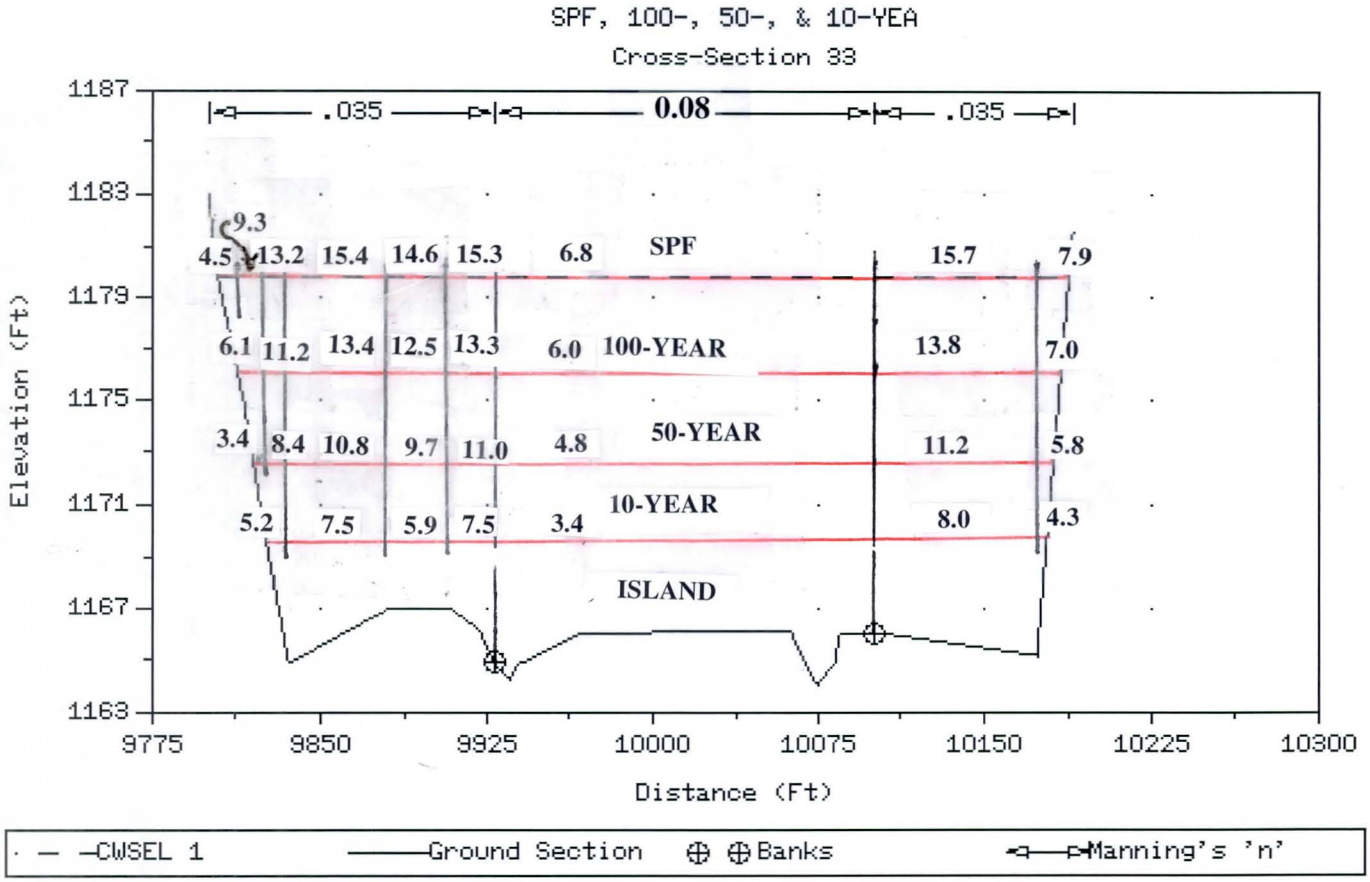
Cross-Section 30



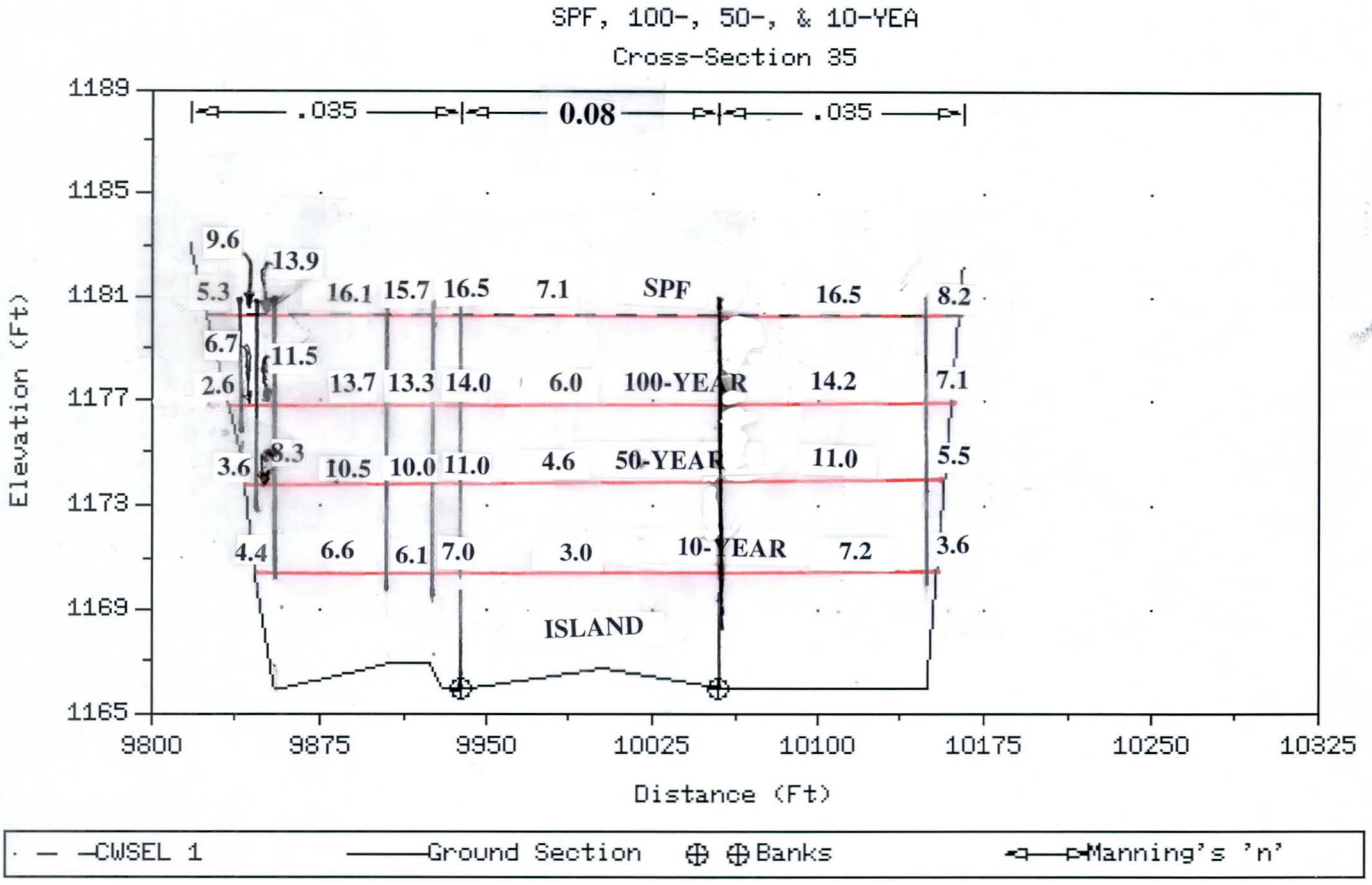
VELOCITY, FPS



VELOCITY, FPS

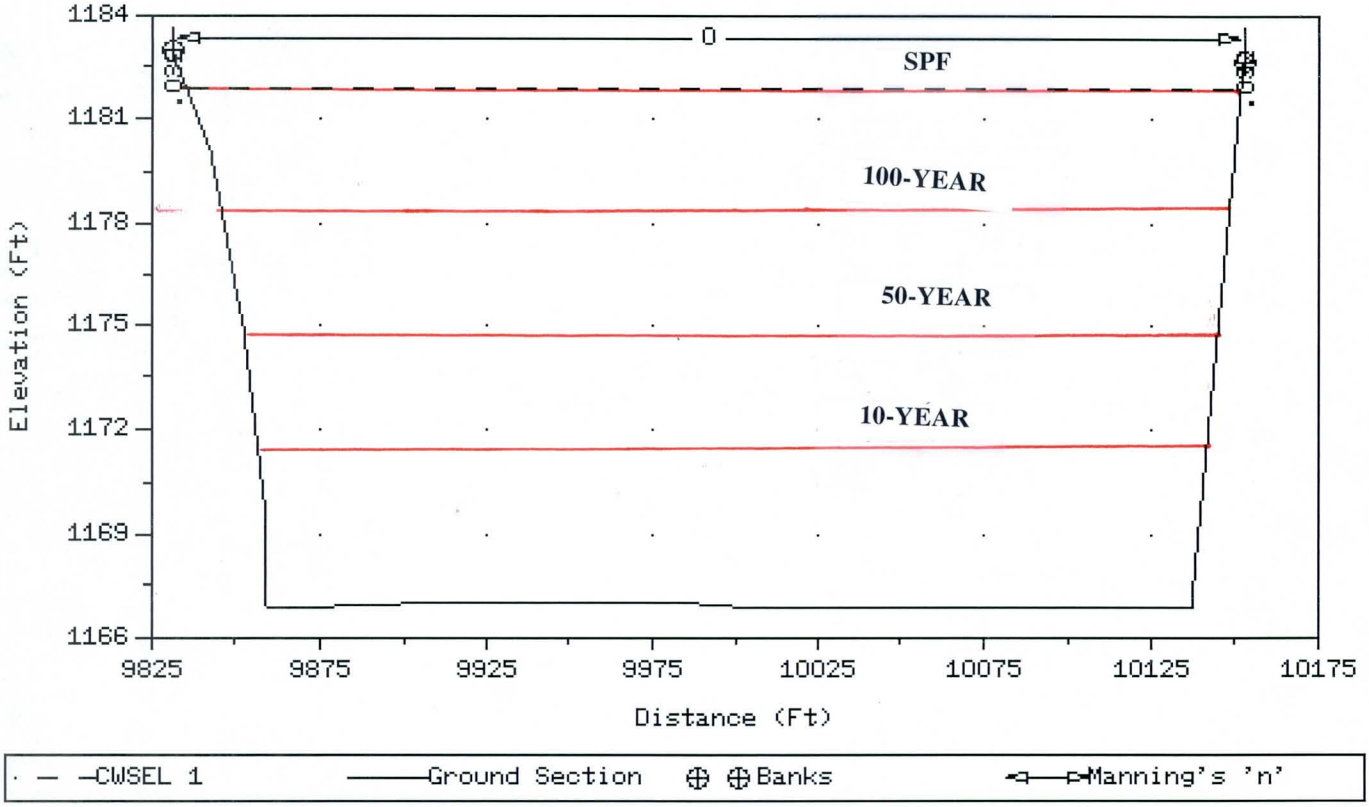


VELOCITY, FPS



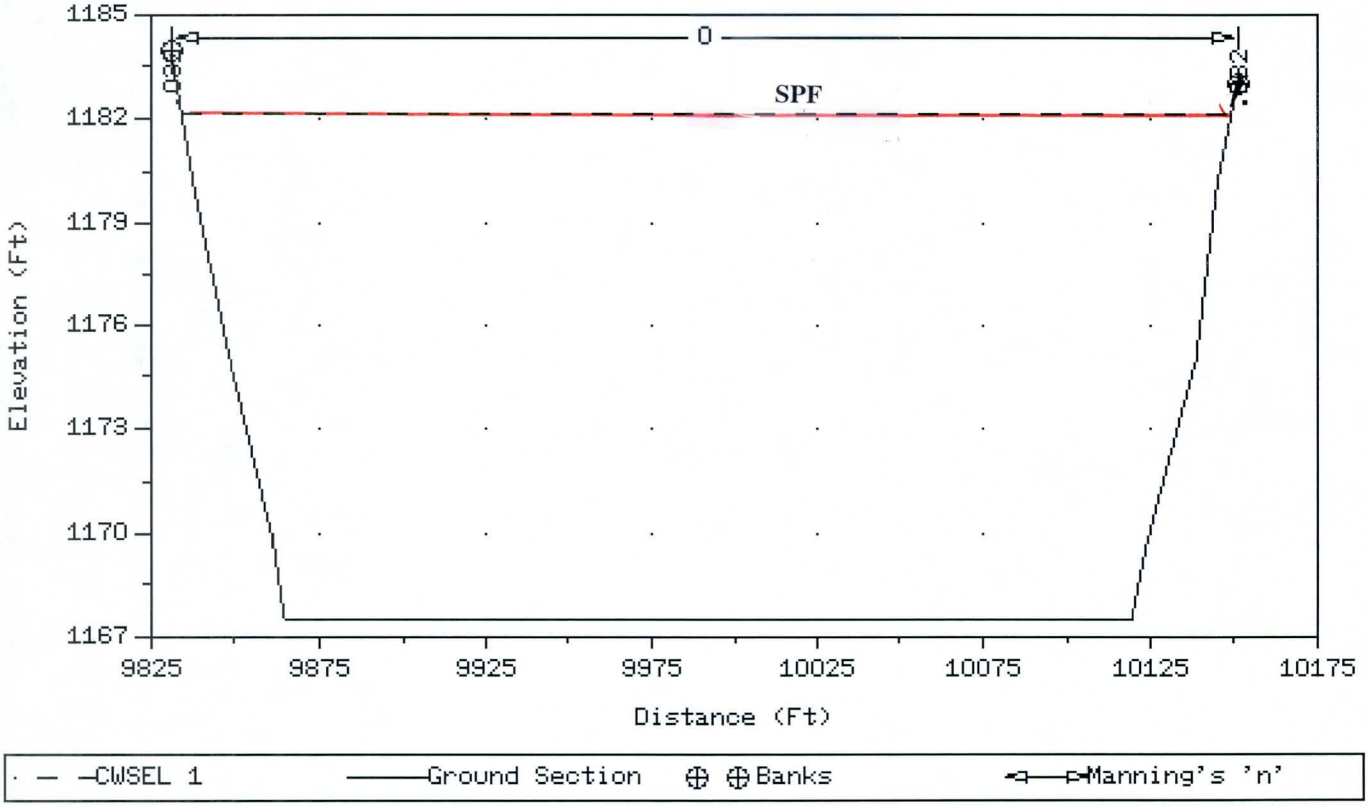
SPF, 100-, 50-, & 10-YEA

Cross-Section 37



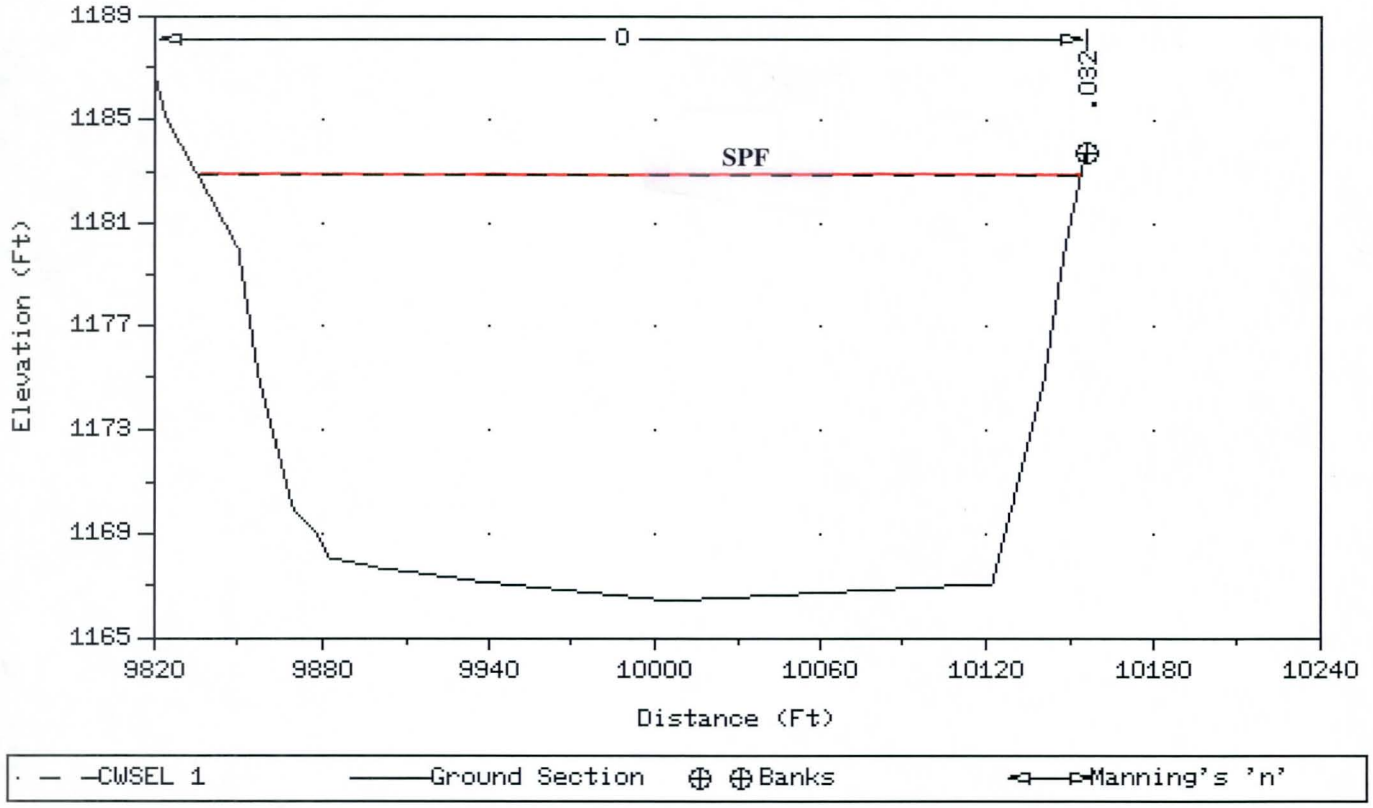
SPF, 100-, 50-, & 10-YEA

Cross-Section 38.32



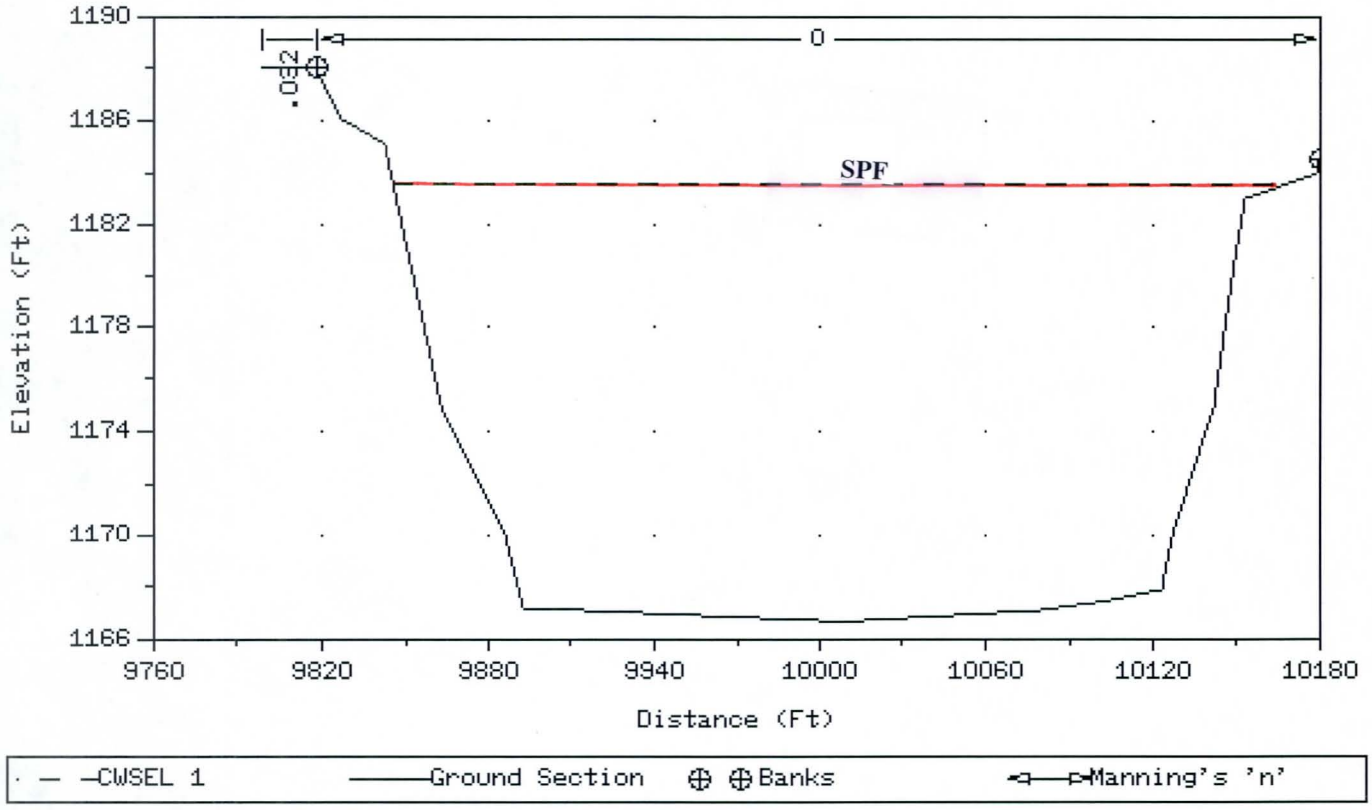
SPF, 100-, 50-, & 10-YEA

Cross-Section 40.05



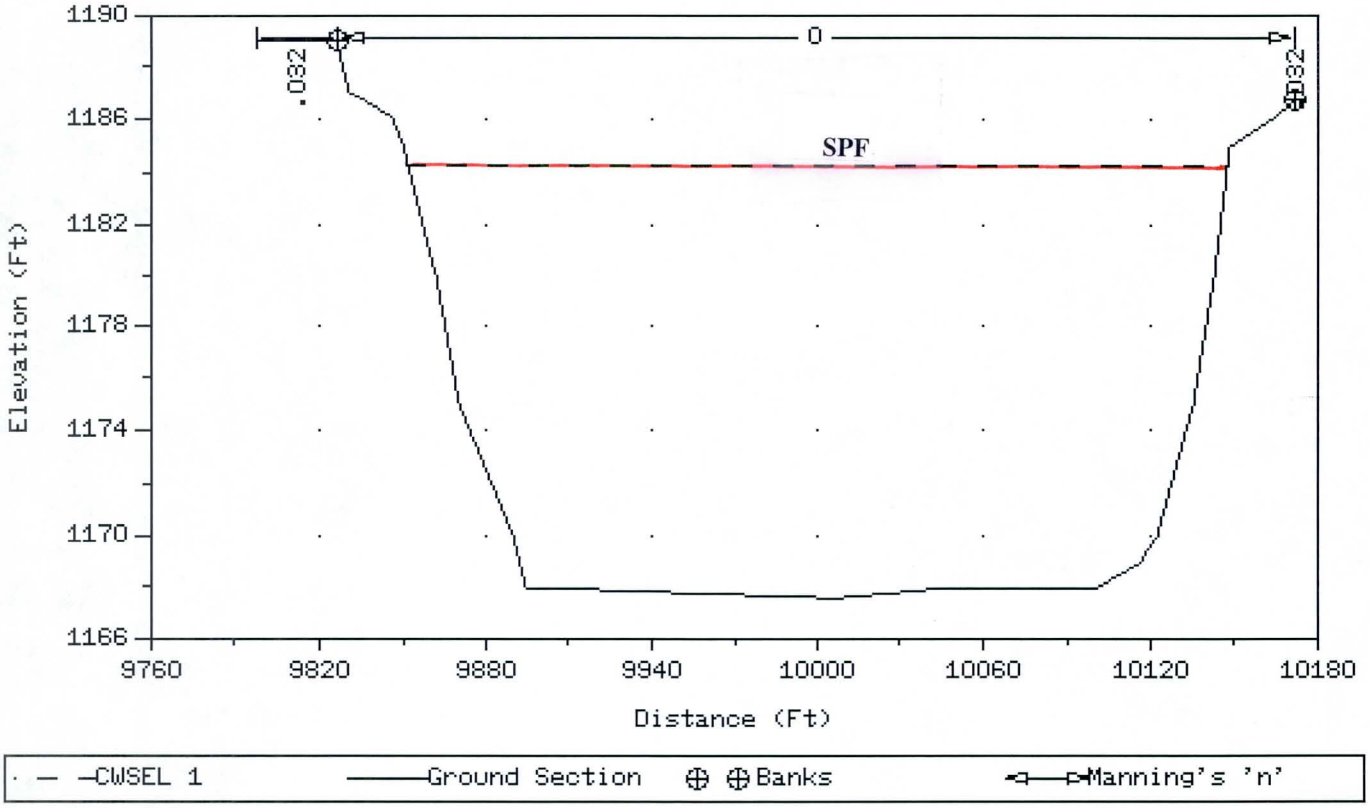
SPF, 100-, 50-, & 10-YEA

Cross-Section 43



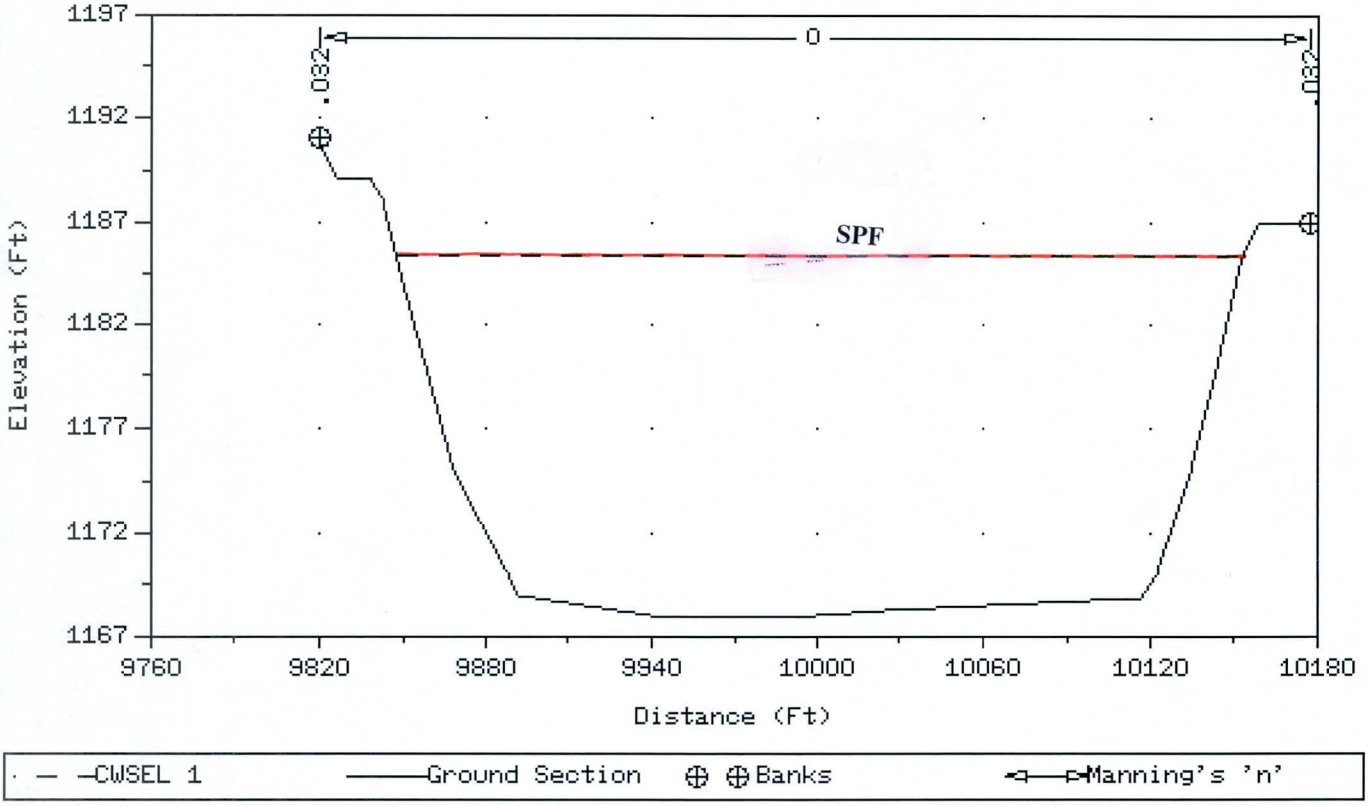
SPF, 100-, 50-, & 10-YEA

Cross-Section 46.92



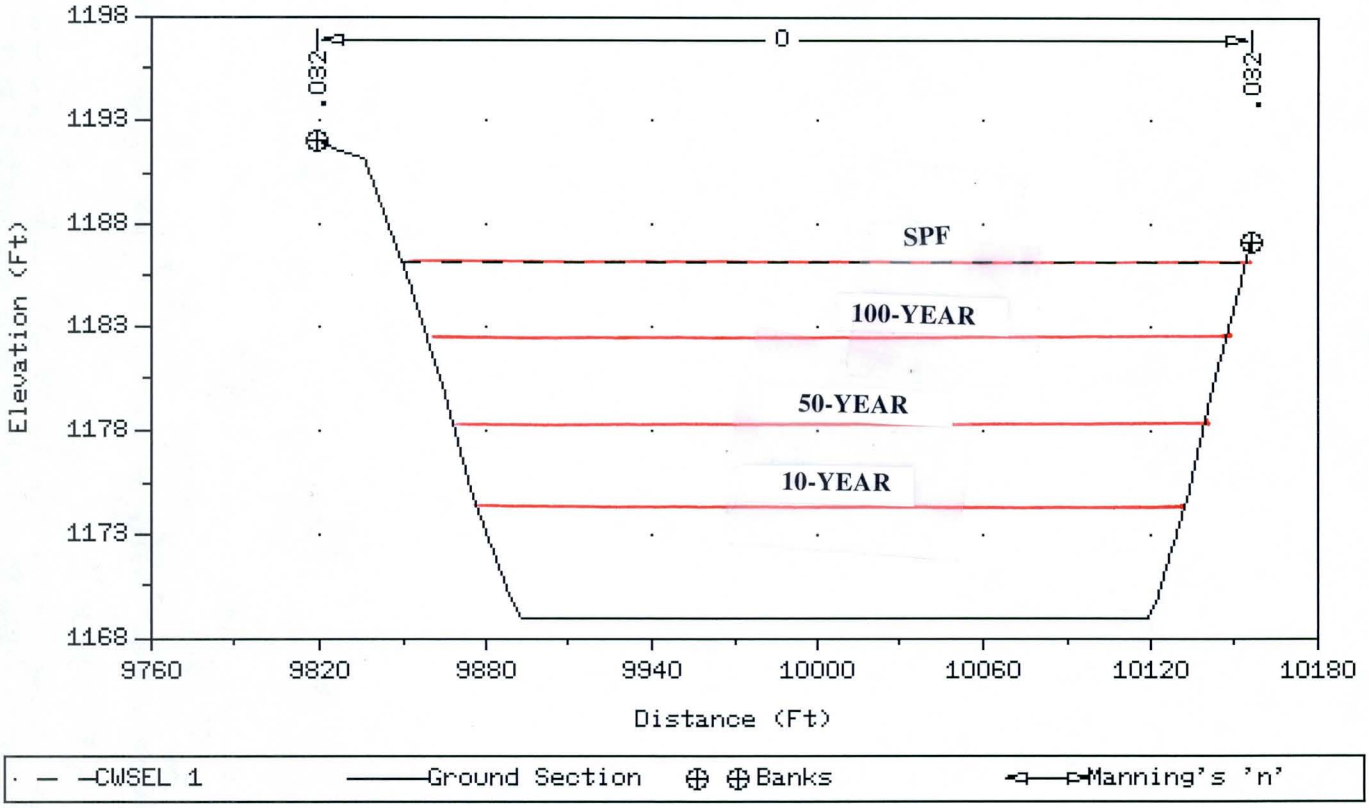
SPF, 100-, 50-, & 10-YEA

Cross-Section 50.9



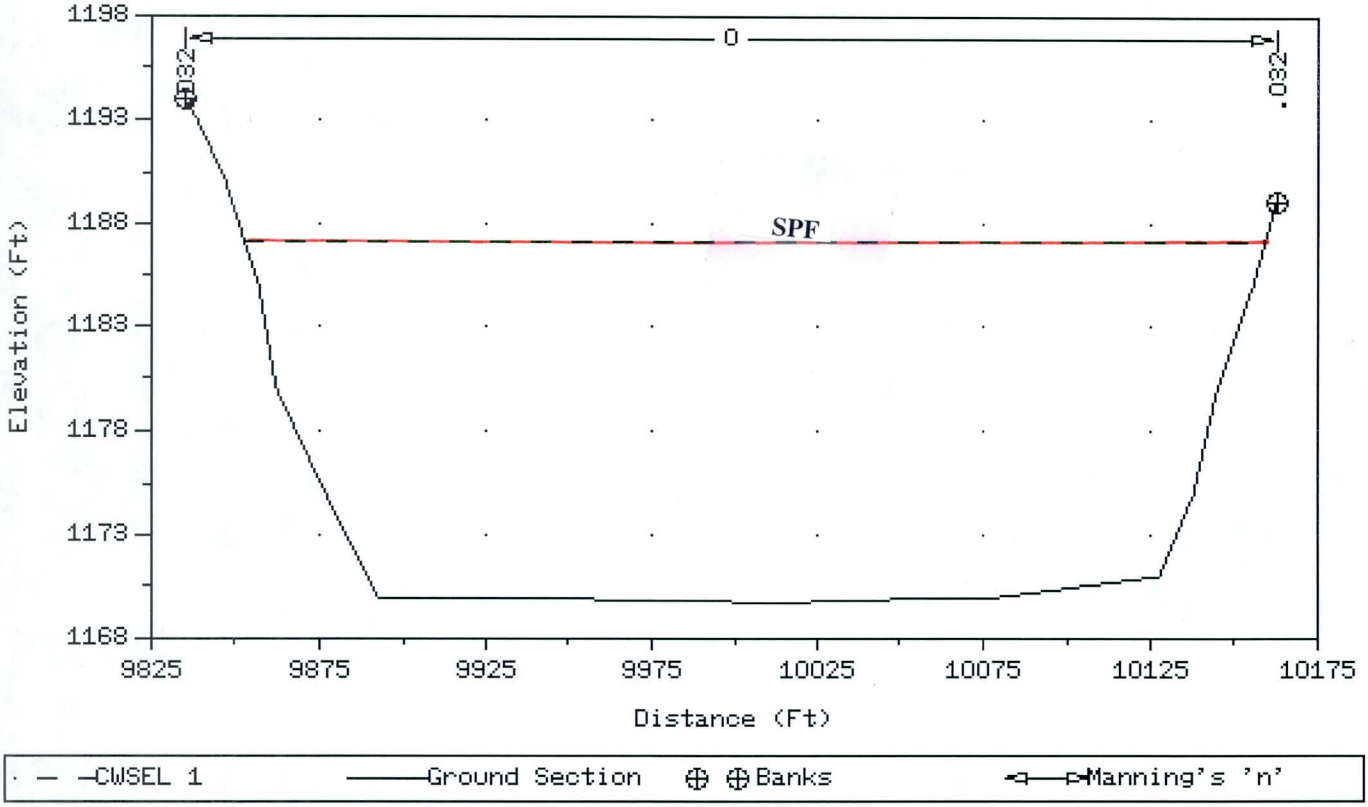
SPF, 100-, 50-, & 10-YEA

Cross-Section 55



SPF, 100-, 50-, & 10-YEA

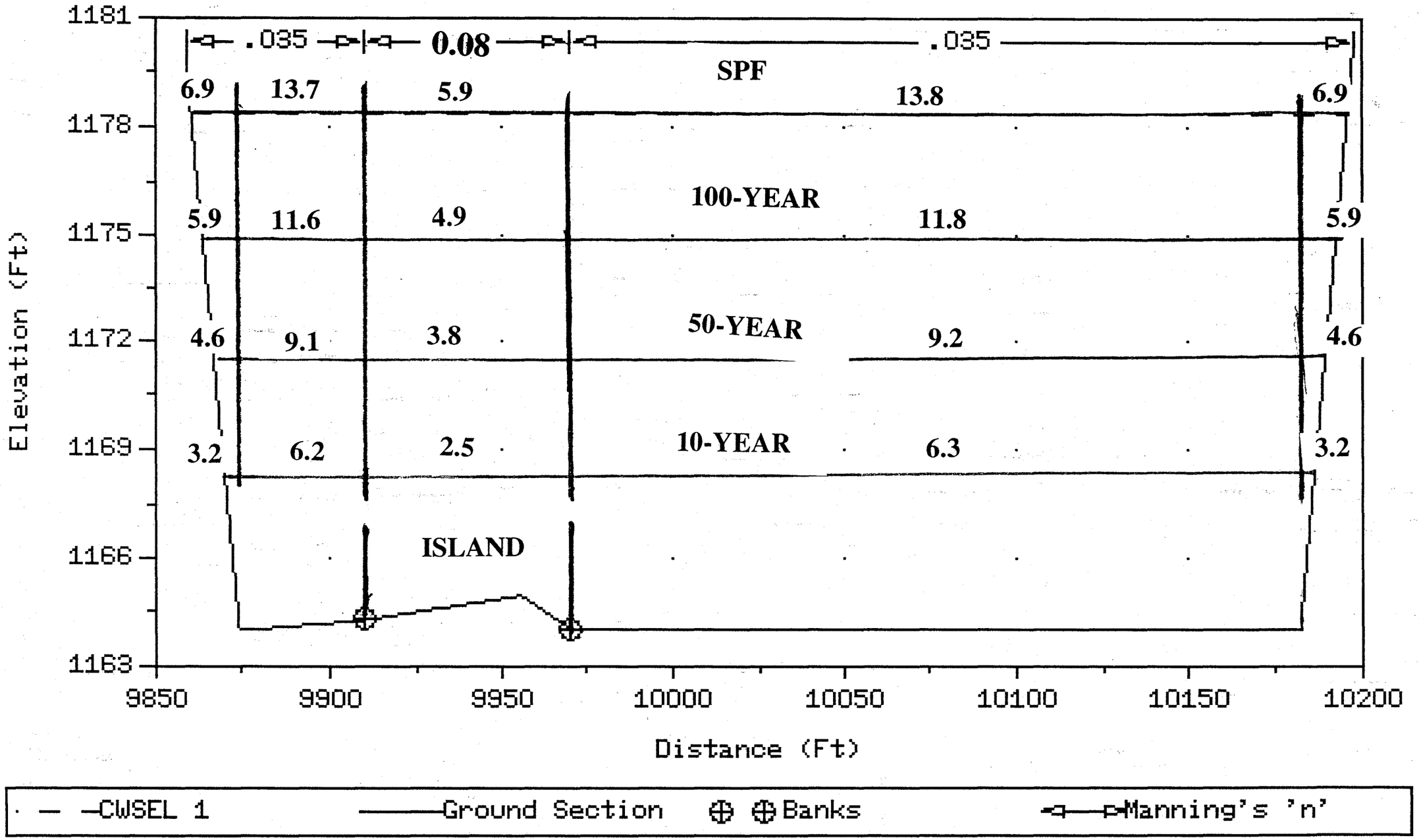
Cross-Section 60



VELOCITY, FPS

SPF, 100-, 50-, & 10-YEA

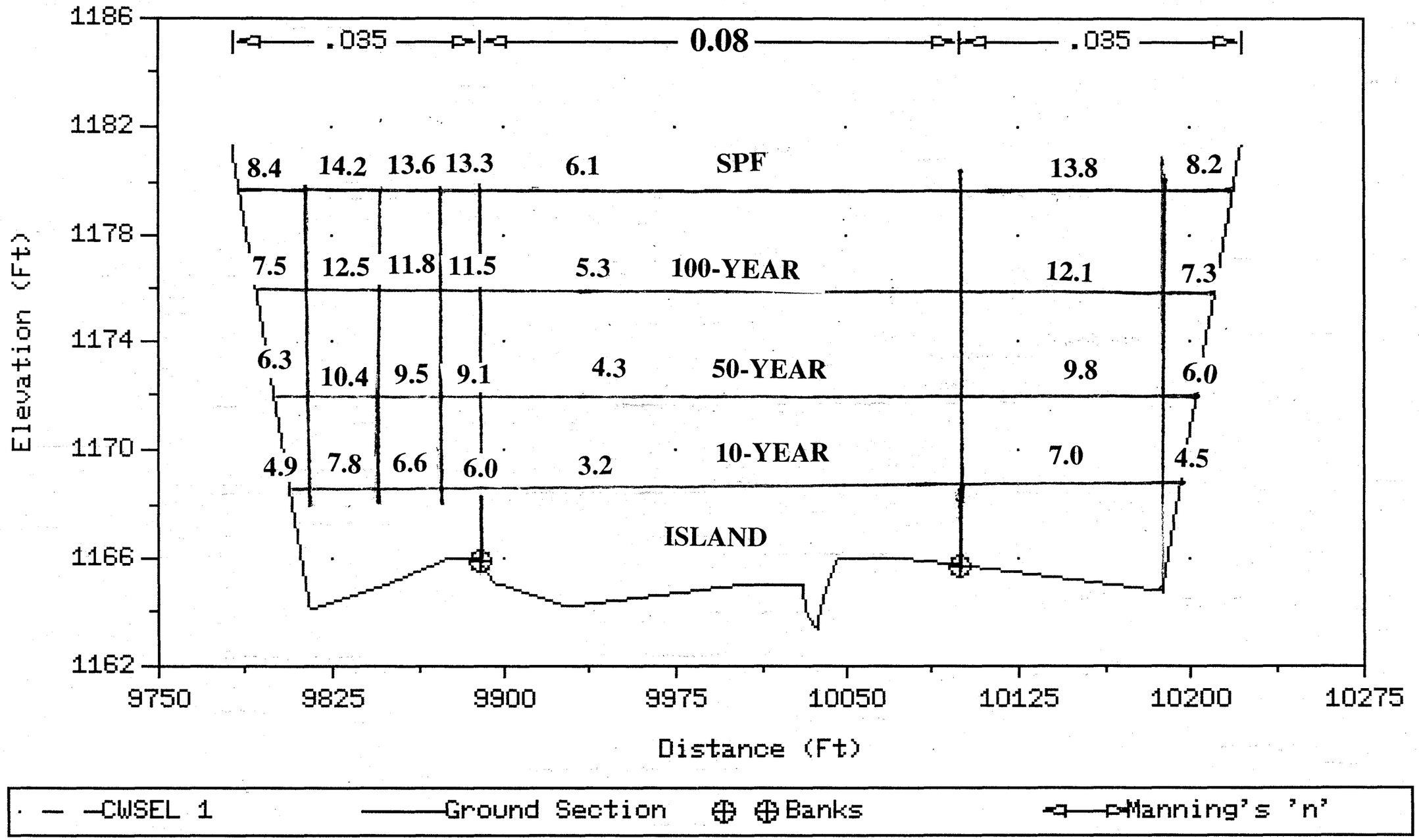
Cross-Section 30



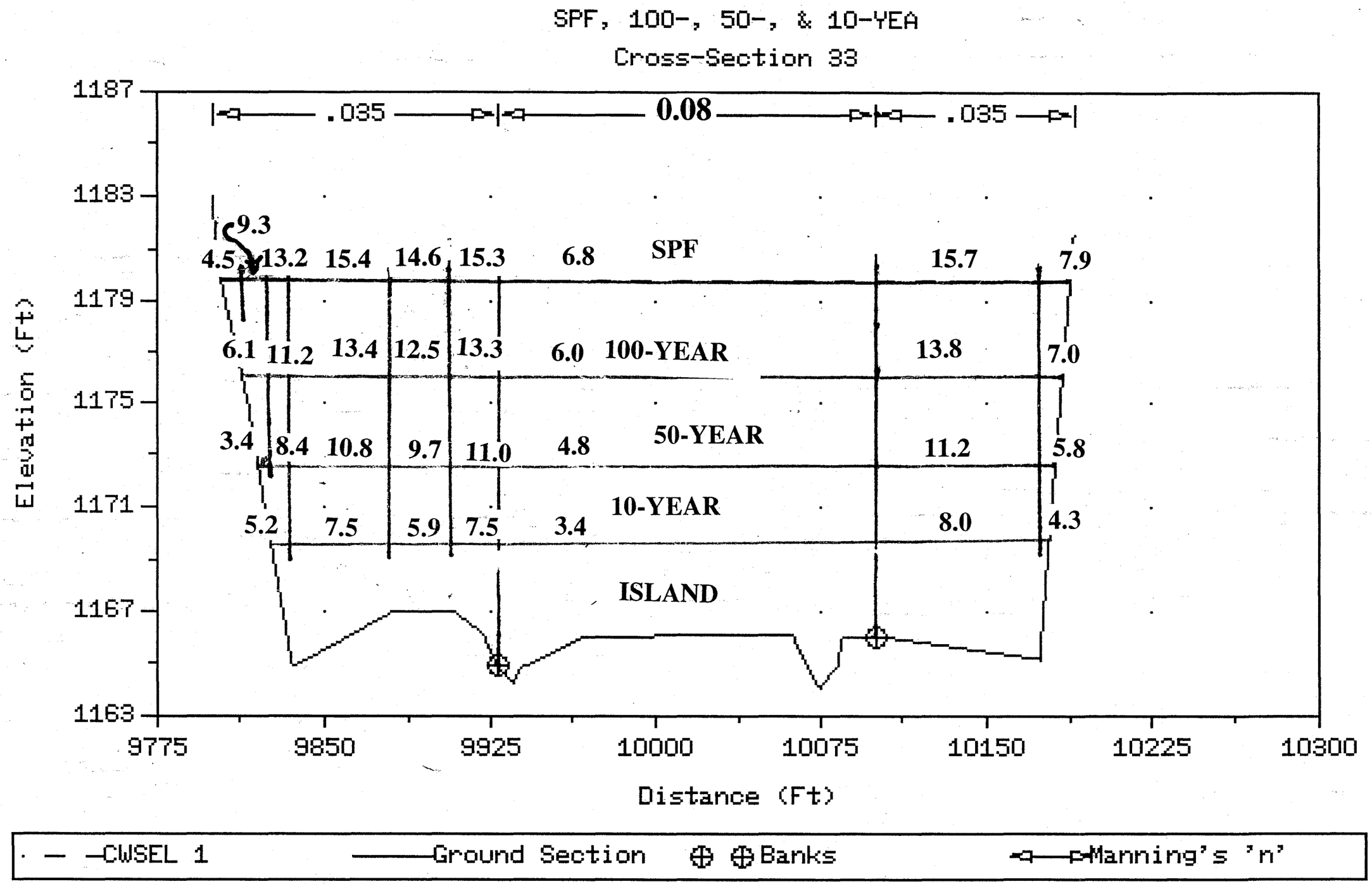
VELOCITY, FPS

SPF, 100-, 50-, & 10-YEA

Cross-Section 31.75



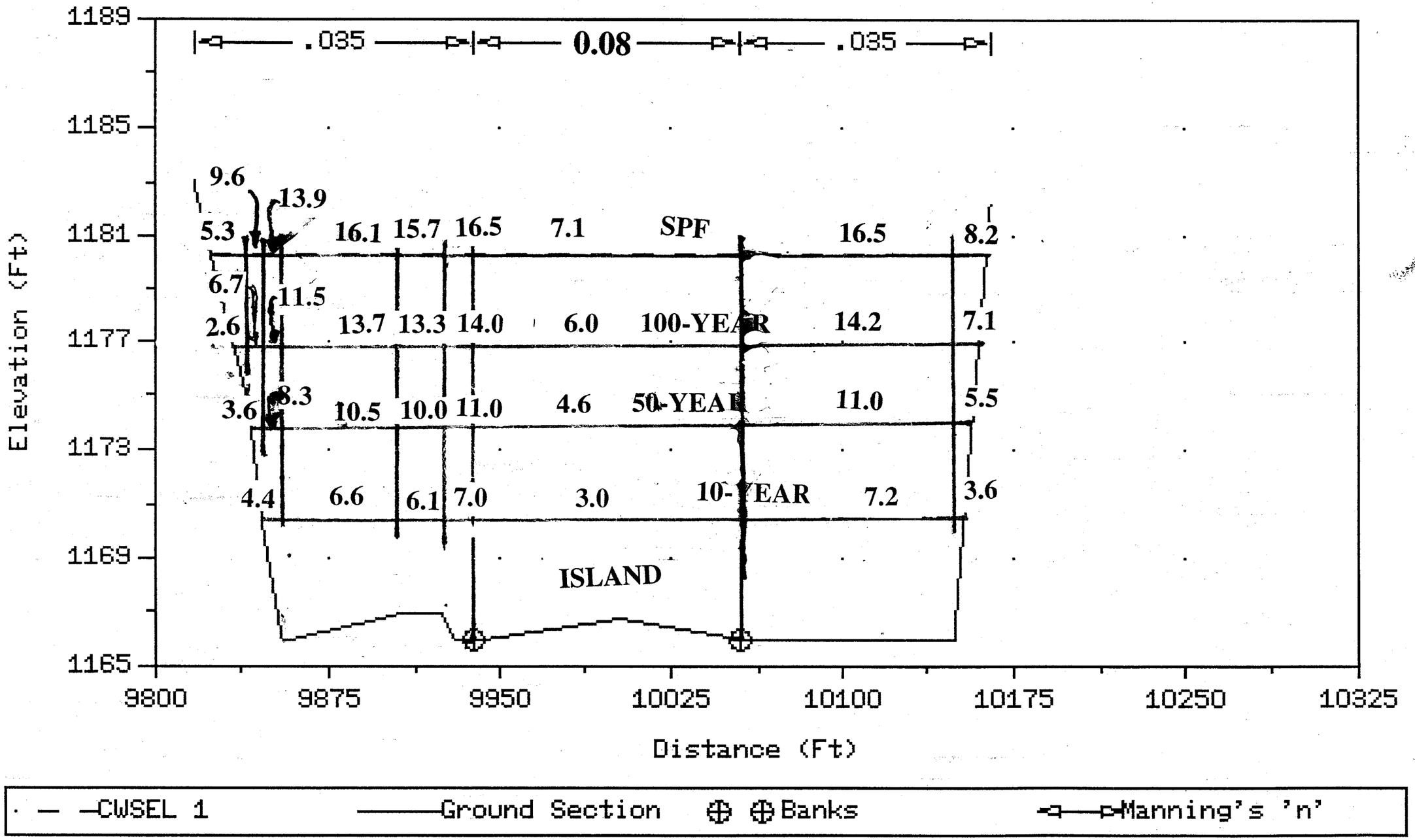
VELOCITY, FPS



VELOCITY, FPS

SPF, 100-, 50-, & 10-YEA

Cross-Section 35



SKUNK CREEK AT 83RD AVENUE

FILE = REF-MARK.WPD

ALL ELEVATIONS BASED ON B.M.(A) FROM THE 83RD AVENUE BRIDGE PLANS.

R.M. 1: A Flood Control District brass tablet set at the south end of the east side walkway railing. Elevation = 1,183.76 feet.

R.M. 2: A Flood Control District brass tablet set on top of wingwall from inlet culvert. Location is on the south bank, near cross section 37+00 at the upstream end of the Wildlife Habitat Area. Elevation = 1,178.58 feet.

B.M.(A): A "+" stamped in the west side of concrete irrigation ditch 61.5 feet west of the centerline of 83rd Avenue, at station 9+00 of the bridge plans, approximately 300 feet south of the south end of the bridge. Elevation = 1,175.02 feet from the as built plans for the 83rd Avenue bridge.

R.P. 1: Top of the fire hydrant on east side of 83rd avenue and south end of bridge. Elevation = 1,182.46 feet.

R.P. 2: Top of the south end of the east guard rail above the yellow diamond marks. Elevation = 1,183.00 feet.

R.P. 3: Black X on northeast side of concrete base of metal power pole on the south side of south access road near cross section 31+75. Elevation = 1,182.55 feet.

R.P. 4: Concrete at the base of fence post that has two support braces on the south bank between cross sections 43+00 and 46+92. Elevation = 1,189.54 feet.

R.W. Cruff, P.E.
April 16, 1997

SKUNK CREEK BETWEEN NEW RIVER AND THE ACDC

THE ATTACHED PAGE FROM THE 1982 CORPS OF ENGINEERS "DESIGN MEMORANDUM #2, HYDROLOGY PART 2" GIVES A RATIO OF VARIOUS RECURRENCE INTERVAL FLOWS TO THE SPF FLOW FOR URBANIZED AREAS.

THE 1986 UPDATE OF THE ABOVE REPORT LISTS THE SPF FLOW FOR THIS REACH AS 55,000 CUBIC FEET PER SECOND. THUS, THE FOLLOWING FLOWS ARE USED FOR THIS REACH OF SKUNK CREEK.

SPF = 55,000 CFS
100-YEAR = 35,000
50-YEAR = 18,000
10-YEAR = 6,600

From Design Memo #2 Hydrology Part 2 Cole 1982

analysis were (1) to determine 100-year flood peak discharges for the design of ACDC and the delineation of the floodways below the authorized dams, and (2) to review previous results for the Agua Fria River. Design discharges for the urbanized watersheds below the authorized dams were determined from the discharge frequency relationships derived in the Part 1 hydrology report, which are summarized below. Revised discharge frequency values for the Agua Fria River downstream from Waddell Dam are based on the procedures discussed in this section.

6.02 Discharge Frequency Analysis for Urbanized Basins. Discharge frequency relationships for urbanized areas were derived in the Part 1 hydrology report from the discharge frequency curves for two stream gages located on catchments with significant percentages of impervious cover: Agua Fria Tributary at Youngtown (USGS No. 9-5137) and Tucson Arroyo at Vine Avenue (USGS No. 9-4830). Representing impervious cover of 40 percent and 60 percent, respectively, the ratios of n-year flood peak discharge to SPF peak discharge for the Youngtown gage frequency curve and for the Tucson gage frequency curve were averaged to derive the following adopted relationships for urbanized basins in the Phoenix region.

n-Year Flood	Percent of SPF for an urbanized watershed
SPF	100
100	45
50	32
25	21
10	12
5	7
2	3

6.03 Discharge Frequency Analysis for Agua Fria River. The discharge frequency analysis for the Agua Fria River was complicated by the existence of Waddell Dam and the lack of long-term streamflow records below the dam. The available stream gage records are given in tables 7 through 11. The records at Avondale and El Mirage are not only short but, except for 1978-1980, occurred during a relatively dry period. Moreover, the accuracy of the large recorded flows at Avondale may be questionable. Therefore, discharge frequency values at points of interest were determined by routing n-year "balanced hydrographs," developed from Waddell Dam volume inflow frequency relationships, through the dam and downstream, adding local flows as appropriate.

a. Waddell Dam Inflow Frequency Analysis. Waddell Dam inflow frequency relationships were developed, where sufficient data were available, from a statistical analysis of the record given in table 7. An attempt to fill gaps in the recorded flows at Waddell Dam by correlation with the fairly long-term Mayer stream gage record failed to yield usable results. Several peak discharge estimates made by the Corps of Engineers and others have been published (ref. 8, 9, and 10). These estimates were evaluated and considered reasonable, based on rain gage records and flow records from other stream gages in the region. Additional estimates were made for this study by

SKUNK CREEK ABOVE 83RD AVENUE

MODELS

The following HEC-2 models have been used in this study:

SCSPF - This is the original model developed in 1989 by Coe & Van Loo.

SCSPF-N - This model was developed, from model SCSPF, by Tim Murphy, in 1995 to determine the affects of allowing vegetation to grow in the channel, thus, increasing the "n" value.

SCSPFA-N - This model used model SCSPF-N and changed the GR data for cross sections 35.00 through 46.92, based on the survey of these cross sections on March 27, 1997.

SCSPF-RI - This model is the same as model SCSPF, except that the 100-, 50-, and 10-year recurrence interval flows were run as well as those for the SPF.

SCSPF&RI - This model is based on model SCSPF-RI, except for the reach around the Wildlife Habitat Area, sections 30.00, 31.75, 33.00, and 35.00. In this reach it was modified so that the area of the wildlife Habitat Area was used as the main channel and the space from there to the banks was used as the overbank area. This way it was possible to get average velocities for reaches of the channel. For these sections, for the main channel, n = 0.080 and for the overbank areas n = 0.035.

R. W. Cruff, P.E.
April 7, 1997

```
1*****************************************                                    ****************************************
 *  HEC-2 WATER SURFACE PROFILES           *                                    *  U.S. ARMY CORPS OF ENGINEERS        *
 *                                         *                                    *  HYDROLOGIC ENGINEERING CENTER       *
 *  Version   4.6.2;  May 1991             *                                    *  609 SECOND STREET, SUITE D          *
 *                                         *                                    *  DAVIS, CALIFORNIA 95616-4687        *
 *  RUN DATE    22AUG95    TIME   13:55:59 *                                    *          (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
1
   22AUG95      13:55:59                                                                                          PAGE    1


                                                                                  THIS RUN EXECUTED 22AUG95    13:55:59
 *************************************
 HEC-2 WATER SURFACE PROFILES

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


 * ************************************************************************ *
 *                                                                          *
 *        THIS IS HEC-2 FILE SCSPF-N.DAT.                                   *
 *                                                                          *
 *        Revising Coe & Van Loo's Skunk Creek SPF model to determine the   *
 *        what effects increasing the n value because of the vegetation     *
 *        upstream of the mitigation area will have on the channel capacity.*
 *        This is from cross section 37.0 to cross section 68.69.           *
 *        The original n value for this reach is 0.032 with the exception of *
 *        cross section 37.00 which was 0.040.  Downstream of the mitigation *
 *        area the n values will not be changed from the Coe & Van Loo ones. *
 *        Above the drop structure (68.69) the n values will also not be    *
 *        changed.                                                          *
 *                                                                          *
 * ************************************************************************ *

T1      SKUNK CREEK - CVL# 1090-040 (FCDMC) - F.C.D. 89-30 - DECEMBER 9,1989
T2      NEW RIVER TO ACDC
T3      SPF          SCSPF

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         6         0         0    0.0055         0         0         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

     38        43         1         2         8        42        25         3        26        53
      4        54        39       150         0         0         0         0         0         0

QT        5      2200      6700     11000     33000     55000
NC    0.032     0.032     0.032        .1        .3
1
   22AUG95      13:55:59                                                                                          PAGE    2

          NEW RIVER CONFLUENCE
X1    15.25        19      9819     10222         0         0         0
GR   1181.0      9817    1180.0      9819    1175.0      9825    1170.0      9842    1165.0      9849
GR   1160.0      9857    1155.0      9870    1155.0      9914    1155.0      9945    1155.0     10000
GR   1155.0     10030    1155.0     10082    1155.0     10104    1156.0     10108    1160.0     10122
GR   1165.0     10134    1170.0     10144    1170.2     10164    1171.0     10222

NC    0.032     0.032     0.032        .3        .5
          HWY 101 BRIDGE
X1    17.00         5      9848     10157       175       175       175
GR   1173.0      9848    1155.3      9877    1155.3     10000    1155.3     10125    1172.7     10157

SB     1.05      1.00      2.80        .0       269        15      7148         2    1155.5    1155.1
X1    19.00         8      9859     10180       200       200       200
X2        0         0         1    1179.5    1188.0         0         0      1.33         0         0
GR   1174.0      9859    1170.0      9871    1160.0      9883    1155.7      9893    1155.7     10000
GR   1155.7     10142    1160.0     10146    1174.0     10180

NC    0.032     0.032     0.032        .1        .3
X1    20.85         5      9857     10190       164       185       185         0         0         0
GR   1173.0      9857    1155.9      9875    1155.9     10000    1155.9     10160    1175.0     10190

X1    22.00        11      9838     10186       110       155       115
GR   1174.0      9838    1170.0      9846    1165.0      9855    1160.0      9865    1156.1      9879
GR   1156.1     10000    1156.1     10160    1160.0     10169    1165.0     10174    1170.0     10180
GR   1174.0     10186
```

```
X1    23.90         7      9790     10200       186       194       190
GR   1175.0      9790    1173.8      9847    1156.6      9865    1156.6     10000    1156.5     10150
GR   1173.8     10168    1175.0     10200

          DROP STRUCTURE BUILT IN CONJUNCTION
          WITH 83RD AVENUE BRIDGE CONSTUCTION
X1    24.89         7      9830     10200        94        94        94
GR   1175.0      9830    1174.0      9854    1156.8      9870    1156.8     10000    1156.8     10155
GR   1174.0     10172    1175.0     10200

X1    24.90         7      9830     10200         6         6         6
GR   1175.0      9830    1174.0      9854    1162.8      9866    1162.8     10000    1162.8     10161
GR   1174.0     10172    1175.0     10200

X1    25.40         7      9855     10200        50        50        50
GR   1176.0      9851    1175.0      9855    1162.9      9868    1162.9     10000    1162.9     10163
GR   1174.5     10175    1175.0     10200

NC    0.032     0.032     0.032        .3        .5
          83RD AVENUE BRIDGE
X1    26.70         5      9862     10183       130       130       130         0         0         0
GR   1176.4      9862    1163.2      9875    1163.2     10000    1163.2     10170    1176.4     10183
1
   22AUG95      13:55:59                                                                          PAGE    3


SB     1.05       1.0       2.8         0       315        12      4980         1    1163.3    1163.2
X1    27.80         5      9867     10159       110       110       110         0         0         0
X2        0         0         1    1177.5    1185.5         0         0                1.33         0
GR   1177.1      9867    1163.5      9880    1163.5     10000    1163.5     10145    1177.1     10159

NC    0.032     0.032     0.032        .1        .3
X1    29.60         5      9870     10195       180       180       180
GR   1179.3      9870    1163.9      9885    1163.9     10000    1163.9     10180    1179.3     10195

NC    0.050     0.050     0.050        .2        .4
          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
X1    30.00         6      9859     10198        44        40        40
GR   1180.0      9859    1164.0      9875    1165.0      9955    1164.0     10000    1164.0     10182
GR   1180.0     10198

X1    31.75        17      9782     10222       200       152       175         0         0         0
GR   1181.3      9782    1164.2      9816    1165.0      9847    1166.0      9875    1166.0      9885
GR   1165.0      9896    1164.3      9925    1165.0     10000    1165.0     10030    1164.0     10033
GR   1163.4     10037    1164.0     10039    1165.0     10042    1166.0     10046    1166.0     10070
GR   1164.7     10189    1181.3     10222

X1    33.00        21      9800     10190       180       135       125
GR   1183.0      9800    1180.0      9804    1175.0      9816    1170.0      9826    1165.0      9836
GR   1167.0      9880    1167.0      9908    1166.0      9923    1165.0      9929    1164.3      9935
GR   1165.0      9940    1166.0      9967    1166.1     10000    1166.0     10064    1165.0     10069
GR   1164.1     10075    1165.0     10083    1166.0     10085    1166.0     10100    1165.2     10174
GR   1181.5     10190

X1    35.00        14      9817     10166       205       180       200
GR   1183.0      9817    1180.0      9825    1175.0      9840    1170.0      9847    1166.0      9855
GR   1167.0      9905    1167.0      9925    1166.0      9930    1165.9      9934    1166.0      9938
GR   1166.8     10000    1166.0     10055    1166.0     10150    1182.1     10166

 * ************************************************************************ *
 *                                                                          *
 *          Just above the habitat mitigation area.  The Coe & Van Loo n    *
 *          value on cross section 37.00 was 0.040.  For cross section 38.32 *
 *          and above, CVL's n value was 0.032.  The critical cross section *
 *          is 55.00.  This cross section was used to determine the highest *
 *          n value for this reach.  The 0.036 channel n value is based on a *
 *          maximum width for the cattails of 16 feet.                      *
 *                                                                          *
 * ************************************************************************ *


NC     .032      .032      .040

1
   22AUG95      13:55:59                                                                          PAGE    4

          END OF WILDLIFE HABITATE MITIGATION AREA
X1    37.00        10      9831     10153       185       184       200
GR   1183.0      9831    1180.0      9843    1175.0      9853    1170.0      9859    1166.9      9860
GR   1167.0      9900    1167.0      9980    1166.9     10000    1166.9     10137    1182.7     10153

NC     .032      .032      .036

X1    38.32        11      9831     10151       132       132       132         0         0         0
GR   1184.0      9831    1180.0      9838    1175.0      9849    1170.0      9861    1167.5      9865
GR   1167.5     10000    1167.5     10120    1170.0     10125    1175.0     10139    1180.0     10145
GR   1183.0     10151

X1    40.05        15      9817     10156       173       173       173
GR   1188.0      9817    1185.0      9825    1180.0      9850    1175.0      9858    1170.0      9870
GR   1169.0      9878    1168.0      9883    1167.6      9900    1167.2      9935    1166.5     10000
GR   1167.2     10123    1170.2     10130    1175.0     10141    1180.0     10149    1183.7     10156

X1    43.00        18      9818     10180       258       330       295
GR   1188.0      9799    1188.0      9818    1186.0      9827    1185.0      9843    1180.0      9853
GR   1175.0      9863    1170.0      9886    1167.2      9893    1166.7     10000    1167.2     10080
GR   1167.5     10100    1168.0     10124    1170.0     10127    1175.0     10142    1180.0     10149
GR   1183.0     10153    1184.0     10179    1184.5     10180
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X1    46.92        20      9826     10172       324       474       392
GR   1189.0      9798    1189.0      9826    1187.0      9831    1186.0      9847    1185.0      9850
GR   1180.0      9862    1175.0      9871    1170.0      9890    1168.0      9895    1167.6     10000
GR   1168.0     10040    1168.0     10058    1168.0     10100    1169.0     10117    1170.0     10123
GR   1175.0     10136    1180.0     10143    1185.0     10149    1186.0     10162    1186.8     10172

X1    50.90        23      9820     10177       398       398       398
GR   1191.0      9820    1190.0      9823    1189.0      9826    1189.0      9838    1188.0      9843
GR   1185.0      9849    1180.0      9859    1175.0      9869    1170.0      9888    1169.0      9892
GR   1168.0      9940    1168.0      9967    1168.0      9982    1168.1     10000    1168.3     10025
GR   1169.0     10117    1170.0     10123    1175.0     10135    1180.0     10144    1185.0     10152
GR   1186.0     10155    1186.9     10159    1187.0     10177

X1    55.00        16      9819     10156       500       314       410
GR   1192.0      9819    1191.5      9826    1191.0      9837    1190.0      9839    1185.0      9853
GR   1180.0      9865    1175.0      9875    1170.0      9889    1169.0      9893    1169.0     10000
GR   1169.0     10119    1170.0     10123    1175.0     10134    1180.0     10142    1185.0     10152
GR   1187.1     10156
```



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X1    60.00        18      9835     10163       522       470       500
GR   1194.0      9835    1193.0      9839    1190.0      9847    1185.0      9857    1180.0      9863
GR   1175.0      9877    1170.0      9893    1170.0      9907    1170.0      9916    1169.7     10000
GR   1170.0     10047    1170.0     10060    1170.0     10074    1171.0     10128    1175.0     10138
GR   1180.0     10145    1185.0     10156    1189.0     10163

X1    64.00        17      9839     10151       400       400       400
GR   1195.0      9839    1190.0      9851    1185.0      9859    1180.0      9868    1175.0      9879
GR   1171.0      9893    1170.5      9958    1170.9     10000    1171.0     10004    1171.0     10027
GR   1171.0     10058    1171.0     10063    1171.0     10095    1172.0     10120    1175.0     10128
GR   1185.0     10136    1190.0     10151

X1    65.45        14      9812     10152       130       160       145
GR   1195.9      9812    1195.0      9816    1190.0      9828    1185.0      9837    1180.0      9849
GR   1175.0      9878    1171.0      9886    1171.0     10000    1171.0     10106    1175.0     10114
GR   1180.0     10125    1185.0     10138    1190.0     10145    1191.0     10152

X1    66.90        14      9818     10152       145       145       145
GR   1197.0      9818    1195.0      9825    1190.0      9835    1185.0      9843    1180.0      9851
GR   1175.0      9864    1171.2      9872    1171.2     10000    1171.2     10108    1175.0     10116
GR   1180.0     10130    1185.0     10140    1190.0     10150    1191.0     10152

X1    67.90        15      9820     10151       100       100       100         0         0         0
GR   1197.5      9820    1197.0      9822    1195.0      9827    1190.0      9838    1185.0      9845
GR   1180.0      9856    1175.0      9869    1171.3      9876    1171.3     10000    1171.3     10105
GR   1175.0     10112    1180.0     10127    1185.0     10139    1190.0     10146    1191.0     10151

          DROP STRUCTURE BUILT IN CONJUNCTION WITH
          83RD AVENUE BRIDGE CONSTRUCTION
X1    68.69        14      9820     10146        73        73        73
GR   1198.0      9820    1195.0      9830    1190.0      9840    1185.0      9846    1180.0      9857
GR   1175.0      9868    1171.4      9875    1171.4     10000    1171.4     10107    1175.0     10114
GR   1180.0     10124    1185.0     10134    1190.0     10143    1192.0     10146

 * ************************************************************************ *
 *                                                                          *
 *          End changes to the channel n values.  Return to how Coe & Van Loo  *
 *          modeled the channel.  Cross section 68.70 is the top of the drop  *
 *          structure.                                                      *
 *                                                                          *
 * ************************************************************************ *
```



```
NC     .032      .032      .032        .1        .3
X1    68.70        12      9820     10146         7         7         7         0
GR   1198.0      9820    1195.0      9830    1190.0      9840    1185.0      9847    1180.0      9857
GR   1178.4      9860    1178.4     10000    1178.4     10121    1180.0     10124    1185.0     10134
GR   1190.0     10143    1192.0     10146

X1    69.10        13      9820     10144        40        40        40         0         0         0
GR   1198.2      9820    1198.0      9822    1195.0      9831    1190.0      9841    1185.0      9848
GR   1180.0      9857    1178.5      9860    1178.5     10000    1178.5     10119    1180.0     10122
GR   1185.0     10133    1190.0     10140    1193.0     10144

X1    70.10        13      9823     10141       100       100       100         0         0         0
GR   1198.6      9823    1198.0      9826    1195.0      9832    1190.0      9843    1185.0      9852
GR   1180.0      9860    1178.8      9862    1178.8     10000    1178.8     10117    1180.0     10119
GR   1185.0     10130    1190.0     10137    1193.6     10141

X1    71.80        12      9827     10136       170       170       170         0         0         0
GR   1199.0      9827    1195.0      9836    1190.0      9845    1185.0      9854    1180.0      9865
GR   1179.3      9867    1179.3     10000    1179.3     10111    1180.0     10113    1185.0     10125
GR   1190.0     10133    1193.2     10136

X1    73.50        18      9815     10147       170       170       170
GR   1200.0      9815    1199.0      9819    1195.0      9827    1190.0      9836    1185.0      9847
GR   1180.0      9857    1179.7      9863    1179.7      9868    1179.7      9873    1179.7      9932
GR   1179.7     10000    1179.7     10103    1180.0     10106    1185.0     10118    1190.0     10126
GR   1193.0     10131    1193.5     10132    1194.8     10147

X1    76.32        18      9824     10160       210       338       282         0         0         0
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GR   1201.0       9824     1200.0       9830      1195.0       9838      1190.0       9850      1185.0       9859
GR   1180.0       9871     1179.9       9874      1179.9       9878      1179.9       9883      1179.9      10000
GR   1180.0      10015     1180.2      10065      1181.0      10114      1185.0      10121      1190.0      10131
GR   1195.0      10142     1195.7      10145      1196.0      10160

X1    81.00         20       9841      10157         468        468        468
GR   1202.0       9841     1200.0       9846      1195.0       9855      1190.0       9864      1185.0       9875
GR   1181.0       9887     1180.5       9892      1180.8       9902      1180.8       9932      1181.0       9971
GR   1181.1      10000     1181.0      10026      1180.8      10055      1181.0      10073      1181.4      10100
GR   1182.0      10121     1185.0      10131      1190.0      10139      1195.0      10148      1199.0      10157

          CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
          OF THIS SECTION
X1    84.70         20       9807      10160         358        380        370
GR   1202.6       9807     1202.0       9808      1200.0       9814      1195.0       9823      1190.0       9833
GR   1185.0       9843     1183.0       9851      1182.0       9854      1181.2       9894      1182.0       9941
GR   1182.0       9982     1181.8      10000      1181.2      10055      1182.0      10112      1183.0      10129
GR   1185.0      10133     1190.0      10142      1195.0      10153      1198.0      10157      1198.9      10160
```



```
   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 15.250
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
          NEW RIVER CONFLUENCE
    15.250     12.13   1167.13   1166.31       .00   1171.61      4.48       .00       .00   1180.00
   55000.0        .0   55000.0        .0        .0    3239.3        .0        .0        .0   1171.00
       .00       .00     16.98       .00      .000      .032      .000      .000   1155.00   9846.01
   .005538        0.        0.        0.         0        11         4       .00    292.25  10138.27

FLOW DISTRIBUTION FOR SECNO=     15.25          CWSEL=   1167.13

STA=    9846.   10222.
  PER Q=    100.0
   AREA=   3239.3
    VEL=     17.0
  DEPTH=     11.1

CCHV=     .300 CEHV=     .500
*SECNO 17.000

3301 HV CHANGED MORE THAN HVINS

          HWY 101 BRIDGE
    17.000     14.40   1169.70   1166.47       .00   1172.74      3.04       .70       .43   1173.00
   55000.0        .0   55000.0        .0        .0    3930.7        .0     14.4       1.2   1172.70
       .00       .00     13.99       .00      .000      .032      .000   1155.30   9853.41
   .003014      175.      175.      175.         4        11         0       .00    298.06  10151.48

FLOW DISTRIBUTION FOR SECNO=     17.00          CWSEL=   1169.70

STA=    9853.   10157.
  PER Q=    100.0
   AREA=   3930.7
    VEL=     14.0
  DEPTH=     13.2
```



```
   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

SPECIAL BRIDGE

SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
     1.05      1.00      2.80       .00    269.00     15.00   7148.00      2.00   1155.50   1155.10

*SECNO 19.000
CLASS A LOW FLOW

3420 BRIDGE W.S.=    1169.41 BRIDGE VELOCITY=      13.81     CALCULATED CHANNEL AREA=      3921.

 EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD     WEIRLN
                                                              AREA
       .00   1173.35      .81        0.    55000.     7148.     7248.     1179.50   1188.00        0.

    19.000     14.81   1170.51       .00       .00   1173.35      2.84       .61       .00   1174.00
   55000.0        .0   55000.0        .0        .0    4066.9        .0      32.8       2.6   1174.00
       .01       .00     13.52       .00      .000      .032      .000      .000   1155.70   9869.46
   .002748      200.      200.      200.         0         0         0       .00    302.08  10171.54

FLOW DISTRIBUTION FOR SECNO=     19.00          CWSEL=   1170.51

STA=    9869.   10180.
  PER Q=    100.0
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   AREA=   4066.9
    VEL=      13.5
  DEPTH=      13.5

CCHV=      .100 CEHV=      .300
*SECNO 20.850

3301 HV CHANGED MORE THAN HVINS

    20.850     15.96   1171.86   1166.19       .00   1173.83      1.97       .39       .09   1173.00
   55000.0        .0   55000.0        .0        .0    4883.2        .0      51.8       3.9   1175.00
       .01       .00     11.26       .00      .000      .032      .000      .000   1155.90   9858.20
   .001671      164.      185.      185.         3        19         0       .00    326.87  10185.07


FLOW DISTRIBUTION FOR SECNO=     20.85          CWSEL=   1171.86

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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


STA=    9858.   10190.
  PER Q=    100.0
   AREA=   4883.2
    VEL=      11.3
  DEPTH=      14.9

*SECNO 22.000
    22.000     16.11   1172.21   1166.27       .00   1174.03      1.82       .18       .01   1174.00
   55000.0        .0   55000.0        .0        .0    5077.0        .0      64.9       4.8   1174.00
       .02       .00     10.83       .00      .000      .032      .000      .000   1156.10   9841.58
   .001542      110.      115.      155.         2        14         0       .00    341.73  10183.31


FLOW DISTRIBUTION FOR SECNO=     22.00          CWSEL=   1172.21

STA=    9842.   10186.
  PER Q=    100.0
   AREA=   5077.0
    VEL=      10.8
  DEPTH=      14.9

*SECNO 23.900
    23.900     15.84   1172.34   1166.90       .00   1174.42      2.08       .31       .08   1175.00
   55000.0        .0   55000.0        .0        .0    4754.9        .0      86.4       6.2   1175.00
       .02       .00     11.57       .00      .000      .032      .000      .000   1156.50   9848.52
   .001774      186.      190.      194.         2        14         0       .00    317.96  10166.49


FLOW DISTRIBUTION FOR SECNO=     23.90          CWSEL=   1172.34

STA=    9849.   10200.
  PER Q=    100.0
   AREA=   4754.9
    VEL=      11.6
  DEPTH=      15.0

*SECNO 24.890
          DROP STRUCTURE BUILT IN CONJUNCTION
          WITH 83RD AVENUE BRIDGE CONSTUCTION
    24.890     15.68   1172.48   1167.14       .00   1174.60      2.12       .17       .01   1175.00
   55000.0        .0   55000.0        .0        .0    4708.5        .0      96.6       6.9   1175.00
       .02       .00     11.68       .00      .000      .032      .000      .000   1156.80   9855.40
   .001817       94.       94.       94.         1        14         0       .00    315.11  10170.51

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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=     24.89          CWSEL=   1172.48

STA=    9855.   10200.
  PER Q=    100.0
   AREA=   4708.5
    VEL=      11.7
  DEPTH=      14.9

*SECNO 24.900

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    24.900     10.10   1172.90   1172.90       .00   1177.84      4.94       .02       .85   1175.00
   55000.0        .0   55000.0        .0        .0    3084.5        .0      97.1       6.9   1175.00
       .02       .00     17.83       .00      .000      .032      .000      .000   1162.80   9855.18
   .007305        6.        6.        6.         0        14         0       .00    315.74  10170.92


FLOW DISTRIBUTION FOR SECNO=     24.90          CWSEL=   1172.90

STA=    9855.   10200.
  PER Q=    100.0
   AREA=   3084.5
    VEL=      17.8
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  DEPTH=       9.8

*SECNO 25.400

3301 HV CHANGED MORE THAN HVINS

    25.400     11.77   1174.67   1173.01       .00   1178.26      3.59       .28       .13   1175.00
   55000.0        .0   55000.0        .0        .0    3618.4        .0     101.0       7.3   1175.00
       .02       .00     15.20       .00      .000      .032      .000      .000   1162.90   9855.36
   .004529       50.       50.       50.         6         5         0       .00    328.07  10183.42


FLOW DISTRIBUTION FOR SECNO=     25.40          CWSEL=   1174.67

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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


STA=    9855.   10200.
  PER Q=    100.0
   AREA=   3618.4
    VEL=     15.2
  DEPTH=     11.0

CCHV=     .300 CEHV=     .500
*SECNO 26.700
          83RD AVENUE BRIDGE
    26.700     12.56   1175.76   1173.32       .00   1178.91      3.15       .52       .13   1176.40
   55000.0        .0   55000.0        .0        .0    3861.1        .0     112.1       8.3   1176.40
       .03       .00     14.24       .00      .000      .032      .000      .000   1163.20   9862.63
   .003546      130.      130.      130.         2        11         0       .00    319.74  10182.37


FLOW DISTRIBUTION FOR SECNO=     26.70          CWSEL=   1175.76

STA=    9863.   10183.
  PER Q=    100.0
   AREA=   3861.1
    VEL=     14.2
  DEPTH=     12.1


SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.05      1.00       2.80        .00    315.00      12.00    4980.00      1.00    1163.30    1163.20

*SECNO 27.800
CLASS A LOW FLOW

3420 BRIDGE W.S.=    1175.36 BRIDGE VELOCITY=      14.42     CALCULATED CHANNEL AREA=      3799.

 EGPRS      EGLWC      H3         QWEIR      QLOW       BAREA    TRAPEZOID      ELLC       ELTRD      WEIRLN
                                                                    AREA
   1177.65   1180.09       .72        0.    55000.     4980.     4504.     1177.50   1185.50        0.


    27.800     12.97   1176.47       .00       .00   1180.09      3.61      1.18       .00   1177.10
   55000.0        .0   55000.0        .0        .0    3605.1        .0     121.5       9.1   1177.10
       .03       .00     15.26       .00      .000      .032      .000      .000   1163.50   9867.60
   .003948      110.      110.      110.         0         0         0       .00    290.76  10158.36

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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=     27.80          CWSEL=   1176.47

STA=    9868.   10159.
  PER Q=    100.0
   AREA=   3605.1
    VEL=     15.3
  DEPTH=     12.4

CCHV=     .100 CEHV=     .300
*SECNO 29.600

3301 HV CHANGED MORE THAN HVINS

    29.600     14.49   1178.39   1174.00       .00   1180.74      2.34       .52       .13   1179.30
   55000.0        .0   55000.0        .0        .0    4479.8        .0     138.2      10.3   1179.30
       .03       .00     12.28       .00      .000      .032      .000      .000   1163.90   9870.88
   .002206      180.      180.      180.         3        15         0       .00    323.23  10194.12


FLOW DISTRIBUTION FOR SECNO=     29.60          CWSEL=   1178.39

STA=    9871.   10195.
  PER Q=    100.0
   AREA=   4479.8
    VEL=     12.3
  DEPTH=     13.9

CCHV=     .200 CEHV=     .400
*SECNO 30.000
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3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =   .67

          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
   30.000      14.77   1178.77   1174.04       .00   1180.90      2.14       .13       .04   1180.00
  55000.0         .0   55000.0        .0        .0    4689.2        .0     142.5      10.6   1180.00
     .03         .00     11.73       .00      .000      .050      .000      .000   1164.00   9860.23
 .004871        44.       40.       40.         2        19         0       .00    336.54  10196.77

FLOW DISTRIBUTION FOR SECNO=     30.00          CWSEL=   1178.77

1
   22AUG95      13:55:59                                                                                PAGE   13

    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=    9860.   10198.
  PER Q=    100.0
   AREA=   4689.2
    VEL=      11.7
  DEPTH=      13.9

*SECNO 31.750

3301 HV CHANGED MORE THAN HVINS

   31.750      17.09   1180.49   1173.65       .00   1181.69      1.20       .61       .19   1181.30
  55000.0         .0   55000.0        .0        .0    6253.3        .0     164.4      12.2   1181.30
     .04         .00      8.80       .00      .000      .050      .000      .000   1163.40   9783.60
 .002583       200.      175.      152.         3        19         0       .00    436.79  10220.40

FLOW DISTRIBUTION FOR SECNO=     31.75          CWSEL=   1180.49

STA=    9784.   10222.
  PER Q=    100.0
   AREA=   6253.3
    VEL=       8.8
  DEPTH=      14.3

*SECNO 33.000
   33.000      16.51   1180.61   1175.02       .00   1182.25      1.64       .38       .18   1183.00
  55000.0         .0   55000.0        .0        .0    5351.1        .0     181.1      13.4   1181.50
     .04         .00     10.28       .00      .000      .050      .000      .000   1164.10   9803.18
 .003724       180.      125.      135.         2        14         0       .00    385.95  10189.13

FLOW DISTRIBUTION FOR SECNO=     33.00          CWSEL=   1180.61

STA=    9803.   10190.
  PER Q=    100.0
   AREA=   5351.1
    VEL=      10.3
  DEPTH=      13.9

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   22AUG95      13:55:59                                                                                PAGE   14

    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 35.000
   35.000      15.28   1181.18   1176.36       .00   1183.29      2.11       .85       .19   1183.00
  55000.0         .0   55000.0        .0        .0    4722.0        .0     204.2      15.0   1182.10
     .05         .00     11.65       .00      .000      .050      .000      .000   1165.90   9821.85
 .004841       205.      200.      180.         2        14         0       .00    343.23  10165.09

FLOW DISTRIBUTION FOR SECNO=     35.00          CWSEL=   1181.18

STA=    9822.   10166.
  PER Q=    100.0
   AREA=   4722.0
    VEL=      11.6
  DEPTH=      13.8

*SECNO 37.000
          END OF WILDLIFE HABITATE MITIGATION AREA
   37.000      14.89   1181.79   1177.51       .00   1184.28      2.49       .84       .15   1183.00
  55000.0         .0   55000.0        .0        .0    4345.7        .0     225.0      16.5   1182.70
     .05         .00     12.66       .00      .000      .040      .000      .000   1166.90   9835.82
 .003699       185.      200.      184.         2        19         0       .00    316.26  10152.08

FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=   1181.79

STA=    9836.   10153.
  PER Q=    100.0
   AREA=   4345.7
    VEL=      12.7
  DEPTH=      13.7

*SECNO 38.320
   38.320      14.64   1182.14   1178.41       .00   1184.82      2.67       .46       .07   1184.00
  55000.0         .0   55000.0        .0        .0    4193.4        .0     238.0      17.5   1183.00
     .05         .00     13.12       .00      .000      .036      .000      .000   1167.50   9834.25
 .003297       132.      132.      132.         2        15         0       .00    315.04  10149.29
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FLOW DISTRIBUTION FOR SECNO=     38.32          CWSEL=   1182.14

1
   22AUG95      13:55:59                                                                                                    PAGE   15

     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=    9834.   10151.
   PER Q=    100.0
    AREA=   4193.4
     VEL=     13.1
   DEPTH=     13.3

 *SECNO 40.050
     40.050     16.59   1183.09   1178.16       .00   1185.40      2.31       .51       .07   1188.00
    55000.0        .0   55000.0       .0        .0    4509.4        .0     255.2      18.8   1183.70
       .06       .00     12.20       .00      .000      .036      .000      .000   1166.50   9834.55
   .002640      173.      173.      173.         2        15         0       .00    320.29  10154.85

 FLOW DISTRIBUTION FOR SECNO=     40.05          CWSEL=   1183.09

 STA=    9835.   10156.
   PER Q=    100.0
    AREA=   4509.4
     VEL=     12.2
   DEPTH=     14.1

 *SECNO 43.000
     43.000     17.32   1184.02   1178.54       .00   1186.18      2.17       .76       .03   1188.00
    55000.0        .0   55000.0       .0        .0    4657.3        .0     286.3      21.0   1184.50
       .06       .00     11.81       .00      .000      .036      .000      .000   1166.70   9844.96
   .002510      258.      295.      330.         2        19         0       .00    334.08  10179.04

 FLOW DISTRIBUTION FOR SECNO=     43.00          CWSEL=   1184.02

 STA=    9845.   10180.
   PER Q=    100.0
    AREA=   4657.3
     VEL=     11.8
   DEPTH=     13.9

 *SECNO 46.920
     46.920     17.30   1184.90   1179.56       .00   1187.21      2.32       .97       .06   1189.00
    55000.0        .0   55000.0       .0        .0    4501.4        .0     327.5      23.8   1186.80
       .07       .00     12.22       .00      .000      .036      .000      .000   1167.60   9850.25
   .002434      324.      392.      474.         2        19         0       .00    298.63  10148.88

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   22AUG95      13:55:59                                                                                                    PAGE   16

     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=     46.92          CWSEL=   1184.90

 STA=    9850.   10172.
   PER Q=    100.0
    AREA=   4501.4
     VEL=     12.2
   DEPTH=     15.1

 *SECNO 50.900
     50.900     18.13   1186.13   1179.94       .00   1188.16      2.03       .88       .06   1191.00
    55000.0        .0   55000.0       .0        .0    4809.9        .0     370.0      26.6   1187.00
       .08       .00     11.43       .00      .000      .036      .000      .000   1168.00   9846.75
   .002036      398.      398.      398.         2        19         0       .00    308.82  10155.56

 FLOW DISTRIBUTION FOR SECNO=     50.90          CWSEL=   1186.13

 STA=    9847.   10177.
   PER Q=    100.0
    AREA=   4809.9
     VEL=     11.4
   DEPTH=     15.6

 *SECNO 55.000
     55.000     17.99   1186.99   1180.57       .00   1188.99      2.00       .82       .01   1192.00
    55000.0        .0   55000.0       .0        .0    4845.6        .0     415.5      29.5   1187.10
       .09       .00     11.35       .00      .000      .036      .000      .000   1169.00   9847.44
   .001986      500.      410.      314.         2        14         0       .00    308.34  10155.78

 FLOW DISTRIBUTION FOR SECNO=     55.00          CWSEL=   1186.99

 STA=    9847.   10156.
   PER Q=    100.0
    AREA=   4845.6
     VEL=     11.4
   DEPTH=     15.7

 *SECNO 60.000
     60.000     18.36   1188.06   1181.41       .00   1189.96      1.90       .96       .02   1194.00
    55000.0        .0   55000.0       .0        .0    4971.0        .0     471.8      33.1   1189.00
       .11       .00     11.06       .00      .000      .036      .000      .000   1169.70   9850.87
   .001845      522.      500.      470.         2        14         0       .00    310.49  10161.36
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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=     60.00          CWSEL=   1188.06

STA=    9851.   10163.
  PER Q=    100.0
   AREA=   4971.0
    VEL=     11.1
  DEPTH=     16.0

*SECNO 64.000
    64.000     18.20   1188.70   1182.55       .00   1190.87      2.17       .80       .11   1195.00
   55000.0        .0   55000.0        .0        .0    4655.7        .0     516.0      35.8   1190.00
       .11       .00     11.81       .00      .000      .036      .000      .000   1170.50   9853.08
   .002153      400.      400.      400.         2        14         0       .00    294.02  10147.10

FLOW DISTRIBUTION FOR SECNO=     64.00          CWSEL=   1188.70

STA=    9853.   10151.
  PER Q=    100.0
   AREA=   4655.7
    VEL=     11.8
  DEPTH=     15.8

*SECNO 65.450
    65.450     18.30   1189.30   1182.85       .00   1191.21      1.91       .29       .05   1195.90
   55000.0        .0   55000.0        .0        .0    4958.6        .0     532.0      36.8   1191.00
       .12       .00     11.09       .00      .000      .036      .000      .000   1171.00   9829.26
   .001889      130.      145.      160.         2        14         0       .00    314.76  10144.02

FLOW DISTRIBUTION FOR SECNO=     65.45          CWSEL=   1189.30

STA=    9829.   10152.
  PER Q=    100.0
   AREA=   4958.6
    VEL=     11.1
  DEPTH=     15.8

*SECNO 66.900
    66.900     18.51   1189.71   1182.60       .00   1191.49      1.78       .26       .03   1197.00
   55000.0        .0   55000.0        .0        .0    5134.0        .0     548.8      37.9   1191.00
       .12       .00     10.71       .00      .000      .036      .000      .000   1171.20   9835.46
   .001682      145.      145.      145.         2        14         0       .00    313.96  10149.42
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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=     66.90          CWSEL=   1189.71

STA=    9835.   10152.
  PER Q=    100.0
   AREA=   5134.0
    VEL=     10.7
  DEPTH=     16.4

*SECNO 67.900
    67.900     18.54   1189.84   1182.95       .00   1191.70      1.86       .17       .03   1197.50
   55000.0        .0   55000.0        .0        .0    5025.4        .0     560.5      38.6   1191.00
       .12       .00     10.94       .00      .000      .036      .000      .000   1171.30   9838.23
   .001760      100.      100.      100.         2        14         0       .00    307.54  10145.77

FLOW DISTRIBUTION FOR SECNO=     67.90          CWSEL=   1189.84

STA=    9838.   10151.
  PER Q=    100.0
   AREA=   5025.4
    VEL=     10.9
  DEPTH=     16.3

*SECNO 68.690
          DROP STRUCTURE BUILT IN CONJUNCTION WITH
          83RD AVENUE BRIDGE CONSTRUCTION
    68.690     18.55   1189.95   1182.99       .00   1191.83      1.88       .13       .01   1198.00
   55000.0        .0   55000.0        .0        .0    4995.0        .0     568.9      39.1   1192.00
       .13       .00     11.01       .00      .000      .036      .000      .000   1171.40   9840.05
   .001765       73.       73.       73.         1        14         0       .00    302.87  10142.92

FLOW DISTRIBUTION FOR SECNO=     68.69          CWSEL=   1189.95

STA=    9840.   10146.
  PER Q=    100.0
   AREA=   4995.0
    VEL=     11.0
  DEPTH=     16.5
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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

CCHV=      .100 CEHV=      .300
*SECNO 68.700

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
    68.700     10.81   1189.21   1189.21       .00   1194.28       5.07       .02       .96   1198.00
   55000.0        .0   55000.0        .0        .0    3043.7         .0     569.5      39.2   1192.00
       .13       .00     18.07       .00      .000      .032       .000      .000   1178.40   9841.11
   .007080        7.        7.        7.         0        11          0       .00    300.47  10141.58

FLOW DISTRIBUTION FOR SECNO=     68.70          CWSEL=   1189.21

STA=    9841.   10146.
  PER Q=    100.0
   AREA=   3043.7
    VEL=     18.1
  DEPTH=     10.1

*SECNO 69.100

3301 HV CHANGED MORE THAN HVINS

    69.100     11.97   1190.47   1189.32       .00   1194.61       4.14       .24       .09   1198.20
   55000.0        .0   55000.0        .0        .0    3369.8         .0     572.5      39.4   1193.00
       .13       .00     16.32       .00      .000      .032       .000      .000   1178.50   9840.05
   .005066       40.       40.       40.        10         5          0       .00    300.58  10140.63

FLOW DISTRIBUTION FOR SECNO=     69.10          CWSEL=   1190.47

STA=    9840.   10144.
  PER Q=    100.0
   AREA=   3369.8
    VEL=     16.3
  DEPTH=     11.2

*SECNO 70.100
    70.100     12.18   1190.98   1189.75       .00   1195.11       4.13       .50       .00   1198.60
   55000.0        .0   55000.0        .0        .0    3371.4         .0     580.2      40.1   1193.60
       .13       .00     16.31       .00      .000      .032       .000      .000   1178.80   9840.84
   .004988      100.      100.      100.         2        11          0       .00    297.25  10138.09
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```
FLOW DISTRIBUTION FOR SECNO=     70.10          CWSEL=   1190.98

STA=    9841.   10141.
  PER Q=    100.0
   AREA=   3371.4
    VEL=     16.3
  DEPTH=     11.3

*SECNO 71.800
    71.800     12.68   1191.98   1190.44       .00   1195.94       3.96       .81       .02   1199.00
   55000.0        .0   55000.0        .0        .0    3443.1         .0     593.5      41.3   1193.20
       .13       .00     15.97       .00      .000      .032       .000      .000   1179.30   9841.43
   .004567      170.      170.      170.         2        11          0       .00    293.42  10134.86

FLOW DISTRIBUTION FOR SECNO=     71.80          CWSEL=   1191.98

STA=    9841.   10136.
  PER Q=    100.0
   AREA=   3443.1
    VEL=     16.0
  DEPTH=     11.7

*SECNO 73.500

3301 HV CHANGED MORE THAN HVINS

    73.500     13.70   1193.40   1190.80       .00   1196.68       3.29       .67       .07   1200.00
   55000.0        .0   55000.0        .0        .0    3780.5         .0     607.6      42.4   1194.80
       .14       .00     14.55       .00      .000      .032       .000      .000   1179.70   9829.89
   .003472      170.      170.      170.         3        11          0       .00    301.90  10131.79

FLOW DISTRIBUTION FOR SECNO=     73.50          CWSEL=   1193.40

STA=    9830.   10147.
  PER Q=    100.0
   AREA=   3780.5
    VEL=     14.5
  DEPTH=     12.5
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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 76.320
    76.320     14.69   1194.59    1191.42        .00    1197.62       3.04        .92        .03    1201.00
   55000.0        .0   55000.0         .0         .0     3933.2         .0      632.6       44.4    1196.00
       .14       .00     13.98        .00       .000       .032       .000       .000    1179.90    9838.99
   .003045      210.      282.       338.          2         11          0        .00     302.11   10141.09

FLOW DISTRIBUTION FOR SECNO=     76.32          CWSEL=   1194.59

STA=    9839.   10160.
  PER Q=    100.0
   AREA=   3933.2
    VEL=     14.0
  DEPTH=     13.0

*SECNO 81.000
    81.000     15.62   1196.12    1192.42        .00    1198.99       2.87       1.34        .02    1202.00
   55000.0        .0   55000.0         .0         .0     4047.5         .0      675.4       47.6    1199.00
       .15       .00     13.59        .00       .000       .032       .000       .000    1180.50    9853.00
   .002716      468.      468.       468.          0         15          0        .00     297.51   10150.50

FLOW DISTRIBUTION FOR SECNO=     81.00          CWSEL=   1196.12

STA=    9853.   10157.
  PER Q=    100.0
   AREA=   4047.5
    VEL=     13.6
  DEPTH=     13.6

*SECNO 84.700

3301 HV CHANGED MORE THAN HVINS

          CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
          OF THIS SECTION
    84.700     16.77   1197.97    1192.13        .00    1199.84       1.87        .75        .10    1202.60
   55000.0        .0   55000.0         .0         .0     5015.4         .0      713.9       50.3    1198.90
       .16       .00     10.97        .00       .000       .032       .000       .000    1181.20    9817.63
   .001582      358.      370.       380.          2         19          0        .00     339.34   10156.97

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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=     84.70          CWSEL=   1197.97

STA=    9818.   10160.
  PER Q=    100.0
   AREA=   5015.4
    VEL=     11.0
  DEPTH=     14.8

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                                                                                THIS RUN EXECUTED 22AUG95     13:56:01
*************************************
 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

SPF          SCSPF

SUMMARY PRINTOUT

      SECNO        Q        CWSEL      CRIWS      DEPTH      ELMIN      AREA       EG         VCH        SSTA       TOPWID     ENDST      XLCH

     15.250  55000.00   1167.13    1166.31      12.13    1155.00    3239.30    1171.61      16.98    9846.01     292.25  10138.27       .00

     17.000  55000.00   1169.70    1166.47      14.40    1155.30    3930.70    1172.74      13.99    9853.41     298.06  10151.48    175.00

     19.000  55000.00   1170.51        .00      14.81    1155.70    4066.88    1173.35      13.52    9869.46     302.08  10171.54    200.00

     20.850  55000.00   1171.86    1166.19      15.96    1155.90    4883.21    1173.83      11.26    9858.20     326.87  10185.07    185.00

     22.000  55000.00   1172.21    1166.27      16.11    1156.10    5077.02    1174.03      10.83    9841.58     341.73  10183.31    115.00

     23.900  55000.00   1172.34    1166.90      15.84    1156.50    4754.88    1174.42      11.57    9848.52     317.96  10166.49    190.00

     24.890  55000.00   1172.48    1167.14      15.68    1156.80    4708.48    1174.60      11.68    9855.40     315.11  10170.51     94.00

*    24.900  55000.00   1172.90    1172.90      10.10    1162.80    3084.51    1177.84      17.83    9855.18     315.74  10170.92      6.00

     25.400  55000.00   1174.67    1173.01      11.77    1162.90    3618.42    1178.26      15.20    9855.36     328.07  10183.42     50.00
```

	26.700	55000.00	1175.76	1173.32	12.56	1163.20	3861.12	1178.91	14.24	9862.63	319.74	10182.37	130.00
	27.800	55000.00	1176.47	.00	12.97	1163.50	3605.06	1180.09	15.26	9867.60	290.76	10158.36	110.00
	29.600	55000.00	1178.39	1174.00	14.49	1163.90	4479.85	1180.74	12.28	9870.88	323.23	10194.12	180.00
*	30.000	55000.00	1178.77	1174.04	14.77	1164.00	4689.19	1180.90	11.73	9860.23	336.54	10196.77	40.00
	31.750	55000.00	1180.49	1173.65	17.09	1163.40	6253.29	1181.69	8.80	9783.60	436.79	10220.40	175.00
	33.000	55000.00	1180.61	1175.02	16.51	1164.10	5351.11	1182.25	10.28	9803.18	385.95	10189.13	125.00
	35.000	55000.00	1181.18	1176.36	15.28	1165.90	4722.01	1183.29	11.65	9821.85	343.23	10165.09	200.00
	37.000	55000.00	1181.79	1177.51	14.89	1166.90	4345.65	1184.28	12.66	9835.82	316.26	10152.08	200.00

	SECNO	Q	CWSEL	CRIWS	DEPTH	ELMIN	AREA	EG	VCH	SSTA	TOPWID	ENDST	XLCH
	38.320	55000.00	1182.14	1178.41	14.64	1167.50	4193.36	1184.82	13.12	9834.25	315.04	10149.29	132.00
	40.050	55000.00	1183.09	1178.16	16.59	1166.50	4509.37	1185.40	12.20	9834.55	320.29	10154.85	173.00
	43.000	55000.00	1184.02	1178.54	17.32	1166.70	4657.27	1186.18	11.81	9844.96	334.08	10179.04	295.00
	46.920	55000.00	1184.90	1179.56	17.30	1167.60	4501.35	1187.21	12.22	9850.25	298.63	10148.88	392.00
	50.900	55000.00	1186.13	1179.94	18.13	1168.00	4809.91	1188.16	11.43	9846.75	308.82	10155.56	398.00
	55.000	55000.00	1186.99	1180.57	17.99	1169.00	4845.62	1188.99	11.35	9847.44	308.34	10155.78	410.00
	60.000	55000.00	1188.06	1181.41	18.36	1169.70	4971.04	1189.96	11.06	9850.87	310.49	10161.36	500.00
	64.000	55000.00	1188.70	1182.55	18.20	1170.50	4655.67	1190.87	11.81	9853.08	294.02	10147.10	400.00
	65.450	55000.00	1189.30	1182.85	18.30	1171.00	4958.63	1191.21	11.09	9829.26	314.76	10144.02	145.00
	66.900	55000.00	1189.71	1182.60	18.51	1171.20	5134.00	1191.49	10.71	9835.46	313.96	10149.42	145.00
	67.900	55000.00	1189.84	1182.95	18.54	1171.30	5025.42	1191.70	10.94	9838.23	307.54	10145.77	100.00
	68.690	55000.00	1189.95	1182.99	18.55	1171.40	4995.03	1191.83	11.01	9840.05	302.87	10142.92	73.00
*	68.700	55000.00	1189.21	1189.21	10.81	1178.40	3043.68	1194.28	18.07	9841.11	300.47	10141.58	7.00
	69.100	55000.00	1190.47	1189.32	11.97	1178.50	3369.81	1194.61	16.32	9840.05	300.58	10140.63	40.00
	70.100	55000.00	1190.98	1189.75	12.18	1178.80	3371.35	1195.11	16.31	9840.84	297.25	10138.09	100.00
	71.800	55000.00	1191.98	1190.44	12.68	1179.30	3443.07	1195.94	15.97	9841.43	293.42	10134.86	170.00
	73.500	55000.00	1193.40	1190.80	13.70	1179.70	3780.46	1196.68	14.55	9829.89	301.90	10131.79	170.00
	76.320	55000.00	1194.59	1191.42	14.69	1179.90	3933.25	1197.62	13.98	9838.99	302.11	10141.09	282.00
	81.000	55000.00	1196.12	1192.42	15.62	1180.50	4047.48	1198.99	13.59	9853.00	297.51	10150.50	468.00
	84.700	55000.00	1197.97	1192.13	16.77	1181.20	5015.38	1199.84	10.97	9817.63	339.34	10156.97	370.00

SPF SCSPF

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	15.250	.00	.00	.00	1155.00	55000.00	1167.13	1166.31	1171.61	55.38	16.98	3239.30	7390.53
	17.000	175.00	.00	.00	1155.30	55000.00	1169.70	1166.47	1172.74	30.14	13.99	3930.70	10017.47
	19.000	200.00	1188.00	1179.50	1155.70	55000.00	1170.51	.00	1173.35	27.48	13.52	4066.88	10491.92
	20.850	185.00	.00	.00	1155.90	55000.00	1171.86	1166.19	1173.83	16.71	11.26	4883.21	13455.37
	22.000	115.00	.00	.00	1156.10	55000.00	1172.21	1166.27	1174.03	15.42	10.83	5077.02	14007.59
	23.900	190.00	.00	.00	1156.50	55000.00	1172.34	1166.90	1174.42	17.74	11.57	4754.88	13058.42
	24.890	94.00	.00	.00	1156.80	55000.00	1172.48	1167.14	1174.60	18.17	11.68	4708.48	12902.97
*	24.900	6.00	.00	.00	1162.80	55000.00	1172.90	1172.90	1177.84	73.05	17.83	3084.51	6435.00
	25.400	50.00	.00	.00	1162.90	55000.00	1174.67	1173.01	1178.26	45.29	15.20	3618.42	8172.37
	26.700	130.00	.00	.00	1163.20	55000.00	1175.76	1173.32	1178.91	35.46	14.24	3861.12	9236.81
	27.800	110.00	1185.50	1177.50	1163.50	55000.00	1176.47	.00	1180.09	39.48	15.26	3605.06	8753.26
	29.600	180.00	.00	.00	1163.90	55000.00	1178.39	1174.00	1180.74	22.06	12.28	4479.85	11710.69
*	30.000	40.00	.00	.00	1164.00	55000.00	1178.77	1174.04	1180.90	48.71	11.73	4689.19	7880.30
	31.750	175.00	.00	.00	1163.40	55000.00	1180.49	1173.65	1181.69	25.83	8.80	6253.29	10822.04
	33.000	125.00	.00	.00	1164.10	55000.00	1180.61	1175.02	1182.25	37.24	10.28	5351.11	9012.39
	35.000	200.00	.00	.00	1165.90	55000.00	1181.18	1176.36	1183.29	48.41	11.65	4722.01	7905.25

37.000	200.00	.00	.00	1166.90	55000.00	1181.79	1177.51	1184.28	36.99	12.66	4345.65	9042.91
38.320	132.00	.00	.00	1167.50	55000.00	1182.14	1178.41	1184.82	32.97	13.12	4193.36	9578.24
40.050	173.00	.00	.00	1166.50	55000.00	1183.09	1178.16	1185.40	26.40	12.20	4509.37	10704.30
43.000	295.00	.00	.00	1166.70	55000.00	1184.02	1178.54	1186.18	25.10	11.81	4657.27	10977.83
46.920	392.00	.00	.00	1167.60	55000.00	1184.90	1179.56	1187.21	24.34	12.22	4501.35	11147.61
50.900	398.00	.00	.00	1168.00	55000.00	1186.13	1179.94	1188.16	20.36	11.43	4809.91	12189.74
55.000	410.00	.00	.00	1169.00	55000.00	1186.99	1180.57	1188.99	19.86	11.35	4845.62	12342.21
60.000	500.00	.00	.00	1169.70	55000.00	1188.06	1181.41	1189.96	18.45	11.06	4971.04	12804.80

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	64.000	400.00	.00	.00	1170.50	55000.00	1188.70	1182.55	1190.87	21.53	11.81	4655.67	11852.73
	65.450	145.00	.00	.00	1171.00	55000.00	1189.30	1182.85	1191.21	18.89	11.09	4958.63	12655.06
	66.900	145.00	.00	.00	1171.20	55000.00	1189.71	1182.60	1191.49	16.82	10.71	5134.00	13410.79
	67.900	100.00	.00	.00	1171.30	55000.00	1189.84	1182.95	1191.70	17.60	10.94	5025.42	13111.22
	68.690	73.00	.00	.00	1171.40	55000.00	1189.95	1182.99	1191.83	17.65	11.01	4995.03	13092.13
*	68.700	7.00	.00	.00	1178.40	55000.00	1189.21	1189.21	1194.28	70.80	18.07	3043.68	6536.64
	69.100	40.00	.00	.00	1178.50	55000.00	1190.47	1189.32	1194.61	50.66	16.32	3369.81	7727.21
	70.100	100.00	.00	.00	1178.80	55000.00	1190.98	1189.75	1195.11	49.88	16.31	3371.35	7787.58
	71.800	170.00	.00	.00	1179.30	55000.00	1191.98	1190.44	1195.94	45.67	15.97	3443.07	8138.61
	73.500	170.00	.00	.00	1179.70	55000.00	1193.40	1190.80	1196.68	34.72	14.55	3780.46	9333.53
	76.320	282.00	.00	.00	1179.90	55000.00	1194.59	1191.42	1197.62	30.45	13.98	3933.25	9967.68
	81.000	468.00	.00	.00	1180.50	55000.00	1196.12	1192.42	1198.99	27.16	13.59	4047.48	10552.93
	84.700	370.00	.00	.00	1181.20	55000.00	1197.97	1192.13	1199.84	15.82	10.97	5015.38	13826.47

SPF SCSPF

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	15.250	55000.00	1167.13	.00	.00	.00	292.25	.00
	17.000	55000.00	1169.70	.00	2.57	.00	298.06	175.00
	19.000	55000.00	1170.51	.00	.81	.00	302.08	200.00
	20.850	55000.00	1171.86	.00	1.35	.00	326.87	185.00
	22.000	55000.00	1172.21	.00	.35	.00	341.73	115.00
	23.900	55000.00	1172.34	.00	.14	.00	317.96	190.00
	24.890	55000.00	1172.48	.00	.14	.00	315.11	94.00
*	24.900	55000.00	1172.90	.00	.42	.00	315.74	6.00
	25.400	55000.00	1174.67	.00	1.77	.00	328.07	50.00
	26.700	55000.00	1175.76	.00	1.09	.00	319.74	130.00
	27.800	55000.00	1176.47	.00	.72	.00	290.76	110.00
	29.600	55000.00	1178.39	.00	1.92	.00	323.23	180.00
*	30.000	55000.00	1178.77	.00	.37	.00	336.54	40.00
	31.750	55000.00	1180.49	.00	1.73	.00	436.79	175.00
	33.000	55000.00	1180.61	.00	.12	.00	385.95	125.00
	35.000	55000.00	1181.18	.00	.57	.00	343.23	200.00
	37.000	55000.00	1181.79	.00	.61	.00	316.26	200.00
	38.320	55000.00	1182.14	.00	.35	.00	315.04	132.00
	40.050	55000.00	1183.09	.00	.94	.00	320.29	173.00
	43.000	55000.00	1184.02	.00	.93	.00	334.08	295.00
	46.920	55000.00	1184.90	.00	.88	.00	298.63	392.00
	50.900	55000.00	1186.13	.00	1.23	.00	308.82	398.00
	55.000	55000.00	1186.99	.00	.86	.00	308.34	410.00
	60.000	55000.00	1188.06	.00	1.08	.00	310.49	500.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	64.000	55000.00	1188.70	.00	.64	.00	294.02	400.00
	65.450	55000.00	1189.30	.00	.60	.00	314.76	145.00
	66.900	55000.00	1189.71	.00	.41	.00	313.96	145.00
	67.900	55000.00	1189.84	.00	.13	.00	307.54	100.00
	68.690	55000.00	1189.95	.00	.11	.00	302.87	73.00
*	68.700	55000.00	1189.21	.00	-.74	.00	300.47	7.00
	69.100	55000.00	1190.47	.00	1.27	.00	300.58	40.00
	70.100	55000.00	1190.98	.00	.51	.00	297.25	100.00
	71.800	55000.00	1191.98	.00	1.00	.00	293.42	170.00
	73.500	55000.00	1193.40	.00	1.42	.00	301.90	170.00
	76.320	55000.00	1194.59	.00	1.19	.00	302.11	282.00
	81.000	55000.00	1196.12	.00	1.53	.00	297.51	468.00
	84.700	55000.00	1197.97	.00	1.85	.00	339.34	370.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=     24.900  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     24.900  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     30.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     68.700  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     68.700  PROFILE=  1  MINIMUM SPECIFIC ENERGY
```

Survey Site: Skunk Creek @ 83rd Ave Date: April 16, 1997

Sta/Dist	Back Site	Height of Ins	Top	Bottom	Forward Site	Elevation	Remarks
R.P.1	4.42	86.88				(1,182.46)	Top of Fire Hydrant
R.P.2					3.87	83.01	(1,183.00)
R.M.1	2.94	86.70			3.12	83.76	Brass tablet @ S. end of East Rail
R.P.1					4.24	82.46	close 0.00
R.P.3	4.98	87.53				(1,182.55)	
R.P.5					9.22	78.31	not sure of carved spot (1,178.37)
R.M.2	8.68	87.26			8.95	78.58	
R.P.3					4.71	82.55	close 0.00

Purpose of the Survey was to install Brass Tablets R.M.1 & R.M.2 and determine Elevations from R.P.'S set in Survey of 3-27-97

Weather: Sunny & 80° Party: R. Cruff, R. Church Page

Survey Site: Skunk Cr. @ 83rd Ave

Date: 3-27-97

Sta/Dist	Back Site	Height of Ins	Top	Bottom	Forward Site	Elevation	Remarks
BM.(A)	9.18	84.20				(1175.02)	@ 83rd Ave Sta 9+00 + on conc. Irr. ditch
P.1					1.74	82.46	Top of fire Hyd
R.P.2					1.20	83.00	Metal ab. yellow ◊'s on rail
T.P.1	6.30	87.72			2.78	81.42	
T.P.2	7.35	87.89			7.18	80.54	
R.P.3					5.34	82.55	N. side of concrete base of barrier power pole
T.P.3	5.18	88.22			4.85	83.04	
X 35+00					~~2~~		
Sta 2.5					21.60	66.62	Toe of L.B.
20 ~~22.19~~					22.19	66.03	
40					22.51	65.71	
60					22.04	66.18	
84					21.54	66.68	edge of Island
8					22.87	65.35	Toe of R.B
20					22.80	65.42	
42					23.40	64.82	
50					22.20	66.02	
~~80~~					~~21.21~~	~~66.85~~	
60					21.57	66.65	
86					20.91	67.31	~~edge o~~
102					22.25	65.97	
108					20.92	67.30	edge of Island
X 37+00							
3					19.00	69.22	Toe of L.B
30					20.40	67.82	
60					20.95	67.27	
100					21.20	67.02	
140					21.91	66.31	
200					21.37	66.85	
210					20.92	67.30	
230					21.16	67.06	
250					20.97	67.25	
260					19.90	68.32	
274					18.22	70.00	Toe of R.B
Island							
Dist ab X37+00							
0 (150)					21.90	66.32	
30 (180)	℄				22.00	66.22	
	R				19.90	68.32	
60 (210)	℄				22.80	65.42	
	L				19.32	68.90	
	R				19.30	68.92	
90 (240)	℄				23.02	65.20	
	L				19.95	68.27	
	R				19.95	68.27	

Weather: Sunny & nice

Party: RWC ⊼, ⌭
JJT ϕ

Survey Site: Skunk Cr. @ 83rd Ave Date: 3-27-97

Sta/Dist	Back Site	Height of Ins	Top	Bottom	Forward Site	Elevation	Remarks
13 (280) ℄		(88.22)			23.16	65.06	
L					19.63	68.59	
R					19.40	68.82	
150 (300) ℄					22.44	65.78	
L					20.06	68.16	
R					20.26	67.96	
T.P. 4	10.98	89.24			9.96	78.26	
X-Sec 38+32							
Sta 0					18.61	70.63	Toe of L.B
34					19.70	69.54	
25					21.12	68.12	
36					21.90	67.34	
45					22.70	66.54	
60					21.74	67.50	
105					22.56	66.68	
145					22.96	66.28	
190					22.30	66.94	
210					21.00	68.24	
235					20.97	68.27	
255					20.41	68.83	
40+05 270					19.17	70.07	Toe of R.B
X 40+05							
Sta 4					19.95	69.29	Toe of LB
30					21.34	67.90	
75					21.37	67.87	
103					22.06	67.18	
125					22.65	66.59	
140					22.11	67.13	
178					21.50	67.74	
209					22.12	67.12	
239					21.54	67.70	
257					21.18	68.06	Toe of R.B.
T.P 5	9.80	90.35			8.69	80.55	
X-Sec 43+00					~~20.45~~		
Sta 4					20.05	70.30	
12					20.61	69.74	
40					22.24	68.11	
64					22.66	67.69	
107					22.96	67.39	
114					23.33	67.02	
122					22.82	67.53	
135					23.45	66.90	
145					23.04	67.31	
180					22.60	67.75	

Weather: Party: Page 2 of 3

SLOPE AREA SURVEYING NOTES

SITE: Skunk Cr. @ 83rd Ave (90.35)

DATE 3-27-97

STA	B.S. ~~AZIM~~	~~T / B~~	H.I. ~~DIST~~	ROD	ELEV	REMARKS
220		/		22.33	68.02	
267		/		20.91	69.44	Top of R.B
X46+92		/				
st2 4		/		19.54	70.81	Top of LB
15		/		20.47	69.88	
50		/		22.60	67.75	
80		/		22.54	67.81	
136		/		23.08	67.27	LEW
144		/		23.04	67.31	REW
158		/		22.49	67.86	
197		/		21.66	68.69	
245		/		19.60	70.75	Top of RB
256		/		18.74	71.61	
R.P.4		/		081	89.54	Concrete @ Base of Fence Post with braces nr. Curve
T.P.6	6.96	/	90.90	6.41	83.94	
T.P.7	8.42	/	87.80	11.52	79.38	
T.P.8	4.88	/	87.03	5.65	82.15	
R.P.5		/		8.66	78.37	Paint Mark @ NE end of headwall from Access Rd 40'
R.P.3		/		4.48	82.55	close 0.00
T.P.9	6.10	/	87.15	5.98	81.05	
T.P.10	3.63	/	85.61	5.17	81.98	
B.M.(A)		/		10.58	75.03	close +0.01
		/				
		/				
		/				
		/				

PARTY:

PAGE: 3 of 3

CROSS SECTION

SITE: Skunk Cr. ab. 83rd Ave . DATE: 3-27-97 .

SECTION ~~1~~ 35+00		SECTION ~~2~~ 37+00		SECTION ~~3~~ 38+32		SECTION ~~4~~ 40+05		SECTION ~~5~~ 43+00	
STA	ELEV	STA	ELEV	STA	ELEV	STA	ELEV	STA	ELEV
LB"2" = 9855 9855	66.62	LB "0"	= 9860	LB"0" =	9860	LB"0"	= 9870	LB "0" =	9,860
9873	66.03	9860							
9893	65.71	9863	69.22	9860	70.63	9874	69.29	9864	70.30
9913	66.18	9890	67.82	9894	69.54	9900	67.90	9872	69.74
9937	66.68	9920	67.27	9895	68.12	9945	67.87	9,900	68.11
10000	(67.30)	9960	67.02	9896	67.34	9973	67.18	9,924	67.69
10050	67.30	10000	66.31	9905	66.54	9995	66.59	9,967	67.39
10056	65.97	10,060	66.85	9920	67.50	10,010	67.13	9,974	67.02
10072	67.31	10,070	67.30	9965	66.68	10,048	67.74	9,982	67.53
10098	66.65	10,090	67.06	10005	66.28	10079	67.12	9,995	66.90
10108	66.02	10,110	67.25	10050	66.94	10109	67.70	10,005	67.31
10116	64.82	10,120	68.32	10070	68.24	10,127	68.06	10,040	67.75
10138	65.42	10,134	70.00	10085	68.27	10,140		10,080	68.02
RB"8" = 10150 10150	65.35			10115	68.33	10127		10,127	69.44
				10130	70.07				

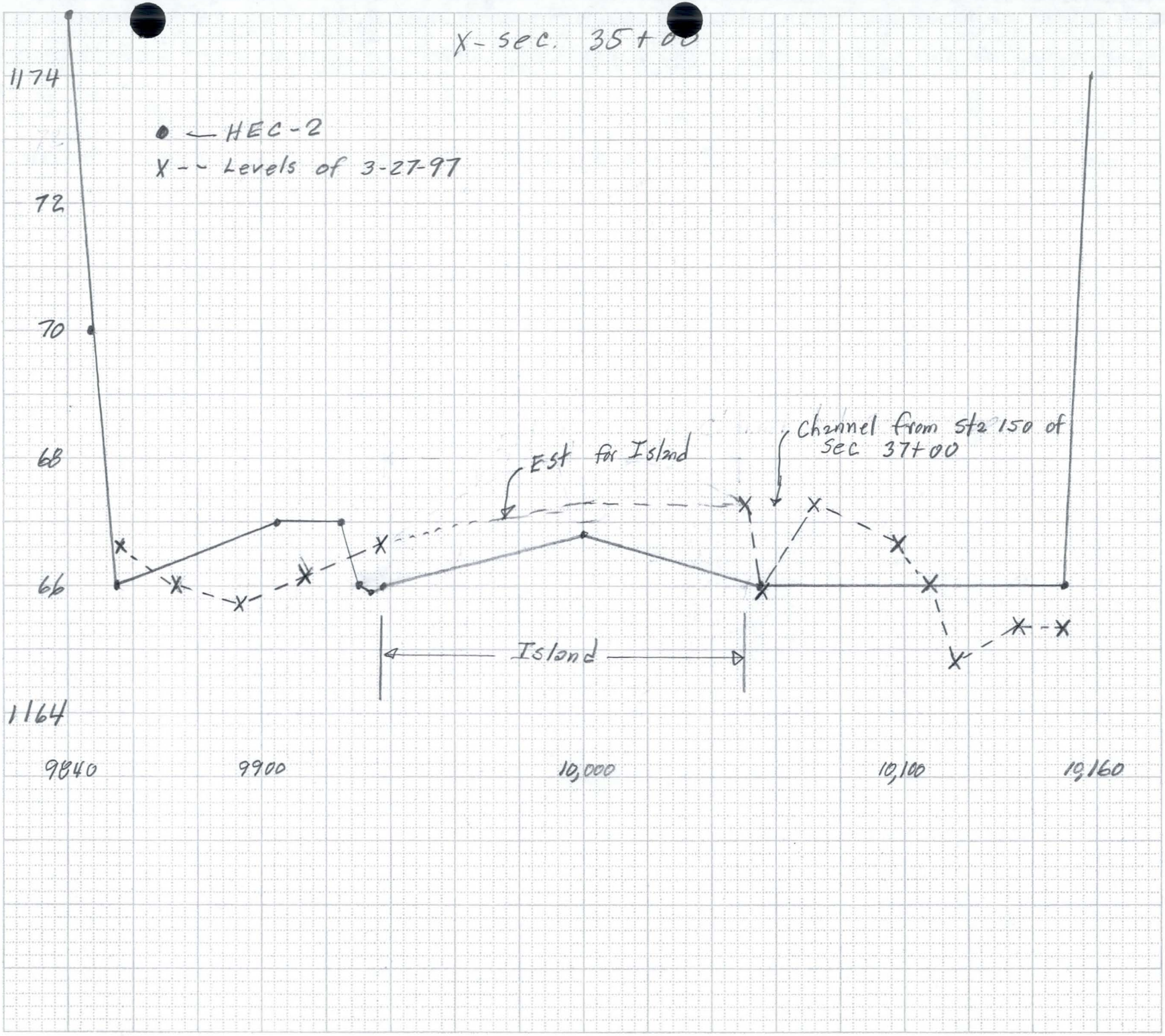
section 46+92	
sta	Elev
LB"0" =	9880
9884	70.81
9895	69.88
9930	67.75
9960	67.81
10016	67.27
10022	67.31
10038	67.36
10077	68.69
10125	70.75
10130	71.61

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. ab. 83rd Ave PAGE 1 OF 6

DETAIL X-Sections COMPUTED RWC DATE 3-27-97

CHECKED BY _____ DATE _____



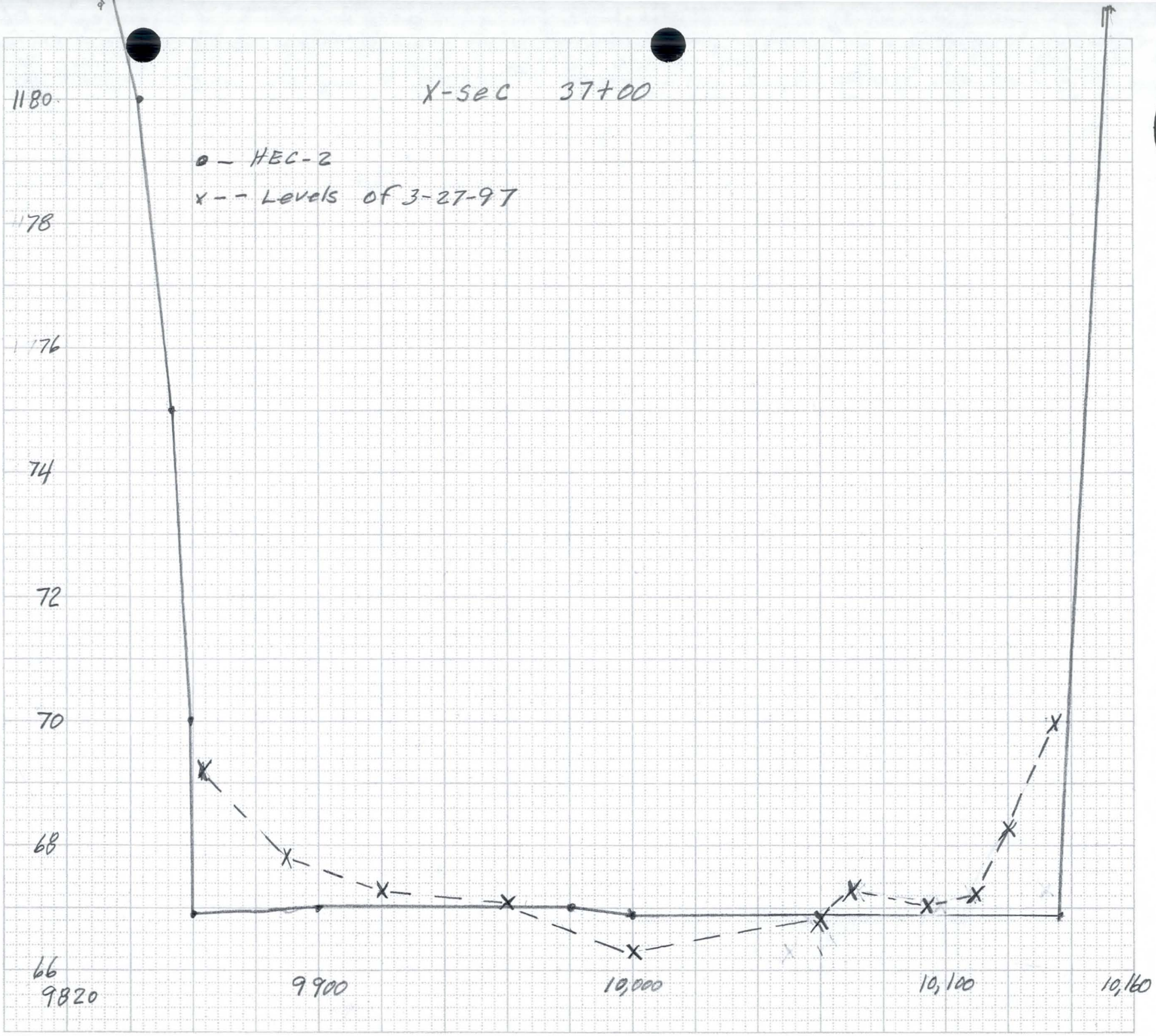
6910-153 4-90

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. ab. 83rd Ave PAGE 2 OF 6

DETAIL X-Sections COMPUTED RWC DATE 3-27-97

CHECKED BY _____ DATE _____



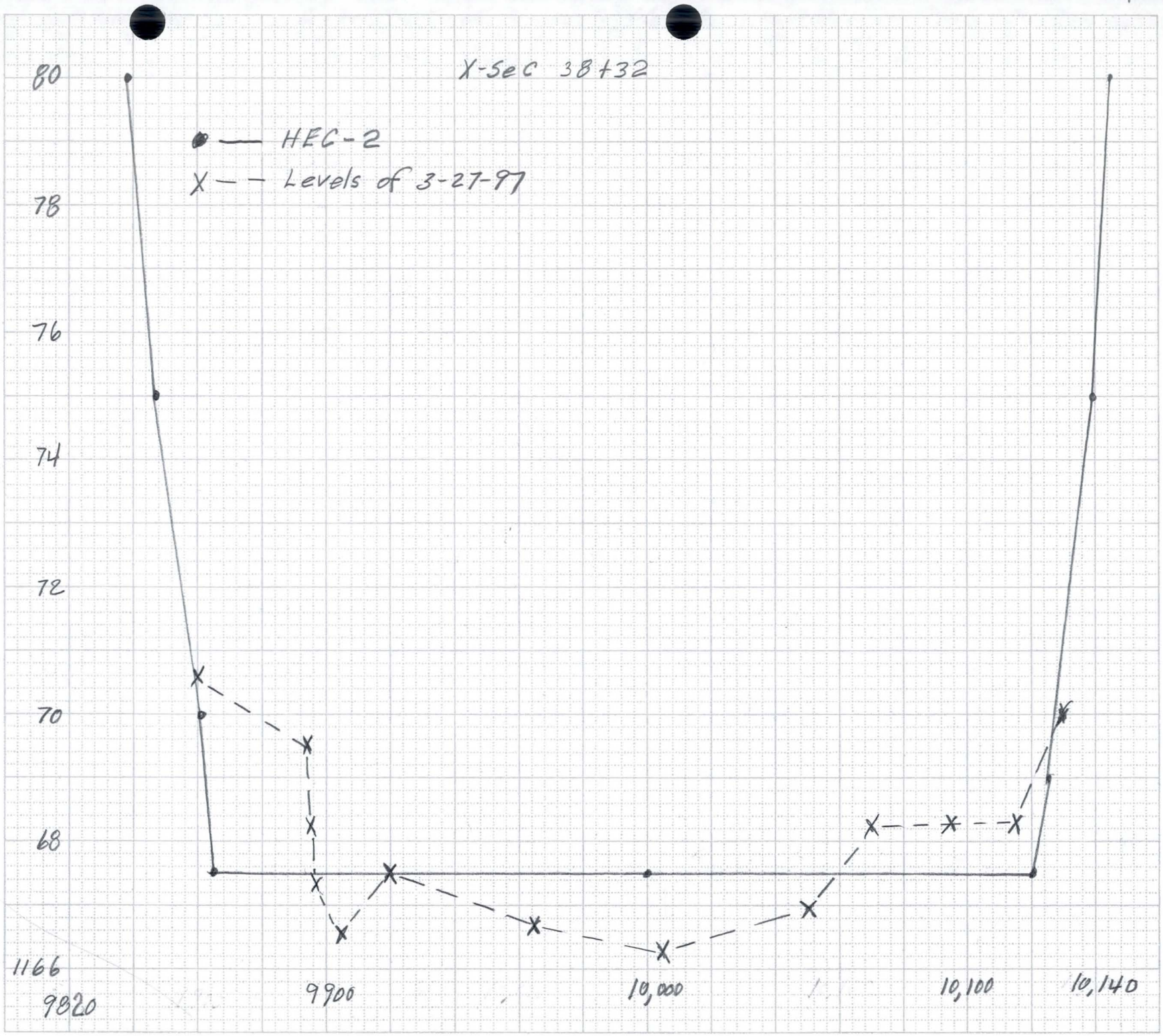
6910-153 4-90

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr 2b 83rd Ave PAGE 3 OF 6

DETAIL X-Sections COMPUTED RWC DATE 3-27-97

CHECKED BY _____ DATE _____



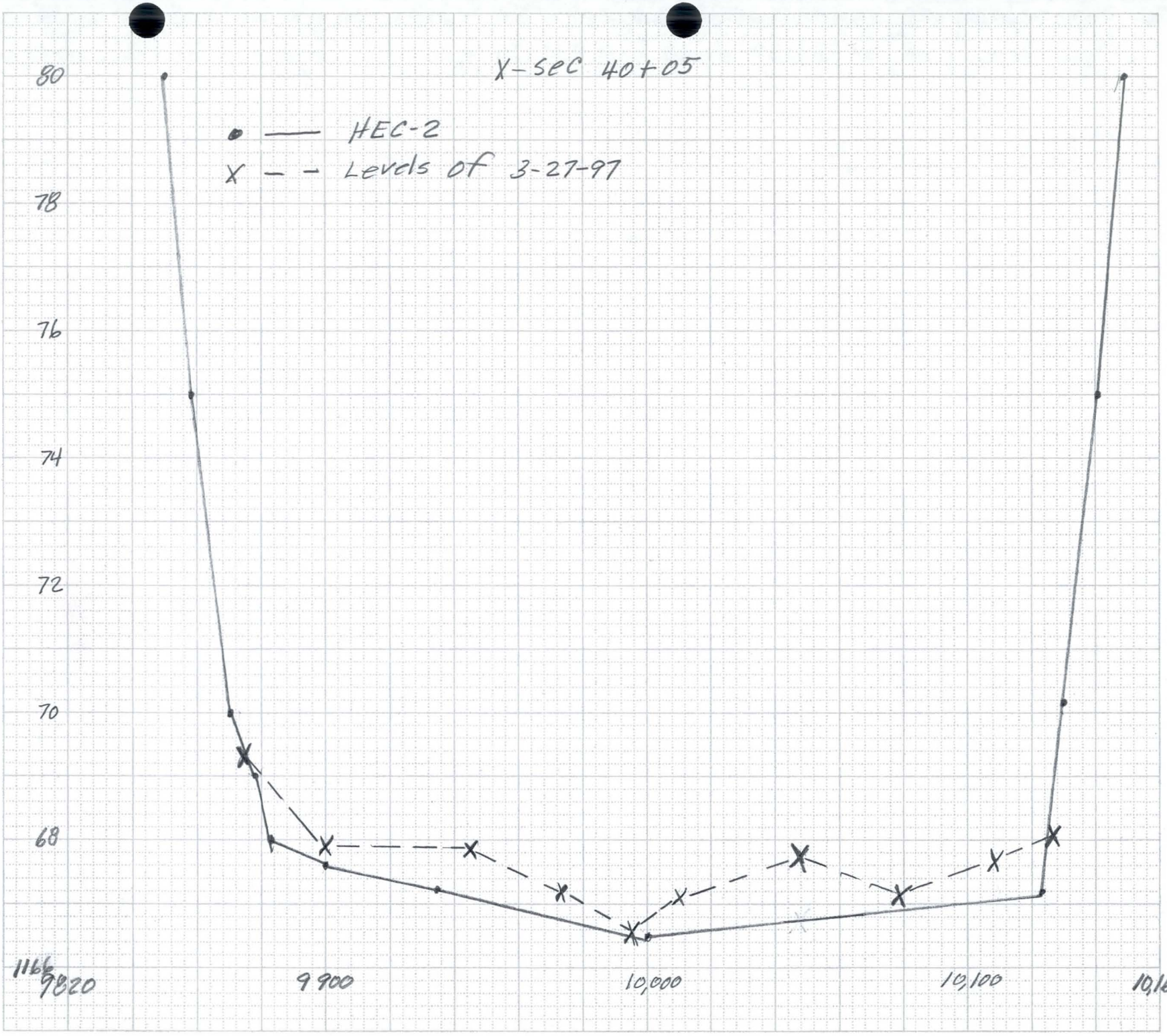
6910-153 4-90

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. at 83rd Ave PAGE 4 OF 6

DETAIL X-sections COMPUTED Rwc DATE 3-27-97

CHECKED BY _____ DATE _____



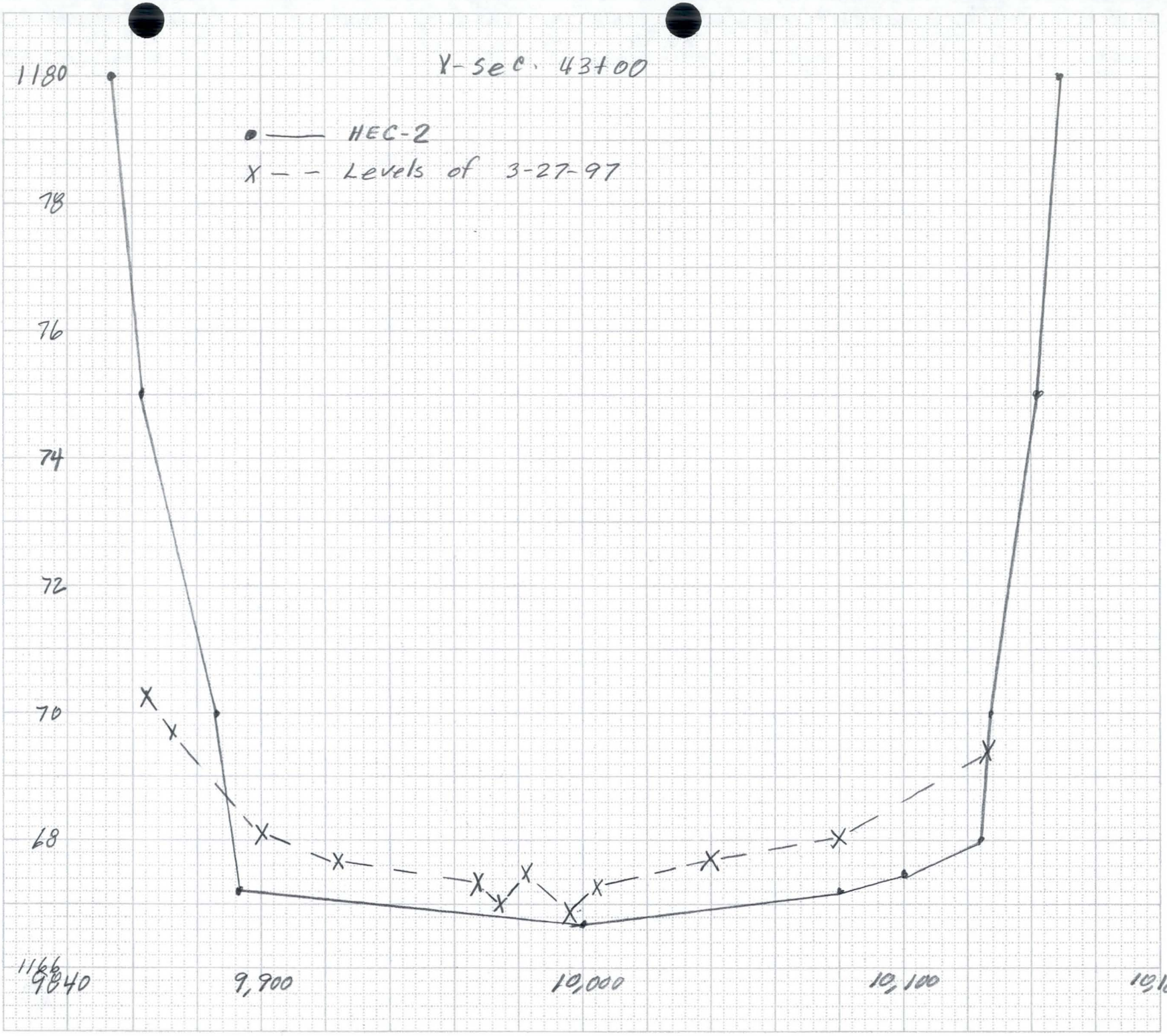
6910-153 4-90

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. at 83rd Ave PAGE 5 OF 6

DETAIL X-Sections COMPUTED RWC DATE 3-27-97

CHECKED BY _____ DATE _____



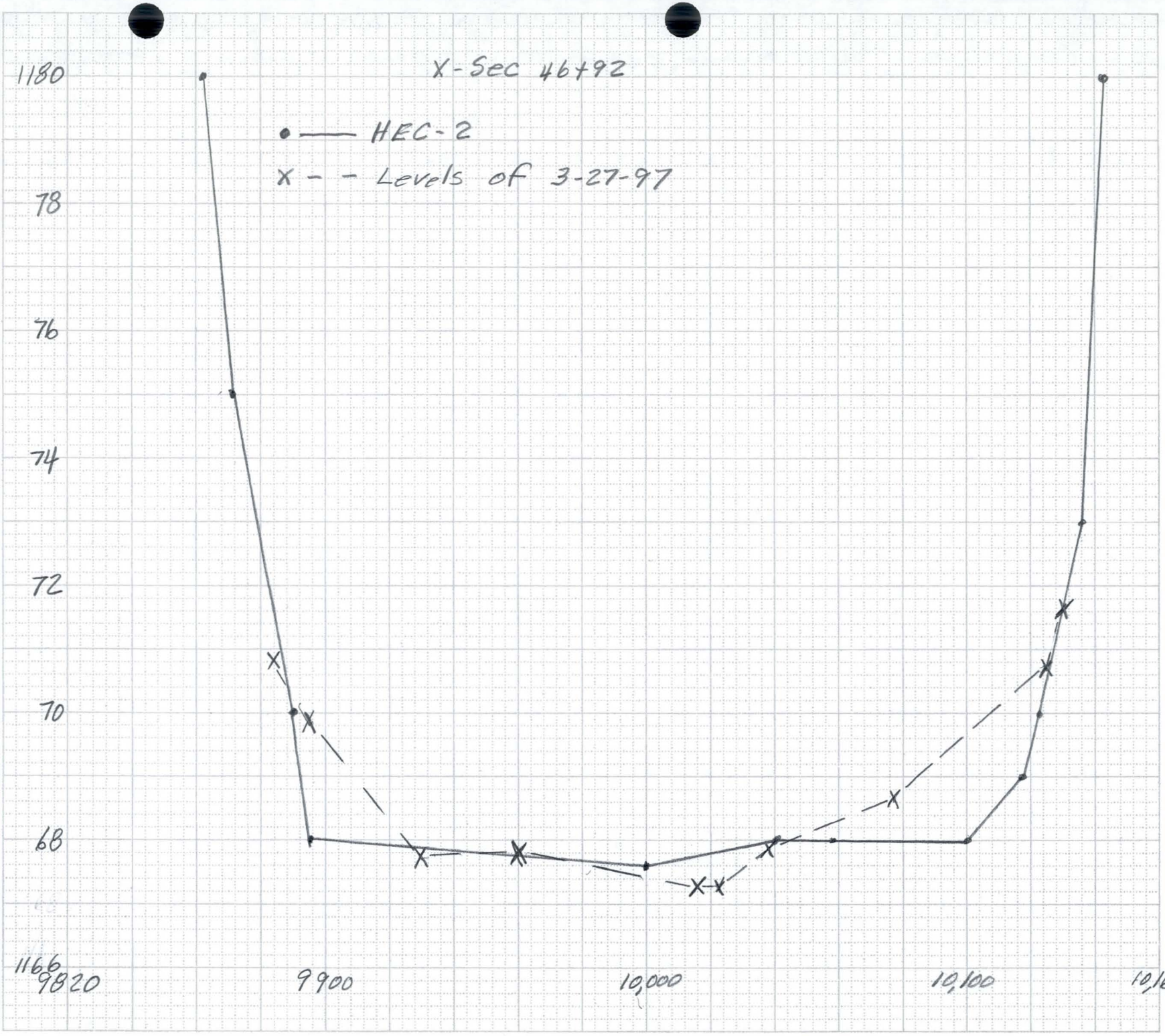
6910-153 4-90

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. 26 th 83rd Ave PAGE 6 OF 6

DETAIL X-Sections COMPUTED RWC DATE 3-28-85

CHECKED BY _____ DATE _____



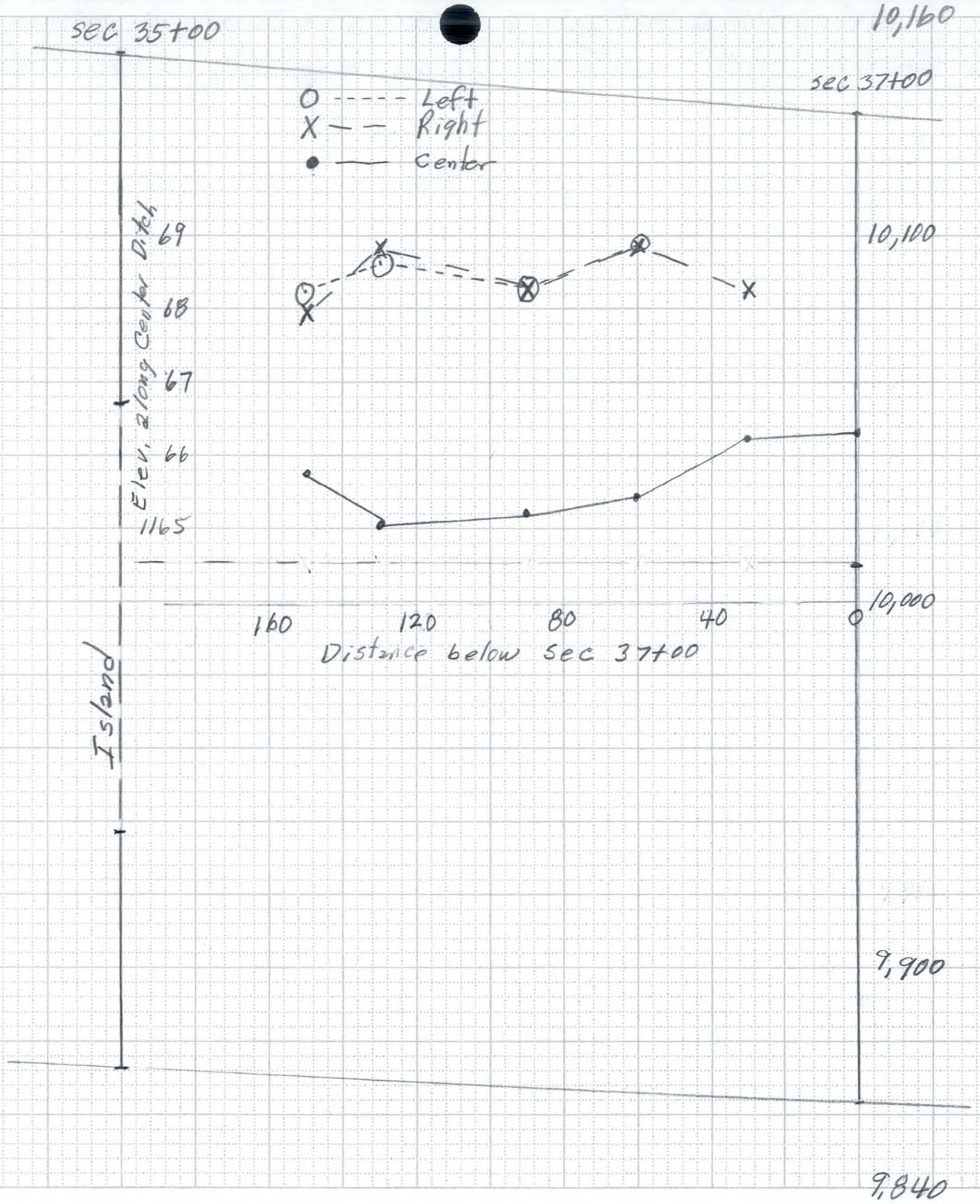
69-10-153 4-90

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. ab. 83rd Ave PAGE 1 OF 1

DETAIL Channel Elev between Sec's 37+00 & 35+00 COMPUTED RWC DATE 3-28-97

CHECKED BY _____ DATE _____



6910-153 4-90

FILE = SCSPF-N.DAT

```
C
C     11
C  15.25  NEW RIVER CONFLUENCE
C  17.00  HWY 101 BRIDGE
C  24.89  DROP STRUCTURE BUILT IN CONJUNCTION
C  24.89  WITH 83RD AVENUE BRIDGE CONSTUCTION
C  26.70  83RD AVENUE BRIDGE
C  30.00  BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
C  37.00  END OF WILDLIFE HABITATE MITIGATION AREA
C  68.69  DROP STRUCTURE BUILT IN CONJUNCTION WITH
C  68.69  83RD AVENUE BRIDGE CONSTRUCTION
C  84.70  CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
C  84.70  OF THIS SECTION


* ************************************************************************ *
*                                                                          *
*        THIS IS HEC-2 FILE SCSPF-N.DAT.                                   *
*                                                                          *
*        Revising Coe & Van Loo's Skunk Creek SPF model to determine the   *
*        what effects increasing the n value because of the vegetation     *
*        upstream of the mitigation area will have on the channel capacity. *
*        This is from cross section 37.0 to cross section 68.69.           *
*        The original n value for this reach is 0.032 with the exception of *
*        cross section 37.00 which was 0.040.  Downstream of the mitigation *
*        area the n values will not be changed from the Coe & Van Loo ones. *
*        Above the drop structure (68.69) the n values will also not be    *
*        changed.                                                          *
*                                                                          *
* ************************************************************************ *


T1      SKUNK CREEK - CVL# 1090-040 (FCDMC) - F.C.D. 89-30 - DECEMBER 9,1989
T2      NEW RIVER TO ACDC
T3      SPF          SCSPF
J1     0       6       0       0  0.0055       0       0       0               0
J2    -1       0      -1       0       0       0      -1       0       0      15
J3    38      43       1       2       8      42      25       3      26      53
J3     4      54      39     150       0       0       0       0       0       0
QT     5    2200    6700   11000   33000   55000
NC 0.032   0.032   0.032      .1      .3
X1 15.25      19    9819   10222       0       0       0
GR1181.0    9817  1180.0    9819  1175.0    9825  1170.0    9842  1165.0    9849
GR1160.0    9857  1155.0    9870  1155.0    9914  1155.0    9945  1155.0   10000
GR1155.0   10030  1155.0   10082  1155.0   10104  1156.0   10108  1160.0   10122
GR1165.0   10134  1170.0   10144  1170.2   10164  1171.0   10222
NC 0.032   0.032   0.032      .3      .5
X1 17.00       5    9848   10157     175     175     175
GR1173.0    9848  1155.3    9877  1155.3   10000  1155.3   10125  1172.7   10157
SB  1.05    1.00    2.80      .0     269      15    7148       2  1155.5  1155.1
X1 19.00       8    9859   10180     200     200     200
X2     0       0       1  1179.5  1188.0       0       0    1.33       0       0
GR1174.0    9859  1170.0    9871  1160.0    9883  1155.7    9893  1155.7   10000
GR1155.7   10142  1160.0   10146  1174.0   10180
NC 0.032   0.032   0.032      .1      .3
X1 20.85       5    9857   10190     164     185     185       0       0       0
GR1173.0    9857  1155.9    9875  1155.9   10000  1155.9   10160  1175.0   10190
X1 22.00      11    9838   10186     110     155     115
GR1174.0    9838  1170.0    9846  1165.0    9855  1160.0    9865  1156.1    9879
GR1156.1   10000  1156.1   10160  1160.0   10169  1165.0   10174  1170.0   10180
GR1174.0   10186
X1 23.90       7    9790   10200     186     194     190
GR1175.0    9790  1173.8    9847  1156.6    9865  1156.6   10000  1156.5   10150
GR1173.8   10168  1175.0   10200
X1 24.89       7    9830   10200      94      94      94
GR1175.0    9830  1174.0    9854  1156.8    9870  1156.8   10000  1156.8   10155
GR1174.0   10172  1175.0   10200
X1 24.90       7    9830   10200       6       6       6
GR1175.0    9830  1174.0    9854  1162.8    9866  1162.8   10000  1162.8   10161
GR1174.0   10172  1175.0   10200
X1 25.40       7    9855   10200      50      50      50
GR1176.0    9851  1175.0    9855  1162.9    9868  1162.9   10000  1162.9   10163
GR1174.5   10175  1175.0   10200
```

```
NC 0.032   0.032   0.032      .3      .5
X1 26.70       5    9862   10183     130     130     130       0       0       0
GR1176.4    9862  1163.2    9875  1163.2   10000  1163.2   10170  1176.4   10183
SB  1.05     1.0     2.8       0     315      12    4980       1  1163.3  1163.2
X1 27.80       5    9867   10159     110     110     110       0       0       0
X2     0       0       1  1177.5  1185.5       0       0            1.33       0
GR1177.1    9867  1163.5    9880  1163.5   10000  1163.5   10145  1177.1   10159
NC 0.032   0.032   0.032      .1      .3
X1 29.60       5    9870   10195     180     180     180
GR1179.3    9870  1163.9    9885  1163.9   10000  1163.9   10180  1179.3   10195
NC 0.050   0.050   0.050      .2      .4
X1 30.00       6    9859   10198      44      40      40
GR1180.0    9859  1164.0    9875  1165.0    9955  1164.0   10000  1164.0   10182
GR1180.0   10198
X1 31.75      17    9782   10222     200     152     175       0       0       0
GR1181.3    9782  1164.2    9816  1165.0    9847  1166.0    9875  1166.0    9885
GR1165.0    9896  1164.3    9925  1165.0   10000  1165.0   10030  1164.0   10033
GR1163.4   10037  1164.0   10039  1165.0   10042  1166.0   10046  1166.0   10070
GR1164.7   10189  1181.3   10222
X1 33.00      21    9800   10190     180     135     125
GR1183.0    9800  1180.0    9804  1175.0    9816  1170.0    9826  1165.0    9836
GR1167.0    9880  1167.0    9908  1166.0    9923  1165.0    9929  1164.3    9935
GR1165.0    9940  1166.0    9967  1166.1   10000  1166.0   10064  1165.0   10069
GR1164.1   10075  1165.0   10083  1166.0   10085  1166.0   10100  1165.2   10174
GR1181.5   10190
X1 35.00      14    9817   10166     205     180     200
GR1183.0    9817  1180.0    9825  1175.0    9840  1170.0    9847  1166.0    9855
GR1167.0    9905  1167.0    9925  1166.0    9930  1165.9    9934  1166.0    9938
GR1166.8   10000  1166.0   10055  1166.0   10150  1182.1   10166


* ************************************************************************ *
*                                                                          *
*         Just above the habitat mitigation area.  The Coe & Van Loo n     *
*         value on cross section 37.00 was 0.040.  For cross section 38.32 *
*         and above, CVL's n value was 0.032.  The critical cross section  *
*         is 55.00.  This cross section was used to determine the highest  *
*         n value for this reach.  The 0.036 channel n value is based on a *
*         maximum width for the cattails of 16 feet.                       *
*                                                                          *
* ************************************************************************ *


NC  .032    .032    .040

X1 37.00      10    9831   10153     185     184     200
GR1183.0    9831  1180.0    9843  1175.0    9853  1170.0    9859  1166.9    9860
GR1167.0    9900  1167.0    9980  1166.9   10000  1166.9   10137  1182.7   10153

NC  .032    .032    .036

X1 38.32      11    9831   10151     132     132     132       0       0       0
GR1184.0    9831  1180.0    9838  1175.0    9849  1170.0    9861  1167.5    9865
GR1167.5   10000  1167.5   10120  1170.0   10125  1175.0   10139  1180.0   10145
GR1183.0   10151

X1 40.05      15    9817   10156     173     173     173
GR1188.0    9817  1185.0    9825  1180.0    9850  1175.0    9858  1170.0    9870
GR1169.0    9878  1168.0    9883  1167.6    9900  1167.2    9935  1166.5   10000
GR1167.2   10123  1170.2   10130  1175.0   10141  1180.0   10149  1183.7   10156

X1 43.00      18    9818   10180     258     330     295
GR1188.0    9799  1188.0    9818  1186.0    9827  1185.0    9843  1180.0    9853
GR1175.0    9863  1170.0    9886  1167.2    9893  1166.7   10000  1167.2   10080
GR1167.5   10100  1168.0   10124  1170.0   10127  1175.0   10142  1180.0   10149
GR1183.0   10153  1184.0   10179  1184.5   10180

X1 46.92      20    9826   10172     324     474     392
GR1189.0    9798  1189.0    9826  1187.0    9831  1186.0    9847  1185.0    9850
GR1180.0    9862  1175.0    9871  1170.0    9890  1168.0    9895  1167.6   10000
GR1168.0   10040  1168.0   10058  1168.0   10100  1169.0   10117  1170.0   10123
GR1175.0   10136  1180.0   10143  1185.0   10149  1186.0   10162  1186.8   10172

X1 50.90      23    9820   10177     398     398     398
GR1191.0    9820  1190.0    9823  1189.0    9826  1189.0    9838  1188.0    9843
GR1185.0    9849  1180.0    9859  1175.0    9869  1170.0    9888  1169.0    9892
```

```
GR1168.0    9940  1168.0    9967  1168.0    9982  1168.1   10000  1168.3   10025
GR1169.0   10117  1170.0   10123  1175.0   10135  1180.0   10144  1185.0   10152
GR1186.0   10155  1186.9   10159  1187.0   10177

X1 55.00      16    9819   10156     500     314     410
GR1192.0    9819  1191.5    9826  1191.0    9837  1190.0    9839  1185.0    9853
GR1180.0    9865  1175.0    9875  1170.0    9889  1169.0    9893  1169.0   10000
GR1169.0   10119  1170.0   10123  1175.0   10134  1180.0   10142  1185.0   10152
GR1187.1   10156

X1 60.00      18    9835   10163     522     470     500
GR1194.0    9835  1193.0    9839  1190.0    9847  1185.0    9857  1180.0    9863
GR1175.0    9877  1170.0    9893  1170.0    9907  1170.0    9916  1169.7   10000
GR1170.0   10047  1170.0   10060  1170.0   10074  1171.0   10128  1175.0   10138
GR1180.0   10145  1185.0   10156  1189.0   10163

X1 64.00      17    9839   10151     400     400     400
GR1195.0    9839  1190.0    9851  1185.0    9859  1180.0    9868  1175.0    9879
GR1171.0    9893  1170.5    9958  1170.9   10000  1171.0   10004  1171.0   10027
GR1171.0   10058  1171.0   10063  1171.0   10095  1172.0   10120  1175.0   10128
GR1185.0   10136  1190.0   10151

X1 65.45      14    9812   10152     130     160     145
GR1195.9    9812  1195.0    9816  1190.0    9828  1185.0    9837  1180.0    9849
GR1175.0    9878  1171.0    9886  1171.0   10000  1171.0   10106  1175.0   10114
GR1180.0   10125  1185.0   10138  1190.0   10145  1191.0   10152

X1 66.90      14    9818   10152     145     145     145
GR1197.0    9818  1195.0    9825  1190.0    9835  1185.0    9843  1180.0    9851
GR1175.0    9864  1171.2    9872  1171.2   10000  1171.2   10108  1175.0   10116
GR1180.0   10130  1185.0   10140  1190.0   10150  1191.0   10152

X1 67.90      15    9820   10151     100     100     100       0       0       0
GR1197.5    9820  1197.0    9822  1195.0    9827  1190.0    9838  1185.0    9845
GR1180.0    9856  1175.0    9869  1171.3    9876  1171.3   10000  1171.3   10105
GR1175.0   10112  1180.0   10127  1185.0   10139  1190.0   10146  1191.0   10151

X1 68.69      14    9820   10146      73      73      73
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9846  1180.0    9857
GR1175.0    9868  1171.4    9875  1171.4   10000  1171.4   10107  1175.0   10114
GR1180.0   10124  1185.0   10134  1190.0   10143  1192.0   10146


* ************************************************************************** *
*                                                                            *
*          End changes to the channel n values.  Return to how Coe & Van Loo  *
*          modeled the channel.  Cross section 68.70 is the top of the drop   *
*          structure.                                                        *
*                                                                            *
* ************************************************************************** *


NC  .032    .032    .032      .1      .3
X1 68.70      12    9820   10146       7       7       7       0
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9847  1180.0    9857
GR1178.4    9860  1178.4   10000  1178.4   10121  1180.0   10124  1185.0   10134
GR1190.0   10143  1192.0   10146
X1 69.10      13    9820   10144      40      40      40       0       0       0
GR1198.2    9820  1198.0    9822  1195.0    9831  1190.0    9841  1185.0    9848
GR1180.0    9857  1178.5    9860  1178.5   10000  1178.5   10119  1180.0   10122
GR1185.0   10133  1190.0   10140  1193.0   10144
X1 70.10      13    9823   10141     100     100     100       0       0       0
GR1198.6    9823  1198.0    9826  1195.0    9832  1190.0    9843  1185.0    9852
GR1180.0    9860  1178.8    9862  1178.8   10000  1178.8   10117  1180.0   10119
GR1185.0   10130  1190.0   10137  1193.6   10141
X1 71.80      12    9827   10136     170     170     170       0       0       0
GR1199.0    9827  1195.0    9836  1190.0    9845  1185.0    9854  1180.0    9865
GR1179.3    9867  1179.3   10000  1179.3   10111  1180.0   10113  1185.0   10125
GR1190.0   10133  1193.2   10136
X1 73.50      18    9815   10147     170     170     170
GR1200.0    9815  1199.0    9819  1195.0    9827  1190.0    9836  1185.0    9847
GR1180.0    9857  1179.7    9863  1179.7    9868  1179.7    9873  1179.7    9932
GR1179.7   10000  1179.7   10103  1180.0   10106  1185.0   10118  1190.0   10126
GR1193.0   10131  1193.5   10132  1194.8   10147
X1 76.32      18    9824   10160     210     338     282       0       0       0
GR1201.0    9824  1200.0    9830  1195.0    9838  1190.0    9850  1185.0    9859
```

```
GR1180.0    9871  1179.9    9874  1179.9    9878  1179.9    9883  1179.9   10000
GR1180.0   10015  1180.2   10065  1181.0   10114  1185.0   10121  1190.0   10131
GR1195.0   10142  1195.7   10145  1196.0   10160
X1 81.00      20    9841   10157     468     468     468
GR1202.0    9841  1200.0    9846  1195.0    9855  1190.0    9864  1185.0    9875
GR1181.0    9887  1180.5    9892  1180.8    9902  1180.8    9932  1181.0    9971
GR1181.1   10000  1181.0   10026  1180.8   10055  1181.0   10073  1181.4   10100
GR1182.0   10121  1185.0   10131  1190.0   10139  1195.0   10148  1199.0   10157
X1 84.70      20    9807   10160     358     380     370
GR1202.6    9807  1202.0    9808  1200.0    9814  1195.0    9823  1190.0    9833
GR1185.0    9843  1183.0    9851  1182.0    9854  1181.2    9894  1182.0    9941
GR1182.0    9982  1181.8   10000  1181.2   10055  1182.0   10112  1183.0   10129
GR1185.0   10133  1190.0   10142  1195.0   10153  1198.0   10157  1198.9   10160
EJ


ER
```

FILE = SCSPF-N.OUT

```
*************************************************************************
*                                                                       *
*       THIS IS HEC-2 FILE SCSPF-N.DAT.                                 *
*                                                                       *
*       Revising Coe & Van Loo's Skunk Creek SPF model to determine the *
*       what effects increasing the n value because of the vegetation   *
*       upstream of the mitigation area will have on the channel capacity. *
*       This is from cross section 37.0 to cross section 68.69.         *
*       The original n value for this reach is 0.032 with the exception of *
*       cross section 37.00 which was 0.040.  Downstream of the mitigation *
*       area the n values will not be changed from the Coe & Van Loo ones. *
*       Above the drop structure (68.69) the n values will also not be  *
*       changed.                                                        *
*                                                                       *
*************************************************************************
```

```
T1      SKUNK CREEK - CVL# 1090-040 (FCDMC) - F.C.D. 89-30 - DECEMBER 9,1989
T2      NEW RIVER TO ACDC
T3      SPF          SCSPF
```

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRIWS	DEPTH	ELMIN	AREA	EG	VCH	SSTA	TOPWID	ENDST	XLCH
15.250	55000.00	1167.13	1166.31	12.13	1155.00	3239.30	1171.61	16.98	9846.01	292.25	10138.27	.00
17.000	55000.00	1169.70	1166.47	14.40	1155.30	3930.70	1172.74	13.99	9853.41	298.06	10151.48	175.00
19.000	55000.00	1170.51	.00	14.81	1155.70	4066.88	1173.35	13.52	9869.46	302.08	10171.54	200.00
20.850	55000.00	1171.86	1166.19	15.96	1155.90	4883.21	1173.83	11.26	9858.20	326.87	10185.07	185.00
22.000	55000.00	1172.21	1166.27	16.11	1156.10	5077.02	1174.03	10.83	9841.58	341.73	10183.31	115.00
23.900	55000.00	1172.34	1166.90	15.84	1156.50	4754.88	1174.42	11.57	9848.52	317.96	10166.49	190.00
24.890	55000.00	1172.48	1167.14	15.68	1156.80	4708.48	1174.60	11.68	9855.40	315.11	10170.51	94.00
24.900	55000.00	1172.90	1172.90	10.10	1162.80	3084.51	1177.84	17.83	9855.18	315.74	10170.92	6.00
25.400	55000.00	1174.67	1173.01	11.77	1162.90	3618.42	1178.26	15.20	9855.36	328.07	10183.42	50.00
26.700	55000.00	1175.76	1173.32	12.56	1163.20	3861.12	1178.91	14.24	9862.63	319.74	10182.37	130.00
27.800	55000.00	1176.47	.00	12.97	1163.50	3605.06	1180.09	15.26	9867.60	290.76	10158.36	110.00
29.600	55000.00	1178.39	1174.00	14.49	1163.90	4479.85	1180.74	12.28	9870.88	323.23	10194.12	180.00
30.000	55000.00	1178.77	1174.04	14.77	1164.00	4689.19	1180.90	11.73	9860.23	336.54	10196.77	40.00
31.750	55000.00	1180.49	1173.65	17.09	1163.40	6253.29	1181.69	8.80	9783.60	436.79	10220.40	175.00
33.000	55000.00	1180.61	1175.02	16.51	1164.10	5351.11	1182.25	10.28	9803.18	385.95	10189.13	125.00
35.000	55000.00	1181.18	1176.36	15.28	1165.90	4722.01	1183.29	11.65				

9821.85 343.23 10165.09 200.00

37.000 55000.00 1181.79 1177.51 14.89 1166.90 4345.65 1184.28 12.66
9835.82 316.26 10152.08 200.00

38.320 55000.00 1182.14 1178.41 14.64 1167.50 4193.36 1184.82 13.12
9834.25 315.04 10149.29 132.00

40.050 55000.00 1183.09 1178.16 16.59 1166.50 4509.37 1185.40 12.20
9834.55 320.29 10154.85 173.00

43.000 55000.00 1184.02 1178.54 17.32 1166.70 4657.27 1186.18 11.81
9844.96 334.08 10179.04 295.00

46.920 55000.00 1184.90 1179.56 17.30 1167.60 4501.35 1187.21 12.22
9850.25 298.63 10148.88 392.00

50.900 55000.00 1186.13 1179.94 18.13 1168.00 4809.91 1188.16 11.43
9846.75 308.82 10155.56 398.00

55.000 55000.00 1186.99 1180.57 17.99 1169.00 4845.62 1188.99 11.35
9847.44 308.34 10155.78 410.00

60.000 55000.00 1188.06 1181.41 18.36 1169.70 4971.04 1189.96 11.06
9850.87 310.49 10161.36 500.00

64.000 55000.00 1188.70 1182.55 18.20 1170.50 4655.67 1190.87 11.81
9853.08 294.02 10147.10 400.00

65.450 55000.00 1189.30 1182.85 18.30 1171.00 4958.63 1191.21 11.09
9829.26 314.76 10144.02 145.00

66.900 55000.00 1189.71 1182.60 18.51 1171.20 5134.00 1191.49 10.71
9835.46 313.96 10149.42 145.00

67.900 55000.00 1189.84 1182.95 18.54 1171.30 5025.42 1191.70 10.94
9838.23 307.54 10145.77 100.00

68.690 55000.00 1189.95 1182.99 18.55 1171.40 4995.03 1191.83 11.01
9840.05 302.87 10142.92 73.00

68.700 55000.00 1189.21 1189.21 10.81 1178.40 3043.68 1194.28 18.07
9841.11 300.47 10141.58 7.00

69.100 55000.00 1190.47 1189.32 11.97 1178.50 3369.81 1194.61 16.32
9840.05 300.58 10140.63 40.00

70.100 55000.00 1190.98 1189.75 12.18 1178.80 3371.35 1195.11 16.31
9840.84 297.25 10138.09 100.00

71.800 55000.00 1191.98 1190.44 12.68 1179.30 3443.07 1195.94 15.97
9841.43 293.42 10134.86 170.00

73.500 55000.00 1193.40 1190.80 13.70 1179.70 3780.46 1196.68 14.55
9829.89 301.90 10131.79 170.00

76.320 55000.00 1194.59 1191.42 14.69 1179.90 3933.25 1197.62 13.98
9838.99 302.11 10141.09 282.00

81.000 55000.00 1196.12 1192.42 15.62 1180.50 4047.48 1198.99 13.59
9853.00 297.51 10150.50 468.00

84.700 55000.00 1197.97 1192.13 16.77 1181.20 5015.38 1199.84 10.97
9817.63 339.34 10156.97 370.00

FILE = SCSPFA-N.DAT

```
C
C     11
C  15.25  NEW RIVER CONFLUENCE
C  17.00  HWY 101 BRIDGE
C  24.89  DROP STRUCTURE BUILT IN CONJUNCTION
C  24.89  WITH 83RD AVENUE BRIDGE CONSTUCTION
C  26.70  83RD AVENUE BRIDGE
C  30.00  BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
C  37.00  END OF WILDLIFE HABITATE MITIGATION AREA
C  68.69  DROP STRUCTURE BUILT IN CONJUNCTION WITH
C  68.69  83RD AVENUE BRIDGE CONSTRUCTION
C  84.70  CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
C  84.70  OF THIS SECTION

* ************************************************************************ *
*                                                                          *
*        THIS IS HEC-2 FILE SCSPFA-N.DAT.                                  *
*          THIS MODEL MODIFIES SCSPF-N.DAT, MODIFYING SECTIONS             *
*          35.00, 37.00, 38.32, 40.05, 43.00, & 46.92                      *
*          BASED ON THE LEVELS OF 3-27-97.   RWC 3-28-97                   *
*                                                                          *
*        MODEL SCSPF-N was for                                             *
*        Revising Coe & Van Loo's Skunk Creek SPF model to determine the   *
*        what effects increasing the n value because of the vegetation     *
*        upstream of the mitigation area will have on the channel capacity. *
*        This is from cross section 37.0 to cross section 68.69.           *
*        The original n value for this reach is 0.032 with the exception of *
*        cross section 37.00 which was 0.040.  Downstream of the mitigation *
*        area the n values will not be changed from the Coe & Van Loo ones. *
*        Above the drop structure (68.69) the n values will also not be    *
*        changed.                                                          *
*                                                                          *
* ************************************************************************ *

T1      SKUNK CREEK - CVL# 1090-040 (FCDMC) - F.C.D. 89-30 - DECEMBER 9,1989
T2      NEW RIVER TO ACDC
T3      SPF          SCSPF        SCSPFA
J1     0       6       0       0  0.0055       0       0       0               0
J2    -1       0      -1       0       0       0      -1       0       0      15
J3    38      43       1       2       8      42      25       3      26      53
J3     4      54      39     150       0       0       0       0       0       0
QT     5    2200    6700   11000   33000   55000
NC 0.032   0.032   0.032      .1      .3
X1 15.25      19    9819   10222       0       0       0
GR1181.0    9817  1180.0    9819  1175.0    9825  1170.0    9842  1165.0    9849
GR1160.0    9857  1155.0    9870  1155.0    9914  1155.0    9945  1155.0   10000
GR1155.0   10030  1155.0   10082  1155.0   10104  1156.0   10108  1160.0   10122
GR1165.0   10134  1170.0   10144  1170.2   10164  1171.0   10222
NC 0.032   0.032   0.032      .3      .5
X1 17.00       5    9848   10157     175     175     175
GR1173.0    9848  1155.3    9877  1155.3   10000  1155.3   10125  1172.7   10157
SB  1.05    1.00    2.80      .0     269      15    7148       2  1155.5  1155.1
X1 19.00       8    9859   10180     200     200     200
X2     0       0       1  1179.5  1188.0       0       0    1.33       0       0
GR1174.0    9859  1170.0    9871  1160.0    9883  1155.7    9893  1155.7   10000
GR1155.7   10142  1160.0   10146  1174.0   10180
NC 0.032   0.032   0.032      .1      .3
X1 20.85       5    9857   10190     164     185     185       0       0       0
GR1173.0    9857  1155.9    9875  1155.9   10000  1155.9   10160  1175.0   10190
X1 22.00      11    9838   10186     110     155     115
GR1174.0    9838  1170.0    9846  1165.0    9855  1160.0    9865  1156.1    9879
GR1156.1   10000  1156.1   10160  1160.0   10169  1165.0   10174  1170.0   10180
GR1174.0   10186
X1 23.90       7    9790   10200     186     194     190
GR1175.0    9790  1173.8    9847  1156.6    9865  1156.6   10000  1156.5   10150
GR1173.8   10168  1175.0   10200
X1 24.89       7    9830   10200      94      94      94
GR1175.0    9830  1174.0    9854  1156.8    9870  1156.8   10000  1156.8   10155
GR1174.0   10172  1175.0   10200
X1 24.90       7    9830   10200       6       6       6
GR1175.0    9830  1174.0    9854  1162.8    9866  1162.8   10000  1162.8   10161
```

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GR1174.0   10172  1175.0   10200
X1 25.40       7    9855   10200      50      50      50
GR1176.0    9851  1175.0    9855  1162.9    9868  1162.9   10000  1162.9   10163
GR1174.5   10175  1175.0   10200
NC 0.032   0.032   0.032      .3      .5
X1 26.70       5    9862   10183     130     130     130       0       0       0
GR1176.4    9862  1163.2    9875  1163.2   10000  1163.2   10170  1176.4   10183
SB  1.05     1.0     2.8       0     315      12    4980       1  1163.3  1163.2
X1 27.80       5    9867   10159     110     110     110       0       0       0
X2     0       0       1  1177.5  1185.5       0       0            1.33       0
GR1177.1    9867  1163.5    9880  1163.5   10000  1163.5   10145  1177.1   10159
NC 0.032   0.032   0.032      .1      .3
X1 29.60       5    9870   10195     180     180     180
GR1179.3    9870  1163.9    9885  1163.9   10000  1163.9   10180  1179.3   10195
NC 0.050   0.050   0.050      .2      .4
X1 30.00       6    9859   10198      44      40      40
GR1180.0    9859  1164.0    9875  1165.0    9955  1164.0   10000  1164.0   10182
GR1180.0   10198
X1 31.75      17    9782   10222     200     152     175       0       0       0
GR1181.3    9782  1164.2    9816  1165.0    9847  1166.0    9875  1166.0    9885
GR1165.0    9896  1164.3    9925  1165.0   10000  1165.0   10030  1164.0   10033
GR1163.4   10037  1164.0   10039  1165.0   10042  1166.0   10046  1166.0   10070
GR1164.7   10189  1181.3   10222
X1 33.00      21    9800   10190     180     135     125
GR1183.0    9800  1180.0    9804  1175.0    9816  1170.0    9826  1165.0    9836
GR1167.0    9880  1167.0    9908  1166.0    9923  1165.0    9929  1164.3    9935
GR1165.0    9940  1166.0    9967  1166.1   10000  1166.0   10064  1165.0   10069
GR1164.1   10075  1165.0   10083  1166.0   10085  1166.0   10100  1165.2   10174
GR1181.5   10190
X1 35.00      19    9817   10166     205     180     200
GR1183.0    9817  1180.0    9825  1175.0    9840  1170.0    9847  1166.6    9855
GR1166.0    9873  1165.7    9893  1166.2    9913  1166.7    9937  1167.3   10000
GR1167.3   10050  1166.0   10056  1167.3   10072  1166.6   10098  1166.0   10108
GR1164.8   10116  1165.4   10138  1165.4   10150  1182.1   10166

* ************************************************************************ *
*                                                                          *
*         Just above the habitat mitigation area.  The Coe & Van Loo n     *
*         value on cross section 37.00 was 0.040.  For cross section 38.32 *
*         and above, CVL's n value was 0.032.  The critical cross section  *
*         is 55.00.  This cross section was used to determine the highest  *
*         n value for this reach.  The 0.036 channel n value is based on a *
*         maximum width for the cattails of 16 feet.                       *
*                                                                          *
* ************************************************************************ *

NC  .032    .032    .040

X1 37.00      16    9831   10153     185     184     200
GR1183.0    9831  1180.0    9843  1175.0    9853  1170.0    9859  1169.2    9863
GR1167.8    9890  1167.3    9920  1167.0    9960  1166.3   10000  1166.9   10060
GR1167.3   10070  1167.1   10090  1167.2   10110  1168.3   10120  1170.0   10134
GR1182.7   10153

NC  .032    .032    .036

X1 38.32      19    9831   10151     132     132     132       0       0       0
GR1184.0    9831  1180.0    9838  1175.0    9849  1170.6    9860  1169.5    9894
GR1168.1    9895  1167.3    9896  1166.5    9905  1167.5    9920  1166.7    9965
GR1166.3   10000  1166.9   10050  1168.2   10070  1168.3   10095  1168.3   10115
GR1170.1   10130  1175.0   10139  1180.0   10145  1183.0   10151

X1 40.05      19    9817   10156     173     173     173
GR1188.0    9817  1185.0    9825  1180.0    9850  1175.0    9858  1170.0    9870
GR1169.3    9874  1167.9    9900  1167.9    9945  1167.2    9973  1166.6    9995
GR1167.1   10010  1167.7   10048  1167.1   10079  1167.7   10109  1168.1   10127
GR1170.2   10130  1175.0   10141  1180.0   10149  1183.7   10156

X1 43.00      23    9818   10180     258     330     295
GR1188.0    9799  1188.0    9818  1186.0    9827  1185.0    9843  1180.0    9853
GR1175.0    9863  1169.7    9872  1168.1    9900  1167.7    9924  1167.4    9967
GR1167.0    9974  1167.5    9982  1166.9    9995  1167.3   10005  1167.8   10040
GR1168.0   10080  1169.4   10127  1170.0   10127  1175.0   10142  1180.0   10149
GR1183.0   10153  1184.0   10179  1184.5   10180
```

```
X1 46.92      22    9826   10172     324     474     392
GR1189.0    9798  1189.0    9826  1187.0    9831  1186.0    9847  1185.0    9850
GR1180.0    9862  1175.0    9871  1170.8    9884  1169.9    9895  1167.8    9930
GR1167.8    9960  1167.3   10016  1167.3   10022  1167.9   10038  1168.7   10077
GR1170.8   10125  1171.6   10130  1175.0   10136  1180.0   10143  1185.0   10149
GR1186.0   10162  1186.8   10172

X1 50.90      23    9820   10177     398     398     398
GR1191.0    9820  1190.0    9823  1189.0    9826  1189.0    9838  1188.0    9843
GR1185.0    9849  1180.0    9859  1175.0    9869  1170.0    9888  1169.0    9892
GR1168.0    9940  1168.0    9967  1168.0    9982  1168.1   10000  1168.3   10025
GR1169.0   10117  1170.0   10123  1175.0   10135  1180.0   10144  1185.0   10152
GR1186.0   10155  1186.9   10159  1187.0   10177

X1 55.00      16    9819   10156     500     314     410
GR1192.0    9819  1191.5    9826  1191.0    9837  1190.0    9839  1185.0    9853
GR1180.0    9865  1175.0    9875  1170.0    9889  1169.0    9893  1169.0   10000
GR1169.0   10119  1170.0   10123  1175.0   10134  1180.0   10142  1185.0   10152
GR1187.1   10156

X1 60.00      18    9835   10163     522     470     500
GR1194.0    9835  1193.0    9839  1190.0    9847  1185.0    9857  1180.0    9863
GR1175.0    9877  1170.0    9893  1170.0    9907  1170.0    9916  1169.7   10000
GR1170.0   10047  1170.0   10060  1170.0   10074  1171.0   10128  1175.0   10138
GR1180.0   10145  1185.0   10156  1189.0   10163

X1 64.00      17    9839   10151     400     400     400
GR1195.0    9839  1190.0    9851  1185.0    9859  1180.0    9868  1175.0    9879
GR1171.0    9893  1170.5    9958  1170.9   10000  1171.0   10004  1171.0   10027
GR1171.0   10058  1171.0   10063  1171.0   10095  1172.0   10120  1175.0   10128
GR1185.0   10136  1190.0   10151

X1 65.45      14    9812   10152     130     160     145
GR1195.9    9812  1195.0    9816  1190.0    9828  1185.0    9837  1180.0    9849
GR1175.0    9878  1171.0    9886  1171.0   10000  1171.0   10106  1175.0   10114
GR1180.0   10125  1185.0   10138  1190.0   10145  1191.0   10152

X1 66.90      14    9818   10152     145     145     145
GR1197.0    9818  1195.0    9825  1190.0    9835  1185.0    9843  1180.0    9851
GR1175.0    9864  1171.2    9872  1171.2   10000  1171.2   10108  1175.0   10116
GR1180.0   10130  1185.0   10140  1190.0   10150  1191.0   10152

X1 67.90      15    9820   10151     100     100     100       0       0       0
GR1197.5    9820  1197.0    9822  1195.0    9827  1190.0    9838  1185.0    9845
GR1180.0    9856  1175.0    9869  1171.3    9876  1171.3   10000  1171.3   10105
GR1175.0   10112  1180.0   10127  1185.0   10139  1190.0   10146  1191.0   10151

X1 68.69      14    9820   10146      73      73      73
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9846  1180.0    9857
GR1175.0    9868  1171.4    9875  1171.4   10000  1171.4   10107  1175.0   10114
GR1180.0   10124  1185.0   10134  1190.0   10143  1192.0   10146


* ************************************************************************ *
*                                                                          *
*          End changes to the channel n values.  Return to how Coe & Van Loo  *
*          modeled the channel.  Cross section 68.70 is the top of the drop  *
*          structure.                                                      *
*                                                                          *
* ************************************************************************ *


NC  .032    .032    .032      .1      .3
X1 68.70      12    9820   10146       7       7       7       0
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9847  1180.0    9857
GR1178.4    9860  1178.4   10000  1178.4   10121  1180.0   10124  1185.0   10134
GR1190.0   10143  1192.0   10146
X1 69.10      13    9820   10144      40      40      40       0       0       0
GR1198.2    9820  1198.0    9822  1195.0    9831  1190.0    9841  1185.0    9848
GR1180.0    9857  1178.5    9860  1178.5   10000  1178.5   10119  1180.0   10122
GR1185.0   10133  1190.0   10140  1193.0   10144
X1 70.10      13    9823   10141     100     100     100       0       0       0
GR1198.6    9823  1198.0    9826  1195.0    9832  1190.0    9843  1185.0    9852
GR1180.0    9860  1178.8    9862  1178.8   10000  1178.8   10117  1180.0   10119
GR1185.0   10130  1190.0   10137  1193.6   10141
X1 71.80      12    9827   10136     170     170     170       0       0       0
```

```
GR1199.0    9827  1195.0    9836  1190.0    9845  1185.0    9854  1180.0    9865
GR1179.3    9867  1179.3   10000  1179.3   10111  1180.0   10113  1185.0   10125
GR1190.0   10133  1193.2   10136
X1 73.50      18    9815   10147     170     170     170
GR1200.0    9815  1199.0    9819  1195.0    9827  1190.0    9836  1185.0    9847
GR1180.0    9857  1179.7    9863  1179.7    9868  1179.7    9873  1179.7    9932
GR1179.7   10000  1179.7   10103  1180.0   10106  1185.0   10118  1190.0   10126
GR1193.0   10131  1193.5   10132  1194.8   10147
X1 76.32      18    9824   10160     210     338     282       0       0       0
GR1201.0    9824  1200.0    9830  1195.0    9838  1190.0    9850  1185.0    9859
GR1180.0    9871  1179.9    9874  1179.9    9878  1179.9    9883  1179.9   10000
GR1180.0   10015  1180.2   10065  1181.0   10114  1185.0   10121  1190.0   10131
GR1195.0   10142  1195.7   10145  1196.0   10160
X1 81.00      20    9841   10157     468     468     468
GR1202.0    9841  1200.0    9846  1195.0    9855  1190.0    9864  1185.0    9875
GR1181.0    9887  1180.5    9892  1180.8    9902  1180.8    9932  1181.0    9971
GR1181.1   10000  1181.0   10026  1180.8   10055  1181.0   10073  1181.4   10100
GR1182.0   10121  1185.0   10131  1190.0   10139  1195.0   10148  1199.0   10157
X1 84.70      20    9807   10160     358     380     370
GR1202.6    9807  1202.0    9808  1200.0    9814  1195.0    9823  1190.0    9833
GR1185.0    9843  1183.0    9851  1182.0    9854  1181.2    9894  1182.0    9941
GR1182.0    9982  1181.8   10000  1181.2   10055  1182.0   10112  1183.0   10129
GR1185.0   10133  1190.0   10142  1195.0   10153  1198.0   10157  1198.9   10160
EJ


ER
```

FILE = SCSPFA-N.OUT

```
*************************************************************************
*                                                                       *
*       THIS IS HEC-2 FILE SCSPFA-N.DAT.                                *
*         THIS MODEL MODIFIES SCSPF-N.DAT, MODIFYING SECTIONS           *
*         35.00, 37.00, 38.32, 40.05, 43.00, & 46.92                    *
*         BASED ON THE LEVELS OF 3-27-97.   RWC 3-28-97                 *
*                                                                       *
*       MODEL SCSPF-N was for                                           *
*       Revising Coe & Van Loo's Skunk Creek SPF model to determine the *
*       what effects increasing the n value because of the vegetation   *
*       upstream of the mitigation area will have on the channel capacity. *
*       This is from cross section 37.0 to cross section 68.69.         *
*       The original n value for this reach is 0.032 with the exception of *
*       cross section 37.00 which was 0.040.  Downstream of the mitigation *
*       area the n values will not be changed from the Coe & Van Loo ones. *
*       Above the drop structure (68.69) the n values will also not be  *
*       changed.                                                        *
*                                                                       *
*************************************************************************
```

```
T1      SKUNK CREEK - CVL# 1090-040 (FCDMC) - F.C.D. 89-30 - DECEMBER 9,1989
T2      NEW RIVER TO ACDC
T3      SPF          SCSPF        SCSPFA
```

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRIWS	DEPTH	ELMIN	AREA	EG	VCH	SSTA	TOPWID	ENDST	XLCH
15.250	55000.00	1167.13	1166.31	12.13	1155.00	3239.30	1171.61	16.98	9846.01	292.25	10138.27	.00
17.000	55000.00	1169.70	1166.47	14.40	1155.30	3930.70	1172.74	13.99	9853.41	298.06	10151.48	175.00
19.000	55000.00	1170.51	.00	14.81	1155.70	4066.88	1173.35	13.52	9869.46	302.08	10171.54	200.00
20.850	55000.00	1171.86	1166.19	15.96	1155.90	4883.21	1173.83	11.26	9858.20	326.87	10185.07	185.00
22.000	55000.00	1172.21	1166.27	16.11	1156.10	5077.02	1174.03	10.83	9841.58	341.73	10183.31	115.00
23.900	55000.00	1172.34	1166.90	15.84	1156.50	4754.88	1174.42	11.57	9848.52	317.96	10166.49	190.00
24.890	55000.00	1172.48	1167.14	15.68	1156.80	4708.48	1174.60	11.68	9855.40	315.11	10170.51	94.00
24.900	55000.00	1172.90	1172.90	10.10	1162.80	3084.51	1177.84	17.83	9855.18	315.74	10170.92	6.00
25.400	55000.00	1174.67	1173.01	11.77	1162.90	3618.42	1178.26	15.20	9855.36	328.07	10183.42	50.00
26.700	55000.00	1175.76	1173.32	12.56	1163.20	3861.12	1178.91	14.24	9862.63	319.74	10182.37	130.00
27.800	55000.00	1176.47	.00	12.97	1163.50	3605.06	1180.09	15.26	9867.60	290.76	10158.36	110.00
29.600	55000.00	1178.39	1174.00	14.49	1163.90	4479.85	1180.74	12.28	9870.88	323.23	10194.12	180.00
30.000	55000.00	1178.77	1174.04	14.77	1164.00	4689.19	1180.90	11.73	9860.23	336.54	10196.77	40.00
31.750	55000.00	1180.49	1173.65	17.09	1163.40	6253.29	1181.69	8.80	9783.60	436.79	10220.40	175.00

33.000	55000.00	1180.61	1175.02	16.51	1164.10	5351.11	1182.25	10.28	9803.18	385.95	10189.13	125.00
35.000	55000.00	1181.17	1176.52	16.37	1164.80	4662.67	1183.33	11.80	9821.89	343.21	10165.10	200.00
37.000	55000.00	1181.76	1177.97	15.46	1166.30	4186.58	1184.44	13.14	9835.95	315.65	10151.60	200.00
38.320	55000.00	1182.33	1178.38	16.03	1166.30	4251.75	1184.93	12.94	9833.92	315.75	10149.67	132.00
40.050	55000.00	1183.01	1178.62	16.41	1166.60	4356.91	1185.48	12.62	9834.95	319.75	10154.70	173.00
43.000	55000.00	1184.10	1179.02	17.20	1166.90	4555.76	1186.36	12.07	9844.79	334.41	10179.21	295.00
46.920	55000.00	1185.07	1179.90	17.77	1167.30	4468.85	1187.42	12.31	9849.80	300.06	10149.86	392.00
50.900	55000.00	1186.41	1179.95	18.41	1168.00	4898.62	1188.37	11.23	9846.17	310.66	10156.84	398.00
55.000	55000.00	1187.21	1180.57	18.21	1169.00	4916.00	1189.16	11.19	9846.80	309.20	10156.00	410.00
60.000	55000.00	1188.23	1181.41	18.53	1169.70	5024.42	1190.10	10.95	9850.53	311.13	10161.66	500.00
64.000	55000.00	1188.85	1182.55	18.35	1170.50	4699.22	1190.97	11.70	9852.84	294.70	10147.54	400.00
65.450	55000.00	1189.43	1182.85	18.43	1171.00	4999.35	1191.31	11.00	9829.03	315.18	10144.20	145.00
66.900	55000.00	1189.83	1182.60	18.63	1171.20	5170.59	1191.58	10.64	9835.28	314.38	10149.66	145.00
67.900	55000.00	1189.95	1182.95	18.65	1171.30	5060.24	1191.78	10.87	9838.07	307.86	10145.93	100.00
68.690	55000.00	1190.06	1182.99	18.66	1171.40	5028.35	1191.92	10.94	9839.87	303.24	10143.10	73.00
68.700	55000.00	1189.21	1189.21	10.81	1178.40	3042.98	1194.28	18.07	9841.11	300.46	10141.57	7.00
69.100	55000.00	1190.48	1189.32	11.98	1178.50	3370.28	1194.61	16.32	9840.05	300.58	10140.63	40.00
70.100	55000.00	1190.98	1189.75	12.18	1178.80	3371.03	1195.11	16.32	9840.84	297.25	10138.09	100.00
71.800	55000.00	1191.98	1190.44	12.68	1179.30	3443.25	1195.94	15.97	9841.43	293.42	10134.86	170.00
73.500	55000.00	1193.40	1190.80	13.70	1179.70	3780.61	1196.68	14.55	9829.89	301.90	10131.79	170.00
76.320	55000.00	1194.59	1191.42	14.69	1179.90	3933.21	1197.62	13.98	9838.99	302.10	10141.09	282.00
81.000	55000.00	1196.12	1192.42	15.62	1180.50	4047.55	1198.99	13.59	9853.00	297.51	10150.50	468.00
84.700	55000.00	1197.97	1192.13	16.77	1181.20	5015.46	1199.84	10.97	9817.63	339.34	10156.97	370.00

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

PROJECT Skunk Cr. ab. 83rd Ave PAGE 1 OF

DETAIL Difference in CWSEL Between Coe & Van Loo's X-Section Data & Levels of 3-27-97 COMPUTED RWC DATE 3-28-97

CHECKED BY DATE

SCSPF-N : Coe & Van Loo Data

SCSPFA-N : Levels of 3-27-97

X-Sec	CWSEL SCSPFA-N	CWSEL SCSPF-N	("SCSPF-N" – "SCSPFA-N") Diff
33.00	1180.61	1180.61	0.00
35.06	81.17	81.18	+0.01
37.00	81.76	81.79	+0.03
38.32	82.33	82.14	+0.19
40.05	83.01	83.09	−0.08
43.00	84.10	84.02	+0.08
46.92	85.07	84.90	+0.17
50.90	86.41	86.13	+0.28
55.00	87.21	86.99	+0.22
60.00	88.23	88.06	+0.17
64.00	88.85	88.70	+0.15
65.45	89.43	89.30	+0.13
66.90	89.83	89.71	+0.12
67.90	89.95	89.84	+0.11
68.69	90.06	89.95	+0.11
68.70	89.21	89.21	0.00

6910-153 4-90

FILE - SCSPF-RI.DAT

```
C
C     11
C  15.25  NEW RIVER CONFLUENCE
C  17.00  HWY 101 BRIDGE
C  24.89  DROP STRUCTURE BUILT IN CONJUNCTION
C  24.89  WITH 83RD AVENUE BRIDGE CONSTUCTION
C  26.70  83RD AVENUE BRIDGE
C  30.00  BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
C  37.00  END OF WILDLIFE HABITATE MITIGATION AREA
C  68.69  DROP STRUCTURE BUILT IN CONJUNCTION WITH
C  68.69  83RD AVENUE BRIDGE CONSTRUCTION
C  84.70  CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
C  84.70  OF THIS SECTION
*
*       "THIS RUN USES THE ORIGINAL CVL GR AND "N" VALUES"
*
*
*       MODEL SCSPF-RI.DAT WAS DEVELOPED FROM MODEL SCSPF DEVELOPED BY
*       COE & VAN LOO IN 1989.
*
*             THE FLOW VALUES OF THAT WERE  USED, WERE
*             TAKEN FROM THE 1986 CORPS OF ENGINEERS DESIGN MEMORANDUM #2,
*             HYDROLOGY, PART 2, 1986
*                  SPF      = 55,000 CFS
*                  100-YEAR = 35,000 CFS
*                   50-YEAR = 18,000 CFS (.32 X SPF)
*                   10-YEAR =  6,600 CFS (.12 X SPF)
*
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      SPF, 100-, 50-, & 10-YEAR FLOWS
J1     0       2       0       0  0.0055       0       0       0               0
J2     1       0      -1       0       0       0      -1       0       0      15
J3    38      43       1      26      25       8       4
QT     4   55000   35000   18000    6600
NC 0.032   0.032   0.032      .1      .3
X1 15.25      19    9819   10222       0       0       0
GR1181.0    9817  1180.0    9819  1175.0    9825  1170.0    9842  1165.0    9849
GR1160.0    9857  1155.0    9870  1155.0    9914  1155.0    9945  1155.0   10000
GR1155.0   10030  1155.0   10082  1155.0   10104  1156.0   10108  1160.0   10122
GR1165.0   10134  1170.0   10144  1170.2   10164  1171.0   10222
NC 0.032   0.032   0.032      .3      .5
X1 17.00       5    9848   10157     175     175     175
GR1173.0    9848  1155.3    9877  1155.3   10000  1155.3   10125  1172.7   10157
SB  1.05    1.00    2.80      .0     269      15    7148       2  1155.5  1155.1
X1 19.00       8    9859   10180     200     200     200
X2     0       0       1  1179.5  1188.0       0       0    1.33       0       0
GR1174.0    9859  1170.0    9871  1160.0    9883  1155.7    9893  1155.7   10000
GR1155.7   10142  1160.0   10146  1174.0   10180
NC 0.032   0.032   0.032      .1      .3
X1 20.85       5    9857   10190     164     185     185       0       0       0
GR1173.0    9857  1155.9    9875  1155.9   10000  1155.9   10160  1175.0   10190
X1 22.00      11    9838   10186     110     155     115
GR1174.0    9838  1170.0    9846  1165.0    9855  1160.0    9865  1156.1    9879
GR1156.1   10000  1156.1   10160  1160.0   10169  1165.0   10174  1170.0   10180
GR1174.0   10186
X1 23.90       7    9790   10200     186     194     190
GR1175.0    9790  1173.8    9847  1156.6    9865  1156.6   10000  1156.5   10150
GR1173.8   10168  1175.0   10200
X1 24.89       7    9830   10200      94      94      94
GR1175.0    9830  1174.0    9854  1156.8    9870  1156.8   10000  1156.8   10155
GR1174.0   10172  1175.0   10200
X1 24.90       7    9830   10200       6       6       6
GR1175.0    9830  1174.0    9854  1162.8    9866  1162.8   10000  1162.8   10161
GR1174.0   10172  1175.0   10200
X1 25.40       7    9855   10200      50      50      50
GR1176.0    9851  1175.0    9855  1162.9    9868  1162.9   10000  1162.9   10163
GR1174.5   10175  1175.0   10200
NC 0.032   0.032   0.032      .3      .5
X1 26.70       5    9862   10183     130     130     130       0       0       0
GR1176.4    9862  1163.2    9875  1163.2   10000  1163.2   10170  1176.4   10183
SB  1.05     1.0     2.8       0     315      12    4980       1  1163.3  1163.2
X1 27.80       5    9867   10159     110     110     110       0       0       0
X2     0       0       1  1177.5  1185.5       0       0            1.33       0
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GR1177.1    9867  1163.5    9880  1163.5   10000  1163.5   10145  1177.1   10159
NC 0.032   0.032   0.032      .1      .3
X1 29.60       5    9870   10195     180     180     180
GR1179.3    9870  1163.9    9885  1163.9   10000  1163.9   10180  1179.3   10195
* 1 0.032    9900   0.100    9980   0.032   10198
NC 0.050   0.050   0.050      .2      .4
X1 30.00       6    9859   10198      44      40      40
X2                                                                            15
X4      2  1164.3    9900    1164    9980
GR1180.0    9859  1164.0    9875  1165.0    9955  1164.0   10000  1164.0   10182
GR1180.0   10198
*  0.032    9870   0.170   10120   0.032   10222
X1 31.75      17    9782   10222     200     152     175       0       0       0
X2                                                                            15
X4      2  1165.9    9870  1165.4   10120
GR1181.3    9782  1164.2    9816  1165.0    9847  1166.0    9875  1166.0    9885
GR1165.0    9896  1164.3    9925  1165.0   10000  1165.0   10030  1164.0   10033
GR1163.4   10037  1164.0   10039  1165.0   10042  1166.0   10046  1166.0   10070
GR1164.7   10189  1181.3   10222
*  0.032    9910   0.170   10130   0.032   10190
X1 33.00      21    9800   10190     180     135     125
X2                                                                            15
X4      2  1166.9    9910  1165.6   10130
GR1183.0    9800  1180.0    9804  1175.0    9816  1170.0    9826  1165.0    9836
GR1167.0    9880  1167.0    9908  1166.0    9923  1165.0    9929  1164.3    9935
GR1165.0    9940  1166.0    9967  1166.1   10000  1166.0   10064  1165.0   10069
GR1164.1   10075  1165.0   10083  1166.0   10085  1166.0   10100  1165.2   10174
GR1181.5   10190
*  0.032    9930   0.170   10090   0.032   10166
X1 35.00      14    9817   10166     205     180     200
X2                                                                            15
X4      1  1166.0   10090
GR1183.0    9817  1180.0    9825  1175.0    9840  1170.0    9847  1166.0    9855
GR1167.0    9905  1167.0    9925  1166.0    9930  1165.9    9934  1166.0    9938
GR1166.8   10000  1166.0   10055  1166.0   10150  1182.1   10166
*  0.032   10000   0.100   10030   0.032   10153
NC 0.040   0.040   0.040
X1 37.00      10    9831   10153     185     184     200
X2                                                                            15
X4      1  1166.9   10030
GR1183.0    9831  1180.0    9843  1175.0    9853  1170.0    9859  1166.9    9860
GR1167.0    9900  1167.0    9980  1166.9   10000  1166.9   10137  1182.7   10153
NC 0.032   0.032   0.032      .1      .3
X1 38.32      11    9831   10151     132     132     132       0       0       0
GR1184.0    9831  1180.0    9838  1175.0    9849  1170.0    9861  1167.5    9865
GR1167.5   10000  1167.5   10120  1170.0   10125  1175.0   10139  1180.0   10145
GR1183.0   10151
X1 40.05      15    9817   10156     173     173     173
GR1188.0    9817  1185.0    9825  1180.0    9850  1175.0    9858  1170.0    9870
GR1169.0    9878  1168.0    9883  1167.6    9900  1167.2    9935  1166.5   10000
GR1167.2   10123  1170.2   10130  1175.0   10141  1180.0   10149  1183.7   10156
X1 43.00      18    9818   10180     258     330     295
GR1188.0    9799  1188.0    9818  1186.0    9827  1185.0    9843  1180.0    9853
GR1175.0    9863  1170.0    9886  1167.2    9893  1166.7   10000  1167.2   10080
GR1167.5   10100  1168.0   10124  1170.0   10127  1175.0   10142  1180.0   10149
GR1183.0   10153  1184.0   10179  1184.5   10180
X1 46.92      20    9826   10172     324     474     392
GR1189.0    9798  1189.0    9826  1187.0    9831  1186.0    9847  1185.0    9850
GR1180.0    9862  1175.0    9871  1170.0    9890  1168.0    9895  1167.6   10000
GR1168.0   10040  1168.0   10058  1168.0   10100  1169.0   10117  1170.0   10123
GR1175.0   10136  1180.0   10143  1185.0   10149  1186.0   10162  1186.8   10172
X1 50.90      23    9820   10177     398     398     398
GR1191.0    9820  1190.0    9823  1189.0    9826  1189.0    9838  1188.0    9843
GR1185.0    9849  1180.0    9859  1175.0    9869  1170.0    9888  1169.0    9892
GR1168.0    9940  1168.0    9967  1168.0    9982  1168.1   10000  1168.3   10025
GR1169.0   10117  1170.0   10123  1175.0   10135  1180.0   10144  1185.0   10152
GR1186.0   10155  1186.9   10159  1187.0   10177
X1 55.00      16    9819   10156     500     314     410
GR1192.0    9819  1191.5    9826  1191.0    9837  1190.0    9839  1185.0    9853
GR1180.0    9865  1175.0    9875  1170.0    9889  1169.0    9893  1169.0   10000
GR1169.0   10119  1170.0   10123  1175.0   10134  1180.0   10142  1185.0   10152
GR1187.1   10156
X1 60.00      18    9835   10163     522     470     500
GR1194.0    9835  1193.0    9839  1190.0    9847  1185.0    9857  1180.0    9863
GR1175.0    9877  1170.0    9893  1170.0    9907  1170.0    9916  1169.7   10000
GR1170.0   10047  1170.0   10060  1170.0   10074  1171.0   10128  1175.0   10138
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GR1180.0   10145  1185.0   10156  1189.0   10163
X1 64.00      17    9839   10151     400     400     400
GR1195.0    9839  1190.0    9851  1185.0    9859  1180.0    9868  1175.0    9879
GR1171.0    9893  1170.5    9958  1170.9   10000  1171.0   10004  1171.0   10027
GR1171.0   10058  1171.0   10063  1171.0   10095  1172.0   10120  1175.0   10128
GR1185.0   10136  1190.0   10151
X1 65.45      14    9812   10152     130     160     145
GR1195.9    9812  1195.0    9816  1190.0    9828  1185.0    9837  1180.0    9849
GR1175.0    9878  1171.0    9886  1171.0   10000  1171.0   10106  1175.0   10114
GR1180.0   10125  1185.0   10138  1190.0   10145  1191.0   10152
X1 66.90      14    9818   10152     145     145     145
GR1197.0    9818  1195.0    9825  1190.0    9835  1185.0    9843  1180.0    9851
GR1175.0    9864  1171.2    9872  1171.2   10000  1171.2   10108  1175.0   10116
GR1180.0   10130  1185.0   10140  1190.0   10150  1191.0   10152
X1 67.90      15    9820   10151     100     100     100       0       0       0
GR1197.5    9820  1197.0    9822  1195.0    9827  1190.0    9838  1185.0    9845
GR1180.0    9856  1175.0    9869  1171.3    9876  1171.3   10000  1171.3   10105
GR1175.0   10112  1180.0   10127  1185.0   10139  1190.0   10146  1191.0   10151
X1 68.69      14    9820   10146      73      73      73
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9846  1180.0    9857
GR1175.0    9868  1171.4    9875  1171.4   10000  1171.4   10107  1175.0   10114
GR1180.0   10124  1185.0   10134  1190.0   10143  1192.0   10146
X1 68.70      12    9820   10146       7       7       7       0
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9847  1180.0    9857
GR1178.4    9860  1178.4   10000  1178.4   10121  1180.0   10124  1185.0   10134
GR1190.0   10143  1192.0   10146
X1 69.10      13    9820   10144      40      40      40       0       0       0
GR1198.2    9820  1198.0    9822  1195.0    9831  1190.0    9841  1185.0    9848
GR1180.0    9857  1178.5    9860  1178.5   10000  1178.5   10119  1180.0   10122
GR1185.0   10133  1190.0   10140  1193.0   10144
X1 70.10      13    9823   10141     100     100     100       0       0       0
GR1198.6    9823  1198.0    9826  1195.0    9832  1190.0    9843  1185.0    9852
GR1180.0    9860  1178.8    9862  1178.8   10000  1178.8   10117  1180.0   10119
GR1185.0   10130  1190.0   10137  1193.6   10141
X1 71.80      12    9827   10136     170     170     170       0       0       0
GR1199.0    9827  1195.0    9836  1190.0    9845  1185.0    9854  1180.0    9865
GR1179.3    9867  1179.3   10000  1179.3   10111  1180.0   10113  1185.0   10125
GR1190.0   10133  1193.2   10136
X1 73.50      18    9815   10147     170     170     170
GR1200.0    9815  1199.0    9819  1195.0    9827  1190.0    9836  1185.0    9847
GR1180.0    9857  1179.7    9863  1179.7    9868  1179.7    9873  1179.7    9932
GR1179.7   10000  1179.7   10103  1180.0   10106  1185.0   10118  1190.0   10126
GR1193.0   10131  1193.5   10132  1194.8   10147
X1 76.32      18    9824   10160     210     338     282       0       0       0
GR1201.0    9824  1200.0    9830  1195.0    9838  1190.0    9850  1185.0    9859
GR1180.0    9871  1179.9    9874  1179.9    9878  1179.9    9883  1179.9   10000
GR1180.0   10015  1180.2   10065  1181.0   10114  1185.0   10121  1190.0   10131
GR1195.0   10142  1195.7   10145  1196.0   10160
X1 81.00      20    9841   10157     468     468     468
GR1202.0    9841  1200.0    9846  1195.0    9855  1190.0    9864  1185.0    9875
GR1181.0    9887  1180.5    9892  1180.8    9902  1180.8    9932  1181.0    9971
GR1181.1   10000  1181.0   10026  1180.8   10055  1181.0   10073  1181.4   10100
GR1182.0   10121  1185.0   10131  1190.0   10139  1195.0   10148  1199.0   10157
X1 84.70      20    9807   10160     358     380     370
GR1202.6    9807  1202.0    9808  1200.0    9814  1195.0    9823  1190.0    9833
GR1185.0    9843  1183.0    9851  1182.0    9854  1181.2    9894  1182.0    9941
GR1182.0    9982  1181.8   10000  1181.2   10055  1182.0   10112  1183.0   10129
GR1185.0   10133  1190.0   10142  1195.0   10153  1198.0   10157  1198.9   10160
EJ
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      100-YEAR EVENT
J1     0       3       0       0  0.0055       0       0       0               0
J2     2       0      -1       0       0       0       0       0       0      15
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      50-YEAR EVENT
J1     0       4       0       0  0.0055       0       0       0               0
J2     3       0      -1       0       0       0       0       0       0      15
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      10-YEAR EVENT
J1     0       5       0       0  0.0055       0       0       0               0
J2    15       0      -1       0       0       0       0       0       0      15
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ER
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FILE = SCSPF-RI.OUT

APRIL 3, 1997

R.W. CRUFF, P.E.

"THIS RUN USES THE ORIGINAL CVL GR AND "N" VALUES"

MODEL SCSPF-RI.DAT WAS DEVELOPED FROM MODEL SCSPF DEVELOPED BY COE & VAN LOO IN 1989.

THE FLOW VALUES OF THAT WERE USED, WERE
TAKEN FROM THE 1986 CORPS OF ENGINEERS DESIGN MEMORANDUM #2,
HYDROLOGY, PART 2, 1986

SPF = 55,000 CFS
100-YEAR = 35,000 CFS
50-YEAR = 18,000 CFS (.32 X SPF)
10-YEAR = 6,600 CFS (.12 X SPF)

SPF, 100-, 50-, & 10-YEAR FLOWS

SUMMARY PRINTOUT

SECNO	Q	CWSEL	VCH	AREA	DEPTH	TOPWID
15.250	55000.00	1167.13	16.98	3239.30	12.13	292.25
15.250	35000.00	1164.31	14.42	2426.85	9.31	282.23
15.250	18000.00	1161.30	11.28	1596.16	6.30	270.20
15.250	6600.00	1158.51	7.68	859.52	3.51	255.89
17.000	55000.00	1169.70	13.99	3930.70	14.40	298.06
17.000	35000.00	1166.38	11.82	2960.20	11.08	286.52
17.000	18000.00	1162.87	9.11	1975.38	7.57	274.30
17.000	6600.00	1159.59	6.02	1096.80	4.29	262.93
19.000	55000.00	1170.51	13.52	4066.88	14.81	302.08
19.000	35000.00	1166.93	11.62	3011.85	11.23	288.16
19.000	18000.00	1163.17	9.22	1951.96	7.47	274.49
19.000	6600.00	1159.70	6.46	1022.46	4.00	262.03
20.850	55000.00	1171.86	11.26	4883.21	15.96	326.87
20.850	35000.00	1168.08	9.54	3668.96	12.18	316.98
20.850	18000.00	1164.08	7.44	2419.08	8.18	306.46
20.850	6600.00	1160.39	5.05	1306.85	4.49	296.79
22.000	55000.00	1172.21	10.83	5077.02	16.11	341.73
22.000	35000.00	1168.36	9.24	3789.03	12.26	329.10
22.000	18000.00	1164.31	7.26	2479.00	8.21	316.93
22.000	6600.00	1160.59	4.99	1321.49	4.49	305.78
23.900	55000.00	1172.34	11.57	4754.88	15.84	317.96
23.900	35000.00	1168.56	9.81	3567.54	12.06	310.07
23.900	18000.00	1164.57	7.67	2345.28	8.07	301.73
23.900	6600.00	1160.90	5.26	1254.98	4.40	294.09
24.890	55000.00	1172.48	11.68	4708.48	15.68	315.11
24.890	35000.00	1168.71	9.90	3533.63	11.91	307.87
24.890	18000.00	1164.73	7.76	2319.88	7.93	300.21
24.890	6600.00	1161.07	5.35	1232.76	4.27	293.18
24.900	55000.00	1172.90	17.83	3084.51	10.10	315.74
24.900	35000.00	1170.29	15.43	2268.47	7.49	310.39
24.900	18000.00	1167.63	12.43	1447.93	4.83	304.91
24.900	6600.00	1165.29	8.91	740.33	2.49	300.11

SECNO	Q	CWSEL	VCH	AREA	DEPTH	TOPWID
25.400	55000.00	1174.67	15.20	3618.42	11.77	328.07
25.400	35000.00	1171.81	12.90	2713.55	8.91	313.80
25.400	18000.00	1168.86	10.02	1795.57	5.96	307.57
25.400	6600.00	1166.21	6.68	988.09	3.31	301.98
26.700	55000.00	1175.76	14.24	3861.12	12.56	319.74
26.700	35000.00	1172.78	12.00	2916.51	9.58	313.87
26.700	18000.00	1169.69	9.20	1955.92	6.49	307.78
26.700	6600.00	1166.85	6.05	1090.17	3.65	302.19
27.800	55000.00	1176.47	15.26	3605.06	12.97	290.76
27.800	35000.00	1173.26	13.05	2681.51	9.76	284.38
27.800	18000.00	1169.95	10.29	1749.18	6.45	277.80
27.800	6600.00	1166.94	7.16	922.17	3.44	271.82
29.600	55000.00	1178.39	12.28	4479.85	14.49	323.23
29.600	35000.00	1174.84	10.47	3343.28	10.94	316.31
29.600	18000.00	1171.17	8.19	2198.25	7.27	309.18
29.600	6600.00	1167.86	5.57	1185.20	3.96	302.72
30.000	55000.00	1178.78	11.69	4705.60	14.78	336.57
30.000	35000.00	1175.14	10.02	3492.49	11.14	329.28
30.000	18000.00	1171.38	7.94	2267.85	7.38	321.76
30.000	6600.00	1168.02	5.52	1195.58	4.02	315.02
31.750	55000.00	1180.49	8.79	6253.89	17.09	436.78
31.750	35000.00	1176.57	7.65	4573.90	13.17	421.21
31.750	18000.00	1172.55	6.18	2913.22	9.15	405.23
31.750	6600.00	1169.03	4.38	1507.57	5.63	391.19
33.000	55000.00	1180.61	10.28	5352.29	16.51	385.95
33.000	35000.00	1176.78	8.98	3897.14	12.68	373.65
33.000	18000.00	1172.89	7.29	2467.89	8.79	361.34
33.000	6600.00	1169.51	5.23	1262.97	5.41	351.25
35.000	55000.00	1181.18	11.65	4720.38	15.28	343.22
35.000	35000.00	1177.51	10.04	3486.86	11.61	328.96
35.000	18000.00	1173.80	7.85	2292.42	7.90	316.06
35.000	6600.00	1170.54	5.17	1275.57	4.64	308.26
37.000	55000.00	1181.79	12.66	4344.42	14.89	316.24
37.000	35000.00	1178.22	10.79	3244.41	11.32	301.91
37.000	18000.00	1174.57	8.32	2162.33	7.67	291.25
37.000	6600.00	1171.27	5.44	1213.33	4.37	283.95
38.320	55000.00	1182.05	13.21	4163.07	14.55	314.68
38.320	35000.00	1178.50	11.41	3068.73	11.00	301.89
38.320	18000.00	1174.86	9.02	1995.17	7.36	289.31
38.320	6600.00	1171.58	6.15	1072.61	4.08	272.22
40.050	55000.00	1182.80	12.45	4417.11	16.30	318.30
40.050	35000.00	1179.24	10.52	3327.81	12.74	296.58
40.050	18000.00	1175.57	7.96	2260.43	9.07	284.84
40.050	6600.00	1172.13	5.06	1305.54	5.63	269.55
43.000	55000.00	1183.53	12.24	4492.87	16.83	320.50
43.000	35000.00	1179.92	10.28	3404.26	13.22	295.73
43.000	18000.00	1176.15	7.78	2314.65	9.45	282.93
43.000	6600.00	1172.56	4.96	1331.28	5.86	260.43
46.920	55000.00	1184.23	12.78	4302.57	16.63	296.22
46.920	35000.00	1180.60	10.76	3252.99	13.00	283.18
46.920	18000.00	1176.80	8.18	2199.47	9.20	270.76
46.920	6600.00	1173.08	5.40	1221.32	5.48	252.73
50.900	55000.00	1185.36	12.03	4573.62	17.36	304.78
50.900	35000.00	1181.61	10.12	3458.10	13.61	290.79
50.900	18000.00	1177.63	7.72	2330.45	9.63	275.99
50.900	6600.00	1173.75	5.12	1289.98	5.75	258.25
55.000	55000.00	1186.13	12.00	4582.97	17.13	304.31
55.000	35000.00	1182.34	10.11	3462.51	13.34	287.29
55.000	18000.00	1178.29	7.71	2335.23	9.29	270.86
55.000	6600.00	1174.33	5.11	1290.98	5.33	255.67

SECNO	Q	CWSEL	VCH	AREA	DEPTH	TOPWID
60.000	55000.00	1187.13	11.74	4684.16	17.43	307.00
60.000	35000.00	1183.27	9.93	3524.44	13.57	293.11
60.000	18000.00	1179.10	7.72	2331.76	9.40	278.20
60.000	6600.00	1175.07	5.30	1246.27	5.37	261.30
64.000	55000.00	1187.66	12.64	4352.05	17.16	289.23
64.000	35000.00	1183.84	10.67	3279.30	13.34	273.98
64.000	18000.00	1179.72	8.28	2173.30	9.22	263.16
64.000	6600.00	1175.74	5.74	1150.52	5.24	251.23
65.450	55000.00	1188.26	11.87	4634.44	17.26	311.45
65.450	35000.00	1184.28	10.24	3418.07	13.28	297.38
65.450	18000.00	1180.03	8.18	2201.64	9.03	276.17
65.450	6600.00	1176.04	5.68	1161.27	5.04	244.30
66.900	55000.00	1188.69	11.42	4815.40	17.49	310.29
66.900	35000.00	1184.71	9.69	3610.28	13.51	295.97
66.900	18000.00	1180.45	7.56	2381.98	9.25	280.64
66.900	6600.00	1176.38	5.16	1279.48	5.18	259.44
67.900	55000.00	1188.79	11.69	4704.89	17.49	304.61
67.900	35000.00	1184.83	9.94	3519.65	13.53	293.20
67.900	18000.00	1180.58	7.77	2315.86	9.28	273.66
67.900	6600.00	1176.51	5.29	1247.64	5.21	251.48
68.690	55000.00	1188.90	11.76	4677.62	17.50	299.71
68.690	35000.00	1184.95	9.96	3515.07	13.55	287.78
68.690	18000.00	1180.71	7.72	2331.67	9.31	269.95
68.690	6600.00	1176.64	5.21	1267.54	5.24	252.86
68.700	55000.00	1189.17	18.14	3032.49	10.77	300.35
68.700	35000.00	1186.43	15.75	2221.70	8.03	291.58
68.700	18000.00	1183.61	12.75	1411.60	5.21	281.43
68.700	6600.00	1181.08	9.25	713.64	2.68	271.33
69.100	55000.00	1190.50	16.29	3377.00	12.00	300.66
69.100	35000.00	1187.67	13.79	2538.91	9.17	292.48
69.100	18000.00	1184.67	10.77	1670.68	6.17	283.63
69.100	6600.00	1181.93	7.25	910.08	3.43	272.69
70.100	55000.00	1190.99	16.30	3373.57	12.19	297.28
70.100	35000.00	1188.24	13.63	2567.66	9.44	288.36
70.100	18000.00	1185.28	10.42	1727.74	6.48	278.88
70.100	6600.00	1182.46	6.88	959.05	3.66	268.38
71.800	55000.00	1191.99	15.96	3447.02	12.69	293.46
71.800	35000.00	1189.14	13.35	2622.09	9.84	285.09
71.800	18000.00	1186.09	10.18	1768.03	6.79	274.72
71.800	6600.00	1183.15	6.76	976.41	3.85	262.49
73.500	55000.00	1193.40	14.54	3781.79	13.70	301.92
73.500	35000.00	1190.28	12.24	2858.95	10.58	290.99
73.500	18000.00	1186.95	9.43	1909.60	7.25	278.42
73.500	6600.00	1183.82	6.26	1054.04	4.12	265.76
76.320	55000.00	1194.59	13.98	3933.80	14.69	302.11
76.320	35000.00	1191.36	11.74	2981.06	11.46	287.24
76.320	18000.00	1187.93	8.91	2020.72	8.03	273.11
76.320	6600.00	1184.63	5.79	1140.24	4.73	260.45
81.000	55000.00	1196.12	13.59	4047.73	15.62	297.51
81.000	35000.00	1192.79	11.37	3078.88	12.29	285.03
81.000	18000.00	1189.15	8.71	2066.62	8.65	271.77
81.000	6600.00	1185.65	5.80	1137.54	5.15	258.45
84.700	55000.00	1197.97	10.97	5015.66	16.77	339.34
84.700	35000.00	1194.25	9.28	3773.50	13.05	326.88
84.700	18000.00	1190.25	7.20	2498.92	9.05	310.07
84.700	6600.00	1186.47	4.89	1350.85	5.27	295.55

FILE = SCSPF&RI.DAT

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C
C     11
C  15.25  NEW RIVER CONFLUENCE
C  17.00  HWY 101 BRIDGE
C  24.89  DROP STRUCTURE BUILT IN CONJUNCTION
C  24.89  WITH 83RD AVENUE BRIDGE CONSTUCTION
C  26.70  83RD AVENUE BRIDGE
C  30.00  BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
C  37.00  END OF WILDLIFE HABITATE MITIGATION AREA
C  68.69  DROP STRUCTURE BUILT IN CONJUNCTION WITH
C  68.69  83RD AVENUE BRIDGE CONSTRUCTION
C  84.70  CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
C  84.70  OF THIS SECTION
*
*
*       THIS RUN  CALLS THE ISLAND THE MAIN CHANNEL &
*         THE FLOW AREAS AROUND IT THE OVERBANKS.
*         THIS WILL GIVE VELOCITIES FOR BOTH.
*         N= 0.035 FOR THE CLEAR AREA (OVERBANKS) AND
*            0.080 FOR THE  ISLAND (MAIN CHANNEL)
*       MODEL SCSPF&RI.DAT WAS DEVELOPED FROM MODEL SCSPF DEVELOPED BY
*       COE & VAN LOO IN 1989.
*
*             THE FLOW VALUES OF THAT WERE  USED, WERE
*             TAKEN FROM THE 1986 CORPS OF ENGINEERS DESIGN MEMORANDUM #2,
*             HYDROLOGY, PART 2, 1986
*                  SPF      = 55,000 CFS
*                  100-YEAR = 35,000 CFS
*                   50-YEAR = 18,000 CFS (.32 X SPF)
*                   10-YEAR =  6,600 CFS (.12 X SPF)
*
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      SPF, 100-, 50-, & 10-YEAR FLOWS
J1     0       2       0       0  0.0055       0       0       0               0
J2     1       0      -1       0       0       0      -1       0       0      15
J3    38       1      14      26      13      55      15      56
J3    38      17      16      18      42       8       4      25
J6     1              -1
QT     4   55000   35000   18000    6600
NC 0.032   0.032   0.032      .1      .3
X1 15.25      19    9819   10222       0       0       0
GR1181.0    9817  1180.0    9819  1175.0    9825  1170.0    9842  1165.0    9849
GR1160.0    9857  1155.0    9870  1155.0    9914  1155.0    9945  1155.0   10000
GR1155.0   10030  1155.0   10082  1155.0   10104  1156.0   10108  1160.0   10122
GR1165.0   10134  1170.0   10144  1170.2   10164  1171.0   10222
NC 0.032   0.032   0.032      .3      .5
X1 17.00       5    9848   10157     175     175     175
GR1173.0    9848  1155.3    9877  1155.3   10000  1155.3   10125  1172.7   10157
SB  1.05    1.00    2.80      .0     269      15    7148       2  1155.5  1155.1
X1 19.00       8    9859   10180     200     200     200
X2     0       0       1  1179.5  1188.0       0       0    1.33       0       0
GR1174.0    9859  1170.0    9871  1160.0    9883  1155.7    9893  1155.7   10000
GR1155.7   10142  1160.0   10146  1174.0   10180
NC 0.032   0.032   0.032      .1      .3
X1 20.85       5    9857   10190     164     185     185       0       0       0
GR1173.0    9857  1155.9    9875  1155.9   10000  1155.9   10160  1175.0   10190
X1 22.00      11    9838   10186     110     155     115
GR1174.0    9838  1170.0    9846  1165.0    9855  1160.0    9865  1156.1    9879
GR1156.1   10000  1156.1   10160  1160.0   10169  1165.0   10174  1170.0   10180
GR1174.0   10186
X1 23.90       7    9790   10200     186     194     190
GR1175.0    9790  1173.8    9847  1156.6    9865  1156.6   10000  1156.5   10150
GR1173.8   10168  1175.0   10200
X1 24.89       7    9830   10200      94      94      94
GR1175.0    9830  1174.0    9854  1156.8    9870  1156.8   10000  1156.8   10155
GR1174.0   10172  1175.0   10200
X1 24.90       7    9830   10200       6       6       6
GR1175.0    9830  1174.0    9854  1162.8    9866  1162.8   10000  1162.8   10161
GR1174.0   10172  1175.0   10200
X1 25.40       7    9855   10200      50      50      50
GR1176.0    9851  1175.0    9855  1162.9    9868  1162.9   10000  1162.9   10163
GR1174.5   10175  1175.0   10200
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NC 0.032   0.032   0.032      .3      .5
X1 26.70       5    9862   10183     130     130     130       0       0       0
GR1176.4    9862  1163.2    9875  1163.2   10000  1163.2   10170  1176.4   10183
SB  1.05     1.0     2.8       0     315      12    4980       1  1163.3  1163.2
X1 27.80       5    9867   10159     110     110     110       0       0       0
X2     0       0       1  1177.5  1185.5       0       0            1.33       0
GR1177.1    9867  1163.5    9880  1163.5   10000  1163.5   10145  1177.1   10159
NC 0.032   0.032   0.032      .1      .3
X1 29.60       5    9870   10195     180     180     180
GR1179.3    9870  1163.9    9885  1163.9   10000  1163.9   10180  1179.3   10195
NC 0.035   0.035   0.080      .2      .4
*  0.050   0.050   0.050      .2      .4
X1 30.00       6    9910    9970      44      40      40
X2                                                                            15
X4     2  1164.3    9910    1164    9970
GR1180.0    9859  1164.0    9875  1165.0    9955  1164.0   10000  1164.0   10182
GR1180.0   10198
X1 31.75      17    9890   10100     200     152     175       0       0       0
X2                                                                            15
X4     2  1165.9    9890  1165.7   10100
GR1181.3    9782  1164.2    9816  1165.0    9847  1166.0    9875  1166.0    9885
GR1165.0    9896  1164.3    9925  1165.0   10000  1165.0   10030  1164.0   10033
GR1163.4   10037  1164.0   10039  1165.0   10042  1166.0   10046  1166.0   10070
GR1164.7   10189  1181.3   10222
X1 33.00      21    9929   10100     180     135     125
X2                                                                            15
GR1183.0    9800  1180.0    9804  1175.0    9816  1170.0    9826  1165.0    9836
GR1167.0    9880  1167.0    9908  1166.0    9923  1165.0    9929  1164.3    9935
GR1165.0    9940  1166.0    9967  1166.1   10000  1166.0   10064  1165.0   10069
GR1164.1   10075  1165.0   10083  1166.0   10085  1166.0   10100  1165.2   10174
GR1181.5   10190
X1 35.00      14    9938   10055     205     180     200
X2                                                                            15
GR1183.0    9817  1180.0    9825  1175.0    9840  1170.0    9847  1166.0    9855
GR1167.0    9905  1167.0    9925  1166.0    9930  1165.9    9934  1166.0    9938
GR1166.8   10000  1166.0   10055  1166.0   10150  1182.1   10166
NC 0.032   0.032   0.040
*  0.040   0.040   0.040
X1 37.00      10    9831   10153     185     184     200
X2                                                                            15
X4     1  1166.9   10030
GR1183.0    9831  1180.0    9843  1175.0    9853  1170.0    9859  1166.9    9860
GR1167.0    9900  1167.0    9980  1166.9   10000  1166.9   10137  1182.7   10153
NC 0.032   0.032   0.032      .1      .3
X1 38.32      11    9831   10151     132     132     132       0       0       0
GR1184.0    9831  1180.0    9838  1175.0    9849  1170.0    9861  1167.5    9865
GR1167.5   10000  1167.5   10120  1170.0   10125  1175.0   10139  1180.0   10145
GR1183.0   10151
X1 40.05      15    9817   10156     173     173     173
GR1188.0    9817  1185.0    9825  1180.0    9850  1175.0    9858  1170.0    9870
GR1169.0    9878  1168.0    9883  1167.6    9900  1167.2    9935  1166.5   10000
GR1167.2   10123  1170.2   10130  1175.0   10141  1180.0   10149  1183.7   10156
X1 43.00      18    9818   10180     258     330     295
GR1188.0    9799  1188.0    9818  1186.0    9827  1185.0    9843  1180.0    9853
GR1175.0    9863  1170.0    9886  1167.2    9893  1166.7   10000  1167.2   10080
GR1167.5   10100  1168.0   10124  1170.0   10127  1175.0   10142  1180.0   10149
GR1183.0   10153  1184.0   10179  1184.5   10180
X1 46.92      20    9826   10172     324     474     392
GR1189.0    9798  1189.0    9826  1187.0    9831  1186.0    9847  1185.0    9850
GR1180.0    9862  1175.0    9871  1170.0    9890  1168.0    9895  1167.6   10000
GR1168.0   10040  1168.0   10058  1168.0   10100  1169.0   10117  1170.0   10123
GR1175.0   10136  1180.0   10143  1185.0   10149  1186.0   10162  1186.8   10172
X1 50.90      23    9820   10177     398     398     398
GR1191.0    9820  1190.0    9823  1189.0    9826  1189.0    9838  1188.0    9843
GR1185.0    9849  1180.0    9859  1175.0    9869  1170.0    9888  1169.0    9892
GR1168.0    9940  1168.0    9967  1168.0    9982  1168.1   10000  1168.3   10025
GR1169.0   10117  1170.0   10123  1175.0   10135  1180.0   10144  1185.0   10152
GR1186.0   10155  1186.9   10159  1187.0   10177
X1 55.00      16    9819   10156     500     314     410
GR1192.0    9819  1191.5    9826  1191.0    9837  1190.0    9839  1185.0    9853
GR1180.0    9865  1175.0    9875  1170.0    9889  1169.0    9893  1169.0   10000
GR1169.0   10119  1170.0   10123  1175.0   10134  1180.0   10142  1185.0   10152
GR1187.1   10156
X1 60.00      18    9835   10163     522     470     500
GR1194.0    9835  1193.0    9839  1190.0    9847  1185.0    9857  1180.0    9863
GR1175.0    9877  1170.0    9893  1170.0    9907  1170.0    9916  1169.7   10000
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GR1170.0   10047  1170.0   10060  1170.0   10074  1171.0   10128  1175.0   10138
GR1180.0   10145  1185.0   10156  1189.0   10163
X1 64.00      17    9839   10151     400     400     400
GR1195.0    9839  1190.0    9851  1185.0    9859  1180.0    9868  1175.0    9879
GR1171.0    9893  1170.5    9958  1170.9   10000  1171.0   10004  1171.0   10027
GR1171.0   10058  1171.0   10063  1171.0   10095  1172.0   10120  1175.0   10128
GR1185.0   10136  1190.0   10151
X1 65.45      14    9812   10152     130     160     145
GR1195.9    9812  1195.0    9816  1190.0    9828  1185.0    9837  1180.0    9849
GR1175.0    9878  1171.0    9886  1171.0   10000  1171.0   10106  1175.0   10114
GR1180.0   10125  1185.0   10138  1190.0   10145  1191.0   10152
X1 66.90      14    9818   10152     145     145     145
GR1197.0    9818  1195.0    9825  1190.0    9835  1185.0    9843  1180.0    9851
GR1175.0    9864  1171.2    9872  1171.2   10000  1171.2   10108  1175.0   10116
GR1180.0   10130  1185.0   10140  1190.0   10150  1191.0   10152
X1 67.90      15    9820   10151     100     100     100       0       0       0
GR1197.5    9820  1197.0    9822  1195.0    9827  1190.0    9838  1185.0    9845
GR1180.0    9856  1175.0    9869  1171.3    9876  1171.3   10000  1171.3   10105
GR1175.0   10112  1180.0   10127  1185.0   10139  1190.0   10146  1191.0   10151
X1 68.69      14    9820   10146      73      73      73
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9846  1180.0    9857
GR1175.0    9868  1171.4    9875  1171.4   10000  1171.4   10107  1175.0   10114
GR1180.0   10124  1185.0   10134  1190.0   10143  1192.0   10146
X1 68.70      12    9820   10146       7       7       7       0
GR1198.0    9820  1195.0    9830  1190.0    9840  1185.0    9847  1180.0    9857
GR1178.4    9860  1178.4   10000  1178.4   10121  1180.0   10124  1185.0   10134
GR1190.0   10143  1192.0   10146
X1 69.10      13    9820   10144      40      40      40       0       0       0
GR1198.2    9820  1198.0    9822  1195.0    9831  1190.0    9841  1185.0    9848
GR1180.0    9857  1178.5    9860  1178.5   10000  1178.5   10119  1180.0   10122
GR1185.0   10133  1190.0   10140  1193.0   10144
X1 70.10      13    9823   10141     100     100     100       0       0       0
GR1198.6    9823  1198.0    9826  1195.0    9832  1190.0    9843  1185.0    9852
GR1180.0    9860  1178.8    9862  1178.8   10000  1178.8   10117  1180.0   10119
GR1185.0   10130  1190.0   10137  1193.6   10141
X1 71.80      12    9827   10136     170     170     170       0       0       0
GR1199.0    9827  1195.0    9836  1190.0    9845  1185.0    9854  1180.0    9865
GR1179.3    9867  1179.3   10000  1179.3   10111  1180.0   10113  1185.0   10125
GR1190.0   10133  1193.2   10136
X1 73.50      18    9815   10147     170     170     170
GR1200.0    9815  1199.0    9819  1195.0    9827  1190.0    9836  1185.0    9847
GR1180.0    9857  1179.7    9863  1179.7    9868  1179.7    9873  1179.7    9932
GR1179.7   10000  1179.7   10103  1180.0   10106  1185.0   10118  1190.0   10126
GR1193.0   10131  1193.5   10132  1194.8   10147
X1 76.32      18    9824   10160     210     338     282       0       0       0
GR1201.0    9824  1200.0    9830  1195.0    9838  1190.0    9850  1185.0    9859
GR1180.0    9871  1179.9    9874  1179.9    9878  1179.9    9883  1179.9   10000
GR1180.0   10015  1180.2   10065  1181.0   10114  1185.0   10121  1190.0   10131
GR1195.0   10142  1195.7   10145  1196.0   10160
X1 81.00      20    9841   10157     468     468     468
GR1202.0    9841  1200.0    9846  1195.0    9855  1190.0    9864  1185.0    9875
GR1181.0    9887  1180.5    9892  1180.8    9902  1180.8    9932  1181.0    9971
GR1181.1   10000  1181.0   10026  1180.8   10055  1181.0   10073  1181.4   10100
GR1182.0   10121  1185.0   10131  1190.0   10139  1195.0   10148  1199.0   10157
X1 84.70      20    9807   10160     358     380     370
GR1202.6    9807  1202.0    9808  1200.0    9814  1195.0    9823  1190.0    9833
GR1185.0    9843  1183.0    9851  1182.0    9854  1181.2    9894  1182.0    9941
GR1182.0    9982  1181.8   10000  1181.2   10055  1182.0   10112  1183.0   10129
GR1185.0   10133  1190.0   10142  1195.0   10153  1198.0   10157  1198.9   10160
EJ
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      100-YEAR EVENT
J1     0       3       0       0  0.0055       0       0       0               0
J2     2       0      -1       0       0       0       0       0       0      15
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      50-YEAR  EVENT
J1     0       4       0       0  0.0055       0       0       0               0
J2     3       0      -1       0       0       0       0       0       0      15
T1      SKUNK CREEK - NEW RIVER TO ACDC
T2      EVALUATE CHANGES SINCE CONSTRUCTION  -  R.W. CRUFF,  APRIL 3, 1997
T3      10-YEAR EVENT
J1     0       5       0       0  0.0055       0       0       0               0
J2    15       0      -1       0       0       0       0       0       0      15
*
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ER

FILE = SCSPF&RI.OUT

APRIL 3, 1997

R.W. CRUFF, P.E.

THIS RUN CALLS THE ISLAND THE MAIN CHANNEL &
THE FLOW AREAS AROUND IT THE OVERBANKS.
THIS WILL GIVE VELOCITIES FOR BOTH.
N= 0.035 FOR THE CLEAR AREA (OVERBANKS) AND
0.080 FOR THE ISLAND (MAIN CHANNEL)
MODEL SCSPF&RI.DAT WAS DEVELOPED FROM MODEL SCSPF DEVELOPED BY
COE & VAN LOO IN 1989.

THE FLOW VALUES OF THAT WERE USED, WERE
TAKEN FROM THE 1986 CORPS OF ENGINEERS DESIGN MEMORANDUM #2,
HYDROLOGY, PART 2, 1986
SPF = 55,000 CFS
100-YEAR = 35,000 CFS
50-YEAR = 18,000 CFS (.32 X SPF)
10-YEAR = 6,600 CFS (.12 X SPF)

SPF, 100-, 50-, & 10-YEA

SUMMARY PRINTOUT

SECNO	K*XNCH	K*XNL	K*XNR	ELMIN	DEPTH	TOPWID	AREA
15.250	32.00	.00	.00	1155.00	12.13	292.25	3239.30
15.250	32.00	.00	.00	1155.00	9.31	282.23	2426.85
15.250	32.00	.00	.00	1155.00	6.30	270.20	1596.16
15.250	32.00	.00	.00	1155.00	3.51	255.89	859.52
17.000	32.00	.00	.00	1155.30	14.37	297.96	3921.65
17.000	32.00	.00	.00	1155.30	11.05	286.42	2952.13
17.000	32.00	.00	.00	1155.30	7.54	274.22	1968.41
17.000	32.00	.00	.00	1155.30	4.27	262.85	1090.86
19.000	32.00	.00	.00	1155.70	14.79	301.96	4060.17
19.000	32.00	.00	.00	1155.70	11.21	288.08	3005.70
19.000	32.00	.00	.00	1155.70	7.45	274.42	1946.20
19.000	32.00	.00	.00	1155.70	3.98	261.96	1017.25
20.850	32.00	.00	.00	1155.90	15.94	326.81	4875.87
20.850	32.00	.00	.00	1155.90	12.16	316.92	3662.00
20.850	32.00	.00	.00	1155.90	8.15	306.40	2412.39
20.850	32.00	.00	.00	1155.90	4.47	296.73	1300.69
22.000	32.00	.00	.00	1156.10	16.09	341.66	5069.84
22.000	32.00	.00	.00	1156.10	12.24	329.04	3782.37
22.000	32.00	.00	.00	1156.10	8.19	316.87	2472.73
22.000	32.00	.00	.00	1156.10	4.48	305.73	1316.19
23.900	32.00	.00	.00	1156.50	15.83	317.92	4748.94
23.900	32.00	.00	.00	1156.50	12.05	310.03	3562.05
23.900	32.00	.00	.00	1156.50	8.05	301.70	2340.46
23.900	32.00	.00	.00	1156.50	4.39	294.07	1251.21
24.890	32.00	.00	.00	1156.80	15.67	315.07	4702.94
24.890	32.00	.00	.00	1156.80	11.90	307.84	3528.52
24.890	32.00	.00	.00	1156.80	7.91	300.18	2315.48
24.890	32.00	.00	.00	1156.80	4.26	293.16	1229.83
24.900	32.00	.00	.00	1162.80	10.10	315.74	3084.20
24.900	32.00	.00	.00	1162.80	7.49	310.39	2268.51
24.900	32.00	.00	.00	1162.80	4.83	304.91	1447.97
24.900	32.00	.00	.00	1162.80	2.49	300.11	740.29

SECNO	K*XNCH	K*XNL	K*XNR	ELMIN	DEPTH	TOPWID	AREA
25.400	32.00	.00	.00	1162.90	11.76	327.44	3614.38
25.400	32.00	.00	.00	1162.90	8.90	313.77	2708.92
25.400	32.00	.00	.00	1162.90	5.94	307.53	1790.35
25.400	32.00	.00	.00	1162.90	3.29	301.93	981.42
26.700	32.00	.00	.00	1163.20	12.55	319.73	3859.37
26.700	32.00	.00	.00	1163.20	9.57	313.86	2914.48
26.700	32.00	.00	.00	1163.20	6.48	307.76	1952.87
26.700	32.00	.00	.00	1163.20	3.63	302.17	1087.11
27.800	32.00	.00	.00	1163.50	12.97	290.75	3603.53
27.800	32.00	.00	.00	1163.50	9.76	284.37	2679.95
27.800	32.00	.00	.00	1163.50	6.44	277.78	1746.94
27.800	32.00	.00	.00	1163.50	3.43	271.80	919.65
29.600	32.00	.00	.00	1163.90	14.48	323.20	4474.16
29.600	32.00	.00	.00	1163.90	10.92	316.27	3337.68
29.600	32.00	.00	.00	1163.90	7.25	309.14	2192.51
29.600	32.00	.00	.00	1163.90	3.95	302.69	1179.51
30.000	80.00	35.00	35.00	1164.00	14.33	335.66	4561.95
30.000	80.00	35.00	35.00	1164.00	10.81	328.62	3393.14
30.000	80.00	35.00	35.00	1164.00	7.18	321.35	2212.53
30.000	80.00	35.00	35.00	1164.00	3.91	314.83	1175.17
31.750	80.00	35.00	35.00	1163.40	16.28	433.54	5894.04
31.750	80.00	35.00	35.00	1163.40	12.48	418.43	4275.27
31.750	80.00	35.00	35.00	1163.40	8.63	403.16	2697.77
31.750	80.00	35.00	35.00	1163.40	5.29	389.85	1370.07
33.000	80.00	35.00	35.00	1164.10	15.69	383.80	5031.74
33.000	80.00	35.00	35.00	1164.10	12.06	371.54	3662.17
33.000	80.00	35.00	35.00	1164.10	8.44	360.27	2336.69
33.000	80.00	35.00	35.00	1164.10	5.33	351.01	1231.57
35.000	80.00	35.00	35.00	1165.90	14.34	339.79	4400.77
35.000	80.00	35.00	35.00	1165.90	10.93	326.25	3264.91
35.000	80.00	35.00	35.00	1165.90	7.52	315.17	2174.45
35.000	80.00	35.00	35.00	1165.90	4.50	307.93	1232.36
37.000	40.00	.00	.00	1166.90	14.96	316.60	4367.24
37.000	40.00	.00	.00	1166.90	11.42	302.20	3273.28
37.000	40.00	.00	.00	1166.90	7.73	291.38	2179.65
37.000	40.00	.00	.00	1166.90	4.35	283.92	1208.72
38.320	32.00	.00	.00	1167.50	14.61	314.92	4183.33
38.320	32.00	.00	.00	1167.50	11.08	302.17	3093.95
38.320	32.00	.00	.00	1167.50	7.41	289.54	2008.42
38.320	32.00	.00	.00	1167.50	4.06	272.14	1068.26
40.050	32.00	.00	.00	1166.50	16.35	318.63	4432.35
40.050	32.00	.00	.00	1166.50	12.80	296.76	3344.40
40.050	32.00	.00	.00	1166.50	9.10	284.91	2267.21
40.050	32.00	.00	.00	1166.50	5.61	269.46	1300.48
43.000	32.00	.00	.00	1166.70	16.87	321.59	4505.33
43.000	32.00	.00	.00	1166.70	13.26	295.87	3416.68
43.000	32.00	.00	.00	1166.70	9.47	282.99	2319.72
43.000	32.00	.00	.00	1166.70	5.84	260.33	1327.75
46.920	32.00	.00	.00	1167.60	16.66	296.34	4312.66
46.920	32.00	.00	.00	1167.60	13.04	283.30	3262.67
46.920	32.00	.00	.00	1167.60	9.21	270.80	2203.37
46.920	32.00	.00	.00	1167.60	5.48	252.76	1222.43
50.900	32.00	.00	.00	1168.00	17.38	304.89	4580.43
50.900	32.00	.00	.00	1168.00	13.63	290.87	3464.60
50.900	32.00	.00	.00	1168.00	9.64	276.02	2332.74
50.900	32.00	.00	.00	1168.00	5.74	258.21	1288.38
55.000	32.00	.00	.00	1169.00	17.15	304.39	4588.13
55.000	32.00	.00	.00	1169.00	13.36	287.37	3467.35
55.000	32.00	.00	.00	1169.00	9.30	270.88	2336.88
55.000	32.00	.00	.00	1169.00	5.33	255.65	1289.92

SECNO	K*XNCH	K*XNL	K*XNR	ELMIN	DEPTH	TOPWID	AREA
60.000	32.00	.00	.00	1169.70	17.45	307.05	4688.09
60.000	32.00	.00	.00	1169.70	13.58	293.15	3527.95
60.000	32.00	.00	.00	1169.70	9.41	278.22	2332.81
60.000	32.00	.00	.00	1169.70	5.37	261.29	1245.82
64.000	32.00	.00	.00	1170.50	17.17	289.30	4356.64
64.000	32.00	.00	.00	1170.50	13.35	274.01	3283.05
64.000	32.00	.00	.00	1170.50	9.23	263.18	2175.10
64.000	32.00	.00	.00	1170.50	5.25	251.24	1151.68
65.450	32.00	.00	.00	1171.00	17.28	311.49	4638.70
65.450	32.00	.00	.00	1171.00	13.29	297.45	3421.81
65.450	32.00	.00	.00	1171.00	9.04	276.20	2203.26
65.450	32.00	.00	.00	1171.00	5.04	244.33	1162.13
66.900	32.00	.00	.00	1171.20	17.50	310.33	4819.03
66.900	32.00	.00	.00	1171.20	13.52	296.01	3613.06
66.900	32.00	.00	.00	1171.20	9.26	280.65	2383.11
66.900	32.00	.00	.00	1171.20	5.18	259.45	1280.08
67.900	32.00	.00	.00	1171.30	17.50	304.64	4708.31
67.900	32.00	.00	.00	1171.30	13.54	293.25	3522.52
67.900	32.00	.00	.00	1171.30	9.28	273.68	2316.90
67.900	32.00	.00	.00	1171.30	5.22	251.49	1248.07
68.690	32.00	.00	.00	1171.40	17.51	299.75	4680.92
68.690	32.00	.00	.00	1171.40	13.56	287.82	3517.78
68.690	32.00	.00	.00	1171.40	9.31	269.97	2332.59
68.690	32.00	.00	.00	1171.40	5.24	252.86	1267.97
68.700	32.00	.00	.00	1178.40	10.77	300.35	3032.42
68.700	32.00	.00	.00	1178.40	8.03	291.58	2221.70
68.700	32.00	.00	.00	1178.40	5.21	281.43	1411.91
68.700	32.00	.00	.00	1178.40	2.68	271.33	713.70
69.100	32.00	.00	.00	1178.50	11.96	300.50	3362.98
69.100	32.00	.00	.00	1178.50	9.17	292.45	2536.59
69.100	32.00	.00	.00	1178.50	6.16	283.59	1667.77
69.100	32.00	.00	.00	1178.50	3.41	272.63	905.76
70.100	32.00	.00	.00	1178.80	12.20	297.31	3376.40
70.100	32.00	.00	.00	1178.80	9.43	288.34	2566.11
70.100	32.00	.00	.00	1178.80	6.47	278.86	1726.04
70.100	32.00	.00	.00	1178.80	3.66	268.35	957.05
71.800	32.00	.00	.00	1179.30	12.69	293.44	3444.58
71.800	32.00	.00	.00	1179.30	9.84	285.09	2621.71
71.800	32.00	.00	.00	1179.30	6.78	274.71	1767.29
71.800	32.00	.00	.00	1179.30	3.85	262.48	975.74
73.500	32.00	.00	.00	1179.70	13.69	301.89	3779.54
73.500	32.00	.00	.00	1179.70	10.57	290.97	2857.17
73.500	32.00	.00	.00	1179.70	7.25	278.40	1908.21
73.500	32.00	.00	.00	1179.70	4.12	265.77	1054.16
76.320	32.00	.00	.00	1179.90	14.68	302.09	3932.14
76.320	32.00	.00	.00	1179.90	11.46	287.22	2979.73
76.320	32.00	.00	.00	1179.90	8.02	273.10	2019.42
76.320	32.00	.00	.00	1179.90	4.72	260.42	1138.55
81.000	32.00	.00	.00	1180.50	15.62	297.50	4046.86
81.000	32.00	.00	.00	1180.50	12.28	285.02	3077.94
81.000	32.00	.00	.00	1180.50	8.65	271.76	2065.86
81.000	32.00	.00	.00	1180.50	5.14	258.45	1137.03
84.700	32.00	.00	.00	1181.20	16.75	339.28	5009.16
84.700	32.00	.00	.00	1181.20	13.04	326.81	3768.71
84.700	32.00	.00	.00	1181.20	9.04	310.02	2495.48
84.700	32.00	.00	.00	1181.20	5.26	295.52	1348.36

FILE = SCSPF&RI.OUT

APRIL 3, 1997

R.W. CRUFF, P.E.

THIS RUN CALLS THE ISLAND THE MAIN CHANNEL &
THE FLOW AREAS AROUND IT THE OVERBANKS.
THIS WILL GIVE VELOCITIES FOR BOTH.
N= 0.035 FOR THE CLEAR AREA (OVERBANKS) AND
0.080 FOR THE ISLAND (MAIN CHANNEL)
MODEL SCSPF&RI.DAT WAS DEVELOPED FROM MODEL SCSPF DEVELOPED BY
COE & VAN LOO IN 1989.

THE FLOW VALUES OF THAT WERE USED, WERE
TAKEN FROM THE 1986 CORPS OF ENGINEERS DESIGN MEMORANDUM #2,
HYDROLOGY, PART 2, 1986
SPF = 55,000 CFS
100-YEAR = 35,000 CFS
50-YEAR = 18,000 CFS (.32 X SPF)
10-YEAR = 6,600 CFS (.12 X SPF)

SPF, 100-, 50-, & 10-YEA

SUMMARY PRINTOUT

SECNO	CWSEL	QCH	VCH	QLOB	VLOB	QROB	VROB
15.250	1167.13	55000.00	16.98	.00	.00	.00	.00
15.250	1164.31	35000.00	14.42	.00	.00	.00	.00
15.250	1161.30	18000.00	11.28	.00	.00	.00	.00
15.250	1158.51	6600.00	7.68	.00	.00	.00	.00
17.000	1169.67	55000.00	14.02	.00	.00	.00	.00
17.000	1166.35	35000.00	11.86	.00	.00	.00	.00
17.000	1162.84	18000.00	9.14	.00	.00	.00	.00
17.000	1159.57	6600.00	6.05	.00	.00	.00	.00
19.000	1170.49	55000.00	13.55	.00	.00	.00	.00
19.000	1166.91	35000.00	11.64	.00	.00	.00	.00
19.000	1163.15	18000.00	9.25	.00	.00	.00	.00
19.000	1159.68	6600.00	6.49	.00	.00	.00	.00
20.850	1171.84	55000.00	11.28	.00	.00	.00	.00
20.850	1168.06	35000.00	9.56	.00	.00	.00	.00
20.850	1164.05	18000.00	7.46	.00	.00	.00	.00
20.850	1160.37	6600.00	5.07	.00	.00	.00	.00
22.000	1172.19	55000.00	10.85	.00	.00	.00	.00
22.000	1168.34	35000.00	9.25	.00	.00	.00	.00
22.000	1164.29	18000.00	7.28	.00	.00	.00	.00
22.000	1160.58	6600.00	5.01	.00	.00	.00	.00
23.900	1172.33	55000.00	11.58	.00	.00	.00	.00
23.900	1168.55	35000.00	9.83	.00	.00	.00	.00
23.900	1164.55	18000.00	7.69	.00	.00	.00	.00
23.900	1160.89	6600.00	5.27	.00	.00	.00	.00
24.890	1172.47	55000.00	11.69	.00	.00	.00	.00
24.890	1168.70	35000.00	9.92	.00	.00	.00	.00
24.890	1164.71	18000.00	7.77	.00	.00	.00	.00
24.890	1161.06	6600.00	5.37	.00	.00	.00	.00
24.900	1172.90	55000.00	17.83	.00	.00	.00	.00
24.900	1170.29	35000.00	15.43	.00	.00	.00	.00
24.900	1167.63	18000.00	12.43	.00	.00	.00	.00
24.900	1165.29	6600.00	8.92	.00	.00	.00	.00

SECNO	CWSEL	QCH	VCH	QLOB	VLOB	QROB	VROB
25.400	1174.66	55000.00	15.22	.00	.00	.00	.00
25.400	1171.80	35000.00	12.92	.00	.00	.00	.00
25.400	1168.84	18000.00	10.05	.00	.00	.00	.00
25.400	1166.19	6600.00	6.72	.00	.00	.00	.00
26.700	1175.75	55000.00	14.25	.00	.00	.00	.00
26.700	1172.77	35000.00	12.01	.00	.00	.00	.00
26.700	1169.68	18000.00	9.22	.00	.00	.00	.00
26.700	1166.83	6600.00	6.07	.00	.00	.00	.00
27.800	1176.47	55000.00	15.26	.00	.00	.00	.00
27.800	1173.26	35000.00	13.06	.00	.00	.00	.00
27.800	1169.94	18000.00	10.30	.00	.00	.00	.00
27.800	1166.93	6600.00	7.18	.00	.00	.00	.00
29.600	1178.38	55000.00	12.29	.00	.00	.00	.00
29.600	1174.82	35000.00	10.49	.00	.00	.00	.00
29.600	1171.15	18000.00	8.21	.00	.00	.00	.00
29.600	1167.85	6600.00	5.60	.00	.00	.00	.00
30.000	1178.33	4827.40	5.87	7513.87	12.55	42658.73	13.58
30.000	1174.81	3025.60	4.95	4688.86	10.87	27285.54	11.61
30.000	1171.18	1496.52	3.80	2354.79	8.67	14148.69	9.15
30.000	1167.91	489.34	2.47	836.33	6.00	5274.33	6.30
31.750	1179.68	18651.65	6.07	16748.13	12.81	19600.21	12.97
31.750	1175.88	12114.52	5.32	10523.51	11.39	12361.97	11.51
31.750	1172.03	6390.52	4.35	5329.35	9.43	6280.13	9.49
31.750	1168.69	2429.20	3.17	1918.27	6.94	2252.53	6.91
33.000	1179.79	16373.41	6.81	21329.01	14.48	17297.59	14.99
33.000	1176.16	10648.98	5.97	13172.57	12.70	11178.45	13.30
33.000	1172.54	5641.56	4.84	6443.35	10.19	5915.09	10.96
33.000	1169.43	2173.02	3.43	2114.63	6.91	2312.35	7.92
35.000	1180.24	11484.31	7.09	20333.01	15.31	23182.68	15.95
35.000	1176.83	7369.93	6.04	12653.98	13.21	14976.08	13.78
35.000	1173.42	3801.57	4.63	6310.07	10.17	7888.36	10.77
35.000	1170.40	1381.86	2.95	2176.99	6.46	3041.14	7.12
37.000	1181.86	55000.00	12.59	.00	.00	.00	.00
37.000	1178.32	35000.00	10.69	.00	.00	.00	.00
37.000	1174.63	18000.00	8.26	.00	.00	.00	.00
37.000	1171.25	6600.00	5.46	.00	.00	.00	.00
38.320	1182.11	55000.00	13.15	.00	.00	.00	.00
38.320	1178.58	35000.00	11.31	.00	.00	.00	.00
38.320	1174.91	18000.00	8.96	.00	.00	.00	.00
38.320	1171.56	6600.00	6.18	.00	.00	.00	.00
40.050	1182.85	55000.00	12.41	.00	.00	.00	.00
40.050	1179.30	35000.00	10.47	.00	.00	.00	.00
40.050	1175.60	18000.00	7.94	.00	.00	.00	.00
40.050	1172.11	6600.00	5.08	.00	.00	.00	.00
43.000	1183.57	55000.00	12.21	.00	.00	.00	.00
43.000	1179.96	35000.00	10.24	.00	.00	.00	.00
43.000	1176.17	18000.00	7.76	.00	.00	.00	.00
43.000	1172.54	6600.00	4.97	.00	.00	.00	.00
46.920	1184.26	55000.00	12.75	.00	.00	.00	.00
46.920	1180.64	35000.00	10.73	.00	.00	.00	.00
46.920	1176.81	18000.00	8.17	.00	.00	.00	.00
46.920	1173.08	6600.00	5.40	.00	.00	.00	.00
50.900	1185.38	55000.00	12.01	.00	.00	.00	.00
50.900	1181.63	35000.00	10.10	.00	.00	.00	.00
50.900	1177.64	18000.00	7.72	.00	.00	.00	.00
50.900	1173.74	6600.00	5.12	.00	.00	.00	.00
55.000	1186.15	55000.00	11.99	.00	.00	.00	.00
55.000	1182.36	35000.00	10.09	.00	.00	.00	.00
55.000	1178.30	18000.00	7.70	.00	.00	.00	.00
55.000	1174.33	6600.00	5.12	.00	.00	.00	.00

SECNO	CWSEL	QCH	VCH	QLOB	VLOB	QROB	VROB
60.000	1187.15	55000.00	11.73	.00	.00	.00	.00
60.000	1183.28	35000.00	9.92	.00	.00	.00	.00
60.000	1179.11	18000.00	7.72	.00	.00	.00	.00
60.000	1175.07	6600.00	5.30	.00	.00	.00	.00
64.000	1187.67	55000.00	12.62	.00	.00	.00	.00
64.000	1183.85	35000.00	10.66	.00	.00	.00	.00
64.000	1179.73	18000.00	8.28	.00	.00	.00	.00
64.000	1175.75	6600.00	5.73	.00	.00	.00	.00
65.450	1188.28	55000.00	11.86	.00	.00	.00	.00
65.450	1184.29	35000.00	10.23	.00	.00	.00	.00
65.450	1180.04	18000.00	8.17	.00	.00	.00	.00
65.450	1176.04	6600.00	5.68	.00	.00	.00	.00
66.900	1188.70	55000.00	11.41	.00	.00	.00	.00
66.900	1184.72	35000.00	9.69	.00	.00	.00	.00
66.900	1180.46	18000.00	7.55	.00	.00	.00	.00
66.900	1176.38	6600.00	5.16	.00	.00	.00	.00
67.900	1188.80	55000.00	11.68	.00	.00	.00	.00
67.900	1184.84	35000.00	9.94	.00	.00	.00	.00
67.900	1180.58	18000.00	7.77	.00	.00	.00	.00
67.900	1176.52	6600.00	5.29	.00	.00	.00	.00
68.690	1188.91	55000.00	11.75	.00	.00	.00	.00
68.690	1184.96	35000.00	9.95	.00	.00	.00	.00
68.690	1180.71	18000.00	7.72	.00	.00	.00	.00
68.690	1176.64	6600.00	5.21	.00	.00	.00	.00
68.700	1189.17	55000.00	18.14	.00	.00	.00	.00
68.700	1186.43	35000.00	15.75	.00	.00	.00	.00
68.700	1183.61	18000.00	12.75	.00	.00	.00	.00
68.700	1181.08	6600.00	9.25	.00	.00	.00	.00
69.100	1190.46	55000.00	16.35	.00	.00	.00	.00
69.100	1187.67	35000.00	13.80	.00	.00	.00	.00
69.100	1184.66	18000.00	10.79	.00	.00	.00	.00
69.100	1181.91	6600.00	7.29	.00	.00	.00	.00
70.100	1191.00	55000.00	16.29	.00	.00	.00	.00
70.100	1188.23	35000.00	13.64	.00	.00	.00	.00
70.100	1185.27	18000.00	10.43	.00	.00	.00	.00
70.100	1182.46	6600.00	6.90	.00	.00	.00	.00
71.800	1191.99	55000.00	15.97	.00	.00	.00	.00
71.800	1189.14	35000.00	13.35	.00	.00	.00	.00
71.800	1186.08	18000.00	10.19	.00	.00	.00	.00
71.800	1183.15	6600.00	6.76	.00	.00	.00	.00
73.500	1193.39	55000.00	14.55	.00	.00	.00	.00
73.500	1190.27	35000.00	12.25	.00	.00	.00	.00
73.500	1186.95	18000.00	9.43	.00	.00	.00	.00
73.500	1183.82	6600.00	6.26	.00	.00	.00	.00
76.320	1194.58	55000.00	13.99	.00	.00	.00	.00
76.320	1191.36	35000.00	11.75	.00	.00	.00	.00
76.320	1187.92	18000.00	8.91	.00	.00	.00	.00
76.320	1184.62	6600.00	5.80	.00	.00	.00	.00
81.000	1196.12	55000.00	13.59	.00	.00	.00	.00
81.000	1192.78	35000.00	11.37	.00	.00	.00	.00
81.000	1189.15	18000.00	8.71	.00	.00	.00	.00
81.000	1185.64	6600.00	5.80	.00	.00	.00	.00
84.700	1197.95	55000.00	10.98	.00	.00	.00	.00
84.700	1194.24	35000.00	9.29	.00	.00	.00	.00
84.700	1190.24	18000.00	7.21	.00	.00	.00	.00
84.700	1186.46	6600.00	4.89	.00	.00	.00	.00

FILE = SCSPF&RI.OUT

APRIL 3, 1997

R.W. CRUFF, P.E.

THIS RUN CALLS THE ISLAND THE MAIN CHANNEL &
THE FLOW AREAS AROUND IT THE OVERBANKS.
THIS WILL GIVE VELOCITIES FOR BOTH.
N= 0.035 FOR THE CLEAR AREA (OVERBANKS) AND
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SPF = 55,000 CFS
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50-YEAR = 18,000 CFS (.32 X SPF)
10-YEAR = 6,600 CFS (.12 X SPF)

-------- SPF FLOWS----------

*SECNO 30.000
BEGINNING OF WILDLIFE HABITATE MITIGATION AREA

30.000	14.33	1178.33	1174.50	.00	1180.93	2.60	.10	.10	1164.30
55000.0	7513.9	4827.4	42658.7	598.9	822.9	3140.2	142.2	10.6	1164.00
.03	12.55	5.87	13.58	.035	.080	.035	.000	1164.00	9860.67
.003040	44.	40.	40.	2	15	0	.00	335.66	10196.33

FLOW DISTRIBUTION FOR SECNO= 30.00 CWSEL= 1178.33

STA=	9861.	9875.	9910.	9970.	10000.	10182.	10196.
PER Q=	1.3	12.4	8.8	10.8	65.5	1.3	
AREA=	102.6	496.2	822.9	429.8	2607.7	102.6	
VEL=	6.9	13.7	5.9	13.8	13.8	6.9	
DEPTH=	7.2	14.2	13.7	14.3	14.3	7.2	

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 31.750

3301 HV CHANGED MORE THAN HVINS

31.750	16.28	1179.68	1174.79	.00	1181.58	1.90	.50	.14	1165.90
55000.0	16748.1	18651.7	19600.2	1307.8	3075.0	1511.3	162.6	12.1	1165.70
.04	12.81	6.07	12.97	.035	.080	.035	.000	1163.40	9785.23
.002989	200.	175.	152.	3	15	0	.00	433.54	10218.77

FLOW DISTRIBUTION FOR SECNO= 31.75 CWSEL= 1179.68

STA=	9785.	9816.	9847.	9875.	9885.	9890.	10100.	10189.	10219.
PER Q=	3.6	12.0	9.8	3.3	1.7	33.9	32.3	3.3	
AREA=	238.1	467.4	396.9	136.8	68.6	3075.0	1288.4	222.9	
VEL=	8.4	14.2	13.6	13.3	13.3	6.1	13.8	8.2	
DEPTH=	7.7	15.1	14.2	13.7	13.7	14.6	14.5	7.5	

*SECNO 33.000

3301 HV CHANGED MORE THAN HVINS

33.000	15.69	1179.79	1176.17	.00	1182.36	2.57	.51	.27	1165.00
55000.0	21329.0	16373.4	17297.6	1472.8	2404.7	1154.2	180.3	13.5	1166.00
.04	14.48	6.81	14.99	.035	.080	.035	.000	1164.10	9804.51
.003975	180.	125.	135.	2	15	0	.00	383.80	10188.32

FLOW DISTRIBUTION FOR SECNO= 33.00 CWSEL= 1179.79

STA=	9805.	9816.	9826.	9836.	9880.	9908.	9923.	9929.	10100.	10174.	10188.
PER Q=	.2	1.2	3.0	17.0	9.5	5.4	2.4	29.8	29.9	1.5	
AREA=	27.5	72.9	122.9	606.6	358.0	199.3	85.7	2404.7	1049.8	104.4	
VEL=	4.5	9.3	13.2	15.4	14.6	15.0	15.6	6.8	15.7	7.9	
DEPTH=	2.4	7.3	12.3	13.8	12.8	13.3	14.3	14.1	14.2	7.3	

*SECNO 35.000

3301 HV CHANGED MORE THAN HVINS

35.000	14.34	1180.24	1177.40	.00	1183.41	3.17	.81	.24	1166.00
55000.0	20333.0	11484.3	23182.7	1328.0	1619.2	1453.5	201.5	15.1	1166.00

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       .04      15.31       7.09      15.95       .035       .080       .035       .000   1165.90   9824.36
   .004388       205.       200.       180.          2         15          0        .00    339.79  10164.15

    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=     35.00          CWSEL=   1180.24

STA=    9824.    9840.    9847.    9855.    9905.    9925.    9930.    9934.    9938.   10055.   10150.   10164.
  PER Q=       .4       .9      2.5     20.1      7.6      2.0      1.7      1.7     20.9     40.6      1.5
   AREA=     41.1     54.2     97.9    687.0    264.8     68.7     57.2     57.2   1619.2   1352.8    100.8
    VEL=      5.3      9.6     13.9     16.1     15.7     15.9     16.6     16.6      7.1     16.5      8.2
  DEPTH=      2.6      7.7     12.2     13.7     13.2     13.7     14.3     14.3     13.8     14.2      7.1

*SECNO 37.000

3301 HV CHANGED MORE THAN HVINS

          END OF WILDLIFE HABITATE MITIGATION AREA
    37.000      14.96   1181.86   1177.52       .00   1184.33      2.46       .77       .14   1183.00
   55000.0         .0   55000.0        .0        .0    4367.2        .0     221.2      16.6   1182.70
       .05        .00     12.59       .00      .000      .040      .000      .000   1166.90   9835.55
   .003644       185.       200.       184.         3         15         0        .00    316.60  10152.15

FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=   1181.86

STA=    9836.   10153.
  PER Q=    100.0
   AREA=   4367.2
    VEL=     12.6
  DEPTH=     13.8

 -------- 100-YEAR FLOW---------

*SECNO 30.000
          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
    30.000      10.81   1174.81       .00       .00   1176.72      1.91       .11       .08   1164.30
   35000.0    4688.9    3025.6   27285.5     431.5     611.8    2349.9     106.4      10.3   1164.00
       .04      10.87      4.95     11.61      .035      .080      .035      .000   1164.00   9864.19
   .003208        44.       40.       40.         2         0         0        .00    328.62  10192.81

FLOW DISTRIBUTION FOR SECNO=     30.00          CWSEL=   1174.81

STA=    9864.    9875.    9910.    9970.   10000.   10182.   10193.
  PER Q=      1.0     12.4      8.6     10.9     66.1      1.0
   AREA=     58.4    373.1    611.8    324.3   1967.2     58.4
    VEL=      5.9     11.6      4.9     11.8     11.8      5.9
  DEPTH=      5.4     10.7     10.2     10.8     10.8      5.4

    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 31.750
    31.750      12.48   1175.88       .00       .00   1177.36      1.48       .56       .09   1165.90
   35000.0   10523.5   12114.5   12362.0     924.0    2277.0    1074.3     121.3      11.7   1165.70
       .04      11.39      5.32     11.51      .035      .080      .035      .000   1163.40   9792.78
   .003433       200.       175.       152.         3         0         0        .00    418.43  10211.22

FLOW DISTRIBUTION FOR SECNO=     31.75          CWSEL=   1175.88

STA=    9793.    9816.    9847.    9875.    9885.    9890.   10100.   10189.   10211.
  PER Q=      2.9     12.5      9.8      3.2      1.6     34.6     32.7      2.6
   AREA=    135.5    349.6    290.5     98.8     49.6   2277.0    950.2    124.1
    VEL=      7.5     12.5     11.8     11.5     11.5      5.3     12.1      7.3
  DEPTH=      5.8     11.3     10.4      9.9      9.9     10.8     10.7      5.6

*SECNO 33.000

3301 HV CHANGED MORE THAN HVINS

    33.000      12.06   1176.16       .00       .00   1178.15      1.99       .59       .20   1165.00
   35000.0   13172.6   10649.0   11178.5    1037.2    1784.6     840.4     134.1      13.0   1166.00
       .05      12.70      5.97     13.30      .035      .080      .035      .000   1164.10   9813.22
   .004544       180.       125.       135.         2         0         0        .00    371.54  10184.76

FLOW DISTRIBUTION FOR SECNO=     33.00          CWSEL=   1176.16

STA=    9813.    9826.    9836.    9880.    9908.    9923.    9929.   10100.   10174.   10185.
  PER Q=       .7      2.8     17.1      9.2      5.4      2.5     30.4     30.8      1.2
   AREA=     38.2     86.6    447.0    256.5    144.9     64.0   1784.6    781.4     59.0
    VEL=      6.1     11.2     13.4     12.5     13.0     13.7      6.0     13.8      7.0
  DEPTH=      3.0      8.7     10.2      9.2      9.7     10.7     10.4     10.6      5.5

*SECNO 35.000
    35.000      10.93   1176.83       .00       .00   1179.19      2.36       .89       .15   1166.00
   35000.0   12654.0    7369.9   14976.1     957.7    1220.2    1087.0     149.7      14.6   1166.00
       .05      13.21      6.04     13.78      .035      .080      .035      .000   1165.90   9834.51
   .004640       205.       200.       180.         2         0         0        .00    326.25  10160.76
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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=     35.00          CWSEL=   1176.83

STA=    9835.    9840.    9847.    9855.    9905.    9925.    9930.    9934.    9938.   10055.   10150.   10161.
  PER Q=       .0       .6      2.3     20.2      7.5      2.0      1.8      1.8     21.1     41.6      1.2
   AREA=      5.0     30.3     70.6    516.5    196.6     51.6     43.5     43.5   1220.2   1028.8     58.3
    VEL=      2.6      6.7     11.5     13.7     13.3     13.5     14.2     14.2      6.0     14.2      7.1
  DEPTH=       .9      4.3      8.8     10.3      9.8     10.3     10.9     10.9     10.4     10.8      5.4

*SECNO 37.000

3301 HV CHANGED MORE THAN HVINS

          END OF WILDLIFE HABITATE MITIGATION AREA
    37.000     11.42   1178.32       .00       .00   1180.09      1.78       .79       .12   1183.00
   35000.0        .0   35000.0        .0        .0    3273.3        .0     164.3      16.0   1182.70
       .06       .00     10.69       .00      .000      .040      .000      .000   1166.90   9846.37
   .003602      185.      200.      184.         3         0         0       .00    302.20  10148.56


FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=   1178.32

STA=    9846.   10153.
  PER Q=    100.0
   AREA=   3273.3
    VEL=     10.7
  DEPTH=     10.8


    ---------50-YEAR FLOW-------------

*SECNO 30.000
          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
    30.000      7.18   1171.18       .00       .00   1172.37      1.19       .11       .06   1164.30
   18000.0    2354.8    1496.5   14148.7     271.7     393.8    1547.1      69.9      10.0   1164.00
       .05      8.67      3.80      9.15      .035      .080      .035      .000   1164.00   9867.82
   .003408       44.       40.       40.         2         0         0       .00    321.35  10189.18


FLOW DISTRIBUTION FOR SECNO=     30.00          CWSEL=   1171.18

STA=    9868.    9875.    9910.    9970.   10000.   10182.   10189.
  PER Q=       .7     12.4      8.3     11.0     66.9       .7
   AREA=     25.7    245.9    393.8    215.3   1306.0     25.7
    VEL=      4.6      9.1      3.8      9.2      9.2      4.6
  DEPTH=      3.6      7.0      6.6      7.2      7.2      3.6

    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 31.750
    31.750      8.63   1172.03       .00       .00   1173.03      1.00       .63       .04   1165.90
   18000.0    5329.3    6390.5    6280.1     565.3    1470.5     661.9      79.4      11.4   1165.70
       .05      9.43      4.35      9.49      .035      .080      .035      .000   1163.40   9800.42
   .004102      200.      175.      152.         2         0         0       .00    403.16  10203.58


FLOW DISTRIBUTION FOR SECNO=     31.75          CWSEL=   1172.03

STA=    9800.    9816.    9847.    9875.    9885.    9890.   10100.   10189.   10204.
  PER Q=      2.1      13.3      9.7      3.0      1.5     35.5     33.1      1.8
   AREA=     61.0     230.5    183.0     60.4     30.4   1470.5    608.4     53.5
    VEL=      6.3      10.4      9.5      9.0      9.1      4.3      9.8      6.0
  DEPTH=      3.9       7.4      6.5      6.0      6.1      7.0      6.8      3.7

*SECNO 33.000
    33.000      8.44   1172.54       .00       .00   1173.84      1.30       .69       .12   1165.00
   18000.0    6443.4    5641.6    5915.1     632.1    1164.9     539.7      87.6      12.6   1166.00
       .06     10.19      4.84     10.96      .035      .080      .035      .000   1164.10   9820.93
   .005286      180.      125.      135.         2         0         0       .00    360.27  10181.20


FLOW DISTRIBUTION FOR SECNO=     33.00          CWSEL=   1172.54

STA=    9821.    9826.    9836.    9880.    9908.    9923.    9929.   10100.   10174.   10181.
  PER Q=       .1      2.4     17.2      8.3      5.1      2.6     31.3     32.0       .8
   AREA=      6.4     50.4    287.6    155.0     90.5     42.2   1164.9    513.2     26.4
    VEL=      3.4      8.4     10.8      9.7     10.2     11.2      4.8     11.2      5.8
  DEPTH=      1.3      5.0      6.5      5.5      6.0      7.0      6.8      6.9      3.7

*SECNO 35.000
    35.000      7.52   1173.42       .00       .00   1174.84      1.42       .96       .05   1166.00
   18000.0    6310.1    3801.6    7888.4     620.5     821.5     732.4      97.7      14.1   1166.00
       .07     10.17      4.63     10.77      .035      .080      .035      .000   1165.90   9842.21
   .004615      205.      200.      180.         2         0         0       .00    315.17  10157.38


FLOW DISTRIBUTION FOR SECNO=     35.00          CWSEL=   1173.42

STA=    9842.    9847.    9855.    9905.    9925.    9930.    9934.    9938.   10055.   10150.   10157.
  PER Q=       .2      2.0     20.1      7.1      2.0      1.8      1.8     21.1     43.0       .8
   AREA=      8.2     43.4    346.1    128.4     34.6     29.9     29.9    821.5    705.1     27.4
    VEL=      3.6      8.3     10.5     10.0     10.3     11.0     11.0      4.6     11.0      5.5
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  DEPTH=      1.7      5.4      6.9      6.4      6.9      7.5      7.5      7.0      7.4      3.7

    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 37.000
          END OF WILDLIFE HABITATE MITIGATION AREA
    37.000      7.73   1174.63       .00       .00   1175.69      1.06       .77       .07   1183.00
   18000.0        .0   18000.0        .0        .0    2179.6        .0     107.4      15.5   1182.70
       .07       .00      8.26       .00      .000      .040      .000      .000   1166.90   9853.44
   .003488      185.      200.      184.         2         0         0       .00    291.38  10144.83


FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=   1174.63

STA=    9853.   10153.
  PER Q=    100.0
   AREA=   2179.6
    VEL=      8.3
  DEPTH=      7.5

  -------------10-YEAR FLOW---------

*SECNO 30.000
          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
    30.000      3.91   1167.91       .00       .00   1168.48       .57       .12       .03   1164.30
    6600.0     836.3     489.3    5274.3     139.4     198.1     837.6      37.6       9.7   1164.00
       .07      6.00      2.47      6.30      .035      .080      .035      .000   1164.00   9871.08
   .003598       44.       40.       40.         2         0         0       .00    314.83  10185.92


FLOW DISTRIBUTION FOR SECNO=     30.00          CWSEL=   1167.91

STA=    9871.    9875.    9910.    9970.   10000.   10182.   10186.
  PER Q=       .4     12.3      7.4     11.3     68.3       .4
   AREA=      7.7    131.8    198.1    117.4    712.5      7.7
    VEL=      3.2      6.2      2.5      6.3      6.3      3.2
  DEPTH=      2.0      3.8      3.3      3.9      3.9      2.0

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   03APR97      14:01:11                                                                                    PAGE   61

    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 31.750
    31.750      5.29   1168.69       .00       .00   1169.21       .53       .72       .01   1165.90
    6600.0    1918.3    2429.2    2252.5     276.5     767.3     326.2      42.5      11.0   1165.70
       .08      6.94      3.17      6.91      .035      .080      .035      .000   1163.40   9807.08
   .005182      200.      175.      152.         3         0         0       .00    389.85  10196.93


FLOW DISTRIBUTION FOR SECNO=     31.75          CWSEL=   1168.69

STA=    9807.    9816.    9847.    9875.    9885.    9890.   10100.   10189.   10197.
  PER Q=      1.5     15.0      8.9      2.4      1.2     36.8     33.1      1.1
   AREA=     20.0    126.7     89.2     26.9     13.7    767.3    310.4     15.8
    VEL=      4.9      7.8      6.6      5.9      6.0      3.2      7.0      4.5
  DEPTH=      2.2      4.1      3.2      2.7      2.7      3.7      3.5      2.0

*SECNO 33.000
    33.000      5.33   1169.43       .00       .00   1170.07       .64       .81       .04   1165.00
    6600.0    2114.6    2173.0    2312.3     305.9     633.5     292.1      46.7      12.2   1166.00
       .09      6.91      3.43      7.92      .035      .080      .035      .000   1164.10   9827.14
   .005973      180.      125.      135.         2         0         0       .00    351.01  10178.15


FLOW DISTRIBUTION FOR SECNO=     33.00          CWSEL=   1169.43

STA=    9827.    9836.    9880.    9908.    9923.    9929.   10100.   10174.   10178.
  PER Q=      1.5     17.0      6.1      4.5      2.9     32.9     34.5       .6
   AREA=     19.6    150.8     68.0     43.9     23.6    633.5    283.3      8.8
    VEL=      5.2      7.5      5.9      6.7      8.1      3.4      8.0      4.3
  DEPTH=      2.2      3.4      2.4      2.9      3.9      3.7      3.8      2.1

*SECNO 35.000
    35.000      4.50   1170.40       .00       .00   1171.00       .60       .93       .01   1166.00
    6600.0    2177.0    1381.9    3041.1     337.2     467.7     427.4      52.2      13.7   1166.00
       .10      6.46      2.95      7.12      .035      .080      .035      .000   1165.90   9846.44
   .003987      205.      200.      180.         2         0         0       .00    307.93  10154.37


FLOW DISTRIBUTION FOR SECNO=     35.00          CWSEL=   1170.40

STA=    9846.    9855.    9905.    9925.    9930.    9934.    9938.   10055.   10150.   10154.
  PER Q=      1.3     19.6      6.2      1.9      2.0      2.0     20.9     45.6       .5
   AREA=     19.3    194.9     68.0     19.5     17.8     17.8    467.7    417.8      9.6
    VEL=      4.4      6.6      6.1      6.6      7.2      7.2      3.0      7.2      3.6
  DEPTH=      2.3      3.9      3.4      3.9      4.4      4.4      4.0      4.4      2.2

    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 37.000
        END OF WILDLIFE HABITATE MITIGATION AREA
   37.000      4.35   1171.25       .00       .00   1171.72       .46       .69       .03   1183.00
   6600.0        .0    6600.0        .0        .0    1208.7        .0      57.7      15.0   1182.70
      .10       .00      5.46       .00      .000      .040      .000      .000   1166.90   9857.49
  .003197      185.      200.      184.         2         0         0       .00    283.92  10141.41

FLOW DISTRIBUTION FOR SECNO=     37.00          CWSEL=   1171.25

STA=    9857.   10153.
  PER Q=    100.0
   AREA=   1208.7
    VEL=      5.5
  DEPTH=      4.3
```

SKUNK CREEK NEAR 83rd AVENUE

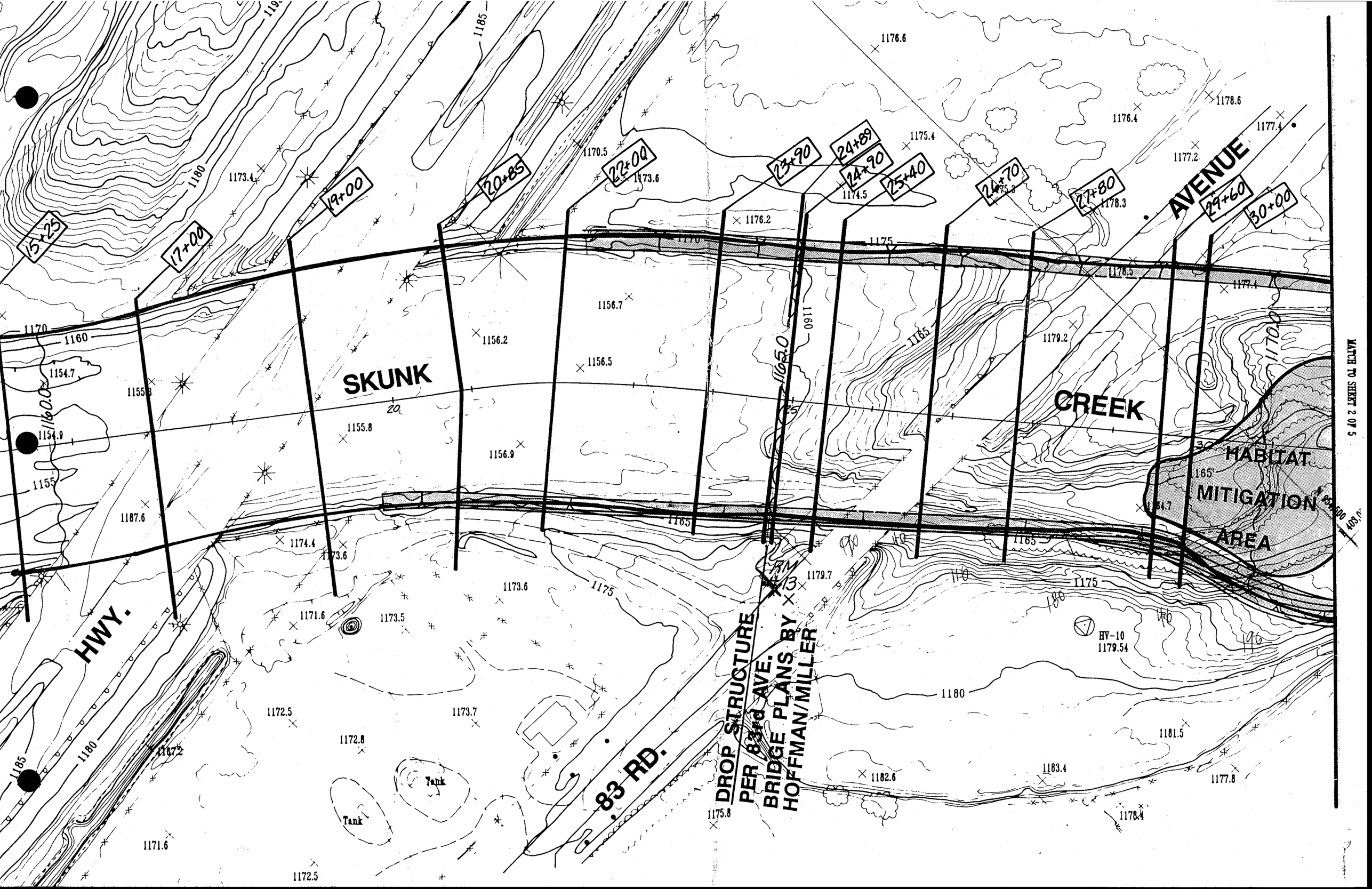
LOOKING DOWNSTREAM FROM THE RIGHT BANK NEAR STATION 52+00.

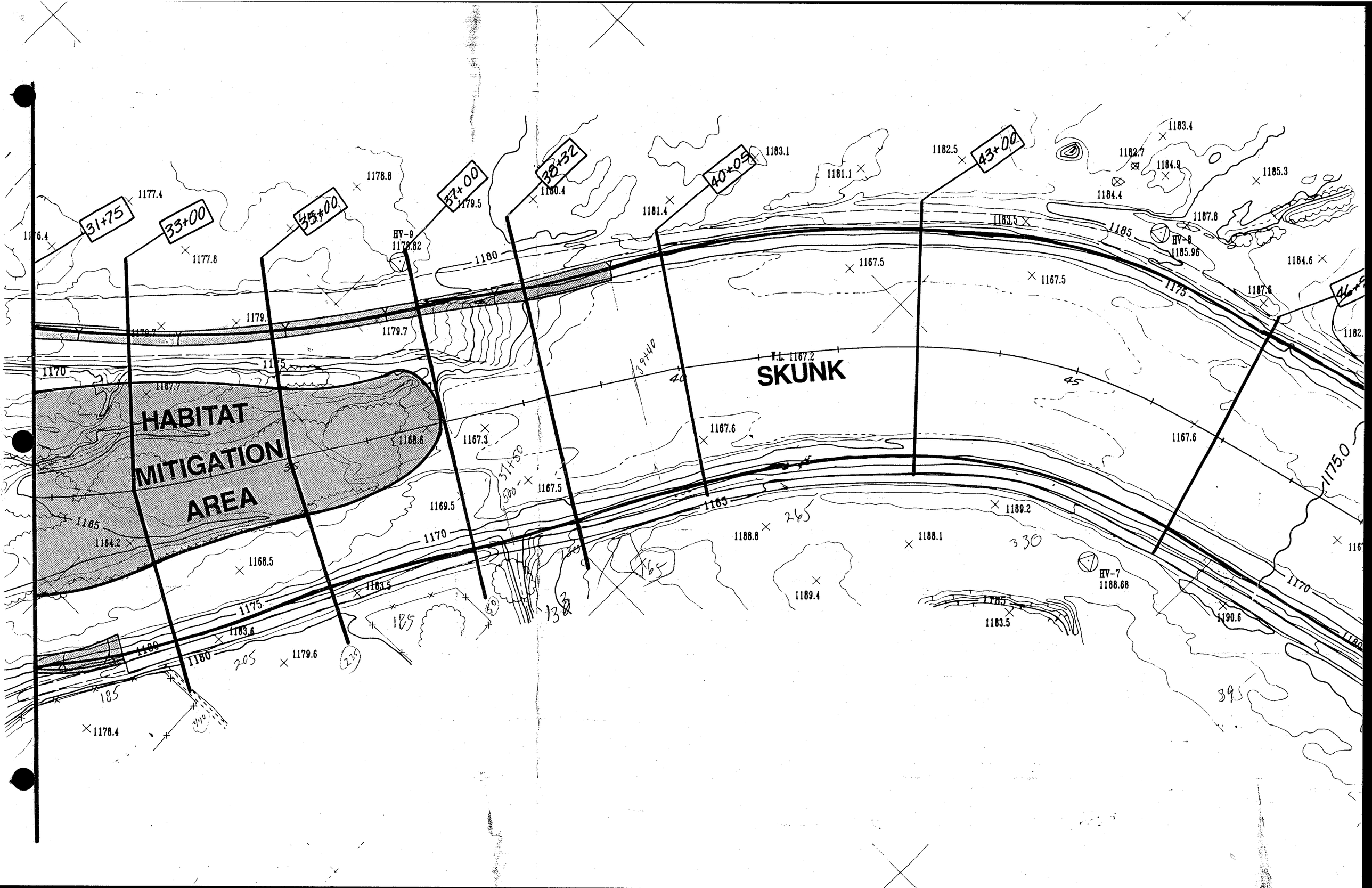
LOOKING DOWNSTREAM FROM RIGHT BANK AT THE DROP STRUCTURE.

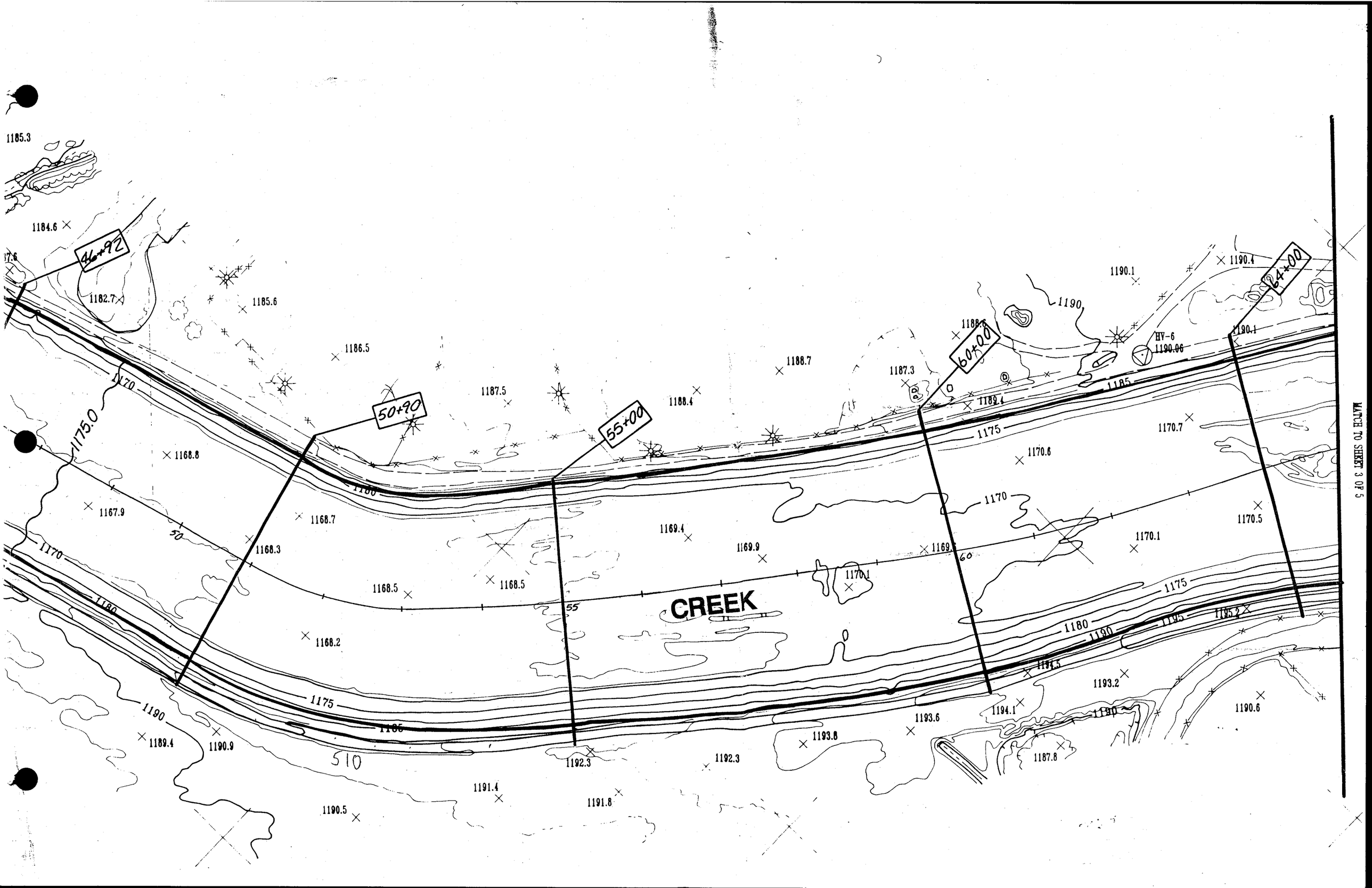
SKUNK CREEK NEAR 83rd AVENUE

LOOKING UPSTREAM FROM THE RIGHT BANK AT UPPER END OF ISLAND, NEAR STATION (CROSS SECTION) 37+00.

LOOKING DOWN STREAM FROM RIGHT BANK NEAR STATION 45+00.


15+25
17+00
19+00
20+85
22+00
23+90
24+89
24+90
25+40
26+70
27+80
29+60
30+00
SKUNK
CREEK
AVENUE
HWY.
83 RD.
HABITAT
MITIGATION
AREA
DROP STRUCTURE
PER 83rd AVE.
BRIDGE PLANS BY
HOFFMAN/MILLER
HV-10
1179.54
Tank
Tank
MATCH TO SHEET 2 OF 5


31+75
33+00
35+00
37+00
38+32
40+05
43+00
HABITAT
MITIGATION
AREA
SKUNK
T.L. 1167.2
HV-9
1178.82
HV-8
1185.96
HV-7
1188.68
1176.4
1177.4
1178.8
1177.8
1179.5
1180.4
1181.4
1183.1
1181.1
1182.5
1183.4
1182.7
1184.9
1184.4
1185.3
1187.8
1184.6
1187.6
1179.7
1167.5
1167.7
1168.6
1167.3
1167.6
1169.5
1168.5
1163.5
1183.6
1179.6
1178.4
1164.2
1188.8
1188.1
1189.2
1189.4
1190.6
1185
1183.5
1180
1175
1170
1165
1175.0
39+40
34+50
500
265
330
165
130
185
205
50
395
35
40
45


46+92
50+90
55+00
60+00
64+00
CREEK
HV-6
1190.06
1185.3
1184.6
1182.7
1185.6
1186.5
1187.5
1188.4
1188.7
1187.3
1189.1
1190.1
1190.4
1170.7
1170.6
1170.5
1170.1
1169.4
1169.9
1170.1
1168.8
1167.9
1168.7
1168.3
1168.5
1168.5
1168.2
1189.4
1190.9
1192.3
1192.3
1191.4
1191.8
1190.5
1193.8
1193.6
1194.1
1193.2
1187.8
1190.6
1175.0
1170
1175
1180
1185
1190
1195
50
55
60
510
MATCH TO SHEET 3 OF 5

957,500

957,000

HV-4
1194.44

HV-5
1201.52

HV-6
1190.06

73+50
71+80
68+69
68+70
70+10
69+10
67+90
66+90
65+45

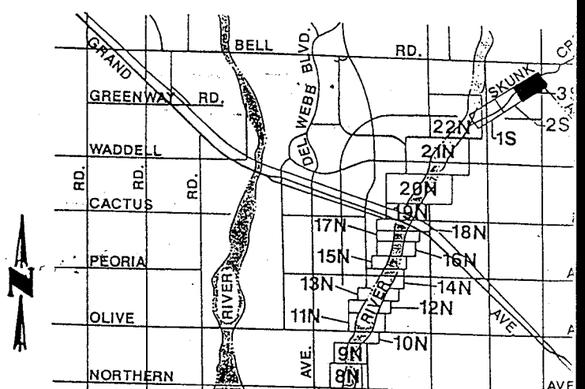
SKUNK

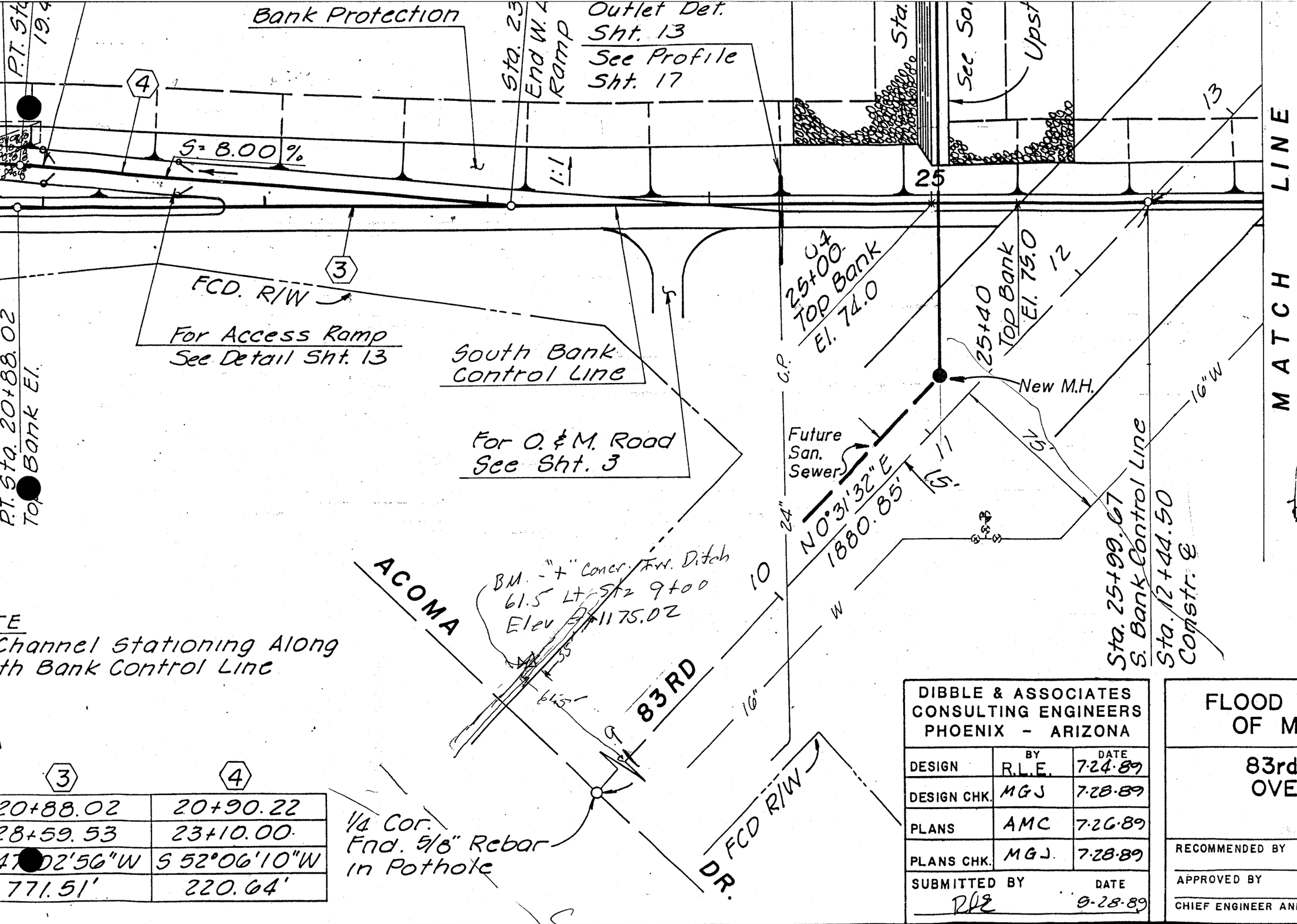
TANK

1185.0
1180.0

DROP STRUCTURE
PER 83rd. AVE. BRIDGE
PLANS BY HOFFMAN/MI

MATCH TO SHEET 2 OF 5





TE
Channel Stationing Along
th Bank Control Line

3	4
20+88.02	20+90.22
28+59.53	23+10.00
4[illegible]02'56"W	S 52°06'10"W
771.51'	220.64'

Fr Ditch

DIBBLE & ASSOCIATES CONSULTING ENGINEERS PHOENIX - ARIZONA		
	BY	DATE
DESIGN	R.L.E.	7-24-89
DESIGN CHK.	MGJ	7-28-89
PLANS	AMC	7-26-89
PLANS CHK.	MGJ.	7-28-89
SUBMITTED BY RLE		DATE 9-28-89

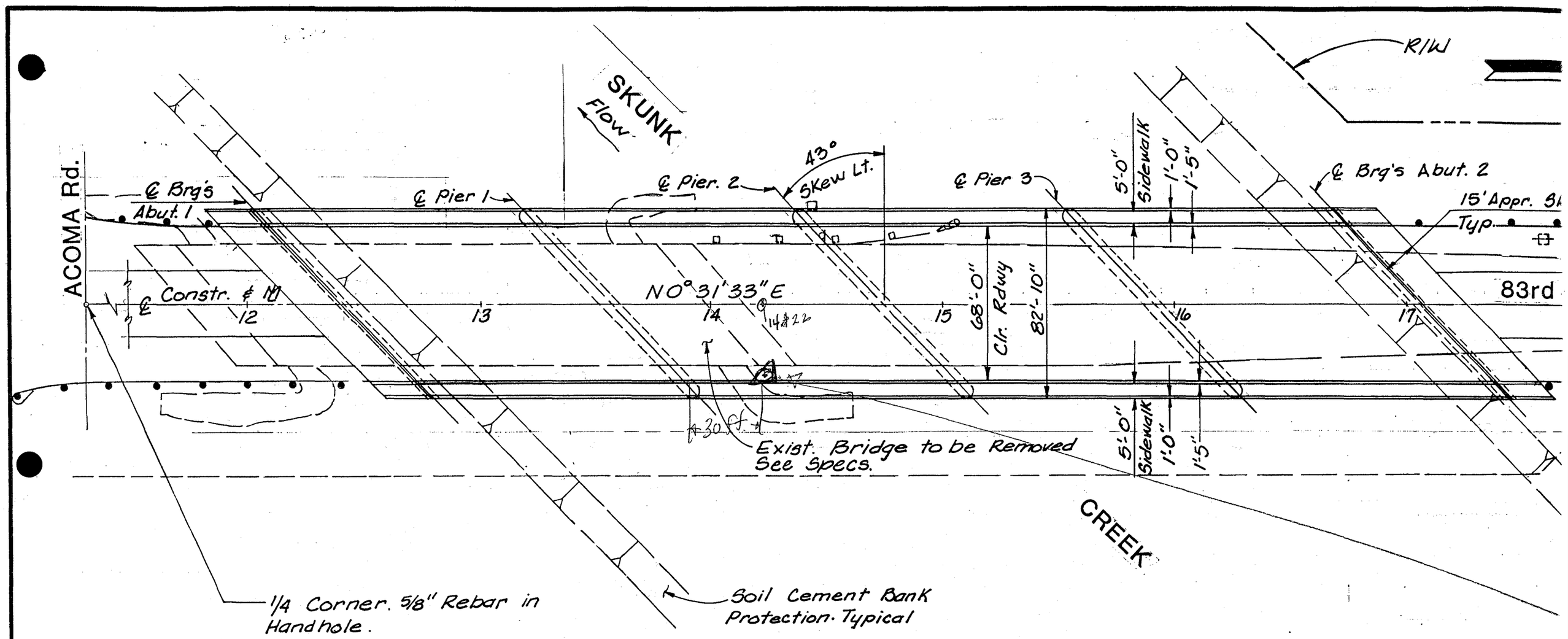
AS BUILT 12-27-9

FLOOD CONTROL DISTR
OF MARICOPA COUNT

83rd AVENUE BRIDGE
OVER SKUNK CREEK

RECOMMENDED BY	DATE
APPROVED BY	DATE
CHIEF ENGINEER AND GENERAL MANAGER	

REGISTERED PROFESSIONAL ENGINEER (CIVIL) CERTIFICATE NO. 9914 RONALD L. EWING Date Signed 1/4/90 ARIZONA, U.S.A.

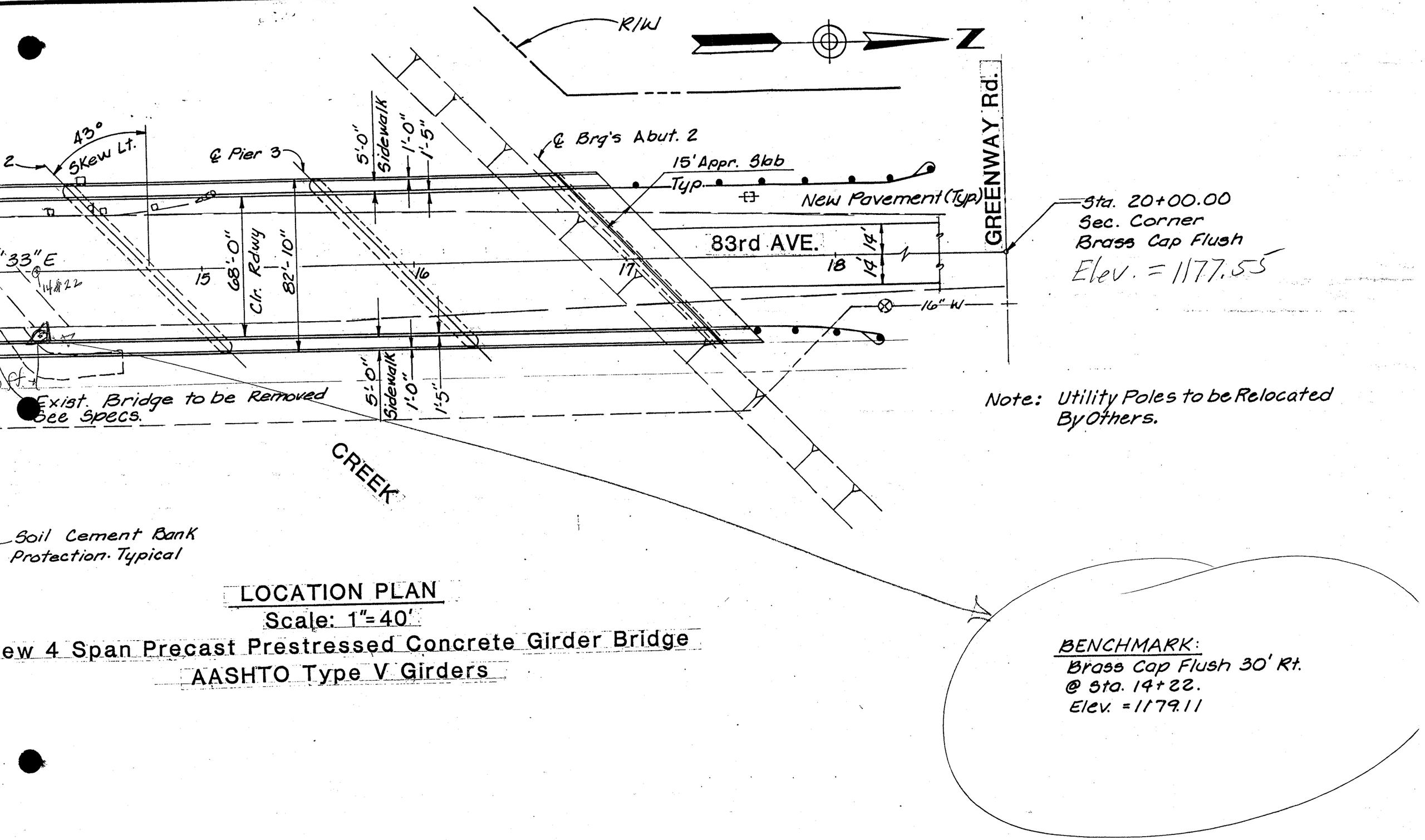


LOCATION PLAN

Scale: 1"=40'

New 4 Span Precast Prestressed Concrete Girder Bridge

AASHTO Type V Girders



LOCATION PLAN

Scale: 1"=40'

ew 4 Span Precast Prestressed Concrete Girder Bridge

AASHTO Type V Girders

```
1*********************************************
 *  HEC-2 WATER SURFACE PROFILES             *
 *                                           *
 *  Version   4.6.2;  May 1991               *
 *                                           *
 *  RUN DATE    22AUG95    TIME   15:41:07   *
 *********************************************
```

```
****************************************
*  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 22AUG95 15:41:07

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

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

```
T1      SKUNK CREEK - CVL# 1090-040 (FCDMC) - F.C.D. 89-30 - DECEMBER 9,1989
T2      NEW RIVER TO ACDC
T3      SPF          SCSPF

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0        6         0         0    0.0055         0         0         0                   0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     -1         0        -1         0         0         0        -1         0         0         0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38        43         1         2         8        42        25         3        26        53
      4        54        39       150         0         0         0         0         0         0

QT       5      2200      6700     11000     33000     55000
NC   0.032     0.032     0.032        .1        .3
         NEW RIVER CONFLUENCE
X1   15.25        19      9819     10222         0         0         0
GR  1181.0      9817    1180.0      9819    1175.0      9825    1170.0      9842    1165.0      9849
GR  1160.0      9857    1155.0      9870    1155.0      9914    1155.0      9945    1155.0     10000
GR  1155.0     10030    1155.0     10082    1155.0     10104    1156.0     10108    1160.0     10122
GR  1165.0     10134    1170.0     10144    1170.2     10164    1171.0     10222

NC   0.032     0.032     0.032        .3        .5
         HWY 101 BRIDGE
X1   17.00         5      9848     10157       175       175       175
GR  1173.0      9848    1155.3      9877    1155.3     10000    1155.3     10125    1172.7     10157

SB    1.05      1.00      2.80        .0       269        15      7148         2    1155.5    1155.1
X1   19.00         8      9859     10180       200       200       200
X2       0         0         1    1179.5    1188.0         0         0      1.33         0         0
GR  1174.0      9859    1170.0      9871    1160.0      9883    1155.7      9893    1155.7     10000
GR  1155.7     10142    1160.0     10146    1174.0     10180

NC   0.032     0.032     0.032        .1        .3
X1   20.85         5      9857     10190       164       185       185         0         0         0
GR  1173.0      9857    1155.9      9875    1155.9     10000    1155.9     10160    1175.0     10190
```



```
X1   22.00        11      9838     10186       110       155       115
GR  1174.0      9838    1170.0      9846    1165.0      9855    1160.0      9865    1156.1      9879
GR  1156.1     10000    1156.1     10160    1160.0     10169    1165.0     10174    1170.0     10180
GR  1174.0     10186

X1   23.90         7      9790     10200       186       194       190
GR  1175.0      9790    1173.8      9847    1156.6      9865    1156.6     10000    1156.5     10150
GR  1173.8     10168    1175.0     10200

         DROP STRUCTURE BUILT IN CONJUNCTION
         WITH 83RD AVENUE BRIDGE CONSTUCTION
X1   24.89         7      9830     10200        94        94        94
GR  1175.0      9830    1174.0      9854    1156.8      9870    1156.8     10000    1156.8     10155
GR  1174.0     10172    1175.0     10200

X1   24.90         7      9830     10200         6         6         6
GR  1175.0      9830    1174.0      9854    1162.8      9866    1162.8     10000    1162.8     10161
GR  1174.0     10172    1175.0     10200

X1   25.40         7      9855     10200        50        50        50
GR  1176.0      9851    1175.0      9855    1162.9      9868    1162.9     10000    1162.9     10163
GR  1174.5     10175    1175.0     10200

NC   0.032     0.032     0.032        .3        .5
         83RD AVENUE BRIDGE
X1   26.70         5      9862     10183       130       130       130         0         0         0
```

```
GR   1176.4      9862     1163.2      9875     1163.2     10000     1163.2     10170     1176.4     10183

SB      1.05      1.0       2.8         0        315        12       4980         1     1163.3    1163.2
X1     27.80        5      9867     10159        110       110        110         0          0         0
X2         0        0         1    1177.5     1185.5         0          0                1.33         0
GR   1177.1      9867     1163.5      9880     1163.5     10000     1163.5     10145     1177.1     10159

NC     0.032    0.032     0.032        .1         .3
X1     29.60        5      9870     10195        180       180        180
GR   1179.3      9870     1163.9      9885     1163.9     10000     1163.9     10180     1179.3     10195

NC     0.050    0.050     0.050        .2         .4
          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
X1     30.00        6      9859     10198         44        40         40
GR   1180.0      9859     1164.0      9875     1165.0      9955     1164.0     10000     1164.0     10182
GR   1180.0     10198

X1     31.75       17      9782     10222        200       152        175         0          0         0
GR   1181.3      9782     1164.2      9816     1165.0      9847     1166.0      9875     1166.0      9885
GR   1165.0      9896     1164.3      9925     1165.0     10000     1165.0     10030     1164.0     10033
GR   1163.4     10037     1164.0     10039     1165.0     10042     1166.0     10046     1166.0     10070
GR   1164.7     10189     1181.3     10222
1
   22AUG95      15:41:07                                                                              PAGE    3


X1     33.00       21      9800     10190        180       135        125
GR   1183.0      9800     1180.0      9804     1175.0      9816     1170.0      9826     1165.0      9836
GR   1167.0      9880     1167.0      9908     1166.0      9923     1165.0      9929     1164.3      9935
GR   1165.0      9940     1166.0      9967     1166.1     10000     1166.0     10064     1165.0     10069
GR   1164.1     10075     1165.0     10083     1166.0     10085     1166.0     10100     1165.2     10174
GR   1181.5     10190

X1     35.00       14      9817     10166        205       180        200
GR   1183.0      9817     1180.0      9825     1175.0      9840     1170.0      9847     1166.0      9855
GR   1167.0      9905     1167.0      9925     1166.0      9930     1165.9      9934     1166.0      9938
GR   1166.8     10000     1166.0     10055     1166.0     10150     1182.1     10166

NC     0.040    0.040     0.040
          END OF WILDLIFE HABITATE MITIGATION AREA
X1     37.00       10      9831     10153        185       184        200
GR   1183.0      9831     1180.0      9843     1175.0      9853     1170.0      9859     1166.9      9860
GR   1167.0      9900     1167.0      9980     1166.9     10000     1166.9     10137     1182.7     10153

NC     0.032    0.032     0.032        .1         .3
X1     38.32       11      9831     10151        132       132        132         0          0         0
GR   1184.0      9831     1180.0      9838     1175.0      9849     1170.0      9861     1167.5      9865
GR   1167.5     10000     1167.5     10120     1170.0     10125     1175.0     10139     1180.0     10145
GR   1183.0     10151

X1     40.05       15      9817     10156        173       173        173
GR   1188.0      9817     1185.0      9825     1180.0      9850     1175.0      9858     1170.0      9870
GR   1169.0      9878     1168.0      9883     1167.6      9900     1167.2      9935     1166.5     10000
GR   1167.2     10123     1170.2     10130     1175.0     10141     1180.0     10149     1183.7     10156

X1     43.00       18      9818     10180        258       330        295
GR   1188.0      9799     1188.0      9818     1186.0      9827     1185.0      9843     1180.0      9853
GR   1175.0      9863     1170.0      9886     1167.2      9893     1166.7     10000     1167.2     10080
GR   1167.5     10100     1168.0     10124     1170.0     10127     1175.0     10142     1180.0     10149
GR   1183.0     10153     1184.0     10179     1184.5     10180

X1     46.92       20      9826     10172        324       474        392
GR   1189.0      9798     1189.0      9826     1187.0      9831     1186.0      9847     1185.0      9850
GR   1180.0      9862     1175.0      9871     1170.0      9890     1168.0      9895     1167.6     10000
GR   1168.0     10040     1168.0     10058     1168.0     10100     1169.0     10117     1170.0     10123
GR   1175.0     10136     1180.0     10143     1185.0     10149     1186.0     10162     1186.8     10172

X1     50.90       23      9820     10177        398       398        398
GR   1191.0      9820     1190.0      9823     1189.0      9826     1189.0      9838     1188.0      9843
GR   1185.0      9849     1180.0      9859     1175.0      9869     1170.0      9888     1169.0      9892
GR   1168.0      9940     1168.0      9967     1168.0      9982     1168.1     10000     1168.3     10025
GR   1169.0     10117     1170.0     10123     1175.0     10135     1180.0     10144     1185.0     10152
GR   1186.0     10155     1186.9     10159     1187.0     10177
1
   22AUG95      15:41:07                                                                              PAGE    4


X1     55.00       16      9819     10156        500       314        410
GR   1192.0      9819     1191.5      9826     1191.0      9837     1190.0      9839     1185.0      9853
GR   1180.0      9865     1175.0      9875     1170.0      9889     1169.0      9893     1169.0     10000
GR   1169.0     10119     1170.0     10123     1175.0     10134     1180.0     10142     1185.0     10152
GR   1187.1     10156

X1     60.00       18      9835     10163        522       470        500
GR   1194.0      9835     1193.0      9839     1190.0      9847     1185.0      9857     1180.0      9863
GR   1175.0      9877     1170.0      9893     1170.0      9907     1170.0      9916     1169.7     10000
GR   1170.0     10047     1170.0     10060     1170.0     10074     1171.0     10128     1175.0     10138
GR   1180.0     10145     1185.0     10156     1189.0     10163

X1     64.00       17      9839     10151        400       400        400
GR   1195.0      9839     1190.0      9851     1185.0      9859     1180.0      9868     1175.0      9879
GR   1171.0      9893     1170.5      9958     1170.9     10000     1171.0     10004     1171.0     10027
GR   1171.0     10058     1171.0     10063     1171.0     10095     1172.0     10120     1175.0     10128
GR   1185.0     10136     1190.0     10151

X1     65.45       14      9812     10152        130       160        145
GR   1195.9      9812     1195.0      9816     1190.0      9828     1185.0      9837     1180.0      9849
GR   1175.0      9878     1171.0      9886     1171.0     10000     1171.0     10106     1175.0     10114
GR   1180.0     10125     1185.0     10138     1190.0     10145     1191.0     10152

X1     66.90       14      9818     10152        145       145        145
GR   1197.0      9818     1195.0      9825     1190.0      9835     1185.0      9843     1180.0      9851
GR   1175.0      9864     1171.2      9872     1171.2     10000     1171.2     10108     1175.0     10116
GR   1180.0     10130     1185.0     10140     1190.0     10150     1191.0     10152

X1     67.90       15      9820     10151        100       100        100         0          0         0
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GR   1197.5      9820     1197.0      9822     1195.0      9827     1190.0      9838     1185.0      9845
GR   1180.0      9856     1175.0      9869     1171.3      9876     1171.3     10000     1171.3     10105
GR   1175.0     10112     1180.0     10127     1185.0     10139     1190.0     10146     1191.0     10151

          DROP STRUCTURE BUILT IN CONJUNCTION WITH
          83RD AVENUE BRIDGE CONSTRUCTION
X1    68.69        14      9820     10146        73        73        73
GR   1198.0      9820     1195.0      9830     1190.0      9840     1185.0      9846     1180.0      9857
GR   1175.0      9868     1171.4      9875     1171.4     10000     1171.4     10107     1175.0     10114
GR   1180.0     10124     1185.0     10134     1190.0     10143     1192.0     10146

X1    68.70        12      9820     10146         7         7         7         0
GR   1198.0      9820     1195.0      9830     1190.0      9840     1185.0      9847     1180.0      9857
GR   1178.4      9860     1178.4     10000     1178.4     10121     1180.0     10124     1185.0     10134
GR   1190.0     10143     1192.0     10146

X1    69.10        13      9820     10144        40        40        40         0         0         0
GR   1198.2      9820     1198.0      9822     1195.0      9831     1190.0      9841     1185.0      9848
GR   1180.0      9857     1178.5      9860     1178.5     10000     1178.5     10119     1180.0     10122
GR   1185.0     10133     1190.0     10140     1193.0     10144
1
   22AUG95      15:41:07                                                                              PAGE    5


X1    70.10        13      9823     10141       100       100       100         0         0         0
GR   1198.6      9823     1198.0      9826     1195.0      9832     1190.0      9843     1185.0      9852
GR   1180.0      9860     1178.8      9862     1178.8     10000     1178.8     10117     1180.0     10119
GR   1185.0     10130     1190.0     10137     1193.6     10141

X1    71.80        12      9827     10136       170       170       170         0         0         0
GR   1199.0      9827     1195.0      9836     1190.0      9845     1185.0      9854     1180.0      9865
GR   1179.3      9867     1179.3     10000     1179.3     10111     1180.0     10113     1185.0     10125
GR   1190.0     10133     1193.2     10136

X1    73.50        18      9815     10147       170       170       170
GR   1200.0      9815     1199.0      9819     1195.0      9827     1190.0      9836     1185.0      9847
GR   1180.0      9857     1179.7      9863     1179.7      9868     1179.7      9873     1179.7      9932
GR   1179.7     10000     1179.7     10103     1180.0     10106     1185.0     10118     1190.0     10126
GR   1193.0     10131     1193.5     10132     1194.8     10147

X1    76.32        18      9824     10160       210       338       282         0         0         0
GR   1201.0      9824     1200.0      9830     1195.0      9838     1190.0      9850     1185.0      9859
GR   1180.0      9871     1179.9      9874     1179.9      9878     1179.9      9883     1179.9     10000
GR   1180.0     10015     1180.2     10065     1181.0     10114     1185.0     10121     1190.0     10131
GR   1195.0     10142     1195.7     10145     1196.0     10160

X1    81.00        20      9841     10157       468       468       468
GR   1202.0      9841     1200.0      9846     1195.0      9855     1190.0      9864     1185.0      9875
GR   1181.0      9887     1180.5      9892     1180.8      9902     1180.8      9932     1181.0      9971
GR   1181.1     10000     1181.0     10026     1180.8     10055     1181.0     10073     1181.4     10100
GR   1182.0     10121     1185.0     10131     1190.0     10139     1195.0     10148     1199.0     10157

          CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
          OF THIS SECTION
X1    84.70        20      9807     10160       358       380       370
GR   1202.6      9807     1202.0      9808     1200.0      9814     1195.0      9823     1190.0      9833
GR   1185.0      9843     1183.0      9851     1182.0      9854     1181.2      9894     1182.0      9941
GR   1182.0      9982     1181.8     10000     1181.2     10055     1182.0     10112     1183.0     10129
GR   1185.0     10133     1190.0     10142     1195.0     10153     1198.0     10157     1198.9     10160


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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 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

CCHV=      .100 CEHV=      .300
*SECNO 15.250
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
          NEW RIVER CONFLUENCE
   15.250     12.13   1167.13   1166.31       .00   1171.61      4.48       .00       .00   1180.00
  55000.0        .0   55000.0        .0        .0    3239.3        .0        .0        .0   1171.00
     .00        .00     16.98       .00      .000      .032      .000      .000   1155.00   9846.01
 .005538        0.        0.        0.         0        11         4       .00    292.25  10138.27


CCHV=      .300 CEHV=      .500
*SECNO 17.000

3301 HV CHANGED MORE THAN HVINS

          HWY 101 BRIDGE
   17.000     14.40   1169.70   1166.47       .00   1172.74      3.04       .70       .43   1173.00
  55000.0        .0   55000.0        .0        .0    3930.7        .0      14.4       1.2   1172.70
     .00        .00     13.99       .00      .000      .032      .000      .000   1155.30   9853.41
 .003014       175.      175.      175.         4        11         0       .00    298.06  10151.48


SPECIAL BRIDGE

SB  XK        XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
     1.05      1.00       2.80        .00    269.00      15.00    7148.00      2.00    1155.50    1155.10

*SECNO 19.000
CLASS A LOW FLOW
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3420 BRIDGE W.S.= 1169.41 BRIDGE VELOCITY= 13.81 CALCULATED CHANNEL AREA= 3921.

EGPRS	EGLWC	H3	QWEIR	QLOW	BAREA	TRAPEZOID AREA	ELLC	ELTRD	WEIRLN
.00	1173.35	.81	0.	55000.	7148.	7248.	1179.50	1188.00	0.

19.000	14.81	1170.51	.00	.00	1173.35	2.84	.61	.00	1174.00
55000.0	.0	55000.0	.0	.0	4066.9	.0	32.8	2.6	1174.00
.01	.00	13.52	.00	.000	.032	.000	.000	1155.70	9869.46
.002748	200.	200.	200.	0	0	0	.00	302.08	10171.54

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= .100 CEHV= .300
*SECNO 20.850

3301 HV CHANGED MORE THAN HVINS

20.850	15.96	1171.86	1166.19	.00	1173.83	1.97	.39	.09	1173.00
55000.0	.0	55000.0	.0	.0	4883.2	.0	51.8	3.9	1175.00
.01	.00	11.26	.00	.000	.032	.000	.000	1155.90	9858.20
.001671	164.	185.	185.	3	19	0	.00	326.87	10185.07

*SECNO 22.000

22.000	16.11	1172.21	1166.27	.00	1174.03	1.82	.18	.01	1174.00
55000.0	.0	55000.0	.0	.0	5077.0	.0	64.9	4.8	1174.00
.02	.00	10.83	.00	.000	.032	.000	.000	1156.10	9841.58
.001542	110.	115.	155.	2	14	0	.00	341.73	10183.31

*SECNO 23.900

23.900	15.84	1172.34	1166.90	.00	1174.42	2.08	.31	.08	1175.00
55000.0	.0	55000.0	.0	.0	4754.9	.0	86.4	6.2	1175.00
.02	.00	11.57	.00	.000	.032	.000	.000	1156.50	9848.52
.001774	186.	190.	194.	2	14	0	.00	317.96	10166.49

*SECNO 24.890
DROP STRUCTURE BUILT IN CONJUNCTION
WITH 83RD AVENUE BRIDGE CONSTUCTION

24.890	15.68	1172.48	1167.14	.00	1174.60	2.12	.17	.01	1175.00
55000.0	.0	55000.0	.0	.0	4708.5	.0	96.6	6.9	1175.00
.02	.00	11.68	.00	.000	.032	.000	.000	1156.80	9855.40
.001817	94.	94.	94.	1	14	0	.00	315.11	10170.51

*SECNO 24.900

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

24.900	10.10	1172.90	1172.90	.00	1177.84	4.94	.02	.85	1175.00
55000.0	.0	55000.0	.0	.0	3084.5	.0	97.1	6.9	1175.00
.02	.00	17.83	.00	.000	.032	.000	.000	1162.80	9855.18
.007305	6.	6.	6.	0	14	0	.00	315.74	10170.92

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 25.400

3301 HV CHANGED MORE THAN HVINS

25.400	11.77	1174.67	1173.01	.00	1178.26	3.59	.28	.13	1175.00
55000.0	.0	55000.0	.0	.0	3618.4	.0	101.0	7.3	1175.00
.02	.00	15.20	.00	.000	.032	.000	.000	1162.90	9855.36
.004529	50.	50.	50.	6	5	0	.00	328.07	10183.42

CCHV= .300 CEHV= .500
*SECNO 26.700
83RD AVENUE BRIDGE

26.700	12.56	1175.76	1173.32	.00	1178.91	3.15	.52	.13	1176.40
55000.0	.0	55000.0	.0	.0	3861.1	.0	112.1	8.3	1176.40
.03	.00	14.24	.00	.000	.032	.000	.000	1163.20	9862.63
.003546	130.	130.	130.	2	11	0	.00	319.74	10182.37

SPECIAL BRIDGE

SB	XK	XKOR	COFQ	RDLEN	BWC	BWP	BAREA	SS	ELCHU	ELCHD
	1.05	1.00	2.80	.00	315.00	12.00	4980.00	1.00	1163.30	1163.20

*SECNO 27.800
CLASS A LOW FLOW

3420 BRIDGE W.S.= 1175.36 BRIDGE VELOCITY= 14.42 CALCULATED CHANNEL AREA= 3799.

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 EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC     ELTRD     WEIRLN
                                                              AREA
  1177.65   1180.09      .72        0.    55000.     4980.     4504.     1177.50   1185.50         0.

   27.800     12.97   1176.47       .00       .00   1180.09      3.61      1.18       .00   1177.10
  55000.0        .0   55000.0        .0        .0    3605.1        .0     121.5       9.1   1177.10
     .03       .00     15.26       .00      .000      .032      .000      .000   1163.50   9867.60
  .003948      110.      110.      110.         0         0         0       .00    290.76  10158.36

CCHV=     .100 CEHV=     .300
*SECNO 29.600
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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

3301 HV CHANGED MORE THAN HVINS

   29.600     14.49   1178.39   1174.00       .00   1180.74      2.34       .52       .13   1179.30
  55000.0        .0   55000.0        .0        .0    4479.8        .0     138.2      10.3   1179.30
     .03       .00     12.28       .00      .000      .032      .000      .000   1163.90   9870.88
  .002206      180.      180.      180.         3        15         0       .00    323.23  10194.12

CCHV=     .200 CEHV=     .400
*SECNO 30.000

3302 WARNING:  CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE,  KRATIO =    .67

          BEGINNING OF WILDLIFE HABITATE MITIGATION AREA
   30.000     14.77   1178.77   1174.04       .00   1180.90      2.14       .13       .04   1180.00
  55000.0        .0   55000.0        .0        .0    4689.2        .0     142.5      10.6   1180.00
     .03       .00     11.73       .00      .000      .050      .000      .000   1164.00   9860.23
  .004871       44.       40.       40.         2        19         0       .00    336.54  10196.77

*SECNO 31.750

3301 HV CHANGED MORE THAN HVINS

   31.750     17.09   1180.49   1173.65       .00   1181.69      1.20       .61       .19   1181.30
  55000.0        .0   55000.0        .0        .0    6253.3        .0     164.4      12.2   1181.30
     .04       .00      8.80       .00      .000      .050      .000      .000   1163.40   9783.60
  .002583      200.      175.      152.         3        19         0       .00    436.79  10220.40

*SECNO 33.000
   33.000     16.51   1180.61   1175.02       .00   1182.25      1.64       .38       .18   1183.00
  55000.0        .0   55000.0        .0        .0    5351.1        .0     181.1      13.4   1181.50
     .04       .00     10.28       .00      .000      .050      .000      .000   1164.10   9803.18
  .003724      180.      125.      135.         2        14         0       .00    385.95  10189.13

*SECNO 35.000
   35.000     15.28   1181.18   1176.36       .00   1183.29      2.11       .85       .19   1183.00
  55000.0        .0   55000.0        .0        .0    4722.0        .0     204.2      15.0   1182.10
     .05       .00     11.65       .00      .000      .050      .000      .000   1165.90   9821.85
  .004841      205.      200.      180.         2        14         0       .00    343.23  10165.09

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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 37.000
          END OF WILDLIFE HABITATE MITIGATION AREA
   37.000     14.89   1181.79   1177.51       .00   1184.28      2.49       .84       .15   1183.00
  55000.0        .0   55000.0        .0        .0    4345.7        .0     225.0      16.5   1182.70
     .05       .00     12.66       .00      .000      .040      .000      .000   1166.90   9835.82
  .003699      185.      200.      184.         2        19         0       .00    316.26  10152.08

CCHV=     .100 CEHV=     .300
*SECNO 38.320
   38.320     14.55   1182.05   1178.41       .00   1184.76      2.71       .41       .07   1184.00
  55000.0        .0   55000.0        .0        .0    4164.1        .0     237.9      17.5   1183.00
     .05       .00     13.21       .00      .000      .032      .000      .000   1167.50   9834.41
  .002662      132.      132.      132.         2        15         0       .00    314.70  10149.10

*SECNO 40.050
   40.050     16.30   1182.80   1178.16       .00   1185.21      2.41       .42       .03   1188.00
  55000.0        .0   55000.0        .0        .0    4417.8        .0     255.0      18.8   1183.70
     .06       .00     12.45       .00      .000      .032      .000      .000   1166.50   9835.98
  .002215      173.      173.      173.         2        15         0       .00    318.32  10154.30

*SECNO 43.000
   43.000     16.83   1183.53   1178.57       .00   1185.86      2.33       .64       .01   1188.00
  55000.0        .0   55000.0        .0        .0    4493.5        .0     285.1      20.9   1184.50
     .06       .00     12.24       .00      .000      .032      .000      .000   1166.70   9845.96
  .002116      258.      295.      330.         0        15         0       .00    320.55  10166.51
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*SECNO 46.920
   46.920     16.63   1184.23   1179.56       .00   1186.77      2.54       .85       .06   1189.00
 55000.0        .0   55000.0        .0        .0    4303.2        .0     324.7      23.7   1186.80
     .07       .00     12.78       .00      .000      .032      .000      .000   1167.60   9851.85
 .002208      324.      392.      474.         2        19         0       .00    296.23  10148.08


*SECNO 50.900
   50.900     17.36   1185.36   1179.98       .00   1187.60      2.25       .81       .03   1191.00
 55000.0        .0   55000.0        .0        .0    4573.9        .0     365.3      26.4   1187.00
     .08       .00     12.02       .00      .000      .032      .000      .000   1168.00   9848.29
 .001868      398.      398.      398.         2        15         0       .00    304.79  10153.07
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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 55.000
   55.000     17.13   1186.13   1180.58       .00   1188.37      2.24       .76       .00   1192.00
 55000.0        .0   55000.0        .0        .0    4583.3        .0     408.4      29.3   1187.10
     .09       .00     12.00       .00      .000      .032      .000      .000   1169.00   9849.84
 .001854      500.      410.      314.         2        14         0       .00    304.32  10154.15


*SECNO 60.000
   60.000     17.43   1187.13   1181.42       .00   1189.27      2.14       .90       .01   1194.00
 55000.0        .0   55000.0        .0        .0    4684.4        .0     461.6      32.8   1189.00
     .10       .00     11.74       .00      .000      .032      .000      .000   1169.70   9852.73
 .001748      522.      500.      470.         2        14         0       .00    307.00  10159.74


*SECNO 64.000
   64.000     17.16   1187.66   1182.55       .00   1190.14      2.48       .76       .10   1195.00
 55000.0        .0   55000.0        .0        .0    4352.2        .0     503.0      35.6   1190.00
     .11       .00     12.64       .00      .000      .032      .000      .000   1170.50   9854.75
 .002081      400.      400.      400.         2        19         0       .00    289.23  10143.97


*SECNO 65.450
   65.450     17.26   1188.26   1182.84       .00   1190.45      2.19       .28       .03   1195.90
 55000.0        .0   55000.0        .0        .0    4634.7        .0     518.0      36.6   1191.00
     .12       .00     11.87       .00      .000      .032      .000      .000   1171.00   9831.12
 .001839      130.      145.      160.         2        19         0       .00    311.45  10142.57


*SECNO 66.900
   66.900     17.49   1188.69   1182.60       .00   1190.72      2.03       .25       .02   1197.00
 55000.0        .0   55000.0        .0        .0    4815.6        .0     533.7      37.6   1191.00
     .12       .00     11.42       .00      .000      .032      .000      .000   1171.20   9837.09
 .001617      145.      145.      145.         2        14         0       .00    310.29  10147.38


*SECNO 67.900
   67.900     17.49   1188.79   1182.96       .00   1190.91      2.12       .17       .03   1197.50
 55000.0        .0   55000.0        .0        .0    4705.0        .0     544.7      38.3   1191.00
     .12       .00     11.69       .00      .000      .032      .000      .000   1171.30   9839.69
 .001706      100.      100.      100.         2        14         0       .00    304.61  10144.31
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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 68.690
         DROP STRUCTURE BUILT IN CONJUNCTION WITH
         83RD AVENUE BRIDGE CONSTRUCTION
   68.690     17.50   1188.90   1183.00       .00   1191.04      2.15       .12       .01   1198.00
 55000.0        .0   55000.0        .0        .0    4677.8        .0     552.5      38.8   1192.00
     .12       .00     11.76       .00      .000      .032      .000      .000   1171.40   9841.31
 .001707       73.       73.       73.         1        14         0       .00    299.71  10141.03


*SECNO 68.700

3301 HV CHANGED MORE THAN HVINS

7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED
   68.700     10.77   1189.17   1189.17       .00   1194.28      5.11       .02       .89   1198.00
 55000.0        .0   55000.0        .0        .0    3032.7        .0     553.1      38.9   1192.00
     .12       .00     18.14       .00      .000      .032      .000      .000   1178.40   9841.16
 .007161        7.        7.        7.         0        14         0       .00    300.35  10141.51


*SECNO 69.100

3301 HV CHANGED MORE THAN HVINS

   69.100     12.00   1190.50   1189.32       .00   1194.62      4.12       .24       .10   1198.20
 55000.0        .0   55000.0        .0        .0    3376.9        .0     556.1      39.1   1193.00
     .12       .00     16.29       .00      .000      .032      .000      .000   1178.50   9840.01
 .005033       40.       40.       40.        10         5         0       .00    300.66  10140.66


*SECNO 70.100
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    70.100      12.19   1190.99   1189.75       .00   1195.12      4.13       .50       .00   1198.60
   55000.0         .0   55000.0       .0        .0    3374.3        .0     563.8      39.8   1193.60
       .13        .00     16.30       .00      .000      .032      .000      .000   1178.80   9840.82
   .004974       100.      100.      100.         2        11         0       .00    297.29  10138.10

*SECNO 71.800
    71.800      12.69   1191.99   1190.44       .00   1195.94      3.96       .81       .02   1199.00
   55000.0         .0   55000.0       .0        .0    3445.8        .0     577.1      41.0   1193.20
       .13        .00     15.96       .00      .000      .032      .000      .000   1179.30   9841.42
   .004556       170.      170.      170.         2        11         0       .00    293.45  10134.87
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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 73.500

3301 HV CHANGED MORE THAN HVINS

    73.500      13.70   1193.40   1190.80       .00   1196.68      3.29       .67       .07   1200.00
   55000.0         .0   55000.0       .0        .0    3781.3        .0     591.2      42.1   1194.80
       .13        .00     14.55       .00      .000      .032      .000      .000   1179.70   9829.88
   .003470       170.      170.      170.         3        11         0       .00    301.91  10131.80

*SECNO 76.320
    76.320      14.69   1194.59   1191.42       .00   1197.62      3.04       .92       .02   1201.00
   55000.0         .0   55000.0       .0        .0    3933.5        .0     616.2      44.1   1196.00
       .14        .00     13.98       .00      .000      .032      .000      .000   1179.90   9838.99
   .003044       210.      282.      338.         2        11         0       .00    302.11  10141.10

*SECNO 81.000
    81.000      15.62   1196.12   1192.42       .00   1198.99      2.87      1.34       .02   1202.00
   55000.0         .0   55000.0       .0        .0    4047.7        .0     659.1      47.3   1199.00
       .15        .00     13.59       .00      .000      .032      .000      .000   1180.50   9853.00
   .002716       468.      468.      468.         0        15         0       .00    297.51  10150.50

*SECNO 84.700

3301 HV CHANGED MORE THAN HVINS

          CONFLUENCE OF ACDC IS IMMEDIATELY UPSTREAM
          OF THIS SECTION
    84.700      16.77   1197.97   1192.13       .00   1199.84      1.87       .75       .10   1202.60
   55000.0         .0   55000.0       .0        .0    5015.6        .0     697.6      50.0   1198.90
       .16        .00     10.97       .00      .000      .032      .000      .000   1181.20   9817.63
   .001582       358.      370.      380.         2        19         0       .00    339.34  10156.97
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                                                                                THIS RUN EXECUTED 22AUG95    15:41:09
*************************************
 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

SPF          SCSPF

SUMMARY PRINTOUT
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SECNO	Q	CWSEL	CRIWS	DEPTH	ELMIN	AREA	EG	VCH	SSTA	TOPWID	ENDST	XLCH
15.250	55000.00	1167.13	1166.31	12.13	1155.00	3239.30	1171.61	16.98	9846.01	292.25	10138.27	.00
17.000	55000.00	1169.70	1166.47	14.40	1155.30	3930.70	1172.74	13.99	9853.41	298.06	10151.48	175.00
19.000	55000.00	1170.51	.00	14.81	1155.70	4066.88	1173.35	13.52	9869.46	302.08	10171.54	200.00
20.850	55000.00	1171.86	1166.19	15.96	1155.90	4883.21	1173.83	11.26	9858.20	326.87	10185.07	185.00
22.000	55000.00	1172.21	1166.27	16.11	1156.10	5077.02	1174.03	10.83	9841.58	341.73	10183.31	115.00
23.900	55000.00	1172.34	1166.90	15.84	1156.50	4754.88	1174.42	11.57	9848.52	317.96	10166.49	190.00
24.890	55000.00	1172.48	1167.14	15.68	1156.80	4708.48	1174.60	11.68	9855.40	315.11	10170.51	94.00
* 24.900	55000.00	1172.90	1172.90	10.10	1162.80	3084.51	1177.84	17.83	9855.18	315.74	10170.92	6.00
25.400	55000.00	1174.67	1173.01	11.77	1162.90	3618.42	1178.26	15.20	9855.36	328.07	10183.42	50.00
26.700	55000.00	1175.76	1173.32	12.56	1163.20	3861.12	1178.91	14.24	9862.63	319.74	10182.37	130.00
27.800	55000.00	1176.47	.00	12.97	1163.50	3605.06	1180.09	15.26	9867.60	290.76	10158.36	110.00
29.600	55000.00	1178.39	1174.00	14.49	1163.90	4479.85	1180.74	12.28	9870.88	323.23	10194.12	180.00

*	30.000	55000.00	1178.77	1174.04	14.77	1164.00	4689.19	1180.90	11.73	9860.23	336.54	10196.77	40.00
	31.750	55000.00	1180.49	1173.65	17.09	1163.40	6253.29	1181.69	8.80	9783.60	436.79	10220.40	175.00
	33.000	55000.00	1180.61	1175.02	16.51	1164.10	5351.11	1182.25	10.28	9803.18	385.95	10189.13	125.00
	35.000	55000.00	1181.18	1176.36	15.28	1165.90	4722.01	1183.29	11.65	9821.85	343.23	10165.09	200.00
	37.000	55000.00	1181.79	1177.51	14.89	1166.90	4345.65	1184.28	12.66	9835.82	316.26	10152.08	200.00

	SECNO	Q	CWSEL	CRIWS	DEPTH	ELMIN	AREA	EG	VCH	SSTA	TOPWID	ENDST	XLCH
	38.320	55000.00	1182.05	1178.41	14.55	1167.50	4164.11	1184.76	13.21	9834.41	314.70	10149.10	132.00
	40.050	55000.00	1182.80	1178.16	16.30	1166.50	4417.81	1185.21	12.45	9835.98	318.32	10154.30	173.00
	43.000	55000.00	1183.53	1178.57	16.83	1166.70	4493.49	1185.86	12.24	9845.96	320.55	10166.51	295.00
	46.920	55000.00	1184.23	1179.56	16.63	1167.60	4303.19	1186.77	12.78	9851.85	296.23	10148.08	392.00
	50.900	55000.00	1185.36	1179.98	17.36	1168.00	4573.88	1187.60	12.02	9848.29	304.79	10153.07	398.00
	55.000	55000.00	1186.13	1180.58	17.13	1169.00	4583.30	1188.37	12.00	9849.84	304.32	10154.15	410.00
	60.000	55000.00	1187.13	1181.42	17.43	1169.70	4684.38	1189.27	11.74	9852.73	307.00	10159.74	500.00
	64.000	55000.00	1187.66	1182.55	17.16	1170.50	4352.16	1190.14	12.64	9854.75	289.23	10143.97	400.00
	65.450	55000.00	1188.26	1182.84	17.26	1171.00	4634.71	1190.45	11.87	9831.12	311.45	10142.57	145.00
	66.900	55000.00	1188.69	1182.60	17.49	1171.20	4815.62	1190.72	11.42	9837.09	310.29	10147.38	145.00
	67.900	55000.00	1188.79	1182.96	17.49	1171.30	4705.03	1190.91	11.69	9839.69	304.61	10144.31	100.00
	68.690	55000.00	1188.90	1183.00	17.50	1171.40	4677.77	1191.04	11.76	9841.31	299.71	10141.03	73.00
*	68.700	55000.00	1189.17	1189.17	10.77	1178.40	3032.68	1194.28	18.14	9841.16	300.35	10141.51	7.00
	69.100	55000.00	1190.50	1189.32	12.00	1178.50	3376.89	1194.62	16.29	9840.01	300.66	10140.66	40.00
	70.100	55000.00	1190.99	1189.75	12.19	1178.80	3374.29	1195.12	16.30	9840.82	297.29	10138.10	100.00
	71.800	55000.00	1191.99	1190.44	12.69	1179.30	3445.76	1195.94	15.96	9841.42	293.45	10134.87	170.00
	73.500	55000.00	1193.40	1190.80	13.70	1179.70	3781.34	1196.68	14.55	9829.88	301.91	10131.80	170.00
	76.320	55000.00	1194.59	1191.42	14.69	1179.90	3933.47	1197.62	13.98	9838.99	302.11	10141.10	282.00
	81.000	55000.00	1196.12	1192.42	15.62	1180.50	4047.66	1198.99	13.59	9853.00	297.51	10150.50	468.00
	84.700	55000.00	1197.97	1192.13	16.77	1181.20	5015.58	1199.84	10.97	9817.63	339.34	10156.97	370.00

SPF SCSPF

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	15.250	.00	.00	.00	1155.00	55000.00	1167.13	1166.31	1171.61	55.38	16.98	3239.30	7390.53
	17.000	175.00	.00	.00	1155.30	55000.00	1169.70	1166.47	1172.74	30.14	13.99	3930.70	10017.47
	19.000	200.00	1188.00	1179.50	1155.70	55000.00	1170.51	.00	1173.35	27.48	13.52	4066.88	10491.92
	20.850	185.00	.00	.00	1155.90	55000.00	1171.86	1166.19	1173.83	16.71	11.26	4883.21	13455.37
	22.000	115.00	.00	.00	1156.10	55000.00	1172.21	1166.27	1174.03	15.42	10.83	5077.02	14007.59
	23.900	190.00	.00	.00	1156.50	55000.00	1172.34	1166.90	1174.42	17.74	11.57	4754.88	13058.42
	24.890	94.00	.00	.00	1156.80	55000.00	1172.48	1167.14	1174.60	18.17	11.68	4708.48	12902.97
*	24.900	6.00	.00	.00	1162.80	55000.00	1172.90	1172.90	1177.84	73.05	17.83	3084.51	6435.00
	25.400	50.00	.00	.00	1162.90	55000.00	1174.67	1173.01	1178.26	45.29	15.20	3618.42	8172.37
	26.700	130.00	.00	.00	1163.20	55000.00	1175.76	1173.32	1178.91	35.46	14.24	3861.12	9236.81
	27.800	110.00	1185.50	1177.50	1163.50	55000.00	1176.47	.00	1180.09	39.48	15.26	3605.06	8753.26
	29.600	180.00	.00	.00	1163.90	55000.00	1178.39	1174.00	1180.74	22.06	12.28	4479.85	11710.69
*	30.000	40.00	.00	.00	1164.00	55000.00	1178.77	1174.04	1180.90	48.71	11.73	4689.19	7880.30
	31.750	175.00	.00	.00	1163.40	55000.00	1180.49	1173.65	1181.69	25.83	8.80	6253.29	10822.04
	33.000	125.00	.00	.00	1164.10	55000.00	1180.61	1175.02	1182.25	37.24	10.28	5351.11	9012.39
	35.000	200.00	.00	.00	1165.90	55000.00	1181.18	1176.36	1183.29	48.41	11.65	4722.01	7905.25
	37.000	200.00	.00	.00	1166.90	55000.00	1181.79	1177.51	1184.28	36.99	12.66	4345.65	9042.91
	38.320	132.00	.00	.00	1167.50	55000.00	1182.05	1178.41	1184.76	26.62	13.21	4164.11	10659.25
	40.050	173.00	.00	.00	1166.50	55000.00	1182.80	1178.16	1185.21	22.15	12.45	4417.81	11687.08
	43.000	295.00	.00	.00	1166.70	55000.00	1183.53	1178.57	1185.86	21.16	12.24	4493.49	11955.83

46.920	392.00	.00	.00	1167.60	55000.00	1184.23	1179.56	1186.77	22.08	12.78	4303.19	11705.21
50.900	398.00	.00	.00	1168.00	55000.00	1185.36	1179.98	1187.60	18.68	12.02	4573.88	12726.75
55.000	410.00	.00	.00	1169.00	55000.00	1186.13	1180.58	1188.37	18.54	12.00	4583.30	12773.40
60.000	500.00	.00	.00	1169.70	55000.00	1187.13	1181.42	1189.27	17.48	11.74	4684.38	13156.46

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
64.000	400.00	.00	.00	1170.50	55000.00	1187.66	1182.55	1190.14	20.81	12.64	4352.16	12056.57
65.450	145.00	.00	.00	1171.00	55000.00	1188.26	1182.84	1190.45	18.39	11.87	4634.71	12824.73
66.900	145.00	.00	.00	1171.20	55000.00	1188.69	1182.60	1190.72	16.17	11.42	4815.62	13679.40
67.900	100.00	.00	.00	1171.30	55000.00	1188.79	1182.96	1190.91	17.06	11.69	4705.03	13317.67
68.690	73.00	.00	.00	1171.40	55000.00	1188.90	1183.00	1191.04	17.07	11.76	4677.77	13311.34
* 68.700	7.00	.00	.00	1178.40	55000.00	1189.17	1189.17	1194.28	71.61	18.14	3032.68	6499.27
69.100	40.00	.00	.00	1178.50	55000.00	1190.50	1189.32	1194.62	50.33	16.29	3376.89	7752.76
70.100	100.00	.00	.00	1178.80	55000.00	1190.99	1189.75	1195.12	49.74	16.30	3374.29	7798.22
71.800	170.00	.00	.00	1179.30	55000.00	1191.99	1190.44	1195.94	45.56	15.96	3445.76	8148.63
73.500	170.00	.00	.00	1179.70	55000.00	1193.40	1190.80	1196.68	34.70	14.55	3781.34	9336.92
76.320	282.00	.00	.00	1179.90	55000.00	1194.59	1191.42	1197.62	30.44	13.98	3933.47	9968.54
81.000	468.00	.00	.00	1180.50	55000.00	1196.12	1192.42	1198.99	27.16	13.59	4047.66	10553.65
84.700	370.00	.00	.00	1181.20	55000.00	1197.97	1192.13	1199.84	15.82	10.97	5015.58	13827.36

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SPF SCSPF

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	15.250	55000.00	1167.13	.00	.00	.00	292.25	.00
	17.000	55000.00	1169.70	.00	2.57	.00	298.06	175.00
	19.000	55000.00	1170.51	.00	.81	.00	302.08	200.00
	20.850	55000.00	1171.86	.00	1.35	.00	326.87	185.00
	22.000	55000.00	1172.21	.00	.35	.00	341.73	115.00
	23.900	55000.00	1172.34	.00	.14	.00	317.96	190.00
	24.890	55000.00	1172.48	.00	.14	.00	315.11	94.00
*	24.900	55000.00	1172.90	.00	.42	.00	315.74	6.00
	25.400	55000.00	1174.67	.00	1.77	.00	328.07	50.00
	26.700	55000.00	1175.76	.00	1.09	.00	319.74	130.00
	27.800	55000.00	1176.47	.00	.72	.00	290.76	110.00
	29.600	55000.00	1178.39	.00	1.92	.00	323.23	180.00
*	30.000	55000.00	1178.77	.00	.37	.00	336.54	40.00
	31.750	55000.00	1180.49	.00	1.73	.00	436.79	175.00
	33.000	55000.00	1180.61	.00	.12	.00	385.95	125.00
	35.000	55000.00	1181.18	.00	.57	.00	343.23	200.00
	37.000	55000.00	1181.79	.00	.61	.00	316.26	200.00
	38.320	55000.00	1182.05	.00	.26	.00	314.70	132.00
	40.050	55000.00	1182.80	.00	.75	.00	318.32	173.00
	43.000	55000.00	1183.53	.00	.73	.00	320.55	295.00
	46.920	55000.00	1184.23	.00	.70	.00	296.23	392.00
	50.900	55000.00	1185.36	.00	1.13	.00	304.79	398.00
	55.000	55000.00	1186.13	.00	.77	.00	304.32	410.00
	60.000	55000.00	1187.13	.00	1.00	.00	307.00	500.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
64.000	55000.00	1187.66	.00	.52	.00	289.23	400.00

	65.450	55000.00	1188.26	.00	.61	.00	311.45	145.00
	66.900	55000.00	1188.69	.00	.43	.00	310.29	145.00
	67.900	55000.00	1188.79	.00	.10	.00	304.61	100.00
	68.690	55000.00	1188.90	.00	.11	.00	299.71	73.00
*	68.700	55000.00	1189.17	.00	.28	.00	300.35	7.00
	69.100	55000.00	1190.50	.00	1.33	.00	300.66	40.00
	70.100	55000.00	1190.99	.00	.50	.00	297.29	100.00
	71.800	55000.00	1191.99	.00	1.00	.00	293.45	170.00
	73.500	55000.00	1193.40	.00	1.41	.00	301.91	170.00
	76.320	55000.00	1194.59	.00	1.19	.00	302.11	282.00
	81.000	55000.00	1196.12	.00	1.53	.00	297.51	468.00
	84.700	55000.00	1197.97	.00	1.85	.00	339.34	370.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

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CAUTION SECNO=     24.900  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     24.900  PROFILE=  1  MINIMUM SPECIFIC ENERGY

WARNING SECNO=     30.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO=     68.700  PROFILE=  1  CRITICAL DEPTH ASSUMED
CAUTION SECNO=     68.700  PROFILE=  1  MINIMUM SPECIFIC ENERGY
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