



BUREAU OF WATERWAYS ENGINEERING AND WETLANDS

HYDRAULICS SUMMARY

May 2018

New Kernsville Dam Removal Project
Tilden and Windsor Townships
Berks County, PA

**New Kernsville Dam Removal Project
Project No. D06-434-101.1
Township of Tilden, Township of Windsor,
and Borough of Hamburg
Berks County, PA**

Hydrology and Hydraulics Summary

Introduction

The Department of Environmental Protection (DEP) is proposing a project to remove the New Kernsville Dam which is located along the Schuylkill River in Tilden and Windsor Townships, Berks County, and is situated between Port Clinton and Hamburg, Pennsylvania. The dam replaced a preexisting dam, The Kernsville Dam, which was located approximately 1,500 feet downstream of the current New Kernsville Dam. The dam was constructed as a result of the Pennsylvania Act 441, "Schuylkill River Desilting Project" and is one of many dams along the Schuylkill River constructed to form desilting basins. The dam was designed by Justin & Courtney, Philadelphia, Pennsylvania and was constructed by Poitier & McLane Corporation. The construction of the concrete gravity dam was started in June of 1948 and completed in November of 1949 by the Department of Forest and Waters, now known as the Department of Environmental Protection for the purpose of creating an impounding reservoir to capture and prevent the downstream advancement of coal-rich silt carried by the Schuylkill River. The dam is classified as an Intermediate Size (Class B), High Hazard (Category 1) facility. Therefore, the dam has the potential for extensive property damage and possible loss of life along the Schuylkill River in the event of a failure.

The dam consists of a central 600 feet of concrete gravity ogee spillway with non-overflow sections at each end. On one end of the spillway is a concrete gravity wall which extends approximately 100 feet into an earth embankment. The end of the earth embankment extends approximately 340 feet beyond the end of the spillway to high ground. On the opposite end of the spillway there is also a concrete gravity wall extending approximately 100 feet into high ground. The concrete ogee gravity type spillway has a base width of 58'-7" and a height above the foundation of 45'. The crest of the spillway is 18' above the stream bed with the remaining 27' below the stream bed.

Currently, the New Kernsville Dam is being operated and maintained by the Bureau of Abandoned Mine Reclamation (BAMR). The Commonwealth owns the dam structure and the surrounding property. Unfortunately, trespassing and inappropriate activities in the area have occurred resulting in numerous fatalities. As a result, the dam and surrounding area has been closed to the public. Reading, Blue Mountain, and Northern Railroad Co. also owns property in the area and has requested that the dam be removed to eliminate the hazard. The dam surpassed its useful life as there is no longer a need to capture coal silts due to the various mine reclamation activities completed within the Schuylkill River watershed. Removal of the dam would also likely revert the property back to public use and would also allow fish passage. The BAMR would like to turn the property over to the Department of Conservation and Natural Resources

(DCNR) or the local municipality so the area can be developed for controlled public use after the dam is removed.

Hydrology

The Flood Insurance Study for Berks County (No. 42011CV001B, Volume 1 of 4, Effective Date: March 21, 2017) defines the peak discharge for the 1% Annual-Chance Flood or the base flood as 42,800 CFS from upstream of the confluence of Maiden Creek to downstream of the confluence with Little Schuylkill River. See attached Table 5 Summary of Discharges for the Schuylkill River. As a result, all hydraulic models for this summary will use the FEMA FIS 100-year flow of 42,800 CFS.

Hydraulics

The Pennsylvania Department of Transportation, Design Manual, Part 2, Highway Design, Publication 13M, Chapter 10, Appendix C was referenced to determine the hydraulic modeling requirements. This document is a joint guidance issued by PennDOT and PA DEP regarding hydraulic modeling requirements for PennDOT H&H Reports when a project is in a FEMA regulated area. Referring to the chart on page 10C-1, the project is located within a detailed FEMA study area with a FEMA regulatory floodway. The dam removal project will include partially removing the concrete spillway and abutments and spoiling the removed concrete directly downstream of the right side of the dam. Therefore, the project will include placing fill within the floodway. According to the chart, if the anticipated increase in 100-year WSE is equal to or less than zero, section 1.b must be followed for modeling requirements. It is anticipated that the difference between the existing WSE and the proposed WSE will be less than zero, therefore, section 1.b will be referenced for modeling requirements.

- **FEMA FIS Effective Models**

DEP requested Category 1 hydraulics data from the FEMA Engineering Library and received input and output data files which included runs at six different locations along the Schuylkill River in Berks County. The models were created using HEC-2 Version 4.6.2, May 1991, produced by the U.S. Army Corps of Engineers. According to the Flood Insurance Study, the hydrologic and hydraulic analysis for Tilden and Windsor Townships were completed in June of 1978 and September of 1979, respectively, and was prepared by the USGS under an inter-Agency Agreement. The Hydraulic Analysis was updated in 1996 by FEMA's consultant Michael Baker International.

- **DEP Duplicate Effective Model**

The HEC-2 input data was manually entered into HEC-RAS River Analysis System Version 5.0.3, September 2016, produced by the U.S. Army Corps of Engineers to develop the Duplicate Effective Model. All geometry, bank station locations, manning's n values, reach lengths, contraction & expansion values, boundary conditions, flow data, etc. was transferred from the HEC-2 input data into HEC-RAS.

The HEC-2 input data was transferred into HEC-RAS with the most upstream cross section located approximately 350 feet upstream of the Rt. 61 Bridge or approximately 1.28 miles upstream of the dam as this is sufficiently upstream of the backwater conditions created by the New Kernsville Dam. When comparing the base flood elevations of the HEC-2 Effective Model and the HEC-RAS Duplicate Effective Model, the output showed very minor differences. The majority of the HEC-RAS Duplicate Effective run is within 0.01 feet of the HEC-2 Effective run water surface elevations. The two cross sections directly upstream of the dam crest resulted in the greatest difference. The greatest difference of the two cross sections (HEC-2 No. 522,990/HEC-RAS No. 43) resulted in a difference of 0.06 feet or $\frac{3}{4}$ inch which is insignificant. The two runs model the dam as a bridge with no opening below the low chord. This forces all flow over the “roadway” as weir flow to replicate the conditions of a dam. The difference in the modeling between the two programs may have caused the differences in the water surface elevations.

- DEP Proposed Model

The Proposed Model was developed by copying the Duplicate Effective model and making the necessary changes to the geometry data to represent the removal of the dam. To represent the removal of the dam, the bridge which was used to model the dam was removed from the model. Also, the two cross sections immediately upstream of the dam (HEC-RAS Nos. 42 and 43) were removed from the model as these cross sections modeled the upstream side of the dam.

- DEP Duplicate Effective Model / DEP Proposed Model

When comparing the water surface elevations of the Duplicate Effective Model and the Proposed model, the removal of the dam decreased the water surface elevation by 0.85 feet or 10 inches starting approximately 4,600 feet upstream of the dam. The water surface elevation just upstream of the dam decreased by 9.72' or 9'-9". There was no difference between the water surface elevations downstream of the dam. A discrepancy was revealed at River Station 49 which shows an increase in water surface elevation of 0.12 feet or 1½ inches. The channel narrows considerably at this location compared to the adjacent cross sections. According to the summary of errors, additional cross sections may be needed at this location to obtain more accurate results.

- DEP Corrected Effective Model

The Corrected Effective Model was developed by copying the Duplicate Effective Model and adding additional cross sections upstream and downstream of River Station 49. The additional cross sections were interpolated automatically by the program. Cross sections were added so there is approximately 100 feet between each cross section. This resulted in four additional interpolated cross sections between River Stations 50 and 49 and eight additional interpolated cross sections between River Stations 49 and 48.

- DEP Duplicate Effective Model / DEP Corrected Effective Model

The addition of the interpolated cross sections increased the water surface elevation at River Station 49 by 0.24 feet or 3 inches. Slight increases upstream of River Station 49 occurred ranging from 0.08 feet to 0.12 feet. All cross sections downstream of River Station 49 resulted in no change in water surface elevations.

- DEP Corrected Proposed Model

The Corrected Proposed Model was developed by copying the Proposed Model and adding the same interpolated cross sections that were added in the Corrective Effective Model. Essentially, the model is the Corrected Effective Model without the modeling of the dam.

- DEP Corrected Effective Model / DEP Corrected Proposed Model

The results show the water surface elevations gradually decreasing in the direction of flow. This is to be expected with the removal of a dam. The water surface decreases from 0.02 feet at the upstream end to 9.72 feet at the dam. The cross sections downstream of the dam experience no change in water surface elevation.

Conclusion

It was determined from the Duplicate Effective model that the more modern hydraulic analysis HEC-RAS program provided slightly different results immediately upstream of the dam compared to the HEC-2 FEMA Effective model. The output data for both showed very little differences at the upstream and downstream ends which assured the HEC-2 input data was transferred into HEC-RAS correctly. The Duplicate Effective model was modified to represent the removal of the dam. When comparing the Duplicate Effective model to the Proposed Model (model without the dam), an increase in water surface elevation is encountered near the upstream limit of the study. Interpolation of cross sections near this location was used to add additional cross sections to produce more accurate results. When comparing the Corrected Effective model (Duplicate Effective Model with additional interpolated cross sections) to the Corrected Proposed Model (Proposed Model with additional interpolated cross sections), the existing water surface elevations remained the same below the dam and decreased significantly (-9.72' maximum) immediately upstream of the dam. The results showed a decrease in water surface elevation as expected with removal of the obstruction. Therefore, there is no increase in the base flood elevations and a CLOMR/LOMR is not required.

Attachments:

- A – FEMA FIS Table 5 – Summary of Discharges
- B – FEMA FIS Table 8 – Floodway Data
- C – FEMA FIS – Flood Profiles
- D – FEMA Effective Model HEC-2 Input Data
- E – FEMA Effective Model HEC-2 Output Data
- F – DEP Duplicate Effective Model HEC-RAS Input and Output Data
- G – FEMA Effective Model Vs. DEP Duplicate Effective Model Comparison Table
- H – DEP Proposed Model HEC-RAS Input and Output Data
- I – DEP Duplicate Effective Model Vs. DEP Proposed Model Comparison Table
- J – DEP Corrected Effective Model HEC-RAS Input and Output Data
- K – DEP Duplicate Effective Model Vs. DEP Corrected Effective Model Comparison Table
- L – DEP Corrected Proposed Model HEC-RAS Input and Output Data
- M – DEP Corrected Effective Model Vs. DEP Corrected Proposed Model Comparison Table
- N – FEMA FIS Flood Profiles with Corrected Proposed Model Water Surface Elevations
- O – FEMA Flood Insurance Rate Maps
- P – New Kernsville Impounding Dam Construction Drawings

A – FEMA FIS Table 5 – Summary of Discharges

TABLE 5 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cubic feet per second)			
		10-Percent- Annual- Chance	2-Percent- Annual- Chance	1-Percent- Annual- Chance	0.2-Percent- Annual- Chance
SCHUYLKILL RIVER					
Upstream of confluence of Tulpehocken Creek	640	28,800	43,500	50,700	69,000
Upstream of confluence of Maiden Creek	355	23,200	36,300	42,800	60,200
Upstream of confluence of Little Schuylkill River	160	8,600	13,800	16,500	24,000
SEIDEL CREEK					
At confluence with Schuylkill River	3.6	495	1,010	1,580	2,000
SIXPENNY CREEK					
At confluence with the Schuylkill River	4.7	383	606	719	1,030
SPRING CREEK					
Approximately 0.3mile upstream of Brownsville Road	19.5	*	*	3,360	*
Approximately 0.6 mile downstream of upstream crossing of Heidelberg Road	16.7	*	*	3,000	*
At upstream crossing of Heidelberg Road	10.3	*	*	2,110	*
SWABIA CREEK					
At a point approximately 0.27 mile downstream of the confluence of Tributary A to Swabia Creek	2.88	*	*	2,320	*
Upstream of confluence of Tributary A to Swabia Creek	1.66	*	*	1,470	*
Upstream of confluence of Tributary B to Swabia Creek	1.10	*	*	1,050	*

* Data not available

B – FEMA FIS Table 8 – Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Schuylkill River (continued)								
AV	474,768	508	6,466	6.6	299.0	299.0	299.6	0.6
AW	477,927	800	7,738	5.5	303.0	303.0	303.5	0.5
AX	480,719	820	8,174	5.2	306.1	306.1	306.6	0.5
AY	484,842	700	9,062	4.7	313.1	313.1	313.8	0.7
AZ	487,362	750	7,574	5.7	314.7	314.7	315.5	0.8
BA	491,458	900	8,395	5.1	319.6	319.6	320.5	0.9
BB	494,352	1,069	10,099	4.2	324.4	324.4	325.2	0.8
BC	497,556	700	5,828	7.3	327.3	327.3	328.3	1.0
BD	501,325	860	9,274	4.6	334.7	334.7	335.3	0.6
BE	504,401	600	7,235	5.9	338.9	338.9	339.5	0.6
BF	508,273	800	7,500	5.7	345.5	345.5	346.0	0.5
BG	511,836	375	5,095	8.4	350.6	350.6	351.3	0.7
BH	515,621	593	7,822	5.5	361.1	361.1	361.7	0.6
BI	517,761	327	5,591	7.7	364.2	364.2	365.1	0.9
DAM → BJ	521,718	477	4,603	9.3	374.3	374.3	375.2	0.9
BK	525,421	264	4,755	9.0	389.6	389.6	389.7	0.1
BL	528,428	210/65 ²	3,140	13.6	397.2	397.2	397.2	0.0
BM	532,009	260/85 ²	4,667	9.2	405.9	405.9	406.0	0.1
BN	534,802	261/55 ²	3,245	5.1	409.4	409.4	410.0	0.6
BO	538,449	180/105 ²	2,118	7.8	416.5	416.5	416.9	0.4
BP	542,126	200/50 ²	2,107	7.8	425.6	425.6	426.3	0.7
BQ	543,631	250/85 ²	2,841	5.8	427.9	427.9	428.8	0.9

¹ Feet above confluence with Delaware River

² Width/width within county boundary

TABLE 8

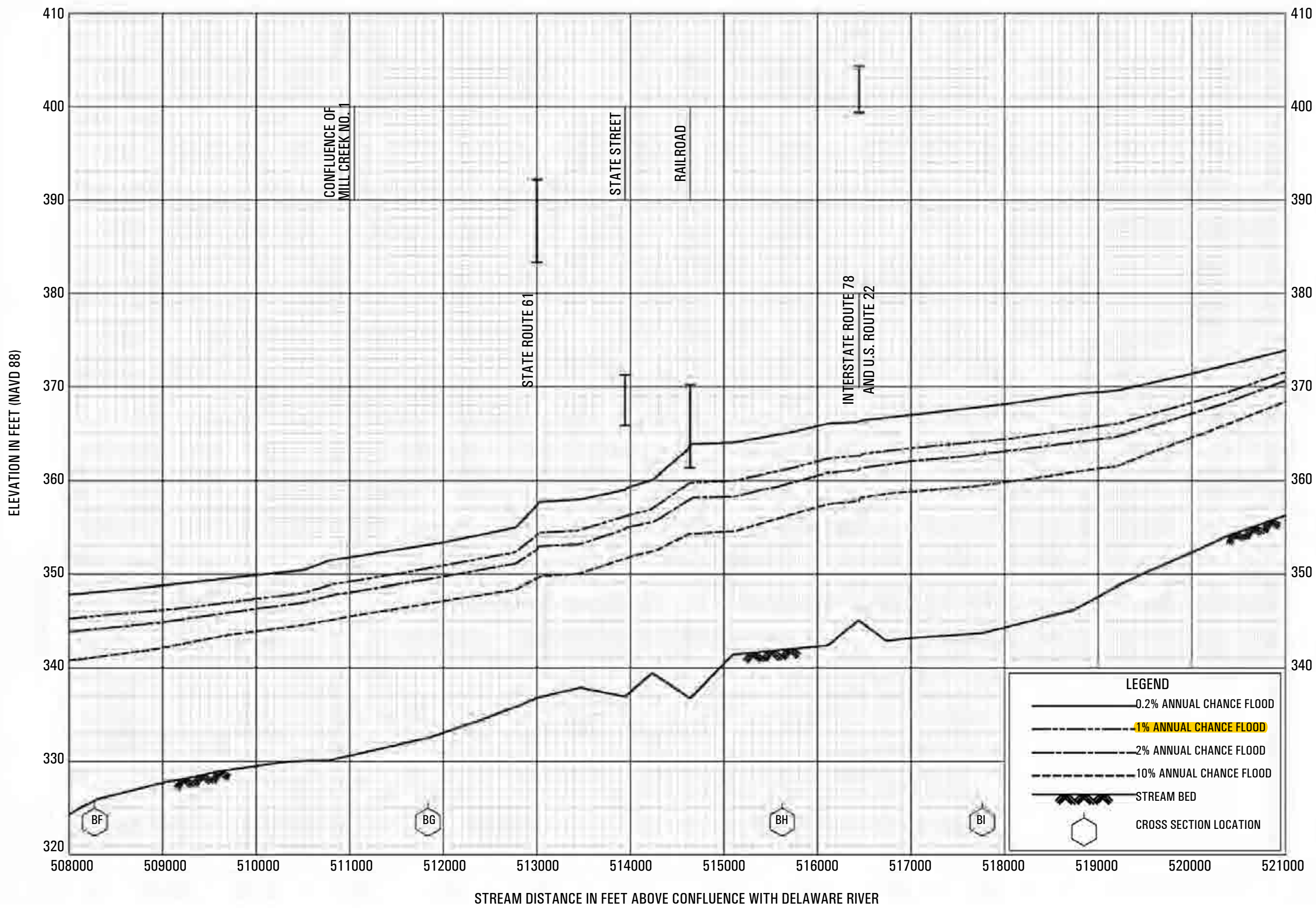
FEDERAL EMERGENCY MANAGEMENT AGENCY

**BERKS COUNTY, PA
(ALL JURISDICTIONS)**

FLOODWAY DATA

SCHUYLKILL RIVER

C – FEMA FIS – Flood Profiles



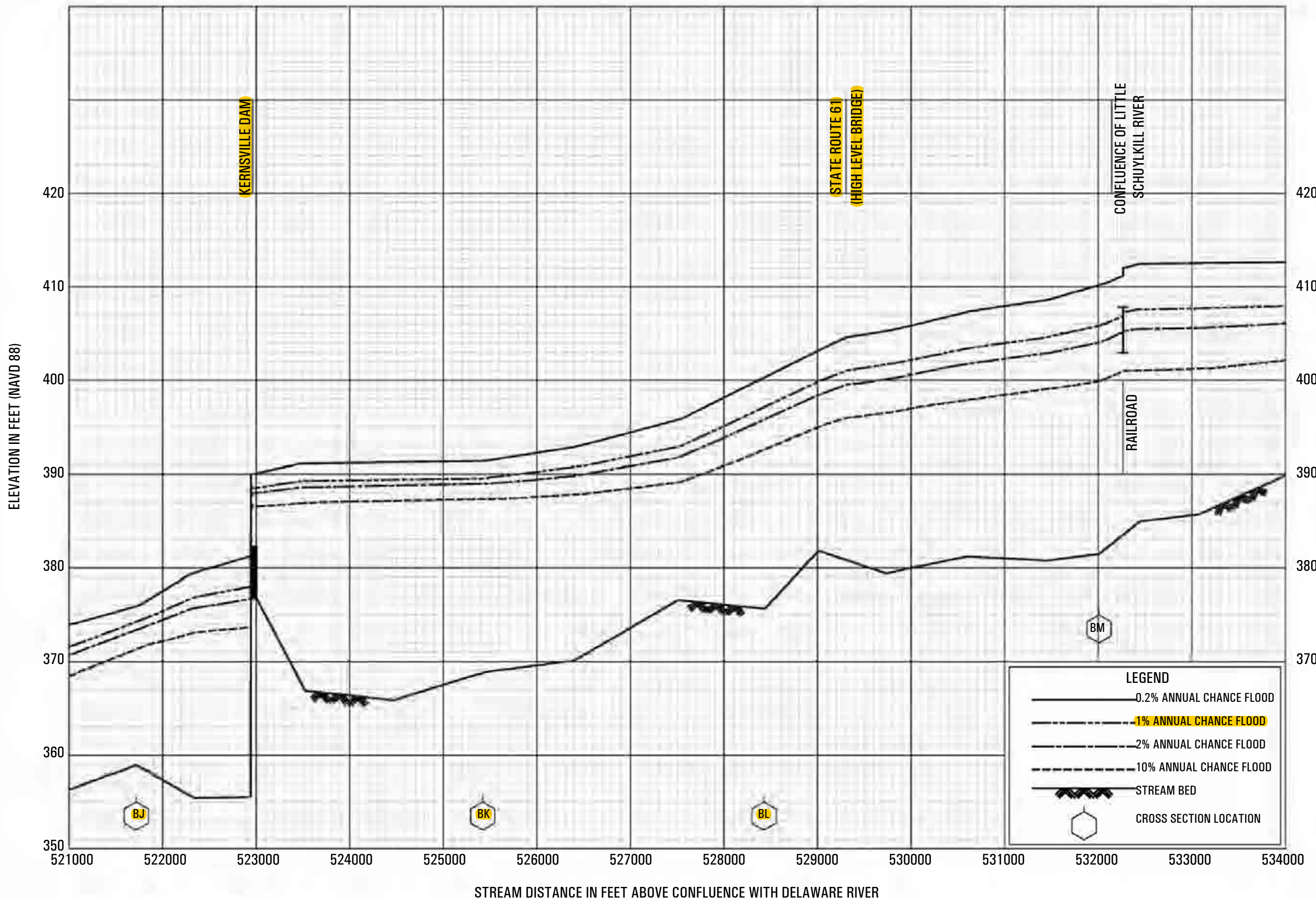
FLOOD PROFILES

SCHUYLKILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BERKS COUNTY, PA

(ALL JURISDICTIONS)



FLOOD PROFILES

SCHUYLKILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
BERKS COUNTY, PA
 (ALL JURISDICTIONS)

D – FEMA Effective Model HEC-2 Input Data

GENERAL NOTES

1) ALL DIMENSIONS SHOWN ARE BASED ON THIS WALL

2) 10/1/75

10/1/75

3) BRIDGE SECTIONS ARE FROM SECTIONS 1, 2 AND

300; FROM WALL 3 - 10/1/75.

4) SOME DIMENSIONS AT BRIDGE WERE APPROXIMATE TO THE OLD SECTIONS

5) ALL VALUES OF "P" AND "Q" WERE CALCULATED TO FIT THE OBSERVED TEST LOAD DEFLECTIONS

6) INFORMATION ON THIS INFO ON THIS WALL IS AVAILABLE FROM ENR 61

START IN ROOM

1) SECTION 1: 10/1/75

2) SECTION 2: 10/1/75, FROM SECTION 1: 10/1/75

3) SECTION 3: 10/1/75, FROM SECTION 2: 10/1/75

4) ALL VALUES ARE BASED ON THE DIMENSIONS SHOWN IN SECTION 1: 10/1/75

11	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75
	0	0	0	0	0	0	0	0	0	0
12	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75
	1	0	1	0	0	0	0	0	0	0

13) SECTION 4: 10/1/75, FROM SECTION 3: 10/1/75

14	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75	10/1/75
	0	0	0	0	0	0	0	0	0	0

15) SECTION 5: 10/1/75, FROM SECTION 4: 10/1/75

16) 10/1/75

X1 514635 0 0 0 15 15 15
 X2 1

[382.1: UST BR 82.1] - 514638 <- FINAL DTM STATION

X1 514638 0 0 0 3 3 3

DTM US MARKER FOR STATIONING

X1514638 10 1050 1270 7 7 7
 357.4 1000 356.3 1040 354.4 1050 342.4 1090 341.2 1110
 342.5 1140 342.7 1160 347.6 1270 347.9 1280 346.2 1355

END OF BRIDGE 82.1

ADJUSTED LB ELEV TO MATCH TOPO

X1515080 34 1410 1620 442 442 442

NH	5	100	1340	.08	1447	.04	1620	.12	2010	100
NH	2570									
X1	515080	34	1447	1620	442	442	442			
X4	1	350	1447							
GR	361.8	1000	358.1	1100	357.9	1120	359.6	1180	359.7	1190
GR	359.0	1230	359.0	1260	357.1	1340	357.1	1410	343.5	1480
GR	342.1	1500	342.1	1510	348.3	1620	352.7	1680	352.8	1690
GR	352.7	1700	352.6	1710	350.0	1820	343.3	1930	343.0	1940
GR	344.5	1960	351.2	1990	352.2	2010	351.8	2090	351.5	2120
GR	351.5	2130	353.1	2210	352.8	2290	353.8	2340	354.0	2390
GR	355.4	2450	352.7	2480	370.8	2560	370.9	2570		

RESTORE NORMAL CHANNEL EXPANSION/CONTRACTION LOSSES U/S OF 3 BRIDGES

NC 0.08 0.12 0.04 0.1 0.3

AFTER THIS SECTION EXPANSION/CONTRACTION BACK TO 0.1/0.3

NC 0.1 0.3

.....

COMPRESSIVE STRENGTH DEVELOPMENT OF CONCRETE

DATE: 15/07/20

Page 1

TEST RESULTS OF CONCRETE CUBES

Sl. No.	Age (Days)	Tested	Cracked	Strength (MPa)	Strength (N/mm ²)	Strength (ksi)	Strength (MPa)	Strength (N/mm ²)	Strength (ksi)	Strength (MPa)	Strength (N/mm ²)	Strength (ksi)
01	7	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
02	14	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
03	21	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
04	28	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
05	35	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
06	42	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
07	49	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
08	56	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
09	63	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
10	70	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48

COMPRESSIVE STRENGTH DEVELOPMENT OF CONCRETE

TEST RESULTS OF CONCRETE CUBES

Sl. No.	Age (Days)	Tested	Cracked	Strength (MPa)	Strength (N/mm ²)	Strength (ksi)	Strength (MPa)	Strength (N/mm ²)	Strength (ksi)	Strength (MPa)	Strength (N/mm ²)	Strength (ksi)
11	7	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
12	14	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
13	21	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
14	28	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
15	35	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
16	42	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
17	49	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
18	56	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
19	63	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48
20	70	15.12	0.00	24.0	24.0	3.48	15.0	15.0	2.15	24.0	24.0	3.48

AT TOE OF ISLAND

TRIB IN LEFT BANK REMOVED (THALWEGS RAISED)
 TRUNCATE ON RIGHT AT BERM (X3/NH)

X1519201		40	1770	2030	469	469	469			
NH	4	.12	1770	.04	2030	.12	2200	100	2463	
X1	519201	40	1770	2030	500	430	469			
	391.8	1000	386.8	1010	383.3	1020	375.3	1060	369.5	1170
	363.9	1230	363.8	1260	367.5	1300	364.8	1310	360.8	1320
	356.0	1340	355.3	1350	367.8	1420	366.9	1430	360.0	1460
	359.6	1470	360.1	1510	360.2	1530	359.5	1590	359.4	1620
	360.5	1710	360.6	1720	361.4	1760	361.0	1770	350.1	1830
	349.4	1850	352.9	1960	354.3	2000	357.8	2030	364.0	2130
	363.9	2140	363.8	2150	364.3	2160	375.3	2200	374.5	2210
	371.1	2230	370.5	2240	372.1	2350	381.6	2460	381.6	2463
GR	391.8	1000	386.8	1010	383.3	1020	375.3	1060	369.5	1170
GR	367.8	1230	367.8	1260	367.8	1300	367.8	1310	367.8	1320
GR	367.8	1340	367.8	1350	367.8	1420	366.9	1430	361.4	1460
GR	361.4	1470	361.4	1510	361.4	1530	361.4	1590	361.4	1620
GR	361.4	1710	361.4	1720	361.4	1760	361.0	1770	350.1	1830
GR	349.4	1850	352.9	1960	354.3	2000	357.8	2030	364.0	2130
GR	363.9	2140	363.8	2150	364.3	2160	375.3	2200	374.5	2210
GR	371.1	2230	370.5	2240	372.1	2350	381.6	2460	381.6	2463

1

15FEB96 13:47:25

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AT CENTER OF ISLAND

REMOVE LEFT OVERBANK TRIB BY RAISING THALWEGS STA 1060-1250

NC 0.12 0.12 0.04 0.1 0.3

X1520289		34	1580	2410	1088	1088	1088			
X1	520289	34	2180	2360	880	1088	1088			
GR	386.5	1000	368.5	1050	368.5	1060	368.5	1160	368.5	1170
GR	368.5	1250	366.4	1260	367.2	1280	363.7	1350	363.7	1360
GR	365.5	1430	365.7	1460	366.1	1500	366.3	1570	365.4	1580

THIS SECTION NOT USED IN MODEL. THE DS SECTION 522318 IS MOVED TO THIS LOCATION AS A BETTER REPRESENTATION OF DS OF DAM BACKWATER

X1522820	33	1090	1700	502	502	502			
410.4	1000	395.6	1030	389.3	1040	369.9	1060	365.8	1070
362.8	1090	354.3	1100	349.4	1110	349.2	1120	349.1	1220
349.2	1230	349.3	1280	349.8	1310	349.9	1330	351.0	1390
351.1	1420	351.0	1430	350.9	1450	350.8	1460	350.7	1470
350.2	1520	350.1	1530	350.0	1540	349.6	1640	350.4	1650
350.4	1660	349.9	1670	354.6	1690	361.9	1700	370.4	1750
374.9	1820	374.7	1830	381.2	1885				

SECTION 522318 USED HERE AS BOUNDARY FOR DS BACKWATER

X1522318	24	1110	1320	600	600	600
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X1	522820	24	1110	1320	502	502	502			
GR	400.3	1000	372.8	1110	357.6	1170	356.2	1220	358.2	1250
GR	356.8	1260	356.6	1270	358.0	1300	363.9	1320	366.7	1380
GR	366.7	1390	365.9	1420	369.3	1470	367.4	1510	378.2	1600
GR	377.9	1650	377.1	1680	377.5	1710	377.8	1740	378.9	1780
GR	390.9	1880	391.1	1890	391.1	1900	391.6	1933		

NC 0.3 0.5

DTM JUST DS OF CREST

X1	184	33	1080	1690	88	88	88			
[184: DSF BR 84]	-	522908	<- FINAL DTM STATION					
X1	522908	33	1060	1490	88	88	88			
GR	394.1	1000	380.3	1020	377.4	1030	376.4	1050	374.5	1060
GR	364.5	1080	366.3	1100	366.9	1200	367.0	1210	368.7	1220
GR	373.8	1230	376.4	1240	365.1	1320	364.4	1340	364.4	1380
GR	371.8	1490	375.8	1570	375.8	1600	374.5	1630	365.4	1660
GR	364.3	1670	366.6	1680	370.8	1690	378.2	1700	381.4	1710
GR	381.7	1720	383.4	1730	393.0	1770	394.4	1810	393.1	1860
GR	393.1	1880	395.0	1930	395.1	1944				

NC 0.025 .025 .025

CREST OF DAM, USE SPECIAL BRIDGE

THIS MODEL BASED ON SURVEY SHEET DATED 10-14-93

SB 3.9 0.01 0.01 376.0 364.4

DTM US OF CREST
MERGE BT'S AS DEVELOPED FROM THE BRIDGE SURVEY SHEET

[284: USF BR 84] - 522950 <- FINAL DTM STATION

1

15FEB96 13:47:25

PAGE 22

X1	522950	45	1050	1650	42	42				
X2			1	360	384.7					
X3	10						480	480		
BT	-6	1000.0	392.7		1049.9	392.7		1050.0	383.0	
BT		1650	383.0		1650.1	392.7		1917.0	392.7	
GR	391.5	1000	387.3	1010	383.8	1030	383.0	1049.9	383.0	1050
GR	378.0	1070	377.9	1080	377.8	1090	377.6	1100	377.7	1110
GR	377.8	1120	377.6	1130	377.7	1160	377.9	1170	377.6	1190
GR	377.8	1200	377.7	1210	378.6	1230	378.6	1330	378.4	1340
GR	378.4	1350	378.6	1360	378.3	1370	378.2	1430	378.5	1440
GR	378.3	1450	378.3	1460	378.5	1470	378.5	1480	378.4	1490
GR	378.6	1510	378.4	1530	378.3	1540	378.1	1610	378.0	1649
GR	383.0	1650	392.1	1650.1	392.1	1710	392.1	1750	392.1	1790
GR	392.1	1800	393.0	1830	392.8	1850	392.7	1860	394.3	1917

[384: UST BR 84] - 522990 <- FINAL DTM STATION

X1	522990	45	1050	1650	40	40				
X3	10						480	480		
GR	391.5	1000	387.3	1010	383.8	1030	383.4	1040	384.0	1050
GR	378.0	1070	377.9	1080	377.8	1090	377.6	1100	377.7	1110
GR	377.8	1120	377.6	1130	377.7	1160	377.9	1170	377.6	1190
GR	377.8	1200	377.7	1210	378.6	1230	378.6	1330	378.4	1340
GR	378.4	1350	378.6	1360	378.3	1370	378.2	1430	378.5	1440

NC 0.1 0.3

SCT075 SCT 075

X1524456	34	1030	1610	956	956	956				
X1 524456	34	1030	1610	956	820	820	956			
GR 400.6	1000	394.4	1010	390.2	1020	387.1	1030	383.8	1050	
GR 373.0	1080	366.8	1190	366.7	1200	366.7	1240	369.3	1310	
GR 373.0	1330	373.9	1350	373.9	1360	373.4	1390	383.3	1500	
GR 388.1	1610	391.1	1690	390.6	1710	399.0	1750	400.2	1760	
GR 394.5	1820	398.3	1930	398.4	1970	398.5	1980	398.7	2060	
GR 400.3	2170	400.9	2220	400.9	2230	400.5	2260	400.6	2270	
GR 401.5	2310	416.5	2370	417.5	2380	416.8	2402			

X1525421	19	1000	1300	965	965	965				
X1 525421	19	1035.5	1300	900	900	965				
X4 1	380	1035.5								
GR 399.5	1000	377.5	1040	371.4	1060	369.7	1090	369.8	1100	
GR 370.4	1130	370.5	1150	370.4	1160	372.8	1260	374.2	1270	
GR 377.0	1280	385.3	1300	392.4	1410	394.4	1520	395.4	1560	
GR 404.4	1620	405.4	1650	407.6	1660	430.4	1690			

X1526404	27	1000	1270	983	983	983				
X1 526404	27	1050	1260	983	983	983				
GR 405.8	1000	378.6	1050	374.3	1060	372.3	1070	371.0	1090	
GR 371.0	1100	372.8	1150	372.8	1160	376.0	1250	379.2	1260	
GR 384.0	1270	386.5	1280	395.5	1360	395.4	1370	395.3	1380	
GR 395.2	1390	393.9	1470	393.6	1540	394.2	1560	395.6	1570	
GR 406.2	1610	408.0	1630	408.1	1640	407.8	1650	408.8	1660	
GR 419.1	1680	425.3	1707							

X1527515 19 1060 1280 1111 1111 1111

1 15FEB96 13:47:25

						2b2_ssf1n				
X1	527515	19	1092.4	1280	1150	1020	1111			
X4	1	385	1092.4							
GR	436.2	1000	399.0	1060	381.7	1100	379.4	1110	377.5	1170
GR	377.6	1180	377.8	1190	377.8	1210	377.6	1220	378.7	1250
GR	380.0	1260	385.1	1280	391.9	1390	398.9	1470	401.2	1480
GR	421.7	1510	426.6	1520	421.6	1630	421.5	1631		

X1528428 15 1310 1560 913 913 913

X1	528428	15	1310	1468.1	940	875	913			
X4	1	387	1468.1							
GR	421.2	1000	409.5	1050	397.0	1160	387.0	1230	386.7	1240
GR	387.1	1260	387.2	1287	387.5	1310	377.2	1420	376.5	1430
GR	377.0	1440	380.1	1450	422.0	1560	424.7	1570	426.8	1618

X1529003 22 1080 1290 575 575 575

X1	529003	22	1080	1290	420	700	575			
GR	411.9	1000	405.3	1030	404.7	1040	389.6	1080	383.1	1140
GR	383.2	1180	382.9	1200	382.8	1210	382.9	1220	382.9	1230
GR	382.7	1240	382.7	1260	384.0	1280	386.6	1290	406.8	1330
GR	409.1	1340	409.3	1350	409.1	1390	408.7	1420	411.6	1460
GR	429.5	1510	431.2	1524						

BRIDGE 85 STATE RT 61

THIS BRIDGE WAS NOT MODELED IN THE OLD FIS, IT WAS CONSIDERED TO BE A HIGH LEVEL BRIDGE WITH NO IMPACT ON THE WSEL.

THIS ASSUMPTION IS REASONABLE

USE DTM CL SECTION AS US AND DS FACE SECTIONS.

NO BT'S (I.E. NO PIERS)

SKEW 480/680 = 0.71

DTM DS CUT

X1529258	31	1110	1410	255	255	255				
428.4	1000	390.6	1110	385.0	1130	381.8	1160	381.8	1180	
382.5	1220	382.7	1270	382.8	1280	382.7	1290	382.5	1300	
382.6	1310	382.8	1320	382.8	1370	383.6	1390	387.8	1410	
407.2	1460	409.0	1470	410.8	1490	410.7	1500	411.1	1510	
411.0	1520	411.8	1550	418.9	1570	420.8	1580	422.1	1600	
433.0	1650	433.1	1660	431.3	1680	431.9	1700	432.0	1710	

2017 10/20

2017 10/20 10/20 10/20
2017 10/20 10/20 10/20

10/20 10/20 10/20 10/20 10/20

10/20 10/20

10/20 10/20

10/20	529258	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	441.9	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20

10/20 10/20 10/20 10/20 10/20 10/20 10/20 10/20 10/20 10/20

10/20 10/20 10/20 10/20 10/20 10/20 10/20 10/20 10/20 10/20

10/20 10/20

10/20	1529362	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20
10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20	10/20

10/20 10/20

10/20 529719 10/20 10/20 10/20 10/20 10/20 10/20

				2021			2020			
27	421.7	1670	421.7	1670	171.1	1099	170.2	1078	525.1	1670
27	101.5	110	101.5	110	101.0	100	101.1	125	100.0	100
27	101.5	110	101.5	110	421.7	1100	420.1	150	420.5	1100
28	421.7	1670	421.7	1670	421.7	1115				

		14	2022	1132	210	210	110			
21	1100.0	14	1100.0	1132	110	27	60			
21	1100.0	14	1100.0							
21	421.7	1670	421.7	1670	421.7	1078	100.1	1100	141.0	1100
21	101.5	110	101.5	110	101.0	100	100.1	110	100.4	110
21	421.7	1670	421.7	1670	421.7	1115	401.0	100		

.....
 511010 511010

		14	2022	1132	210	210	110			
21	1100.0	14	1100.0	1132	110	27	60			
21	1100.0	14	1100.0							
21	421.7	1670	421.7	1670	421.7	1078	100.1	1100	141.0	1100
21	101.5	110	101.5	110	101.0	100	100.1	110	100.4	110
21	421.7	1670	421.7	1670	421.7	1115	401.0	100		

		14	2022	1132	210	210	110			
21	1100.0	14	1100.0	1132	110	27	60			
21	1100.0	14	1100.0							
21	421.7	1670	421.7	1670	421.7	1078	100.1	1100	141.0	1100
21	101.5	110	101.5	110	101.0	100	100.1	110	100.4	110
21	421.7	1670	421.7	1670	421.7	1115	401.0	100		

E – FEMA Effective Model HEC-2 Output Data

516481.000	516481.00	23200.00	358.76	345.90	.00	.00	359.45	7.48	.00	12.86	1222.69
1813.48											
516481.000	516481.00	36300.00	362.06	345.90	.00	.00	362.93	8.45	356.17	16.16	1214.91
1837.94											
516481.000	516481.00	42800.00	363.53	345.90	.00	.00	364.47	8.84	357.06	17.63	1211.46
1842.87											
516481.000	516481.00	60200.00	367.16	345.90	.00	.00	368.26	9.68	359.01	21.26	1202.91
1855.09											
* 516732.000	516732.00	23200.00	359.27	343.70	.00	.00	359.80	5.98	.00	15.57	1032.86
1668.54											
516732.000	516732.00	36300.00	362.43	343.70	.00	.00	363.25	7.49	353.64	18.73	1027.93
1681.10											
516732.000	516732.00	42800.00	363.83	343.70	.00	.00	364.79	8.10	354.70	20.13	1025.73
1686.68											
516732.000	516732.00	60200.00	367.38	343.70	.00	.00	368.66	9.42	357.04	23.68	1020.19
1700.78											
517761.000	517761.00	23200.00	360.15	344.50	.00	.00	360.75	6.49	.00	15.65	1056.98
1542.85											
517761.000	517761.00	36300.00	363.46	344.50	.00	.00	364.32	7.84	355.62	18.96	1046.82
1960.91											
517761.000	517761.00	42800.00	364.92	344.50	.00	.00	365.88	8.38	356.59	20.42	1044.77
1969.34											
517761.000	517761.00	60200.00	368.57	344.50	.00	.00	369.80	9.52	358.96	24.07	1039.76
1990.47											
518732.000	518732.00	23200.00	361.49	346.90	.00	.00	362.19	7.12	.00	14.59	1447.11
1936.97											
518732.000	518732.00	36300.00	364.79	346.90	.00	.00	365.69	8.06	358.79	17.89	1404.02
2251.83											
518732.000	518732.00	42800.00	366.24	346.90	.00	.00	367.23	8.45	359.61	19.34	1302.25
2265.11											
518732.000	518732.00	60200.00	369.94	346.90	.00	.00	371.04	9.08	361.68	23.04	1050.77
2283.17											
519201.000	519201.00	23200.00	362.23	349.40	.00	.00	363.62	9.51	.00	12.83	1455.45
2101.50											
519201.000	519201.00	36300.00	365.35	349.40	.00	.00	366.91	10.41	361.83	15.95	1438.44
2163.83											
519201.000	519201.00	42800.00	366.77	349.40	.00	.00	368.35	10.68	362.92	17.37	1430.73
2168.97											

					2b2_ssf1n							
522820.000	522820.00	60200.00	381.28	356.20	.00	.00	382.87	11.05	373.21	25.08	1076.08	
1799.83												
* 522908.000	522908.00	23200.00	374.33	364.30	.00	.00	375.27	7.93	.00	10.03	1060.34	
1694.77												
* 522908.000	522908.00	36300.00	377.36	364.30	.00	.00	378.39	8.39	373.39	13.06	1030.78	
1698.87												
* 522908.000	522908.00	42800.00	378.74	364.30	.00	.00	379.80	8.56	374.19	14.44	1025.39	
1701.68												
522908.000	522908.00	60200.00	381.94	364.30	.00	.00	383.13	9.13	376.07	17.64	1017.62	
1721.41												
* 522950.000	522950.00	23200.00	387.34	377.60	360.00	384.70	387.62	4.27	.00	9.74	1050.00	
1650.00												
* 522950.000	522950.00	36300.00	388.70	377.60	360.00	384.70	389.22	5.81	.00	11.10	1050.00	
1650.00												
* 522950.000	522950.00	42800.00	389.29	377.60	360.00	384.70	389.94	6.48	.00	11.69	1050.00	
1650.00												
* 522950.000	522950.00	60200.00	390.75	377.60	360.00	384.70	391.75	8.05	.00	13.15	1050.00	
1650.00												
522990.000	522990.00	23200.00	387.35	377.60	.00	.00	387.63	4.28	.00	9.75	1050.00	
1650.00												
522990.000	522990.00	36300.00	388.71	377.60	.00	.00	389.24	5.81	383.12	11.11	1050.00	
1650.00												
* 522990.000	522990.00	42800.00	389.31	377.60	.00	.00	389.96	6.48	383.69	11.71	1050.00	
1650.00												
522990.000	522990.00	60200.00	390.77	377.60	.00	.00	391.78	8.05	385.09	13.17	1050.00	
1650.00												
* 523500.000	523500.00	23200.00	387.71	367.60	.00	.00	387.78	2.13	.00	20.11	1023.85	
1831.61												
* 523500.000	523500.00	36300.00	389.35	367.60	.00	.00	389.48	2.99	376.30	21.74	1020.97	
1846.99												
* 523500.000	523500.00	42800.00	390.08	367.60	.00	.00	390.26	3.36	376.94	22.48	1019.75	
1853.89												
* 523500.000	523500.00	60200.00	391.92	367.60	.00	.00	392.20	4.24	378.47	24.32	1017.19	
1870.71												
* 524456.000	524456.00	23200.00	387.79	366.70	.00	.00	387.95	3.23	.00	21.09	1027.79	
1602.81												
* 524456.000	524456.00	36300.00	389.47	366.70	.00	.00	389.77	4.45	377.33	22.77	1022.36	
1646.48												

					2b2_ssf1n							
* 524456.000	524456.00	42800.00	390.22	366.70	.00	.00	390.60	4.98	378.20	23.52	1019.95	
1666.54												
* 524456.000	524456.00	60200.00	392.09	366.70	.00	.00	392.69	6.20	380.18	25.39	1015.50	
1717.09												
* 525421.000	525421.00	23200.00	387.92	369.70	.00	.00	388.41	5.63	.00	18.22	1021.08	
1340.63												
* 525421.000	525421.00	36300.00	389.61	369.70	.00	.00	390.59	7.93	380.48	19.91	1018.00	
1366.84												
* 525421.000	525421.00	42800.00	390.35	369.70	.00	.00	391.58	8.95	381.53	20.65	1016.66	
1378.18												
* 525421.000	525421.00	60200.00	392.09	369.70	.00	.00	394.10	11.43	384.05	22.39	1013.49	
1405.20												
526404.000	526404.00	23200.00	388.46	371.00	.00	.00	389.29	7.31	.00	17.46	1031.87	
1297.45												
526404.000	526404.00	36300.00	390.50	371.00	.00	.00	392.04	10.02	383.22	19.50	1028.12	
1315.57												
526404.000	526404.00	42800.00	391.40	371.00	.00	.00	393.31	11.20	384.37	20.40	1026.48	
1323.53												
526404.000	526404.00	60200.00	393.55	371.00	.00	.00	396.51	13.98	387.16	22.55	1022.52	
1342.64												
* 527515.000	527515.00	23200.00	389.70	377.50	.00	.00	391.70	11.42	.00	12.20	1081.51	
1354.47												
* 527515.000	527515.00	36300.00	392.38	377.50	.00	.00	395.37	14.06	389.61	14.88	1075.31	
1395.51												
* 527515.000	527515.00	42800.00	393.57	377.50	.00	.00	396.97	15.08	390.82	16.07	1072.57	
1409.08												
527515.000	527515.00	60200.00	396.42	377.50	.00	.00	400.82	17.33	393.94	18.92	1065.97	
1441.69												
528428.000	528428.00	23200.00	393.30	376.50	.00	.00	395.27	11.64	.00	16.80	1185.92	
1484.63												
528428.000	528428.00	36300.00	396.51	376.50	.00	.00	399.22	13.86	393.15	20.01	1163.45	
1493.06												
528428.000	528428.00	42800.00	397.86	376.50	.00	.00	400.91	14.80	394.35	21.36	1152.46	
1496.61												
528428.000	528428.00	60200.00	401.02	376.50	.00	.00	404.92	16.95	397.36	24.52	1124.64	
1504.91												

ENDST	SECNO	CUMDS	Q	CWSEL	ELMIN	ELLC	ELTRD	EG	VCH	CRWS	DEPTH	SSTA
529003.000	529003.00	23200.00	395.67	382.70	.00	.00	397.04	9.45	.00	12.97	1063.93	
1307.96	529003.000	529003.00	36300.00	399.07	382.70	.00	.00	401.05	11.37	393.82	16.37	1054.91
1314.69	529003.000	529003.00	42800.00	400.50	382.70	.00	.00	402.78	12.21	394.96	17.80	1051.12
1317.53	529003.000	529003.00	60200.00	403.81	382.70	.00	.00	406.87	14.20	397.68	21.11	1042.35
1324.08	529258.000	529258.00	23200.00	396.58	381.50	.00	.00	397.55	7.95	.00	15.08	1100.31
1347.70	529258.000	529258.00	36300.00	400.13	381.50	.00	.00	401.61	9.81	392.64	18.63	1093.05
1353.77	529258.000	529258.00	42800.00	401.63	381.50	.00	.00	403.36	10.61	393.74	20.13	1089.98
1356.34	529258.000	529258.00	60200.00	405.13	381.50	.00	.00	407.51	12.50	396.47	23.63	1082.84
1362.39	529362.000	529362.00	23200.00	396.75	381.50	.00	.00	397.70	7.84	.00	15.25	1099.95
1347.99	529362.000	529362.00	36300.00	400.33	381.50	.00	.00	401.77	9.69	392.62	18.83	1092.63
1354.13	529362.000	529362.00	42800.00	401.85	381.50	.00	.00	403.53	10.48	393.74	20.35	1089.53
1356.72	529362.000	529362.00	60200.00	405.38	381.50	.00	.00	407.70	12.36	396.47	23.88	1082.35
1362.92	529719.000	529719.00	23200.00	397.19	380.20	.00	.00	398.29	8.44	.00	16.99	1053.35
1298.11	529719.000	529719.00	36300.00	400.80	380.20	.00	.00	402.42	10.27	393.93	20.60	1047.47
1305.63	529719.000	529719.00	42800.00	402.33	380.20	.00	.00	404.20	11.06	395.06	22.13	1044.98
1308.82	529719.000	529719.00	60200.00	405.90	380.20	.00	.00	408.44	12.92	397.81	25.70	1039.18
1433.38	530555.000	530555.00	23200.00	398.62	381.90	.00	.00	399.51	7.65	.00	16.72	1063.38
1362.42												

F – DEP Duplicate Effective Model HEC-RAS Input and Output Data

HEC-RAS HEC-RAS 5.0.3 September 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

X	X	XXXXXX	XXXX	XXXX	XX	XXXX
X	X	X	X X	X X	X X	X
X	X	X	X	X X	X X	X
XXXXXXXX	XXXX	X	XXX	XXXX	XXXXXX	XXXX
X	X	X	X	X X	X X	X
X	X	X	X X	X X	X X	X
X	X	XXXXXX	XXXX	X X	X X	XXXXX

PROJECT DATA

Project Title: New Kernsville Dam
Project File : NewKernsvilleDam.prj
Run Date and Time: 5/8/2018 8:44:56 AM

Project in English units

Project Description:
New Kernsville Dam Removal
D06-434
Tilden and Windsor Townships
Berks
County, PA

Schuylkill River FEMA FIS Flows from Downstream of Little
Schuylkill River to Upstream of Maiden Creek

10-Year = 23,200 CFS
50-Year
=36,300 CFS
100-Year = 42,800 CFS
500-Year = 60,200 CFS

PLAN DATA

Plan Title: Duplicate Effective Run
Plan File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology &
Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.p01

Geometry Title: Duplicate Effective Model
Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville
Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g01

Flow Title : FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Plan Summary Information:

Number of: Cross Sections = 18 Multiple Openings = 0
 Culverts = 0 Inline Structures = 0
 Bridges = 1 Lateral Structures = 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: Between every coordinate point (HEC2 Style)
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Flow Data (cfs)

River	Reach	RS	10-Year	50-Year	100-Year
500-Year Schuylkill River	Reach 1	53	23200	36300	42800
60200					

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Schuylkill River	Reach 1	10-Year	Known WS = 397.19	Known WS = 362.23
Schuylkill River	Reach 1	50-Year	Known WS = 400.8	Known WS = 365.35
Schuylkill River	Reach 1	100-Year	Known WS = 402.33	Known WS = 366.77
Schuylkill River	Reach 1	500-Year	Known WS = 405.9	Known WS = 370.37

GEOMETRY DATA

Geometry Title: Duplicate Effective Model

Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g01

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 53

INPUT

Description: 529719

Station Elevation Data		num= 18		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	425.2	1020	417.7	1060	393.1	1070	390.2	1130	385.6		
1150	381.1	1160	380.2	1220	382.9	1240	382.9	1260	384		
1270	385.5	1280	388.5	1320	407.7	1330	408.9	1340	408.8		
1430	405.7	1490	409.3	1516	418.8						

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1070	.04	1280	.12				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1070	1280		320	357		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 52

INPUT

Description: 529362 (Upstream of Rt. 61 Bridge)

Station Elevation Data		num= 27		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5		
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8		
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405		
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6		
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7		
1646.1	434.8	1651.07	434.9								

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		104	104		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 51

INPUT

Description: 529258 (Downstream of Rt. 61 Bridge) Skewed

Station Elevation Data		num= 27							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7
1646.1	434.8	1651.07	434.9						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		255	255		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 50

INPUT

Description: 529003

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	411.9	1030	405.3	1040	404.7	1080	389.6	1140	383.1
1180	383.2	1200	382.9	1210	382.8	1220	382.9	1230	382.9
1240	382.7	1260	382.7	1280	384	1290	386.6	1330	406.8
1340	409.1	1350	409.3	1390	409.1	1420	408.7	1460	411.6
1510	429.5	1524	431.2						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1080	.04	1290	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1080	1290		420	575		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 49

INPUT

Description: 528428

Station Elevation Data		num= 16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	421.2	1050	409.5	1160	397	1230	387	1240	386.7
1260	387.1	1287	387.2	1310	387.5	1420	377.2	1430	376.5

1440 377 1450 380.1 1468.1 387 1560 422 1570 424.7
 1618 426.8

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1310 .04 1468.1 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1310 1468.1 940 913 875 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48

INPUT

Description: 527515

Station Elevation Data num= 20
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 436.2 1060 399 1092.4 385 1100 381.7 1110 379.4
 1170 377.5 1180 377.6 1190 377.8 1210 377.8 1220 377.6
 1250 378.7 1260 380 1280 385.1 1390 391.9 1470 398.9
 1480 401.2 1510 421.7 1520 426.6 1630 421.6 1631 421.5

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1092.4 .04 1280 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1092.4 1280 1150 1111 1020 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 47

INPUT

Description: 526404

Station Elevation Data num= 27
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 405.8 1050 378.6 1060 374.3 1070 372.3 1090 371
 1100 371 1150 372.8 1160 372.8 1250 376 1260 379.2
 1270 384 1280 386.5 1360 395.5 1370 395.4 1380 395.3
 1390 395.2 1470 393.9 1540 393.6 1560 394.2 1570 395.6
 1610 406.2 1630 408 1640 408.1 1650 407.8 1660 408.8
 1680 419.1 1707 425.3

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1050 .04 1260 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1050 1260 983 983 983 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 46

INPUT

Description: 525421

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	399.5	1035.5	380	1040	377.5	1060	371.4	1090	369.7
1100	369.8	1130	370.4	1150	370.5	1160	370.4	1260	372.8
1270	374.2	1280	377	1300	385.3	1410	392.4	1520	394.4
1560	395.4	1620	404.4	1650	405.4	1660	407.6	1690	430.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1035.5	.04	1300	.12

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

1035.5	1300	900	965	900	.1	.3
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 45

INPUT

Description: 524456

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.6	1010	394.4	1020	390.2	1030	387.1	1050	383.8
1080	373	1190	366.8	1200	366.7	1240	366.7	1310	369.3
1330	373	1350	373.9	1360	373.9	1390	373.4	1500	383.3
1610	388.1	1690	391.1	1710	390.6	1750	399	1760	400.2
1820	394.5	1930	398.3	1970	398.4	1980	398.5	2060	398.7
2170	400.3	2220	400.9	2230	400.9	2260	400.5	2270	400.6
2310	401.5	2370	416.5	2380	417.5	2402	416.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1610	.12

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

1030	1610	820	956	820	.1	.3
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 44

INPUT

Description: 523500

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	404.3	1020	389.9	1030	384.2	1090	371.6	1160	367.6

NewKernsvilleDam.rep

1270	367.8	1380	372	1400	372.4	1420	372.2	1450	372.8
1480	373	1590	375.1	1700	378.5	1810	385.4	1870	391.8
1890	395.3	1940	396.9	1960	396.9	1990	398	2000	398
2040	398	2050	398	2110	400.7	2120	401	2170	401
2260	404.7	2270	404.7	2380	407.7	2399	408		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1810	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1030	1810		510	510		.3	.5

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 43

INPUT
 Description: 522990

Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.5	1010	387.3	1030	383.8	1040	383.4	1050	384
1070	378	1080	377.9	1090	377.8	1100	377.6	1110	377.7
1120	377.8	1130	377.6	1160	377.7	1170	377.9	1190	377.6
1200	377.8	1210	377.7	1230	378.6	1330	378.6	1340	378.4
1350	378.4	1360	378.6	1370	378.3	1430	378.2	1440	378.5
1450	378.3	1460	378.3	1470	378.5	1480	378.5	1490	378.4
1510	378.6	1530	378.4	1540	378.3	1610	378.1	1649	378
1650	383	1700	392.1	1710	392.1	1750	392.1	1790	392.1
1800	392.1	1830	393	1850	392.8	1860	392.7	1917	394.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.025	1050	.025	1650	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1050	1650		40	40		.3	.5

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 42

INPUT
 Description: 522950 (Upstream of Dam)

Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.5	1010	387.3	1030	383.8	1049.9	383	1050	383
1070	378	1080	377.9	1090	377.8	1100	377.6	1110	377.7
1120	377.8	1130	377.6	1160	377.7	1170	377.9	1190	377.6
1200	377.8	1210	377.7	1230	378.6	1330	378.6	1340	378.4
1350	378.4	1360	378.6	1370	378.3	1430	378.2	1440	378.5
1450	378.3	1460	378.3	1470	378.5	1480	378.5	1490	378.4
1510	378.6	1530	378.4	1540	378.3	1610	378.1	1649	378

NewKernsvilleDam.rep

1650	383	1650.1	392.1	1710	392.1	1750	392.1	1790	392.1
1800	392.1	1830	393	1850	392.8	1860	392.7	1917	394.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.025	1050	.025	1650	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1050	1650		42	42		.3	.5

BRIDGE

RIVER: Schuylkill River
 REACH: Reach 1 RS: 41.5

INPUT

Description: 522950 (New Kernsville Dam)
 Distance from Upstream XS = .001
 Deck/Roadway Width = 41.99
 Weir Coefficient = 3.9

Upstream Deck/Roadway Coordinates num= 8

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000		392.7			1049.9		392.7			1050		383		
1200		383		377.9	1210		383		377.8	1650		383		
1650.1		392.7			1917		392.7							

Upstream Bridge Cross Section Data

Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.5	1010	387.3	1030	383.8	1049.9	383	1050	383
1070	378	1080	377.9	1090	377.8	1100	377.6	1110	377.7
1120	377.8	1130	377.6	1160	377.7	1170	377.9	1190	377.6
1200	377.8	1210	377.7	1230	378.6	1330	378.6	1340	378.4
1350	378.4	1360	378.6	1370	378.3	1430	378.2	1440	378.5
1450	378.3	1460	378.3	1470	378.5	1480	378.5	1490	378.4
1510	378.6	1530	378.4	1540	378.3	1610	378.1	1649	378
1650	383	1650.1	392.1	1710	392.1	1750	392.1	1790	392.1
1800	392.1	1830	393	1850	392.8	1860	392.7	1917	394.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.025	1050	.025	1650	.025

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1050	1650		.3	.5

Downstream Deck/Roadway Coordinates num= 8

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000		392.7			1049.9		392.7			1050		383		
1200		383		367	1210		383		367.1	1650		383		
1650.1		392.7			1917		392.7							

Downstream Bridge Cross Section Data
 Station Elevation Data num= 33

NewKernsvilleDam.rep

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.1	1020	380.3	1030	377.4	1050	376.4	1060	374.5
1080	364.5	1100	366.3	1200	366.9	1210	367	1220	368.7
1230	373.8	1240	376.4	1320	365.1	1340	364.4	1380	364.4
1490	371.8	1570	375.8	1600	375.8	1630	374.5	1660	365.4
1670	364.3	1680	366.6	1690	370.8	1700	378.2	1710	381.4
1720	381.7	1730	383.4	1770	393	1810	394.4	1860	393.1
1880	393.1	1930	395	1944	395.1				

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1060 .04 1490 .12

Bank Sta: Left Right Coeff Contr. Expan.
 1060 1490 .3 .5

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = 1
 Elevation at which weir flow begins = 383
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
 Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow
 Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .8
 Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum
 Do not add Weight component to Momentum
 Class B flow critical depth computations use critical depth
 inside the bridge at the upstream end
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 41

INPUT

Description: 522908 (Downstream of Dam Crest)

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.1	1020	380.3	1030	377.4	1050	376.4	1060	374.5
1080	364.5	1100	366.3	1200	366.9	1210	367	1220	368.7
1230	373.8	1240	376.4	1320	365.1	1340	364.4	1380	364.4
1490	371.8	1570	375.8	1600	375.8	1630	374.5	1660	365.4

1670	364.3	1680	366.6	1690	370.8	1700	378.2	1710	381.4
1720	381.7	1730	383.4	1770	393	1810	394.4	1860	393.1
1880	393.1	1930	395	1944	395.1				

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
1000	.12	1060	.04
		1490	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1060	1490		88	88		.3	.5

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 40

INPUT
 Description: 522820

Station Elevation Data

num=		24							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
1000	.12	1110	.04
		1320	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1110	1320		502	502		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 39

INPUT
 Description: 522318

Station Elevation Data

num=		24							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
1000	.12	1110	.04
		1320	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1110	1320		600	600		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 38

INPUT

Description: 521718 (Upstream of Island)

Station Elevation Data		num= 39							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.5	1110	389.2	1170	384.4	1180	384.6	1230	372
1280	370.5	1390	370.9	1410	370.9	1490	369.3	1540	360.2
1550	360.1	1560	360.2	1590	360.3	1600	360.5	1610	360.4
1620	360.2	1640	360.8	1650	360.8	1690	359.7	1700	359.9
1710	361.4	1726.6	369	1740	375.1	1770	377.9	1780	377
1790	374.4	1900	369.6	1920	369.4	2010	369.5	2040	370.7
2120	383.6	2130	384.1	2240	381.6	2300	376.7	2310	377
2330	380.1	2340	384.2	2380	411.5	2382	411.3		

Manning's n Values		num= 4					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1490	.04	1726.6	.12	1770	100

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1490	1726.6		1100	1429		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 37

INPUT

Description: 520289 (Center of Island)

Station Elevation Data		num= 34							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	386.5	1050	368.5	1060	368.5	1160	368.5	1170	368.5
1250	368.5	1260	366.4	1280	367.2	1350	363.7	1360	363.7
1430	365.5	1460	365.7	1500	366.1	1570	366.3	1580	365.4
1620	356.7	1630	356.2	1640	356.2	1720	366.5	1730	366.6
1830	366.5	1860	366.8	1890	366.8	1980	365.3	1990	365.3
2060	366.3	2070	366.3	2180	360.7	2290	354.5	2330	356.9
2340	356.9	2360	358.3	2410	373.8	2465	398		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	2180	.04	2360	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2180	2360		880	1088		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 36

INPUT

Description: 519201 (At Toe of Island)

Station Elevation Data num= 40									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.8	1010	386.8	1020	383.3	1060	375.3	1170	369.5
1230	367.8	1260	367.8	1300	367.8	1310	367.8	1320	367.8
1340	367.8	1350	367.8	1420	367.8	1430	366.9	1460	361.4
1470	361.4	1510	361.4	1530	361.4	1590	361.4	1620	361.4
1710	361.4	1720	361.4	1760	361.4	1770	361	1830	350.1
1850	349.4	1960	352.9	2000	354.3	2030	357.8	2130	364
2140	363.9	2150	363.8	2160	364.3	2200	375.3	2210	374.5
2230	371.1	2240	370.5	2350	372.1	2460	381.6	2463	381.6

Manning's n Values num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1770	.04	2030	.12	2200	.100

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1770	2030		0	0		.1	.3

SUMMARY OF MANNING'S N VALUES

River:Schuylkill River

Reach	River Sta.	n1	n2	n3	n4
Reach 1	53	.12	.04	.12	
Reach 1	52	.12	.04	.12	
Reach 1	51	.12	.04	.12	
Reach 1	50	.12	.04	.12	
Reach 1	49	.12	.04	.12	
Reach 1	48	.12	.04	.12	
Reach 1	47	.12	.04	.12	
Reach 1	46	.12	.04	.12	
Reach 1	45	.12	.04	.12	
Reach 1	44	.12	.04	.12	
Reach 1	43	.025	.025	.025	
Reach 1	42	.025	.025	.025	
Reach 1	41.5	Bridge			
Reach 1	41	.12	.04	.12	
Reach 1	40	.12	.04	.12	
Reach 1	39	.12	.04	.12	
Reach 1	38	.12	.04	.12	100
Reach 1	37	.12	.04	.12	
Reach 1	36	.12	.04	.12	100

SUMMARY OF REACH LENGTHS

River: Schuylkill River

Reach	River Sta.	Left	Channel	Right
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NewKernsvilleDam.rep

Reach 1	53	320	357	390
Reach 1	52	104	104	104
Reach 1	51	255	255	255
Reach 1	50	420	575	700
Reach 1	49	940	913	875
Reach 1	48	1150	1111	1020
Reach 1	47	983	983	983
Reach 1	46	900	965	900
Reach 1	45	820	956	820
Reach 1	44	510	510	510
Reach 1	43	40	40	40
Reach 1	42	42	42	42
Reach 1	41.5	Bridge		
Reach 1	41	88	88	88
Reach 1	40	502	502	502
Reach 1	39	600	600	600
Reach 1	38	1100	1429	1390
Reach 1	37	880	1088	1088
Reach 1	36	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Schuylkill River

Reach	River Sta.	Contr.	Expan.
Reach 1	53	.1	.3
Reach 1	52	.1	.3
Reach 1	51	.1	.3
Reach 1	50	.1	.3
Reach 1	49	.1	.3
Reach 1	48	.1	.3
Reach 1	47	.1	.3
Reach 1	46	.1	.3
Reach 1	45	.1	.3
Reach 1	44	.3	.5
Reach 1	43	.3	.5
Reach 1	42	.3	.5
Reach 1	41.5	Bridge	
Reach 1	41	.3	.5
Reach 1	40	.1	.3
Reach 1	39	.1	.3
Reach 1	38	.1	.3
Reach 1	37	.1	.3
Reach 1	36	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev
E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #	Chl		
(ft/ft)	(ft/s)	(sq ft)	(cfs)	(ft)	(ft)	(ft)	(ft)

Reach 1 0.001707	53 8.44	10-Year 2873.36	23200.00 244.77	380.20 0.41	397.19	398.29
Reach 1 0.001820	53 10.27	50-Year 3782.44	36300.00 258.18	380.20 0.44	400.81	402.42
Reach 1 0.001876	53 11.05	100-Year 4181.79	42800.00 263.85	380.20 0.46	402.34	404.21
Reach 1 0.002015	53 12.91	500-Year 5147.90	60200.00 286.53	380.20 0.49	405.91	408.44
Reach 1 0.001361	52 7.84	10-Year 3097.92	23200.00 248.05	381.50 0.37	396.76	397.70
Reach 1 0.001526	52 9.69	50-Year 4010.36	36300.00 261.49	381.50 0.41	400.34	401.78
Reach 1 0.001598	52 10.48	100-Year 4410.60	42800.00 267.17	381.50 0.43	401.85	403.53
Reach 1 0.001765	52 12.35	500-Year 5377.31	60200.00 280.62	381.50 0.46	405.38	407.71
Reach 1 0.001420	51 7.95	10-Year 3055.10	23200.00 247.40	381.50 0.38	396.58	397.56
Reach 1 0.001587	51 9.81	50-Year 3957.76	36300.00 260.73	381.50 0.42	400.14	401.61
Reach 1 0.001661	51 10.61	100-Year 4353.58	42800.00 266.37	381.50 0.43	401.64	403.36
Reach 1 0.001833	51 12.50	500-Year 5308.32	60200.00 279.57	381.50 0.47	405.14	407.51
Reach 1 0.002480	50 9.45	10-Year 2564.60	23200.00 244.03	382.70 0.49	395.67	397.05
Reach 1 0.002542	50 11.37	50-Year 3422.77	36300.00 259.80	382.70 0.52	399.08	401.06
Reach 1 0.002595	50 12.20	100-Year 3798.99	42800.00 266.42	382.70 0.53	400.51	402.78
Reach 1 0.002750	50 14.19	500-Year 4706.50	60200.00 281.75	382.70 0.56	403.82	406.88
Reach 1 0.003741	49 11.64	10-Year 2545.16	23200.00 298.75	376.50 0.60	393.30	395.27
Reach 1 0.003843	49 13.86	50-Year 3555.14	36300.00 329.69	376.50 0.63	396.52	399.22
Reach 1 0.003909	49 14.80	100-Year 4007.94	42800.00 344.18	376.50 0.65	397.86	400.91
Reach 1 0.004046	49 16.95	500-Year 5153.93	60200.00 380.33	376.50 0.68	401.02	404.92
Reach 1 0.004049	48 11.41	10-Year 2206.39	23200.00 273.05	377.50 0.61	389.71	391.71
Reach 1 0.004651	48 14.14	50-Year 2979.36	36300.00 319.23	377.50 0.68	392.31	395.34
Reach 1	48	100-Year	42800.00	377.50	393.56	396.97

NewKernsvilleDam.rep

0.004693	15.09	3390.07	336.44	0.70			
Reach 1	48	500-Year	60200.00	377.50	396.41	393.93	400.82
0.004895	17.35	4401.15	375.48	0.73			
Reach 1	47	10-Year	23200.00	371.00	388.47		389.30
0.001060	7.31	3351.79	265.69	0.33			
Reach 1	47	50-Year	36300.00	371.00	390.37		391.94
0.001728	10.10	3876.21	286.08	0.43			
Reach 1	47	100-Year	42800.00	371.00	391.39		393.31
0.001965	11.20	4173.33	297.01	0.47			
Reach 1	47	500-Year	60200.00	371.00	393.51		396.49
0.002645	14.00	4826.50	319.74	0.55			
Reach 1	46	10-Year	23200.00	369.70	387.93		388.43
0.000603	5.63	4221.77	319.76	0.25			
Reach 1	46	50-Year	36300.00	369.70	389.45		390.44
0.001078	8.01	4727.19	346.04	0.34			
Reach 1	46	100-Year	42800.00	369.70	390.34		391.58
0.001261	8.96	5041.60	361.43	0.37			
Reach 1	46	500-Year	60200.00	369.70	392.04		394.06
0.001831	11.46	5679.85	390.81	0.46			
Reach 1	45	10-Year	23200.00	366.70	387.80		387.96
0.000260	3.23	7193.54	575.35	0.16			
Reach 1	45	50-Year	36300.00	366.70	389.29		389.61
0.000444	4.50	8083.23	618.79	0.21			
Reach 1	45	100-Year	42800.00	366.70	390.22		390.60
0.000497	4.98	8668.49	646.44	0.23			
Reach 1	45	500-Year	60200.00	366.70	392.03		392.63
0.000666	6.22	9908.27	701.18	0.27			
Reach 1	44	10-Year	23200.00	367.60	387.72		387.79
0.000098	2.13	10914.07	807.90	0.10			
Reach 1	44	50-Year	36300.00	367.60	389.16		389.30
0.000173	3.02	12090.78	823.95	0.14			
Reach 1	44	100-Year	42800.00	367.60	390.08		390.25
0.000199	3.36	12850.33	834.09	0.15			
Reach 1	44	500-Year	60200.00	367.60	391.86		392.15
0.000277	4.26	14358.84	853.10	0.18			
Reach 1	43	10-Year	23200.00	377.60	387.38		387.65
0.000268	4.21	5605.39	664.24	0.25			
Reach 1	43	50-Year	36300.00	377.60	388.54		389.06
0.000433	5.80	6384.15	673.41	0.32			
Reach 1	43	100-Year	42800.00	377.60	389.37		389.98
0.000461	6.30	6943.43	679.92	0.33			
Reach 1	43	500-Year	60200.00	377.60	390.84		391.76
0.000592	7.76	7951.59	691.50	0.39			
Reach 1	42	10-Year	23200.00	377.60	387.37	381.86	387.64
0.000269	4.22	5559.29	640.20	0.25			

NewKernsvilleDam.rep

Reach 1 0.000439	42 5.83	50-Year 6297.04	36300.00 642.95	377.60 0.32	388.51	383.12	389.04
Reach 1 0.000469	42 6.35	100-Year 6824.70	42800.00 644.91	377.60 0.34	389.33	383.72	389.95
Reach 1 0.000611	42 7.86	500-Year 7755.27	60200.00 648.36	377.60 0.39	390.77	385.09	391.72
Reach 1	41.5		Bridge				
Reach 1 0.003549	41 7.93	10-Year 3238.63	23200.00 521.93	364.40 0.53	374.33		375.27
Reach 1 0.002585	41 8.39	50-Year 5082.40	36300.00 668.09	364.40 0.48	377.36		378.39
Reach 1 0.002247	41 8.56	100-Year 6007.76	42800.00 676.29	364.40 0.46	378.74		379.81
Reach 1 0.001809	41 9.13	500-Year 8209.91	60200.00 703.81	364.40 0.43	381.94		383.14
Reach 1 0.000970	40 6.83	10-Year 4693.94	23200.00 463.82	356.20 0.32	374.33		374.98
Reach 1 0.001219	40 8.64	50-Year 6087.37	36300.00 512.69	356.20 0.36	377.22		378.24
Reach 1 0.001321	40 9.41	100-Year 6809.60	42800.00 675.26	356.20 0.38	378.43		379.62
Reach 1 0.001506	40 11.05	500-Year 8825.78	60200.00 723.82	356.20 0.42	381.29		382.87
Reach 1 0.001134	39 7.18	10-Year 4415.01	23200.00 456.34	356.20 0.34	373.72		374.45
Reach 1 0.001451	39 9.14	50-Year 5687.09	36300.00 489.52	356.20 0.39	376.41		377.56
Reach 1 0.001591	39 9.99	100-Year 6247.58	42800.00 550.79	356.20 0.42	377.52		378.88
Reach 1 0.001856	39 11.83	500-Year 8020.80	60200.00 709.97	356.20 0.46	380.16		382.01
Reach 1 0.002721	38 9.22	10-Year 3293.27	23200.00 709.26	359.70 0.50	372.09		373.39
Reach 1 0.003427	38 11.67	50-Year 4845.86	36300.00 782.69	359.70 0.58	374.17		376.19
Reach 1 0.003798	38 12.79	100-Year 5472.47	42800.00 799.96	359.70 0.62	374.96		377.36
Reach 1 0.004788	38 15.57	500-Year 6877.86	60200.00 841.12	359.70 0.71	376.67	374.61	380.15
Reach 1 0.005178	37 11.76	10-Year 3273.31	23200.00 893.55	354.50 0.68	366.38	364.58	368.20
Reach 1 0.004573	37 12.89	50-Year 5996.56	36300.00 1344.59	354.50 0.67	368.78	367.62	370.73
Reach 1	37	100-Year	42800.00	354.50	369.91		371.77

0.004118	13.01	7514.76	1351.36	0.64			
Reach 1	37	500-Year	60200.00	354.50	372.87		374.47
0.003060	12.89	11538.22	1369.11	0.57			
Reach 1	36	10-Year	23200.00	349.40	362.23	359.16	363.62
0.003412	9.52	2819.26	645.98	0.55			
Reach 1	36	50-Year	36300.00	349.40	365.35	361.83	366.91
0.002771	10.41	4969.07	725.36	0.52			
Reach 1	36	100-Year	42800.00	349.40	366.77	362.97	368.36
0.002520	10.68	6008.24	738.27	0.51			
Reach 1	36	500-Year	60200.00	349.40	370.37	365.27	371.95
0.001975	11.04	9320.97	1028.57	0.47			

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : Duplicate Ef

River: Schuylkill River Reach: Reach 1 RS: 53 Profile: 500-Year
Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 50-Year
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 100-Year
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 500-Year
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 10-Year
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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 50-Year
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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 100-Year
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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 500-Year
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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 10-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 100-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 50-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 100-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 100-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 500-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 100-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 10-Year

Warning:The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was

small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 10-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 10-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 50-Year

Warning:The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 50-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 50-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 100-Year

Warning: The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 100-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 100-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 500-Year

Warning: The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 500-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 500-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 10-Year

Warning: Divided flow computed for this cross-section.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 50-Year

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 40 Profile: 50-Year

Warning: Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 10-Year

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

need for additional cross sections.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 500-Year

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.

**G – FEMA Effective Model Vs. DEP Duplicate Effective Model
Comparison Table**

Effective Model/Duplicate Effective Model Comparison Table

FEMA FIS Q 100-Yr (CFS)	Description	Effective Model (HEC-2)		Duplicate Effective Model (HEC-RAS)		Difference (Feet)
		Feet Above Confluence with Delaware River	100-Yr WSEL (NGVD29)	River Station	100-Yr WSEL (NGVD29)	
42,800		529,719	402.33	53	402.34	0.01
42,800		529,362	401.85	52	401.85	0.00
Rt. 61 Bridge						
42,800		529,258	401.63	51	401.64	0.01
42,800		529,003	400.50	50	400.51	0.01
42,800	Cross Section BL	528,428	397.86	49	397.86	0.00
42,800		527,515	393.57	48	393.56	-0.01
42,800		526,404	391.40	47	391.39	-0.01
42,800	Cross Section BK	525,421	390.35	46	390.34	-0.01
42,800		524,456	390.22	45	390.22	0.00
42,800		523,500	390.08	44	390.08	0.00
42,800		522,990	389.31	43	389.37	0.06
42,800	US of Dam Crest	522,950	389.29	42	389.33	0.04
New Kernsville Dam						
42,800	DS of Dam Crest	522,908	378.74	41	378.74	0.00
42,800		522,820	378.43	40	378.43	0.00
42,800		522,318	377.52	39	377.52	0.00
42,800	Upstream of Island					
42,800	Cross Section BJ	521,718	374.96	38	374.96	0.00
42,800	Center of Island	520,289	369.91	37	369.91	0.00
42,800	Toe of Island	519,201	366.77	36	366.77	0.00

H – DEP Proposed Model HEC-RAS Input and Output Data

HEC-RAS HEC-RAS 5.0.3 September 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

X	X	XXXXXX	XXXX	XXXX	XX	XXXX
X	X	X	X X	X X	X X	X
X	X	X	X	X X	X X	X
XXXXXXXX	XXXX	X	XXX	XXXX	XXXXXX	XXXX
X	X	X	X	X X	X X	X
X	X	X	X X	X X	X X	X
X	X	XXXXXX	XXXX	X X	X X	XXXXX

PROJECT DATA

Project Title: New Kernsville Dam
Project File : NewKernsvilleDam.prj
Run Date and Time: 5/8/2018 8:50:07 AM

Project in English units

Project Description:
New Kernsville Dam Removal
D06-434
Tilden and Windsor Townships
Berks
County, PA

Schuylkill River FEMA FIS Flows from Downstream of Little
Schuylkill River to Upstream of Maiden Creek

10-Year = 23,200 CFS
50-Year
=36,300 CFS
100-Year = 42,800 CFS
500-Year = 60,200 CFS

PLAN DATA

Plan Title: Proposed Run
Plan File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology &
Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.p02

Geometry Title: Proposed Model
Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville
Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g02

Flow Title : FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Plan Summary Information:

Number of: Cross Sections = 16 Multiple Openings = 0
 Culverts = 0 Inline Structures = 0
 Bridges = 0 Lateral Structures = 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: Between every coordinate point (HEC2 Style)
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Flow Data (cfs)

River	Reach	RS	10-Year	50-Year	100-Year
500-Year Schuylkill River	Reach 1	53	23200	36300	42800
60200					

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Schuylkill River	Reach 1	10-Year	Known WS = 397.19	Known WS = 362.23
Schuylkill River	Reach 1	50-Year	Known WS = 400.8	Known WS = 365.35
Schuylkill River	Reach 1	100-Year	Known WS = 402.33	Known WS = 366.77
Schuylkill River	Reach 1	500-Year	Known WS = 405.9	Known WS = 370.37

GEOMETRY DATA

Geometry Title: Proposed Model

Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g02

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 53

INPUT

Description: 529719 (Start Run)

Station Elevation Data		num=		18					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	425.2	1020	417.7	1060	393.1	1070	390.2	1130	385.6
1150	381.1	1160	380.2	1220	382.9	1240	382.9	1260	384
1270	385.5	1280	388.5	1320	407.7	1330	408.9	1340	408.8
1430	405.7	1490	409.3	1516	418.8				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1070	.04	1280	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1070	1280		320	357		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 52

INPUT

Description: 529362 (Upstream of Rt. 61 Bridge)

Station Elevation Data		num=		27					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7
1646.1	434.8	1651.07	434.9						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		104	104		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 51

INPUT

Description: 529258 (Downstream of Rt. 61 Bridge)

Station Elevation Data		num= 27							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7
1646.1	434.8	1651.07	434.9						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		255	255		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 50

INPUT

Description: 529003

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	411.9	1030	405.3	1040	404.7	1080	389.6	1140	383.1
1180	383.2	1200	382.9	1210	382.8	1220	382.9	1230	382.9
1240	382.7	1260	382.7	1280	384	1290	386.6	1330	406.8
1340	409.1	1350	409.3	1390	409.1	1420	408.7	1460	411.6
1510	429.5	1524	431.2						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1080	.04	1290	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1080	1290		420	575		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 49

INPUT

Description: 528428

Station Elevation Data		num= 16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	421.2	1050	409.5	1160	397	1230	387	1240	386.7
1260	387.1	1287	387.2	1310	387.5	1420	377.2	1430	376.5

1440 377 1450 380.1 1468.1 387 1560 422 1570 424.7
 1618 426.8

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1310 .04 1468.1 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1310 1468.1 940 913 875 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48

INPUT
 Description: 527515

Station Elevation Data num= 20
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 436.2 1060 399 1092.4 385 1100 381.7 1110 379.4
 1170 377.5 1180 377.6 1190 377.8 1210 377.8 1220 377.6
 1250 378.7 1260 380 1280 385.1 1390 391.9 1470 398.9
 1480 401.2 1510 421.7 1520 426.6 1630 421.6 1631 421.5

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1092.4 .04 1280 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1092.4 1280 1150 1111 1020 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 47

INPUT
 Description: 526404

Station Elevation Data num= 27
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 405.8 1050 378.6 1060 374.3 1070 372.3 1090 371
 1100 371 1150 372.8 1160 372.8 1250 376 1260 379.2
 1270 384 1280 386.5 1360 395.5 1370 395.4 1380 395.3
 1390 395.2 1470 393.9 1540 393.6 1560 394.2 1570 395.6
 1610 406.2 1630 408 1640 408.1 1650 407.8 1660 408.8
 1680 419.1 1707 425.3

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1050 .04 1260 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1050 1260 983 983 983 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 46

INPUT

Description: 525421

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	399.5	1035.5	380	1040	377.5	1060	371.4	1090	369.7
1100	369.8	1130	370.4	1150	370.5	1160	370.4	1260	372.8
1270	374.2	1280	377	1300	385.3	1410	392.4	1520	394.4
1560	395.4	1620	404.4	1650	405.4	1660	407.6	1690	430.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1035.5	.04	1300	.12

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

1035.5	1300	900	965	900	.1	.3
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 45

INPUT

Description: 524456

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.6	1010	394.4	1020	390.2	1030	387.1	1050	383.8
1080	373	1190	366.8	1200	366.7	1240	366.7	1310	369.3
1330	373	1350	373.9	1360	373.9	1390	373.4	1500	383.3
1610	388.1	1690	391.1	1710	390.6	1750	399	1760	400.2
1820	394.5	1930	398.3	1970	398.4	1980	398.5	2060	398.7
2170	400.3	2220	400.9	2230	400.9	2260	400.5	2270	400.6
2310	401.5	2370	416.5	2380	417.5	2402	416.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1610	.12

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

1030	1610	820	956	820	.1	.3
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 44

INPUT

Description: 523500

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	404.3	1020	389.9	1030	384.2	1090	371.6	1160	367.6

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1270	367.8	1380	372	1400	372.4	1420	372.2	1450	372.8
1480	373	1590	375.1	1700	378.5	1810	385.4	1870	391.8
1890	395.3	1940	396.9	1960	396.9	1990	398	2000	398
2040	398	2050	398	2110	400.7	2120	401	2170	401
2260	404.7	2270	404.7	2380	407.7	2399	408		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1810	.12

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

1030	1810	592	592	592	.3	.5
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 41

INPUT
 Description: 522908 (Downstream of Dam Crest)

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.1	1020	380.3	1030	377.4	1050	376.4	1060	374.5
1080	364.5	1100	366.3	1200	366.9	1210	367	1220	368.7
1230	373.8	1240	376.4	1320	365.1	1340	364.4	1380	364.4
1490	371.8	1570	375.8	1600	375.8	1630	374.5	1660	365.4
1670	364.3	1680	366.6	1690	370.8	1700	378.2	1710	381.4
1720	381.7	1730	383.4	1770	393	1810	394.4	1860	393.1
1880	393.1	1930	395	1944	395.1				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1060	.04	1490	.12

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

1060	1490	88	88	88	.3	.5
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 40

INPUT
 Description: 522820

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1110	.04	1320	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1110 1320 502 502 502 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 39

INPUT

Description: 522318

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1110	.04	1320	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1110 1320 600 600 600 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 38

INPUT

Description: 521718 (Upstream of Island)

Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.5	1110	389.2	1170	384.4	1180	384.6	1230	372
1280	370.5	1390	370.9	1410	370.9	1490	369.3	1540	360.2
1550	360.1	1560	360.2	1590	360.3	1600	360.5	1610	360.4
1620	360.2	1640	360.8	1650	360.8	1690	359.7	1700	359.9
1710	361.4	1726.6	369	1740	375.1	1770	377.9	1780	377
1790	374.4	1900	369.6	1920	369.4	2010	369.5	2040	370.7
2120	383.6	2130	384.1	2240	381.6	2300	376.7	2310	377
2330	380.1	2340	384.2	2380	411.5	2382	411.3		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1490	.04	1726.6	.12	1770	100

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1490 1726.6 1100 1429 1390 .1 .3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 37

INPUT

Description: 520289 (Center of Island)

Station Elevation Data		num= 34							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	386.5	1050	368.5	1060	368.5	1160	368.5	1170	368.5
1250	368.5	1260	366.4	1280	367.2	1350	363.7	1360	363.7
1430	365.5	1460	365.7	1500	366.1	1570	366.3	1580	365.4
1620	356.7	1630	356.2	1640	356.2	1720	366.5	1730	366.6
1830	366.5	1860	366.8	1890	366.8	1980	365.3	1990	365.3
2060	366.3	2070	366.3	2180	360.7	2290	354.5	2330	356.9
2340	356.9	2360	358.3	2410	373.8	2465	398		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	2180	.04	2360	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2180	2360		880	1088		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 36

INPUT

Description: 519201 (At Toe of Island)

Station Elevation Data		num= 40							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.8	1010	386.8	1020	383.3	1060	375.3	1170	369.5
1230	367.8	1260	367.8	1300	367.8	1310	367.8	1320	367.8
1340	367.8	1350	367.8	1420	367.8	1430	366.9	1460	361.4
1470	361.4	1510	361.4	1530	361.4	1590	361.4	1620	361.4
1710	361.4	1720	361.4	1760	361.4	1770	361	1830	350.1
1850	349.4	1960	352.9	2000	354.3	2030	357.8	2130	364
2140	363.9	2150	363.8	2160	364.3	2200	375.3	2210	374.5
2230	371.1	2240	370.5	2350	372.1	2460	381.6	2463	381.6

Manning's n Values		num= 4			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1770	.04	2030	.12
				2200	100

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1770	2030		0	0		.1	.3

SUMMARY OF MANNING'S N VALUES

River:Schuylkill River

Reach	River Sta.	n1	n2	n3	n4
Reach 1	53	.12	.04	.12	
Reach 1	52	.12	.04	.12	

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Reach	Sta.	Left	Channel	Right	
Reach 1	51	.12	.04	.12	
Reach 1	50	.12	.04	.12	
Reach 1	49	.12	.04	.12	
Reach 1	48	.12	.04	.12	
Reach 1	47	.12	.04	.12	
Reach 1	46	.12	.04	.12	
Reach 1	45	.12	.04	.12	
Reach 1	44	.12	.04	.12	
Reach 1	41	.12	.04	.12	
Reach 1	40	.12	.04	.12	
Reach 1	39	.12	.04	.12	
Reach 1	38	.12	.04	.12	100
Reach 1	37	.12	.04	.12	
Reach 1	36	.12	.04	.12	100

SUMMARY OF REACH LENGTHS

River: Schuylkill River

Reach	River Sta.	Left	Channel	Right
Reach 1	53	320	357	390
Reach 1	52	104	104	104
Reach 1	51	255	255	255
Reach 1	50	420	575	700
Reach 1	49	940	913	875
Reach 1	48	1150	1111	1020
Reach 1	47	983	983	983
Reach 1	46	900	965	900
Reach 1	45	820	956	820
Reach 1	44	592	592	592
Reach 1	41	88	88	88
Reach 1	40	502	502	502
Reach 1	39	600	600	600
Reach 1	38	1100	1429	1390
Reach 1	37	880	1088	1088
Reach 1	36	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Schuylkill River

Reach	River Sta.	Contr.	Expan.
Reach 1	53	.1	.3
Reach 1	52	.1	.3
Reach 1	51	.1	.3
Reach 1	50	.1	.3
Reach 1	49	.1	.3
Reach 1	48	.1	.3
Reach 1	47	.1	.3

Reach 1	46	.1	.3
Reach 1	45	.1	.3
Reach 1	44	.3	.5
Reach 1	41	.3	.5
Reach 1	40	.1	.3
Reach 1	39	.1	.3
Reach 1	38	.1	.3
Reach 1	37	.1	.3
Reach 1	36	.1	.3

Profile Output Table - Standard Table 1

Reach E.G. Slope (ft/ft)	River Sta Vel Chnl (ft/s)	Profile Flow Area (sq ft)	Q Total Top Width (cfs) (ft)	Min Ch El Froude # Chl (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)
Reach 1 0.001692	53 8.42	10-Year 2881.59	23200.00 244.89	380.20 0.41	397.23		398.32
Reach 1 0.001809	53 10.25	50-Year 3790.15	36300.00 258.29	380.20 0.44	400.84		402.45
Reach 1 0.001866	53 11.04	100-Year 4189.48	42800.00 263.96	380.20 0.46	402.37		404.23
Reach 1 0.002008	53 12.90	500-Year 5153.65	60200.00 287.52	380.20 0.49	405.93		408.46
Reach 1 0.001348	52 7.82	10-Year 3107.39	23200.00 248.19	381.50 0.37	396.79		397.74
Reach 1 0.001516	52 9.67	50-Year 4019.09	36300.00 261.62	381.50 0.41	400.37		401.80
Reach 1 0.001588	52 10.47	100-Year 4419.27	42800.00 267.30	381.50 0.42	401.88		403.56
Reach 1 0.001759	52 12.34	500-Year 5383.53	60200.00 280.72	381.50 0.46	405.40		407.72
Reach 1 0.001406	51 7.92	10-Year 3065.01	23200.00 247.55	381.50 0.38	396.62		397.59
Reach 1 0.001576	51 9.79	50-Year 3966.88	36300.00 260.87	381.50 0.42	400.17		401.64
Reach 1 0.001650	51 10.59	100-Year 4362.64	42800.00 266.50	381.50 0.43	401.67		403.39
Reach 1 0.001826	51 12.48	500-Year 5314.82	60200.00 279.67	381.50 0.47	405.16		407.53
Reach 1 0.002441	50 9.41	10-Year 2577.71	23200.00 244.28	382.70 0.49	395.72		397.09
Reach 1 0.002516	50 11.33	50-Year 3434.81	36300.00 260.02	382.70 0.51	399.12		401.09
Reach 1 0.002571	50 12.17	100-Year 3810.98	42800.00 266.63	382.70 0.53	400.55		402.81
Reach 1	50	500-Year	60200.00	382.70	403.85		406.90

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0.002735	14.17	4715.27	281.89	0.56			
Reach 1	49	10-Year	23200.00	376.50	393.46		395.37
0.003566	11.46	2592.47	300.27	0.59			
Reach 1	49	50-Year	36300.00	376.50	396.64		399.30
0.003730	13.73	3596.23	330.89	0.62			
Reach 1	49	100-Year	42800.00	376.50	397.98		400.98
0.003802	14.67	4050.76	345.60	0.64			
Reach 1	49	500-Year	60200.00	376.50	401.11		404.97
0.003982	16.86	5186.42	381.30	0.67			
Reach 1	48	10-Year	23200.00	377.50	388.41		391.05
0.006305	13.07	1866.94	249.01	0.75			
Reach 1	48	50-Year	36300.00	377.50	391.41	389.62	394.96
0.005955	15.27	2697.14	304.48	0.76			
Reach 1	48	100-Year	42800.00	377.50	392.71	390.91	396.64
0.005823	16.14	3107.57	324.70	0.77			
Reach 1	48	500-Year	60200.00	377.50	395.80	393.93	400.60
0.005561	18.06	4176.96	367.18	0.78			
Reach 1	47	10-Year	23200.00	371.00	384.55		386.09
0.002956	9.96	2382.97	233.15	0.53			
Reach 1	47	50-Year	36300.00	371.00	387.41		389.76
0.003332	12.33	3075.42	254.29	0.58			
Reach 1	47	100-Year	42800.00	371.00	388.61		391.36
0.003497	13.35	3388.94	267.19	0.61			
Reach 1	47	500-Year	60200.00	371.00	391.38		395.18
0.003895	15.77	4170.32	296.91	0.66			
Reach 1	46	10-Year	23200.00	369.70	381.65		383.03
0.003175	9.41	2468.33	258.73	0.53			
Reach 1	46	50-Year	36300.00	369.70	384.07		386.21
0.003778	11.74	3105.50	268.94	0.60			
Reach 1	46	100-Year	42800.00	369.70	385.07		387.60
0.004051	12.75	3376.86	273.18	0.63			
Reach 1	46	500-Year	60200.00	369.70	387.47		390.99
0.004495	15.06	4076.46	311.79	0.68			
Reach 1	45	10-Year	23200.00	366.70	379.67		380.42
0.002037	6.92	3354.17	398.24	0.42			
Reach 1	45	50-Year	36300.00	366.70	381.84		382.98
0.002498	8.54	4250.82	428.37	0.48			
Reach 1	45	100-Year	42800.00	366.70	382.80		384.10
0.002652	9.17	4665.43	441.61	0.50			
Reach 1	45	500-Year	60200.00	366.70	385.29		386.94
0.002969	10.31	5838.07	504.69	0.53			
Reach 1	44	10-Year	23200.00	367.60	376.75		377.63
0.004450	7.55	3074.29	577.75	0.58			
Reach 1	44	50-Year	36300.00	367.60	379.19		380.16
0.003396	7.90	4592.28	657.11	0.53			

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Reach 1 0.002933	44 7.96	100-Year 5374.86	42800.00 681.32	367.60 0.50	380.36		381.34
Reach 1 0.002136	44 8.01	500-Year 7512.64	60200.00 743.45	367.60 0.44	383.36		384.36
Reach 1 0.003549	41 7.93	10-Year 3238.63	23200.00 521.93	364.40 0.53	374.33		375.27
Reach 1 0.002585	41 8.39	50-Year 5082.40	36300.00 668.09	364.40 0.48	377.36		378.39
Reach 1 0.002247	41 8.56	100-Year 6007.76	42800.00 676.29	364.40 0.46	378.74		379.81
Reach 1 0.001809	41 9.13	500-Year 8209.91	60200.00 703.81	364.40 0.43	381.94		383.14
Reach 1 0.000970	40 6.83	10-Year 4693.94	23200.00 463.82	356.20 0.32	374.33		374.98
Reach 1 0.001219	40 8.64	50-Year 6087.37	36300.00 512.69	356.20 0.36	377.22		378.24
Reach 1 0.001321	40 9.41	100-Year 6809.60	42800.00 675.26	356.20 0.38	378.43		379.62
Reach 1 0.001506	40 11.05	500-Year 8825.78	60200.00 723.82	356.20 0.42	381.29		382.87
Reach 1 0.001134	39 7.18	10-Year 4415.01	23200.00 456.34	356.20 0.34	373.72		374.45
Reach 1 0.001451	39 9.14	50-Year 5687.09	36300.00 489.52	356.20 0.39	376.41		377.56
Reach 1 0.001591	39 9.99	100-Year 6247.58	42800.00 550.79	356.20 0.42	377.52		378.88
Reach 1 0.001856	39 11.83	500-Year 8020.80	60200.00 709.97	356.20 0.46	380.16		382.01
Reach 1 0.002721	38 9.22	10-Year 3293.27	23200.00 709.26	359.70 0.50	372.09		373.39
Reach 1 0.003427	38 11.67	50-Year 4845.86	36300.00 782.69	359.70 0.58	374.17		376.19
Reach 1 0.003798	38 12.79	100-Year 5472.47	42800.00 799.96	359.70 0.62	374.96		377.36
Reach 1 0.004788	38 15.57	500-Year 6877.86	60200.00 841.12	359.70 0.71	376.67	374.61	380.15
Reach 1 0.005178	37 11.76	10-Year 3273.31	23200.00 893.55	354.50 0.68	366.38	364.58	368.20
Reach 1 0.004573	37 12.89	50-Year 5996.56	36300.00 1344.59	354.50 0.67	368.78	367.62	370.73
Reach 1 0.004118	37 13.01	100-Year 7514.76	42800.00 1351.36	354.50 0.64	369.91		371.77
Reach 1 0.003060	37 12.89	500-Year 11538.22	60200.00 1369.11	354.50 0.57	372.87		374.47
Reach 1	36	10-Year	23200.00	349.40	362.23	359.16	363.62

0.003412	9.52	2819.26	645.98	0.55			
Reach 1	36	50-Year	36300.00	349.40	365.35	361.83	366.91
0.002771	10.41	4969.07	725.36	0.52			
Reach 1	36	100-Year	42800.00	349.40	366.77	362.97	368.36
0.002520	10.68	6008.24	738.27	0.51			
Reach 1	36	500-Year	60200.00	349.40	370.37	365.22	371.95
0.001975	11.04	9320.97	1028.57	0.47			

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : Proposed Run

River: Schuylkill River Reach: Reach 1 RS: 53 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 10-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 50-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 100-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 50 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 10-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 50-Year

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

cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 100-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 49 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 50-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 100-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 10-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 500-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 10-Year

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

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 50-Year

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

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 50-Year

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

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 10-Year

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

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 50-Year

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

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 500-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 40 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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

cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 500-Year

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.

**I – DEP Duplicate Effective Model Vs. DEP Proposed Model
Comparison Table**

Duplicate Effective Model Vs. Proposed Model Comparison Table

FEMA FIS Q 100-Yr (CFS)	Description	River Station	Duplicate Effective Model 100-Yr WSEL (NGVD29)	Proposed Model 100-Yr WSEL (NGVD29)	Difference (Feet)
42,800		53	402.34	402.37	0.03
42,800		52	401.85	401.88	0.03
Rt. 61 Bridge					
42,800		51	401.64	402	0.03
42,800		50	400.51	400.55	0.04
42,800	Cross Section BL	49	397.86	397.98	0.12
42,800		48	393.56	392.71	-0.85
42,800		47	391.39	388.61	-2.78
42,800	Cross Section BK	46	390.34	385.07	-5.27
42,800		45	390.22	382.8	-7.42
42,800		44	390.08	380.36	-9.72
42,800		43	389.37	Removed	N/A
42,800	US of Dam Crest	42	389.33	Removed	N/A
New Kernsville Dam					
42,800	DS of Dam Crest	41	378.74	378.74	0.00
42,800		40	378.43	378.43	0.00
42,800		39	377.52	377.52	0.00
	Upstream of Island				
42,800	Cross Section BJ	38	374.96	374.96	0.00
42,800	Center of Island	37	369.91	369.91	0.00
42,800	Toe of Island	36	366.77	366.77	0.00

J – DEP Corrected Effective Model HEC-RAS Input and Output Data

HEC-RAS HEC-RAS 5.0.3 September 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

X	X	XXXXXX	XXXX	XXXX	XX	XXXX
X	X	X	X X	X X	X X	X
X	X	X	X	X X	X X	X
XXXXXXXX	XXXX	X	XXX	XXXX	XXXXXX	XXXX
X	X	X	X	X X	X X	X
X	X	X	X X	X X	X X	X
X	X	XXXXXX	XXXX	X X	X X	XXXXX

PROJECT DATA

Project Title: New Kernsville Dam
Project File : NewKernsvilleDam.prj
Run Date and Time: 5/8/2018 8:52:03 AM

Project in English units

Project Description:
New Kernsville Dam Removal
D06-434
Tilden and Windsor Townships
Berks
County, PA

Schuylkill River FEMA FIS Flows from Downstream of Little
Schuylkill River to Upstream of Maiden Creek

10-Year = 23,200 CFS
50-Year
=36,300 CFS
100-Year = 42,800 CFS
500-Year = 60,200 CFS

PLAN DATA

Plan Title: Corrected Effective Run
Plan File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology &
Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.p03

Geometry Title: Corrected Effective Model
Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville
Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g03

Flow Title : FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Plan Summary Information:

Number of: Cross Sections = 30 Multiple Openings = 0
 Culverts = 0 Inline Structures = 0
 Bridges = 1 Lateral Structures = 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: Between every coordinate point (HEC2 Style)
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Flow Data (cfs)

River	Reach	RS	10-Year	50-Year	100-Year
500-Year Schuylkill River	Reach 1	53	23200	36300	42800
60200					

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Schuylkill River	Reach 1	10-Year	Known WS = 397.19	Known WS = 362.23
Schuylkill River	Reach 1	50-Year	Known WS = 400.8	Known WS = 365.35
Schuylkill River	Reach 1	100-Year	Known WS = 402.33	Known WS = 366.77
Schuylkill River	Reach 1	500-Year	Known WS = 405.9	Known WS = 370.37

GEOMETRY DATA

Geometry Title: Corrected Effective Model

Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g03

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 53

INPUT

Description: 529719

Station Elevation Data		num= 18		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	425.2	1020	417.7	1060	393.1	1070	390.2	1130	385.6		
1150	381.1	1160	380.2	1220	382.9	1240	382.9	1260	384		
1270	385.5	1280	388.5	1320	407.7	1330	408.9	1340	408.8		
1430	405.7	1490	409.3	1516	418.8						

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1070	.04	1280	.12				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1070	1280		320	357		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 52

INPUT

Description: 529362 (Upstream of Rt. 61 Bridge)

Station Elevation Data		num= 27		Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5		
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8		
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405		
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6		
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7		
1646.1	434.8	1651.07	434.9								

Manning's n Values		num= 3		Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		104	104		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 51

INPUT

Description: 529258 (Downstream of Rt. 61 Bridge) Skewed

Station Elevation Data		num= 27							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7
1646.1	434.8	1651.07	434.9						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		255	255		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 50

INPUT

Description: 529003

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	411.9	1030	405.3	1040	404.7	1080	389.6	1140	383.1
1180	383.2	1200	382.9	1210	382.8	1220	382.9	1230	382.9
1240	382.7	1260	382.7	1280	384	1290	386.6	1330	406.8
1340	409.1	1350	409.3	1390	409.1	1420	408.7	1460	411.6
1510	429.5	1524	431.2						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1080	.04	1290	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1080	1290		84	115		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 49.800*

INPUT

Description: Interpolated Cross Section

Station Elevation Data		num= 33							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	413.76	1020.32	409.15	1047.25	404.63	1063	403.27	1065.03	402.77
1093.48	395.31	1097.55	394.48	1105.68	393	1116.65	390.91	1126	389.18

NewKernsvilleDam.rep

1183	383.14	1221	382.66	1240	382.13	1249.5	381.91	1259	381.85
1265.33	381.76	1268.5	381.73	1278	381.46	1294	381.46	1302.3	381.97
1310.6	383	1315.08	383.63	1325.62	386.68	1362.74	404.79	1372.03	407.12
1381.31	407.77	1418.43	409.56	1446.28	410.7	1458.77	412.14	1473.26	413.59
1483.4	414.28	1529.81	428.88	1542.8	430.32				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1126	.04	1325.62	.12

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1126	1325.62		84	115	140		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49.600*

INPUT
 Description: Interpolated Cross Section
 Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	415.62	1027.74	409.24	1064.5	403.97	1086	401.85	1088.77	401.33
1127.61	393.24	1133.16	392.53	1144.26	391.52	1159.24	389.98	1172	388.76
1226	383.17	1262	382.11	1280	381.37	1289	381.03	1298	380.81
1304	380.62	1307	380.55	1316	380.22	1328	380.22	1336.72	380.73
1345.45	382.27	1350.16	383.26	1361.24	386.76	1395.49	402.78	1404.05	405.14
1412.61	406.24	1446.86	410.02	1472.55	412.71	1484.08	414.61	1497.44	416.36
1506.8	416.96	1549.61	428.26	1561.6	429.44				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1172	.04	1361.24	.12

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1172	1361.24		84	115	140		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49.400*

INPUT
 Description: Interpolated Cross Section
 Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	417.48	1035.16	409.32	1081.75	403.3	1109	400.42	1112.52	399.89
1161.74	391.16	1168.77	390.59	1182.84	390.05	1201.83	389.06	1218	388.34
1269	383.21	1303	381.57	1320	380.6	1328.5	380.14	1337	379.76
1342.67	379.48	1345.5	379.38	1354	378.98	1362	378.98	1371.15	379.48
1380.3	381.55	1385.24	382.9	1396.86	386.84	1428.23	400.78	1436.08	403.16
1443.92	404.7	1475.3	410.48	1498.83	414.71	1509.38	417.07	1521.63	419.14
1530.2	419.64	1569.42	427.64	1580.4	428.56				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1218	.04	1396.86	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1218	1396.86		84	115		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49.200*

INPUT

Description: Interpolated Cross Section
 Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	419.34	1042.58	409.41	1099	402.64	1132	398.99	1136.26	398.44
1195.87	389.08	1204.39	388.64	1221.42	388.57	1244.41	388.13	1264	387.92
1312	383.25	1344	381.02	1360	379.84	1368	379.26	1376	378.71
1381.33	378.34	1384	378.2	1392	377.74	1396	377.74	1405.57	378.24
1415.15	380.82	1420.32	382.53	1432.48	386.92	1460.98	398.77	1468.1	401.18
1475.23	403.17	1503.73	410.94	1525.1	416.71	1534.69	419.54	1545.81	421.92
1553.6	422.33	1589.23	427.03	1599.2	427.68				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1264	.04	1432.48	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1264	1432.48		84	115		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49

INPUT

Description: 528428
 Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	421.2	1050	409.5	1160	397	1230	387	1240	386.7
1260	387.1	1287	387.2	1310	387.5	1420	377.2	1430	376.5
1440	377	1450	380.1	1468.1	387	1560	422	1570	424.7
1618	426.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1310	.04	1468.1	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1310	1468.1		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 48.889*

INPUT

Description: Interpolated Cross Section

Station Elevation Data		num= 31									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	422.87	1046.1	411.44	1147.52	398.07	1185.6	391.98	1212.06	387.92		
1221.28	387.51	1239.72	387.58	1264.62	387.28	1285.82	387.22	1297.11	385.88		
1311.97	384.33	1391.5	377.26	1401.11	376.61	1405.3	376.78	1409.49	376.95		
1413.21	377.09	1417.87	378.15	1422.06	379.08	1425.3	379.85	1434.63	382.56		
1438.82	383.87	1447.2	386.79	1501.18	403.45	1540.44	415.79	1545.34	417.49		
1552.8	420.84	1560.07	423.48	1564.29	424.84	1564.97	424.93	1618.95	426.21		
1619.44	426.21										

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1285.82	.04	1447.2	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1285.82	1447.2		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 48.778*

INPUT

Description: Interpolated Cross Section

Station Elevation Data		num= 31									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	424.53	1042.2	413.38	1135.04	399.14	1169.9	392.86	1194.12	388.85		
1202.56	388.33	1219.44	388.06	1242.23	387.37	1261.64	386.94	1272.47	385.36		
1286.72	383.72	1363.01	377.31	1372.22	376.72	1377.14	376.88	1382.05	377.06		
1386.42	377.18	1391.89	378.11	1396.8	378.9	1400.61	379.61	1411.55	382.07		
1416.47	383.39	1426.3	386.58	1487.28	402	1531.63	413.68	1537.18	415.46		
1545.6	419.68	1553.81	423.26	1558.58	424.97	1559.35	425.14	1620.33	425.63		
1620.89	425.62										

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1261.64	.04	1426.3	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1261.64	1426.3		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 48.667*

INPUT

Description: Interpolated Cross Section

Station Elevation Data		num= 31									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	426.2	1038.3	415.32	1122.56	400.21	1154.2	393.73	1176.18	389.77		

NewKernsvilleDam.rep

1183.85	389.14	1199.17	388.55	1219.85	387.45	1237.47	386.67	1247.84	384.83
1261.48	383.1	1334.51	377.37	1343.33	376.83	1348.98	376.98	1354.62	377.16
1359.62	377.27	1365.9	378.06	1371.55	378.71	1375.91	379.36	1388.47	381.59
1394.12	382.91	1405.4	386.37	1473.38	400.56	1522.83	411.57	1529.01	413.42
1538.4	418.53	1547.55	423.04	1552.87	425.11	1553.73	425.35	1621.72	425.05
1622.33	425.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1237.47	.04	1405.4	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1237.47	1405.4		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.556*

INPUT
 Description: Interpolated Cross Section
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	427.87	1034.4	417.26	1110.08	401.28	1138.5	394.61	1158.25	390.69
1165.13	389.95	1178.89	389.03	1197.46	387.54	1213.29	386.39	1223.2	384.31
1236.23	382.48	1306.01	377.42	1314.44	376.94	1320.81	377.09	1327.18	377.27
1332.83	377.36	1339.92	378.02	1346.29	378.53	1351.22	379.12	1365.39	381.11
1371.76	382.42	1384.5	386.16	1459.49	399.12	1514.02	409.46	1520.84	411.38
1531.2	417.37	1541.29	422.82	1547.16	425.24	1548.11	425.56	1623.1	424.48
1623.78	424.44								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1213.29	.04	1384.5	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1213.29	1384.5		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.444*

INPUT
 Description: Interpolated Cross Section
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	429.53	1030.5	419.2	1097.61	402.35	1122.8	395.49	1140.31	391.61
1146.41	390.76	1158.61	389.51	1175.08	387.62	1189.11	386.11	1198.56	383.79
1210.99	381.87	1277.52	377.48	1285.56	377.06	1292.65	377.19	1299.75	377.38
1306.04	377.44	1313.94	377.98	1321.03	378.34	1326.52	378.87	1342.32	380.63
1349.41	381.94	1363.6	385.94	1445.59	397.67	1505.22	407.35	1512.67	409.35
1523.99	416.21	1535.03	422.59	1541.45	425.38	1542.49	425.77	1624.48	423.9
1625.22	423.86								

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1189.11 .04 1363.6 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1189.11 1363.6 104.44 101.44 97.22 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.333*

INPUT
 Description: Interpolated Cross Section
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	431.2	1026.6	421.14	1085.13	403.42	1107.1	396.37	1122.37	392.54
1127.69	391.58	1138.33	389.99	1152.7	387.71	1164.93	385.83	1173.92	383.27
1185.74	381.25	1249.02	377.54	1256.67	377.17	1264.49	377.29	1272.31	377.48
1279.25	377.53	1287.95	377.93	1295.77	378.16	1301.83	378.62	1319.24	380.15
1327.06	381.45	1342.7	385.73	1431.69	396.23	1496.41	405.23	1504.5	407.31
1516.79	415.05	1528.78	422.37	1535.74	425.51	1536.87	425.98	1625.86	423.33
1626.67	423.27								

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1164.93 .04 1342.7 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1164.93 1342.7 104.44 101.44 97.22 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.222*

INPUT
 Description: Interpolated Cross Section
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	432.87	1022.7	423.08	1072.65	404.49	1091.4	397.24	1104.43	393.46
1108.97	392.39	1118.05	390.48	1130.31	387.79	1140.76	385.56	1149.28	382.74
1160.49	380.63	1220.53	377.59	1227.78	377.28	1236.33	377.39	1244.87	377.59
1252.46	377.62	1261.97	377.89	1270.52	377.97	1277.13	378.38	1296.16	379.66
1304.71	380.97	1321.8	385.52	1417.79	394.79	1487.61	403.12	1496.34	405.27
1509.59	413.9	1522.52	422.15	1530.03	425.65	1531.24	426.18	1627.24	422.75
1628.11	422.68								

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1140.76 .04 1321.8 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1140.76 1321.8 104.44 101.44 97.22 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.111*

INPUT

Description: Interpolated Cross Section
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	434.53	1018.8	425.02	1060.17	405.56	1075.7	398.12	1086.49	394.38
1090.25	393.2	1097.77	390.96	1107.93	387.88	1116.58	385.28	1124.64	382.22
1135.25	380.02	1192.03	377.65	1198.89	377.39	1208.16	377.5	1217.44	377.69
1225.66	377.71	1235.98	377.84	1245.26	377.79	1252.44	378.13	1273.08	379.18
1282.35	380.48	1300.9	385.31	1403.9	393.34	1478.8	401.01	1488.17	403.24
1502.39	412.74	1516.26	421.92	1524.32	425.78	1525.62	426.39	1628.62	422.18
1629.56	422.09								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1116.58	.04	1300.9	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1116.58	1300.9		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48

INPUT

Description: 527515
 Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	436.2	1060	399	1092.4	385	1100	381.7	1110	379.4
1170	377.5	1180	377.6	1190	377.8	1210	377.8	1220	377.6
1250	378.7	1260	380	1280	385.1	1390	391.9	1470	398.9
1480	401.2	1510	421.7	1520	426.6	1630	421.6	1631	421.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1092.4	.04	1280	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1092.4	1280		1150	1111		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 47

INPUT

Description: 526404
 Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

NewKernsvilleDam.rep

1000	405.8	1050	378.6	1060	374.3	1070	372.3	1090	371
1100	371	1150	372.8	1160	372.8	1250	376	1260	379.2
1270	384	1280	386.5	1360	395.5	1370	395.4	1380	395.3
1390	395.2	1470	393.9	1540	393.6	1560	394.2	1570	395.6
1610	406.2	1630	408	1640	408.1	1650	407.8	1660	408.8
1680	419.1	1707	425.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1050	.04	1260	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1050	1260		983	983		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 46

INPUT
 Description: 525421
 Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	399.5	1035.5	380	1040	377.5	1060	371.4	1090	369.7
1100	369.8	1130	370.4	1150	370.5	1160	370.4	1260	372.8
1270	374.2	1280	377	1300	385.3	1410	392.4	1520	394.4
1560	395.4	1620	404.4	1650	405.4	1660	407.6	1690	430.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1035.5	.04	1300	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1035.5	1300		900	965		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 45

INPUT
 Description: 524456
 Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.6	1010	394.4	1020	390.2	1030	387.1	1050	383.8
1080	373	1190	366.8	1200	366.7	1240	366.7	1310	369.3
1330	373	1350	373.9	1360	373.9	1390	373.4	1500	383.3
1610	388.1	1690	391.1	1710	390.6	1750	399	1760	400.2
1820	394.5	1930	398.3	1970	398.4	1980	398.5	2060	398.7
2170	400.3	2220	400.9	2230	400.9	2260	400.5	2270	400.6
2310	401.5	2370	416.5	2380	417.5	2402	416.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1610	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1030 1610 820 956 820 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 44

INPUT

Description: 523500

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	404.3	1020	389.9	1030	384.2	1090	371.6	1160	367.6
1270	367.8	1380	372	1400	372.4	1420	372.2	1450	372.8
1480	373	1590	375.1	1700	378.5	1810	385.4	1870	391.8
1890	395.3	1940	396.9	1960	396.9	1990	398	2000	398
2040	398	2050	398	2110	400.7	2120	401	2170	401
2260	404.7	2270	404.7	2380	407.7	2399	408		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1810	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1030 1810 510 510 510 .3 .5

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 43

INPUT

Description: 522990

Station Elevation Data num= 45

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.5	1010	387.3	1030	383.8	1040	383.4	1050	384
1070	378	1080	377.9	1090	377.8	1100	377.6	1110	377.7
1120	377.8	1130	377.6	1160	377.7	1170	377.9	1190	377.6
1200	377.8	1210	377.7	1230	378.6	1330	378.6	1340	378.4
1350	378.4	1360	378.6	1370	378.3	1430	378.2	1440	378.5
1450	378.3	1460	378.3	1470	378.5	1480	378.5	1490	378.4
1510	378.6	1530	378.4	1540	378.3	1610	378.1	1649	378
1650	383	1700	392.1	1710	392.1	1750	392.1	1790	392.1
1800	392.1	1830	393	1850	392.8	1860	392.7	1917	394.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.025	1050	.025	1650	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1050 1650 40 40 40 .3 .5

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 42

INPUT

Description: 522950 (Upstream of Dam)

Station Elevation Data		num= 45							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.5	1010	387.3	1030	383.8	1049.9	383	1050	383
1070	378	1080	377.9	1090	377.8	1100	377.6	1110	377.7
1120	377.8	1130	377.6	1160	377.7	1170	377.9	1190	377.6
1200	377.8	1210	377.7	1230	378.6	1330	378.6	1340	378.4
1350	378.4	1360	378.6	1370	378.3	1430	378.2	1440	378.5
1450	378.3	1460	378.3	1470	378.5	1480	378.5	1490	378.4
1510	378.6	1530	378.4	1540	378.3	1610	378.1	1649	378
1650	383	1650.1	392.1	1710	392.1	1750	392.1	1790	392.1
1800	392.1	1830	393	1850	392.8	1860	392.7	1917	394.3

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.025	1050	.025	1650	.025

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1050	1650		42	42		.3	.5

BRIDGE

RIVER: Schuylkill River

REACH: Reach 1 RS: 41.5

INPUT

Description: 522950 (New Kernsville Dam)

Distance from Upstream XS = .001

Deck/Roadway Width = 41.99

Weir Coefficient = 3.9

Upstream Deck/Roadway Coordinates

num= 8									
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	
1000	392.7		1049.9	392.7		1050	383		
1200	383	377.9	1210	383	377.8	1650	383		
1650.1	392.7		1917	392.7					

Upstream Bridge Cross Section Data

Station Elevation Data		num= 45							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.5	1010	387.3	1030	383.8	1049.9	383	1050	383
1070	378	1080	377.9	1090	377.8	1100	377.6	1110	377.7
1120	377.8	1130	377.6	1160	377.7	1170	377.9	1190	377.6
1200	377.8	1210	377.7	1230	378.6	1330	378.6	1340	378.4
1350	378.4	1360	378.6	1370	378.3	1430	378.2	1440	378.5
1450	378.3	1460	378.3	1470	378.5	1480	378.5	1490	378.4
1510	378.6	1530	378.4	1540	378.3	1610	378.1	1649	378
1650	383	1650.1	392.1	1710	392.1	1750	392.1	1790	392.1
1800	392.1	1830	393	1850	392.8	1860	392.7	1917	394.3

Manning's n Values		num= 3	
--------------------	--	--------	--

Sta	n Val	Sta	n Val	Sta	n Val
1000	.025	1050	.025	1650	.025

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1050	1650		.3	.5

Downstream Deck/Roadway Coordinates

num=	8													
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000		392.7			1049.9		392.7			1050		383		
1200		383		367	1210		383		367.1	1650		383		
1650.1		392.7			1917		392.7							

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	33											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.1	1020	380.3	1030	377.4	1050	376.4	1060	374.5						
1080	364.5	1100	366.3	1200	366.9	1210	367	1220	368.7						
1230	373.8	1240	376.4	1320	365.1	1340	364.4	1380	364.4						
1490	371.8	1570	375.8	1600	375.8	1630	374.5	1660	365.4						
1670	364.3	1680	366.6	1690	370.8	1700	378.2	1710	381.4						
1720	381.7	1730	383.4	1770	393	1810	394.4	1860	393.1						
1880	393.1	1930	395	1944	395.1										

Manning's n	Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1060	.04	1490	.12

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1060	1490		.3	.5

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = 1
 Elevation at which weir flow begins = 383
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd	=	
Submerged Inlet + Outlet Cd	=	.8
Max Low Cord	=	

Additional Bridge Parameters

Add Friction component to Momentum
 Do not add Weight component to Momentum
 Class B flow critical depth computations use critical depth
 inside the bridge at the upstream end
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 41

INPUT

Description: 522908 (Downstream of Dam Crest)

Station Elevation Data		num= 33							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.1	1020	380.3	1030	377.4	1050	376.4	1060	374.5
1080	364.5	1100	366.3	1200	366.9	1210	367	1220	368.7
1230	373.8	1240	376.4	1320	365.1	1340	364.4	1380	364.4
1490	371.8	1570	375.8	1600	375.8	1630	374.5	1660	365.4
1670	364.3	1680	366.6	1690	370.8	1700	378.2	1710	381.4
1720	381.7	1730	383.4	1770	393	1810	394.4	1860	393.1
1880	393.1	1930	395	1944	395.1				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1060	.04	1490	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1060	1490		88	88		.3	.5

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 40

INPUT

Description: 522820

Station Elevation Data		num= 24							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1110	.04	1320	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1110	1320		502	502		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 39

INPUT

Description: 522318

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Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1110	.04	1320	.12

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

1110	1320	600	600	600	.1	.3
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CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 38

INPUT

Description: 521718 (Upstream of Island)

Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.5	1110	389.2	1170	384.4	1180	384.6	1230	372
1280	370.5	1390	370.9	1410	370.9	1490	369.3	1540	360.2
1550	360.1	1560	360.2	1590	360.3	1600	360.5	1610	360.4
1620	360.2	1640	360.8	1650	360.8	1690	359.7	1700	359.9
1710	361.4	1726.6	369	1740	375.1	1770	377.9	1780	377
1790	374.4	1900	369.6	1920	369.4	2010	369.5	2040	370.7
2120	383.6	2130	384.1	2240	381.6	2300	376.7	2310	377
2330	380.1	2340	384.2	2380	411.5	2382	411.3		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1490	.04	1726.6	.12	1770	100

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

1490	1726.6	1100	1429	1390	.1	.3
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CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 37

INPUT

Description: 520289 (Center of Island)

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	386.5	1050	368.5	1060	368.5	1160	368.5	1170	368.5
1250	368.5	1260	366.4	1280	367.2	1350	363.7	1360	363.7
1430	365.5	1460	365.7	1500	366.1	1570	366.3	1580	365.4
1620	356.7	1630	356.2	1640	356.2	1720	366.5	1730	366.6
1830	366.5	1860	366.8	1890	366.8	1980	365.3	1990	365.3
2060	366.3	2070	366.3	2180	360.7	2290	354.5	2330	356.9

2340 356.9 2360 358.3 2410 373.8 2465 398

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 2180 .04 2360 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 2180 2360 880 1088 1088 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 36

INPUT

Description: 519201 (At Toe of Island)

Station Elevation Data num= 40
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 391.8 1010 386.8 1020 383.3 1060 375.3 1170 369.5
 1230 367.8 1260 367.8 1300 367.8 1310 367.8 1320 367.8
 1340 367.8 1350 367.8 1420 367.8 1430 366.9 1460 361.4
 1470 361.4 1510 361.4 1530 361.4 1590 361.4 1620 361.4
 1710 361.4 1720 361.4 1760 361.4 1770 361 1830 350.1
 1850 349.4 1960 352.9 2000 354.3 2030 357.8 2130 364
 2140 363.9 2150 363.8 2160 364.3 2200 375.3 2210 374.5
 2230 371.1 2240 370.5 2350 372.1 2460 381.6 2463 381.6

Manning's n Values num= 4
 Sta n Val Sta n Val Sta n Val Sta n Val
 1000 .12 1770 .04 2030 .12 2200 100

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1770 2030 0 0 0 .1 .3

SUMMARY OF MANNING'S N VALUES

River:Schuylkill River

Reach	River Sta.	n1	n2	n3	n4
Reach 1	53	.12	.04	.12	
Reach 1	52	.12	.04	.12	
Reach 1	51	.12	.04	.12	
Reach 1	50	.12	.04	.12	
Reach 1	49.800*	.12	.04	.12	
Reach 1	49.600*	.12	.04	.12	
Reach 1	49.400*	.12	.04	.12	
Reach 1	49.200*	.12	.04	.12	
Reach 1	49	.12	.04	.12	
Reach 1	48.889*	.12	.04	.12	
Reach 1	48.778*	.12	.04	.12	
Reach 1	48.667*	.12	.04	.12	
Reach 1	48.556*	.12	.04	.12	
Reach 1	48.444*	.12	.04	.12	

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Reach 1	48.333*	.12	.04	.12	
Reach 1	48.222*	.12	.04	.12	
Reach 1	48.111*	.12	.04	.12	
Reach 1	48	.12	.04	.12	
Reach 1	47	.12	.04	.12	
Reach 1	46	.12	.04	.12	
Reach 1	45	.12	.04	.12	
Reach 1	44	.12	.04	.12	
Reach 1	43	.025	.025	.025	
Reach 1	42	.025	.025	.025	
Reach 1	41.5	Bridge			
Reach 1	41	.12	.04	.12	
Reach 1	40	.12	.04	.12	
Reach 1	39	.12	.04	.12	
Reach 1	38	.12	.04	.12	100
Reach 1	37	.12	.04	.12	
Reach 1	36	.12	.04	.12	100

SUMMARY OF REACH LENGTHS

River: Schuylkill River

Reach	River Sta.	Left	Channel	Right
Reach 1	53	320	357	390
Reach 1	52	104	104	104
Reach 1	51	255	255	255
Reach 1	50	84	115	140
Reach 1	49.800*	84	115	140
Reach 1	49.600*	84	115	140
Reach 1	49.400*	84	115	140
Reach 1	49.200*	84	115	140
Reach 1	49	104.44	101.44	97.22
Reach 1	48.889*	104.44	101.44	97.22
Reach 1	48.778*	104.44	101.44	97.22
Reach 1	48.667*	104.44	101.44	97.22
Reach 1	48.556*	104.44	101.44	97.22
Reach 1	48.444*	104.44	101.44	97.22
Reach 1	48.333*	104.44	101.44	97.22
Reach 1	48.222*	104.44	101.44	97.22
Reach 1	48.111*	104.44	101.44	97.22
Reach 1	48	1150	1111	1020
Reach 1	47	983	983	983
Reach 1	46	900	965	900
Reach 1	45	820	956	820
Reach 1	44	510	510	510
Reach 1	43	40	40	40
Reach 1	42	42	42	42
Reach 1	41.5	Bridge		
Reach 1	41	88	88	88
Reach 1	40	502	502	502
Reach 1	39	600	600	600
Reach 1	38	1100	1429	1390
Reach 1	37	880	1088	1088

Reach 1 36 0 0 0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
 River: Schuylkill River

Reach	River Sta.	Contr.	Expan.
Reach 1	53	.1	.3
Reach 1	52	.1	.3
Reach 1	51	.1	.3
Reach 1	50	.1	.3
Reach 1	49.800*	.1	.3
Reach 1	49.600*	.1	.3
Reach 1	49.400*	.1	.3
Reach 1	49.200*	.1	.3
Reach 1	49	.1	.3
Reach 1	48.889*	.1	.3
Reach 1	48.778*	.1	.3
Reach 1	48.667*	.1	.3
Reach 1	48.556*	.1	.3
Reach 1	48.444*	.1	.3
Reach 1	48.333*	.1	.3
Reach 1	48.222*	.1	.3
Reach 1	48.111*	.1	.3
Reach 1	48	.1	.3
Reach 1	47	.1	.3
Reach 1	46	.1	.3
Reach 1	45	.1	.3
Reach 1	44	.3	.5
Reach 1	43	.3	.5
Reach 1	42	.3	.5
Reach 1	41.5	Bridge	
Reach 1	41	.3	.5
Reach 1	40	.1	.3
Reach 1	39	.1	.3
Reach 1	38	.1	.3
Reach 1	37	.1	.3
Reach 1	36	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev
E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude #	Elev	Elev	Elev
(ft/ft)	(ft/s)	(sq ft)	(cfs)	(ft)	(ft)	(ft)	(ft)
Reach 1	53	10-Year	23200.00	380.20	397.21		398.30
0.001701	8.43	2876.69	244.82	0.41			
Reach 1	53	50-Year	36300.00	380.20	400.86		402.46
0.001803	10.24	3794.75	258.35	0.44			

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Reach 1 0.001848	53 11.00	100-Year 4203.45	42800.00 264.16	380.20 0.45	402.42	404.27
Reach 1 0.001963	53 12.81	500-Year 5195.95	60200.00 294.70	380.20 0.48	406.07	408.57
Reach 1 0.001355	52 7.83	10-Year 3101.76	23200.00 248.10	381.50 0.37	396.77	397.72
Reach 1 0.001510	52 9.66	50-Year 4024.29	36300.00 261.69	381.50 0.41	400.39	401.82
Reach 1 0.001572	52 10.43	100-Year 4434.98	42800.00 267.52	381.50 0.42	401.94	403.61
Reach 1 0.001716	52 12.25	500-Year 5428.65	60200.00 281.40	381.50 0.45	405.56	407.85
Reach 1 0.001414	51 7.94	10-Year 3059.11	23200.00 247.46	381.50 0.38	396.60	397.57
Reach 1 0.001570	51 9.77	50-Year 3972.31	36300.00 260.94	381.50 0.42	400.19	401.66
Reach 1 0.001632	51 10.55	100-Year 4379.07	42800.00 266.73	381.50 0.43	401.73	403.44
Reach 1 0.001780	51 12.39	500-Year 5361.95	60200.00 280.39	381.50 0.46	405.33	407.66
Reach 1 0.002464	50 9.43	10-Year 2569.92	23200.00 244.13	382.70 0.49	395.69	397.06
Reach 1 0.002500	50 11.31	50-Year 3441.94	36300.00 260.14	382.70 0.51	399.15	401.11
Reach 1 0.002529	50 12.11	100-Year 3832.63	42800.00 267.01	382.70 0.52	400.63	402.87
Reach 1 0.002633	50 14.01	500-Year 4778.15	60200.00 282.92	382.70 0.55	404.07	407.05
Reach 1 0.002587	49.800* 9.75	10-Year 2527.28	23200.00 249.76	381.46 0.50	395.30	396.76
Reach 1 0.002658	49.800* 11.71	50-Year 3413.40	36300.00 269.78	381.46 0.53	398.71	400.80
Reach 1 0.002696	49.800* 12.54	100-Year 3814.29	42800.00 278.35	381.46 0.54	400.17	402.56
Reach 1 0.002813	49.800* 14.50	500-Year 4793.25	60200.00 300.70	381.46 0.57	403.57	406.72
Reach 1 0.002764	49.600* 10.13	10-Year 2500.83	23200.00 258.82	380.22 0.52	394.87	396.44
Reach 1 0.002866	49.600* 12.18	50-Year 3409.02	36300.00 282.12	380.22 0.55	398.23	400.47
Reach 1 0.002912	49.600* 13.04	100-Year 3822.71	42800.00 292.12	380.22 0.56	399.67	402.22
Reach 1 0.003038	49.600* 15.04	500-Year 4844.98	60200.00 322.29	380.22 0.59	403.02	406.36
Reach 1	49.400*	10-Year	23200.00	378.98	394.41	396.10

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0.003002	10.57	2494.80	270.47	0.54		
Reach 1	49.400*	50-Year	36300.00	378.98	397.72	400.11
0.003121	12.69	3433.10	296.57	0.57		
Reach 1	49.400*	100-Year	42800.00	378.98	399.14	401.85
0.003170	13.57	3862.99	307.79	0.59		
Reach 1	49.400*	500-Year	60200.00	378.98	402.49	405.99
0.003271	15.57	4947.57	344.40	0.61		
Reach 1	49.200*	10-Year	23200.00	377.74	393.91	395.72
0.003301	11.05	2515.79	284.15	0.56		
Reach 1	49.200*	50-Year	36300.00	377.74	397.18	399.72
0.003413	13.21	3493.74	312.89	0.60		
Reach 1	49.200*	100-Year	42800.00	377.74	398.60	401.46
0.003453	14.10	3945.44	325.53	0.61		
Reach 1	49.200*	500-Year	60200.00	377.74	401.98	405.59
0.003490	16.05	5113.15	365.99	0.63		
Reach 1	49	10-Year	23200.00	376.50	393.38	395.32
0.003650	11.55	2569.53	299.53	0.59		
Reach 1	49	50-Year	36300.00	376.50	396.66	399.30
0.003716	13.71	3601.42	331.04	0.62		
Reach 1	49	100-Year	42800.00	376.50	398.10	401.05
0.003705	14.55	4091.32	346.94	0.63		
Reach 1	49	500-Year	60200.00	376.50	401.52	405.18
0.003690	16.46	5344.05	386.00	0.65		
Reach 1	48.889*	10-Year	23200.00	376.61	392.93	394.93
0.003760	11.66	2436.86	287.40	0.60		
Reach 1	48.889*	50-Year	36300.00	376.61	396.14	398.91
0.003859	13.88	3409.45	317.91	0.63		
Reach 1	48.889*	100-Year	42800.00	376.61	397.54	400.65
0.003883	14.78	3864.31	331.21	0.64		
Reach 1	48.889*	500-Year	60200.00	376.61	400.85	404.77
0.003936	16.83	5016.05	366.29	0.67		
Reach 1	48.778*	10-Year	23200.00	376.72	392.48	394.54
0.003858	11.73	2332.02	277.43	0.61		
Reach 1	48.778*	50-Year	36300.00	376.72	395.60	398.49
0.004035	14.07	3245.48	307.31	0.65		
Reach 1	48.778*	100-Year	42800.00	376.72	396.97	400.23
0.004081	15.01	3673.78	320.28	0.66		
Reach 1	48.778*	500-Year	60200.00	376.72	400.15	404.33
0.004208	17.19	4741.81	351.51	0.69		
Reach 1	48.667*	10-Year	23200.00	376.83	392.07	394.15
0.003903	11.73	2259.64	269.24	0.61		
Reach 1	48.667*	50-Year	36300.00	376.83	395.08	398.07
0.004184	14.19	3119.01	299.56	0.66		
Reach 1	48.667*	100-Year	42800.00	376.83	396.41	399.79
0.004255	15.18	3525.42	312.41	0.67		
Reach 1	48.667*	500-Year	60200.00	376.83	399.47	403.87
0.004464	17.49	4526.92	342.01	0.71		

Reach 1 0.003922	48.556* 11.69	10-Year 2212.01	23200.00 263.04	376.94 0.61	391.67		393.75
Reach 1 0.004305	48.556* 14.27	50-Year 3026.01	36300.00 294.64	376.94 0.67	394.59		397.63
Reach 1 0.004402	48.556* 15.28	100-Year 3415.28	42800.00 307.65	376.94 0.68	395.88		399.34
Reach 1 0.004693	48.556* 17.71	500-Year 4364.65	60200.00 337.23	376.94 0.73	398.82		403.38
Reach 1 0.003938	48.444* 11.64	10-Year 2183.34	23200.00 258.17	377.06 0.61	391.27		393.35
Reach 1 0.004388	48.444* 14.28	50-Year 2967.43	36300.00 291.81	377.06 0.67	394.12		397.19
Reach 1 0.004516	48.444* 15.34	100-Year 3342.67	42800.00 306.25	377.06 0.69	395.38		398.89
Reach 1 0.004860	48.444* 17.83	500-Year 4261.38	60200.00 336.34	377.06 0.74	398.23		402.89
Reach 1 0.003946	48.333* 11.57	10-Year 2173.81	23200.00 254.08	377.17 0.61	390.89		392.94
Reach 1 0.004454	48.333* 14.26	50-Year 2935.34	36300.00 292.09	377.17 0.67	393.67		396.74
Reach 1 0.004591	48.333* 15.33	100-Year 3305.97	42800.00 307.50	377.17 0.69	394.90		398.43
Reach 1 0.004928	48.333* 17.80	500-Year 4223.31	60200.00 339.63	377.17 0.74	397.73	395.11	402.39
Reach 1 0.003961	48.222* 11.51	10-Year 2177.68	23200.00 255.40	377.28 0.61	390.50		392.53
Reach 1 0.004517	48.222* 14.23	50-Year 2926.69	36300.00 296.01	377.28 0.68	393.21		396.28
Reach 1 0.004655	48.222* 15.29	100-Year 3299.23	42800.00 313.08	377.28 0.70	394.44		397.95
Reach 1 0.004957	48.222* 17.71	500-Year 4230.98	60200.00 347.12	377.28 0.74	397.26	394.82	401.88
Reach 1 0.003995	48.111* 11.45	10-Year 2188.76	23200.00 261.85	377.39 0.61	390.11		392.12
Reach 1 0.004587	48.111* 14.20	50-Year 2940.62	36300.00 304.76	377.39 0.68	392.76		395.81
Reach 1 0.004682	48.111* 15.20	100-Year 3328.40	42800.00 322.59	377.39 0.70	394.00		397.47
Reach 1 0.004937	48.111* 17.55	500-Year 4290.93	60200.00 358.46	377.39 0.74	396.82	394.39	401.35
Reach 1 0.004049	48 11.41	10-Year 2206.39	23200.00 273.05	377.50 0.61	389.71		391.71
Reach 1 0.004651	48 14.14	50-Year 2979.36	36300.00 319.23	377.50 0.68	392.31		395.34
Reach 1	48	100-Year	42800.00	377.50	393.56		396.97

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0.004693	15.09	3390.07	336.44	0.70			
Reach 1	48	500-Year	60200.00	377.50	396.41	393.93	400.82
0.004895	17.35	4401.15	375.48	0.73			
Reach 1	47	10-Year	23200.00	371.00	388.47		389.30
0.001060	7.31	3351.79	265.69	0.33			
Reach 1	47	50-Year	36300.00	371.00	390.37		391.94
0.001728	10.10	3876.21	286.08	0.43			
Reach 1	47	100-Year	42800.00	371.00	391.39		393.31
0.001965	11.20	4173.33	297.01	0.47			
Reach 1	47	500-Year	60200.00	371.00	393.51		396.49
0.002645	14.00	4826.50	319.74	0.55			
Reach 1	46	10-Year	23200.00	369.70	387.93		388.43
0.000603	5.63	4221.77	319.76	0.25			
Reach 1	46	50-Year	36300.00	369.70	389.45		390.44
0.001078	8.01	4727.19	346.04	0.34			
Reach 1	46	100-Year	42800.00	369.70	390.34		391.58
0.001261	8.96	5041.60	361.43	0.37			
Reach 1	46	500-Year	60200.00	369.70	392.04		394.06
0.001831	11.46	5679.85	390.81	0.46			
Reach 1	45	10-Year	23200.00	366.70	387.80		387.96
0.000260	3.23	7193.54	575.35	0.16			
Reach 1	45	50-Year	36300.00	366.70	389.29		389.61
0.000444	4.50	8083.23	618.79	0.21			
Reach 1	45	100-Year	42800.00	366.70	390.22		390.60
0.000497	4.98	8668.49	646.44	0.23			
Reach 1	45	500-Year	60200.00	366.70	392.03		392.63
0.000666	6.22	9908.27	701.18	0.27			
Reach 1	44	10-Year	23200.00	367.60	387.72		387.79
0.000098	2.13	10914.07	807.90	0.10			
Reach 1	44	50-Year	36300.00	367.60	389.16		389.30
0.000173	3.02	12090.78	823.95	0.14			
Reach 1	44	100-Year	42800.00	367.60	390.08		390.25
0.000199	3.36	12850.33	834.09	0.15			
Reach 1	44	500-Year	60200.00	367.60	391.86		392.15
0.000277	4.26	14358.84	853.10	0.18			
Reach 1	43	10-Year	23200.00	377.60	387.38		387.65
0.000268	4.21	5605.39	664.24	0.25			
Reach 1	43	50-Year	36300.00	377.60	388.54		389.06
0.000433	5.80	6384.15	673.41	0.32			
Reach 1	43	100-Year	42800.00	377.60	389.37		389.98
0.000461	6.30	6943.43	679.92	0.33			
Reach 1	43	500-Year	60200.00	377.60	390.84		391.76
0.000592	7.76	7951.59	691.50	0.39			
Reach 1	42	10-Year	23200.00	377.60	387.37	381.86	387.64
0.000269	4.22	5559.29	640.20	0.25			

NewKernsvilleDam.rep

Reach 1 0.000439	42 5.83	50-Year 6297.04	36300.00 642.95	377.60 0.32	388.51	383.12	389.04
Reach 1 0.000469	42 6.35	100-Year 6824.70	42800.00 644.91	377.60 0.34	389.33	383.72	389.95
Reach 1 0.000611	42 7.86	500-Year 7755.27	60200.00 648.36	377.60 0.39	390.77	385.09	391.72
Reach 1	41.5		Bridge				
Reach 1 0.003549	41 7.93	10-Year 3238.63	23200.00 521.93	364.40 0.53	374.33		375.27
Reach 1 0.002585	41 8.39	50-Year 5082.40	36300.00 668.09	364.40 0.48	377.36		378.39
Reach 1 0.002247	41 8.56	100-Year 6007.76	42800.00 676.29	364.40 0.46	378.74		379.81
Reach 1 0.001809	41 9.13	500-Year 8209.91	60200.00 703.81	364.40 0.43	381.94		383.14
Reach 1 0.000970	40 6.83	10-Year 4693.94	23200.00 463.82	356.20 0.32	374.33		374.98
Reach 1 0.001219	40 8.64	50-Year 6087.37	36300.00 512.69	356.20 0.36	377.22		378.24
Reach 1 0.001321	40 9.41	100-Year 6809.60	42800.00 675.26	356.20 0.38	378.43		379.62
Reach 1 0.001506	40 11.05	500-Year 8825.78	60200.00 723.82	356.20 0.42	381.29		382.87
Reach 1 0.001134	39 7.18	10-Year 4415.01	23200.00 456.34	356.20 0.34	373.72		374.45
Reach 1 0.001451	39 9.14	50-Year 5687.09	36300.00 489.52	356.20 0.39	376.41		377.56
Reach 1 0.001591	39 9.99	100-Year 6247.58	42800.00 550.79	356.20 0.42	377.52		378.88
Reach 1 0.001856	39 11.83	500-Year 8020.80	60200.00 709.97	356.20 0.46	380.16		382.01
Reach 1 0.002721	38 9.22	10-Year 3293.27	23200.00 709.26	359.70 0.50	372.09		373.39
Reach 1 0.003427	38 11.67	50-Year 4845.86	36300.00 782.69	359.70 0.58	374.17		376.19
Reach 1 0.003798	38 12.79	100-Year 5472.47	42800.00 799.96	359.70 0.62	374.96		377.36
Reach 1 0.004788	38 15.57	500-Year 6877.86	60200.00 841.12	359.70 0.71	376.67	374.61	380.15
Reach 1 0.005178	37 11.76	10-Year 3273.31	23200.00 893.55	354.50 0.68	366.38	364.58	368.20
Reach 1 0.004573	37 12.89	50-Year 5996.56	36300.00 1344.59	354.50 0.67	368.78	367.62	370.73
Reach 1	37	100-Year	42800.00	354.50	369.91		371.77

0.004118	13.01	7514.76	1351.36	0.64			
Reach 1	37	500-Year	60200.00	354.50	372.87		374.47
0.003060	12.89	11538.22	1369.11	0.57			
Reach 1	36	10-Year	23200.00	349.40	362.23	359.16	363.62
0.003412	9.52	2819.26	645.98	0.55			
Reach 1	36	50-Year	36300.00	349.40	365.35	361.83	366.91
0.002771	10.41	4969.07	725.36	0.52			
Reach 1	36	100-Year	42800.00	349.40	366.77	362.97	368.36
0.002520	10.68	6008.24	738.27	0.51			
Reach 1	36	500-Year	60200.00	349.40	370.37	365.27	371.95
0.001975	11.04	9320.97	1028.57	0.47			

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : Corr. Effect. Run

River: Schuylkill River Reach: Reach 1 RS: 53 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 100-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 50-Year

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

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 100-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 100-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 500-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 100-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 10-Year

Warning:The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 10-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 10-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 50-Year

Warning:The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 50-Year Upstream

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

used.

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 50-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 100-Year

Warning: The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 100-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 100-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 500-Year

Warning: The pressure flow/weir flow answer did not converge within the given number of iterations. However, the error was small enough that the solution was treated as valid.

Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 500-Year Upstream

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

Note: For the cross section inside the bridge at the upstream end, the water surface and energy have been projected from the upstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

River: Schuylkill River Reach: Reach 1 RS: 41.5 Profile: 500-Year Downstream

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

Note: For the cross section inside the bridge at the downstream end, the water surface is based on critical depth over the weir. The energy has been projected.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 40 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

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

cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 500-Year

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.

**K – DEP Duplicate Effective Model Vs. DEP Corrected Effective Model
Comparison Table**

Duplicate Effective Model Vs. Corrected Effective Model Comparison Table

FEMA FIS Q 100-Yr (CFS)	Description	River Station	Duplicate Effective Model 100-Yr WSEL (NGVD29)	Corrected Effective Model 100-Yr WSEL (NGVD29)	Difference (Feet)
42,800		53	402.34	402.42	0.08
42,800		52	401.85	401.94	0.09
Rt. 61 Bridge					
42,800		51	401.64	402	0.09
42,800		50	400.51	400.63	0.12
42,800	Interpolated	49.800*	-----	400.17	-----
42,800	Interpolated	49.600*	-----	399.67	-----
42,800	Interpolated	49.400*	-----	399.14	-----
42,800	Interpolated	49.200*	-----	398.6	-----
42,800	Cross Section BL	49	397.86	398.1	0.24
42,800	Interpolated	48.889*	-----	397.54	-----
42,800	Interpolated	48.778*	-----	396.97	-----
42,800	Interpolated	48.667*	-----	396.41	-----
42,800	Interpolated	48.556*	-----	395.88	-----
42,800	Interpolated	48.444*	-----	395.38	-----
42,800	Interpolated	48.333*	-----	394.9	-----
42,800	Interpolated	48.222*	-----	394.44	-----
42,800	Interpolated	48.111*	-----	394	-----
42,800		48	393.56	393.56	0.00
42,800		47	391.39	391.39	0.00
42,800	Cross Section BK	46	390.34	390.34	0.00
42,800		45	390.22	390.22	0.00
42,800		44	390.08	390.08	0.00
42,800		43	389.37	389.37	0.00
42,800	US of Dam Crest	42	389.33	389.33	0.00
New Kernsville Dam					
42,800	DS of Dam Crest	41	378.74	378.74	0.00
42,800		40	378.43	378.43	0.00
42,800		39	377.52	377.52	0.00
Upstream of Island					
42,800	Cross Section BJ	38	374.96	374.96	0.00
42,800	Center of Island	37	369.91	369.91	0.00
42,800	Toe of Island	36	366.77	366.77	0.00

L – DEP Corrected Proposed Model HEC-RAS Input and Output Data

HEC-RAS HEC-RAS 5.0.3 September 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

X	X	XXXXXX	XXXX	XXXX	XX	XXXX
X	X	X	X X	X X	X X	X
X	X	X	X	X X	X X	X
XXXXXXXX	XXXX	X	XXX	XXXX	XXXXXX	XXXX
X	X	X	X	X X	X X	X
X	X	X	X X	X X	X X	X
X	X	XXXXXX	XXXX	X X	X X	XXXXX

PROJECT DATA

Project Title: New Kernsville Dam
Project File : NewKernsvilleDam.prj
Run Date and Time: 5/8/2018 8:54:29 AM

Project in English units

Project Description:
New Kernsville Dam Removal
D06-434
Tilden and Windsor Townships
Berks
County, PA

Schuylkill River FEMA FIS Flows from Downstream of Little
Schuylkill River to Upstream of Maiden Creek

10-Year = 23,200 CFS
50-Year
=36,300 CFS
100-Year = 42,800 CFS
500-Year = 60,200 CFS

PLAN DATA

Plan Title: Corrected Proposed Run
Plan File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology &
Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.p04

Geometry Title: Corrected Proposed Model
Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville
Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g04

Flow Title : FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Plan Summary Information:

Number of: Cross Sections = 28 Multiple Openings = 0
 Culverts = 0 Inline Structures = 0
 Bridges = 0 Lateral Structures = 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: Between every coordinate point (HEC2 Style)
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA Flow

Flow File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.f01

Flow Data (cfs)

River	Reach	RS	10-Year	50-Year	100-Year
500-Year Schuylkill River	Reach 1	53	23200	36300	42800
60200					

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Schuylkill River	Reach 1	10-Year	Known WS = 397.19	Known WS = 362.23
Schuylkill River	Reach 1	50-Year	Known WS = 400.8	Known WS = 365.35
Schuylkill River	Reach 1	100-Year	Known WS = 402.33	Known WS = 366.77
Schuylkill River	Reach 1	500-Year	Known WS = 405.9	Known WS = 370.37

GEOMETRY DATA

Geometry Title: Corrected Proposed Model

Geometry File : P:\Devel\PROJECT FILES\+MISCELLANEOUS ITEMS\D06-434 New Kernsville Dam\Hydrology & Hydraulics\CLOMR Review\HEC-RAS\NewKernsvilleDam.g04

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 53

INPUT

Description: 529719 (Start Run)

Station Elevation Data		num=		18					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	425.2	1020	417.7	1060	393.1	1070	390.2	1130	385.6
1150	381.1	1160	380.2	1220	382.9	1240	382.9	1260	384
1270	385.5	1280	388.5	1320	407.7	1330	408.9	1340	408.8
1430	405.7	1490	409.3	1516	418.8				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1070	.04	1280	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1070	1280		320	357		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 52

INPUT

Description: 529362 (Upstream of Rt. 61 Bridge)

Station Elevation Data		num=		27					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7
1646.1	434.8	1651.07	434.9						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		104	104		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 51

INPUT

Description: 529258 (Downstream of Rt. 61 Bridge)

Station Elevation Data		num= 27							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	441.9	1063.9	414.4	1120.7	386.6	1149.1	381.7	1156.2	381.5
1163.3	381.6	1191.7	382.4	1241.4	382.7	1255.6	382.5	1269.8	382.8
1298.2	382.8	1319.5	384.1	1326.6	385.7	1333.7	388.4	1362.1	405
1369.2	408.2	1390.5	409.4	1404.7	412.7	1440.2	430.1	1454.4	432.6
1461.5	436.2	1468.6	437.7	1518.3	436.1	1525.4	436	1575.1	434.7
1646.1	434.8	1651.07	434.9						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1120.7	.04	1333.7	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1120.7	1333.7		255	255		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 50

INPUT

Description: 529003

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	411.9	1030	405.3	1040	404.7	1080	389.6	1140	383.1
1180	383.2	1200	382.9	1210	382.8	1220	382.9	1230	382.9
1240	382.7	1260	382.7	1280	384	1290	386.6	1330	406.8
1340	409.1	1350	409.3	1390	409.1	1420	408.7	1460	411.6
1510	429.5	1524	431.2						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1080	.04	1290	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1080	1290		84	115		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 49.800*

INPUT

Description:

Station Elevation Data		num= 33							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	413.76	1020.32	409.15	1047.25	404.63	1063	403.27	1065.03	402.77
1093.48	395.31	1097.55	394.48	1105.68	393	1116.65	390.91	1126	389.18

NewKernsvilleDam.rep

1183	383.14	1221	382.66	1240	382.13	1249.5	381.91	1259	381.85
1265.33	381.76	1268.5	381.73	1278	381.46	1294	381.46	1302.3	381.97
1310.6	383	1315.08	383.63	1325.62	386.68	1362.74	404.79	1372.03	407.12
1381.31	407.77	1418.43	409.56	1446.28	410.7	1458.77	412.14	1473.26	413.59
1483.4	414.28	1529.81	428.88	1542.8	430.32				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1126	.04	1325.62	.12

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1126	1325.62		84	115	140		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49.600*

INPUT
 Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	415.62	1027.74	409.24	1064.5	403.97	1086	401.85	1088.77	401.33
1127.61	393.24	1133.16	392.53	1144.26	391.52	1159.24	389.98	1172	388.76
1226	383.17	1262	382.11	1280	381.37	1289	381.03	1298	380.81
1304	380.62	1307	380.55	1316	380.22	1328	380.22	1336.72	380.73
1345.45	382.27	1350.16	383.26	1361.24	386.76	1395.49	402.78	1404.05	405.14
1412.61	406.24	1446.86	410.02	1472.55	412.71	1484.08	414.61	1497.44	416.36
1506.8	416.96	1549.61	428.26	1561.6	429.44				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1172	.04	1361.24	.12

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1172	1361.24		84	115	140		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49.400*

INPUT
 Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	417.48	1035.16	409.32	1081.75	403.3	1109	400.42	1112.52	399.89
1161.74	391.16	1168.77	390.59	1182.84	390.05	1201.83	389.06	1218	388.34
1269	383.21	1303	381.57	1320	380.6	1328.5	380.14	1337	379.76
1342.67	379.48	1345.5	379.38	1354	378.98	1362	378.98	1371.15	379.48
1380.3	381.55	1385.24	382.9	1396.86	386.84	1428.23	400.78	1436.08	403.16
1443.92	404.7	1475.3	410.48	1498.83	414.71	1509.38	417.07	1521.63	419.14
1530.2	419.64	1569.42	427.64	1580.4	428.56				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1218	.04	1396.86	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1218	1396.86		84	115		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49.200*

INPUT
 Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	419.34	1042.58	409.41	1099	402.64	1132	398.99	1136.26	398.44
1195.87	389.08	1204.39	388.64	1221.42	388.57	1244.41	388.13	1264	387.92
1312	383.25	1344	381.02	1360	379.84	1368	379.26	1376	378.71
1381.33	378.34	1384	378.2	1392	377.74	1396	377.74	1405.57	378.24
1415.15	380.82	1420.32	382.53	1432.48	386.92	1460.98	398.77	1468.1	401.18
1475.23	403.17	1503.73	410.94	1525.1	416.71	1534.69	419.54	1545.81	421.92
1553.6	422.33	1589.23	427.03	1599.2	427.68				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1264	.04	1432.48	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1264	1432.48		84	115		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 49

INPUT
 Description: 528428

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	421.2	1050	409.5	1160	397	1230	387	1240	386.7
1260	387.1	1287	387.2	1310	387.5	1420	377.2	1430	376.5
1440	377	1450	380.1	1468.1	387	1560	422	1570	424.7
1618	426.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1310	.04	1468.1	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1310	1468.1		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1

RS: 48.889*

INPUT

Description:

Station Elevation Data									
num= 31									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	422.87	1046.1	411.44	1147.52	398.07	1185.6	391.98	1212.06	387.92
1221.28	387.51	1239.72	387.58	1264.62	387.28	1285.82	387.22	1297.11	385.88
1311.97	384.33	1391.5	377.26	1401.11	376.61	1405.3	376.78	1409.49	376.95
1413.21	377.09	1417.87	378.15	1422.06	379.08	1425.3	379.85	1434.63	382.56
1438.82	383.87	1447.2	386.79	1501.18	403.45	1540.44	415.79	1545.34	417.49
1552.8	420.84	1560.07	423.48	1564.29	424.84	1564.97	424.93	1618.95	426.21
1619.44	426.21								

Manning's n Values					
num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1285.82	.04	1447.2	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1285.82	1447.2		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1

RS: 48.778*

INPUT

Description:

Station Elevation Data									
num= 31									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	424.53	1042.2	413.38	1135.04	399.14	1169.9	392.86	1194.12	388.85
1202.56	388.33	1219.44	388.06	1242.23	387.37	1261.64	386.94	1272.47	385.36
1286.72	383.72	1363.01	377.31	1372.22	376.72	1377.14	376.88	1382.05	377.06
1386.42	377.18	1391.89	378.11	1396.8	378.9	1400.61	379.61	1411.55	382.07
1416.47	383.39	1426.3	386.58	1487.28	402	1531.63	413.68	1537.18	415.46
1545.6	419.68	1553.81	423.26	1558.58	424.97	1559.35	425.14	1620.33	425.63
1620.89	425.62								

Manning's n Values					
num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1261.64	.04	1426.3	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1261.64	1426.3		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1

RS: 48.667*

INPUT

Description:

Station Elevation Data									
num= 31									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	426.2	1038.3	415.32	1122.56	400.21	1154.2	393.73	1176.18	389.77

NewKernsvilleDam.rep

1183.85	389.14	1199.17	388.55	1219.85	387.45	1237.47	386.67	1247.84	384.83
1261.48	383.1	1334.51	377.37	1343.33	376.83	1348.98	376.98	1354.62	377.16
1359.62	377.27	1365.9	378.06	1371.55	378.71	1375.91	379.36	1388.47	381.59
1394.12	382.91	1405.4	386.37	1473.38	400.56	1522.83	411.57	1529.01	413.42
1538.4	418.53	1547.55	423.04	1552.87	425.11	1553.73	425.35	1621.72	425.05
1622.33	425.03								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1237.47	.04	1405.4	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1237.47	1405.4		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.556*

INPUT
 Description:
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	427.87	1034.4	417.26	1110.08	401.28	1138.5	394.61	1158.25	390.69
1165.13	389.95	1178.89	389.03	1197.46	387.54	1213.29	386.39	1223.2	384.31
1236.23	382.48	1306.01	377.42	1314.44	376.94	1320.81	377.09	1327.18	377.27
1332.83	377.36	1339.92	378.02	1346.29	378.53	1351.22	379.12	1365.39	381.11
1371.76	382.42	1384.5	386.16	1459.49	399.12	1514.02	409.46	1520.84	411.38
1531.2	417.37	1541.29	422.82	1547.16	425.24	1548.11	425.56	1623.1	424.48
1623.78	424.44								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1213.29	.04	1384.5	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1213.29	1384.5		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.444*

INPUT
 Description:
 Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	429.53	1030.5	419.2	1097.61	402.35	1122.8	395.49	1140.31	391.61
1146.41	390.76	1158.61	389.51	1175.08	387.62	1189.11	386.11	1198.56	383.79
1210.99	381.87	1277.52	377.48	1285.56	377.06	1292.65	377.19	1299.75	377.38
1306.04	377.44	1313.94	377.98	1321.03	378.34	1326.52	378.87	1342.32	380.63
1349.41	381.94	1363.6	385.94	1445.59	397.67	1505.22	407.35	1512.67	409.35
1523.99	416.21	1535.03	422.59	1541.45	425.38	1542.49	425.77	1624.48	423.9
1625.22	423.86								

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1189.11 .04 1363.6 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1189.11 1363.6 104.44 101.44 97.22 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.333*

INPUT

Description:

Station Elevation Data num= 31
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 431.2 1026.6 421.14 1085.13 403.42 1107.1 396.37 1122.37 392.54
 1127.69 391.58 1138.33 389.99 1152.7 387.71 1164.93 385.83 1173.92 383.27
 1185.74 381.25 1249.02 377.54 1256.67 377.17 1264.49 377.29 1272.31 377.48
 1279.25 377.53 1287.95 377.93 1295.77 378.16 1301.83 378.62 1319.24 380.15
 1327.06 381.45 1342.7 385.73 1431.69 396.23 1496.41 405.23 1504.5 407.31
 1516.79 415.05 1528.78 422.37 1535.74 425.51 1536.87 425.98 1625.86 423.33
 1626.67 423.27

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1164.93 .04 1342.7 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1164.93 1342.7 104.44 101.44 97.22 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.222*

INPUT

Description:

Station Elevation Data num= 31
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 432.87 1022.7 423.08 1072.65 404.49 1091.4 397.24 1104.43 393.46
 1108.97 392.39 1118.05 390.48 1130.31 387.79 1140.76 385.56 1149.28 382.74
 1160.49 380.63 1220.53 377.59 1227.78 377.28 1236.33 377.39 1244.87 377.59
 1252.46 377.62 1261.97 377.89 1270.52 377.97 1277.13 378.38 1296.16 379.66
 1304.71 380.97 1321.8 385.52 1417.79 394.79 1487.61 403.12 1496.34 405.27
 1509.59 413.9 1522.52 422.15 1530.03 425.65 1531.24 426.18 1627.24 422.75
 1628.11 422.68

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .12 1140.76 .04 1321.8 .12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1140.76 1321.8 104.44 101.44 97.22 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48.111*

INPUT

Description:

Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	434.53	1018.8	425.02	1060.17	405.56	1075.7	398.12	1086.49	394.38
1090.25	393.2	1097.77	390.96	1107.93	387.88	1116.58	385.28	1124.64	382.22
1135.25	380.02	1192.03	377.65	1198.89	377.39	1208.16	377.5	1217.44	377.69
1225.66	377.71	1235.98	377.84	1245.26	377.79	1252.44	378.13	1273.08	379.18
1282.35	380.48	1300.9	385.31	1403.9	393.34	1478.8	401.01	1488.17	403.24
1502.39	412.74	1516.26	421.92	1524.32	425.78	1525.62	426.39	1628.62	422.18
1629.56	422.09								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1116.58	.04	1300.9	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1116.58	1300.9		104.44	101.44		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 48

INPUT

Description: 527515

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	436.2	1060	399	1092.4	385	1100	381.7	1110	379.4
1170	377.5	1180	377.6	1190	377.8	1210	377.8	1220	377.6
1250	378.7	1260	380	1280	385.1	1390	391.9	1470	398.9
1480	401.2	1510	421.7	1520	426.6	1630	421.6	1631	421.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1092.4	.04	1280	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1092.4	1280		1150	1111		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 47

INPUT

Description: 526404

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

NewKernsvilleDam.rep

1000	405.8	1050	378.6	1060	374.3	1070	372.3	1090	371
1100	371	1150	372.8	1160	372.8	1250	376	1260	379.2
1270	384	1280	386.5	1360	395.5	1370	395.4	1380	395.3
1390	395.2	1470	393.9	1540	393.6	1560	394.2	1570	395.6
1610	406.2	1630	408	1640	408.1	1650	407.8	1660	408.8
1680	419.1	1707	425.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1050	.04	1260	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1050	1260		983	983		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 46

INPUT
 Description: 525421
 Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	399.5	1035.5	380	1040	377.5	1060	371.4	1090	369.7
1100	369.8	1130	370.4	1150	370.5	1160	370.4	1260	372.8
1270	374.2	1280	377	1300	385.3	1410	392.4	1520	394.4
1560	395.4	1620	404.4	1650	405.4	1660	407.6	1690	430.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1035.5	.04	1300	.12

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1035.5	1300		900	965		.1	.3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 45

INPUT
 Description: 524456
 Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.6	1010	394.4	1020	390.2	1030	387.1	1050	383.8
1080	373	1190	366.8	1200	366.7	1240	366.7	1310	369.3
1330	373	1350	373.9	1360	373.9	1390	373.4	1500	383.3
1610	388.1	1690	391.1	1710	390.6	1750	399	1760	400.2
1820	394.5	1930	398.3	1970	398.4	1980	398.5	2060	398.7
2170	400.3	2220	400.9	2230	400.9	2260	400.5	2270	400.6
2310	401.5	2370	416.5	2380	417.5	2402	416.8		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1610	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1030 1610 820 956 820 .1 .3

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 44

INPUT

Description: 523500

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	404.3	1020	389.9	1030	384.2	1090	371.6	1160	367.6
1270	367.8	1380	372	1400	372.4	1420	372.2	1450	372.8
1480	373	1590	375.1	1700	378.5	1810	385.4	1870	391.8
1890	395.3	1940	396.9	1960	396.9	1990	398	2000	398
2040	398	2050	398	2110	400.7	2120	401	2170	401
2260	404.7	2270	404.7	2380	407.7	2399	408		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1030	.04	1810	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1030 1810 592 592 592 .3 .5

CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 41

INPUT

Description: 522908 (Downstream of Dam Crest)

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.1	1020	380.3	1030	377.4	1050	376.4	1060	374.5
1080	364.5	1100	366.3	1200	366.9	1210	367	1220	368.7
1230	373.8	1240	376.4	1320	365.1	1340	364.4	1380	364.4
1490	371.8	1570	375.8	1600	375.8	1630	374.5	1660	365.4
1670	364.3	1680	366.6	1690	370.8	1700	378.2	1710	381.4
1720	381.7	1730	383.4	1770	393	1810	394.4	1860	393.1
1880	393.1	1930	395	1944	395.1				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1060	.04	1490	.12

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1060 1490 88 88 88 .3 .5

CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 40

INPUT

Description: 522820

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1110	.04	1320	.12

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

1110	1320	502	502	502	.1	.3
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CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 39

INPUT

Description: 522318

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	400.3	1110	372.8	1170	357.6	1220	356.2	1250	358.2
1260	356.8	1270	356.6	1300	358	1320	363.9	1380	366.7
1390	366.7	1420	365.9	1470	369.3	1510	367.4	1600	378.2
1650	377.9	1680	377.1	1710	377.5	1740	377.8	1780	378.9
1880	390.9	1890	391.1	1900	391.1	1933	391.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1110	.04	1320	.12

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

1110	1320	600	600	600	.1	.3
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CROSS SECTION

RIVER: Schuylkill River

REACH: Reach 1 RS: 38

INPUT

Description: 521718 (Upstream of Island)

Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	394.5	1110	389.2	1170	384.4	1180	384.6	1230	372
1280	370.5	1390	370.9	1410	370.9	1490	369.3	1540	360.2
1550	360.1	1560	360.2	1590	360.3	1600	360.5	1610	360.4
1620	360.2	1640	360.8	1650	360.8	1690	359.7	1700	359.9
1710	361.4	1726.6	369	1740	375.1	1770	377.9	1780	377

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1790	374.4	1900	369.6	1920	369.4	2010	369.5	2040	370.7
2120	383.6	2130	384.1	2240	381.6	2300	376.7	2310	377
2330	380.1	2340	384.2	2380	411.5	2382	411.3		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	1490	.04	1726.6	.12	1770	100

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

1490	1726.6	1100	1429	1390	.1	.3
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 37

INPUT
 Description: 520289 (Center of Island)

Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	386.5	1050	368.5	1060	368.5	1160	368.5	1170	368.5
1250	368.5	1260	366.4	1280	367.2	1350	363.7	1360	363.7
1430	365.5	1460	365.7	1500	366.1	1570	366.3	1580	365.4
1620	356.7	1630	356.2	1640	356.2	1720	366.5	1730	366.6
1830	366.5	1860	366.8	1890	366.8	1980	365.3	1990	365.3
2060	366.3	2070	366.3	2180	360.7	2290	354.5	2330	356.9
2340	356.9	2360	358.3	2410	373.8	2465	398		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.12	2180	.04	2360	.12

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

2180	2360	880	1088	1088	.1	.3
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CROSS SECTION

RIVER: Schuylkill River
 REACH: Reach 1 RS: 36

INPUT
 Description: 519201 (At Toe of Island)

Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	391.8	1010	386.8	1020	383.3	1060	375.3	1170	369.5
1230	367.8	1260	367.8	1300	367.8	1310	367.8	1320	367.8
1340	367.8	1350	367.8	1420	367.8	1430	366.9	1460	361.4
1470	361.4	1510	361.4	1530	361.4	1590	361.4	1620	361.4
1710	361.4	1720	361.4	1760	361.4	1770	361	1830	350.1
1850	349.4	1960	352.9	2000	354.3	2030	357.8	2130	364
2140	363.9	2150	363.8	2160	364.3	2200	375.3	2210	374.5
2230	371.1	2240	370.5	2350	372.1	2460	381.6	2463	381.6

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
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1000 .12 1770 .04 2030 .12 2200 100

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1770 2030 0 0 0 .1 .3

SUMMARY OF MANNING'S N VALUES

River:Schuylkill River

Reach	River Sta.	n1	n2	n3	n4
Reach 1	53	.12	.04	.12	
Reach 1	52	.12	.04	.12	
Reach 1	51	.12	.04	.12	
Reach 1	50	.12	.04	.12	
Reach 1	49.800*	.12	.04	.12	
Reach 1	49.600*	.12	.04	.12	
Reach 1	49.400*	.12	.04	.12	
Reach 1	49.200*	.12	.04	.12	
Reach 1	49	.12	.04	.12	
Reach 1	48.889*	.12	.04	.12	
Reach 1	48.778*	.12	.04	.12	
Reach 1	48.667*	.12	.04	.12	
Reach 1	48.556*	.12	.04	.12	
Reach 1	48.444*	.12	.04	.12	
Reach 1	48.333*	.12	.04	.12	
Reach 1	48.222*	.12	.04	.12	
Reach 1	48.111*	.12	.04	.12	
Reach 1	48	.12	.04	.12	
Reach 1	47	.12	.04	.12	
Reach 1	46	.12	.04	.12	
Reach 1	45	.12	.04	.12	
Reach 1	44	.12	.04	.12	
Reach 1	41	.12	.04	.12	
Reach 1	40	.12	.04	.12	
Reach 1	39	.12	.04	.12	
Reach 1	38	.12	.04	.12	100
Reach 1	37	.12	.04	.12	
Reach 1	36	.12	.04	.12	100

SUMMARY OF REACH LENGTHS

River: Schuylkill River

Reach	River Sta.	Left	Channel	Right
Reach 1	53	320	357	390
Reach 1	52	104	104	104
Reach 1	51	255	255	255
Reach 1	50	84	115	140
Reach 1	49.800*	84	115	140
Reach 1	49.600*	84	115	140

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Reach 1	49.400*	84	115	140
Reach 1	49.200*	84	115	140
Reach 1	49	104.44	101.44	97.22
Reach 1	48.889*	104.44	101.44	97.22
Reach 1	48.778*	104.44	101.44	97.22
Reach 1	48.667*	104.44	101.44	97.22
Reach 1	48.556*	104.44	101.44	97.22
Reach 1	48.444*	104.44	101.44	97.22
Reach 1	48.333*	104.44	101.44	97.22
Reach 1	48.222*	104.44	101.44	97.22
Reach 1	48.111*	104.44	101.44	97.22
Reach 1	48	1150	1111	1020
Reach 1	47	983	983	983
Reach 1	46	900	965	900
Reach 1	45	820	956	820
Reach 1	44	592	592	592
Reach 1	41	88	88	88
Reach 1	40	502	502	502
Reach 1	39	600	600	600
Reach 1	38	1100	1429	1390
Reach 1	37	880	1088	1088
Reach 1	36	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Schuylkill River

Reach	River Sta.	Contr.	Expan.
Reach 1	53	.1	.3
Reach 1	52	.1	.3
Reach 1	51	.1	.3
Reach 1	50	.1	.3
Reach 1	49.800*	.1	.3
Reach 1	49.600*	.1	.3
Reach 1	49.400*	.1	.3
Reach 1	49.200*	.1	.3
Reach 1	49	.1	.3
Reach 1	48.889*	.1	.3
Reach 1	48.778*	.1	.3
Reach 1	48.667*	.1	.3
Reach 1	48.556*	.1	.3
Reach 1	48.444*	.1	.3
Reach 1	48.333*	.1	.3
Reach 1	48.222*	.1	.3
Reach 1	48.111*	.1	.3
Reach 1	48	.1	.3
Reach 1	47	.1	.3
Reach 1	46	.1	.3
Reach 1	45	.1	.3
Reach 1	44	.3	.5
Reach 1	41	.3	.5
Reach 1	40	.1	.3
Reach 1	39	.1	.3

Reach 1	38	.1	.3
Reach 1	37	.1	.3
Reach 1	36	.1	.3

Profile Output Table - Standard Table 1

Reach E.G. Slope (ft/ft)	River Sta Vel Chnl (ft/s)	Profile Flow Area (sq ft)	Q Total Top Width (cfs) (ft)	Min Ch El Froude # Chl (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)
Reach 1 0.001712	53 8.45	10-Year 2870.35	23200.00 244.72	380.20 0.41	397.18		398.28
Reach 1 0.001809	53 10.25	50-Year 3790.51	36300.00 258.29	380.20 0.44	400.84		402.45
Reach 1 0.001854	53 11.01	100-Year 4198.95	42800.00 264.09	380.20 0.46	402.40		404.26
Reach 1 0.001967	53 12.82	500-Year 5192.14	60200.00 294.06	380.20 0.48	406.06		408.56
Reach 1 0.001365	52 7.85	10-Year 3094.46	23200.00 247.99	381.50 0.37	396.74		397.69
Reach 1 0.001515	52 9.67	50-Year 4019.50	36300.00 261.62	381.50 0.41	400.37		401.81
Reach 1 0.001577	52 10.44	100-Year 4429.91	42800.00 267.45	381.50 0.42	401.92		403.59
Reach 1 0.001720	52 12.26	500-Year 5424.64	60200.00 281.34	381.50 0.45	405.55		407.84
Reach 1 0.001425	51 7.95	10-Year 3051.46	23200.00 247.34	381.50 0.38	396.57		397.54
Reach 1 0.001576	51 9.79	50-Year 3967.31	36300.00 260.87	381.50 0.42	400.17		401.64
Reach 1 0.001638	51 10.56	100-Year 4373.78	42800.00 266.66	381.50 0.43	401.71		403.42
Reach 1 0.001784	51 12.39	500-Year 5357.76	60200.00 280.33	381.50 0.46	405.31		407.65
Reach 1 0.002494	50 9.47	10-Year 2559.76	23200.00 243.94	382.70 0.49	395.65		397.03
Reach 1 0.002515	50 11.33	50-Year 3435.36	36300.00 260.03	382.70 0.51	399.12		401.09
Reach 1 0.002542	50 12.13	100-Year 3825.67	42800.00 266.89	382.70 0.53	400.61		402.85
Reach 1 0.002641	50 14.02	500-Year 4772.59	60200.00 282.83	382.70 0.55	404.05		407.04
Reach 1 0.002624	49.800* 9.79	10-Year 2515.26	23200.00 249.43	381.46 0.50	395.25		396.73
Reach 1	49.800*	50-Year	36300.00	381.46	398.68		400.78

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0.002676	11.73	3405.62	269.61	0.53		
Reach 1	49.800*	100-Year	42800.00	381.46	400.14	402.54
0.002712	12.56	3805.99	278.18	0.54		
Reach 1	49.800*	500-Year	60200.00	381.46	403.55	406.71
0.002824	14.51	4786.46	300.39	0.57		
Reach 1	49.600*	10-Year	23200.00	380.22	394.82	396.40
0.002810	10.18	2486.12	258.43	0.52		
Reach 1	49.600*	50-Year	36300.00	380.22	398.20	400.44
0.002888	12.21	3399.50	281.89	0.55		
Reach 1	49.600*	100-Year	42800.00	380.22	399.64	402.19
0.002933	13.07	3812.53	291.88	0.56		
Reach 1	49.600*	500-Year	60200.00	380.22	403.00	406.35
0.003052	15.07	4836.36	321.92	0.59		
Reach 1	49.400*	10-Year	23200.00	378.98	394.34	396.05
0.003064	10.64	2476.06	269.92	0.54		
Reach 1	49.400*	50-Year	36300.00	378.98	397.68	400.08
0.003150	12.73	3421.06	296.25	0.58		
Reach 1	49.400*	100-Year	42800.00	378.98	399.10	401.83
0.003198	13.61	3850.13	307.46	0.59		
Reach 1	49.400*	500-Year	60200.00	378.98	402.45	405.97
0.003290	15.60	4936.57	343.99	0.62		
Reach 1	49.200*	10-Year	23200.00	377.74	393.82	395.67
0.003388	11.14	2490.85	283.38	0.57		
Reach 1	49.200*	50-Year	36300.00	377.74	397.13	399.69
0.003454	13.26	3478.01	312.45	0.60		
Reach 1	49.200*	100-Year	42800.00	377.74	398.55	401.43
0.003492	14.16	3928.46	325.00	0.61		
Reach 1	49.200*	500-Year	60200.00	377.74	401.94	405.57
0.003515	16.08	5099.03	365.50	0.63		
Reach 1	49	10-Year	23200.00	376.50	393.26	395.24
0.003788	11.68	2532.86	298.35	0.60		
Reach 1	49	50-Year	36300.00	376.50	396.58	399.26
0.003780	13.78	3577.78	330.35	0.63		
Reach 1	49	100-Year	42800.00	376.50	398.04	401.01
0.003759	14.62	4068.64	346.19	0.63		
Reach 1	49	500-Year	60200.00	376.50	401.47	405.16
0.003721	16.50	5326.20	385.47	0.65		
Reach 1	48.889*	10-Year	23200.00	376.61	392.77	394.84
0.003946	11.83	2391.75	285.91	0.61		
Reach 1	48.889*	50-Year	36300.00	376.61	396.05	398.86
0.003944	13.98	3380.86	317.05	0.64		
Reach 1	48.889*	100-Year	42800.00	376.61	397.46	400.60
0.003954	14.87	3837.47	330.44	0.65		
Reach 1	48.889*	500-Year	60200.00	376.61	400.79	404.74
0.003978	16.89	4994.66	365.66	0.67		

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Reach 1 0.004104	48.778* 11.96	10-Year 2276.44	23200.00 275.42	376.72 0.63	392.28		394.43
Reach 1 0.004151	48.778* 14.19	50-Year 3209.92	36300.00 306.20	376.72 0.66	395.49		398.43
Reach 1 0.004177	48.778* 15.12	100-Year 3640.32	42800.00 319.29	376.72 0.67	396.86		400.17
Reach 1 0.004270	48.778* 17.27	500-Year 4714.71	60200.00 350.70	376.72 0.70	400.07		404.29
Reach 1 0.004235	48.667* 12.03	10-Year 2188.98	23200.00 266.52	376.83 0.63	391.80		394.00
Reach 1 0.004343	48.667* 14.36	50-Year 3073.88	36300.00 298.10	376.83 0.67	394.93		397.99
Reach 1 0.004389	48.667* 15.32	100-Year 3482.64	42800.00 311.08	376.83 0.68	396.28		399.72
Reach 1 0.004554	48.667* 17.60	500-Year 4491.19	60200.00 341.00	376.83 0.72	399.37		403.82
Reach 1 0.004345	48.556* 12.07	10-Year 2125.95	23200.00 259.48	376.94 0.64	391.34		393.56
Reach 1 0.004522	48.556* 14.49	50-Year 2968.01	36300.00 292.50	376.94 0.68	394.39		397.53
Reach 1 0.004590	48.556* 15.49	100-Year 3359.18	42800.00 305.81	376.94 0.70	395.70		399.26
Reach 1 0.004830	48.556* 17.87	500-Year 4314.79	60200.00 335.74	376.94 0.74	398.68	395.93	403.32
Reach 1 0.004469	48.444* 12.10	10-Year 2080.18	23200.00 252.44	377.06 0.65	390.87		393.12
Reach 1 0.004687	48.444* 14.58	50-Year 2891.45	36300.00 288.80	377.06 0.69	393.86		397.06
Reach 1 0.004792	48.444* 15.62	100-Year 3264.71	42800.00 303.30	377.06 0.71	395.12		398.77
Reach 1 0.005091	48.444* 18.09	500-Year 4183.43	60200.00 334.05	377.06 0.75	398.00		402.81
Reach 1 0.004623	48.333* 12.15	10-Year 2048.47	23200.00 246.48	377.17 0.66	390.39		392.65
Reach 1 0.004856	48.333* 14.65	50-Year 2837.01	36300.00 287.87	377.17 0.70	393.33		396.58
Reach 1 0.004976	48.333* 15.72	100-Year 3201.41	42800.00 303.23	377.17 0.72	394.56		398.27
Reach 1 0.005263	48.333* 18.17	500-Year 4113.76	60200.00 336.29	377.17 0.76	397.41	395.11	402.28
Reach 1 0.004855	48.222* 12.24	10-Year 2018.68	23200.00 245.94	377.28 0.67	389.87		392.17
Reach 1 0.005061	48.222* 14.74	50-Year 2797.99	36300.00 289.59	377.28 0.71	392.78		396.07
Reach 1 0.005178	48.222* 15.81	100-Year 3161.01	42800.00 306.93	377.28 0.73	393.99		397.76
Reach 1	48.222*	500-Year	60200.00	377.28	396.86	394.82	401.74

NewKernsvilleDam.rep

0.005380	18.17	4093.42	342.41	0.77			
Reach 1 0.005287	48.111* 12.47	10-Year 1971.20	23200.00 248.09	377.39 0.70	389.25		391.65
Reach 1 0.005363	48.111* 14.90	50-Year 2763.01	36300.00 295.17	377.39 0.73	392.17		395.54
Reach 1 0.005448	48.111* 15.94	100-Year 3132.82	42800.00 314.64	377.39 0.75	393.38		397.22
Reach 1 0.005471	48.111* 18.12	500-Year 4115.59	60200.00 352.21	377.39 0.77	396.33	394.39	401.18
Reach 1 0.006305	48 13.07	10-Year 1866.94	23200.00 249.01	377.50 0.75	388.41		391.05
Reach 1 0.005955	48 15.27	50-Year 2697.14	36300.00 304.48	377.50 0.76	391.41	389.62	394.96
Reach 1 0.005823	48 16.14	100-Year 3107.57	42800.00 324.70	377.50 0.77	392.71	390.91	396.64
Reach 1 0.005561	48 18.06	500-Year 4176.96	60200.00 367.18	377.50 0.78	395.80	393.93	400.60
Reach 1 0.002956	47 9.96	10-Year 2382.97	23200.00 233.15	371.00 0.53	384.55		386.09
Reach 1 0.003332	47 12.33	50-Year 3075.42	36300.00 254.29	371.00 0.58	387.41		389.76
Reach 1 0.003497	47 13.35	100-Year 3388.94	42800.00 267.19	371.00 0.61	388.61		391.36
Reach 1 0.003895	47 15.77	500-Year 4170.32	60200.00 296.91	371.00 0.66	391.38		395.18
Reach 1 0.003175	46 9.41	10-Year 2468.33	23200.00 258.73	369.70 0.53	381.65		383.03
Reach 1 0.003778	46 11.74	50-Year 3105.50	36300.00 268.94	369.70 0.60	384.07		386.21
Reach 1 0.004051	46 12.75	100-Year 3376.86	42800.00 273.18	369.70 0.63	385.07		387.60
Reach 1 0.004495	46 15.06	500-Year 4076.46	60200.00 311.79	369.70 0.68	387.47		390.99
Reach 1 0.002037	45 6.92	10-Year 3354.17	23200.00 398.24	366.70 0.42	379.67		380.42
Reach 1 0.002498	45 8.54	50-Year 4250.82	36300.00 428.37	366.70 0.48	381.84		382.98
Reach 1 0.002652	45 9.17	100-Year 4665.43	42800.00 441.61	366.70 0.50	382.80		384.10
Reach 1 0.002969	45 10.31	500-Year 5838.07	60200.00 504.69	366.70 0.53	385.29		386.94
Reach 1 0.004450	44 7.55	10-Year 3074.29	23200.00 577.75	367.60 0.58	376.75		377.63
Reach 1 0.003396	44 7.90	50-Year 4592.28	36300.00 657.11	367.60 0.53	379.19		380.16

NewKernsvilleDam.rep

Reach 1 0.002933	44 7.96	100-Year 5374.86	42800.00 681.32	367.60 0.50	380.36		381.34
Reach 1 0.002136	44 8.01	500-Year 7512.64	60200.00 743.45	367.60 0.44	383.36		384.36
Reach 1 0.003549	41 7.93	10-Year 3238.63	23200.00 521.93	364.40 0.53	374.33		375.27
Reach 1 0.002585	41 8.39	50-Year 5082.40	36300.00 668.09	364.40 0.48	377.36		378.39
Reach 1 0.002247	41 8.56	100-Year 6007.76	42800.00 676.29	364.40 0.46	378.74		379.81
Reach 1 0.001809	41 9.13	500-Year 8209.91	60200.00 703.81	364.40 0.43	381.94		383.14
Reach 1 0.000970	40 6.83	10-Year 4693.94	23200.00 463.82	356.20 0.32	374.33		374.98
Reach 1 0.001219	40 8.64	50-Year 6087.37	36300.00 512.69	356.20 0.36	377.22		378.24
Reach 1 0.001321	40 9.41	100-Year 6809.60	42800.00 675.26	356.20 0.38	378.43		379.62
Reach 1 0.001506	40 11.05	500-Year 8825.78	60200.00 723.82	356.20 0.42	381.29		382.87
Reach 1 0.001134	39 7.18	10-Year 4415.01	23200.00 456.34	356.20 0.34	373.72		374.45
Reach 1 0.001451	39 9.14	50-Year 5687.09	36300.00 489.52	356.20 0.39	376.41		377.56
Reach 1 0.001591	39 9.99	100-Year 6247.58	42800.00 550.79	356.20 0.42	377.52		378.88
Reach 1 0.001856	39 11.83	500-Year 8020.80	60200.00 709.97	356.20 0.46	380.16		382.01
Reach 1 0.002721	38 9.22	10-Year 3293.27	23200.00 709.26	359.70 0.50	372.09		373.39
Reach 1 0.003427	38 11.67	50-Year 4845.86	36300.00 782.69	359.70 0.58	374.17		376.19
Reach 1 0.003798	38 12.79	100-Year 5472.47	42800.00 799.96	359.70 0.62	374.96		377.36
Reach 1 0.004788	38 15.57	500-Year 6877.86	60200.00 841.12	359.70 0.71	376.67	374.61	380.15
Reach 1 0.005178	37 11.76	10-Year 3273.31	23200.00 893.55	354.50 0.68	366.38	364.58	368.20
Reach 1 0.004573	37 12.89	50-Year 5996.56	36300.00 1344.59	354.50 0.67	368.78	367.62	370.73
Reach 1 0.004118	37 13.01	100-Year 7514.76	42800.00 1351.36	354.50 0.64	369.91		371.77
Reach 1 0.003060	37 12.89	500-Year 11538.22	60200.00 1369.11	354.50 0.57	372.87		374.47
Reach 1	36	10-Year	23200.00	349.40	362.23	359.16	363.62

0.003412	9.52	2819.26	645.98	0.55			
Reach 1	36	50-Year	36300.00	349.40	365.35	361.83	366.91
0.002771	10.41	4969.07	725.36	0.52			
Reach 1	36	100-Year	42800.00	349.40	366.77	362.97	368.36
0.002520	10.68	6008.24	738.27	0.51			
Reach 1	36	500-Year	60200.00	349.40	370.37	365.22	371.95
0.001975	11.04	9320.97	1028.57	0.47			

ERRORS WARNINGS AND NOTES

Errors Warnings and Notes for Plan : Corr. Proposed Run

River: Schuylkill River Reach: Reach 1 RS: 53 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 100-Year

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

River: Schuylkill River Reach: Reach 1 RS: 51 Profile: 500-Year

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

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 50-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 100-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 48 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 10-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 47 Profile: 500-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 10-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 50-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 100-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 46 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 10-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 45 Profile: 500-Year

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 10-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 44 Profile: 500-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 41 Profile: 50-Year

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 40 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 10-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 50-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 39 Profile: 500-Year

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

Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4.

This may indicate the need for additional cross sections.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 50-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 38 Profile: 100-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: SchuylkillRiver Reach: Reach 1 RS: 38 Profile: 500-Year

Warning:Divided flow computed for this cross-section.

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 energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 10-Year

Warning:Divided flow computed for this cross-section.

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 50-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 100-Year

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

the need for additional cross sections.

River: Schuylkill River Reach: Reach 1 RS: 37 Profile: 500-Year

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

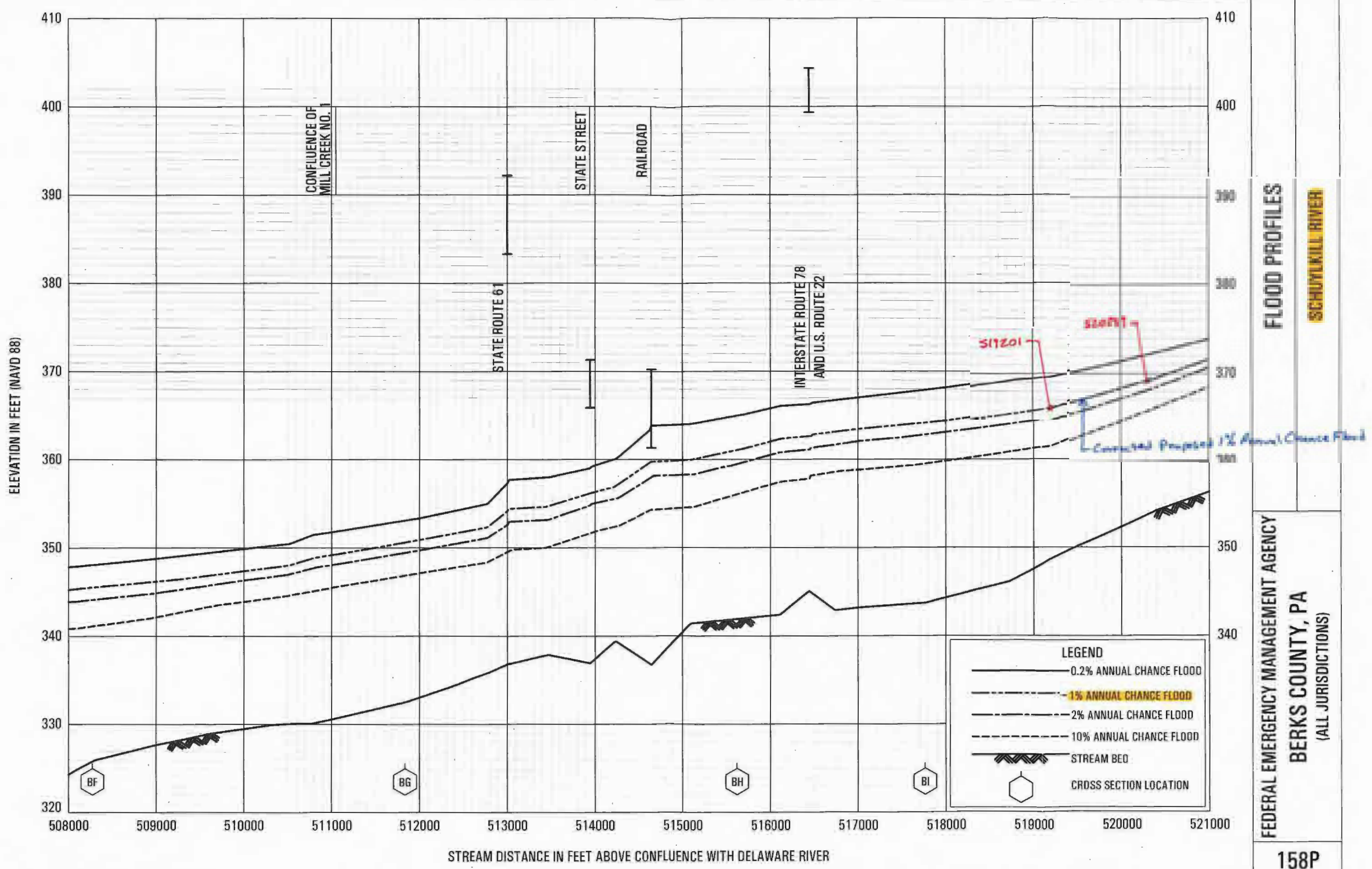
the need for additional cross sections.

**M – DEP Corrected Effective Model Vs. DEP Corrected Proposed Model
Comparison Table**

Corrected Effective Model Vs. Corrected Proposed Model Comparison Table

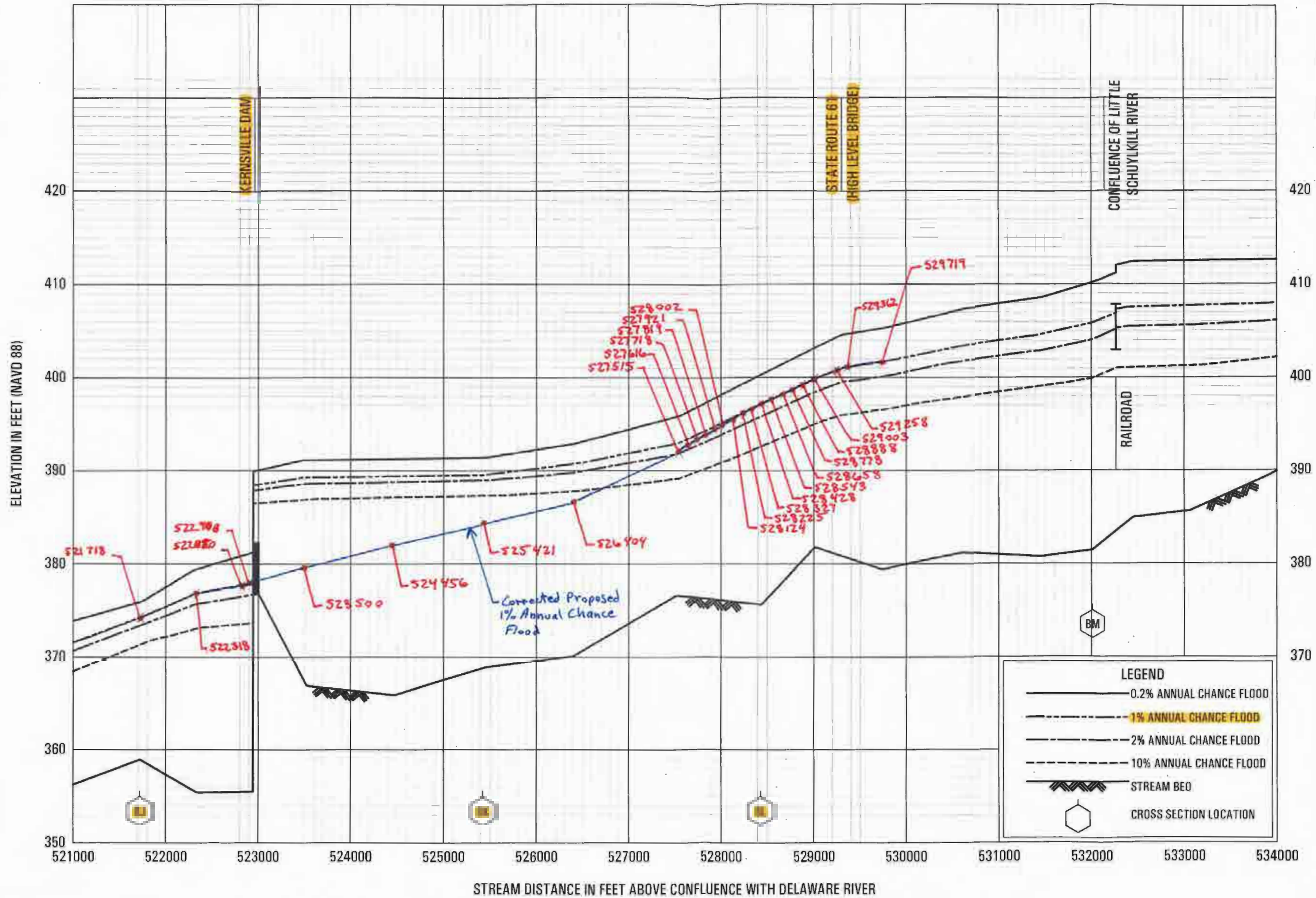
FEMA FIS Q 100-Yr (CFS)	Description	River Station	Corrected Effective Model 100-Yr WSEL (NGVD29)	Corrected Proposed Model 100-Yr WSEL (NGVD29)	Difference (Feet)
42,800		53	402.42	402.4	-0.02
42,800		52	401.94	401.92	-0.02
Rt. 61 Bridge					
42,800		51	402	402	-0.02
42,800		50	400.63	400.61	-0.02
42,800	Interpolated	49.800*	400.17	400.14	-0.03
42,800	Interpolated	49.600*	399.67	399.64	-0.03
42,800	Interpolated	49.400*	399.14	399.1	-0.04
42,800	Interpolated	49.200*	398.6	398.55	-0.05
42,800	Cross Section BL	49	398.1	398.04	-0.06
42,800	Interpolated	48.889*	397.54	397.46	-0.08
42,800	Interpolated	48.778*	396.97	396.86	-0.11
42,800	Interpolated	48.667*	396.41	396.28	-0.13
42,800	Interpolated	48.556*	395.88	395.7	-0.18
42,800	Interpolated	48.444*	395.38	395.12	-0.26
42,800	Interpolated	48.333*	394.9	394.56	-0.34
42,800	Interpolated	48.222*	394.44	393.99	-0.45
42,800	Interpolated	48.111*	394	393.38	-0.62
42,800		48	393.56	392.71	-0.85
42,800		47	391.39	388.61	-2.78
42,800	Cross Section BK	46	390.34	385.07	-5.27
42,800		45	390.22	382.8	-7.42
42,800		44	390.08	380.36	-9.72
42,800		43	389.37	Removed	N/A
42,800	US of Dam Crest	42	389.33	Removed	N/A
New Kernsville Dam					
42,800	DS of Dam Crest	41	378.74	378.74	0.00
42,800		40	378.43	378.43	0.00
42,800		39	377.52	377.52	0.00
Upstream of Island					
42,800	Cross Section BJ	38	374.96	374.96	0.00
42,800	Center of Island	37	369.91	369.91	0.00
42,800	Toe of Island	36	366.77	366.77	0.00

**N – FEMA FIS Flood Profiles with Corrected Proposed
Water Surface Elevations**



FLOOD PROFILES
SCHUYLKILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY
BERKS COUNTY, PA
 (ALL JURISDICTIONS)



FLOOD PROFILES

SCHUYLKILL RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BERKS COUNTY, PA

(ALL JURISDICTIONS)

O – FEMA Flood Insurance Rate Maps

P – New Kernsville Impounding Dam Construction Drawings

SCHUYLKILL RIVER PROJECT

D. 100
100

NEW KENNSVILLE IMPOUNDING DAM

APPROXIMATE LOCATION OF DAM, PROJECT AREA

CONTRACT NO. 1
100-100

CONTRACT NO. 1
100-100

CONTRACT NO. 1
100-100

CONTRACT NO. 1
100-100

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for financial transparency and accountability.

2. The second part outlines the specific procedures for recording transactions, including the use of standardized forms and the requirement for double-checking entries to ensure accuracy.

3. The third part addresses the role of internal controls in preventing errors and fraud. It highlights the need for a robust system of checks and balances to safeguard the organization's assets.

4. The fourth part discusses the importance of regular audits and reviews. It states that periodic audits are necessary to verify the integrity of the records and to identify any discrepancies or areas for improvement.

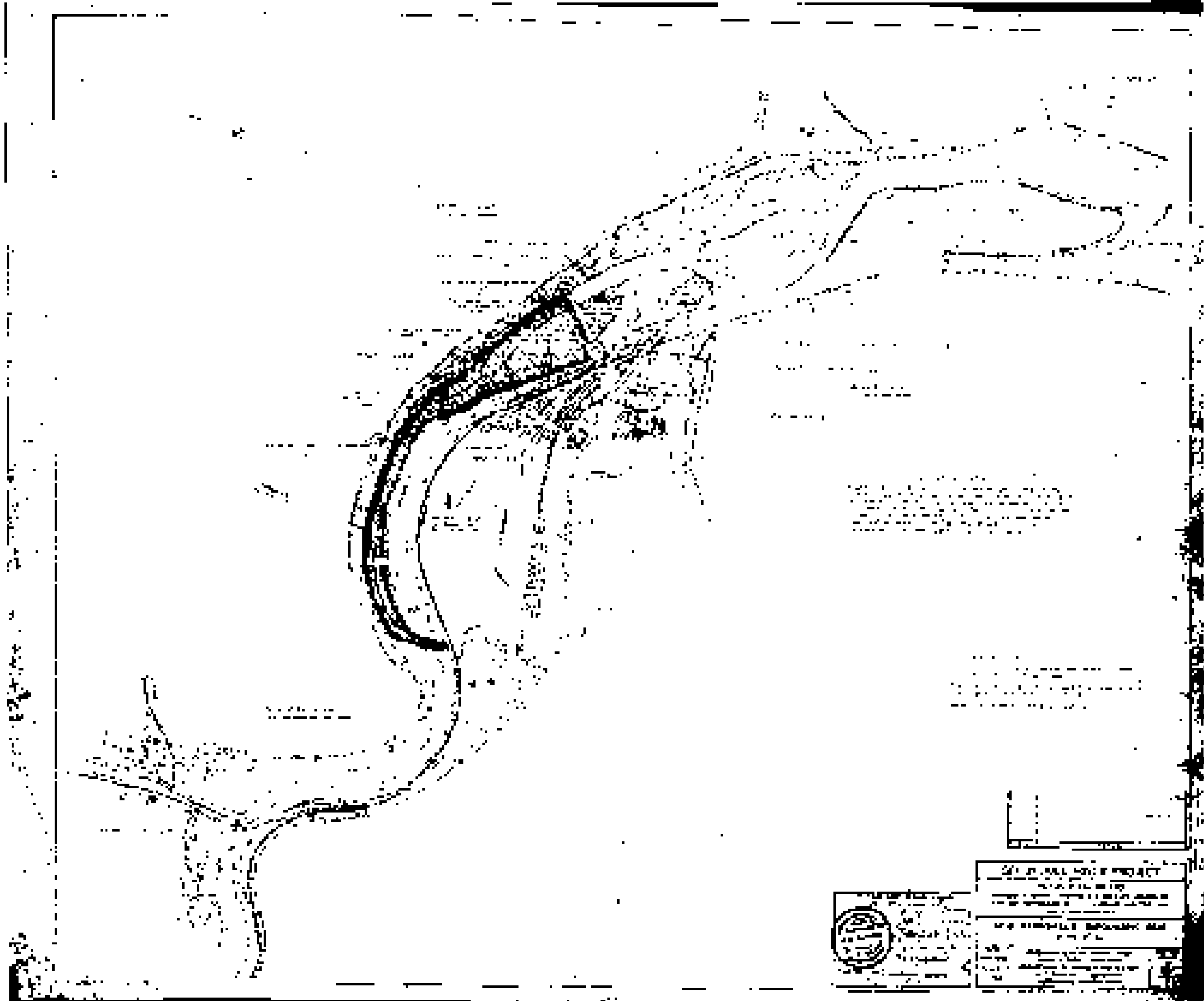
5. The fifth part provides guidance on the retention and disposal of records. It specifies the minimum retention periods for different types of documents and the proper methods for securely destroying sensitive information.

6. The sixth part concludes by reinforcing the overall goal of the document: to ensure that all records are maintained in a clear, concise, and accessible manner that supports the organization's mission and objectives.

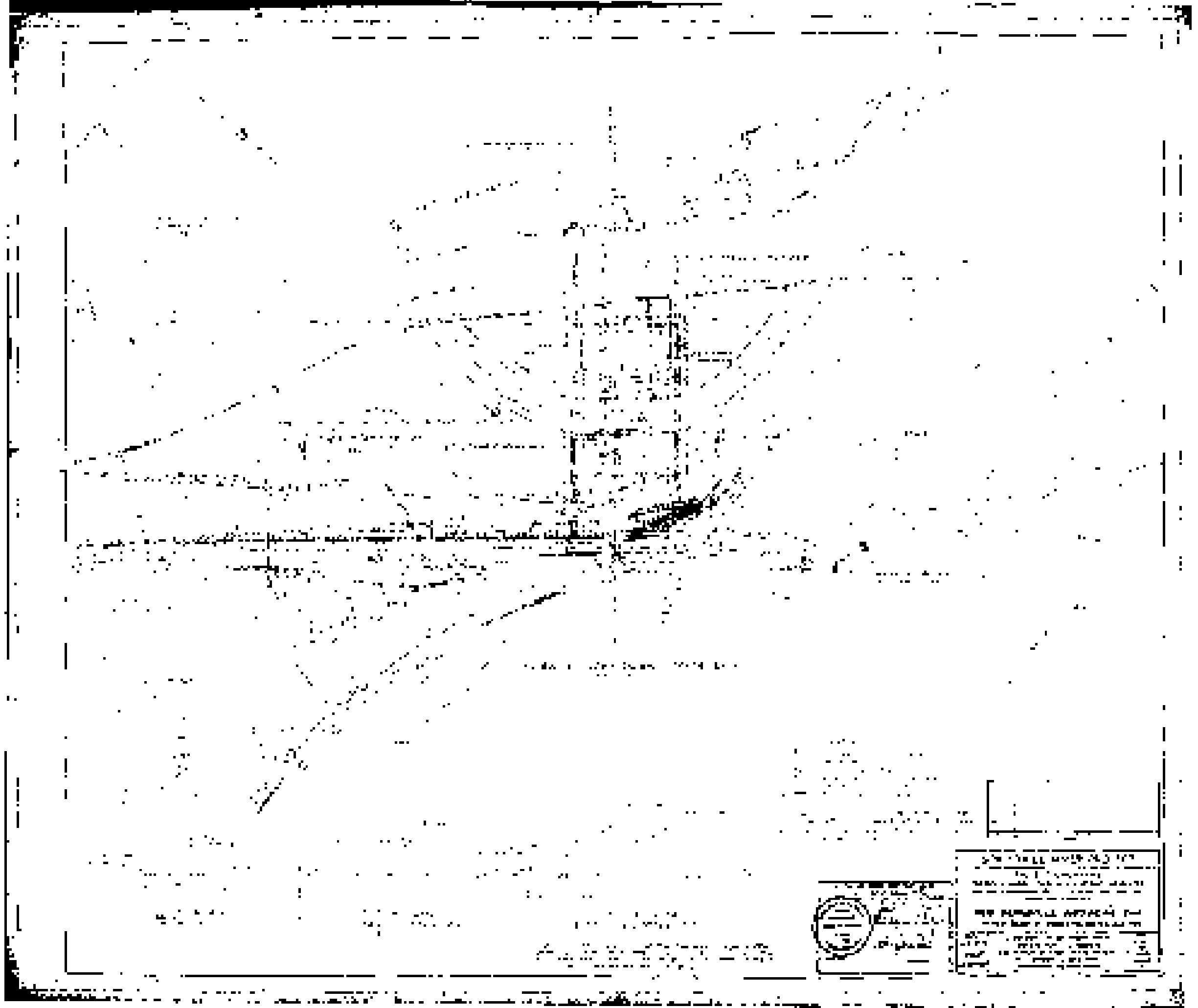
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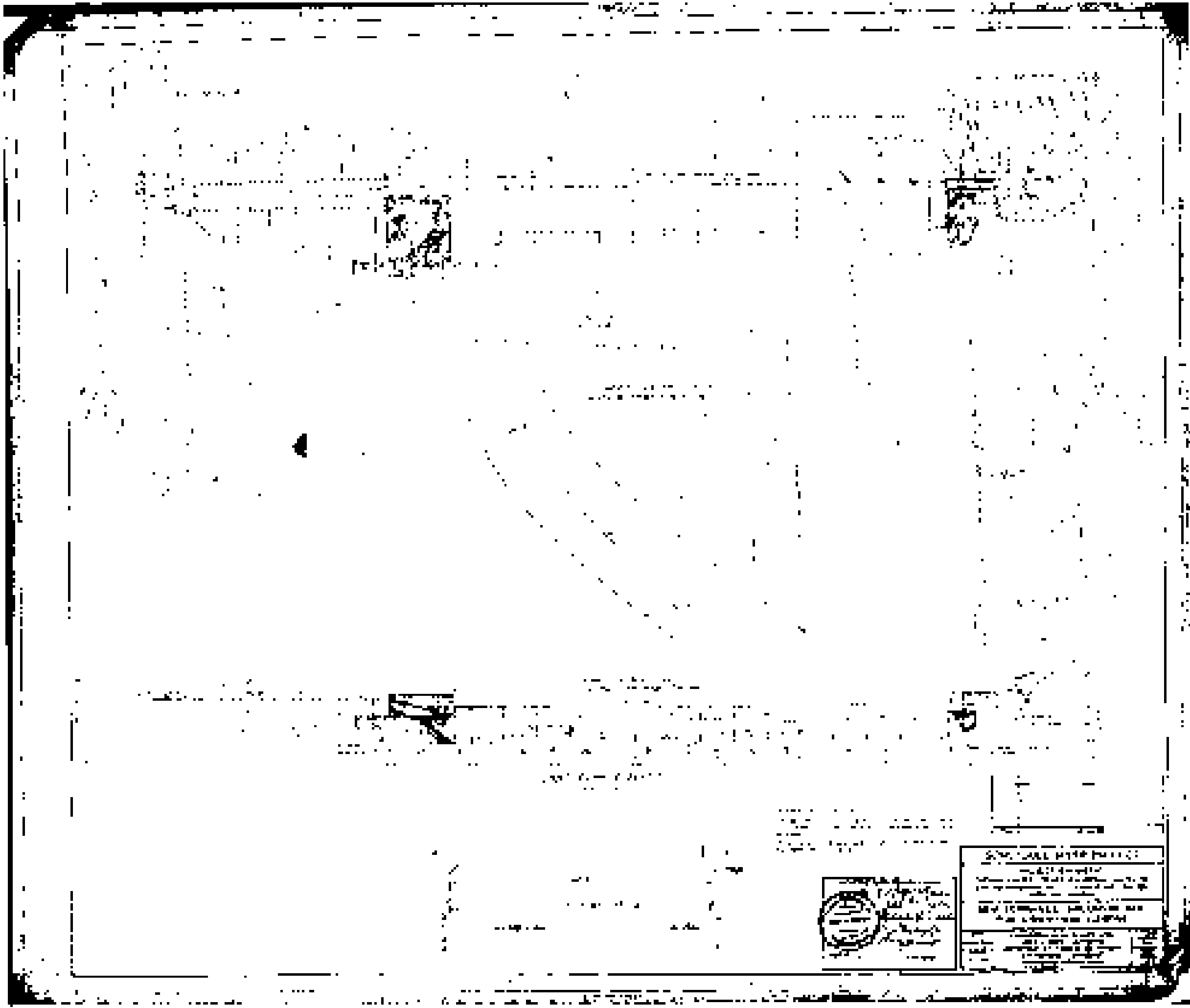
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PAGE: 1 OF 1
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BY: [Signature]
FOR: [Signature]



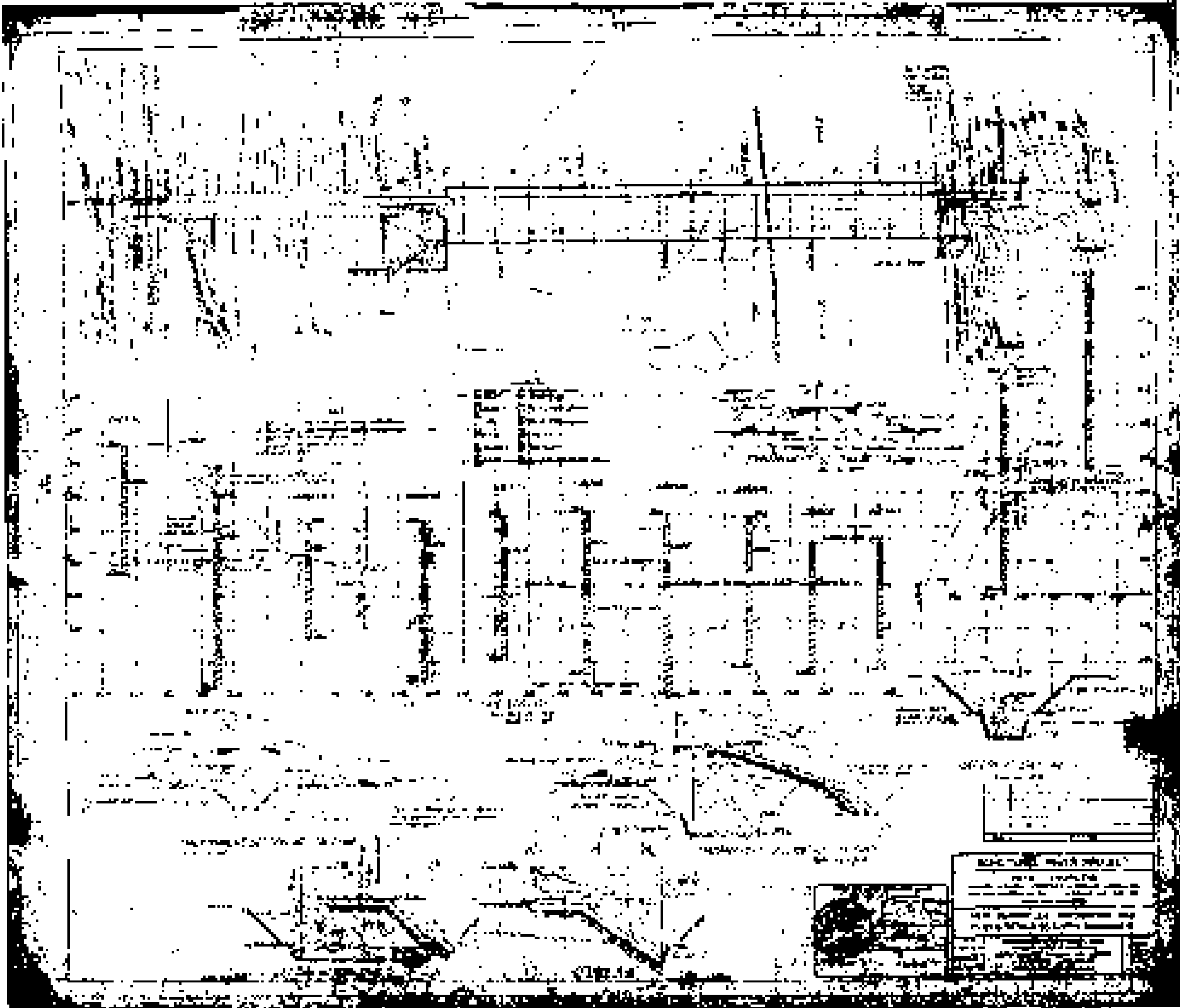
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DEPARTMENT OF GEOLOGY
ANN ARBOR, MICHIGAN 48106-1063
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FAX: 734 763 2346
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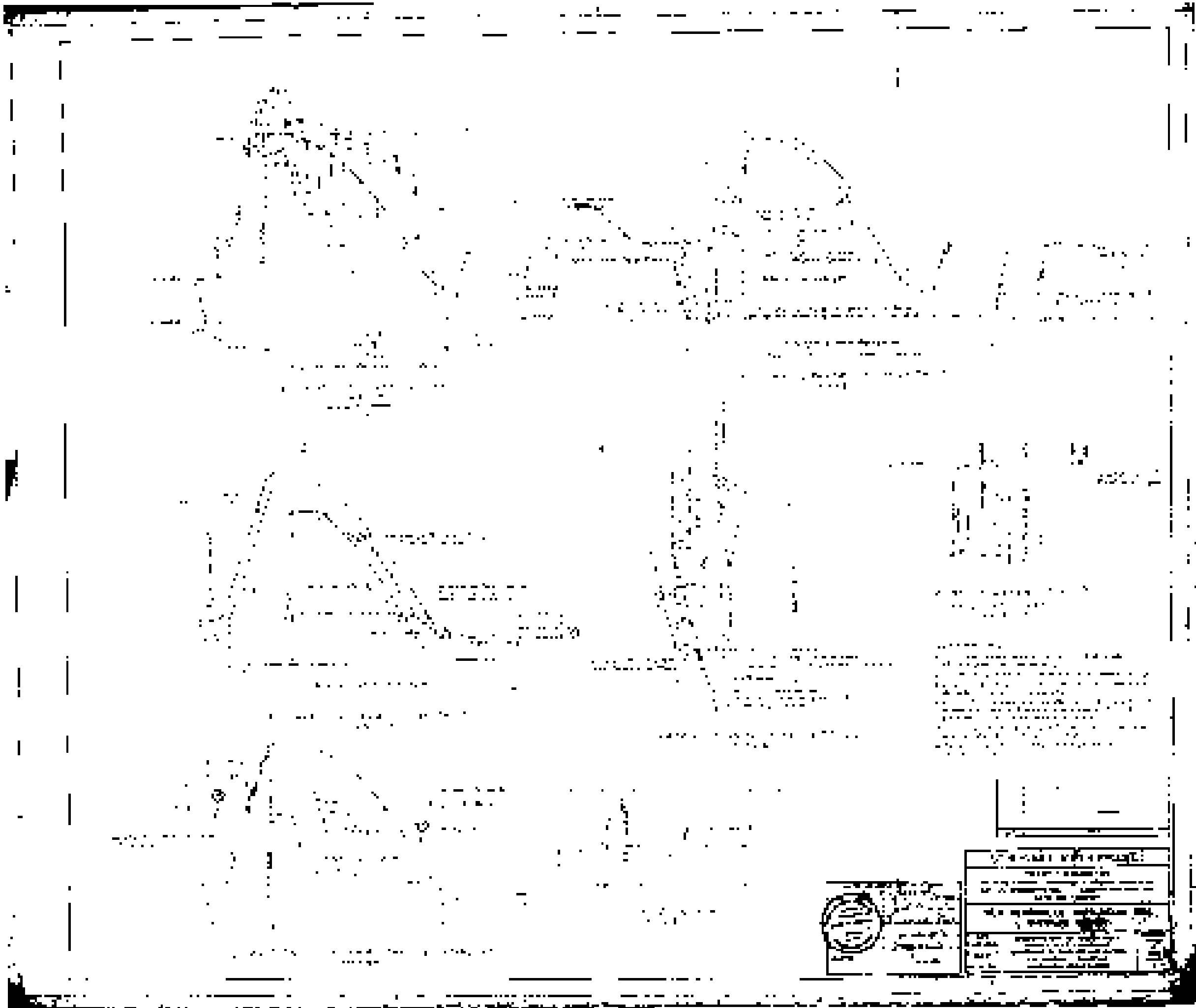
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COUNTY OF [illegible]
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[illegible text]
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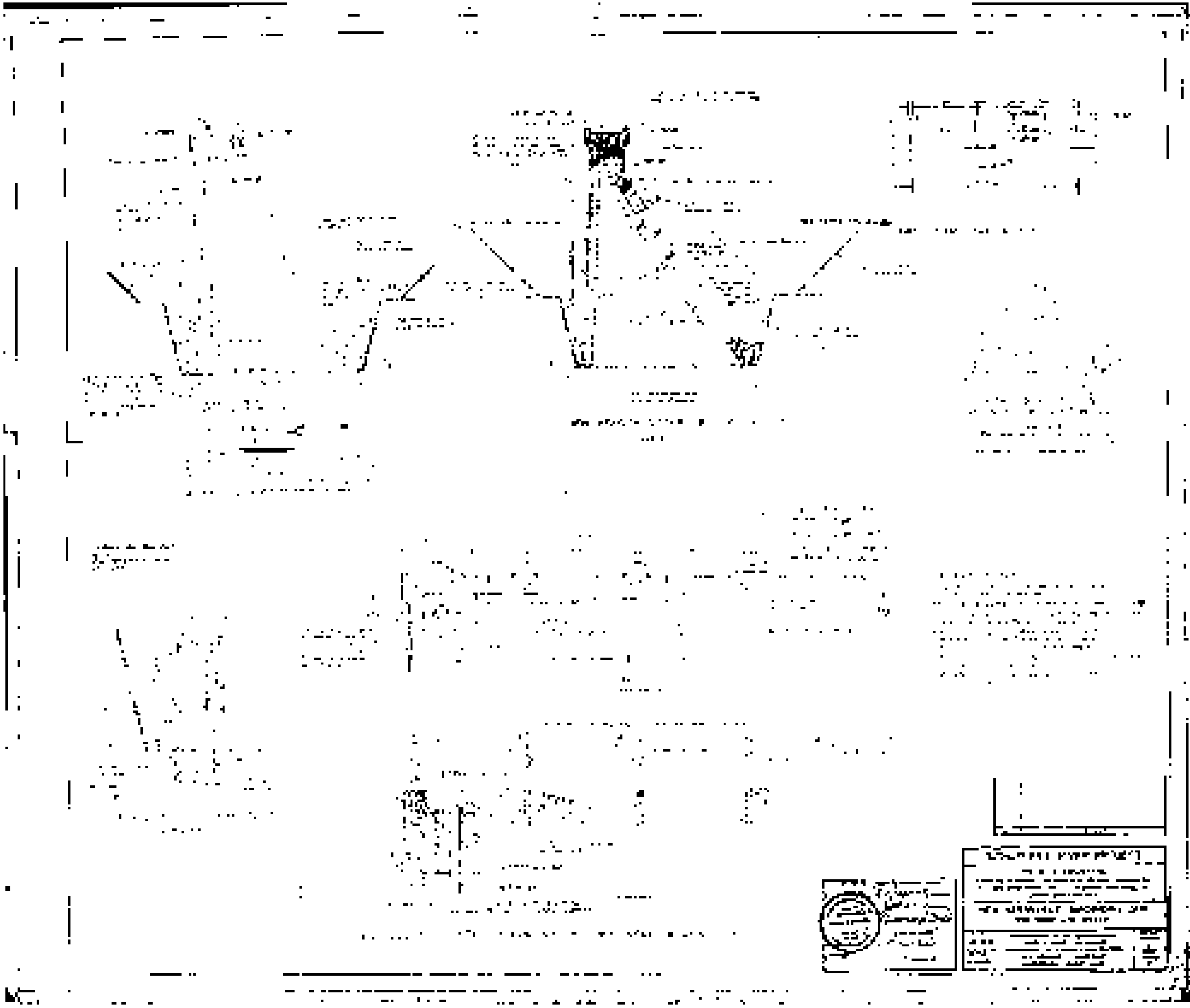
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SECTION 101-101-101

SECTION 101-101-101
SECTION 101-101-101
SECTION 101-101-101

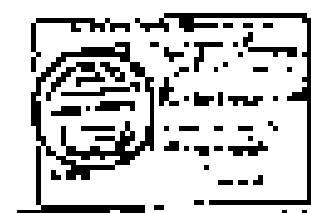




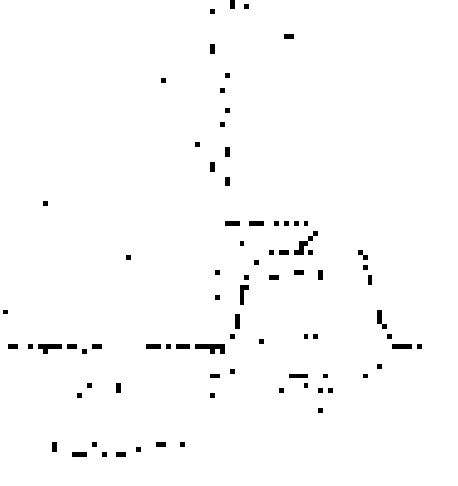
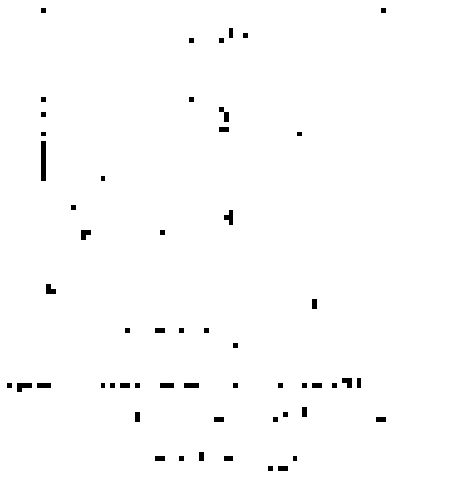
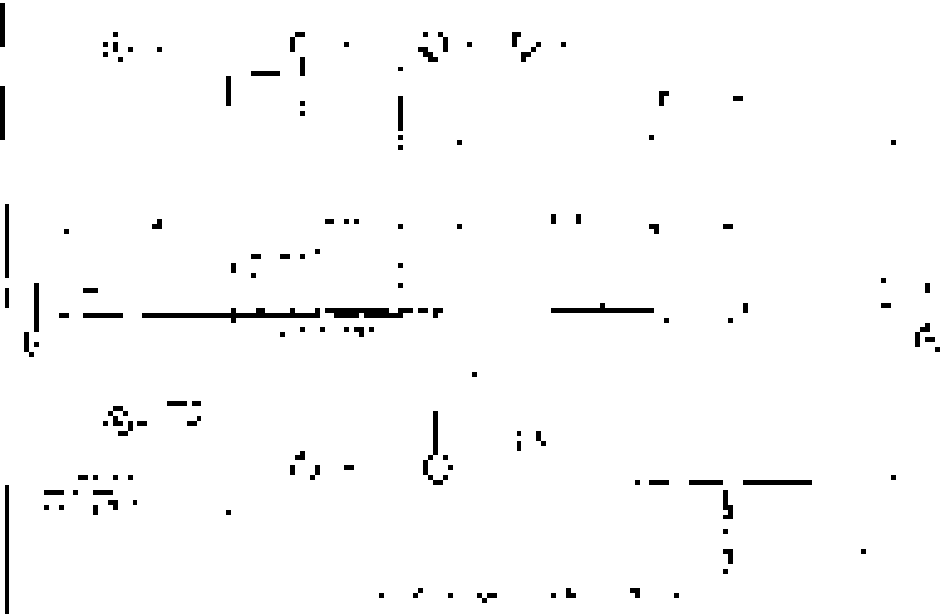
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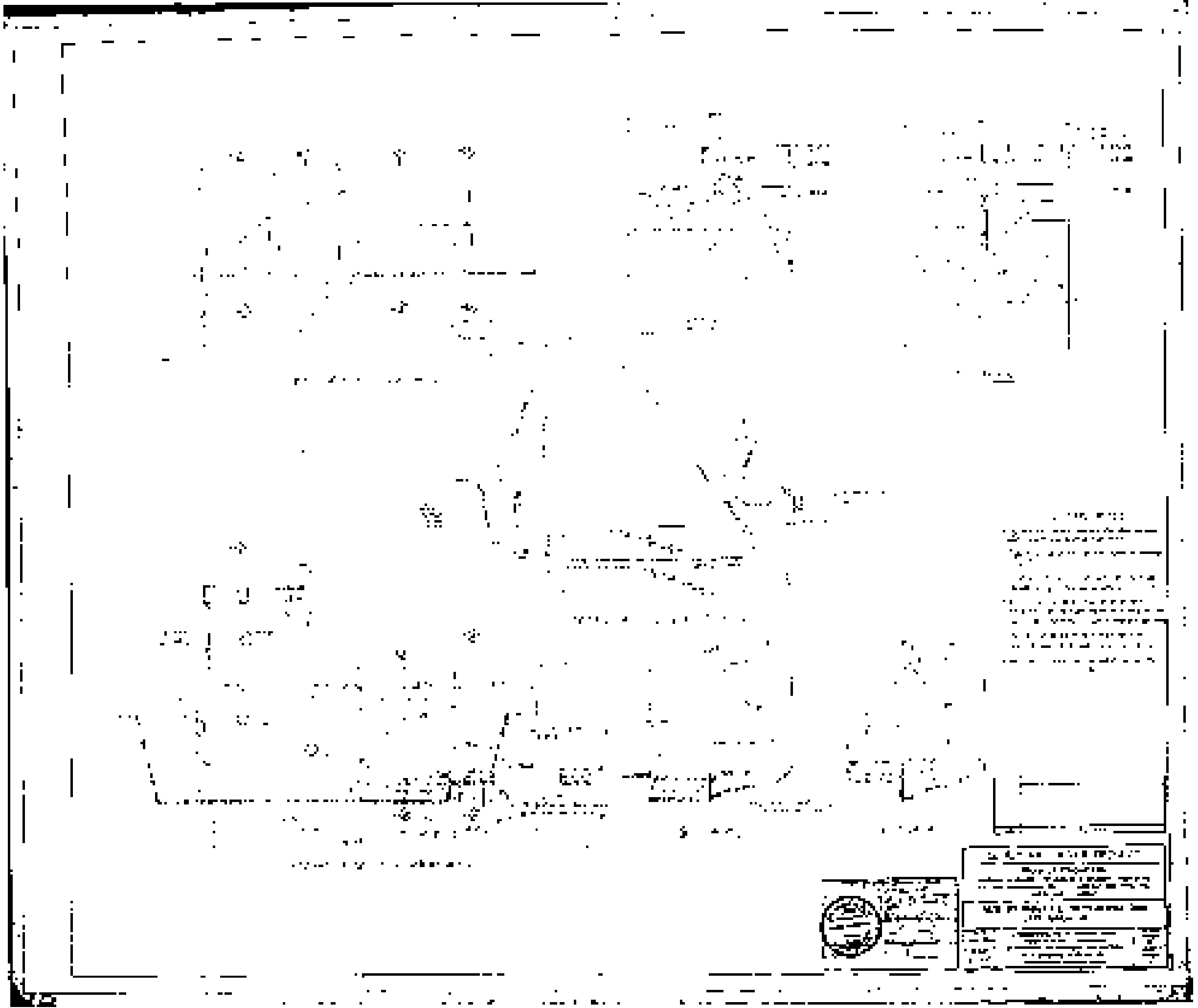
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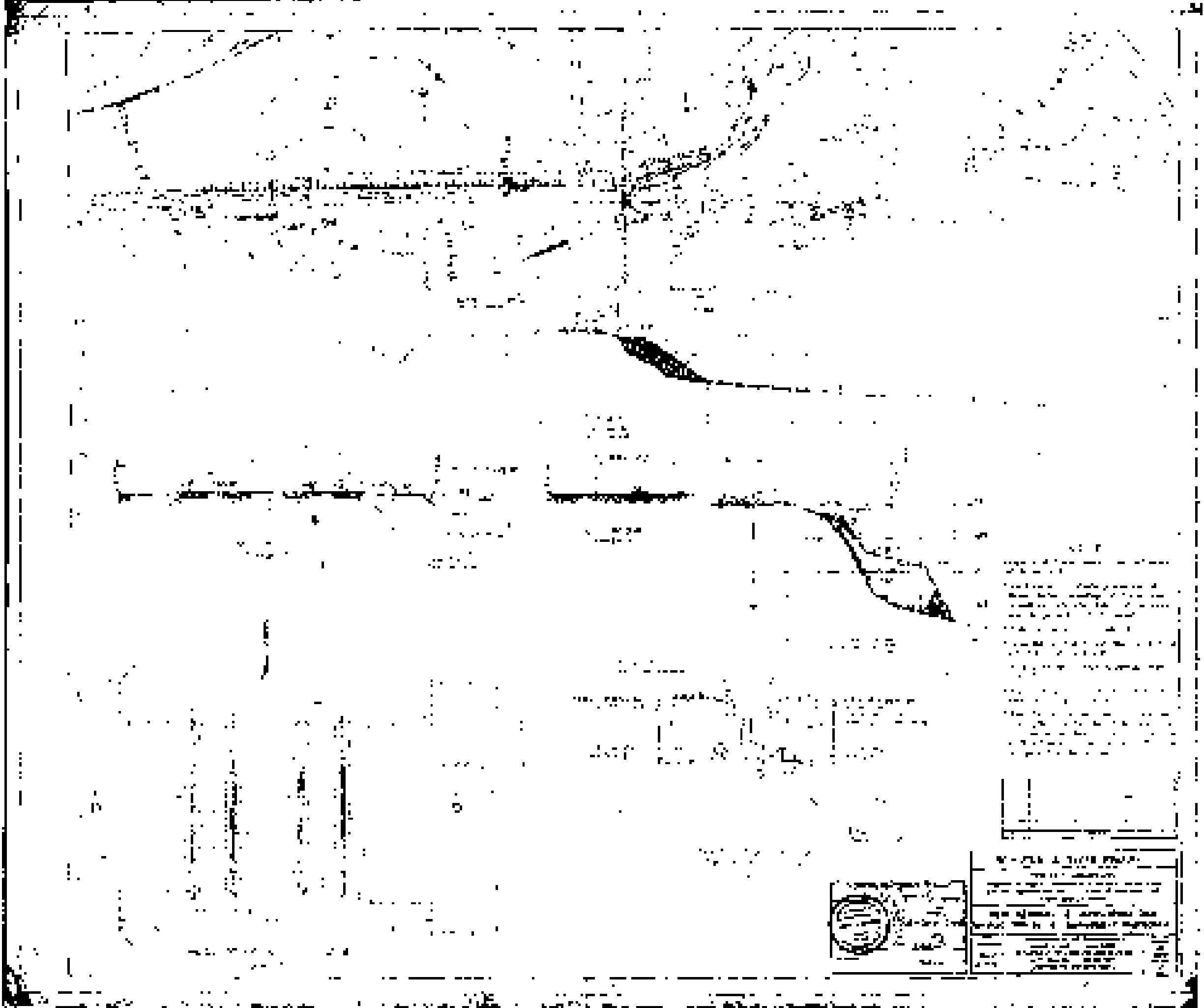
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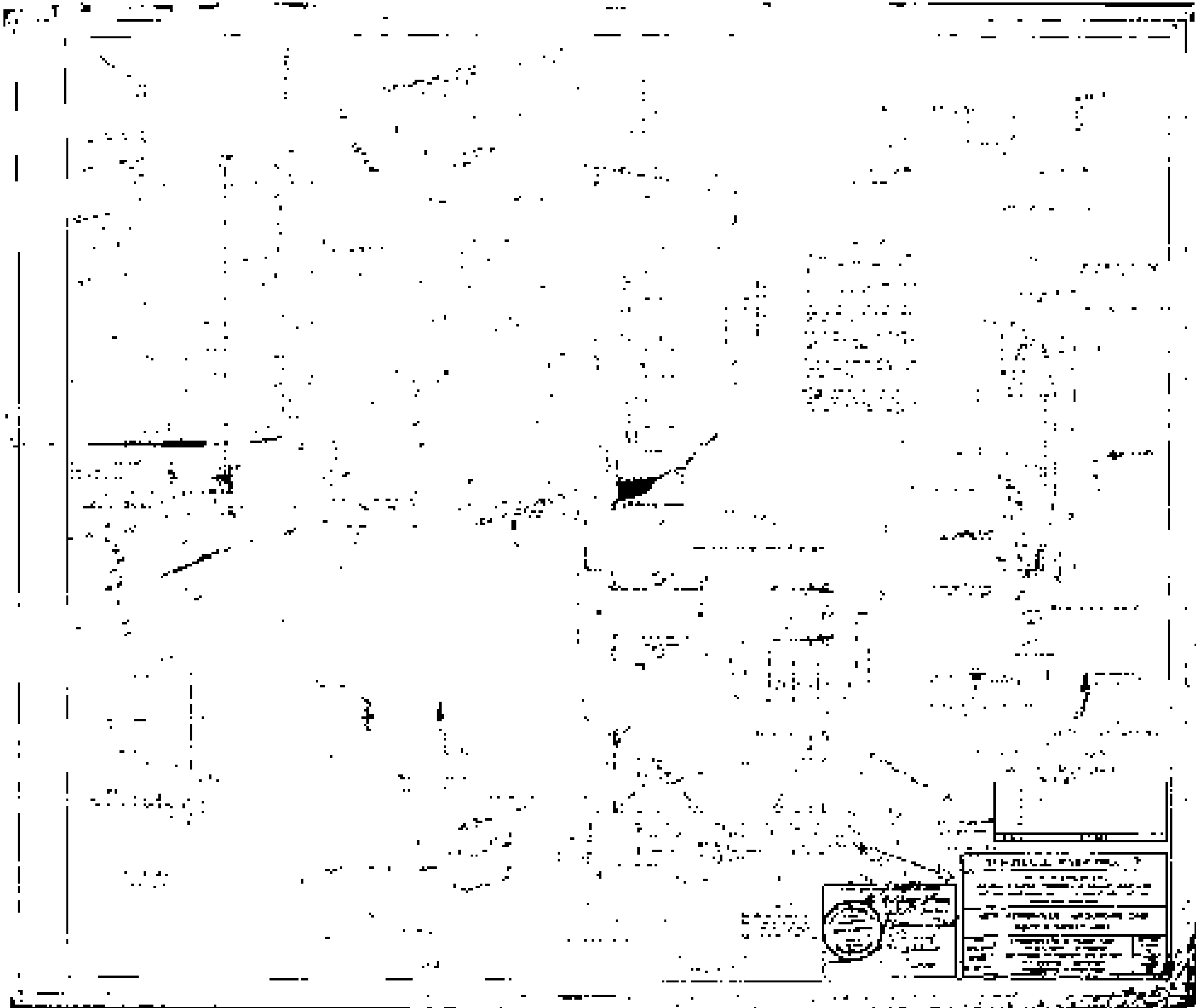




1. The drawing is a perspective view of a mechanical part, possibly a valve or a piston, showing its complex, curved shape. The part is divided into several distinct sections, with a horizontal line running across the middle and a vertical line running down the left side. The drawing is highly detailed, showing various surfaces and edges.



2. The drawing is a perspective view of a mechanical part, possibly a valve or a piston, showing its complex, curved shape. The part is divided into several distinct sections, with a horizontal line running across the middle and a vertical line running down the left side. The drawing is highly detailed, showing various surfaces and edges.



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