

APPENDIX S

HEC-HMS MODEL FOR THE CALCULATION OF THE 500-YEAR PEAK DISCHARGES, ANTECEDENT MOISTURE CONDITION III

HMS * Summary of Results

Project : WCS

Run Name : 500 Yr AMIII

Start of Run : 01Dec00 0000 Basin Model : 100YrAMIII3/24/06NOD
 End of Run : 02Dec00 0000 Met. Model : Met 500 Year
 Execution Time : 29Mar06 1420 Control Specs : Control 1

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Subbasin-4	1210.1	01 Dec 00 1231	190.85	0.490
Reach-2	1210.1	01 Dec 00 1246	190.21	0.490
Subbasin-2	1741.4	01 Dec 00 1258	390.34	1.063
playa	0.0	30 Nov 00 2400	0.0	1.063
Reach-1	0.0	30 Nov 00 2400	0.0	1.063
Subbasin-1A	975.62	01 Dec 00 1319	274.21	0.691
Reach-1A	975.62	01 Dec 00 1336	273.13	0.691
Subbasin-1B	703.08	01 Dec 00 1236	120.10	0.314
Junction-1A	1241.7	01 Dec 00 1318	393.23	1.005
Reach-1B	1241.7	01 Dec 00 1321	392.96	1.005
Subbasin-3	353.38	01 Dec 00 1236	60.672	0.156
Junction-1	1483.0	01 Dec 00 1252	453.63	2.224
Reach-3	1483.0	01 Dec 00 1309	451.82	2.224
Subbasin-5A	465.61	01 Dec 00 1230	71.094	0.192
Junction-2	2887.8	01 Dec 00 1250	713.12	2.906
Reach-4	2887.8	01 Dec 00 1311	709.60	2.906
Subbasin-5B	504.92	01 Dec 00 1245	97.675	0.265
Junction-3	3286.1	01 Dec 00 1309	807.28	3.171
Reach-5	3286.1	01 Dec 00 1323	804.57	3.171
Subbasin-6	211.72	01 Dec 00 1222	27.467	0.074
Junction-4	3326.9	01 Dec 00 1323	832.04	3.245
Reach-6	3326.9	01 Dec 00 1323	832.04	3.245
Subbasin-7	174.68	01 Dec 00 1257	38.870	0.104
Junction-5	3472.7	01 Dec 00 1322	870.91	3.349

Meteorologic Model Input

HMS * Meteorologic Model

File Edit Help

Meteorologic Model: Met 500 Year Subbasin List

Description: 500 Year, 24 Hour Storm ...

Precipitation Evapotranspiration

Method : SCS Hypothetical Storm

Storm Selection: Type II

Storm Depth (in) : 8.71

OK Apply Cancel

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: 100YrAMIII3/24/06NOD

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Subbasin-1A	91		0.0
Subbasin-2	86		0.0
Subbasin-3	89		0.0
Subbasin-4	89		0.0
Subbasin-5B	86		0.0
Subbasin-6	86		0.0
Subbasin-1B	88		0.0
Subbasin-5A	86		0.0
Subbasin-7	87		0.0

OK Apply Cancel

HMS * Basin Model * SCS UH

Sort Help

Basin Model ID: 100YrAMIII3/24/06NOD

Time Units : Minutes

Subbasin Name	SCS Lag (min)
Subbasin-1A	86
Subbasin-2	65
Subbasin-3	44
Subbasin-4	39
Subbasin-5B	53
Subbasin-6	30
Subbasin-1B	44
Subbasin-5A	38
Subbasin-7	64

OK Apply Cancel

HMS * Basin Model * Lag Routing

Help

Basin Model ID : 100YrAMIII3/24/06NOD

Interval :

Reach Name	Lag (min)
Reach-1	35
Reach-2	15
Reach-3	17
Reach-4	21
Reach-5	14
Reach-1A	17
Reach-1B	3
Reach-6	0

OK Apply Cancel

HMS - Basin Model - Reservoir Editor

Edit File Help

Reservoir Name:

Description: ...

Storage Outlet Spillway Overflow Dam Break

Method:

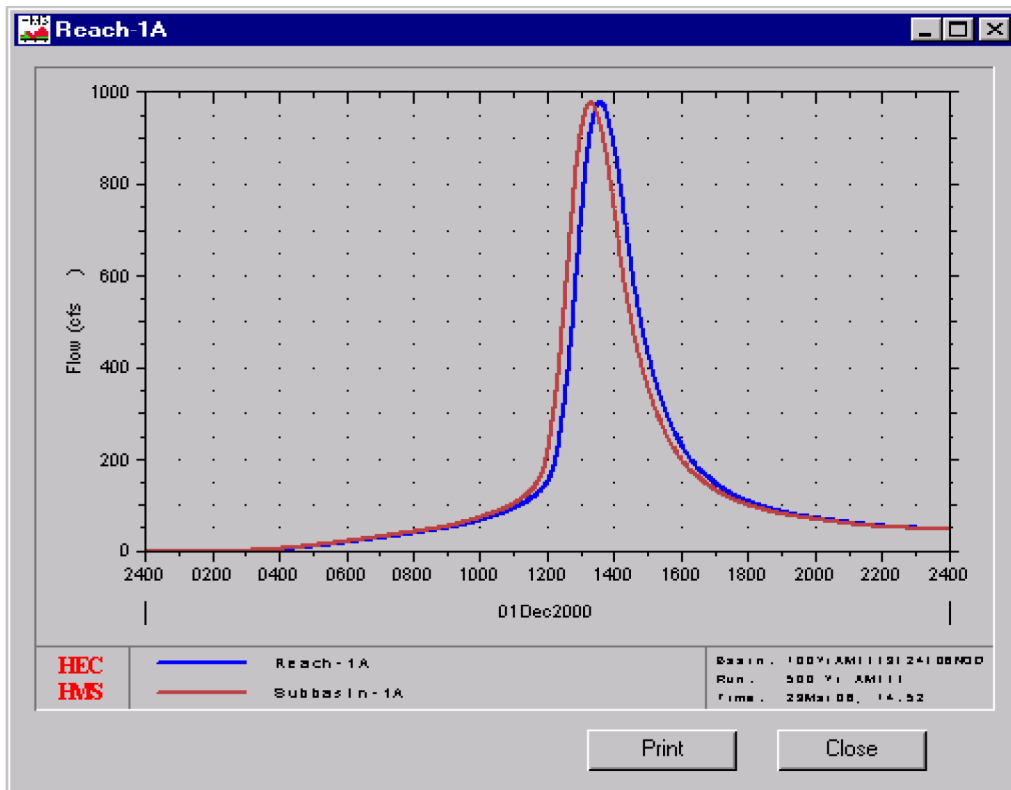
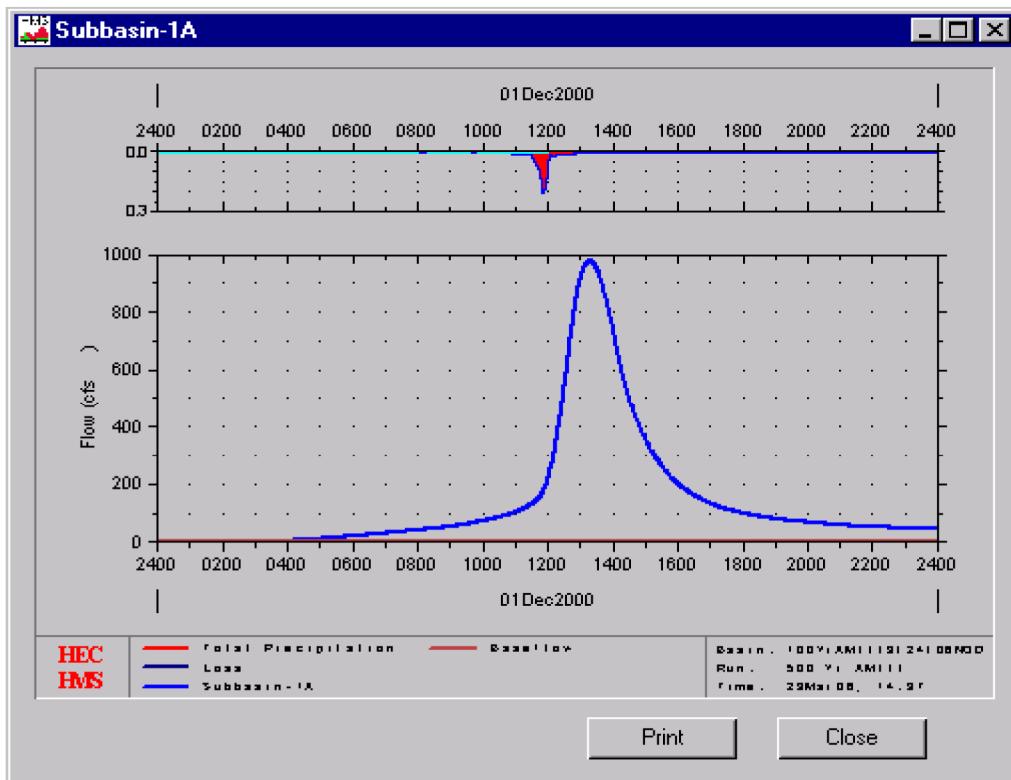
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Elevation (ft)	Storage (acre-feet)	Outflow (cfs)
3478.0	0.0	0.0
3480.0	24.0	0.0
3482.0	61.0	0.0
3484.0	170.0	0.0
3486.0	457.0	0.0
3487.0	693.0	863.0
3488.0	928.0	2427.0

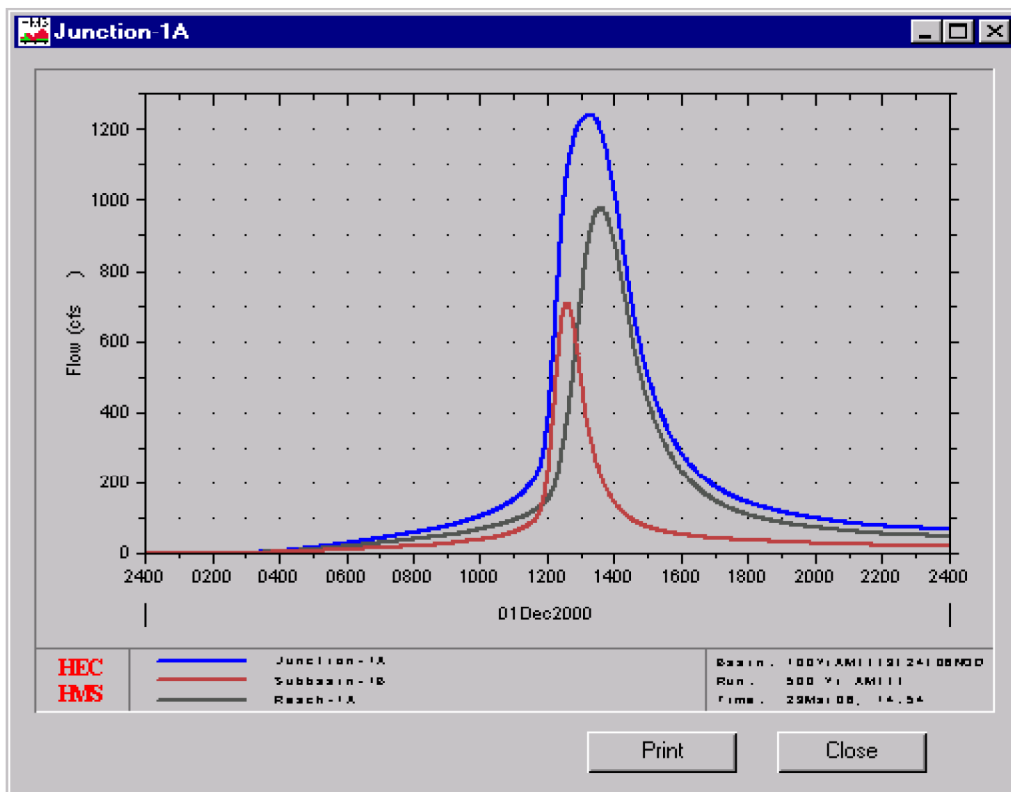
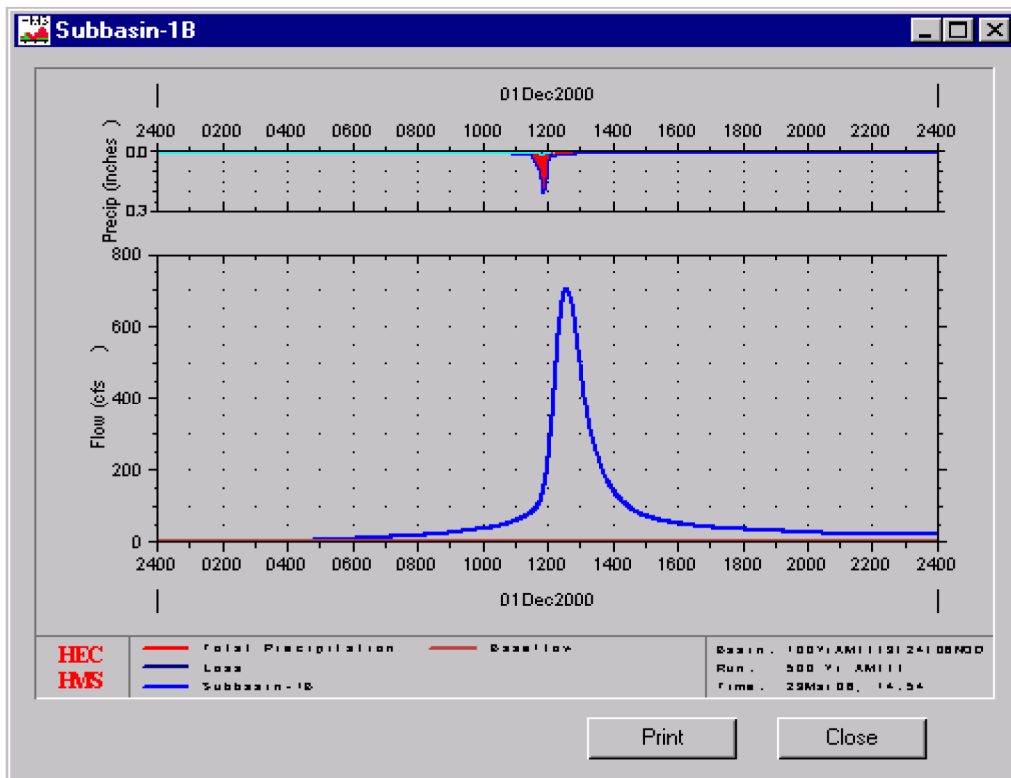
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OK Apply Cancel

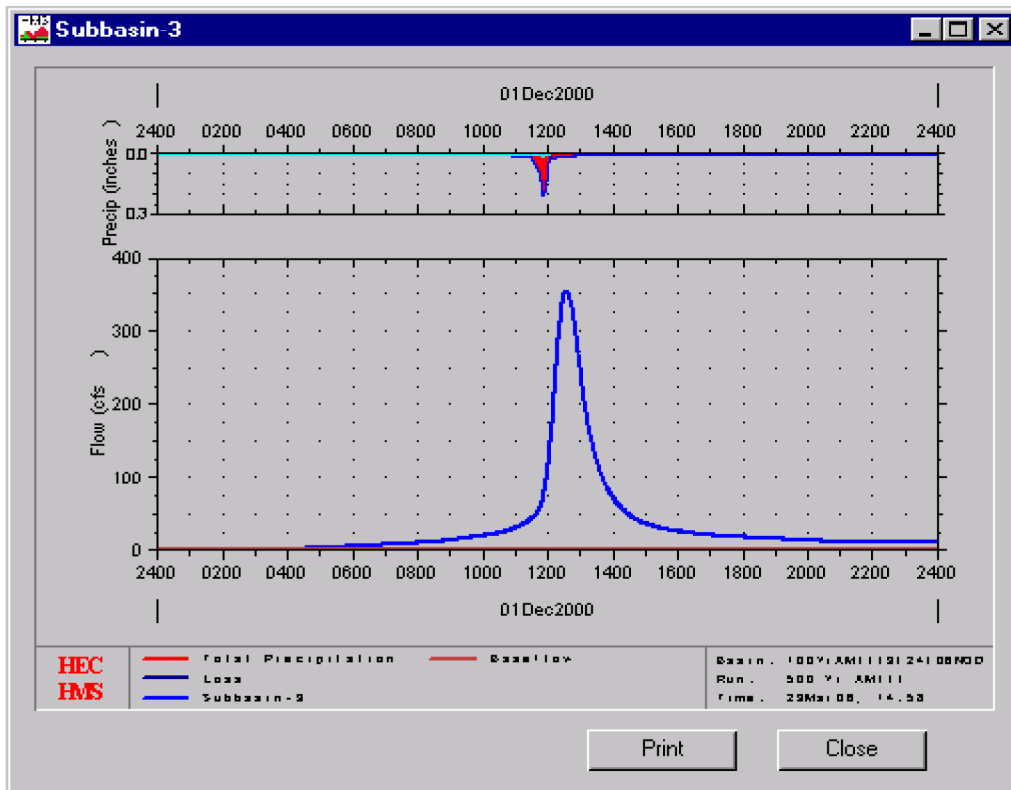
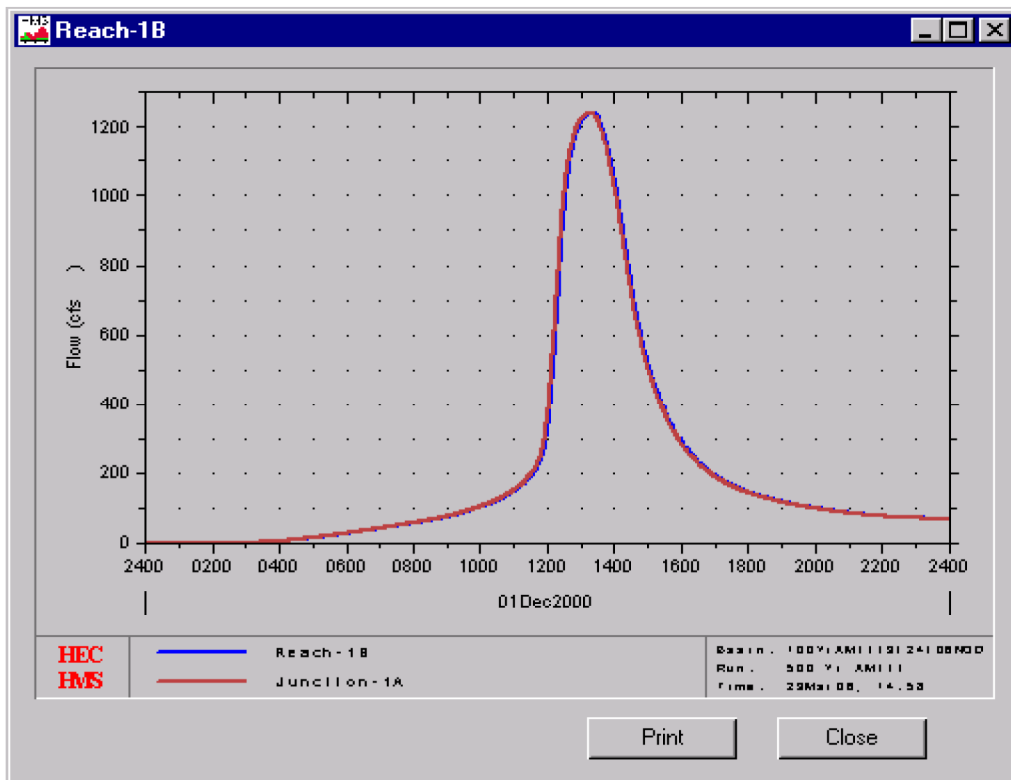
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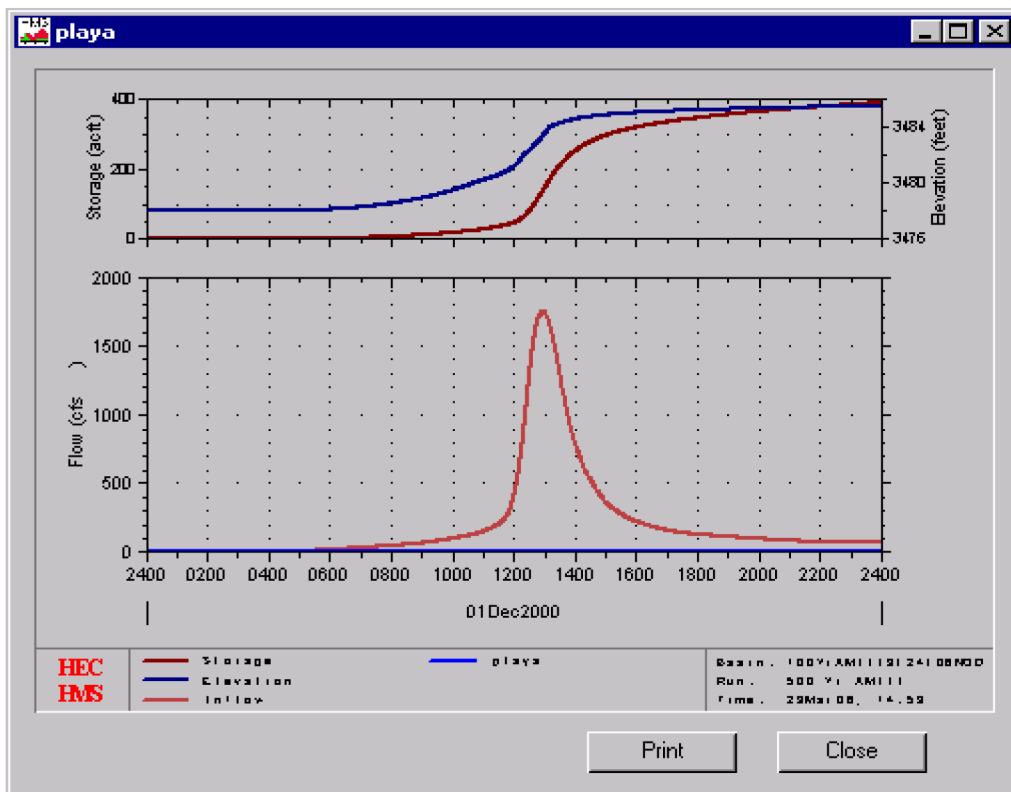
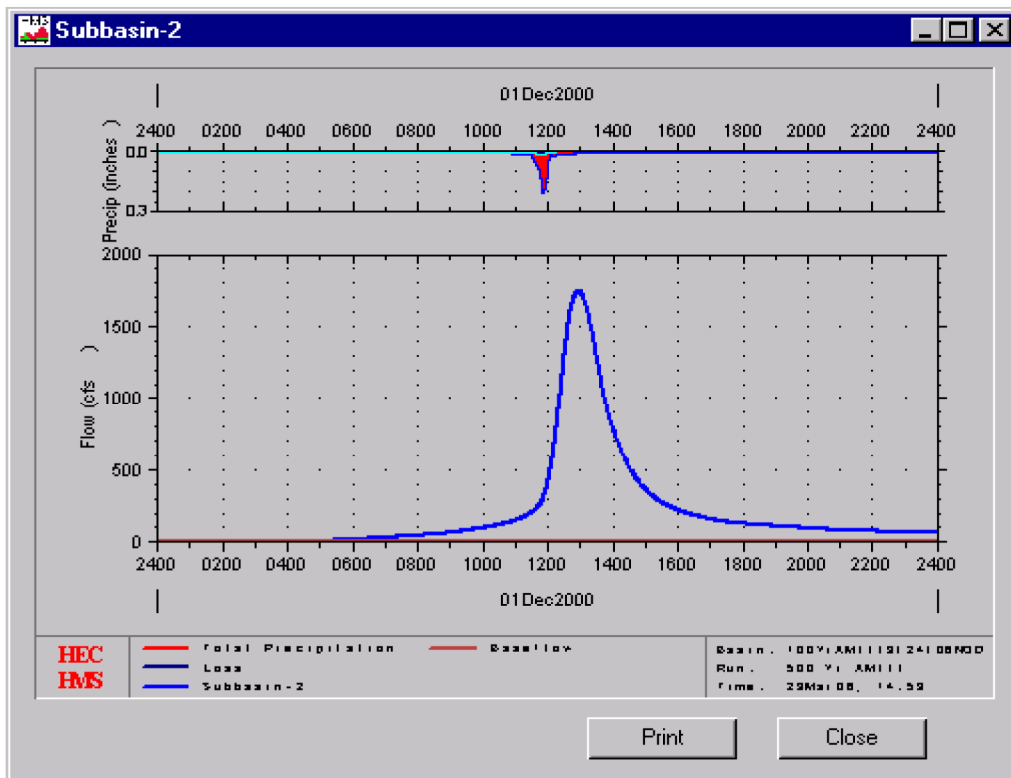
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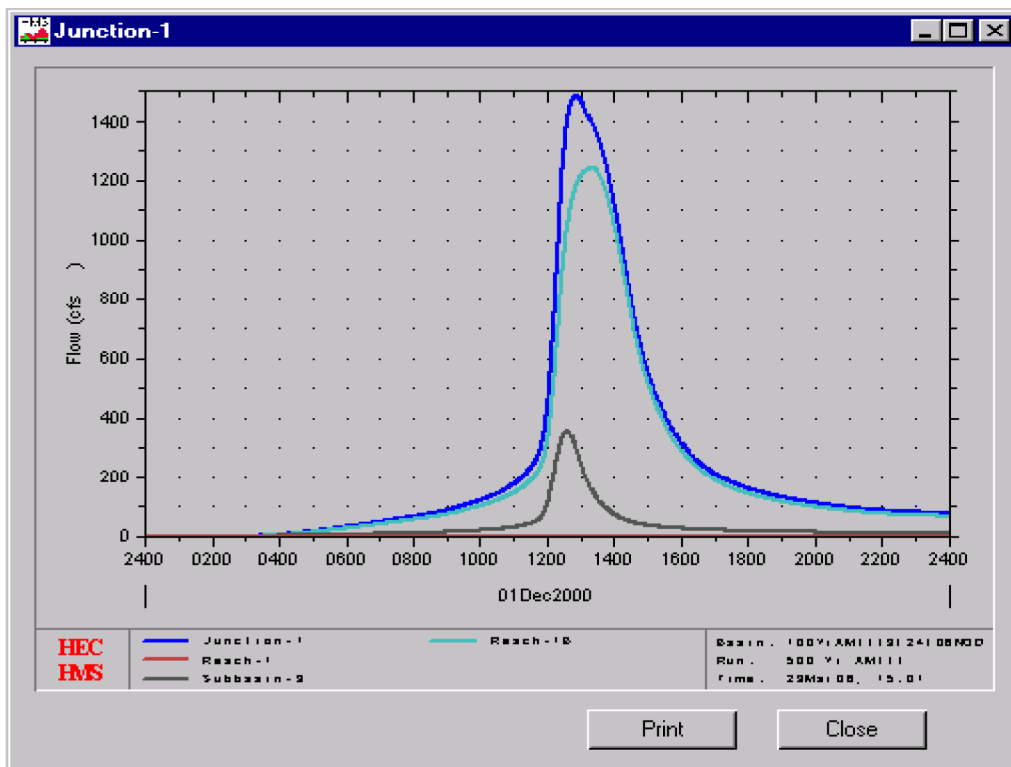
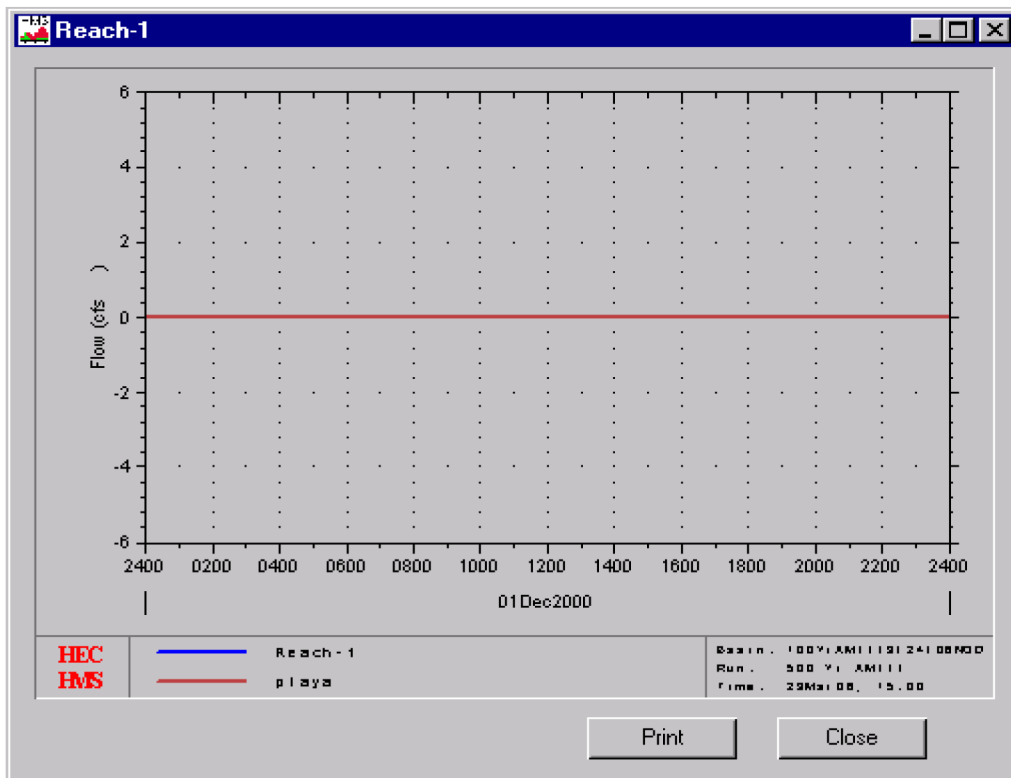
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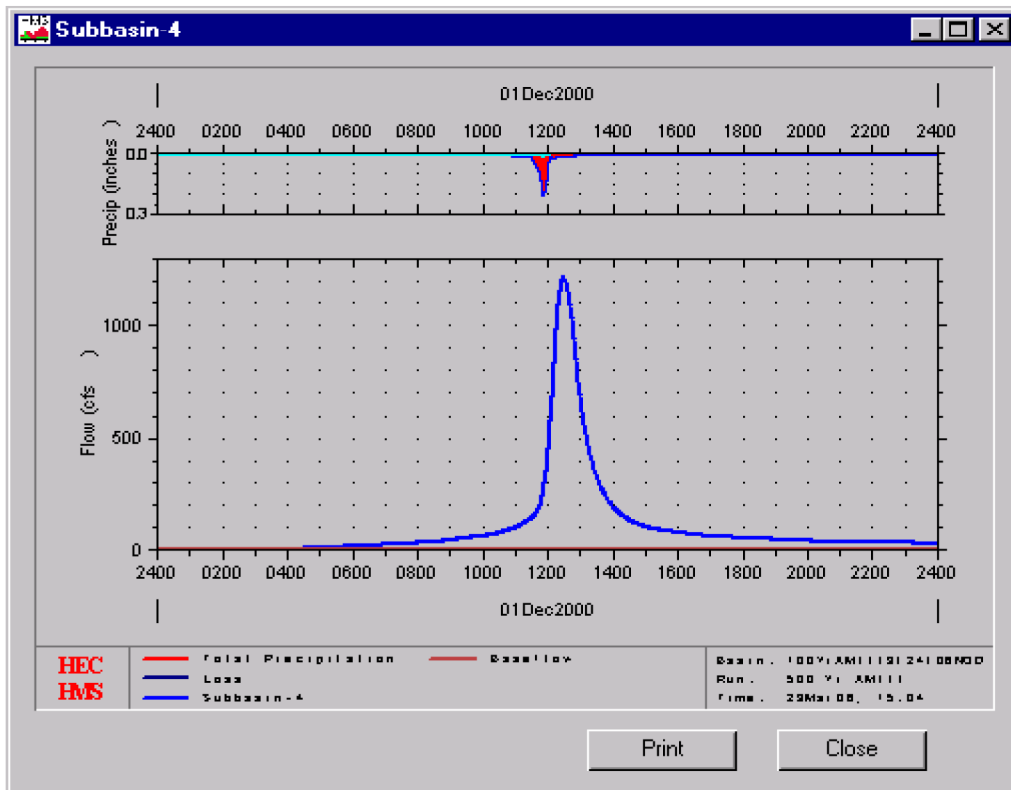
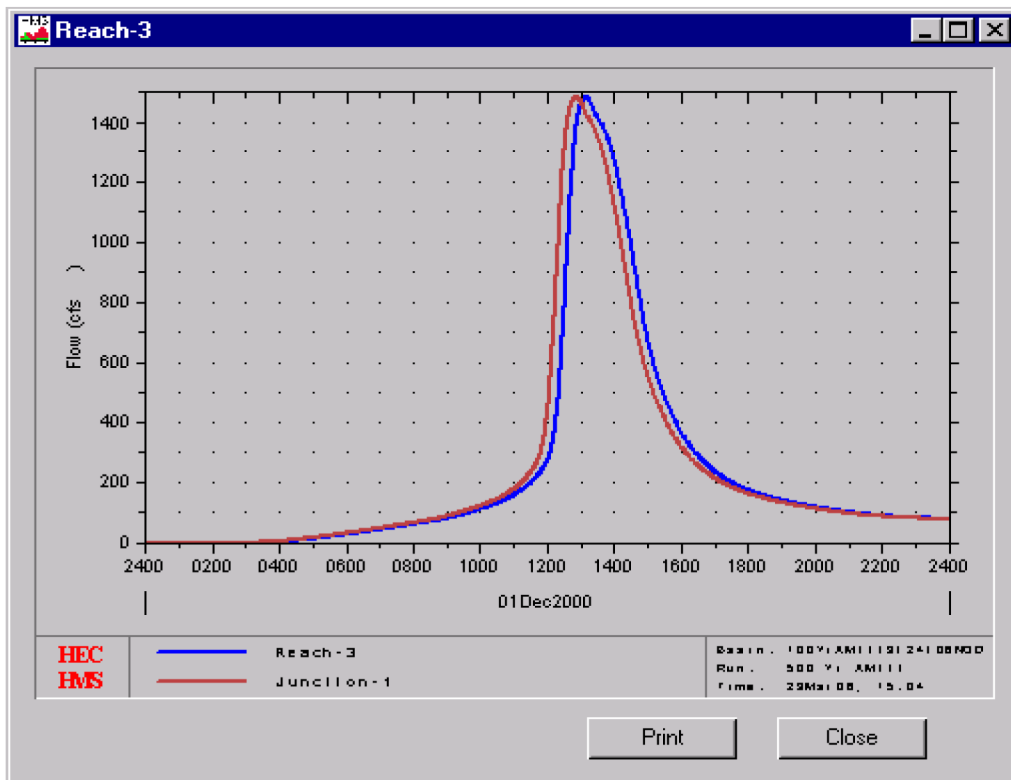
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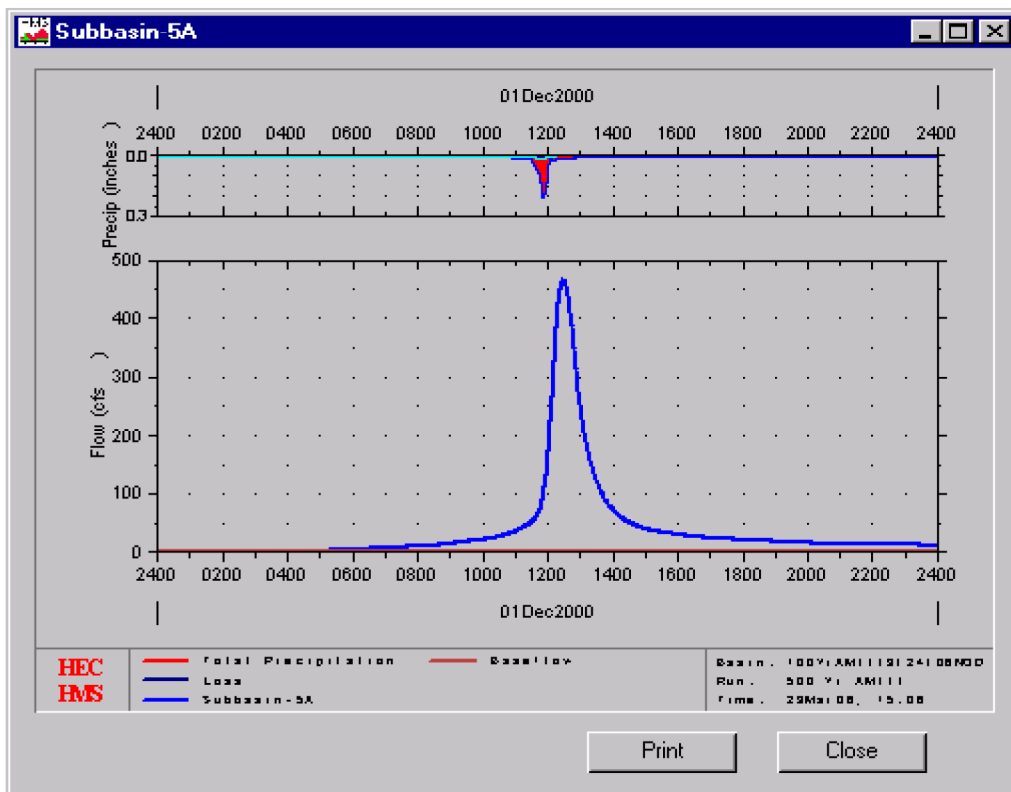
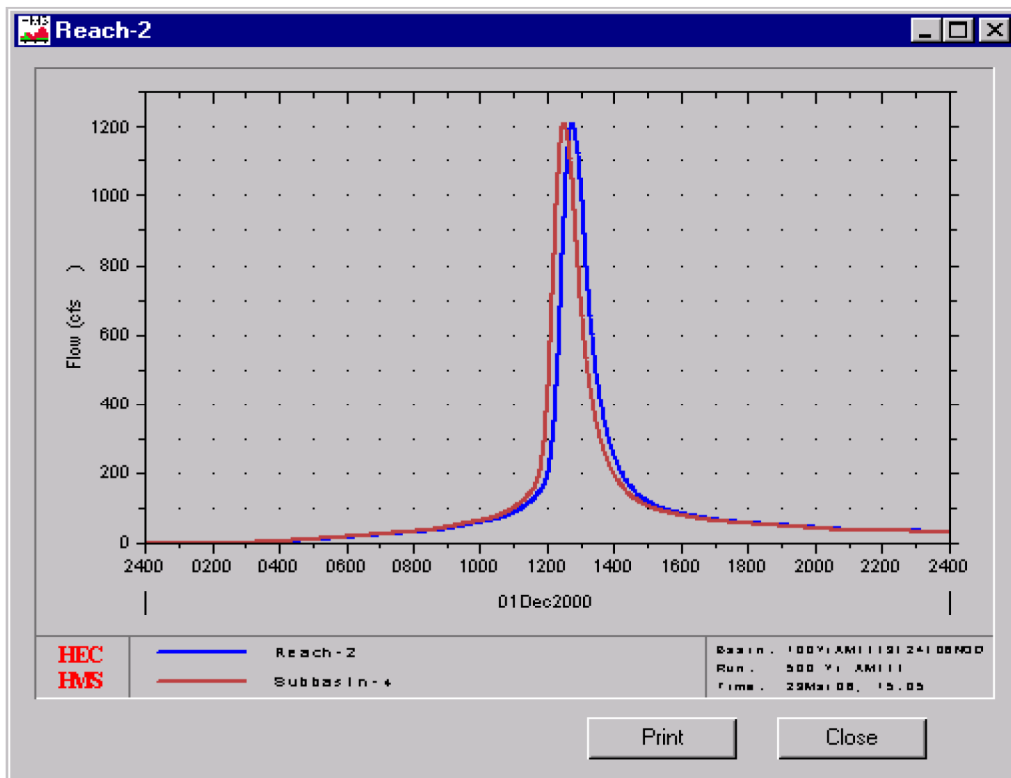
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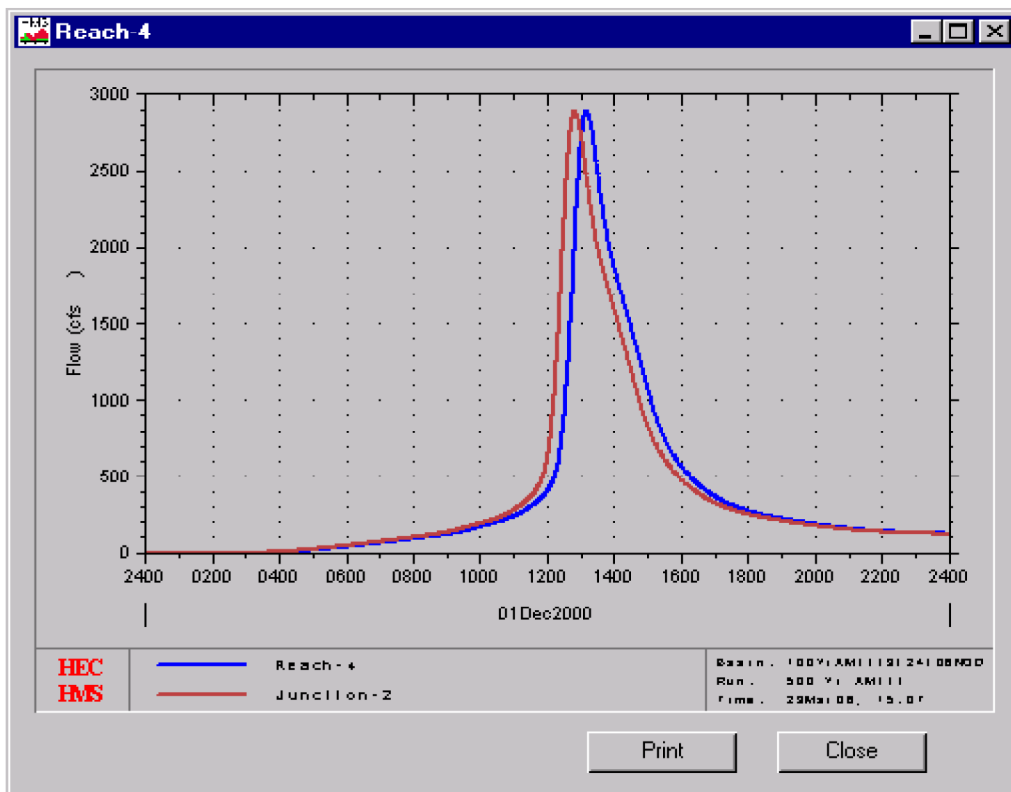
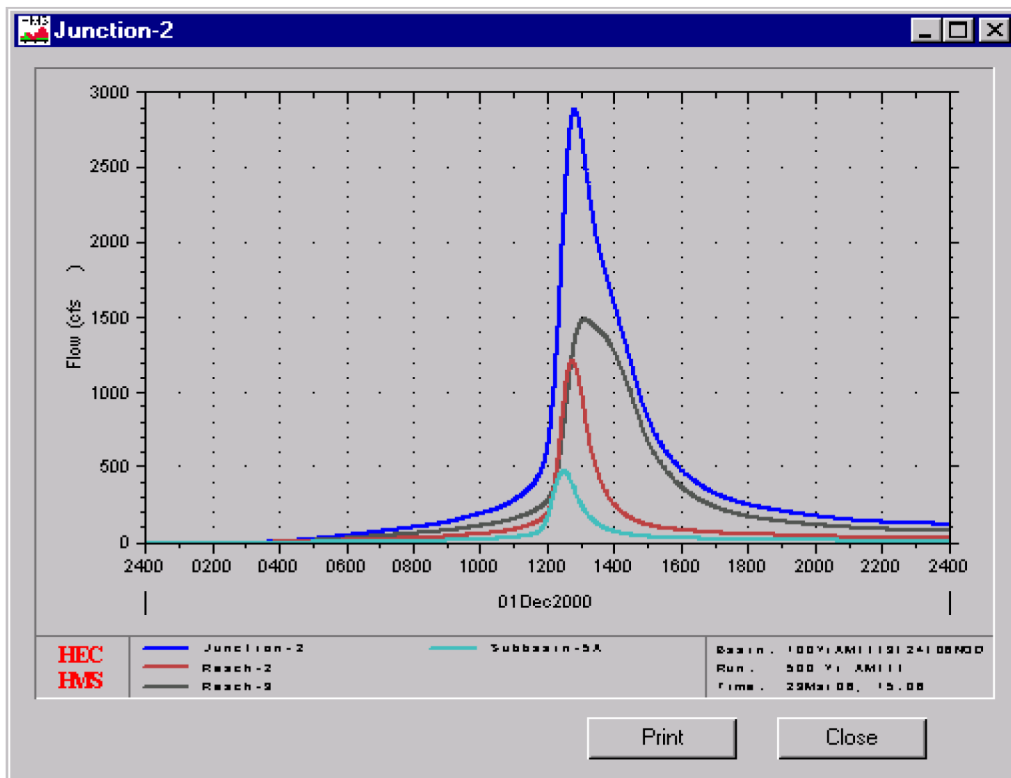
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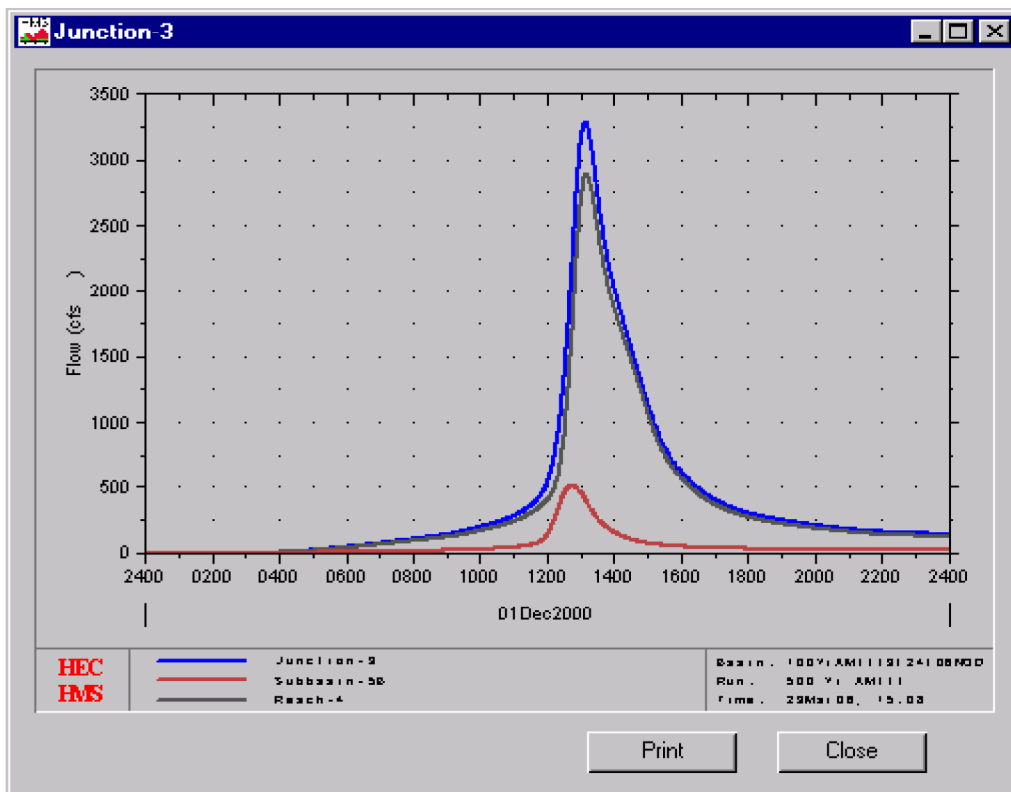
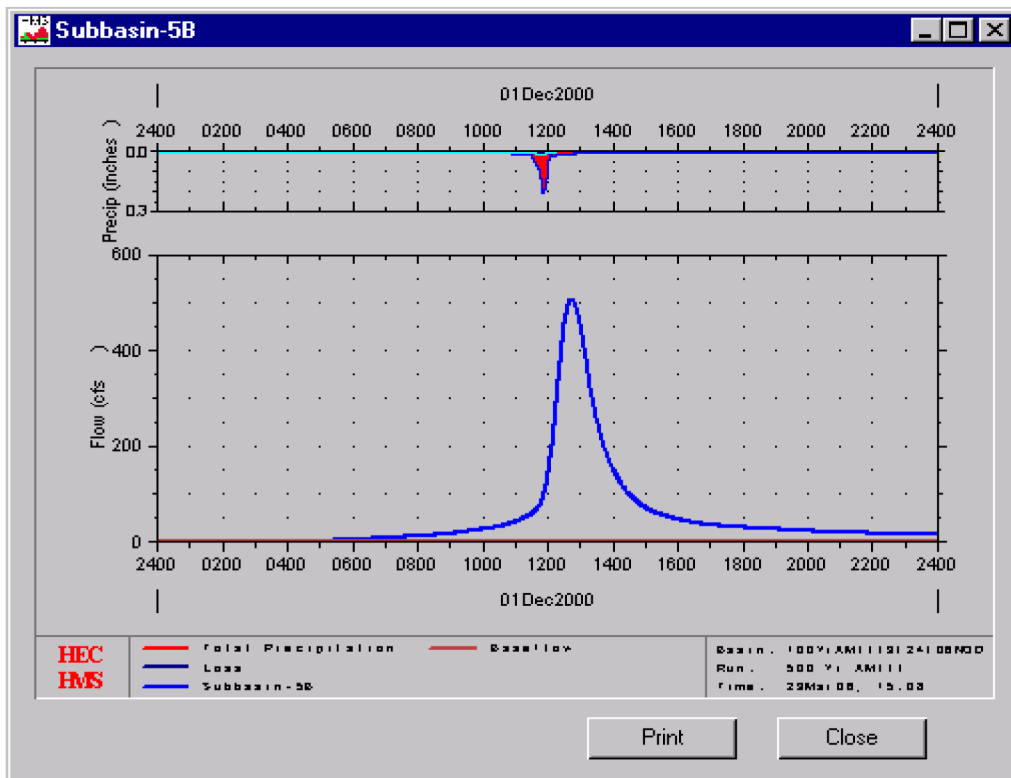
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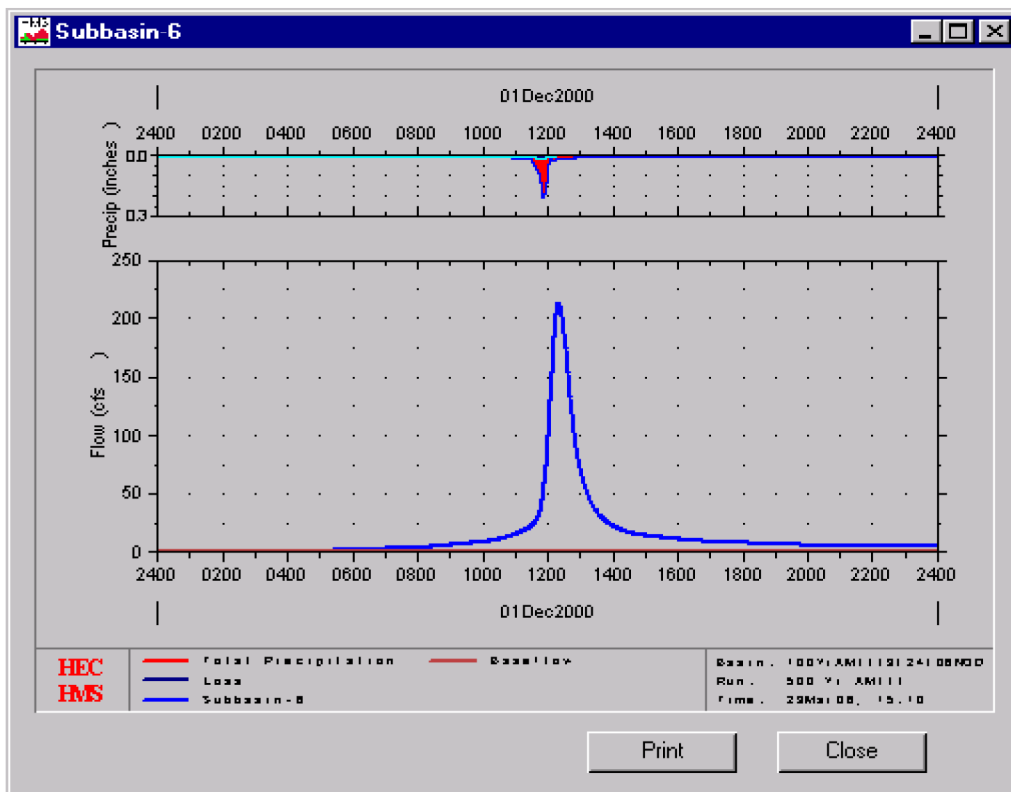
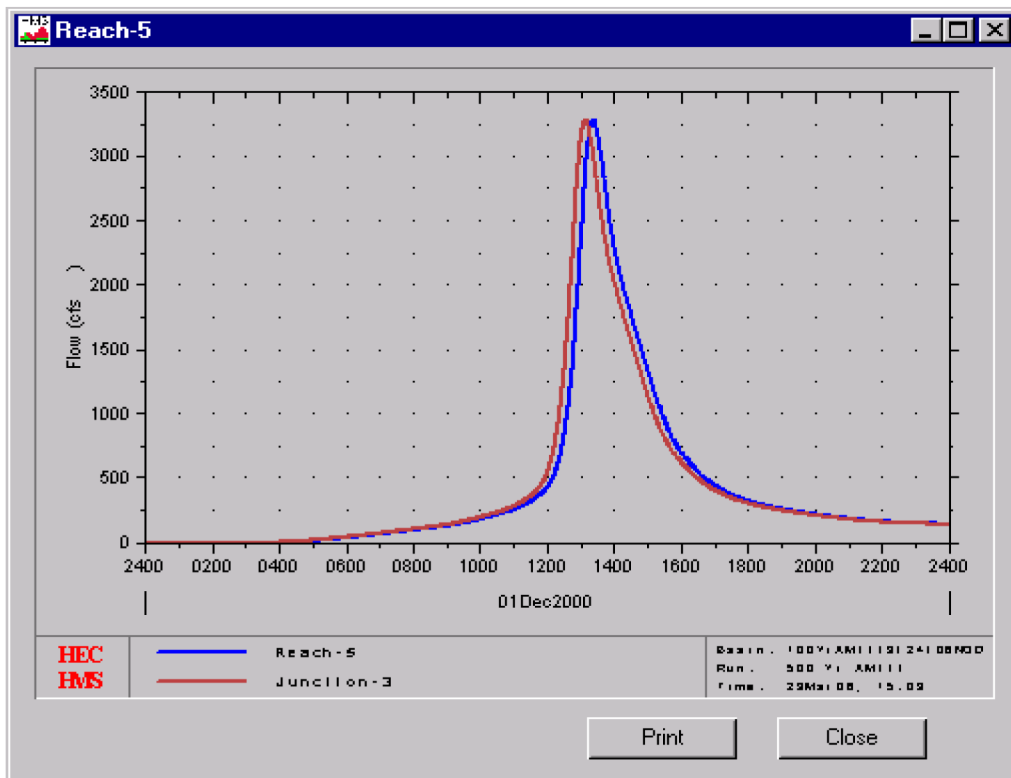
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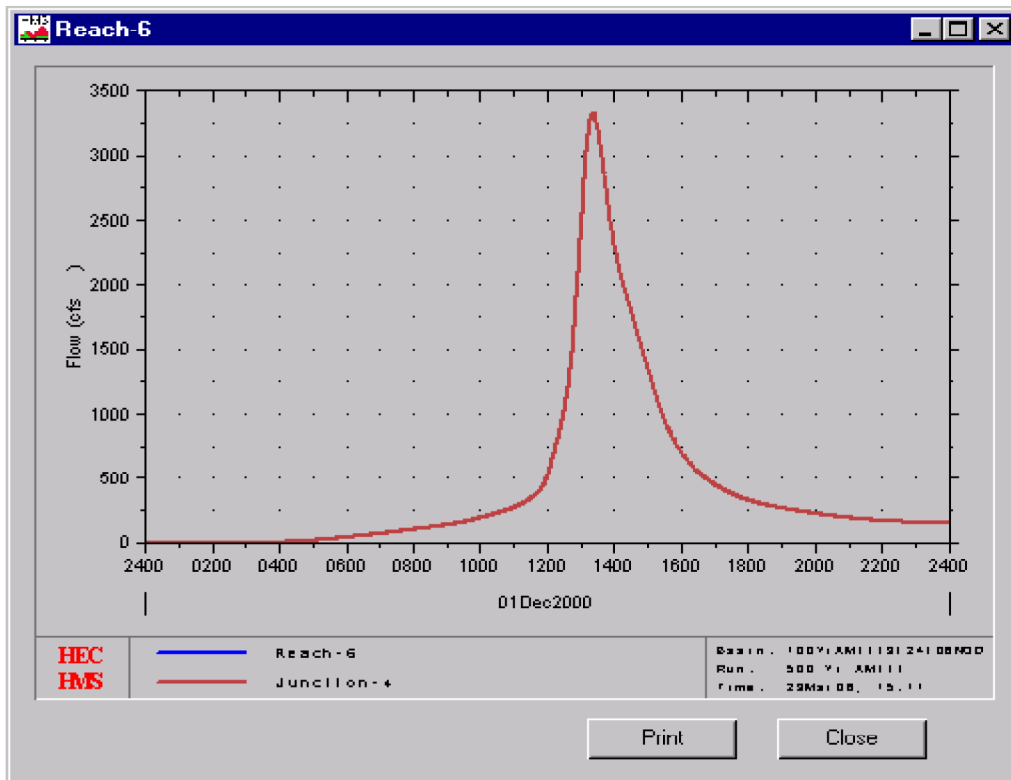
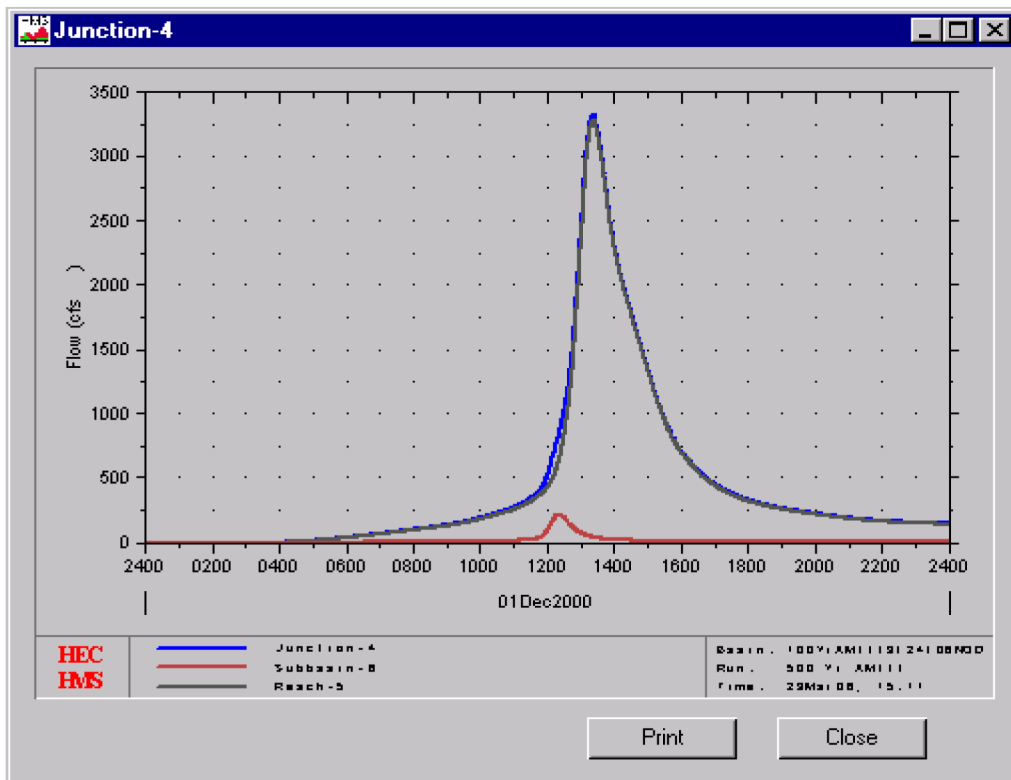
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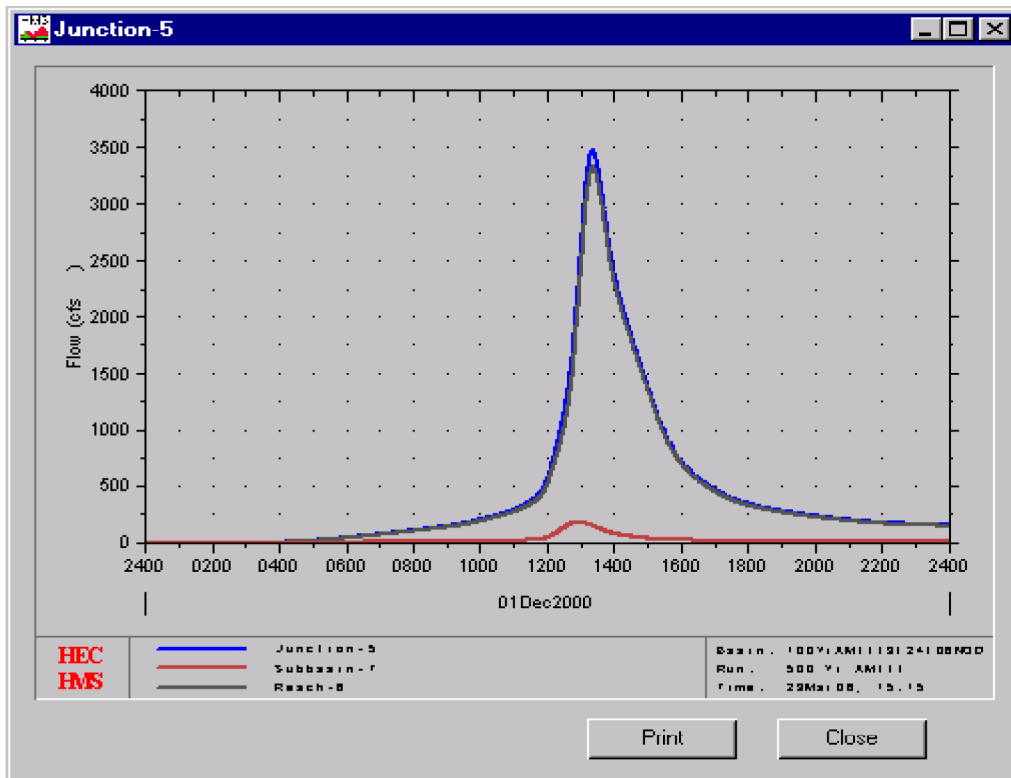
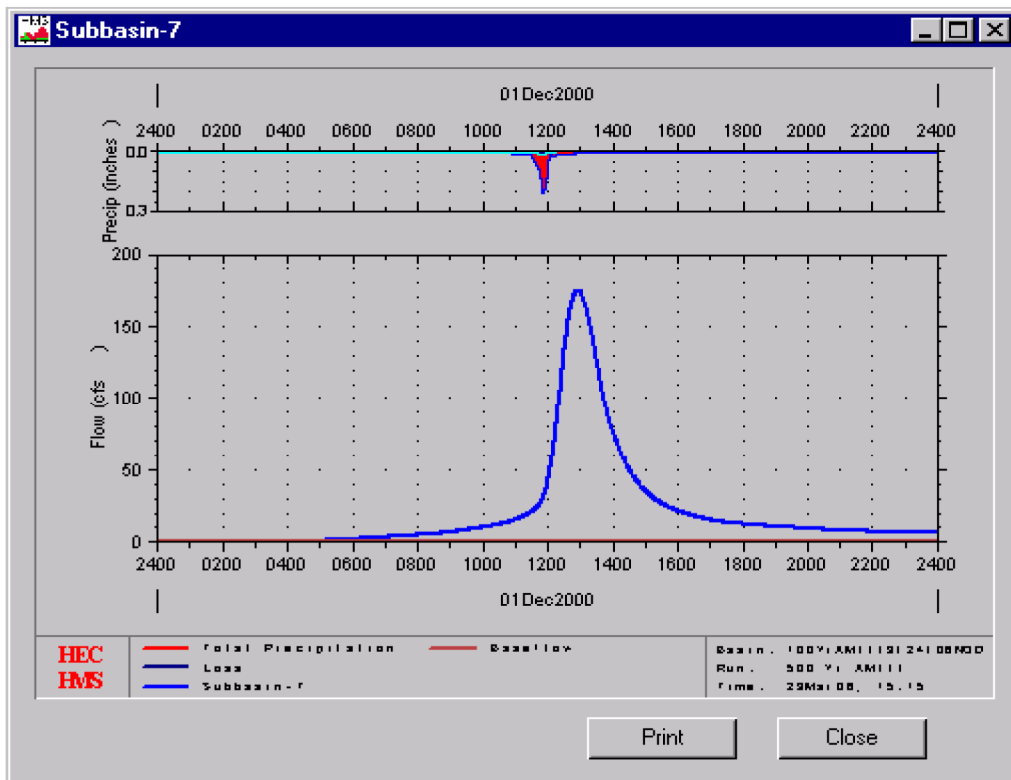
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



APPENDIX T

HEC-HMS MODEL FOR THE CALCULATION OF THE PMP PEAK DISCHARGE, ANTECEDENT MOISTURE CONDITION III

HMS * Summary of Results

Project : WCS

Run Name : PMP Dist A AMIII

Start of Run : 01Dec00 0000 Basin Model : 100YrAMIII3/24/06NOD

End of Run : 05Dec00 0000 Met. Model : PMP Dist. A NOD

Execution Time : 30Mar06 0838 Control Specs : Control PMP

Hydrologic Element	Discharge Peak (cfs)	Time of Peak	Volume (ac ft)	Drainage Area (sq mi)
Subbasin-4	1314.7	03 Dec 00 0600	1020.6	0.490
Reach-2	1314.7	03 Dec 00 0615	1020.6	0.490
Subbasin-2	2846.6	03 Dec 00 0600	2188.9	1.063
playa	2519.0	03 Dec 00 0644	1731.9	1.063
Reach-1	2519.0	03 Dec 00 0719	1731.9	1.063
Subbasin-1A	1849.8	03 Dec 00 0603	1449.7	0.691
Reach-1A	1849.8	03 Dec 00 0620	1449.7	0.691
Subbasin-1B	842.09	03 Dec 00 0600	651.59	0.314
Junction-1A	2689.0	03 Dec 00 0602	2101.3	1.005
Reach-1B	2689.0	03 Dec 00 0605	2101.3	1.005
Subbasin-3	418.53	03 Dec 00 0600	324.93	0.156
Junction-1	5399.3	03 Dec 00 0619	4158.1	2.224
Reach-3	5399.3	03 Dec 00 0636	4158.1	2.224
Subbasin-5A	514.51	03 Dec 00 0600	395.37	0.192
Junction-2	7143.7	03 Dec 00 0620	5574.0	2.906
Reach-4	7143.7	03 Dec 00 0641	5574.0	2.906
Subbasin-5B	709.89	03 Dec 00 0600	545.69	0.265
Junction-3	7765.5	03 Dec 00 0631	6119.7	3.171
Reach-5	7765.5	03 Dec 00 0645	6119.7	3.171
Subbasin-6	198.33	03 Dec 00 0600	152.38	0.074
Junction-4	7864.0	03 Dec 00 0638	6272.1	3.245
Reach-6	7864.0	03 Dec 00 0638	6272.1	3.245
Subbasin-7	278.66	03 Dec 00 0600	214.99	0.104
Junction-5	8123.7	03 Dec 00 0633	6487.1	3.349

File: StorageNOD11.xls

PLAYA ELEVATION, STORAGE, OUTFLOW

ELEVATION AND STORAGE

Elev	Area S.F.	Elev. Change	Ave S.F.	Storage C.F.	Total Storage C.F.	AC.-FT.
3478	402,878			0	0	
		2	517,775	1,035,550		
3480	632,672				1,035,550	24
		2	811,325	1,622,649		
3482	989,977				2,658,199	61
		2	2,375,467	4,750,934		
3484	3,760,957				7,409,133	170
		2	6,247,780	12,495,559		
3486	8,734,602				19,904,692	457
		2	10,261,979	20,523,958		
3488	11,789,356				40,428,650	928
		2	13,334,447	26,668,893		
3,490	14,879,537				67,097,543	1,540

OUTFLOW

WEIR EQUATION

$$Q = C * L * H^{3/2}$$

WHERE:

Q= FLOW, CFS

C= WEIR COEFFICIENT

L= HORIZONTAL LENGTH, FT

H= HEAD ON WEIR, FT

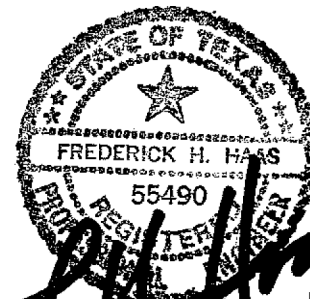
ASSUME TOP OF PLAYA IS ELEVATION 3486

LENGTH OF 3486 CONTOUR IS

241 FT.

ELEV FT	HEAD FT	Cw	Q CU FT/SEC
3,486.5	0.5	3.58	305
3,487.0	1.0	3.58	863
3,487.5	1.5	3.58	1,585
3,488.0	2.0	3.56	2,427
3,490.0	4.0	3.62	6,979

NOTE: Cw IS FROM WATER-RESOURCES ENGINEERING, LINSLEY AND FRANZINI



Handwritten signature and date:
 3/31/06

Meteorologic Model Input

HMS - Meteorologic Model

File Edit Help

Meteorologic Model: PMP Distribution A Subbasin List

Description: PMP with Distribution per figure in HMR 51 ...

Precipitation Evapotranspiration

Method : User Hyetograph

Subbasin	"Gage" ID
Subbasin-1A	PMP Distribution A
Subbasin-2	PMP Distribution A
Subbasin-3	PMP Distribution A
Subbasin-4	PMP Distribution A
Subbasin-6	PMP Distribution A
Subbasin-1B	PMP Distribution A
Subbasin-7	PMP Distribution A
Subbasin-5B	PMP Distribution A
Subbasin-5A	PMP Distribution A

OK Apply Cancel

HMS * Basin Model * SCS Curve Number

Sort Help

Basin Model ID: 100YrAMIII3/24/06NOD

Subbasin Name	SCS Curve Number	Initial Abstraction (in)	Imperviousness (%)
Subbasin-1A	91		0.0
Subbasin-2	86		0.0
Subbasin-3	89		0.0
Subbasin-4	89		0.0
Subbasin-5B	86		0.0
Subbasin-6	86		0.0
Subbasin-1B	88		0.0
Subbasin-5A	86		0.0
Subbasin-7	87		0.0

OK Apply Cancel

HMS * Basin Model * SCS UH

Sort Help

Basin Model ID: 100YrAMIII3/24/06NOD

Time Units : Minutes

Subbasin Name	SCS Lag (min)
Subbasin-1A	86
Subbasin-2	65
Subbasin-3	44
Subbasin-4	39
Subbasin-5B	53
Subbasin-6	30
Subbasin-1B	44
Subbasin-5A	38
Subbasin-7	64

OK Apply Cancel

HMS * Basin Model * Lag Routing

Help

Basin Model ID : 100YrAMIII3/24/06NOD

Interval : Minutes

Reach Name	Lag (min)
Reach-1	35
Reach-2	15
Reach-3	17
Reach-4	21
Reach-5	14
Reach-1A	17
Reach-1B	3
Reach-6	0

OK Apply Cancel

HMS * Basin Model * Reservoir Editor

Edit File Help

Reservoir Name:

Description:

Storage Outlet Spillway Overflow Dam Break

Method:

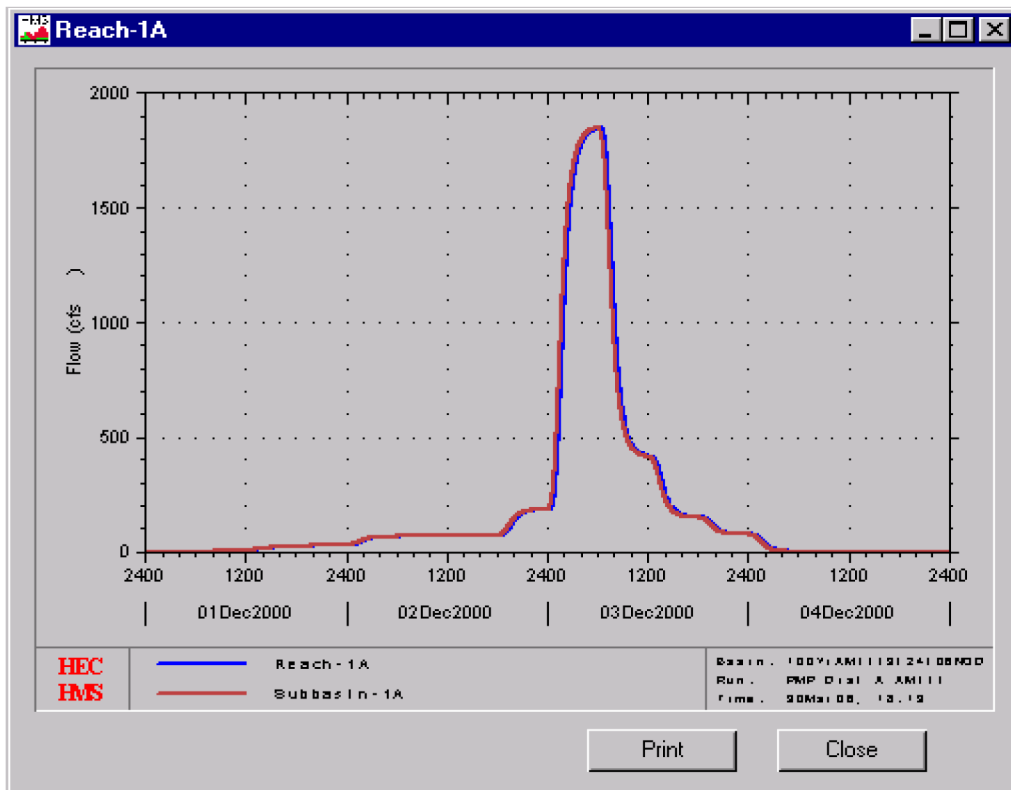
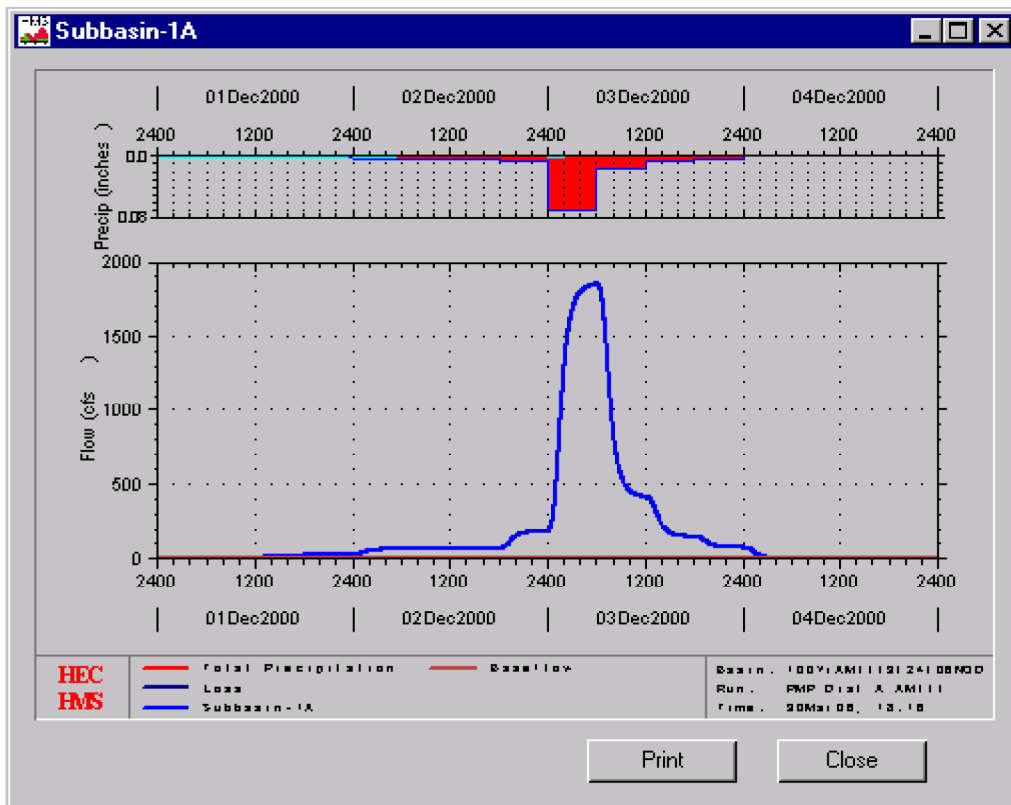
Initial

Elevation (ft)	Storage (acre-feet)	Outflow (cfs)
3478.0	0.0	0.0
3480.0	24.0	0.0
3482.0	61.0	0.0
3484.0	170.0	0.0
3486.0	457.0	0.0
3487.0	693.0	863.0
3488.0	928.0	2427.0
3490.0	1540.0	6979.0

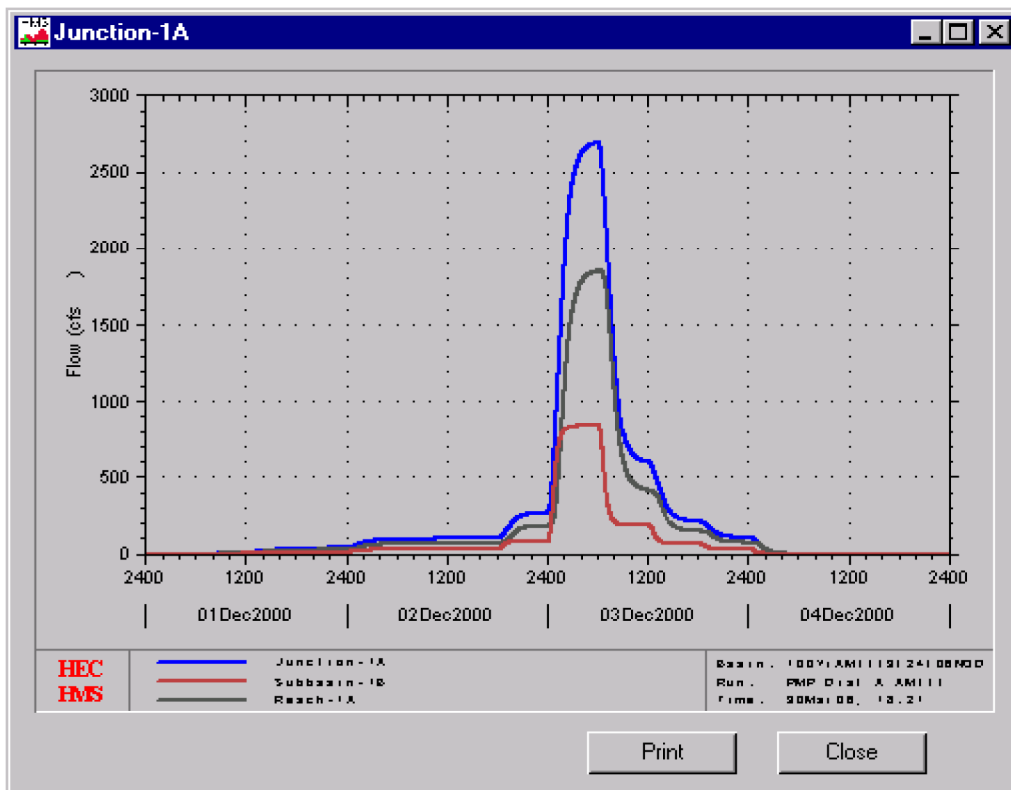
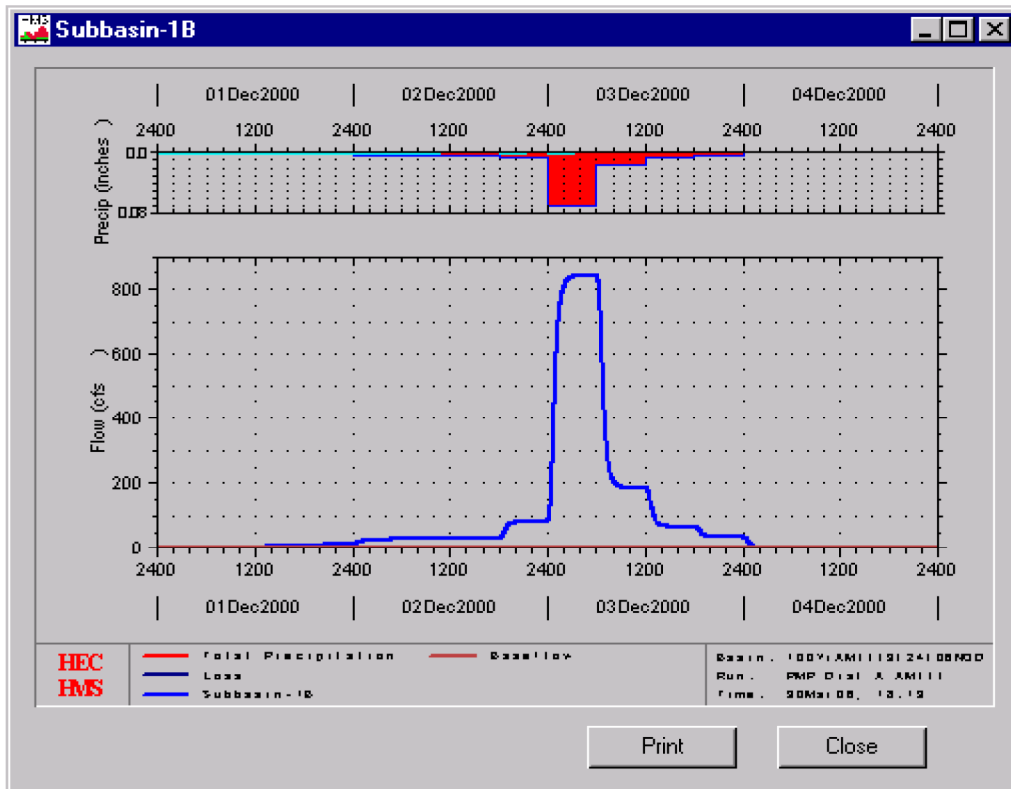
Graph

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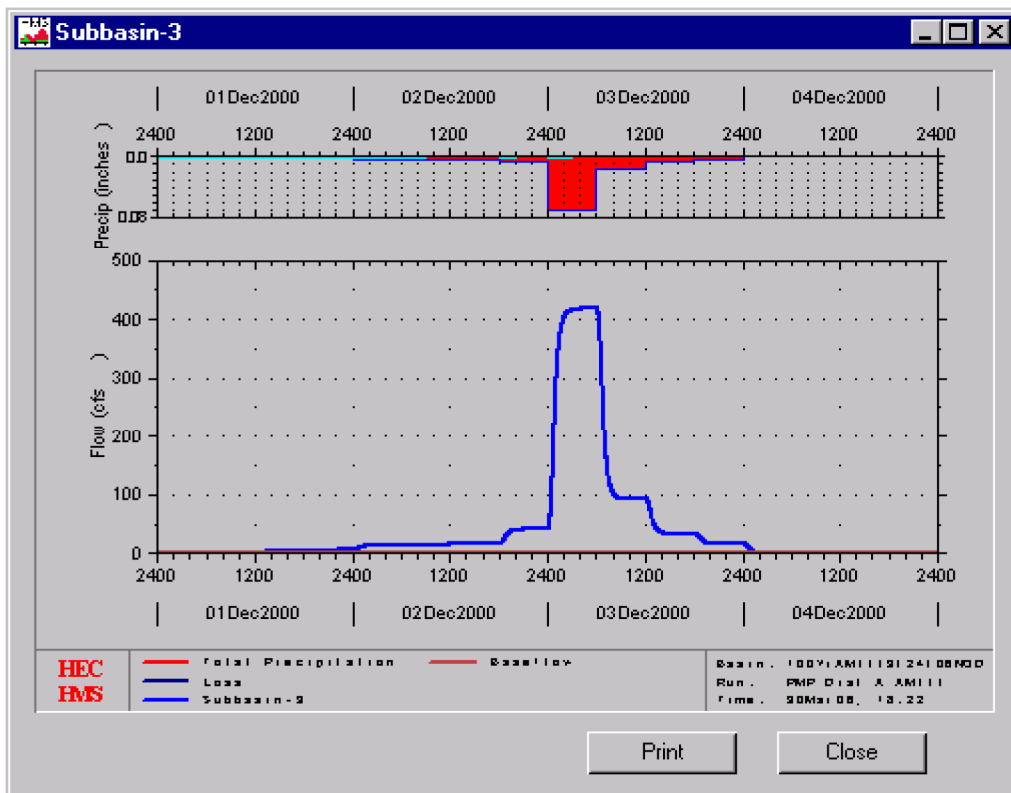
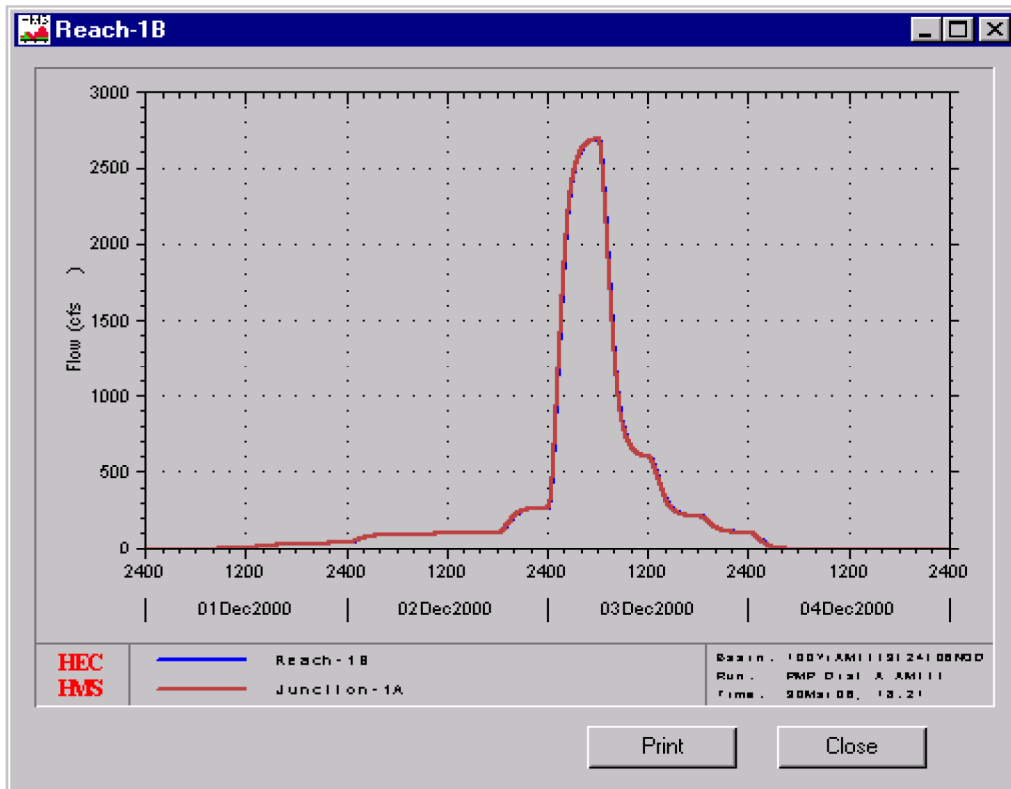
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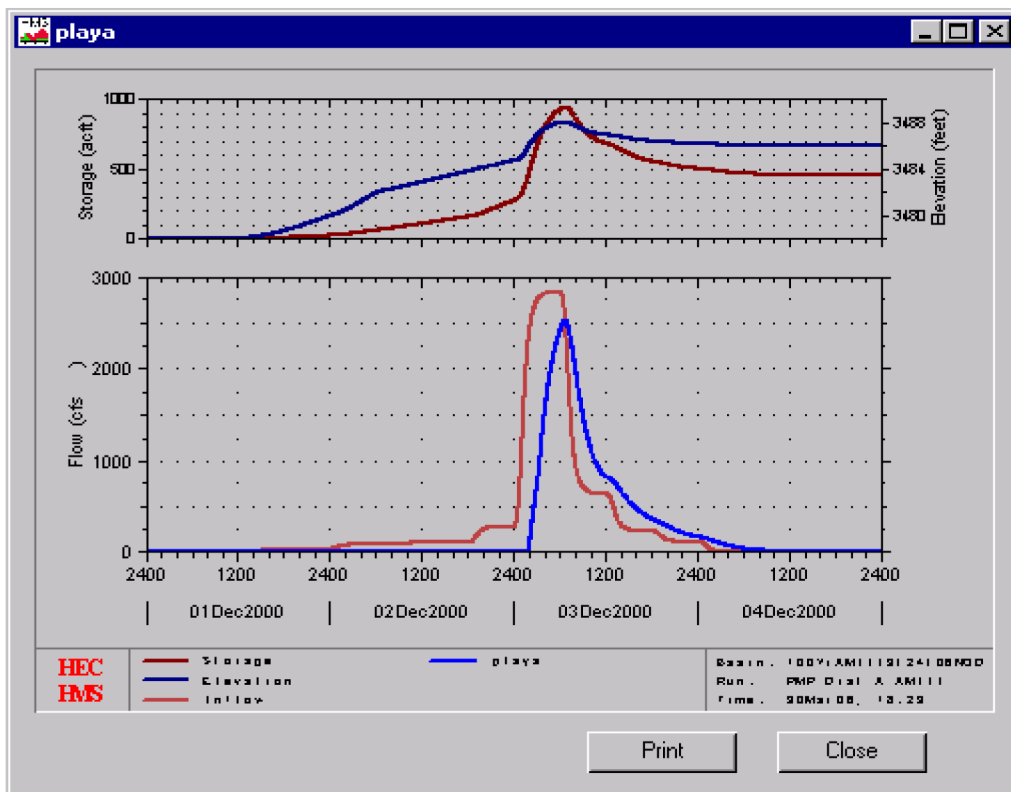
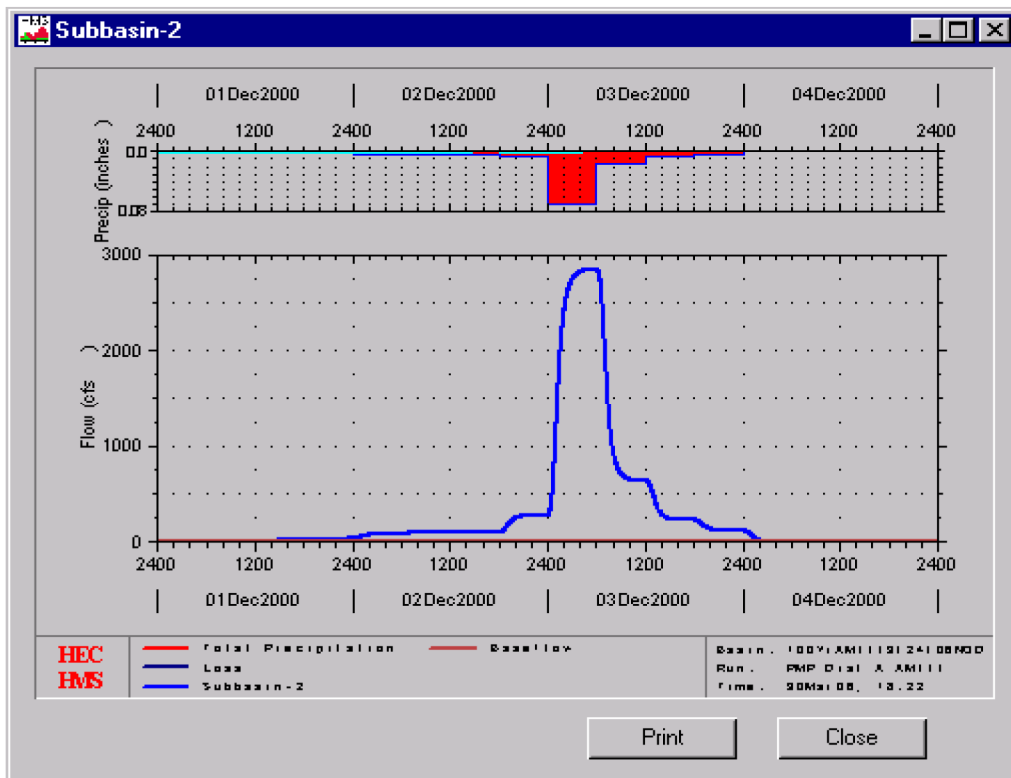
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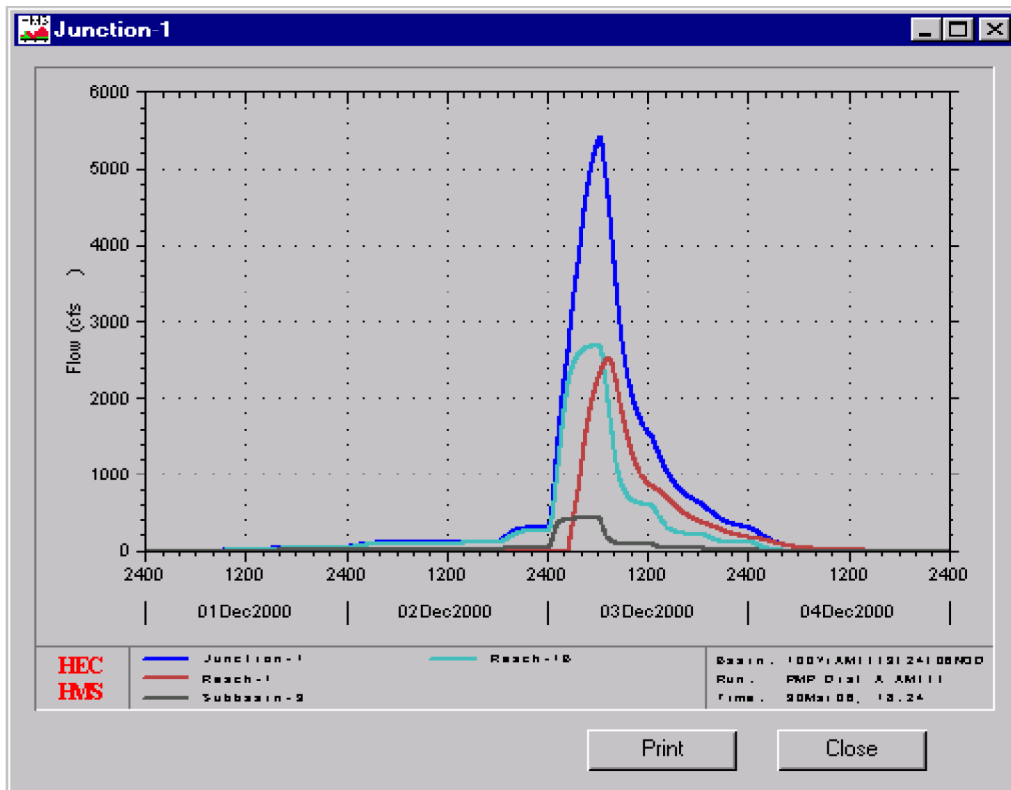
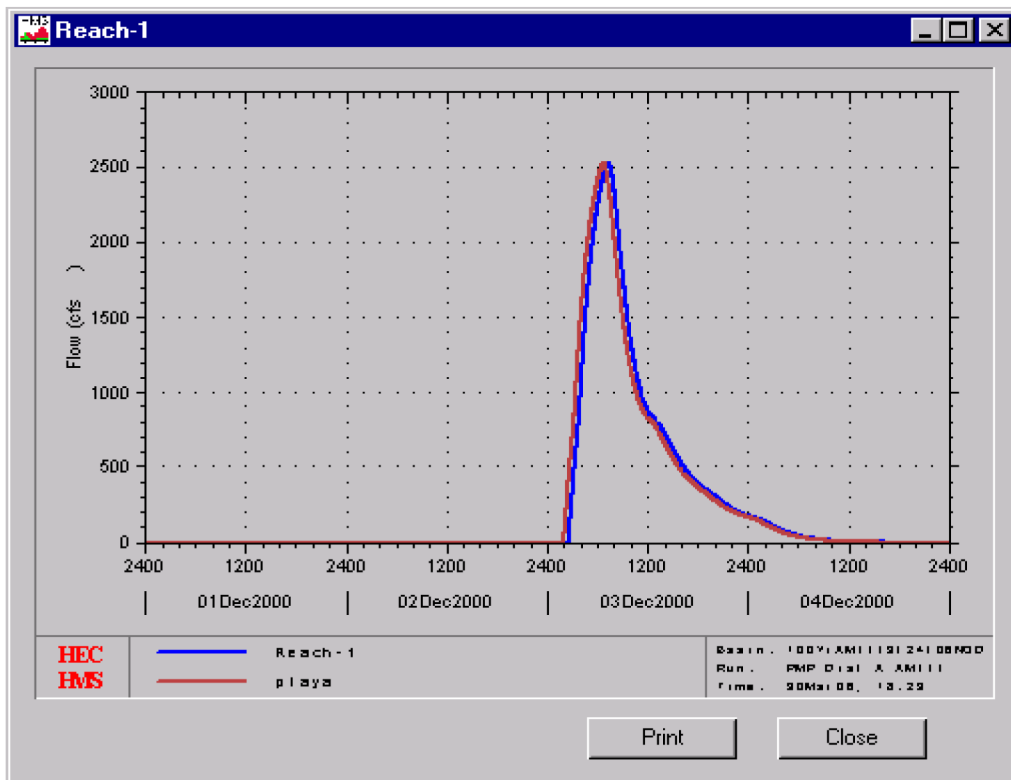
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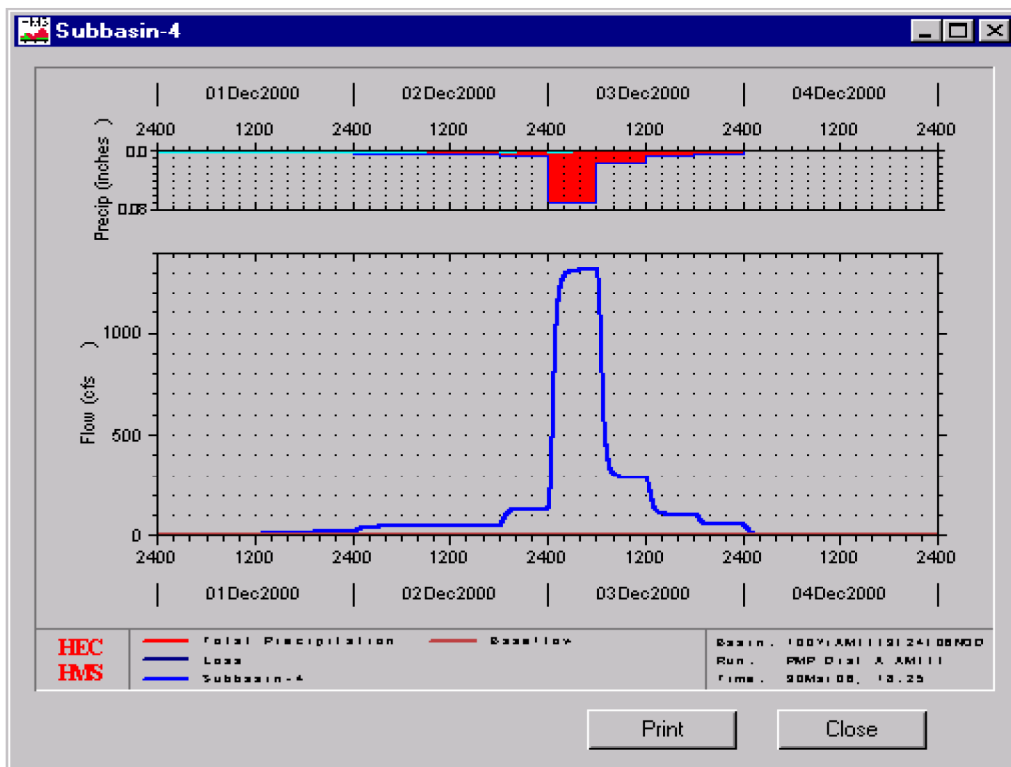
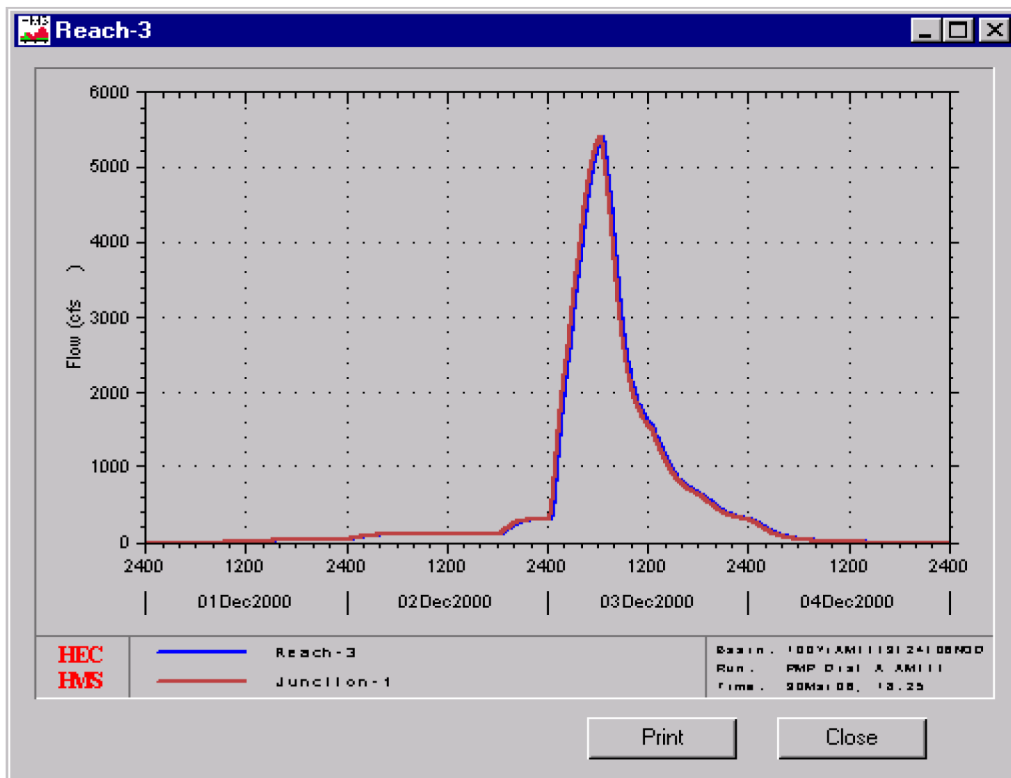
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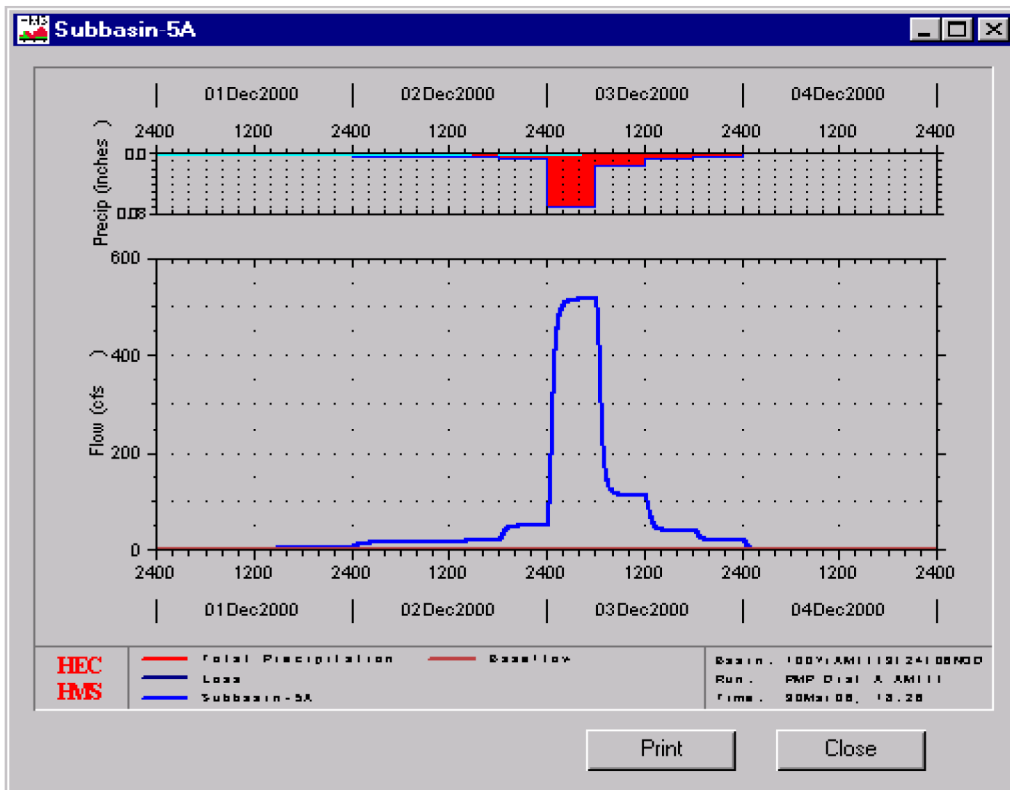
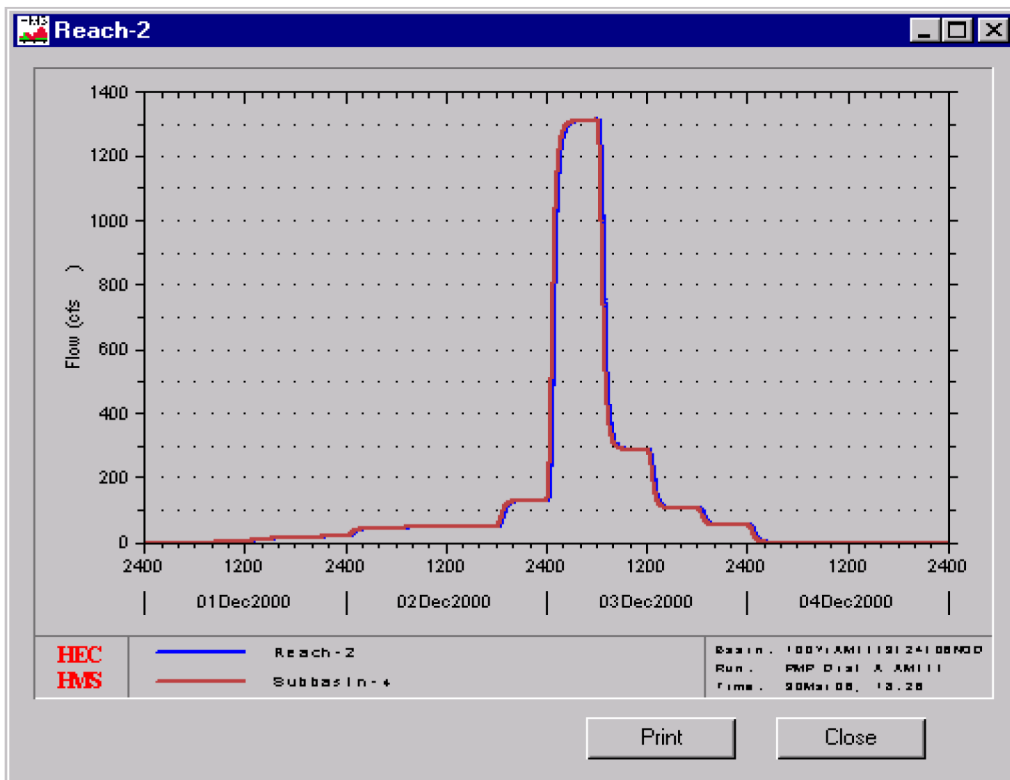
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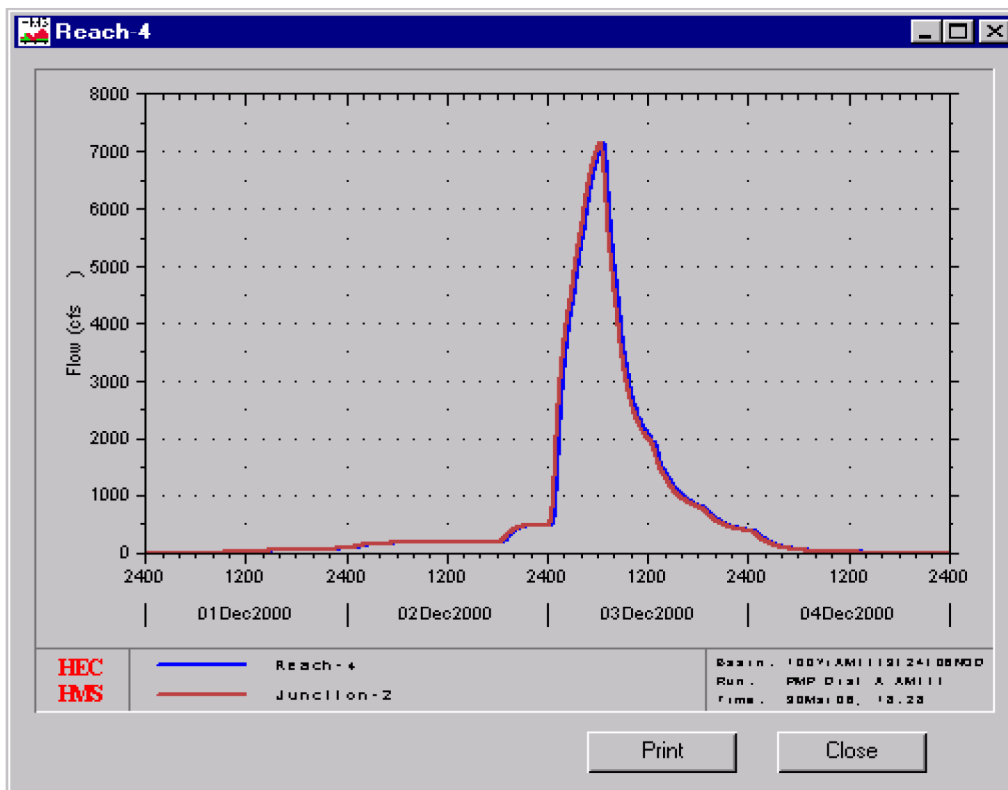
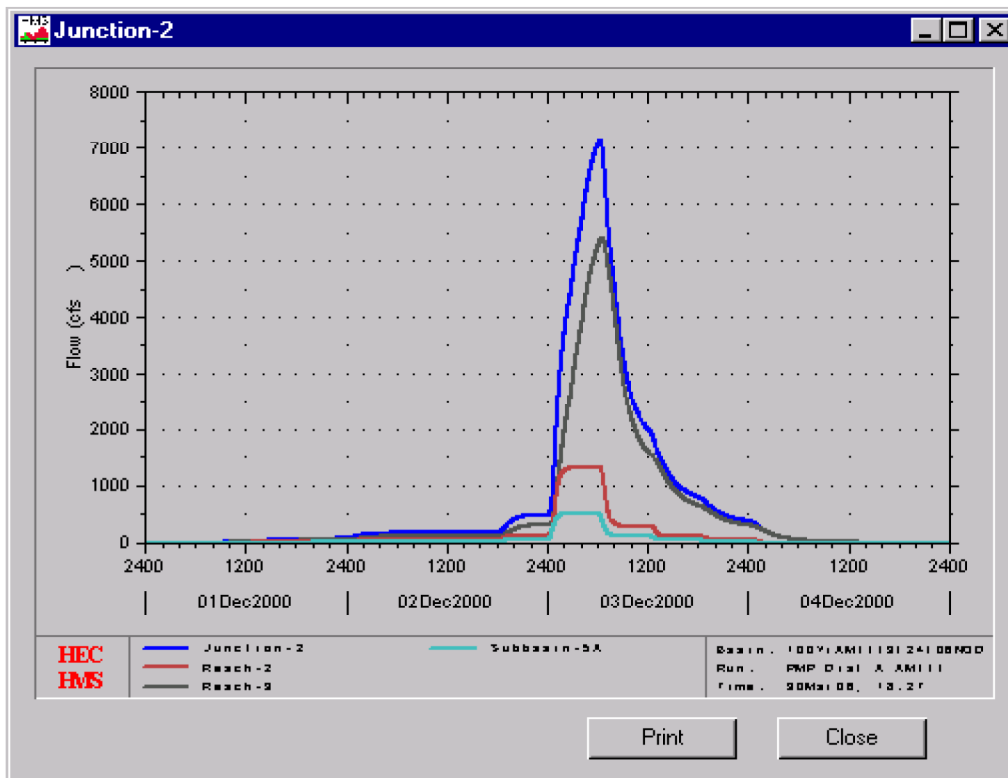
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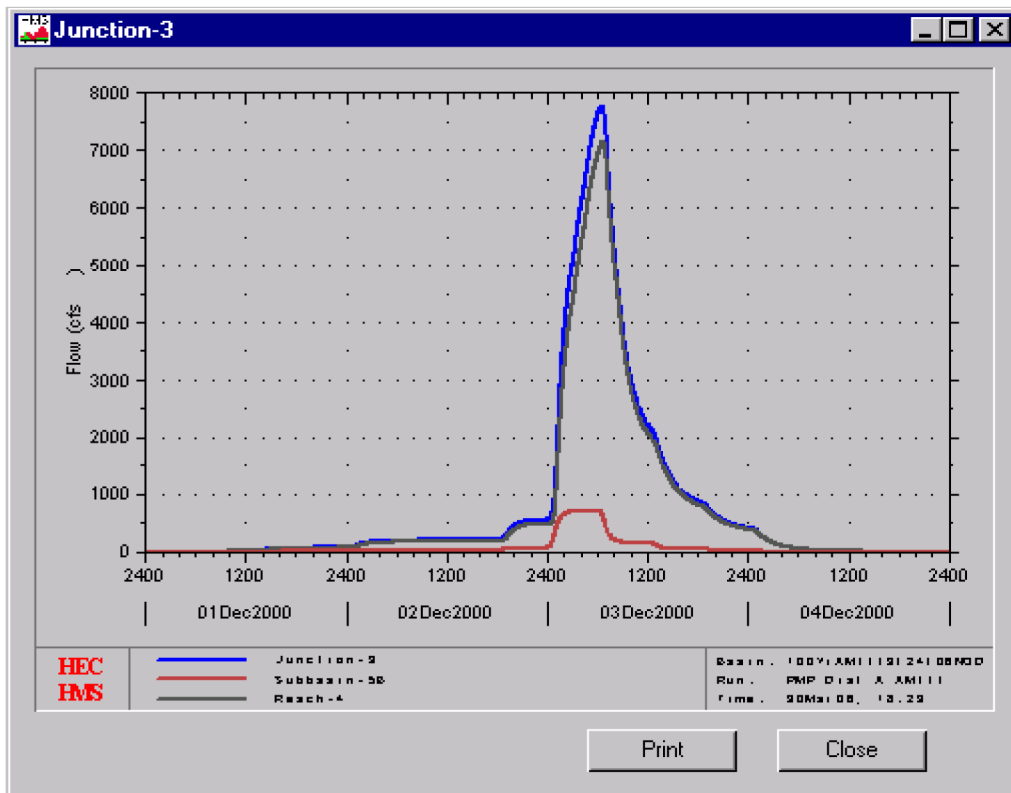
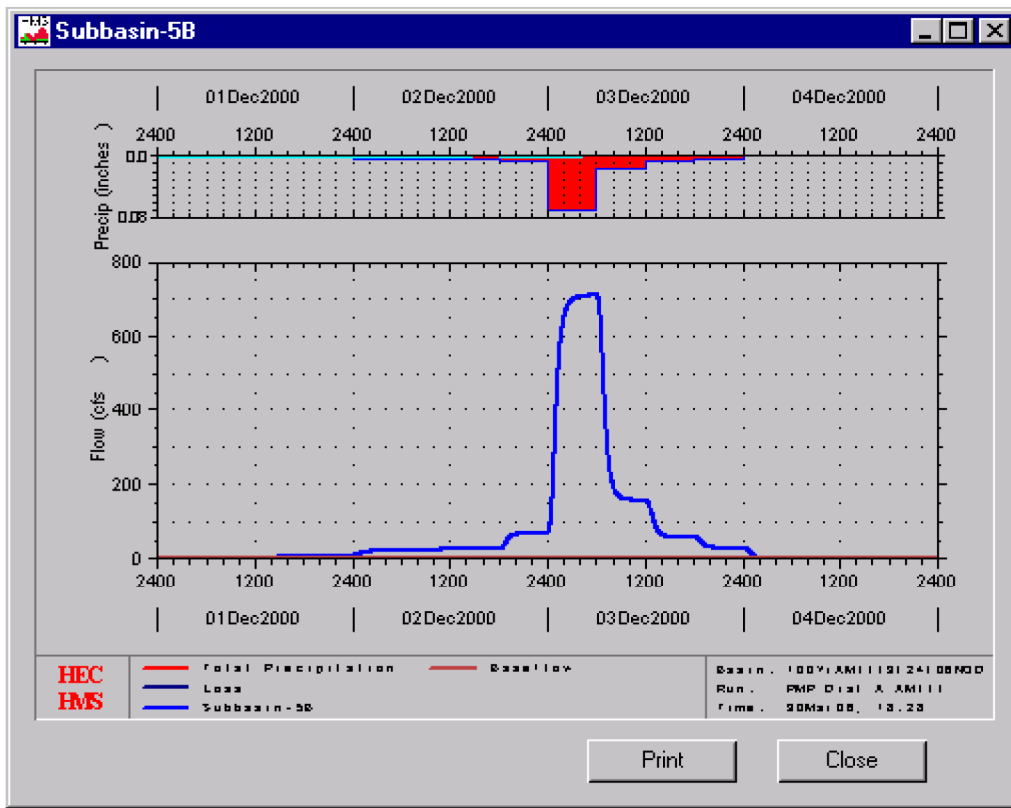
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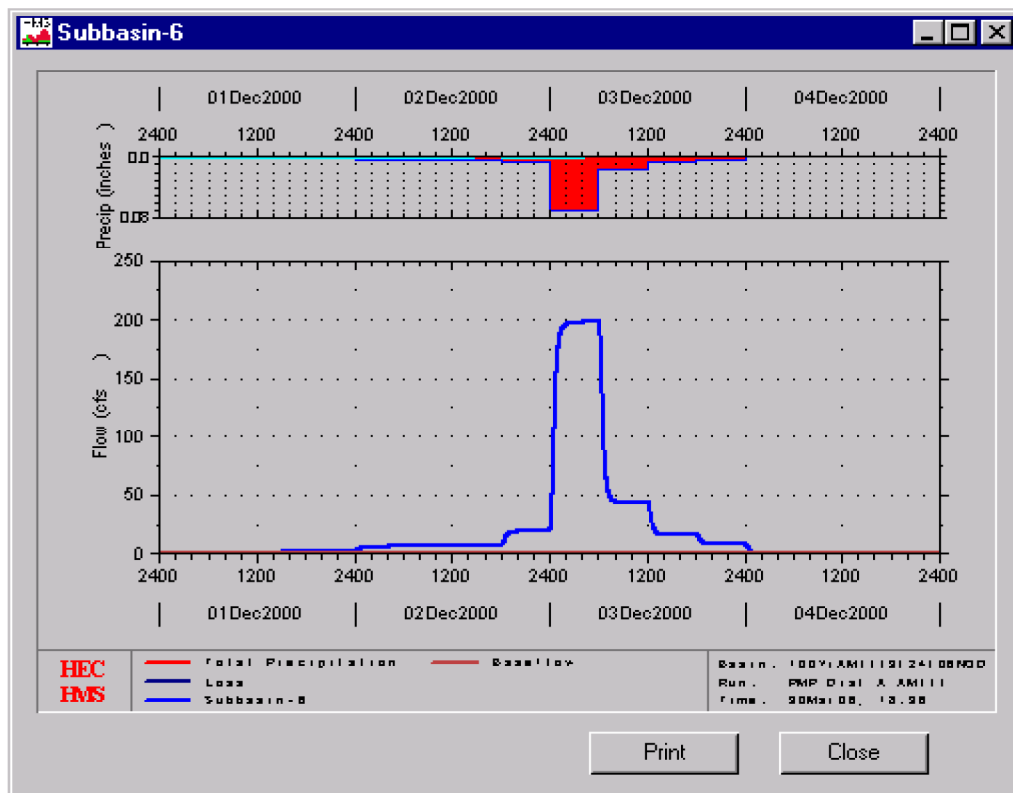
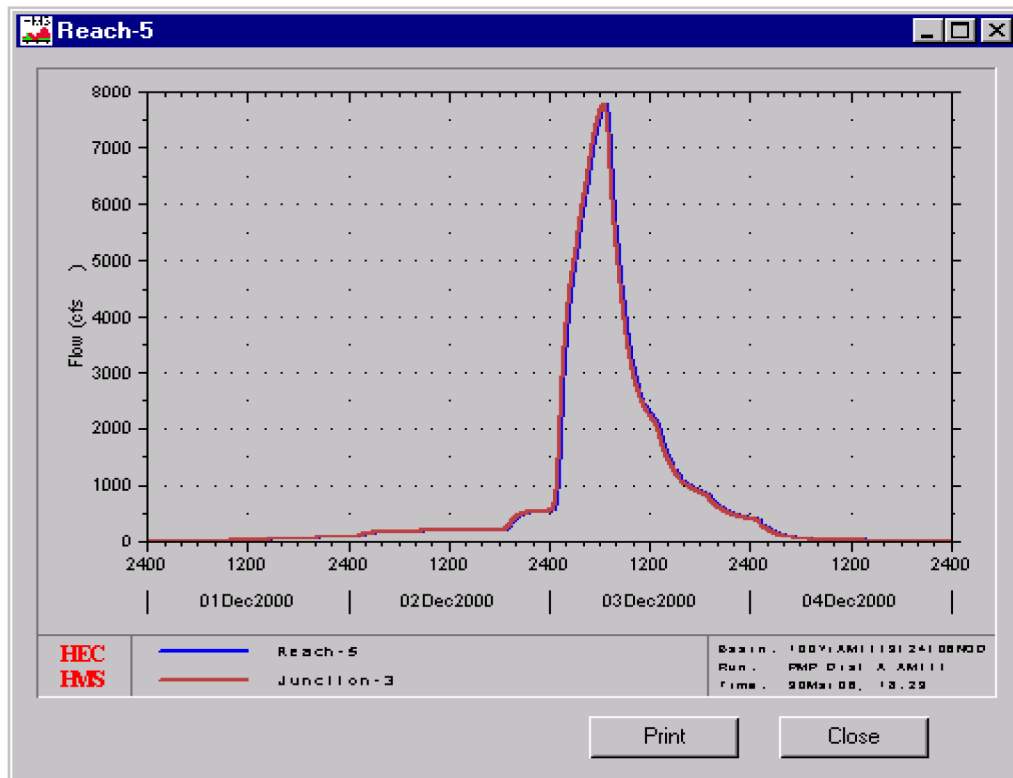
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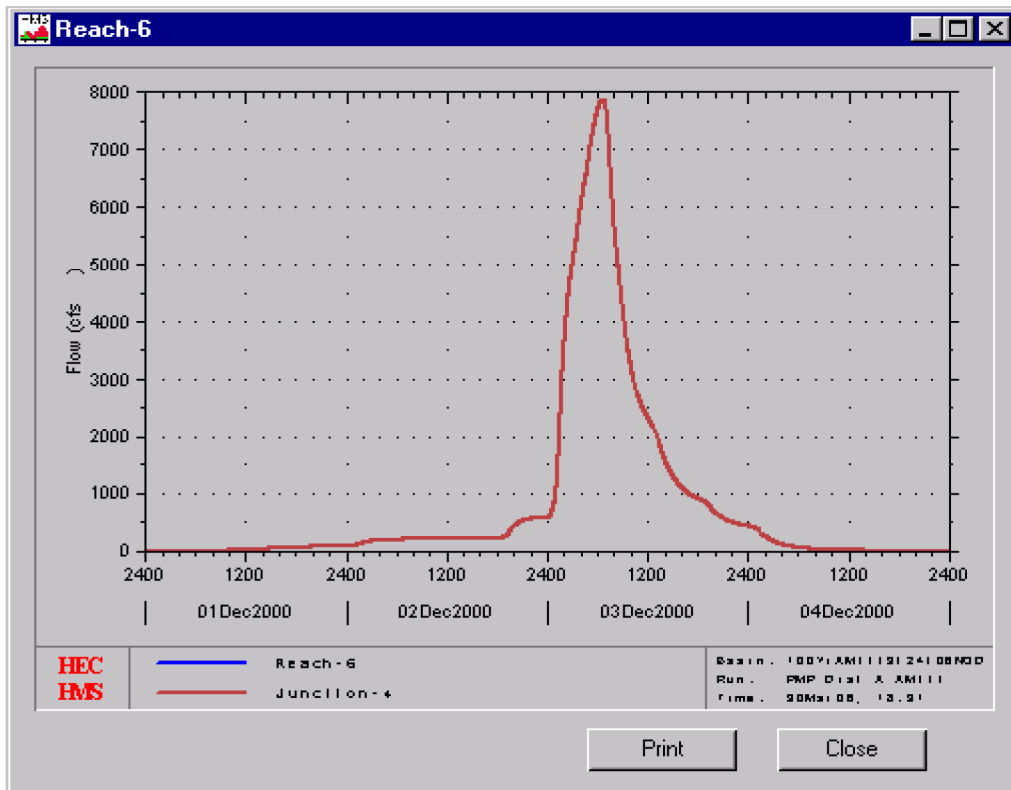
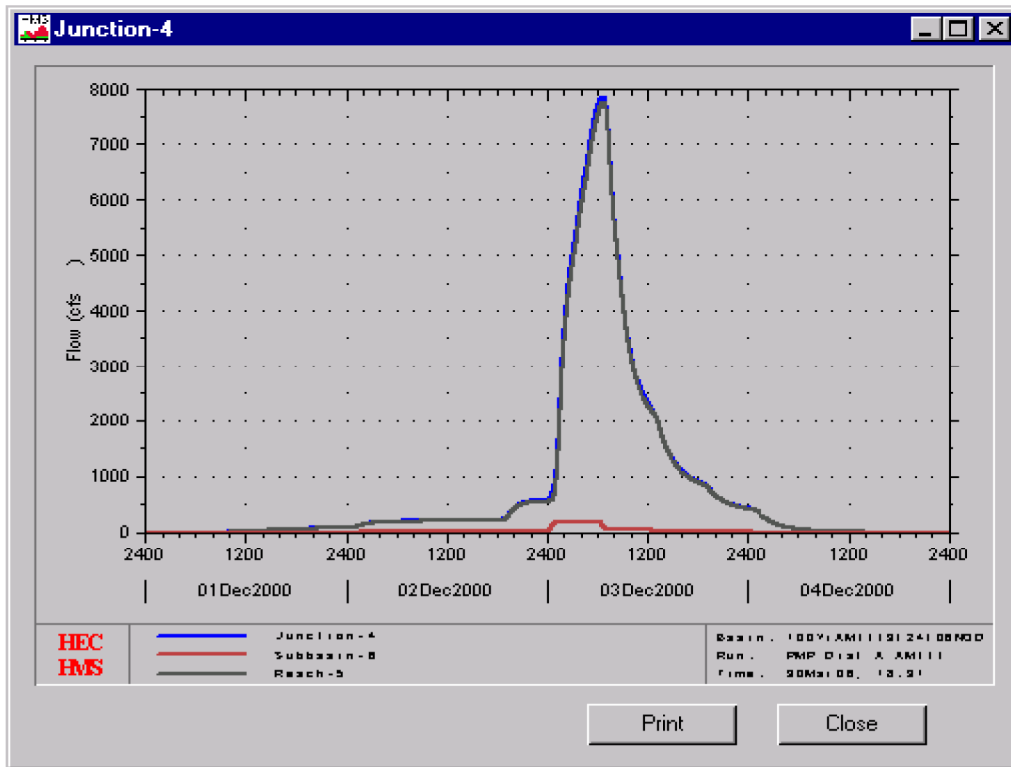
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



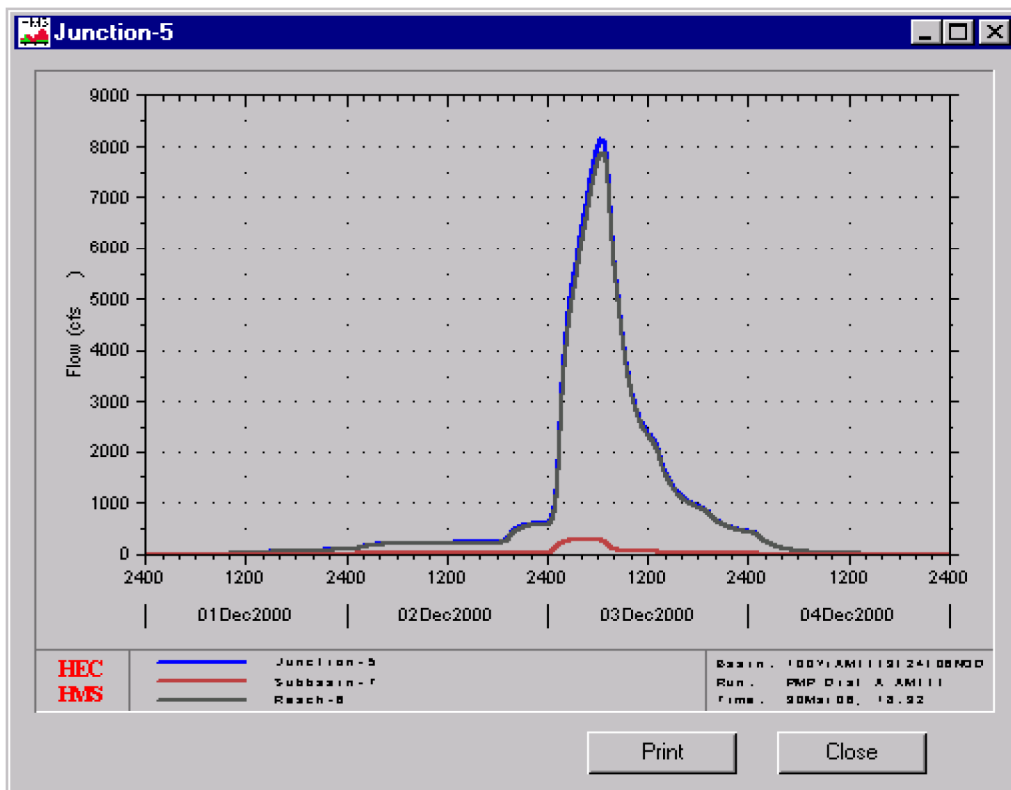
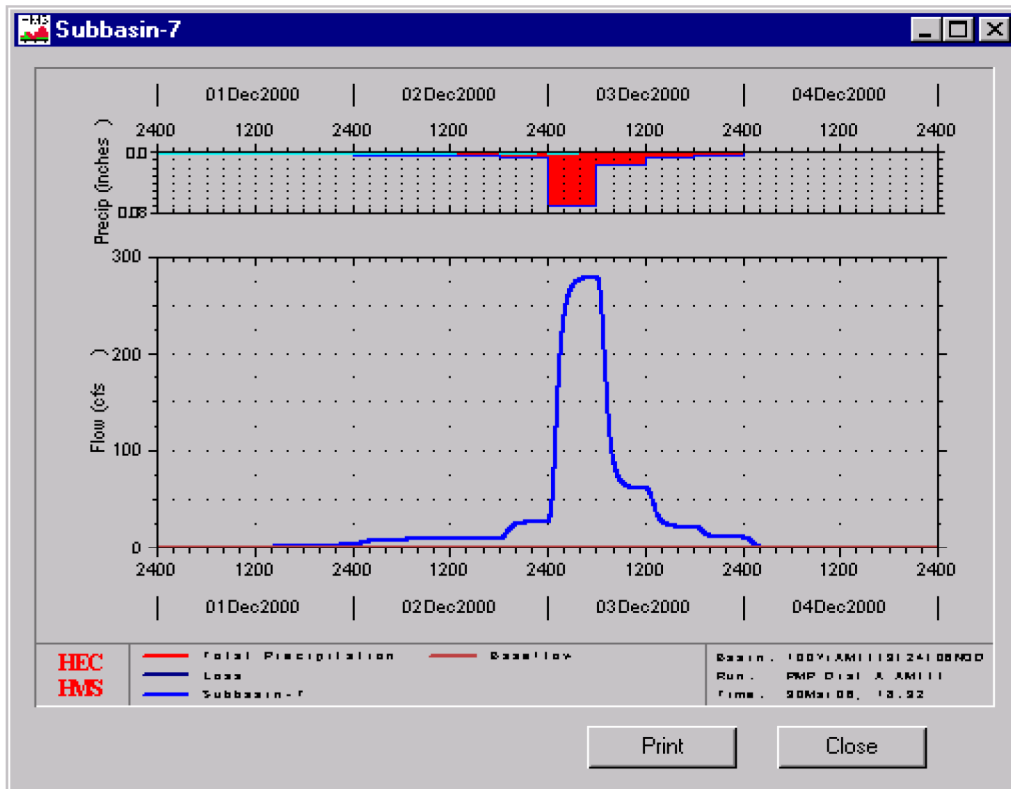
WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



WCS FACILITY FLOOD PLAIN STUDY HYDROGRAPHS



APPENDIX U

HEC-RAS MODEL FOR THE CALCULATION OF THE 500-YEAR AND PMP WATER SURFACE PROFILES ANTECEDENT MOISTURE CONDITION III

HEC-RAS Plan: PMP AMill River: Ditch A Reach: 5

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Chl W.S. (ft)	Max Chl Dpth (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
5	12674	976.00	3477.00	3478.76	3478.27	1.75	3478.88	0.003056	2.90	327.16	682.66	357.89	355.40	0.46
5	12674	1850.00	3477.00	3479.26	3478.68	2.26	3479.45	0.003167	3.69	291.95	714.24	553.45	422.29	0.49
5	11337	976.00	3469.00	3470.81	3470.81	1.81	3471.39	0.013220	6.21	417.53	566.86	164.80	149.13	0.95
5	11337	1850.00	3469.00	3471.47	3471.46	2.47	3472.26	0.010885	7.39	403.34	560.18	272.36	176.84	0.93
5	10937	976.00	3464.00	3466.24	3466.08	2.24	3466.66	0.010235	5.21	455.99	618.01	188.24	162.01	0.83
5	10937	1850.00	3464.00	3466.72	3466.72	2.72	3467.45	0.013153	6.91	438.39	635.61	273.71	197.22	0.98
5	10288	976.00	3456.00	3457.22	3457.22	1.22	3457.51	0.020477	4.31	374.31	788.29	226.46	413.97	1.03
5	10288	1850.00	3456.00	3457.57	3457.53	1.57	3457.93	0.015410	4.82	339.97	819.21	363.60	479.26	0.95
5	9690	1242.00	3450.00	3451.93	3451.51	1.93	3452.09	0.004989	3.13	389.43	793.60	396.40	404.17	0.56
5	9690	2689.00	3450.00	3452.40	3452.06	2.40	3452.72	0.006338	4.52	345.06	818.68	603.04	473.62	0.67
5	9009	1242.00	3445.00	3446.90	3446.75	1.90	3447.19	0.011195	4.31	416.94	751.61	288.10	334.67	0.82
5	9009	2689.00	3445.00	3447.65		2.65	3447.96	0.007751	4.51	354.62	846.77	596.64	492.15	0.72
5	8130	1242.00	3440.00	3442.03	3441.49	2.03	3442.15	0.003422	2.73	417.18	854.27	455.81	437.11	0.47
5	8130	2689.00	3440.00	3442.50	3442.03	2.50	3442.75	0.004847	4.06	390.07	887.66	674.08	497.59	0.58
5	7717	1242.00	3437.80	3439.01	3439.01	1.21	3439.36	0.018011	4.88	307.16	657.89	254.54	350.81	1.01
5	7717	2689.00	3437.80	3439.74		1.94	3440.11	0.009311	4.84	252.35	723.77	555.05	471.42	0.79
5	7253	1483.00	3435.00	3436.81	3436.16	1.81	3436.89	0.001808	2.29	382.26	946.12	664.86	563.87	0.35
5	7253	5399.00	3435.00	3437.84	3437.06	2.84	3438.13	0.003105	4.42	329.17	997.14	1299.73	667.97	0.51
5	6343	2888.00	3430.00	3431.11	3431.11	1.11	3431.57	0.016513	5.44	724.42	1307.78	531.28	583.36	1.00
5	6343	7144.00	3430.00	3431.94	3431.94	1.94	3432.64	0.012039	6.76	667.41	1534.53	1091.24	867.12	0.94
5	5383	2888.00	3425.00	3426.84	3426.14	1.84	3426.94	0.001869	2.54	660.98	1645.22	1198.09	984.24	0.37
5	5383	7144.00	3425.00	3427.72	3426.80	2.72	3427.91	0.002096	3.85	577.26	1820.07	2169.17	1242.61	0.42
5	4221	3286.00	3420.00	3421.49	3421.49	1.49	3421.94	0.015261	5.39	444.14	1172.66	624.24	728.53	0.97
5	4221	7766.00	3420.00	3422.20	3422.20	2.20	3422.62	0.013358	6.51	293.64	1337.10	1256.74	1043.46	0.97
5	3489	3286.00	3416.00	3417.66	3417.07	2.66	3417.76	0.002329	2.66	-122.29	903.15	1293.45	1025.44	0.40
5	3489	7766.00	3416.00	3418.44	3417.60	3.44	3418.65	0.002671	3.78	-136.55	950.96	2110.92	1087.51	0.46
5	2989	3286.00	3413.80	3414.95	3414.95	1.15	3415.36	0.016461	5.40	47.78	836.22	645.74	788.45	1.00
5	2989	7766.00	3413.80	3415.68	3415.59	1.88	3416.28	0.011352	6.62	-6.70	894.15	1259.21	900.85	0.92
5	2774	3286.00	3409.00	3414.41	3412.71	5.41	3414.50	0.000645	3.37	-418.02	658.08	1773.70	1076.10	0.26
5	2774	7766.00	3409.00	3415.12	3413.54	6.12	3415.31	0.001303	5.22	-438.85	687.85	2554.86	1126.70	0.38
5	2773	Culvert												
5	2734	3286.00	3408.90	3412.71	3412.71	3.81	3413.25	0.004812	7.06	83.74	515.65	665.51	431.91	0.67
5	2734	7766.00	3408.90	3414.37	3414.37	5.47	3414.83	0.003331	7.66	-1467.17	584.55	2185.05	2051.72	0.60
5	1888	3327.00	3408.00	3409.80	3409.14	1.80	3409.92	0.002775	2.72	131.77	1131.73	1225.09	999.96	0.43
5	1888	7864.00	3408.00	3410.59	3409.82	2.59	3410.80	0.002839	3.70	-259.09	1206.15	2224.23	1465.23	0.47
5	1060	3473.00	3402.70	3404.67	3404.67	1.97	3405.20	0.016121	5.85	589.80	1163.09	593.57	573.29	1.01
5	1060	8124.00	3402.70	3405.55	3405.55	2.85	3406.22	0.014413	6.58	460.16	1380.29	1235.07	920.12	1.00

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HEC-RAS Version 3.0.1 Mar 2001
 U.S. Army Corp of Engineers
 Hydrologic Engineering Center
 609 Second Street, Suite D
 Davis, California 95616-4687
 (916) 756-1104

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X      X  XXXXXX   XXXX      XXXX      XX      XXXX
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PROJECT DATA

Project Title: WCS
 Project File : FloodPlain.prj
 Run Date and Time: 3/30/06 9:32:01 AM

Project in English units

PLAN DATA

Plan Title: Plan 38
 Plan File : D:\program files\WCS\FloodPlain.p38

Geometry Title: PMP1-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

Flow Title : pmp NOD AMIII
 Flow File : D:\program files\WCS\FloodPlain.f30

Plan Summary Information:

Number of: Cross Sections =	18	Multiple Openings =	0
Culverts =	1	Inline Weirs =	0
Bridges =	0		

Computational Information

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

Computation Options

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

FLOW DATA

Flow Title: pmp NOD AMIII
 Flow File : D:\program files\WCS\FloodPlain.f30

FloodPlain.rep

Flow Data (cfs)

River	Reach	RS	PF 2	PF 3
Ditch A	5	12674	976	1850
Ditch A	5	9690	1242	2689
Ditch A	5	7253	1483	5399
Ditch A	5	6343	2888	7144
Ditch A	5	4221	3286	7766
Ditch A	5	1888	3327	7864
Ditch A	5	1060	3473	8124

Boundary Conditions

River stream	Reach	Profile	Upstream	Down
Ditch A ritical	5	PF 2	Critical	Cr

GEOMETRY DATA

Geometry Title: PMPl-20-04SecRemoved
 Geometry File : D:\program files\WCS\FloodPlain.g04

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 12674

INPUT

Description: Sta. 12674

Station Elevation Data		num= 6							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3482	380	3478	560	3477	635	3478	761	3480
964	3482								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	380	.033	635	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	380	635		1206 1337	1433	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3478.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3478.76	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3478.27	Flow Area (sq ft)	19.94	320.00	17.95
E.G. Slope (ft/ft)	0.003056	Area (sq ft)	19.94	320.00	17.95
Q Total (cfs)	976.00	Flow (cfs)	25.93	926.74	23.34
Top Width (ft)	355.40	Top Width (ft)	52.84	255.00	47.56

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Vel Total (ft/s)	2.73	Avg. Vel. (ft/s)	1.30	2.90	1.30
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)	0.38	1.25	0.38
Conv. Total (cfs)	17654.0	Conv. (cfs)	469.0	16762.9	422.1
Length Wtd. (ft)	1336.00	Wetted Per. (ft)	52.85	255.01	47.56
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.07	0.24	0.07
Alpha	1.08	Stream Power (lb/ft s)	0.09	0.69	0.09
Frctn Loss (ft)	7.45	Cum Volume (acre-ft)	22.71	137.88	4.08
C & E Loss (ft)	0.05	Cum SA (acres)	24.33	121.69	6.69

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3479.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3479.26	Reach Len. (ft)	1206.00	1337.00	1433.00
Crit W.S. (ft)	3478.68	Flow Area (sq ft)	55.37	448.24	49.84
E.G. Slope (ft/ft)	0.003167	Area (sq ft)	55.37	448.24	49.84
Q Total (cfs)	1850.00	Flow (cfs)	102.99	1654.32	92.69
Top Width (ft)	422.29	Top Width (ft)	88.05	255.00	79.24
Vel Total (ft/s)	3.34	Avg. Vel. (ft/s)	1.86	3.69	1.86
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)	0.63	1.76	0.63
Conv. Total (cfs)	32873.9	Conv. (cfs)	1830.1	29396.7	1647.1
Length Wtd. (ft)	1334.81	Wetted Per. (ft)	88.06	255.01	79.25
Min Ch El (ft)	3477.00	Shear (lb/sq ft)	0.12	0.35	0.12
Alpha	1.12	Stream Power (lb/ft s)	0.23	1.28	0.23
Frctn Loss (ft)	7.14	Cum Volume (acre-ft)	54.74	234.96	14.97
C & E Loss (ft)	0.06	Cum SA (acres)	51.06	137.20	20.21

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

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additional cross sections.

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 11337

INPUT

Description: Sta. 11337

Station Elevation Data		num= 8	
Sta	Elev	Sta	Elev
100	3477	315	3474
550	3470	591	3472

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
100	.033	435	.033
		550	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	435	550		545	400	332	.1 .3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3471.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3470.81	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3470.81	Flow Area (sq ft)	7.10	150.94	6.77
E.G. Slope (ft/ft)	0.013220	Area (sq ft)	7.10	150.94	6.77
Q Total (cfs)	976.00	Flow (cfs)	20.14	936.66	19.20
Top Width (ft)	149.13	Top Width (ft)	17.47	115.00	16.66
Vel Total (ft/s)	5.92	Avg. Vel. (ft/s)	2.84	6.21	2.84
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)	0.41	1.31	0.41
Conv. Total (cfs)	8488.6	Conv. (cfs)	175.2	8146.4	167.0
Length Wtd. (ft)	400.78	Wetted Per. (ft)	17.49	115.02	16.68
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.33	1.08	0.33
Alpha	1.06	Stream Power (lb/ft s)	0.95	6.72	0.95
Frctn Loss (ft)	4.64	Cum Volume (acre-ft)	22.34	130.65	3.67
C & E Loss (ft)	0.05	Cum SA (acres)	23.35	116.01	5.64

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

FloodPlain.rep

and assumed values.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

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

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3472.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3471.47	Reach Len. (ft)	545.00	400.00	332.00
Crit W.S. (ft)	3471.46	Flow Area (sq ft)	23.31	226.83	22.22
E.G. Slope (ft/ft)	0.010885	Area (sq ft)	23.31	226.83	22.22
Q Total (cfs)	1850.00	Flow (cfs)	89.20	1675.75	85.05
Top Width (ft)	176.84	Top Width (ft)	31.66	115.00	30.18
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)	3.83	7.39	3.83
Max Chl Dpth (ft)	2.47	Hydr. Depth (ft)	0.74	1.97	0.74
Conv. Total (cfs)	17732.1	Conv. (cfs)	855.0	16061.9	815.2
Length Wtd. (ft)	401.47	Wetted Per. (ft)	31.69	115.02	30.22
Min Ch El (ft)	3469.00	Shear (lb/sq ft)	0.50	1.34	0.50
Alpha	1.10	Stream Power (lb/ft s)	1.91	9.90	1.91
Frctn Loss (ft)	4.79	Cum Volume (acre-ft)	53.65	224.60	13.78
C & E Loss (ft)	0.02	Cum SA (acres)	49.40	131.52	18.41

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10937

INPUT

Description: Sta. 10937

Station Elevation Data		num=	9						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3470	351	3468	428	3467	465	3466	536	3464
543	3464	609	3466	683	3468	811	3472		

Manning's n Values		num=	3			
Sta	n Val	Sta	n Val	Sta	n Val	
100	.033	428	.033	609	.033	

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Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
428	609	729	649	445	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3466.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3466.24	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3466.08	Flow Area (sq ft)		187.15	1.10
E.G. Slope (ft/ft)	0.010235	Area (sq ft)		187.15	1.10
Q Total (cfs)	976.00	Flow (cfs)		974.77	1.23
Top Width (ft)	162.01	Top Width (ft)		153.01	9.01
Vel Total (ft/s)	5.18	Avg. Vel. (ft/s)		5.21	1.12
Max Chl Dpth (ft)	2.24	Hydr. Depth (ft)		1.22	0.12
Conv. Total (cfs)	9647.4	Conv. (cfs)		9635.2	12.1
Length Wtd. (ft)	648.87	Wetted Per. (ft)		153.07	9.01
Min Ch El (ft)	3464.00	Shear (lb/sq ft)		0.78	0.08
Alpha	1.01	Stream Power (lb/ft s)		4.07	0.09
Frctn Loss (ft)	9.12	Cum Volume (acre-ft)	22.29	129.10	3.64
C & E Loss (ft)	0.04	Cum SA (acres)	23.25	114.78	5.54

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3467.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3466.72	Reach Len. (ft)	729.00	649.00	445.00
Crit W.S. (ft)	3466.72	Flow Area (sq ft)		264.14	9.57
E.G. Slope (ft/ft)	0.013153	Area (sq ft)		264.14	9.57
Q Total (cfs)	1850.00	Flow (cfs)		1825.01	24.99
Top Width (ft)	197.22	Top Width (ft)		170.61	26.61
Vel Total (ft/s)	6.76	Avg. Vel. (ft/s)		6.91	2.61

Max Chl Dpth (ft)	2.72	FloodPlain.rep Hydr. Depth (ft)	1.55	0.36
Conv. Total (cfs)	16130.8	Conv. (cfs)	15913.0	217.9
Length Wtd. (ft)	647.62	Wetted Per. (ft)	170.68	26.62
Min Ch El (ft)	3464.00	Shear (lb/sq ft)	1.27	0.30
Alpha	1.03	Stream Power (lb/ft s)	8.78	0.77
Frctn Loss (ft)	9.21	Cum Volume (acre-ft)	53.50	222.35
C & E Loss (ft)	0.11	Cum SA (acres)	49.20	130.21
			18.19	

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 10288

INPUT

Description: Sta. 10288

Station Elevation Data				num=	12				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3464	177	3462	238	3460	298	3458	493	3456
519	3456	662	3457	778	3457.1	857	3458	903	3460
947	3462	989	3464						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	298	.033	857	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	298	857		552	598	633	.1
							.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3457.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.033	
W.S. Elev (ft)	3457.22	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3457.22	Flow Area (sq ft)		226.46	
E.G. Slope (ft/ft)	0.020477	Area (sq ft)		226.46	
Q Total (cfs)	976.00	Flow (cfs)		976.00	

		FloodPlain.rep			
Top Width (ft)	413.97	Top Width (ft)	413.97		
Vel Total (ft/s)	4.31	Avg. Vel. (ft/s)	4.31		
Max Chl Dpth (ft)	1.22	Hydr. Depth (ft)	0.55		
Conv. Total (cfs)	6820.4	Conv. (cfs)	6820.4		
Length Wtd. (ft)	598.00	Wetted Per. (ft)	413.98		
Min Ch El (ft)	3456.00	Shear (lb/sq ft)	0.70		
Alpha	1.00	Stream Power (lb/ft s)	3.01		
Frctn Loss (ft)	4.93	Cum Volume (acre-ft)	22.29	126.01	3.64
C & E Loss (ft)	0.04	Cum SA (acres)	23.25	110.56	5.49

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

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

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3457.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.033		
W.S. Elev (ft)	3457.57	Reach Len. (ft)	552.00	598.00	633.00
Crit W.S. (ft)	3457.53	Flow Area (sq ft)	383.80		
E.G. Slope (ft/ft)	0.015410	Area (sq ft)	383.80		
Q Total (cfs)	1850.00	Flow (cfs)	1850.00		
Top Width (ft)	479.25	Top Width (ft)	479.25		
Vel Total (ft/s)	4.82	Avg. Vel. (ft/s)	4.82		
Max Chl Dpth (ft)	1.57	Hydr. Depth (ft)	0.80		
Conv. Total (cfs)	14902.9	Conv. (cfs)	14902.9		
Length Wtd. (ft)	597.95	Wetted Per. (ft)	479.26		
Min Ch El (ft)	3456.00	Shear (lb/sq ft)	0.77		

Alpha	1.00	FloodPlain.rep Stream Power (lb/ft s)	3.71		
Frctn Loss (ft)	5.20	Cum Volume (acre-ft)	53.50	217.52	13.61
C & E Loss (ft)	0.01	Cum SA (acres)	49.20	125.36	18.06

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

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9690

INPUT

Description: Sta. 9690

Station Elevation Data		num= 8							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3454.5	202	3454	381	3452	632	3450	638	3450
799	3452	897	3454	1010	3458				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	381	.033	799	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	381	799		639 681	658	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3452.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.033	
W.S. Elev (ft)	3451.93	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3451.51	Flow Area (sq ft)		396.40	
E.G. Slope (ft/ft)	0.004969	Area (sq ft)		396.40	
Q Total (cfs)	1242.00	Flow (cfs)		1242.00	
Top Width (ft)	404.17	Top Width (ft)		404.17	
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)		3.13	
Max Chl Dpth (ft)	1.93	Hydr. Depth (ft)		0.98	
Conv. Total (cfs)	17619.0	Conv. (cfs)		17619.0	
Length Wtd. (ft)	681.00	Wetted Per. (ft)		404.19	
Min Ch El (ft)	3450.00	Shear (lb/sq ft)		0.30	
Alpha	1.00	Stream Power (lb/ft s)		0.95	
Frctn Loss (ft)	4.88	Cum Volume (acre-ft)	22.29	121.74	3.64
C & E Loss (ft)	0.01	Cum SA (acres)	23.25	104.94	5.49

FloodPlain.rep

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3452.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3452.40	Reach Len. (ft)	639.00	681.00	658.00
Crit W.S. (ft)	3452.06	Flow Area (sq ft)	7.22	591.87	3.95
E.G. Slope (ft/ft)	0.006338	Area (sq ft)	7.22	591.87	3.95
Q Total (cfs)	2689.00	Flow (cfs)	8.87	2675.27	4.86
Top Width (ft)	473.62	Top Width (ft)	35.94	418.00	19.68
Vel Total (ft/s)	4.46	Avg. Vel. (ft/s)	1.23	4.52	1.23
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	0.20	1.42	0.20
Conv. Total (cfs)	33777.0	Conv. (cfs)	111.4	33604.5	61.0
Length Wtd. (ft)	680.91	Wetted Per. (ft)	35.95	418.02	19.68
Min Ch El (ft)	3450.00	Shear (lb/sq ft)	0.08	0.56	0.08
Alpha	1.02	Stream Power (lb/ft s)	0.10	2.53	0.10
Frctn Loss (ft)	4.76	Cum Volume (acre-ft)	53.46	210.83	13.59
C & E Loss (ft)	0.00	Cum SA (acres)	48.97	119.21	17.91

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 9009

INPUT

Description: Sta. 9009

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3452	203	3450	325	3448	492	3446	596	3445
637	3446	892	3448	1007	3450	1124	3452		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	325	.033	892	.033

		FloodPlain.rep				
Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
325	892	898	879	794	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3447.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.033	
W.S. Elev (ft)	3446.90	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)	3446.75	Flow Area (sq ft)		288.10	
E.G. Slope (ft/ft)	0.011195	Area (sq ft)		288.10	
Q Total (cfs)	1242.00	Flow (cfs)		1242.00	
Top Width (ft)	334.67	Top Width (ft)		334.67	
Vel Total (ft/s)	4.31	Avg. Vel. (ft/s)		4.31	
Max Chl Dpth (ft)	1.90	Hydr. Depth (ft)		0.86	
Conv. Total (cfs)	11738.3	Conv. (cfs)		11738.3	
Length Wtd. (ft)	879.00	Wetted Per. (ft)		334.70	
Min Ch El (ft)	3445.00	Shear (lb/sq ft)		0.60	
Alpha	1.00	Stream Power (lb/ft s)		2.59	
Frctn Loss (ft)	4.99	Cum Volume (acre-ft)	22.29	116.39	3.64
C & E Loss (ft)	0.05	Cum SA (acres)	23.25	99.17	5.49

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3447.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.		0.033	
W.S. Elev (ft)	3447.65	Reach Len. (ft)	898.00	879.00	794.00
Crit W.S. (ft)		Flow Area (sq ft)		596.64	
E.G. Slope (ft/ft)	0.007751	Area (sq ft)		596.64	
Q Total (cfs)	2689.00	Flow (cfs)		2689.00	
Top Width (ft)	492.15	Top Width (ft)		492.15	
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)		4.51	

Max Chl Dpth (ft)	2.65	FloodPlain.rep Hydr. Depth (ft)	1.21
Conv. Total (cfs)	30543.4	Conv. (cfs)	30543.4
Length Wtd. (ft)	878.86	Wetted Per. (ft)	492.18
Min Ch El (ft)	3445.00	Shear (lb/sq ft)	0.59
Alpha	1.00	Stream Power (lb/ft s)	2.64
Frctn Loss (ft)	5.19	Cum Volume (acre-ft)	53.40 201.54 13.56
C & E Loss (ft)	0.02	Cum SA (acres)	48.71 112.09 17.77

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

CROSS SECTION RIVER: Ditch A
 REACH: 5 RS: 8130

INPUT									
Description: Sta. 8130									
Station Elevation Data num= 8									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3448	303	3444	419	3442	654	3440	663	3440
852	3442	995	3444	1104	3446				

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	419	.033	852	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	419	852		399 413	456	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3442.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3442.03	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3441.49	Flow Area (sq ft)	0.03	455.74	0.04
E.G. Slope (ft/ft)	0.003422	Area (sq ft)	0.03	455.74	0.04
Q Total (cfs)	1242.00	Flow (cfs)	0.00	1241.99	0.01
Top Width (ft)	437.11	Top Width (ft)	1.84	433.00	2.27
Vel Total (ft/s)	2.72	Avg. Vel. (ft/s)	0.17	2.73	0.17
Max Chl Dpth (ft)	2.03	Hydr. Depth (ft)	0.02	1.05	0.02
Conv. Total (cfs)	21233.1	Conv. (cfs)	0.1	21232.9	0.1
Length Wtd. (ft)	413.00	Wetted Per. (ft)	1.84	433.02	2.27
Min Ch El (ft)	3440.00	Shear (lb/sq ft)	0.00	0.22	0.00

Alpha	1.00	FloodPlain.rep Stream Power (lb/ft s)	0.00	0.61	0.00
Frctn Loss (ft)	2.74	Cum Volume (acre-ft)	22.29	108.88	3.63
C & E Loss (ft)	0.03	Cum SA (acres)	23.23	91.42	5.47

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3442.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3442.50	Reach Len. (ft)	399.00	413.00	456.00
Crit W.S. (ft)	3442.03	Flow Area (sq ft)	7.21	657.97	8.89
E.G. Slope (ft/ft)	0.004647	Area (sq ft)	7.21	657.97	8.89
Q Total (cfs)	2689.00	Flow (cfs)	8.77	2669.41	10.82
Top Width (ft)	497.59	Top Width (ft)	28.93	433.00	35.66
Vel Total (ft/s)	3.99	Avg. Vel. (ft/s)	1.22	4.06	1.22
Max Chl Dpth (ft)	2.50	Hydr. Depth (ft)	0.25	1.52	0.25
Conv. Total (cfs)	39445.5	Conv. (cfs)	128.7	39158.1	158.7
Length Wtd. (ft)	413.06	Wetted Per. (ft)	28.93	433.02	35.67
Min Ch El (ft)	3440.00	Shear (lb/sq ft)	0.07	0.44	0.07
Alpha	1.03	Stream Power (lb/ft s)	0.09	1.79	0.09
Frctn Loss (ft)	2.64	Cum Volume (acre-ft)	53.33	188.88	13.47
C & E Loss (ft)	0.01	Cum SA (acres)	48.41	102.76	17.44

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

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7717

INPUT
Description: Sta 7717
Station Elevation Data num= 8

		FloodPlain.rep							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3442	233	3440	383	3438	492	3437.8	510	3438
657	3439	747	3440	879	3442				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
100	.033	233	.033	747	.033

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

233	747	444	464	510	.1	.3
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CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3439.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.033	
W.S. Elev (ft)	3439.01	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)	3439.01	Flow Area (sq ft)		254.54	
E.G. Slope (ft/ft)	0.018011	Area (sq ft)		254.54	
Q Total (cfs)	1242.00	Flow (cfs)		1242.00	
Top Width (ft)	350.81	Top Width (ft)		350.81	
Vel Total (ft/s)	4.88	Avg. Vel. (ft/s)		4.88	
Max Chl Dpth (ft)	1.21	Hydr. Depth (ft)		0.73	
Conv. Total (cfs)	9254.5	Conv. (cfs)		9254.5	
Length Wtd. (ft)	464.16	Wetted Per. (ft)		350.82	
Min Ch El (ft)	3437.80	Shear (lb/sq ft)		0.82	
Alpha	1.00	Stream Power (lb/ft s)		3.98	
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	22.29	105.52	3.63
C & E Loss (ft)	0.09	Cum SA (acres)	23.22	87.70	5.46

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

CROSS SECTION OUTPUT Profile #PF 3

FloodPlain.rep

E.G. Elev (ft)	3440.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.		0.033	
W.S. Elev (ft)	3439.74	Reach Len. (ft)	444.00	464.00	510.00
Crit W.S. (ft)		Flow Area (sq ft)		555.05	
E.G. Slope (ft/ft)	0.009311	Area (sq ft)		555.05	
Q Total (cfs)	2689.00	Flow (cfs)		2689.00	
Top Width (ft)	471.42	Top Width (ft)		471.42	
Vel Total (ft/s)	4.84	Avg. Vel. (ft/s)		4.84	
Max Chl Dpth (ft)	1.94	Hydr. Depth (ft)		1.18	
Conv. Total (cfs)	27866.5	Conv. (cfs)		27866.5	
Length Wtd. (ft)	464.62	Wetted Per. (ft)		471.44	
Min Ch El (ft)	3437.80	Shear (lb/sq ft)		0.68	
Alpha	1.00	Stream Power (lb/ft s)		3.32	
Frctn Loss (ft)	1.95	Cum Volume (acre-ft)	53.30	183.13	13.43
C & E Loss (ft)	0.02	Cum SA (acres)	48.28	98.47	17.25

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 7253

INPUT

Description: Sta. 7253

Station Elevation Data				num=	9				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3438	109	3438.7	321	3438	424	3436	668	3435
906	3436	1005	3438	1200	3440	1365	3442		

Manning's n Values				num=	3		
Sta	n Val	Sta	n Val	Sta	n Val		
100	.033	424	.033	906	.033		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
424	906	756	910	980	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3436.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.033	0.033	0.033

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W.S. Elev (ft)	3436.81	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3436.16	Flow Area (sq ft)	16.92	631.68	16.26
E.G. Slope (ft/ft)	0.001808	Area (sq ft)	16.92	631.68	16.26
Q Total (cfs)	1483.00	Flow (cfs)	17.73	1448.22	17.05
Top Width (ft)	563.87	Top Width (ft)	41.74	482.00	40.12
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)	1.05	2.29	1.05
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)	0.41	1.31	0.41
Conv. Total (cfs)	34880.8	Conv. (cfs)	417.1	34062.8	400.9
Length Wtd. (ft)	909.65	Wetted Per. (ft)	41.75	482.00	40.13
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.05	0.15	0.05
Alpha	1.04	Stream Power (lb/ft s)	0.05	0.34	0.05
Frctn Loss (ft)	5.28	Cum Volume (acre-ft)	22.21	100.80	3.54
C & E Loss (ft)	0.04	Cum SA (acres)	23.01	83.27	5.22

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3438.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3437.84	Reach Len. (ft)	756.00	910.00	980.00
Crit W.S. (ft)	3437.06	Flow Area (sq ft)	87.30	1128.51	83.91
E.G. Slope (ft/ft)	0.003105	Area (sq ft)	87.30	1128.51	83.91
Q Total (cfs)	5399.00	Flow (cfs)	207.28	4992.50	199.22
Top Width (ft)	667.97	Top Width (ft)	94.83	482.00	91.14
Vel Total (ft/s)	4.15	Avg. Vel. (ft/s)	2.37	4.42	2.37
Max Chl Dpth (ft)	2.84	Hydr. Depth (ft)	0.92	2.34	0.92
Conv. Total (cfs)	96891.5	Conv. (cfs)	3719.8	89596.3	3575.3
Length Wtd. (ft)	909.03	Wetted Per. (ft)	94.85	482.00	91.16
Min Ch El (ft)	3435.00	Shear (lb/sq ft)	0.18	0.45	0.18
Alpha	1.07	Stream Power (lb/ft s)	0.42	2.01	0.42

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Frctn Loss (ft)	5.45	Cum Volume (acre-ft)	52.85	174.16	12.94
C & E Loss (ft)	0.04	Cum SA (acres)	47.79	93.39	16.72

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

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 6343

INPUT

Description: Sta. 6343

Station Elevation Data		num= 9							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3434	346	3433	663	3432	732	3431	860	3430.2
981	3430	1273	3430	1320	3431.5	1566	3432		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	663	.033	1320	.033

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
663	1320	767	980	1051	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3431.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.		0.033	
W.S. Elev (ft)	3431.11	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3431.11	Flow Area (sq ft)		531.26	
E.G. Slope (ft/ft)	0.016513	Area (sq ft)		531.26	
Q Total (cfs)	2888.00	Flow (cfs)		2888.00	
Top Width (ft)	583.36	Top Width (ft)		583.36	
Vel Total (ft/s)	5.44	Avg. Vel. (ft/s)		5.44	
Max Chl Dpth (ft)	1.11	Hydr. Depth (ft)		0.91	
Conv. Total (cfs)	22474.4	Conv. (cfs)		22474.4	
Length Wtd. (ft)	979.58	Wetted Per. (ft)		583.38	
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		0.94	
Alpha	1.00	Stream Power (lb/ft s)		5.10	
Frctn Loss (ft)	4.10	Cum Volume (acre-ft)	22.06	88.65	3.36
C & E Loss (ft)	0.11	Cum SA (acres)	22.64	72.14	4.77

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

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

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3432.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.033	0.033
W.S. Elev (ft)	3431.94	Reach Len. (ft)	767.00	980.00	1051.00
Crit W.S. (ft)	3431.94	Flow Area (sq ft)		1044.47	46.77
E.G. Slope (ft/ft)	0.012039	Area (sq ft)		1044.47	46.77
Q Total (cfs)	7144.00	Flow (cfs)		7060.30	83.70
Top Width (ft)	867.12	Top Width (ft)		652.59	214.53
Vel Total (ft/s)	6.55	Avg. Vel. (ft/s)		6.76	1.79
Max Chl Dpth (ft)	1.94	Hydr. Depth (ft)		1.60	0.22
Conv. Total (cfs)	65111.0	Conv. (cfs)		64348.1	762.9
Length Wtd. (ft)	979.22	Wetted Per. (ft)		652.62	214.53
Min Ch El (ft)	3430.00	Shear (lb/sq ft)		1.20	0.16
Alpha	1.05	Stream Power (lb/ft s)		8.13	0.29
Frctn Loss (ft)	4.09	Cum Volume (acre-ft)	52.09	151.46	11.47
C & E Loss (ft)	0.15	Cum SA (acres)	46.97	81.54	13.28

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program selected the water surface that had the least amount of error between computed and assumed values.

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

additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less

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than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

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

critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 5363

INPUT

Description: Sta. 5363

Station Elevation Data		num= 10							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3432	282	3430	550	3428	742	3426	885	3425
1097	3425	1476	3426	1877	3428	1966	3428	2160	3430

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	742	.033	1476	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	742	1476		1199 1142	713	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3426.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3426.84	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3426.14	Flow Area (sq ft)	34.19	1092.49	71.41
E.G. Slope (ft/ft)	0.001869	Area (sq ft)	34.19	1092.49	71.41
Q Total (cfs)	2888.00	Flow (cfs)	37.45	2772.35	78.21
Top Width (ft)	984.24	Top Width (ft)	81.02	734.00	169.22
Vel Total (ft/s)	2.41	Avg. Vel. (ft/s)	1.10	2.54	1.10
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)	0.42	1.49	0.42
Conv. Total (cfs)	66802.9	Conv. (cfs)	866.1	64127.7	1809.0
Length Wtd. (ft)	1137.41	Wetted Per. (ft)	81.03	734.00	169.22
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.05	0.17	0.05
Alpha	1.07	Stream Power (lb/ft s)	0.05	0.44	0.05
Frctn Loss (ft)	4.97	Cum Volume (acre-ft)	21.76	70.38	2.50
C & E Loss (ft)	0.03	Cum SA (acres)	21.93	57.32	2.73

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3427.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3427.72	Reach Len. (ft)	1199.00	1142.00	713.00
Crit W.S. (ft)	3426.80	Flow Area (sq ft)	141.35	1732.59	295.22
E.G. Slope (ft/ft)	0.002096	Area (sq ft)	141.35	1732.59	295.22
Q Total (cfs)	7144.00	Flow (cfs)	263.09	6331.42	549.49
Top Width (ft)	1242.81	Top Width (ft)	164.74	734.00	344.07
Vel Total (ft/s)	3.29	Avg. Vel. (ft/s)	1.86	3.65	1.86
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)	0.86	2.36	0.86
Conv. Total (cfs)	156056.6	Conv. (cfs)	5747.0	138306.4	12003.2
Length Wtd. (ft)	1129.22	Wetted Per. (ft)	164.75	734.00	344.08
Min Ch El (ft)	3425.00	Shear (lb/sq ft)	0.11	0.31	0.11
Alpha	1.13	Stream Power (lb/ft s)	0.21	1.13	0.21
Frctn Loss (ft)	5.04	Cum Volume (acre-ft)	50.85	120.22	7.34
C & E Loss (ft)	0.04	Cum SA (acres)	45.52	65.94	6.54

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 4221

INPUT

Description: Sta. 4221

Station Elevation Data		num= 12							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3423	341	3422	544	3421	640	3420	669	3420
753	3420.2	829	3420	837	3420	1030	3421	1320	3422
1407	3423	1497	3424						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
100	.033	544	.033	1407	.033

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Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
544	1407	749	732	843	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3421.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3421.49	Reach Len. (ft)	749.00	732.00	843.00
Crit W.S. (ft)	3421.49	Flow Area (sq ft)	24.56	599.68	
E.G. Slope (ft/ft)	0.015261	Area (sq ft)	24.56	599.68	
Q Total (cfs)	3286.00	Flow (cfs)	53.64	3232.36	
Top Width (ft)	728.53	Top Width (ft)	99.86	628.66	
Vel Total (ft/s)	5.26	Avg. Vel. (ft/s)	2.18	5.39	
Max Chl Dpth (ft)	1.49	Hydr. Depth (ft)	0.25	0.95	
Conv. Total (cfs)	26599.8	Conv. (cfs)	434.2	26165.6	
Length Wtd. (ft)	737.24	Wetted Per. (ft)	99.87	628.67	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)	0.23	0.91	
Alpha	1.03	Stream Power (lb/ft s)	0.51	4.90	
Frctn Loss (ft)	3.55	Cum Volume (acre-ft)	20.95	48.20	1.91
C & E Loss (ft)	0.10	Cum SA (acres)	19.44	39.46	1.35

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3422.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3422.20	Reach Len. (ft)	749.00	732.00	843.00

Crit W.S. (ft)	3422.20	FloodPlain.rep Flow Area (sq ft)	146.05	1110.69	
E.G. Slope (ft/ft)	0.013358	Area (sq ft)	146.05	1110.69	
Q Total (cfs)	7766.00	Flow (cfs)	530.65	7235.35	
Top Width (ft)	1043.46	Top Width (ft)	250.36	793.10	
Vel Total (ft/s)	6.18	Avg. Vel. (ft/s)	3.63	6.51	
Max Chl Dpth (ft)	2.20	Hydr. Depth (ft)	0.58	1.40	
Conv. Total (cfs)	67192.6	Conv. (cfs)	4591.3	62601.3	
Length Wtd. (ft)	737.87	Wetted Per. (ft)	250.37	793.11	
Min Ch El (ft)	3420.00	Shear (lb/sq ft)	0.49	1.17	
Alpha	1.06	Stream Power (lb/ft s)	1.77	7.61	
Frctn Loss (ft)	3.76	Cum Volume (acre-ft)	46.89	82.95	4.92
C & E Loss (ft)	0.12	Cum SA (acres)	39.81	45.93	3.73

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 3489

INPUT

Description: Sta. 3489

Station Elevation Data				num=	22				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-286	3420	-138	3418.5	-126	3418	-104	3416	-91	3415.5
-76	3416	-21	3417	100	3417	258	3416.5	299	3416
309	3415	318	3416	405	3416	422	3416	539	3416.4
581	3416.2	642	3416.4	744	3416	830	3416	918	3418
1068	3420	1159	3421						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
-286	.033	539	.033	918	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	539	918		464 500	457	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3417.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3417.66	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3417.07	Flow Area (sq ft)	800.11	493.34	
E.G. Slope (ft/ft)	0.002329	Area (sq ft)	800.11	493.34	
Q Total (cfs)	3286.00	Flow (cfs)	1973.59	1312.41	
Top Width (ft)	1025.44	Top Width (ft)	661.29	364.15	
Vel Total (ft/s)	2.54	Avg. Vel. (ft/s)	2.47	2.66	
Max Chl Dpth (ft)	2.66	Hydr. Depth (ft)	1.21	1.35	
Conv. Total (cfs)	68095.7	Conv. (cfs)	40898.7	27197.0	
Length Wtd. (ft)	481.91	Wetted Per. (ft)	661.50	364.17	
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.18	0.20	
Alpha	1.00	Stream Power (lb/ft s)	0.43	0.52	
Frctn Loss (ft)	2.37	Cum Volume (acre-ft)	13.86	39.02	1.91
C & E Loss (ft)	0.03	Cum SA (acres)	12.90	31.12	1.35

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3418.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3418.44	Reach Len. (ft)	464.00	500.00	457.00
Crit W.S. (ft)	3417.60	Flow Area (sq ft)	1318.41	785.27	7.24
E.G. Slope (ft/ft)	0.002671	Area (sq ft)	1318.41	785.27	7.24
Q Total (cfs)	7766.00	Flow (cfs)	4790.13	2969.74	6.14
Top Width (ft)	1087.51	Top Width (ft)	675.55	379.00	32.96
Vel Total (ft/s)	3.68	Avg. Vel. (ft/s)	3.63	3.78	0.85
Max Chl Dpth (ft)	3.44	Hydr. Depth (ft)	1.95	2.07	0.22
Conv. Total (cfs)	150271.6	Conv. (cfs)	92688.7	57464.2	118.7

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Length Wtd. (ft)	480.92	Wetted Per. (ft)	675.78	379.02	32.96
Min Ch El (ft)	3416.00	Shear (lb/sq ft)	0.33	0.35	0.04
Alpha	1.01	Stream Power (lb/ft s)	1.18	1.31	0.03
Frctn Loss (ft)	2.33	Cum Volume (acre-ft)	34.30	67.02	4.85
C & E Loss (ft)	0.04	Cum SA (acres)	31.85	36.08	3.41

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

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

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 2989

INPUT

Description: Sta. 2989

Station Elevation Data		num=	14						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31	3416	59	3414.8	170	3414.8	196	3414	436	3413.8
613	3414	651	3414	700	3414	747	3414	761	3414
841	3415.01	920	3416	976	3418	1067	3420		

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-31	.033	436	.033	841	.033

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
436	841	317	215	172	.3	.5

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3415.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.033	0.033	
W.S. Elev (ft)	3414.95	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3414.95	Flow Area (sq ft)	283.67	362.07	
E.G. Slope (ft/ft)	0.016461	Area (sq ft)	283.67	362.07	
Q Total (cfs)	3286.00	Flow (cfs)	1329.43	1956.57	
Top Width (ft)	788.45	Top Width (ft)	388.22	400.22	
Vel Total (ft/s)	5.09	Avg. Vel. (ft/s)	4.69	5.40	
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)	0.73	0.90	
Conv. Total (cfs)	25611.5	Conv. (cfs)	10361.7	15249.8	
Length Wtd. (ft)	255.96	Wetted Per. (ft)	388.24	400.23	
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.75	0.93	

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Alpha	1.01	Stream Power (lb/ft s)	3.52	5.02	
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	8.09	34.11	1.91
C & E Loss (ft)	0.16	Cum SA (acres)	7.31	26.73	1.35

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program selected the water surface that had the least amount of error between computed and assumed values.

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3416.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.61	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3415.68	Reach Len. (ft)	317.00	215.00	172.00
Crit W.S. (ft)	3415.59	Flow Area (sq ft)	585.43	656.09	17.70
E.G. Slope (ft/ft)	0.011352	Area (sq ft)	585.43	656.09	17.70
Q Total (cfs)	7766.00	Flow (cfs)	3383.66	4341.55	40.79
Top Width (ft)	900.85	Top Width (ft)	442.70	405.00	53.15
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	5.78	6.62	2.30
Max Chl Dpth (ft)	1.88	Hydr. Depth (ft)	1.32	1.62	0.33
Conv. Total (cfs)	72888.6	Conv. (cfs)	31757.7	40748.1	382.9
Length Wtd. (ft)	263.06	Wetted Per. (ft)	442.72	405.01	53.15
Min Ch El (ft)	3413.80	Shear (lb/sq ft)	0.94	1.15	0.24
Alpha	1.03	Stream Power (lb/ft s)	5.42	7.60	0.54
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	24.16	58.75	4.72
C & E Loss (ft)	0.20	Cum SA (acres)	25.89	31.58	2.96

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

CROSS SECTION
REACH: 5

RIVER: Ditch A
RS: 2774

INPUT

Description: Sta. 2774 Upstream of culverts

Station	Elevation	Data	num=	18
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
-453	3416	-437	3415	-405 3414 -289 3413.8 -13 3413.8
100	3413.8	175	3413.8	204 3412 261 3412 298 3411.2
402	3410.9	437	3410	469 3409 491 3409 511 3410
560	3412	641	3414	725 3416

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
-453	.033	437	.033	511	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	437	511		40	40		
						.3	.5

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

-888

F

888

F

CROSS SECTION OUTPUT

Profile #PF 2

E.G. Elev (ft)	3414.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3414.41	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	1115.26	374.10	284.35
E.G. Slope (ft/ft)	0.000645	Area (sq ft)	1115.26	374.10	284.35
Q Total (cfs)	3286.00	Flow (cfs)	1522.17	1259.45	504.38
Top Width (ft)	1076.10	Top Width (ft)	855.02	74.00	147.08
Vel Total (ft/s)	1.85	Avg. Vel. (ft/s)	1.36	3.37	1.77
Max Chl Dpth (ft)	5.41	Hydr. Depth (ft)	1.30	5.06	1.93
Conv. Total (cfs)	129409.2	Conv. (cfs)	59946.0	49599.6	19863.6
Length Wtd. (ft)	40.00	Wetted Per. (ft)	855.10	74.04	147.15
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.05	0.20	0.08
Alpha	1.66	Stream Power (lb/ft s)	0.07	0.68	0.14
Frctn Loss (ft)		Cum Volume (acre-ft)	3.00	32.29	1.35
C & E Loss (ft)		Cum SA (acres)	2.78	25.56	1.06

Warning: The cross section had to be extended vertically during the critical depth calculations.

Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3415.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3415.12	Reach Len. (ft)	40.00	40.00	40.00
Crit W.S. (ft)	3413.54	Flow Area (sq ft)	1729.17	426.55	399.14
E.G. Slope (ft/ft)	0.001303	Area (sq ft)	1729.17	426.55	399.14
Q Total (cfs)	7766.00	Flow (cfs)	4422.39	2227.79	1115.82
Top Width (ft)	1126.70	Top Width (ft)	875.85	74.00	176.85
Vel Total (ft/s)	3.04	Avg. Vel. (ft/s)	2.56	5.22	2.80
Max Chl Dpth (ft)	6.12	Hydr. Depth (ft)	1.97	5.76	2.26
Conv. Total (cfs)	215162.4	Conv. (cfs)	122525.4	61722.5	30914.5
Length Wtd. (ft)	40.00	Wetted Per. (ft)	875.94	74.04	176.93
Min Ch El (ft)	3409.00	Shear (lb/sq ft)	0.16	0.47	0.18
Alpha	1.37	Stream Power (lb/ft s)	0.41	2.45	0.51
Frctn Loss (ft)		Cum Volume (acre-ft)	15.74	56.08	3.90
C & E Loss (ft)		Cum SA (acres)	21.09	30.40	2.50

CULVERT RIVER: Ditch A
 REACH: 5 RS: 2773

INPUT

Description:

Distance from Upstream XS = 8

Deck/Roadway Width = 24

Weir Coefficient = 3

Upstream Deck/Roadway Coordinates

num= 6			
Sta	Hi	Cord	Lo Cord
26	3413.8		
500	3412.8		

Sta	Hi	Cord	Lo Cord
100	3413.8		
600	3413.9		

Sta	Hi	Cord	Lo Cord
402	3412.7		
700	3415.7		

Upstream Bridge Cross Section Data

Station Elevation Data num= 18			
Sta	Elev	Sta	Elev
-453	3416	-437	3415
100	3413.8	175	3413.8
402	3410.9	437	3410
560	3412	641	3414

Sta	Elev	Sta	Elev
-405	3414	-289	3413.8
204	3412	261	3412
469	3409	491	3409
725	3416	511	3410

Manning's n Values

num= 3			
Sta	n Val	Sta	n Val
-453	.033	437	.033
		511	.033

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	437	511		.3	.5

Ineffective Flow num= 2

FloodPlain.rep

Sta L Sta R Elev Permanent
 -888 F
 888 F

Downstream Deck/Roadway Coordinates

num= 6

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
26	3413.8				100	3413.8				402	3412.7			
500	3412.8				600	3413.9				700	3415.7			

Downstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9
400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

Bank Sta: Left Right Coeff Contr. Expan.
 349 434 .3 .5

Ineffective Flow num= 2

Sta L Sta R Elev Permanent
 -888 F
 888 F

Upstream Embankment side slope = 3 horiz. to 1.0 vertical
 Downstream Embankment side slope = 3 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .95
 Elevation at which weir flow begins = 3412.7
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span

Culvert #1 Pipe Arch 1.833 2.43

FHWA Chart # 34- 18 inch corner radius; Corrugated metal

FHWA Scale # 1 - 90 Degree headwall

Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
1	39	.024	.5	1

Number of Barrels = 6

Upstream Elevation = 3409

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
469	473.4	477.8	482.2	486.6	491

Downstream Elevation = 3408.9

Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.	Sta.
387	391.4	395.8	400.2	404.6	409

CROSS SECTION

RIVER: Ditch A

REACH: 5

RS: 2734

INPUT

Description: Sta. 2734 Downstream of culverts

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1721	3416	-1410	3414	26	3413.8	100	3412.4	155	3412
299	3411.4	349	3410	387	3408.9	391.4	3408.9	395.8	3408.9

FloodPlain.rep

400.2	3408.9	404.6	3408.9	409	3408.9	434	3410	487	3412
568	3414	658	3416						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-1721	.033	349	.033	434	.033

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

	349	434		745	846	1015		.3	.5
--	-----	-----	--	-----	-----	------	--	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-888	F		
888	F		

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3413.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3412.71	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3412.71	Flow Area (sq ft)	275.89	288.99	100.64
E.G. Slope (ft/ft)	0.004812	Area (sq ft)	275.89	288.99	100.64
Q Total (cfs)	3286.00	Flow (cfs)	884.51	2040.31	361.18
Top Width (ft)	431.91	Top Width (ft)	265.26	85.00	81.65
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)	3.21	7.06	3.59
Max Chl Dpth (ft)	3.81	Hydr. Depth (ft)	1.04	3.40	1.23
Conv. Total (cfs)	47371.8	Conv. (cfs)	12751.3	29413.6	5206.9
Length Wtd. (ft)	841.72	Wetted Per. (ft)	265.28	85.04	81.70
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.31	1.02	0.37
Alpha	1.44	Stream Power (lb/ft s)	1.00	7.21	1.33
Frctn Loss (ft)	3.01	Cum Volume (acre-ft)	2.36	31.99	1.17
C & E Loss (ft)	0.22	Cum SA (acres)	2.27	25.49	0.95

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

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

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

Warning: The parabolic search method failed to converge on critical depth. The program will

try the
cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3414.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.46	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3414.37	Reach Len. (ft)	745.00	846.00	1015.00
Crit W.S. (ft)	3414.37	Flow Area (sq ft)	1462.63	430.11	292.31
E.G. Slope (ft/ft)	0.003331	Area (sq ft)	1462.63	430.11	292.31
Q Total (cfs)	7766.00	Flow (cfs)	3290.35	3293.62	1182.03
Top Width (ft)	2051.72	Top Width (ft)	1816.17	85.00	150.55
Vel Total (ft/s)	3.55	Avg. Vel. (ft/s)	2.25	7.66	4.04
Max Chl Dpth (ft)	5.47	Hydr. Depth (ft)	0.81	5.06	1.94
Conv. Total (cfs)	134550.1	Conv. (cfs)	57007.1	57063.8	20479.3
Length Wtd. (ft)		Wetted Per. (ft)	1816.21	85.04	150.61
Min Ch El (ft)	3408.90	Shear (lb/sq ft)	0.17	1.05	0.40
Alpha	2.34	Stream Power (lb/ft s)	0.38	8.06	1.63
Frctn Loss (ft)		Cum Volume (acre-ft)	14.28	55.69	3.58
C & E Loss (ft)		Cum SA (acres)	19.86	30.32	2.35

Warning: The energy equation could not be balanced within the specified number of iterations.
The

program used critical depth for the water surface and continued on with the calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1888

INPUT

Description: Sta. 1888

Station Elevation Data		num= 10							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-775	3412	-41	3410	81	3410	100	3410.2	110	3410
331	3408	532	3408	690	3408	1180	3410	1268	3412

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-775	.033	100	.033	1180	.033

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	100	1180		305	828	980	.1
							.3

CROSS SECTION OUTPUT Profile #PF 2

FloodPlain.rep

E.G. Elev (ft)	3409.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.033	
W.S. Elev (ft)	3409.80	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3409.14	Flow Area (sq ft)		1225.09	
E.G. Slope (ft/ft)	0.002775	Area (sq ft)		1225.09	
Q Total (cfs)	3327.00	Flow (cfs)		3327.00	
Top Width (ft)	999.96	Top Width (ft)		999.96	
Vel Total (ft/s)	2.72	Avg. Vel. (ft/s)		2.72	
Max Chl Dpth (ft)	1.80	Hydr. Depth (ft)		1.23	
Conv. Total (cfs)	63158.9	Conv. (cfs)		63158.9	
Length Wtd. (ft)	828.00	Wetted Per. (ft)		999.97	
Min Ch El (ft)	3408.00	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.58	
Frctn Loss (ft)	4.67	Cum Volume (acre-ft)		17.28	
C & E Loss (ft)	0.04	Cum SA (acres)		14.95	

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

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3410.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.033	0.033	0.033
W.S. Elev (ft)	3410.59	Reach Len. (ft)	305.00	828.00	980.00
Crit W.S. (ft)	3409.82	Flow Area (sq ft)	146.69	2069.78	7.77
E.G. Slope (ft/ft)	0.002839	Area (sq ft)	146.69	2069.78	7.77
Q Total (cfs)	7864.00	Flow (cfs)	193.76	7661.94	8.30
Top Width (ft)	1465.23	Top Width (ft)	359.09	1080.00	26.15
Vel Total (ft/s)	3.54	Avg. Vel. (ft/s)	1.32	3.70	1.07
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)	0.41	1.92	0.30

		FloodPlain.rep			
Conv. Total (cfs)	147583.8	Conv. (cfs)	3636.3	143791.8	155.7
Length Wtd. (ft)	821.74	Wetted Per. (ft)	359.09	1080.02	26.15
Min Ch El (ft)	3408.00	Shear (lb/sq ft)	0.07	0.34	0.05
Alpha	1.07	Stream Power (lb/ft s)	0.10	1.26	0.06
Frctn Loss (ft)	4.53	Cum Volume (acre-ft)	0.51	31.41	0.09
C & E Loss (ft)	0.05	Cum SA (acres)	1.26	19.01	0.29

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

Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross

section. This may indicate the need for additional cross sections.

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION RIVER: Ditch A
REACH: 5 RS: 1060

INPUT

Description: Sta. 1060

Station	Elevation	Data	num=	6					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
100	3408	394	3406	879	3402.7	909	3402.7	1206	3405
1523	3406								

Manning's n	Values	num=	3			
Sta	n Val	Sta	n Val	Sta	n Val	
100	.033	394	.033	1523	.033	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	394	1523		60	60	.1	.3

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3405.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.		0.033	
W.S. Elev (ft)	3404.67	Reach Len. (ft)			
Crit W.S. (ft)	3404.67	Flow Area (sq ft)		593.57	
E.G. Slope (ft/ft)	0.016121	Area (sq ft)		593.57	
Q Total (cfs)	3473.00	Flow (cfs)		3473.00	
Top Width (ft)	573.29	Top Width (ft)		573.29	
Vel Total (ft/s)	5.85	Avg. Vel. (ft/s)		5.85	
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)		1.04	
Conv. Total (cfs)	27353.4	Conv. (cfs)		27353.4	
Length Wtd. (ft)		Wetted Per. (ft)		573.31	

FloodPlain.rep

Min Ch El (ft)	3402.70	Shear (lb/sq ft)	1.04
Alpha	1.00	Stream Power (lb/ft s)	6.10
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3406.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.033	
W.S. Elev (ft)	3405.55	Reach Len. (ft)			
Crit W.S. (ft)	3405.55	Flow Area (sq ft)		1235.07	
E.G. Slope (ft/ft)	0.014413	Area (sq ft)		1235.07	
Q Total (cfs)	8124.00	Flow (cfs)		8124.00	
Top Width (ft)	920.12	Top Width (ft)		920.12	
Vel Total (ft/s)	6.58	Avg. Vel. (ft/s)		6.58	
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)		1.34	
Conv. Total (cfs)	67669.9	Conv. (cfs)		67669.9	
Length Wtd. (ft)		Wetted Per. (ft)		920.14	
Min Ch El (ft)	3402.70	Shear (lb/sq ft)		1.21	
Alpha	1.00	Stream Power (lb/ft s)		7.94	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Ditch A

Reach	River Sta.	n1	n2	n3
5	12674	.033	.033	.033
5	11337	.033	.033	.033
5	10937	.033	.033	.033
5	10288	.033	.033	.033
5	9690	.033	.033	.033
5	9009	.033	.033	.033
5	8130	.033	.033	.033
5	7717	.033	.033	.033
5	7253	.033	.033	.033

		FloodPlain.rep		
5	6343	.033	.033	.033
5	5363	.033	.033	.033
5	4221	.033	.033	.033
5	3489	.033	.033	.033
5	2989	.033	.033	.033
5	2774	.033	.033	.033
5	2773	Culvert		
5	2734	.033	.033	.033
5	1888	.033	.033	.033
5	1060	.033	.033	.033

SUMMARY OF REACH LENGTHS

River: Ditch A

Reach	River Sta.	Left	Channel	Right
5	12674	1206	1337	1433
5	11337	545	400	332
5	10937	729	649	445
5	10288	552	598	633
5	9690	639	681	658
5	9009	898	879	794
5	8130	399	413	456
5	7717	444	464	510
5	7253	756	910	980
5	6343	767	980	1051
5	5363	1199	1142	713
5	4221	749	732	843
5	3489	464	500	457
5	2989	317	215	172
5	2774	40	40	40
5	2773	Culvert		
5	2734	745	846	1015
5	1888	305	828	980
5	1060	60	60	60

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Ditch A

Reach	River Sta.	Contr.	Expan.
5	12674	.1	.3
5	11337	.1	.3
5	10937	.1	.3
5	10288	.1	.3
5	9690	.1	.3
5	9009	.1	.3
5	8130	.1	.3
5	7717	.1	.3
5	7253	.1	.3
5	6343	.1	.3
5	5363	.1	.3
5	4221	.1	.3
5	3489	.1	.3
5	2989	.3	.5
5	2774	.3	.5
5	2773	Culvert	

		FloodPlain.rep
5	2734	.3 .5
5	1888	.1 .3
5	1060	.1 .3

Profile Output Table - Standard Table 1

Reach lope /ft)	Vel (ft/s)	River Sta Chnl Flow Area (sq ft)	Q Total Top Width (ft)	Min Ch El Froude # Chl (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. S (ft)
5		12674	976.00	3477.00	3478.76	3478.27	3478.88	0.00
3056	2.90	357.89	355.40	0.46				
5		12674	1850.00	3477.00	3479.26	3478.68	3479.45	0.00
3167	3.69	553.45	422.29	0.49				
5		11337	976.00	3469.00	3470.81	3470.81	3471.39	0.01
3220	6.21	164.80	149.13	0.95				
5		11337	1850.00	3469.00	3471.47	3471.46	3472.26	0.01
0885	7.39	272.36	176.84	0.93				
5		10937	976.00	3464.00	3466.24	3466.08	3466.66	0.01
0235	5.21	188.24	162.01	0.83				
5		10937	1850.00	3464.00	3466.72	3466.72	3467.45	0.01
3153	6.91	273.71	197.22	0.98				
5		10288	976.00	3456.00	3457.22	3457.22	3457.51	0.02
0477	4.31	226.46	413.97	1.03				
5		10288	1850.00	3456.00	3457.57	3457.53	3457.93	0.01
5410	4.82	383.80	479.25	0.95				
5		9690	1242.00	3450.00	3451.93	3451.51	3452.09	0.00
4969	3.13	396.40	404.17	0.56				
5		9690	2689.00	3450.00	3452.40	3452.06	3452.72	0.00
6338	4.52	603.04	473.62	0.67				
5		9009	1242.00	3445.00	3446.90	3446.75	3447.19	0.01
1195	4.31	288.10	334.67	0.82				
5		9009	2689.00	3445.00	3447.65		3447.96	0.00
7751	4.51	596.64	492.15	0.72				
5		8130	1242.00	3440.00	3442.03	3441.49	3442.15	0.00
3422	2.73	455.81	437.11	0.47				
5		8130	2689.00	3440.00	3442.50	3442.03	3442.75	0.00
4647	4.06	674.08	497.59	0.58				
5		7717	1242.00	3437.80	3439.01	3439.01	3439.38	0.01
8011	4.88	254.54	350.81	1.01				
5		7717	2689.00	3437.80	3439.74		3440.11	0.00
9311	4.84	555.05	471.42	0.79				
5		7253	1483.00	3435.00	3436.81	3436.16	3436.89	0.00
1808	2.29	664.86	563.87	0.35				
5		7253	5399.00	3435.00	3437.84	3437.06	3438.13	0.00

				FloodPlain.rep				
3105	4.42	1299.73	667.97	0.51				
5		6343	2888.00	3430.00	3431.11	3431.11	3431.57	0.01
6513	5.44	531.26	583.36	1.00				
5		6343	7144.00	3430.00	3431.94	3431.94	3432.64	0.01
2039	6.76	1091.24	867.12	0.94				
5		5363	2888.00	3425.00	3426.84	3426.14	3426.94	0.00
1869	2.54	1198.09	984.24	0.37				
5		5363	7144.00	3425.00	3427.72	3426.80	3427.91	0.00
2096	3.65	2169.17	1242.81	0.42				
5		4221	3286.00	3420.00	3421.49	3421.49	3421.94	0.01
5261	5.39	624.24	728.53	0.97				
5		4221	7766.00	3420.00	3422.20	3422.20	3422.82	0.01
3358	6.51	1256.74	1043.46	0.97				
5		3489	3286.00	3416.00	3417.66	3417.07	3417.76	0.00
2329	2.66	1293.45	1025.44	0.40				
5		3489	7766.00	3416.00	3418.44	3417.60	3418.65	0.00
2671	3.78	2110.92	1087.51	0.46				
5		2989	3286.00	3413.80	3414.95	3414.95	3415.36	0.01
6461	5.40	645.74	788.45	1.00				
5		2989	7766.00	3413.80	3415.68	3415.59	3416.28	0.01
1352	6.62	1259.21	900.85	0.92				
5		2774	3286.00	3409.00	3414.41	3412.71	3414.50	0.00
0645	3.37	1773.70	1076.10	0.26				
5		2774	7766.00	3409.00	3415.12	3413.54	3415.31	0.00
1303	5.22	2554.86	1126.70	0.38				
5		2773	Culvert					
5		2734	3286.00	3408.90	3412.71	3412.71	3413.25	0.00
4812	7.06	665.51	431.91	0.67				
5		2734	7766.00	3408.90	3414.37	3414.37	3414.83	0.00
3331	7.66	2185.05	2051.72	0.60				
5		1888	3327.00	3408.00	3409.80	3409.14	3409.92	0.00
2775	2.72	1225.09	999.96	0.43				
5		1888	7864.00	3408.00	3410.59	3409.82	3410.80	0.00
2839	3.70	2224.23	1465.23	0.47				
5		1060	3473.00	3402.70	3404.67	3404.67	3405.20	0.01
6121	5.85	593.57	573.29	1.01				
5		1060	8124.00	3402.70	3405.55	3405.55	3406.22	0.01
4413	6.58	1235.07	920.12	1.00				

Profile Output Table - Report Standard Table 1

FloodPlain.rep

Reach	River Sta	Q Total	Min Ch El	W.S.	Elev	Crit W.S.	Max Chl Dpth	E.G
Elev	E.G. Slope	Sta W.S. Lft	Sta W.S. Rgt	Flow Area	Top Width	Froude #	Chl	
(ft)	(ft/ft)	(ft/s)	(cfs)	(ft)	(ft)	(sq ft)	(ft)	(ft)
			(ft)					
5	12674	976.00	3477.00	3478.76	3478.27	1.75	3	
478.88	0.003056	2.90	327.16	682.56	357.89	355.40	0.46	
5	12674	1850.00	3477.00	3479.26	3478.68	2.26	3	
479.45	0.003167	3.69	291.95	714.24	553.45	422.29	0.49	
5	11337	976.00	3469.00	3470.81	3470.81	1.81	3	
471.39	0.013220	6.21	417.53	566.66	164.80	149.13	0.95	
5	11337	1850.00	3469.00	3471.47	3471.46	2.47	3	
472.26	0.010885	7.39	403.34	580.18	272.36	176.84	0.93	
5	10937	976.00	3464.00	3466.24	3466.08	2.24	3	
466.66	0.010235	5.21	455.99	618.01	188.24	162.01	0.83	
5	10937	1850.00	3464.00	3466.72	3466.72	2.72	3	
467.45	0.013153	6.91	438.39	635.61	273.71	197.22	0.98	
5	10288	976.00	3456.00	3457.22	3457.22	1.22	3	
457.51	0.020477	4.31	374.31	788.29	226.46	413.97	1.03	
5	10288	1850.00	3456.00	3457.57	3457.53	1.57	3	
457.93	0.015410	4.82	339.97	819.21	383.80	479.25	0.95	
5	9690	1242.00	3450.00	3451.93	3451.51	1.93	3	
452.09	0.004969	3.13	389.43	793.60	396.40	404.17	0.56	
5	9690	2689.00	3450.00	3452.40	3452.06	2.40	3	
452.72	0.006338	4.52	345.06	818.68	603.04	473.62	0.67	
5	9009	1242.00	3445.00	3446.90	3446.75	1.90	3	
447.19	0.011195	4.31	416.94	751.61	288.10	334.67	0.82	
5	9009	2689.00	3445.00	3447.65		2.65	3	
447.96	0.007751	4.51	354.62	846.77	596.64	492.15	0.72	
5	8130	1242.00	3440.00	3442.03	3441.49	2.03	3	

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442.15	0.003422	2.73	417.16	854.27	455.81	437.11		0.47	
5	8130		2689.00	3440.00	3442.50	3442.03		2.50	3
442.75	0.004647	4.06	390.07	887.66	674.08	497.59		0.58	
5	7717		1242.00	3437.80	3439.01	3439.01		1.21	3
439.38	0.018011	4.88	307.18	657.99	254.54	350.81		1.01	
5	7717		2689.00	3437.80	3439.74			1.94	3
440.11	0.009311	4.84	252.35	723.77	555.05	471.42		0.79	
5	7253		1483.00	3435.00	3436.81	3436.16		1.81	3
436.89	0.001808	2.29	382.26	946.12	664.86	563.87		0.35	
5	7253		5399.00	3435.00	3437.84	3437.06		2.84	3
438.13	0.003105	4.42	329.17	997.14	1299.73	667.97		0.51	
5	6343		2888.00	3430.00	3431.11	3431.11		1.11	3
431.57	0.016513	5.44	724.42	1307.78	531.26	583.36		1.00	
5	6343		7144.00	3430.00	3431.94	3431.94		1.94	3
432.64	0.012039	6.76	667.41	1534.53	1091.24	867.12		0.94	
5	5363		2888.00	3425.00	3426.84	3426.14		1.84	3
426.94	0.001869	2.54	660.98	1645.22	1198.09	984.24		0.37	
5	5363		7144.00	3425.00	3427.72	3426.80		2.72	3
427.91	0.002096	3.65	577.26	1820.07	2169.17	1242.81		0.42	
5	4221		3286.00	3420.00	3421.49	3421.49		1.49	3
421.94	0.015261	5.39	444.14	1172.66	624.24	728.53		0.97	
5	4221		7766.00	3420.00	3422.20	3422.20		2.20	3
422.82	0.013358	6.51	293.64	1337.10	1256.74	1043.46		0.97	
5	3489		3286.00	3416.00	3417.66	3417.07		2.66	3
417.76	0.002329	2.66	-122.29	903.15	1293.45	1025.44		0.40	
5	3489		7766.00	3416.00	3418.44	3417.60		3.44	3
418.65	0.002671	3.78	-136.55	950.96	2110.92	1087.51		0.46	
5	2989		3286.00	3413.80	3414.95	3414.95		1.15	3
415.36	0.016461	5.40	47.78	836.22	645.74	788.45		1.00	

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5	2989		7766.00	3413.80	3415.68	3415.59	1.88	3	
416.28	0.011352	6.62	-6.70	894.15	1259.21	900.85		0.92	
5	2774		3286.00	3409.00	3414.41	3412.71	5.41	3	
414.50	0.000645	3.37	-418.02	658.08	1773.70	1076.10		0.26	
5	2774		7766.00	3409.00	3415.12	3413.54	6.12	3	
415.31	0.001303	5.22	-438.85	687.85	2554.86	1126.70		0.38	
5	2773		Culvert						
5	2734		3286.00	3408.90	3412.71	3412.71	3.81	3	
413.25	0.004812	7.06	83.74	515.65	665.51	431.91		0.67	
5	2734		7766.00	3408.90	3414.37	3414.37	5.47	3	
414.83	0.003331	7.66	-1467.17	584.55	2185.05	2051.72		0.60	
5	1888		3327.00	3408.00	3409.80	3409.14	1.80	3	
409.92	0.002775	2.72	131.77	1131.73	1225.09	999.96		0.43	
5	1888		7864.00	3408.00	3410.59	3409.82	2.59	3	
410.80	0.002839	3.70	-259.09	1206.15	2224.23	1465.23		0.47	
5	1060		3473.00	3402.70	3404.67	3404.67	1.97	3	
405.20	0.016121	5.85	589.80	1163.09	593.57	573.29		1.01	
5	1060		8124.00	3402.70	3405.55	3405.55	2.85	3	
406.22	0.014413	6.58	460.16	1380.29	1235.07	920.12		1.00	

