

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TECHNICAL REPORT COVERSHEET

650-050-38
ENVIRONMENTAL
MANAGEMENT
08/22

BRIDGE HYDRAULIC REPORT

Florida Department of Transportation

District 5

LPGA Boulevard PD&E Study

Limits of Project: From US 92 to Williamson Boulevard

Volusia, Florida

Financial Management Number: 448456-1

ETDM Number: 14332

Date: June, 2023

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.



LPGA BOULEVARD FROM US 92 (SR 600) TO WILLIAMSON BOULEVARD PD&E STUDY

FPID: 448456-1-22-01

BRIDGE HYDRAULIC REPORT

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016, and executed by the FHWA and FDOT.

June 2023



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EXECUTIVE SUMMARY

The proposed bridge is part of a project to add two travel lanes to LPGA Boulevard, making it a four-lane roadway in Volusia County, Florida. The bridge will replace the existing bridge over Tomoka River and will carry both eastbound and westbound traffic. The project will also involve widening of LPGA Boulevard which will include the addition of bicycle and pedestrian facilities and modifications to the LPGA Boulevard/Interstate 95 (I-95) interchange.

The existing bridge is 250' long with five 50' spans. The four intermediate bents are supported by 18" square concrete piles. The abutments are sloping spill-through placed on 1:1.5 slope and are armored with rubble riprap. The existing bridge does not meet 2.0 ft drift clearance and needs to be replaced.

The proposed bridges are two parallel identical bridges of 340' long with four 85' spans. The three intermediate bents will be supported by 24" diameter square concrete piles. The begin bridge and end bridge stationing is 566+60.00 and 569+15.00, respectively. The abutments will be 1:2 sloping spill-through armored with Bank and Shore rubble riprap. The bridge has no skew and the intermediate bents will be constructed perpendicular to the road.

The bridge provides 2.91' of drift clearance above the design flood event (50-year) and 10.81' of clearance above normal water level. This meets the vertical clearance requirements in the Florida Design Manual. There are no specific horizontal clearance requirements. A 25' wide wildlife shelf is provided under the bridge on both sides of the river.

The bridge reduces the water surface 0.01 foot for the 100-year event. The reduction dissipates approximately 3100' upstream. The slight decrease results from the wider span of new bridge. This is consistent with the FDOT requirement to have no substantial change in land use. It is also consistent with FEMA and St Johns River Water Management District requirements.

Total scour depths consisting of contraction and pier scour are predicted to be 3.8' and 4.0' for the 100-year and 500-year events, respectively. The existing conditions do not indicate that scour has been an issue at the site but the inspection report states that the bridge is scour critical.

The longitudinal grade of the proposed bridge deck is from the middle of the bridge to both sides at 0.7%, with the sag point located approximately 400 feet beyond the bridge's approach slab. Scuppers will be not used for the bridge.

Although several alternative bridge lengths or configurations are typically considered for hydraulics, alternatives were not considered in this situation because the proposed length is the minimum length to meet hydraulic and environmental requirements.

1. INTRODUCTION

The proposed bridge over Tomoka River is located in Volusia County approximately 0.4 miles west of the I-95 (approximately Latitude 30.2167 North, Longitude 81.1089 West). The proposed bridge is part of a project to add two travel lanes to LPGA making it a four-lane divided roadway. The new bridge is to be constructed to replace the existing bridge over Tomoka River. **Figure 1** presents the project location map.

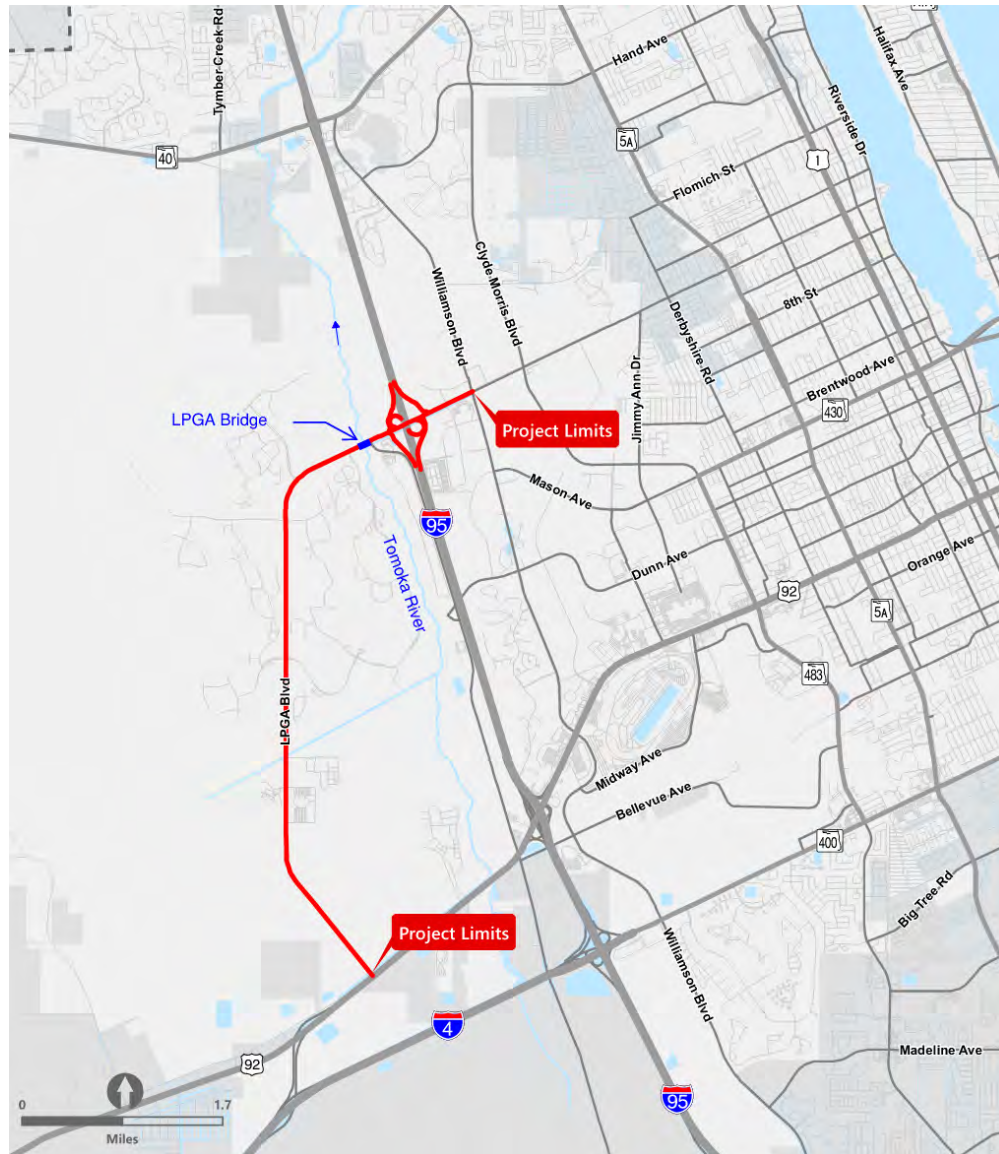


Figure 1 Project Location Map

1.1. Existing Bridge Crossing

The existing two-lane bridge (# 794038) was constructed in 1968. It is 250' long with five 50' spans. The superstructure is flat slab construction with two 12' lanes and 2.0' shoulders yielding a deck width of 33' with the barrier walls. The four intermediate bents are supported by 18" square concrete piles. The low member elevation is 16.44 NGVD (15.31 NAVD). The longitudinal grade of the deck is flat at elevation 17.95 NGVD (19.12 NAVD). The bridge is located at a slight sag in the roadway profile, so both roadway approaches slope toward the bridge. The bridge is crowned in the middle with a 0.02 cross slope toward the barrier walls on each side. The abutments are sloping spill-through placed on a 1:1.5 slope and are armored with bank and shore rubble riprap. Four-inch scuppers are used on both sides of the bridge for deck drainage.

The channel is not in the center of the bridge and is located at about 60 ft from the west bank of the bridge abutment.

The construction plans (**Appendix A**) for the existing bridge note a historical high water elevation of 14.5 NGVD (13.37 NAVD) measured on September 17, 1945. The highest known water elevation is 17.05 NGVD (15.93 NAVD) on September 29, 2022 during Hurricane Ian, as recorded by USGS gage 02247510 downstream of the bridge since 1964. The normal water level (NWL) estimated from gage records is 7.32 ft.

1.2. Existing Conditions

The area surrounding the project is predominantly developed or under development. There are several structures located along the closest intersecting streets to the north and south of Tomoka River. US 92 and US 40 are approximately 3.8 miles south and 2.8 miles north of LPGA Boulevard, respectively.

The main channel is poorly defined. Reasonably dense tree growth exists across the channel and floodplain upstream and downstream of LGPA Boulevard. The rubble riprap armoring the abutments is in good condition.

Field visits were performed on January 7, 2022. Select photos are included in **Appendix B**.

1.3. Maintenance History

The bridge was last inspected in April 2022. The inspection report indicates that the bridge is in fair condition with an overall rating of 71. The channel bottom shows a slight degradation of about six inches from January 1988 to April 2022. The inspection results are presented in **Appendix C**.

1.4. Proposed Bridge

Two parallel identical bridges are proposed to replace the existing bridge. The proposed bridges will be lengthened to 340' with four 85' span. Majority of bridge extension occurs at the west side of the bank, which will make the channel closer to the center of the bridge.

1.5. Vertical Datum

The project survey and the FEMA Flood Insurance Study (FIS) for Volusia County revised on September 29, 2017 is based on NAVD1988 vertical datum. The existing bridge over Tomaka River was built using NGVD 29. The current FIS model is also based upon NGVD 29.

The conversion between datums is $NGVD1929 = NAVD1988 + 1.13'$, according to the FIS.

This Bridge Hydraulics Report is based upon the NGVD1929 datum. Any documentation under the NAVD1988 datum is noted.

2.2. FDOT

The Drainage Manual establishes the following:

Design Frequency (4.3.1): 50 year event.

Backwater (4.4): 1. Consistent with FEMA guidelines

2. Any increase in backwater shall not significantly change land use
3. Backwater of design frequency flood shall be kept at or below travel lanes

Scour Frequency (4.9.2.2): 100-year, Scour Design Flood

500-year, Scour Design Check Flood

Spread (3.9): 1. Spread resulting from 4.0 inches per hour shall not encroach the travel lane.

2. Within the shoulder gutter, spread resulting from a 10-year frequency event shall not exceed 15" outside the gutter in direction of front slope.

The FDM establishes the following:

Vertical Clearance: 1. Two feet between the design flood stage and the low member of bridge.

2. Six feet above the Normal High Water for freshwater rivers, streams, non-regulated/controlled canals and lakes.

Horizontal Clearance: Where no boat traffic is anticipated, horizontal clearance shall be provided consistent with debris conveyance needs and structure economy.

2.3. St Johns River Water Management District / FDEP

Environmental Resource Permit Information Manual, Section 3.3.2 provides the following:

A system shall not cause a reduction in the flood conveyance capabilities provided by a floodway except for structures elevated on pilings or traversing works. Such works or other structures shall cause no more than a one-foot increase in the 100-year flood elevation immediately upstream and no more than one tenth of a foot increase in the 100- year flood elevation 500 feet upstream.

3. HYDROLOGY

The Tomoka River flows south to north, draining several tributaries and ultimately discharges into the Halifax River north of Ormond Beach, Florida. The project is located within the Northern Coastal Basin. The project terrain is relatively flat as shown in the USGS Quadrangle Map. The total drainage basin area is 74.7 square miles upstream the bridge based on FIS (**Figure 3**).

The flow rates at the bridge were estimated in the Volusia County FIS and are listed below. The flow rates are used in analysis in this report.

Flow Rate				
Frequency	10% Annual Chance (10 yr)	2% Annual Chance (50 yr)	1% Annual Chance (100 yr)	0.2% Annual Chance (500 yr)
Discharge rate (cfs)	3,520	4,786	5,628	7,015

Table 1 Design Discharge Rates at LPGA

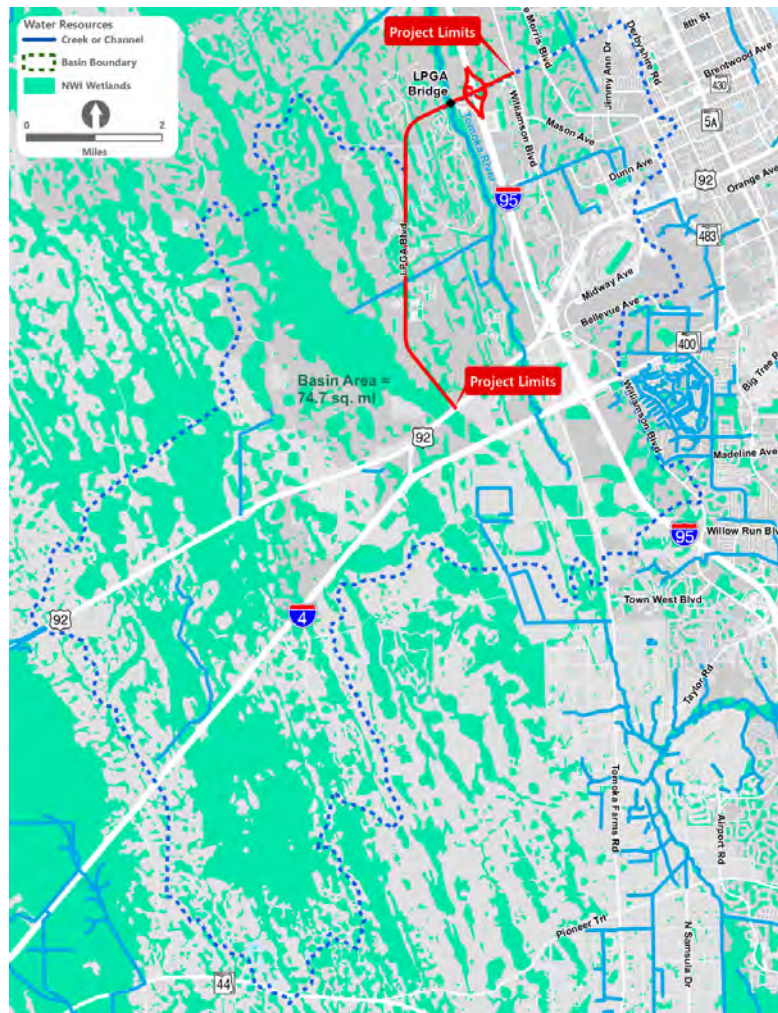


Figure 3 Basin Map

4. HYDRAULICS

The hydraulic analysis follows the procedures outlined in FEMA Guidance for Flood Risk Analysis and Mapping. The computer model HEC-RAS version 6.1.0 was used to evaluate the existing and proposed conditions.

4.1. Effective Model and Duplicate Effective Model

A digital copy of hydraulic model for the effective FIS was requested from FEMA, referred to herein as the Effective Model (EM). The EM was conducted in HEC-2 in 2004. The effective model was converted to HEC-RAS to produce the duplicate effective model (DEM). This is required to ensure the effective model's input data have been transferred correctly to the current software and to ensure the revised data will be integrated into the effective data to provide a continuous FIS model, upstream and downstream of the revised reach.

The LPGA Boulevard bridge is referred as Bridge 19.25 in the EM. It's associated with upstream section RS 19.3 and downstream section RS 19.2.

The input data in the DEM is identical to the EM except that the distance between the cross section (RS 19.2) immediate upstream the bridge and the bridge (Bridge 19.25) was adjusted from 0.0 to 0.1'. HEC-RAS does not allow a distance of zero between a cross section and bridge.

4.2. Corrected Effective Model

A Corrected Effective Model (CEM) was developed by modifying the DEM to reflect the latest survey, correct errors, and to add sections upstream and downstream of the proposed bridge in order to compare the flood elevation at the same location. The CEM reflects the existing physical condition for the pre-project site as accurately as possible.

The CEM model was based upon the DEM model with the incorporation of the following changes:

- The HEC-2 and DEM models include one single 6' wide pier. In the CEM model, the single pier has been replaced with four separate 18" wide piers at corresponding locations. Abutments with 1:1.5 slope were added to the existing bridge cross section in the CEM. The low member elevation of the bridge was adjusted from 16.6' to 16.44' per bridge construction plans.
- Section RS 19.2 was replaced with Section 19.15 and Section RS 19.3 was replaced with Section RS 19.35. The new sections were developed from the field survey terrain file.
- The reach lengths for section 19.4 were adjusted to account for the difference in location of sections RS 19.15 and RS 19.35. The distance from Section RS 19.35 and the bridge was updated to 60.5 to reflect the new section location.
- Ineffective flow areas were included for the cross sections immediately upstream and downstream of the bridge per HEC-RAS manual (RS 19.35 and RS 19.15).

4.3. Proposed Condition Model

The same cross sections from the CEM were utilized in the proposed condition model (PM). The grading of RS 19.35 and RS 19.15 were modified to reflect the lengthened span and grading of wildlife shelves.

The existing bridges were replaced in the model by the proposed bridges. The proposed eastbound and westbound bridges were also modeled as one structure due to the relative proximity of each bridge. The proposed bridges are also parallel thus the piers and the abutments are in line with each other from structure to structure so there are no added obstructions in the river. Also with the dual bridges being close to each other, there is no room for the water flow to expand and then contract again. Therefore, there is no hydraulic loss encountered between the two proposed bridges.

The elevations Ineffective flow area offsets for RS 19.35 and RS 19.15 were adjusted to account for the shorter reach length from these sections to their corresponding bridge faces.

The river section locations in HEC-RAS model are presented in Figure 4.

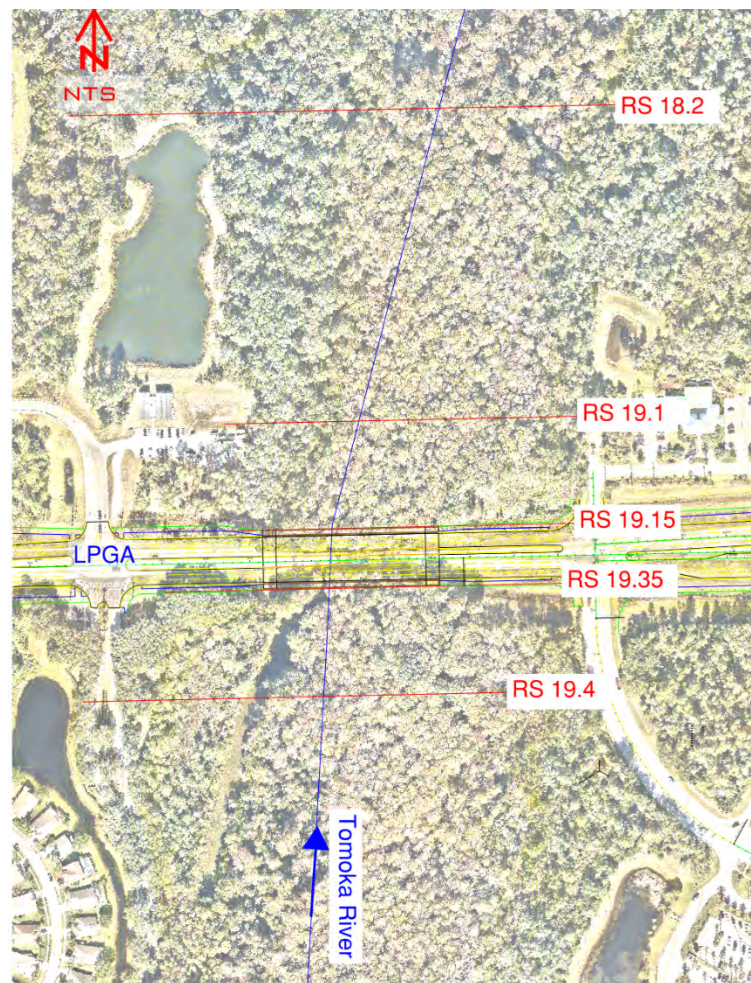


Figure 4 HEC-RAS Model River Section Location Map

4.4. Tailwater Conditions

Tomoka River discharges into Halifax River 9.7 miles north of the LPGA. Halifax River is a lagoon connecting to the ocean directly. The high tidal level is used as tailwater in EM.

Considering future ocean water level rise, FDOT requires to use the projected ocean level as tailwater. The estimated 100-year ocean level rise is 0.91 ft in Mayport USGS station (**Appendix E**), which is the closest tide station to the project site. The raised tailwater was also used in the PM. However, the results remain the same as the current tailwater in LPGA bridge, which means the raised ocean level does not affect the flood stage in LPGA.

Storm Event (Year)	Tailwater at Halifax River (EM)	Tailwater at Halifax River (With estimated 100-year rise of 0.91 ft)
50 (Design)	0.80	1.71
100	0.80	1.71
500	0.80	1.71

Table 2 Tailwater Elevations

4.5. Results

Table 3 shows the existing and proposed water surface elevations for various design events. The elevations are taken from River Station 19.4 which is the approach section for the proposed bridge. It is approximately 240' from the face of the proposed bridge and sufficient distance upstream of both bridges to not be affected by the localized high velocities at the bridge.

Storm Event (Year)	Discharge CFS	Water Surface Elevation (feet)	
		Existing	Proposed
10	3520	13.84	13.83
50 (Design)	4786	15.26	15.25
100	5628	16.17	16.16
500	7015	17.72	17.56

Table 3 Existing and Proposed Water Surface Elevations

The proposed bridge will be raised to provide a larger drift clearance. The low chord of the bridge will be set at 18.11 (NGVD1929) or 16.98' (NAGD1988) which provides 2.89 feet of drift clearance over design high water of 15.22' at RS 19.35.

The proposed bridge reduces the 100-year event water surface 0.01 feet at RS 19.4, approximately 240' upstream. The decrease dissipates to 0.00 foot at RS 20.0, approximately 3100' upstream. This is consistent with the FDOT requirement to have no substantial change in land use. It is also consistent with FEMA floodway no-rise requirement.

There is 10.79 feet of clearance above the NWL at the upstream face of the bridge.

Appendix F contains additional details and supporting information about the hydraulic modeling. **Appendix J** contains the Bridge Hydraulic Recommendation Sheet.

4.6. Alternatives Analysis

The proposed bridge is to replace the existing bridge at the same location. The alternative analysis of the new bridge was conducted from following aspects: (1) meet the clearance requirements; (2) accommodate wildlife path on both sides; (3) center the river flow line under the bridge span as much as possible; and (4) accommodate and simplify TCP plan during the construction. The current configuration provides the shortest span length while meets all requirements.

5. SCOUR

The contraction and pier scour depths for the 100 and 500 year storm events have been estimated. A Rapid Stability Assessment (RSA) along with a review of historical aerial photographs was performed on the Tomoka River to evaluate potential channel migration. The results from the RSA for the Tomoka River indicate that it has good lateral and vertical stability (**Appendix G**); therefore channel migration is anticipated to be a low possibility at the bridges.

The long-term aggradation and degradation scour potential has been evaluated using original design plan, field inspections, historical aerial photographs and Bridge Inspection Reports (BIR). By comparing the contour map adjacent the bridge crossing in the original construction plans and the current survey, the elevation of the channel remains essentially the same. Overall, the waterway channel does not show signs of long-term aggradation or degradation.

Contraction scour depths were computed using the procedures in Hydraulic Engineering Circular (HEC) 18. In accordance with Section 4.9.2.3 of the FDOT Drainage Manual, abutment scour was not determined since the proposed abutments and wildlife shelves will be protected with rubble riprap (bank & shore). The results indicate that no contraction scour is anticipated.

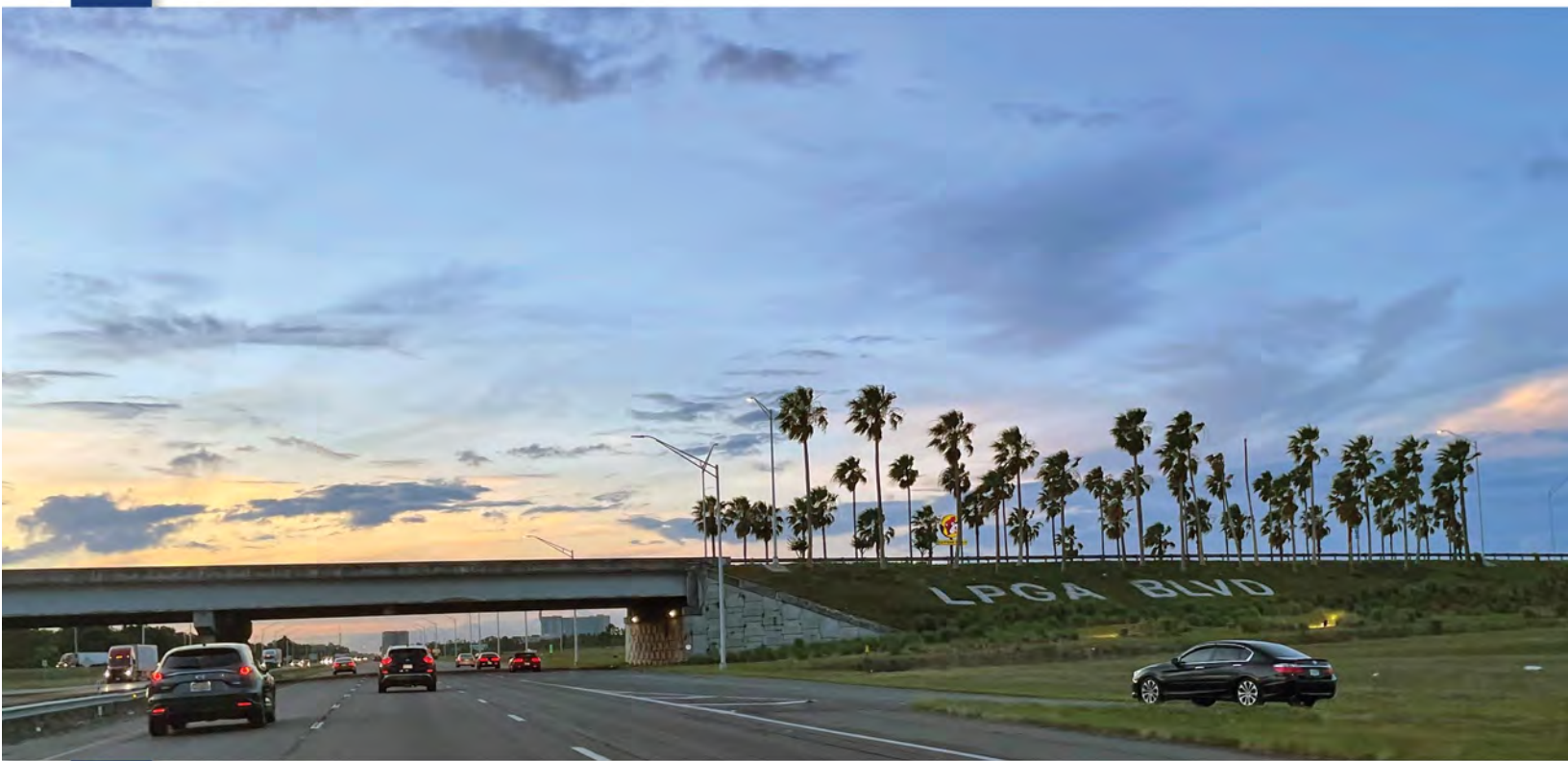
The pier scour was determined using the Sheppard's Pier Scour Equations (**Appendix H**). The total scour depth for the proposed bridges for the 100 and 500 year storm events are listed in **Table 4** below.

Storm Event (Year)	Contraction	Pier	Total
100	0.0	3.9	3.9
500	0.0	4.0	4.0

Table 4 Scour Depths (feet)

6 DECK DRAINAGE

The spread is 7.3 feet and is contained in the half of travel lane (**Appendix I**), as required by FDOT drainage manual at design speed of 35 m/h. Bridge runoff will drain to an inlet on both sides of the bridge. Scuppers will not be used.



Florida Department of Transportation District 5

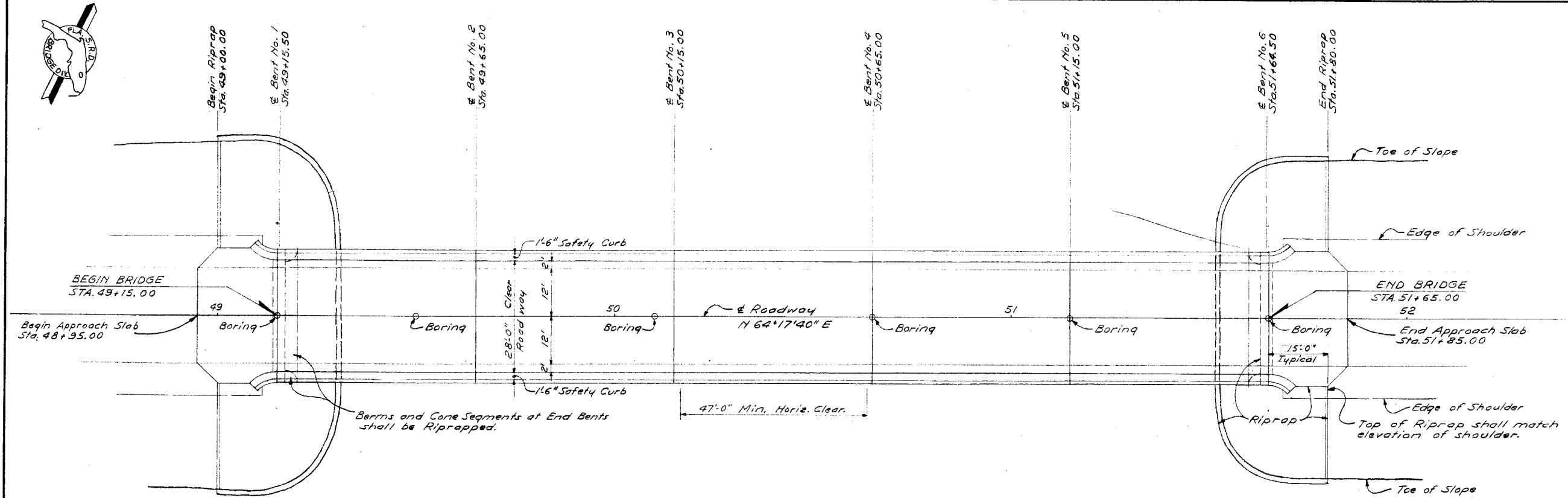
Environmental Management Office

719 S. Woodland Blvd.

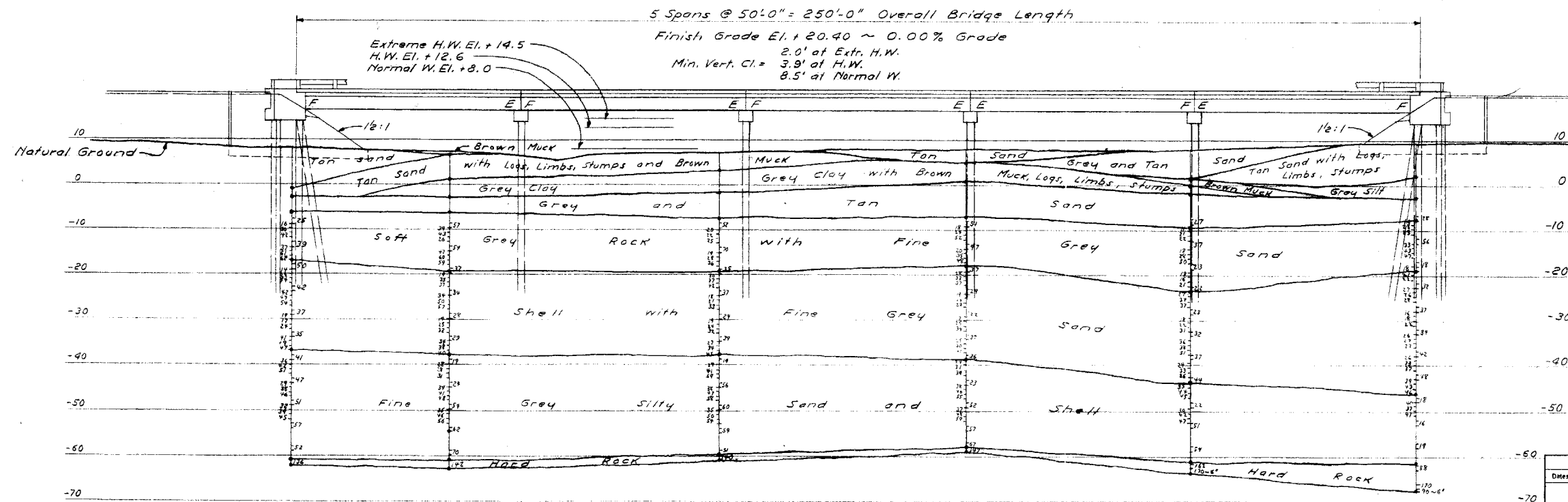
DeLand, FL 32720

APPENDIX A

Construction Plans in 1967



End Bent Piles may be in place before Fill is placed.
Fill shall be in place to bottom of End Bent Caps before they are poured.



Numbers at left of Boring Columns are blows per foot on Casing at elevations shown.
Numbers at right of Boring Columns are blows per foot on Spoon at elevations.
* unless otherwise noted.

Inside Diameter	Casing	Spoon
Outside Diameter	2 1/2"	12"
Weight of Hammer	300 Lbs.	140 Lbs.
Average Drop of Hammer	30"	30"

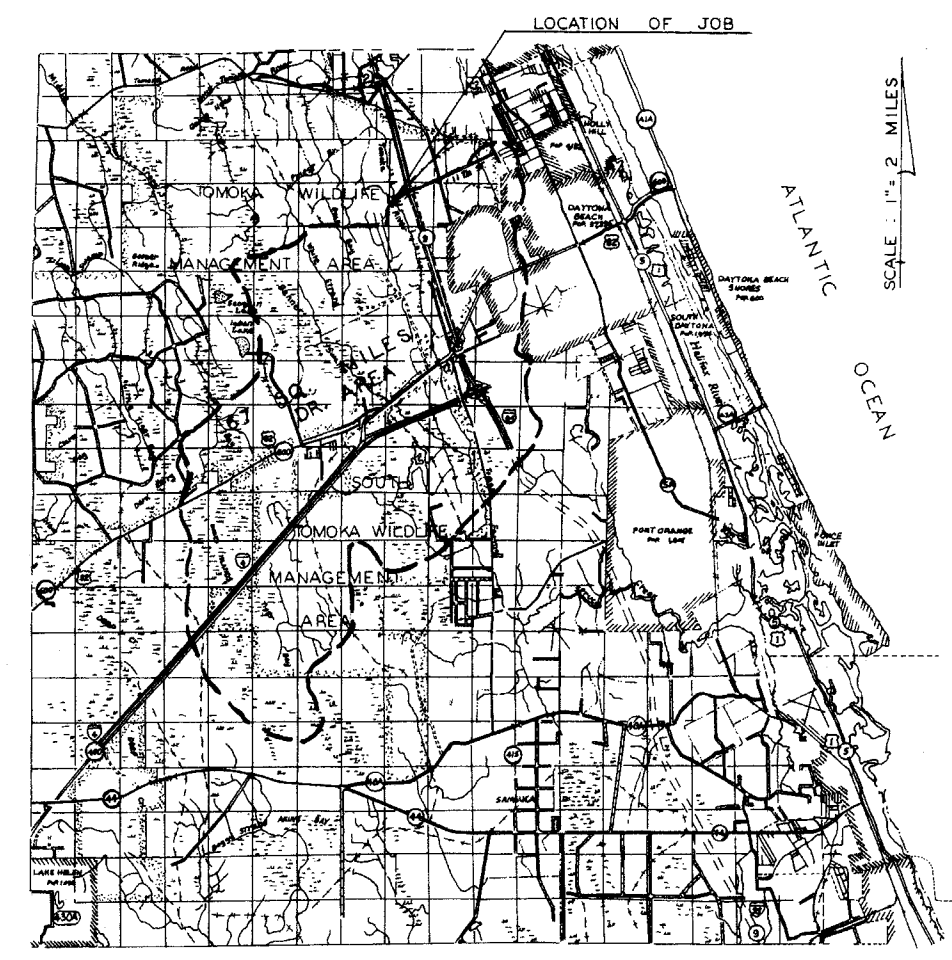
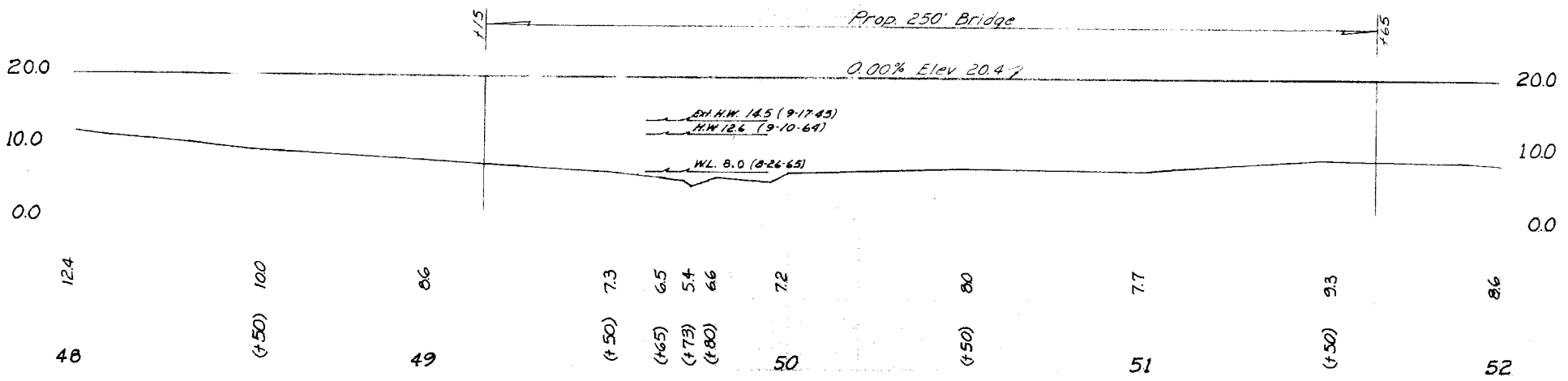
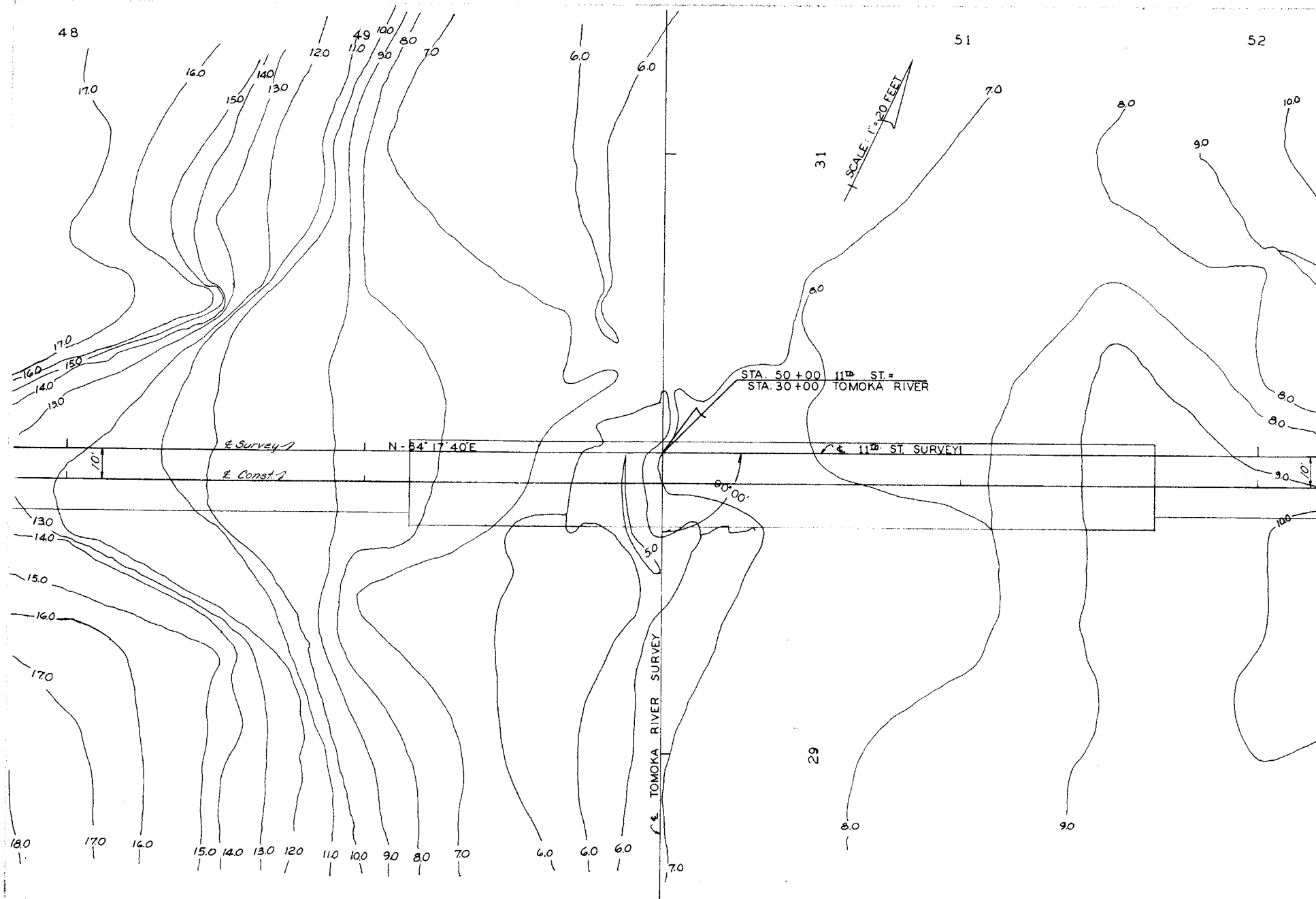
BORING DATA

PLAN AND ELEVATION AND BORING DATA

STATE ROAD DEPARTMENT OF FLORIDA STRUCTURES DIVISION			
11TH STREET BRIDGE OVER TOMOKA RIVER			
ROAD NO.	COUNTY	PROJECT NO.	
11TH ST.	VOLUSIA	79507-3601	
REVISIONS		APPROVED BY	
Dates	Descriptions	Names	Dates
		C. E. S.	2-67
		R. C. E.	2-67
Checked by		Checked by	
Traced by		Traced by	
C. E. S.		2-67	
2 of 7		9525	

Drive one Unloaded Test Pile (18"Ø) 60 feet in Bents Nos. 1, 3, 4 and 6 in the positions of permanent plumb piles located as directed by the Engineer.

BA. N= 794035



CONC. PILES		CONC. PILES	
180'	360'	180'	360'
30'	40'	30'	40'
CONC. (PRESTR. SLAB)		CONC. (BEAMS)	
20' LT. RT.	NONE	20' LT. RT.	NONE
28'	30'	28'	30'
23.97'	16.09'	23.97'	16.09'

49+15	51+65
20.40	
EXISTING	CHANNEL
	49+73 (EXISTING)
	NONE
60' (MIN)	92'
67 SQ. MILES	20'
14.5'	14.5'
SEPT. 17, 1945	SEPT. 9, 1964
50 YEAR	25 YEAR
2,200	EXISTING CHANNEL, R.W. PRIDE, U.S. GEOLOGIC WATER-STAGE RECORDING GAUGE
25	
1.87	

NO CHANNEL EXCAVATION AT PRESENT IS REQUIRED, HOWEVER A FUTURE VERTICAL NAVIGATIONAL CLEARANCE OF 60' ABOVE MEAN ANNUAL FLOOD ELEVATION (92') WAS REQUESTED BY VOLUSIA COUNTY. THE ELEVATION OF THE LOW MEMBER WAS SET BY A 20' DEBRIS CLEARANCE ABOVE EXTREME HIGH WATER. RIP-RAP SLOPES 90' TO 6' ON 1:1. ALSO RIP-RAP SHOULD BE EXTENDED AHEAD ON RT. SIDE OF EAST EMBANKMENT TO STA. 53+50 TO PROTECT FROM SCOUR DUE TO DIVERSION OF EXISTING ROADWAY CANAL.

3 of 7 9525

APPENDIX B

Field Review Photos



LPGA Tomoka Rover Bridge ID



Looking north under the bridge



Looking south under the bridge



Looking west under the bridge



Looking east under the bridge



Scupper and utility pipe

APPENDIX C

Bridge Inspection Report 2022

**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM****Inspection/CIDR Report with PDF attachment(s)****Inspection****Structure ID: 794038****DISTRICT: D5 - Deland****INSPECTION DATE: 4/11/2022 GTJH**

BY: Ayres Associates	STRUCTURE NAME: LPGA Blvd-Tomoka River
OWNER: 2 County Hwy Agency	YEAR BUILT: 1968
MAINTAINED BY: 2 County Hwy Agency	SECTION NO.: 79 507 000
STRUCTURE TYPE: 5 Prestressed Concrete - 02 Stringer/Girder	MP: 5.048
LOCATION: 0.4 Mile West of I-95	ROUTE: 00000
SERV. TYPE ON: 1 Highway	FACILITY CARRIED: LPGA Blvd
SERV. TYPE UNDER: 5 Waterway	FEATURE INTERSECTED: Tomoka River

☒ FUNCTIONALLY OBSOLETE☐ STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Regular NBI

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 4/11/2022 UNDERWATER: 4/11/2022

SUFFICIENCY RATING: 71.3

HEALTH INDEX: 95.5

FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM

Inspection/CIDR Report with PDF attachment(s) Inspection

Structure ID: 794038

DISTRICT: D5 - Deland

INSPECTION DATE: 4/11/2022 GTJH

BY: Ayres Associates
 OWNER: 2 County Hwy Agency
 MAINTAINED BY: 2 County Hwy Agency
 STRUCTURE TYPE: 5 Prestressed Concrete - 02 Stringer/Girder
 LOCATION: 0.4 Mile West of I-95
 SERV. TYPE ON: 1 Highway
 SERV. TYPE UNDER: 5 Waterway

STRUCTURE NAME: LPGA Blvd-Tomoka River
 YEAR BUILT: 1968
 SECTION NO.: 79 507 000
 MP: 5.048
 ROUTE: 00000
 FACILITY CARRIED: LPGA Blvd
 FEATURE INTERSECTED: Tomoka River

- ☐ THIS BRIDGE CONTAINS FRACTURE CRITICAL COMPONENTS
- ☒ THIS BRIDGE IS SCOUR CRITICAL
- ☐ THIS REPORT IDENTIFIES DEFICIENCIES WHICH REQUIRE PROMPT CORRECTIVE ACTION
- ☒ FUNCTIONALLY OBSOLETE ☐ STRUCTURALLY DEFICIENT

TYPE OF INSPECTION: Regular NBI

DATE FIELD INSPECTION WAS PERFORMED: ABOVE WATER: 4/11/2022 UNDERWATER: 4/11/2022

OVERALL NBI RATINGS:

DECK: 7 Good	CHANNEL: 6 Bank Slumping
SUPERSTRUCTURE: 7 Good	CULVERT: N N/A (NBI)
SUBSTRUCTURE: 7 Good	SUFF. RATING: 71.3
PERF. RATING: Good	HEALTH INDEX: 95.5

FIELD PERSONNEL / TITLE / NUMBER:**INITIALS**

O'Grady, John - Bridge Inspector (CBI# 00344) (lead)

Stenborg, Kevin - Assistant Bridge Inspector

JO

KS

REVIEWING BRIDGE INSPECTION SUPERVISOR:

Maslyn, Rick - Bridge Inspector (CBI #00271)

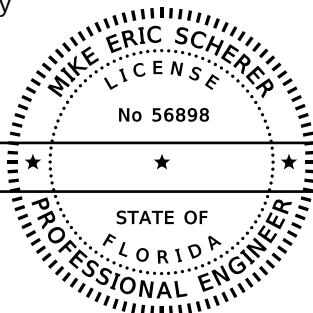
RM

CONFIRMING REGISTERED PROFESSIONAL ENGINEER:

Scherer, Michael - Professional Engineer (P.E.#56898) Ayres Associates (C. A. #4356)
 8875 Hidden River Pkwy
 Suite 200
 Tampa FL 33637

SIGNATURE: _____

DATE: _____



THIS ITEM HAS BEEN DIGITALLY
SIGNED AND SEALED BY

ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE
NOT CONSIDERED SIGNED AND SEALED
AND THE SIGNATURE MUST BE VERIFIED
ON ANY ELECTRONIC COPIES.

This report contains information relating to the physical security of a structure and depictions of the structure. This information is confidential and exempt from public inspection pursuant to sections 119.071(3)(a) and 119.071(3)(b), Florida Statutes. Only the cover page of this report may be inspected and copied.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
Inspection

Structure ID: 794038

DISTRICT: D5 - Deland

INSPECTION DATE: 4/11/2022 GTJH

All Elements

DECKS : Decks/Slabs

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	12 / 3	Re Concrete Deck	8189	100	0	.	0	.	0	.	8189 sq.ft

Element Inspection Notes:

12/3 Note: A water level gauge is attached to the north side of the structure at Bent 2. There are utility pipes present under the south overhang of all spans and in Bay 3 and 4.

Previously Noted:

CS1 = The deck top has up to 1/64in. wide longitudinal and map cracks.

INCIDENTAL:

The south curb has minor impact related spalls up to 8in. L x 5in. W x 3/4in. D with no exposed steel in all spans. Refer to Photo 1.

Noted This Inspection:

INCIDENTAL:

There is a light accumulation of dirt and debris along the curbs.

DECKS : Joints

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	301 / 3	Pourable Joint Seal	0	.	0	.	0	.	197	100	197 ft
0	2320 / 3	Seal Adhesion	0	.	0	.	0	.	197	100	197 ft

Element Inspection Notes:

301/3 Previously Noted:
 CS4 (2320) = All joint pourable sealers have heavy deterioration, adhesion loss or have failed completely. Refer to Photo 2. REPAIR (197FT)

2320/3 Refer to Parent Element

MISCELLANEOUS : Channel

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8290 / 3	Channel	0	.	1	100	0	.	0	.	1 (EA)
0	9140 / 3	Debris	0	.	1	100	0	.	0	.	1 (EA)

Element Inspection Notes:

8290/3 Note: Channel flow mainly occurs thru Spans 1 and 2.

Previously Noted:

CS2 (9140) = There is scattered drift, debris, and car tires throughout the channel. Refer to Photo 3. REMOVE (1EA)

The channel slopes have moderate vegetation beneath Span 1.

9140/3 Refer to Parent Element

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	321 / 3	Re Conc Approach Slab	1308	100	0	.	0	.	0	.	1308 sq.ft
0	510 / 3	Wearing Surfaces	1112	100	0	.	0	.	0	.	1112 sq.ft

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FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
Inspection

Structure ID: 794038

DISTRICT: D5 - Deland

INSPECTION DATE: 4/11/2022 GTJH

Element Inspection Notes:

321/3 Note: The approach slabs are not visible due to an overlay of asphalt.

510/3 Refer to Parent Element

MISCELLANEOUS : Other Elements

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8475 / 3	R/Conc Walls	24	92.31	0	.	2	7.69	0	.	26 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	0	.	2	100	0	.	2 ft

Element Inspection Notes:

8475/3 Note: This element represents the wingwalls / barrier walls at all four corners of the bridge.

Previously Noted:

CS3 (1080) = The northeast wingwall barrier has a spall 14in. L x 14in. W x 1-1/2in. D with no exposed steel at the top west edge at Abutment 6. Refer to Photo 4. (2FT)

INCIDENTAL:

The southeast wingwall curb has a spall 4in. L x 3in. W x 1/2in. D with no exposed steel on the traffic (north) face.

1080/3 Refer to Parent Element

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	215 / 3	Re Conc Abutment	66	100	0	.	0	.	0	.	66 ft

Element Inspection Notes:

215/3 Previously Noted:

INCIDENTAL:

Both abutment caps have a minor amount of dirt & debris on the caps between the beams.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	226 / 3	Pre Conc Pile	6	37.5	5	31.25	5	31.25	0	.	16 (EA)
0	1080 / 3	Delamination/Spall/Patched Area	0	.	2	50	2	50	0	.	4 (EA)
0	1190 / 3	Abrasion(PSC/RC)	0	.	3	50	3	50	0	.	6 (EA)

Element Inspection Notes:

226/3 Note: This element represents the (4) 18in. square piles at each Intermediate Bent.

Previously Noted:

CS3 (1080) = Pile 2-4 has a spall 1-1/2ft. L x 8in. W x 1in. D with no exposed steel on the southeast edge 3ft. below the cap and a spall 5in. L x 3in. W x 1in. D with no exposed steel in the northwest corner 4ft. below the cap. Refer to Photo 5. (1EA)

CS3 (1080) = Pile 3-1 has a spall 7in. L x 4in. W x 1-1/4in. D with no exposed steel on the northwest edge 4-1/2ft. below the cap. (1EA)

CS3 (1190) = All pile at Bent 2 have scale damage up to 1/2in. deep that has removed

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
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Structure ID: 794038

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INSPECTION DATE: 4/11/2022 GTJH

course aggregate from the high-water mark down to the mudline. Refer to Photo 6. (3EA)

CS2 (1080) = Piles 4-2 and 4-3 have spalls up to 5in. diameter x 1in. D with no exposed steel on the west face. The spalls appear to be gun shot related. (2EA)

CS2 (1190) = All piles at Bent 3 have scale damage up to 1/4in. deep that has exposed course aggregate from the high water mark down to the mudline. (3EA)

INCIDENTAL:

There are corroded pickup points in the east face of Piles 2-2 and 2-3, the south face of Pile 2-1 and the north face of Pile 2-4 located 4ft. below the cap.

1080/3 Refer to Parent Element

1190/3 Refer to Parent Element

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	234 / 3	Re Conc Pier Cap	119	100	0	.	0	.	0	.	119 ft

Element Inspection Notes:

234/3 Previously Noted:
 CS1 = Bent 2 cap has (2) vertical cracks full cap height x 1/32 in. W on both faces over Pile 3.

Bent 2 cap has (2) vertical cracks full cap height x 1/64 in. W on both faces over Pile 2.

SUBSTRUCTURE : Substructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	8396 / 3	Other Abutment Slope Protection	1942	100	0	.	0	.	0	.	1942 (SF)

Element Inspection Notes:

8396/3 Note: This element represents the sand-cement bag slope protection at both Abutments.

Previously Noted:
 INCIDENTAL:
 There is minor vegetation growing from the the joints between the sand-cement bags, primarily at the radius areas.

SUPERSTRUCTURE : Bearings

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	311 / 3	Moveable Bearing	20	100	0	.	0	.	0	.	20 each
0	8518 / 3	Galvanized Steel	40	100	0	.	0	.	0	.	40 sq.ft

Element Inspection Notes:

311/3 No Notes

8518/3 Refer to Parent Element

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
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Inspection

Structure ID: 794038

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SUPERSTRUCTURE : Bearings

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	313 / 3	Fixed Bearing	18	90	0	.	2	10	0	.	20 each
0	1000 / 3	Corrosion	0	.	0	.	1	100	0	.	1 each
0	1020 / 3	Connection	0	.	0	.	1	100	0	.	1 each
0	8518 / 3	Galvanized Steel	39	97.5	0	.	0	.	1	2.5	40 sq.ft
0	3440 / 3	Eff (Stl Protect Coat)	0	.	0	.	0	.	1	100	1 sq.ft

Element Inspection Notes:

313/3 Noted This Inspection:
 CS3 (1020) = The south nut at Bearing 1-4 at Abutment 1 is missing. Refer to Photo 7. (1EA)

CS3 (1000) = Bearing 1-1 at Abutment 1 has heavy flaking corrosion. Refer to Photo 8. (1EA)

1000/3 Refer to Parent Element

1020/3 Refer to Parent Element

8518/3 Noted This Inspection:
 CS4 (3440) = Failed, no protection of the underlying metal. (1SF)

3440/3 Refer to Parent Element

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	109 / 3	Pre Opn Conc Girder/Beam	1000	99.8	0	.	2	0.2	0	.	1002 ft
0	1080 / 3	Delamination/Spall/Patched Area	0	.	0	.	2	100	0	.	2 ft

Element Inspection Notes:

109/3 Note: There are (4) beams per span. A utility is attached to the north face of Beam 1 in all spans and four utilities are attached to the diaphragm in Bay 3 of all spans.

Previously Noted:
 CS3 (1080) = Beam 1-4 has a spall 8in. L x 3in. W x 1in. D with no exposed steel at the bottom south edge of the flange near mid-span. Refer to Photo 9. (1FT)

CS3 (1080) = Beam 2-4 has a spall 7in. L x 5in. W x 5/8in. D with no exposed steel at the bottom south edge of the flange 12ft. east of Bent 2. (1FT)

1080/3 Refer to Parent Element

SUPERSTRUCTURE : Superstructure

Str Unit	Elem/Env	Description	Qty1	%1	Qty2	%2	Qty3	%3	Qty4	%4	T Qty
0	331 / 3	Re Conc Bridge Railing	501	100	0	.	0	.	0	.	501 ft

Element Inspection Notes:

331/3 No Notes

Total Number of Elements*: 13

*excluding defects/protective systems

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**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
Inspection/CIDR Report with PDF attachment(s)
Inspection**

Structure ID: 794038

DISTRICT: D5 - Deland

INSPECTION DATE: 4/11/2022 GTJH

Structure Notes

BRIDGE OWNER: VOLUSIA COUNTY

Bridge inventoried from west to east.

TRAFFIC RESTRICTIONS:

Based on the results of the most recent load rating analysis dated 6/20/94, posting is not required. This structure is not posted.

As stated in section 3.4 of the Bridge and Other Structures Inspection and Reporting as of 11/24/2009 superstructure unit numbering (Section 3.4.2.2) and substructure unit numbering (Section 3.4.3) are designated NOT BY ORDER IN WHICH THE ELEMENTS WERE CONSTRUCTED AND PUT INTO SERVICE. Plans sheet or drawing in Topic G, Bridge Description and Drawings section of the bridge folder can confirm all references to these elements prior to this date.

INSPECTION NOTES: **GTJH** **4/11/2022**

LOAD CAPACITY EVALUATION: A cursory review of the current load rating analysis dated 6/20/94 was conducted during this inspection by Michael Scherer, P.E. on 5/12/2022. The findings of this review and inspection reveal no substantial deterioration, geometric changes or additional dead load to the bridge that warrant the need for a new load rating analysis; therefore, the current load rating is considered applicable.

An underwater inspection is not required due to the water depth being less than 3ft. All underwater elements were reviewed and included with this report.

Non-Structural Items:

Reflectors:

Noted This Inspection:

Several bridge rail reflectors are broken / missing. Refer to Photo 10. REPAIR

Guardrails:

Previously Noted:

The southwest & northeast guardrails are only attached to the structure by one bolt at each location. Refer to Photo 11. REPAIR

The northwest and southeast off-going guardrails are not attached to the structure. Refer to Photo 12. REPAIR

Graffiti:

Previously Noted:

There is non-offensive graffiti on the west face of Bent 4 cap and the east face of Bent 5 cap. Refer to Photo 13.

Striping:

Previously Noted:

The deck striping is heavily faded and chipped throughout. Refer to Photo 14. REPAIR

Sufficiency Rating Calculation Accepted 5/12/2022.

**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT
ADDENDUM**

CONTENTS OF ADDENDUM

	Bridge Location Map		Sketches and Photos
*	Additional Element Inspection Notes		Recommended Corrective Action
	Load Rating Analysis Summary		Scour Evaluation
*	Posting Photos	*	Fracture Critical Inspections

* This section is not included in this report.

**PREPARED FOR: FDOT
BRIDGE OWNER: VOLUSIA COUNTY
PREPARED BY: AYRES ASSOCIATES**

REPORT IDENTIFICATION

Bridge Number: 794038 — Regular NBI	Inspection Date: 04/11/2022

Bridge Name: LPGA Blvd over Tomoka River

Facility Carried: LPGA Blvd

Featured Intersected: Tomoka River



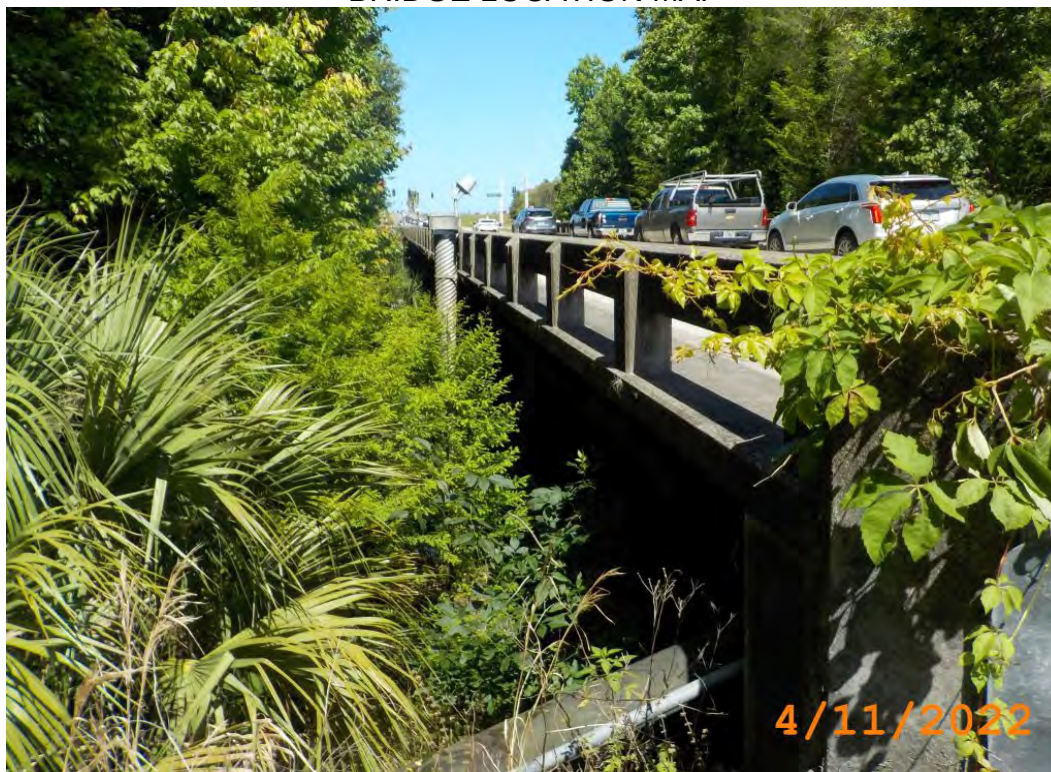
West Approach

FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

BRIDGE LOCATION MAP



North Elevation



LPGA Blvd over Tomoka River

0.4 mile west of I-95

FLORIDA DEPARTMENT OF TRANSPORTATION BRIDGE MANAGEMENT SYSTEM BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

LOAD RATING ANALYSIS SUMMARY

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION LOAD CAPACITY INFORMATION

 FORM 850-010-05-B
 REPLACES 571-29
 MAINTENANCE
 05/98

1) **BRIDGE NUMBER:** 794038 **DATE:** 6/20/94

2) **INVENTORY RATING:** 44.4
 FORM (HS 20) LOADING 49.0 (TONS)
 OTHER () LOADING _____

3) **POSTING DATA:** 20
 POSTED Yes; IF YES, EXISTING RESTRICTIONS SU=25T
C = 34T
 POSTING NEEDED No; IF YES, SEE TABLE BELOW.
 DATE SIGNS ERECTED _____

4) **GOVERNING SPAN DATA:**
 A) **METHOD OF ANALYSIS:**
☒ LFD
☐ WSD
 B) **ANALYSIS SYSTEM:**
☒ BARS (15.4)
☐ BRUFEM
☐ OTHER _____

C) **CONTROLLING FACTORS:**
 SPAN NO. 1
 SPAN LTH. 48.42 14.76m
 DES. VEH. H5-20
 DISTR. F. 1.422 DISTR. F. METHOD SALOD
 CONTINUOUS YES ☐ NO ☒
 V ☒ OR M ☐ LOC. Mid-span
 IMPACT 29%

D) **MEMBER ANALYZED:**

SUPERSTRUCTURE	SUBSTRUCTURE
☒ PRESTRESSED CONCRETE SECT ☒ AASHTO GIRDERS (TYPE <u>2</u>) ☐ NON-STANDARD SECT. ☐ BULB-T ☐ SINGLE-T ☐ DOUBLE-T ☐ HOLLOW VOID SLAB ☐ SOLID SLAB ☐ PRECAST SEGMENTAL BOX ☐ POST TENSIONED	☐ R/CONC. SECT. ☐ C.I.P. SLAB ☐ PRECAST ☐ SLAB ☐ FRAME ☐ BOX CULVERT ☐ C.I.P. BOX ☐ STEEL SECT. ☐ I-BEAM ☐ PLATE GIR. ☐ BOX ☐ COMPOSITE
☐ BENT CONSTR. ☐ PILING ☐ CAP ☐ PIER CONSTR. ☐ PILING ☐ FOOTING ☐ COLUMN ☐ CAP	

E) **LOAD RATING SUMMARY TABLE:**

LOAD RATING SUMMARY FOR OPERATING RATING (Gross Tons)																				NOTES:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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COMMENTS: Bridge currently posted due to "crack rating" check no longer required by FDOT.

COMPUTATIONS: PERFORMED BY PLW DATE 5-26-94
 CHECKED BY MAB DATE 6-6-94
 RESPONSIBLE ENGINEER: Steve Womble Jr PE# 42123 DATE 6/20/94

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 1: Element 12: Typical impact related spall along south curb.



Photo 2: Element 301: Typical failing / missing pourable joint seal.

**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT**

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 3: Element 8290: Drift and debris in the channel.



Photo 4: Element 8475: Spall at northeast wingwall barrier at Abutment 6.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 5: Element 226: Pile 2-4 spall on SE corner, 3ft. below the cap.



Photo 6: Element 226: Scale damage on Bent 2 pile.

**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT**

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 7: Element 313: South nut missing from Bearing 1-4 at Abutment 1.



Photo 8: Element 313: Heavy flaking corrosion on Bearing 1-1 at Abutment 1.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 9: Element 109: Beam 1-4 spall on bottom south edge of flange.



Photo 10: Inspection Notes: Broken bridge rail reflectors.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 11: Inspection Notes: Northeast guardrail attached to structure with one bolt.



Photo 12: Inspection Notes: Northwest guardrail not attached to structure.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT

Bridge No: 794038

Inspection Date: 04/11/2022

SKETCHES AND PHOTOS



Photo 13: Inspection Notes: Graffiti on Bent 4 cap.



Photo 14: Inspection Notes: Heavily faded and chipped roadway striping.

**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT**

Bridge No: 794038

Inspection Date: 04/11/2022

RECOMMENDED CORRECTIVE ACTION

Element 301 Pourable Joint Seal

Clean and reseal the expansion joints.

Element 8290 Channel

Remove the drift, debris and car tires from the channel.

Non-Structural Items:

Reflectors

Replace all missing and broken bridge rail reflectors.

Guardrails

Attach guardrail to the structure in accordance with current FDOT Standards.

Striping

Apply new roadway striping across the structure.

**FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT**

Bridge No: 794038

Inspection Date: 04/11/2022

SCOUR EVALUATION

LEFT (NORTH) SIDE				
	01/29/88	04/20/20	04/11/22	
Abutment 1	5.7	5.7	5.7	0.0
Bent 2	15.8	16.1	16.2	-0.1
C/L of Channel	15.8	16.3	16.4	-0.1
Bent 3	14.2	12.9	12.7	0.2
Bent 4	14.5	12.2	12.0	0.2
Bent 5	13.9	11.4	11.1	0.3
Abutment 6	5.2	5.1	5.1	0.0

Waterline at C/L of Channel	14.0	14.8	13.5

RIGHT (SOUTH) SIDE				
	01/29/88	04/20/20	04/11/22	
Abutment 1	4.4	5.0	5.0	0.0
Bent 2	16.0	16.9	16.4	0.5
C/L of Channel	16.0	16.9	16.4	0.5
Bent 3	13.8	13.2	13.0	0.2
Bent 4	14.0	11.7	11.7	0.0
Bent 5	13.9	11.4	11.4	0.0
Abutment 6	5.6	5.6	5.6	0.0

Waterline at C/L of Channel	14.0	14.8	13.5

NOTE: - = An increase in degradation.

Blank box = No previous measurement available.

Relative Channel Plots Are Not To Scale.

Any Vertical Curvature Of Datum Point Is Not Reflective In Plot.

The waterline and mudline measurements taken from top of the Curbs.

All measurements are in feet.

FLORIDA DEPARTMENT OF TRANSPORTATION

BRIDGE MANAGEMENT SYSTEM

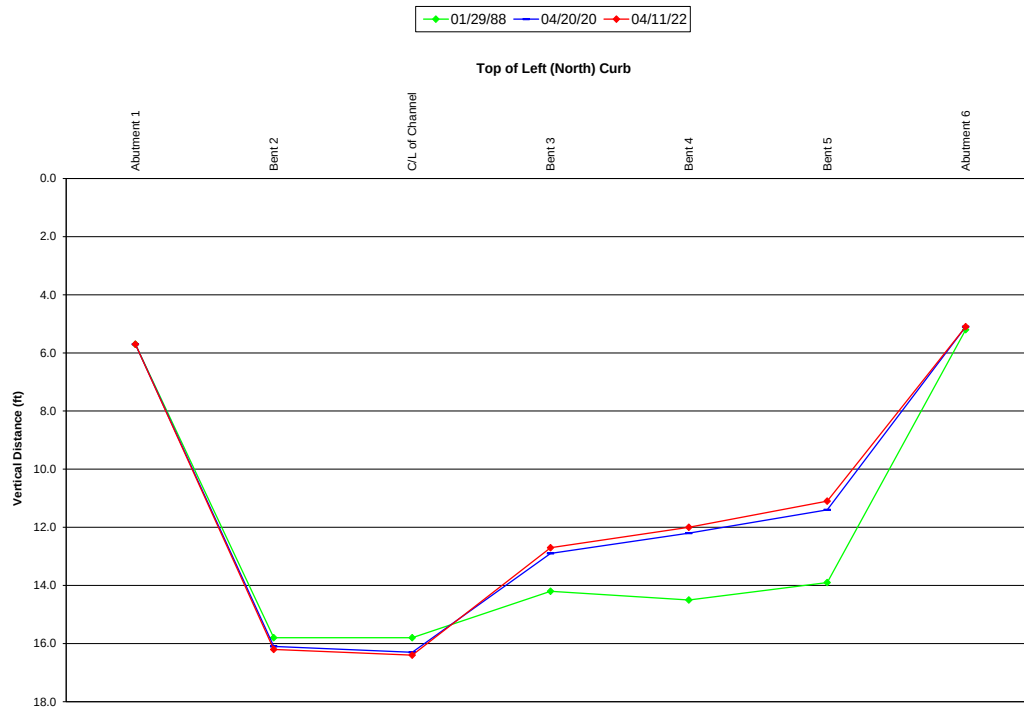
BRIDGE INSPECTION REPORT

Bridge No: 794038

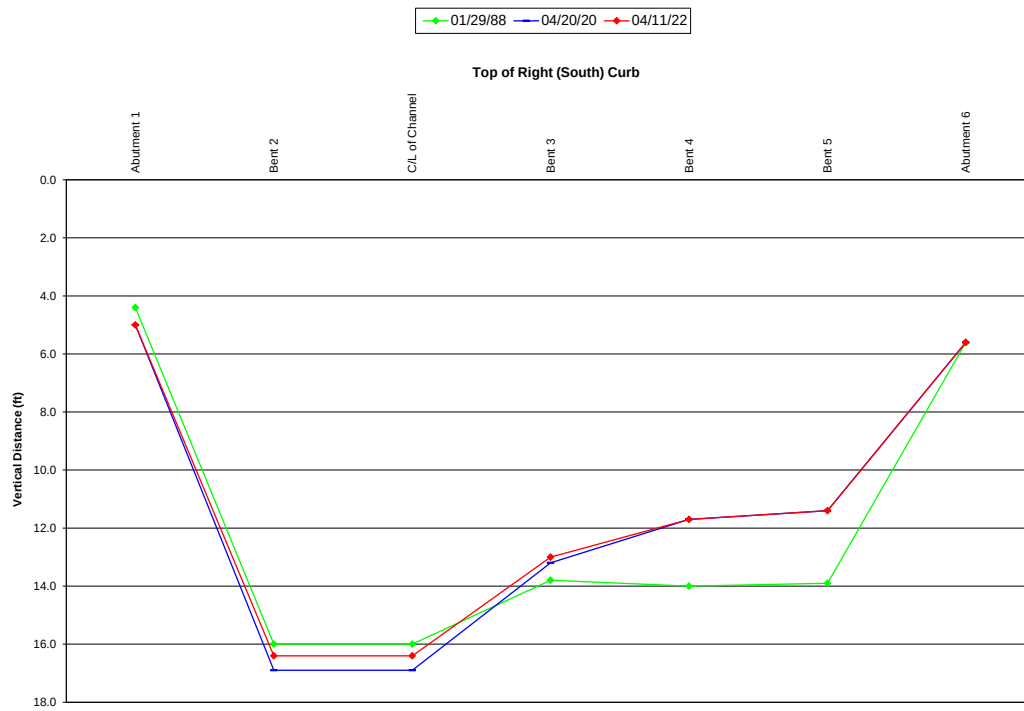
Inspection Date: 04/11/2022

SCOUR EVALUATION

LEFT (NORTH) SIDE SOUNDINGS



RIGHT (SOUTH) SIDE SOUNDINGS



Relative Channel Plots Are Not To Scale.

Any Vertical Curvature Of Datum Point Is Not Reflective In Plot.

FLORIDA DEPARTMENT OF TRANSPORTATION
BRIDGE MANAGEMENT SYSTEM
BRIDGE INSPECTION REPORT

Bridge No: 794038

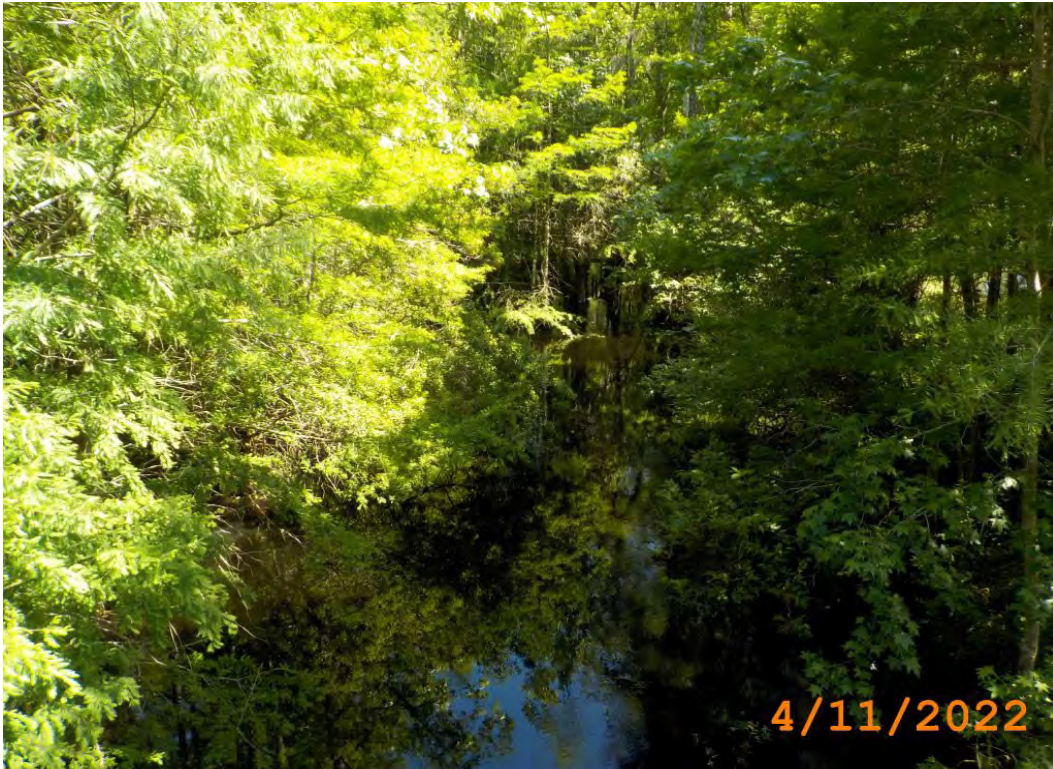
Inspection Date: 04/11/2022

SCOUR EVALUATION



4/11/2022

Channel Looking North



4/11/2022

Channel Looking South

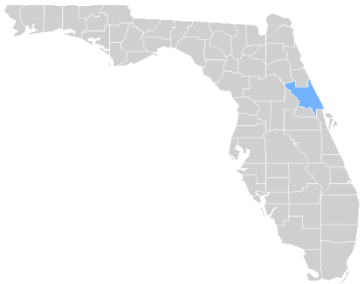
APPENDIX D

FEMA FIS and FIRM Information

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 5



VOLUSIA COUNTY, FLORIDA AND INCORPORATED AREAS

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
DAYTONA BEACH, CITY OF	125099	NEW SMYRNA BEACH, CITY OF	125132
DAYTONA BEACH SHORES, CITY OF	125100	OAK HILL, CITY OF	120624
DEBARY, CITY OF	120672	ORANGE CITY, CITY OF	120633
DELAND, CITY OF	120307	ORMOND BEACH, CITY OF	125136
DELTONA, CITY OF	120677	PIERSON, TOWN OF	120675
EDGEWATER, CITY OF	120308	PONCE INLET, TOWN OF	120312
FLAGLER BEACH, CITY OF	120087	PORT ORANGE, CITY OF	120313
HOLLY HILL, CITY OF	125112	SOUTH DAYTONA, CITY OF	120314
LAKE HELEN, CITY OF	120674	VOLUSIA COUNTY (UNINCORPORATED AREAS)	125155

Reprinted with corrections on June 27, 2020

REVISED:
September 29, 2017

FLOOD INSURANCE STUDY NUMBER
12127CV001D
Version Number 2.3.3.2



FEMA

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi ²) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Spruce Creek	City of Port Orange, Volusia County Unincorporated Areas	Approximately 29,800 feet upstream of U.S. Highway 1	Approximately 2,800 feet upstream of Branch Crossing Road	03080201	6.2		Y	AE, VE, X	2002
Spruce Creek Tributary No. 1	Volusia County Unincorporated Areas	Confluence with Spruce Creek	Approximately 1,300 feet upstream of Old Samsula Road	03080201	1.6		Y	AE	2002
Spruce Creek Tributary No. 2	Volusia County Unincorporated Areas	Confluence with Spruce Creek	Approximately 2,950 feet upstream of confluence with Spruce Creek	03080201	0.6		Y	AE	2002
Spruce Creek Tributary A	City of Port Orange, Volusia County Unincorporated Areas	Confluence with Spruce Creek	Approximately 4,475 feet upstream of confluence with Spruce Creek	03080201	0.8		N	AE, X	2002
Thompson Creek	City of Ormond Beach	Approximately 1,000 feet downstream of U.S. Highway 1	Approximately 550 feet upstream of Division Avenue	03080201	1.7		Y	AE, X	2014
Tomoka River	City of Daytona Beach, City of Ormond Beach, Volusia County Unincorporated Areas	Tomoka Basin	Approximately 5,100 feet upstream of U.S. Highway 92	03080201	17		Y	AE, X	2003

Flooding Source	Location	Drainage Area (Acres)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Spruce Creek Tributary No. 2	At Confluence with Spruce Creek	8.49	626	*	919	1,047	1,326
Spruce Creek Tributary A	At Confluence with Spruce Creek	*	*	*	*	8,600	*
Thompson Creek	Approximately 20' upstream of U.S. Highway 1	0.6	232	*	303	352	427
Thompson Creek	Approximately 20' upstream of Wilmette Avenue	0.6	229	*	300	350	433
Thompson Creek	At Granada Boulevard	0.3	166	*	231	275	341
Thompson Creek	At Division Avenue	0.1	66	*	89	105	129
Tomoka River	At Old Dixie Highway	145.1	5,470	*	7,396	8,914	11,522
Tomoka River	At U.S. Highway 1	136.6	7,489	*	10,380	12,366	15,670
Tomoka River	At Interstate 95	127.3	8,393	*	11,622	13,784	17,385
Tomoka River	At State Route 40	88.1	4,521	*	6,206	7,332	9,185
Tomoka River	At Eleventh Street	74.7	3,520	*	4,786	5,628	7,015
Tomoka River	At U.S. Route 92	6.1	928	*	1,268	1,494	1,866
Wally Hoffmeyer Canal	At mouth	2.29	*	*	*	833	*

*Not calculated for this Flood Risk Project

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3345	203	2174	4.1	3.6 ²	1.8 ³	1.8	0.0
B	7,428	272	2,729	3.3	4.0 ²	3.4	3.8	0.4
C	14,219	418	4,165	2.1	4.8 ²	4.6	5.5	0.9
D	20,034	2,445	15,745	0.7	5.5 ²	5.4	6.4	1.0
E	22,925	241	3,677	3.4	5.7	5.7	6.7	1.0
F	23,484	249	3,905	3.2	5.9	5.9	6.9	1.0
G	25,739	659	7,158	1.7	6.3	6.3	7.3	1.0
H	30,663	281	4,786	2.7	7.0	7.0	8.0	1.0
I	35,095	756	8,739	1.5	7.5	7.5	8.5	1.0
J	38,241	309	4,866	2.8	7.8	7.8	8.7	0.9
K	43,152	477	6,335	2.2	8.5	8.5	9.5	1.0
L	45,210	542	6,734	2.1	8.9	8.9	9.9	1.0
M	46,912	311	4,754	1.3	9.2	9.2	10.2	1.0
N	49,810	448	4,298	1.8	9.4	9.4	10.4	1.0
O	52,677	774	8,499	0.9	10.4	10.4	11.4	1.0
P	54,934	536	6,267	1.0	11.2	11.3	12.3	1.0
Q	58,152	522	5,686	1.0	12.6	12.6	13.6	1.0
R	60,216	629	6,323	0.9	13.4	13.4	14.4	1.0
S	63,130	249	2,026	2.8	14.7	14.7	15.7	1.0

¹Feet above Tomoka Basin

²Combined coastal and riverine effects from Atlantic Ocean

³Elevation computed without consideration of storm surge effects from Tomoka Basin

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUSIA COUNTY, FLORIDA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: TOMOKA RIVER

NOTES TO USERS

Map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local sources of small size. The community map repository should be used for possible updated or additional flood information.

For more detailed information in areas where **Base Flood Elevations** and/or **Floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Floodway Data tables contained within the Flood Insurance Study (FIS) report that represents the FIS. Users should be aware that the FIS shown on the map is based on the best available data and should not be used as the sole source of flood information. Floodway data is provided in the FIS for purposes of floodway management and should not be used for other purposes.

Base Flood Elevations shown on this map apply only to the 1% Annual Chance Flood. Users of this FIS should be aware that all flood elevations are also provided in the Summary of Floodway Data table in the Flood Insurance Study report for this jurisdiction. Floodway data is provided in the FIS for purposes of floodway management and should not be used for other purposes.

Floodway Data was compiled at cross sections and interpolated between cross sections. The floodway data is based on hydraulic considerations and is not intended to represent the actual floodway. Floodway data is provided in the FIS for purposes of floodway management and should not be used for other purposes.

In areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Control Structures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

Projection used in the preparation of this map was Florida State Plane East (NAD 83) (NAD 83). The horizontal datum used was the North American Datum of 1983 (NAD 83). The vertical datum used was the National Geodetic Survey (NGS) datum. The map is based on the best available data and should not be used as the sole source of flood information. Floodway data is provided in the FIS for purposes of floodway management and should not be used for other purposes.

Elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and elevation elevations referenced to the same vertical datum. For information on the conversion between the National Geodetic Vertical Datum of 1955 and the North American Vertical Datum of 1988, visit the National Geodetic Survey at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

Information Services
NAD 83
National Geodetic Survey
2030
East-West Highway
Spring, Maryland 20705-3022
713-3242

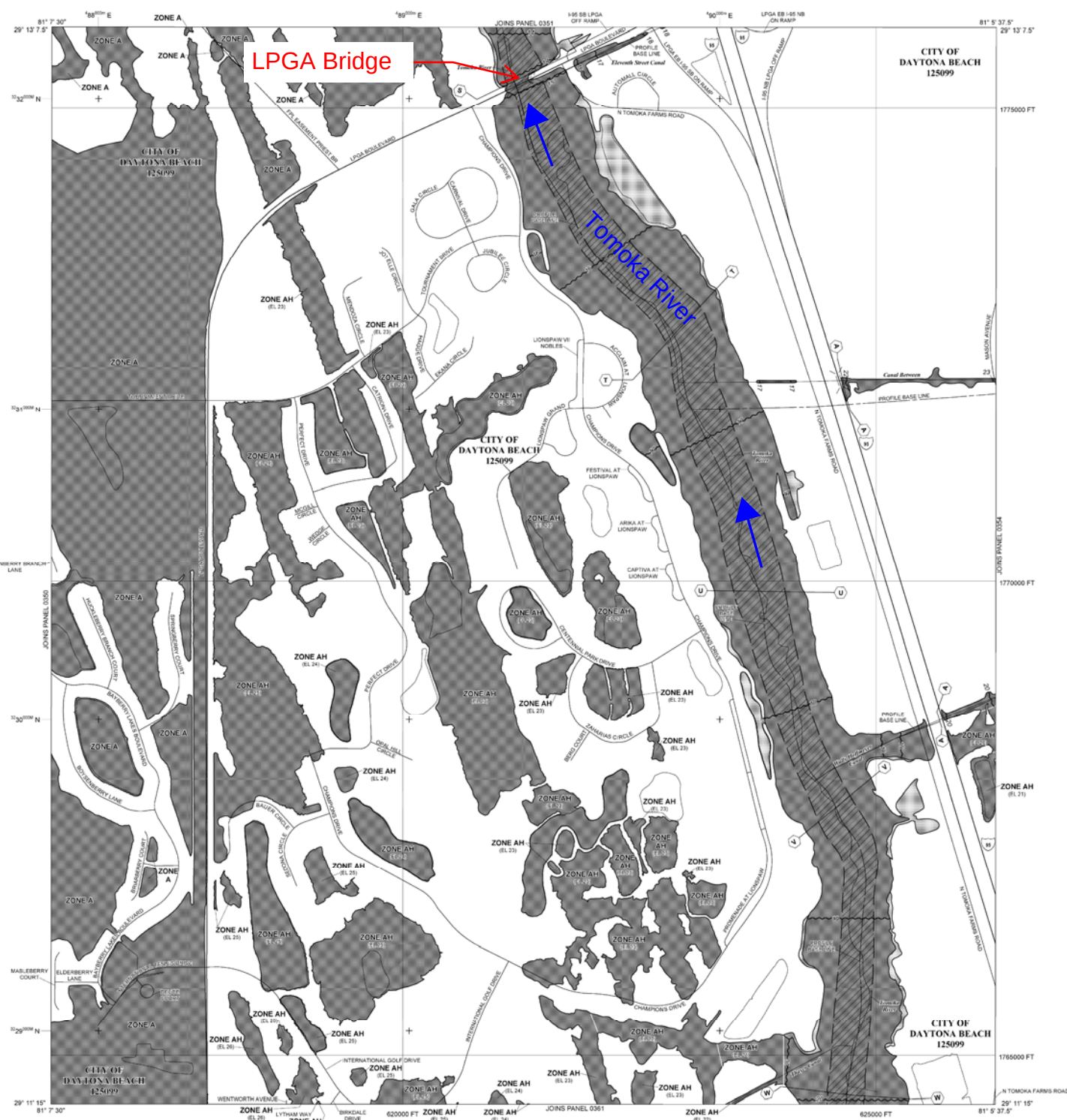
For current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Map information shown on this FIS was provided in digital format by the Volusia County, Florida GIS Department at a scale of 1:12,000 or larger from a map dated 2006 or later.

Based on updated topographic information, this map reflects more detailed and accurate stream channel configurations and floodplain delineations than shown on the previous FIS for this jurisdiction. As a result, the Floodway and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map. Also, the relationship between stream and floodplain boundaries may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may occur after this map was published, map users should contact their local community officials to verify current corporate limits locations.

For more information and questions about this map, available products associated with this FIS including historic versions of this FIS, how to order products or National Flood Insurance Program in general, please call the FEMA Map Service Center at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at <http://www.fema.gov>. Available products may be previously issued Letters of Map Change, a Flood Insurance Study, and/or digital versions of this map. Many of these products can be obtained or purchased directly from the website. Users may determine the current date for each FIS panel by visiting the FEMA Map Service Center website at <http://www.fema.gov> or by calling the FEMA Map Information Exchange at 1-800-438-6622.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood of a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Areas (SFHAs) are the areas subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include ZONE A, ZONE AH, ZONE AE, ZONE AO, ZONE AR, ZONE A99, ZONE V, and ZONE VE. The base flood elevation is the elevation of the 1% annual chance flood.

ZONE A
No Base Flood Elevations determined.
Base Flood Elevations determined.

ZONE AE
Flood depths of 1 to 3 feet (usually areas of ponds). Base Flood Elevations determined.

ZONE AH
Flood depths of 1 to 3 feet. Usually, sheet flow on sloping terrain. Base Flood Elevations determined.

ZONE AO
Flood depths of 1 to 3 feet. Usually, sheet flow on sloping terrain. Base Flood Elevations determined.

ZONE AR
Special Flood Hazard areas formerly protected from wave 1% annual chance flood by a flood control system that was subsequently identified. ZONE AR indicates that the former flood control system is being retained to protect from the 1% annual chance or greater flood.

ZONE A99
Area to be protected from the 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V
Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE
Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be approached so that the 1% annual chance flood can be carried without substantial increase in flood heights.

OTHER FLOOD AREAS

ZONE X
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from the 1% annual chance flood.

OTHER AREAS

ZONE D
Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D
Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Map Symbols:

- Floodway Boundary
- Floodway Boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary of Special Flood Hazard Areas of different Flood Elevations, Flood depths or flood velocities.
- Limit of Moderate Wave Action
- Base Flood Elevation line and value: elevation in feet (EL. 567)
- Base Flood Elevation value where uniform within zone, elevation in feet

Map Information:

- Referenced to the North American Vertical Datum of 1988
- Cross section line
- Truncated line
- Culvert
- Bridge
- Floodway
- Geographic coordinates referenced to the North American 1983 (NAD 83) datum
- 1000-meter Universal Transverse Mercator grid ticks, zone 18QUD990007
- 5000-foot grid values: Florida State Plane coordinate system zone 18QUD990007, Lambert Conformal Conic
- Bench mark (see explanation in Notes to Users section of panel)
- M 1.5
- River Mile
- MAP REPOSITORIES
- Refer to Map Repository list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP: APRIL 15, 2007

EFFECTIVE DATE OF REVISIONS TO THIS PANEL:

February 16, 2014: to update corporate limits, to reflect updated topographic information, and to change Base Flood Elevations, to add floodways, to add and change Special Flood Hazard Areas, to incorporate previously issued Letters of Map Revision, and to change designations.

For community map revision history prior to countywide mapping, refer to the Community History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-438-6622.

NFIP

PANEL 0353H

FIRM

FLOOD INSURANCE RATE MAP

VOLUSIA COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 353 OF 930
(SEE MAP INDEX FOR FIRM PANEL LOCATION)

COMMUNITY NUMBER PANEL
DAYTONA BEACH CITY OF 125099 0353

Notice to User: The Map Number shown above should be used when placing map orders or insurance applications for the community.

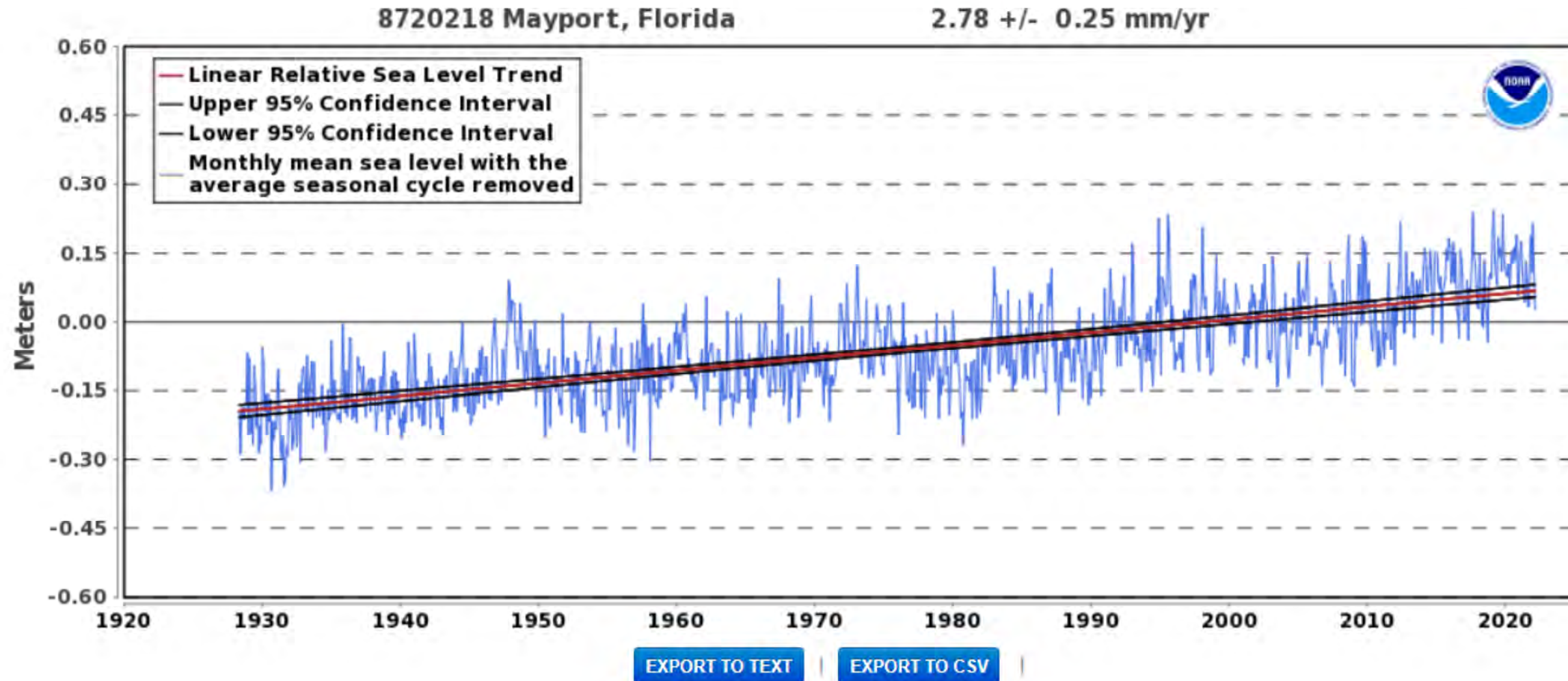
MAP NUMBER 12127C0
MAP REVISION FEBRUARY 19

Federal Emergency Management Agency

APPENDIX E

Sea Level Trend

Relative Sea Level Trend 8720218 Mayport, Florida



The relative sea level trend is 2.78 millimeters/year with a 95% confidence interval of +/- 0.25 mm/yr based on monthly mean sea level data from 1928 to 2021 which is equivalent to a change of 0.91 feet in 100 years.

Earlier data stored in database as station 8720220

APPENDIX F

Hydraulic Models (HEC-RAS Reports)

Duplicated Effective Model

Corrected Effective Model

Proposed Model

Duplicate Effective Model

LPGA Tomoka River EC-RAS Report _ DEM

HEC-RAS HEC-RAS 6.1.0 September 2021
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X   X XXXXX   XXXX   XXXX   XX   XXXX
X   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: Tomoka River
Project File : TomokaRiver.prj
Run Date and Time: 1/24/2023 5:13:35 PM

Project in English units

Project Description:

WATER SURFACE PROFILES FOR TOMOKA RIVER

T1 039
10 YEAR FLOOD

T2 040
TOMOKA RIVER

T3 041
WATER SURFACE

PROFILES FOR TOMOKA RIVER

T1 039

10 YEAR FLOOD
040

T2

TOMOKA RIVER
T3 041

PLAN DATA

Plan Title: Duplicate 02

Plan File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.p05

Geometry Title: Duplicate EM

Geometry File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.g06

Flow Title : FEMA INPUT 02

Flow File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.f04

Plan Summary Information:

Number of: Cross Sections = 58 Multiple Openings = 0
 Culverts = 0 Inline Structures = 0
 Bridges = 7 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: At breaks in n values only
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA INPUT 02

Flow File : p:\D5 LPGA Draiange\HEC-RAS\TomokaRiver.f04

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2	PF 3	PF 4
RIVER-1	Reach-1	29	477	643	753	931
RIVER-1	Reach-1	28	1203	1616	1885	2324
RIVER-1	Reach-1	27	928	1268	1494	1866
RIVER-1	Reach-1	26.4	928	1268	1494	1866
RIVER-1	Reach-1	25.3	2554	3468	4074	5071
RIVER-1	Reach-1	25.2	2554	3468	4074	5071
RIVER-1	Reach-1	25.1	2554	3468	4074	5071
RIVER-1	Reach-1	25	2633	3556	4167	5170
RIVER-1	Reach-1	24	2728	3675	4302	5332
RIVER-1	Reach-1	23	2710	3649	4271	5289
RIVER-1	Reach-1	22	2903	3893	4553	5634
RIVER-1	Reach-1	20	3219	4361	5122	6374
RIVER-1	Reach-1	19.4	3520	4786	5628	7015
RIVER-1	Reach-1	18.2	3464	4703	5527	6875
RIVER-1	Reach-1	18.1	3464	4703	5527	6875
RIVER-1	Reach-1	18	3655	4971	5846	7280
RIVER-1	Reach-1	17	3613	4924	5800	7230
RIVER-1	Reach-1	16	3959	5404	6368	7947
RIVER-1	Reach-1	15	4859	6631	7809	9741
RIVER-1	Reach-1	14.4	4690	6420	7571	9462
RIVER-1	Reach-1	13.4	4521	6206	7332	9185
RIVER-1	Reach-1	12.1	6997	9688	11504	14490
RIVER-1	Reach-1	12	8490	11760	13955	17579
RIVER-1	Reach-1	11.4	8376	11610	13785	17387
RIVER-1	Reach-1	10	8175	11317	13440	16964
RIVER-1	Reach-1	9	7885	10844	12859	16198
RIVER-1	Reach-1	8	7988	11022	13098	16542

LPGA Tomoka River EC-RAS Report _ DEM

RIVER-1	Reach-1	7	7489	10380	12366	15670
RIVER-1	Reach-1	4	7151	9870	11770	14956
RIVER-1	Reach-1	3	5214	7242	8773	11307
RIVER-1	Reach-1	2	5471	7399	8920	11547
RIVER-1	Reach-1	1.4	5470	7396	8914	11522
RIVER-1	Reach-1	1	5465	7356	8839	11383

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1		Known WS = 0.8
RIVER-1	Reach-1	PF 2		Known WS = 0.8
RIVER-1	Reach-1	PF 3		Known WS = 0.8
RIVER-1	Reach-1	PF 4		Known WS = 0.8

GEOMETRY DATA

Geometry Title: Duplicate EM
Geometry File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.g06

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 29

INPUT

Description:

Station Elevation Data		num=	12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1054	25	1862	24	1907	23	2008	22
2212	21	2632	21	2788	22	2818	23	2928	24
3056	25	3348	26						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2212	.04	2788	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2212	2788		1398	1398		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.24	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	788.59	1785.39	136.44
E.G. Slope (ft/ft)	0.000010	Area (sq ft)	788.59	1785.39	136.44
Q Total (cfs)	477.00	Flow (cfs)	31.51	441.83	3.66
Top Width (ft)	1286.00	Top Width (ft)	539.92	576.00	170.09
Vel Total (ft/s)	0.18	Avg. Vel. (ft/s)	0.04	0.25	0.03

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Max Chl Dpth (ft)	3.24	Hydr. Depth (ft)	1.46	3.10	0.80
Conv. Total (cfs)	152218.5	Conv. (cfs)	10056.0	140995.8	1166.8
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	539.94	576.00	170.11
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	1.84	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	3658.75	4227.13	3529.11
C & E Loss (ft)	0.00	Cum SA (acres)	1643.95	447.97	1343.74

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	25.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.06	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	1508.14	2260.84	320.74
E.G. Slope (ft/ft)	0.000008	Area (sq ft)	1508.14	2260.84	320.74
Q Total (cfs)	643.00	Flow (cfs)	49.67	583.74	9.59
Top Width (ft)	2022.93	Top Width (ft)	1161.27	576.00	285.66
Vel Total (ft/s)	0.16	Avg. Vel. (ft/s)	0.03	0.26	0.03
Max Chl Dpth (ft)	4.06	Hydr. Depth (ft)	1.30	3.93	1.12
Conv. Total (cfs)	230193.6	Conv. (cfs)	17783.3	208978.1	3432.2
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1161.29	576.00	285.69
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	2.45	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	5709.85	4785.77	5365.08
C & E Loss (ft)	0.00	Cum SA (acres)	1916.05	448.34	1919.33

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.57	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	2111.73	2556.69	505.99
E.G. Slope (ft/ft)	0.000007	Area (sq ft)	2111.73	2556.69	505.99
Q Total (cfs)	753.00	Flow (cfs)	78.92	659.84	14.25
Top Width (ft)	2200.64	Top Width (ft)	1189.00	576.00	435.64
Vel Total (ft/s)	0.15	Avg. Vel. (ft/s)	0.04	0.26	0.03
Max Chl Dpth (ft)	4.57	Hydr. Depth (ft)	1.78	4.44	1.16
Conv. Total (cfs)	292733.8	Conv. (cfs)	30678.8	256516.8	5538.1
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1189.03	576.00	435.67
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	2.76	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	7090.85	5133.67	6807.72
C & E Loss (ft)	0.00	Cum SA (acres)	2021.27	448.49	2119.36

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.25	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	2921.27	2943.75	855.81
E.G. Slope (ft/ft)	0.000006	Area (sq ft)	2921.27	2943.75	855.81
Q Total (cfs)	931.00	Flow (cfs)	124.90	779.10	27.00
Top Width (ft)	2348.00	Top Width (ft)	1212.00	576.00	560.00

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Vel Total (ft/s)	0.14	Avg. Vel. (ft/s)	0.04	0.26	0.03
Max Chl Dpth (ft)	5.25	Hydr. Depth (ft)	2.41	5.11	1.53
Conv. Total (cfs)	387713.0	Conv. (cfs)	52014.2	324454.4	11244.4
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1212.28	576.00	560.27
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	3.07	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	9254.05	5649.88	9221.82
C & E Loss (ft)	0.00	Cum SA (acres)	2151.00	448.74	2343.42

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 28

INPUT

Description:

Station Elevation Data		num=	14						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1592	25	2309	24	2337	23	2390	22
2435	21	2440	20	2700	20	2731	21	2812	22
2989	23	3607	24	3729	25	3897	26		

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2390	.04	2812	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2390	2812		1424	1424		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.18	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	120.28	1558.14	721.86
E.G. Slope (ft/ft)	0.000068	Area (sq ft)	120.28	1558.14	721.86
Q Total (cfs)	1203.00	Flow (cfs)	6.74	1141.88	54.37
Top Width (ft)	1451.36	Top Width (ft)	212.06	422.00	817.30
Vel Total (ft/s)	0.50	Avg. Vel. (ft/s)	0.06	0.73	0.08
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)	0.57	3.69	0.88
Conv. Total (cfs)	145643.1	Conv. (cfs)	816.4	138244.1	6582.7
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	212.09	422.13	817.31
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.00
Alpha	2.03	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3644.17	4173.47	3515.34
C & E Loss (ft)	0.00	Cum SA (acres)	1631.89	431.96	1327.89

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	25.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150

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W.S. Elev (ft)	25.02	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	546.85	1910.28	1446.34
E.G. Slope (ft/ft)	0.000055	Area (sq ft)	546.85	1910.28	1446.34
Q Total (cfs)	1616.00	Flow (cfs)	30.99	1441.20	143.81
Top Width (ft)	2150.10	Top Width (ft)	808.21	422.00	919.90
Vel Total (ft/s)	0.41	Avg. Vel. (ft/s)	0.06	0.75	0.10
Max Chl Dpth (ft)	5.02	Hydr. Depth (ft)	0.68	4.53	1.57
Conv. Total (cfs)	217694.4	Conv. (cfs)	4175.0	194146.7	19372.7
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	808.24	422.13	919.90
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	2.97	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	5676.88	4718.83	5336.73
C & E Loss (ft)	0.00	Cum SA (acres)	1884.45	432.33	1899.99

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.54	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	1046.10	2129.32	1946.44
E.G. Slope (ft/ft)	0.000048	Area (sq ft)	1046.10	2129.32	1946.44
Q Total (cfs)	1885.00	Flow (cfs)	68.68	1609.37	206.95
Top Width (ft)	2544.58	Top Width (ft)	1115.49	422.00	1007.10
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)	0.07	0.76	0.11
Max Chl Dpth (ft)	5.54	Hydr. Depth (ft)	0.94	5.05	1.93
Conv. Total (cfs)	272495.8	Conv. (cfs)	9928.3	232650.1	29917.3
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	1115.52	422.13	1007.11
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	3.61	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	7040.18	5058.47	6768.37
C & E Loss (ft)	0.00	Cum SA (acres)	1984.29	432.47	2096.21

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.21	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	1922.15	2414.61	2661.89
E.G. Slope (ft/ft)	0.000042	Area (sq ft)	1922.15	2414.61	2661.89
Q Total (cfs)	2324.00	Flow (cfs)	153.20	1859.88	310.92
Top Width (ft)	2897.00	Top Width (ft)	1390.00	422.00	1085.00
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)	0.08	0.77	0.12
Max Chl Dpth (ft)	6.21	Hydr. Depth (ft)	1.38	5.72	2.45
Conv. Total (cfs)	358479.6	Conv. (cfs)	23631.4	286888.8	47959.4
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	1390.24	422.13	1085.22
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	4.33	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	9176.33	5563.89	9165.37
C & E Loss (ft)	0.00	Cum SA (acres)	2109.25	432.73	2317.03

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1

RS: 27

INPUT

Description:

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1534	25	1815	24	1871	23	1999	22
2091	21	2181	20	2200	19.7	2500	19.7	2580	20
2737	21	2847	22	3075	23	3213	24	3835	25
3908	26								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2181	.04	2580	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2181	2580		1912	1912		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.13	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	816.86	1754.60	1326.42
E.G. Slope (ft/ft)	0.000020	Area (sq ft)	816.86	1754.60	1326.42
Q Total (cfs)	928.00	Flow (cfs)	57.82	781.69	88.49
Top Width (ft)	1519.65	Top Width (ft)	403.86	399.00	716.80
Vel Total (ft/s)	0.24	Avg. Vel. (ft/s)	0.07	0.45	0.07
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	2.02	4.40	1.85
Conv. Total (cfs)	207697.1	Conv. (cfs)	12941.3	174950.9	19804.8
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	403.88	399.00	716.81
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	2.96	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	3628.85	4119.32	3481.86
C & E Loss (ft)	0.00	Cum SA (acres)	1621.82	418.54	1302.82

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.97	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	1254.46	2089.28	2146.47
E.G. Slope (ft/ft)	0.000020	Area (sq ft)	1254.46	2089.28	2146.47
Q Total (cfs)	1268.00	Flow (cfs)	86.88	1044.23	136.89
Top Width (ft)	2277.08	Top Width (ft)	639.56	399.00	1238.52
Vel Total (ft/s)	0.23	Avg. Vel. (ft/s)	0.07	0.50	0.06
Max Chl Dpth (ft)	5.27	Hydr. Depth (ft)	1.96	5.24	1.73
Conv. Total (cfs)	284184.3	Conv. (cfs)	19471.5	234033.9	30678.9
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	639.58	399.00	1238.54
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	3.87	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	5647.43	4653.46	5278.00

C & E Loss (ft)	0.00	Cum SA (acres)	LPGA Tomoka River	EC-RAS Report _ DEM
			1860.78	418.91
				1864.71

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.50	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	1658.78	2298.05	2811.92
E.G. Slope (ft/ft)	0.000019	Area (sq ft)	1658.78	2298.05	2811.92
Q Total (cfs)	1494.00	Flow (cfs)	105.83	1185.85	202.32
Top Width (ft)	2602.52	Top Width (ft)	912.26	399.00	1291.26
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.52	0.07
Max Chl Dpth (ft)	5.80	Hydr. Depth (ft)	1.82	5.76	2.18
Conv. Total (cfs)	345572.0	Conv. (cfs)	24479.2	274294.7	46798.2
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	912.29	399.00	1291.28
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.36	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	6995.97	4986.11	6690.59
C & E Loss (ft)	0.00	Cum SA (acres)	1951.15	419.05	2058.64

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.18	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	2393.34	2569.07	3704.71
E.G. Slope (ft/ft)	0.000018	Area (sq ft)	2393.34	2569.07	3704.71
Q Total (cfs)	1866.00	Flow (cfs)	160.64	1397.65	307.71
Top Width (ft)	2908.00	Top Width (ft)	1181.00	399.00	1328.00
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.07	0.54	0.08
Max Chl Dpth (ft)	6.48	Hydr. Depth (ft)	2.03	6.44	2.79
Conv. Total (cfs)	440984.2	Conv. (cfs)	37963.0	330301.4	72719.7
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	1181.20	399.00	1328.20
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.82	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	9105.79	5482.43	9061.31
C & E Loss (ft)	0.00	Cum SA (acres)	2067.22	419.31	2277.59

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.4

INPUT

Description:

Station	Elevation	Data	num=	26						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
387	25.9	547	25	817	24	917	23	1000	21.8	
1035	21.3	1060	21.1	1098	20.4	1113	19.7	1119	19.2	
1144	18.5	1189	17.6	1239	18.1	1295	18.3	1376	19.1	

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1380	19.4	1410	19.3	1477	20	1547	21	1747	22
1927	23	2117	23	2367	22	2427	23	2437	24
2487	26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
387	.15	1113	.04	1380	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1113	1380		350	350		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.10	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	551.99	1530.88	2210.91
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	551.99	1530.88	2210.91
Q Total (cfs)	928.00	Flow (cfs)	32.14	748.83	147.02
Top Width (ft)	1649.26	Top Width (ft)	322.78	267.00	1059.48
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.49	0.07
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	1.71	5.73	2.09
Conv. Total (cfs)	225734.6	Conv. (cfs)	7818.9	182152.4	35763.4
Length Wtd. (ft)	350.00	Wetted Per. (ft)	322.82	267.06	1059.56
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.15	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3598.81	4047.22	3404.23
C & E Loss (ft)	0.00	Cum SA (acres)	1605.87	403.92	1263.84

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.94	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	917.51	1754.74	3107.98
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	917.51	1754.74	3107.98
Q Total (cfs)	1268.00	Flow (cfs)	53.42	954.63	259.95
Top Width (ft)	1896.59	Top Width (ft)	549.15	267.00	1080.44
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.54	0.08
Max Chl Dpth (ft)	7.34	Hydr. Depth (ft)	1.67	6.57	2.88
Conv. Total (cfs)	303741.8	Conv. (cfs)	12796.8	228675.5	62269.5
Length Wtd. (ft)	350.00	Wetted Per. (ft)	549.19	267.06	1080.54
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.66	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	5599.77	4569.10	5162.68
C & E Loss (ft)	0.01	Cum SA (acres)	1834.69	404.29	1813.81

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

CROSS SECTION OUTPUT Profile #PF 3

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E.G. Elev (ft)	25.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.46	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	1232.82	1894.78	3678.09
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	1232.82	1894.78	3678.09
Q Total (cfs)	1494.00	Flow (cfs)	77.71	1077.28	339.02
Top Width (ft)	2008.70	Top Width (ft)	648.15	267.00	1093.55
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.57	0.09
Max Chl Dpth (ft)	7.86	Hydr. Depth (ft)	1.90	7.10	3.36
Conv. Total (cfs)	360427.6	Conv. (cfs)	18747.0	259893.1	81787.5
Length Wtd. (ft)	350.00	Wetted Per. (ft)	648.19	267.06	1093.66
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.88	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	6932.51	4894.09	6548.16
C & E Loss (ft)	0.01	Cum SA (acres)	1916.90	404.44	2006.30

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.14	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	1708.84	2076.11	4426.31
E.G. Slope (ft/ft)	0.000018	Area (sq ft)	1708.84	2076.11	4426.31
Q Total (cfs)	1866.00	Flow (cfs)	126.12	1274.71	465.16
Top Width (ft)	2100.00	Top Width (ft)	726.00	267.00	1107.00
Vel Total (ft/s)	0.23	Avg. Vel. (ft/s)	0.07	0.61	0.11
Max Chl Dpth (ft)	8.54	Hydr. Depth (ft)	2.35	7.78	4.00
Conv. Total (cfs)	443046.1	Conv. (cfs)	29945.8	302656.6	110443.7
Length Wtd. (ft)	350.00	Wetted Per. (ft)	726.29	267.06	1107.26
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	5.05	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	9015.76	5380.49	8882.86
C & E Loss (ft)	0.01	Cum SA (acres)	2025.37	404.69	2224.15

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.3

INPUT

Description:

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1490	26	1994	24.9	2000	22.8	2012.2	19.8	2039.8	19
2071	18.7	2110.4	18.4	2121.4	18.2	2137.4	17.6	2158.3	17.9

2166.8 19.5 2173.3 21.2 2174 22 2180.1 23.3 2185.1 24.7
 3540 26

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1490 .15 1994 .04 2185.1 .15

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1994 2185.1 96.1 96.1 96.1 .3 .5
 Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 1490 1994 25.9 F
 2185.1 3540 25.9 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.07	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	19.60	Flow Area (sq ft)		921.11	
E.G. Slope (ft/ft)	0.000088	Area (sq ft)		921.11	
Q Total (cfs)	928.00	Flow (cfs)		928.00	
Top Width (ft)	186.49	Top Width (ft)		186.49	
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)		1.01	
Max Chl Dpth (ft)	6.47	Hydr. Depth (ft)		4.94	
Conv. Total (cfs)	98683.7	Conv. (cfs)		98683.7	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		188.07	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)		Cum Volume (acre-ft)	3596.59	4037.37	3395.34
C & E Loss (ft)		Cum SA (acres)	1604.57	402.10	1259.58

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.90	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	19.86	Flow Area (sq ft)		1078.20	
E.G. Slope (ft/ft)	0.000101	Area (sq ft)	0.00	1078.20	21.27
Q Total (cfs)	1268.00	Flow (cfs)		1268.00	
Top Width (ft)	402.56	Top Width (ft)	0.92	191.10	210.54
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)		1.18	
Max Chl Dpth (ft)	7.30	Hydr. Depth (ft)		5.64	
Conv. Total (cfs)	126143.3	Conv. (cfs)		126143.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		192.91	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)		Cum Volume (acre-ft)	5596.08	4557.71	5150.11
C & E Loss (ft)		Cum SA (acres)	1832.48	402.45	1808.63

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

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	25.45	Wt. n-Val.		0.040	
Vel Head (ft)	0.03	Reach Len. (ft)	1.00	1.00	1.00
W.S. Elev (ft)	25.42	Flow Area (sq ft)		1177.60	
Crit W.S. (ft)	20.01	Area (sq ft)	62.46	1177.60	271.75
E.G. Slope (ft/ft)	0.000105	Flow (cfs)		1494.00	
Q Total (cfs)	1494.00	Top Width (ft)	239.23	191.10	752.63
Top Width (ft)	1182.97	Avg. Vel. (ft/s)		1.27	
Vel Total (ft/s)	1.27	Hydr. Depth (ft)		6.16	
Max Chl Dpth (ft)	7.82	Conv. (cfs)		146114.3	
Conv. Total (cfs)	146114.3	Wetted Per. (ft)		192.91	
Length Wtd. (ft)	1.00	Shear (lb/sq ft)		0.04	
Min Ch El (ft)	17.60	Stream Power (lb/ft s)		0.05	
Alpha	1.00	Cum Volume (acre-ft)	6927.31	4881.75	6532.29
Frctn Loss (ft)		Cum SA (acres)	1913.34	402.60	1998.89
C & E Loss (ft)					

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

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	26.13	Wt. n-Val.	0.150	0.040	0.150
Vel Head (ft)	0.03	Reach Len. (ft)	1.00	1.00	1.00
W.S. Elev (ft)	26.10	Flow Area (sq ft)	327.46	1307.08	1015.81
Crit W.S. (ft)	20.24	Area (sq ft)	327.46	1307.08	1015.81
E.G. Slope (ft/ft)	0.000102	Flow (cfs)	24.60	1757.46	83.94
Q Total (cfs)	1866.00	Top Width (ft)	504.00	191.10	1354.90
Top Width (ft)	2050.00	Avg. Vel. (ft/s)	0.08	1.34	0.08
Vel Total (ft/s)	0.70	Hydr. Depth (ft)	0.65	6.84	0.75
Max Chl Dpth (ft)	8.50	Conv. (cfs)	2433.1	173862.1	8304.2
Conv. Total (cfs)	184599.5	Wetted Per. (ft)	504.10	192.91	1355.00
Length Wtd. (ft)	1.00	Shear (lb/sq ft)	0.00	0.04	0.00
Min Ch El (ft)	17.60	Stream Power (lb/ft s)	0.00	0.06	0.00
Alpha	3.44	Cum Volume (acre-ft)	9007.58	5366.90	8860.99
Frctn Loss (ft)		Cum SA (acres)	2020.43	402.85	2214.26
C & E Loss (ft)					

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

BRIDGE

RIVER: RIVER-1

REACH: Reach-1

RS: 26.25

INPUT

Description: Bridge #7

Distance from Upstream XS = 1

Deck/Roadway Width = 95

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1994		25.9		23.7	2185		25.9		23.7

Upstream Bridge Cross Section Data

Station Elevation Data				num=	16				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1490	26	1994	24.9	2000	22.8	2012.2	19.8	2039.8	19
2071	18.7	2110.4	18.4	2121.4	18.2	2137.4	17.6	2158.3	17.9
2166.8	19.5	2173.3	21.2	2174	22	2180.1	23.3	2185.1	24.7
3540	26								

Manning's n Values

num=				3	
Sta	n Val	Sta	n Val	Sta	n Val
1490	.15	1994	.04	2185.1	.15

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1994	2185.1		.3	.5

Ineffective Flow				num=	2
Sta L	Sta R	Elev	Permanent		
1490	1994	25.9	F		
2185.1	3540	25.9	F		

Downstream Deck/Roadway Coordinates

num=				2					
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1994		25.9		23.7	2185		25.9		23.7

Downstream Bridge Cross Section Data

Station Elevation Data				num=	19				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
811	26	2000	25.4	2001.4	23.2	2011.7	20.3	2024.8	20
2040.4	19	2060	18.2	2067	17.6	2082	17.2	2098.9	16.6
2109.1	18.1	2115	18.7	2142.3	20	2165.7	19.9	2172.2	21.8
2172.9	22.2	2178.9	24.3	2182.4	25.5	3591.2	26.6		

Manning's n Values

num=				3	
Sta	n Val	Sta	n Val	Sta	n Val
811	.15	2000	.04	2182.4	.15

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	2000	2182.4		.3	.5

Ineffective Flow				num=	2
Sta L	Sta R	Elev	Permanent		
811	2000	24.8	F		
2182.4	3591.2	24.8	F		

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	25.9
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 2089.55 Downstream= 2091.2

Upstream	num=	2	
Width	Elev	Width	Elev
8.5	17.6	8.5	23.7
Downstream	num=	2	
Width	Elev	Width	Elev
8.5	16.6	8.5	23.7

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 23.7

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	24.09	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	24.07	E.G. Elev (ft)	24.09	24.07
Q Total (cfs)	928.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	928.00	Crit W.S. (ft)	19.64	19.70
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.15	1.24
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.09	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	2056.03	1887.99
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.02	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.02	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.24	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.04	0.04
BR Sel Method	Press Only	Power Total (lb/ft s)	0.04	0.05

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	24.92	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	24.90	E.G. Elev (ft)	24.92	24.88
Q Total (cfs)	1268.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	1268.00	Crit W.S. (ft)	19.91	20.15
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.57	1.69
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.13	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	2084.72	1918.95
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.05	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.05	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.69	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.07	0.08
BR Sel Method	Press Only	Power Total (lb/ft s)	0.11	0.14

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	25.45	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	25.42	E.G. Elev (ft)	25.45	25.38
Q Total (cfs)	1494.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	1494.00	Crit W.S. (ft)	20.06	20.33
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.85	1.99
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.15	0.17
Weir Max Depth (ft)		Specif Force (cu ft)	2108.72	1944.83
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.07	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.07	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.99	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.09	0.11
BR Sel Method	Press Only	Power Total (lb/ft s)	0.18	0.22

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	26.13	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	26.10	E.G. Elev (ft)	26.13	26.12
Q Total (cfs)	1866.00	W.S. Elev (ft)	26.10	26.09
Q Bridge (cfs)	960.76	Crit W.S. (ft)	20.30	20.58
Q Weir (cfs)	905.24	Max Chl Dpth (ft)	8.50	9.49
Weir Sta Lft (ft)	811.00	Vel Total (ft/s)	0.85	1.28
Weir Sta Rgt (ft)	2984.39	Flow Area (sq ft)	2190.20	1457.13
Weir Submerg	0.95	Froude # Chl	0.09	0.12
Weir Max Depth (ft)	0.72	Specif Force (cu ft)	4659.53	3908.51
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	1.07	0.69
Min El Prs (ft)	23.70	W.P. Total (ft)	2415.38	2472.57
Delta EG (ft)	0.01	Conv. Total (cfs)		
Delta WS (ft)	0.01	Top Width (ft)	2050.00	2121.16
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.28	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)		
BR Sel Method	Press/Weir	Power Total (lb/ft s)		

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.
 Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
 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.
 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 and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.2

INPUT

Description:

Station		Elevation		Data		num=		19	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
811	26	2000	25.4	2001.4	23.2	2011.7	20.3	2024.8	20
2040.4	19	2060	18.2	2067	17.6	2082	17.2	2098.9	16.6
2109.1	18.1	2115	18.7	2142.3	20	2165.7	19.9	2172.2	21.8
2172.9	22.2	2178.9	24.3	2182.4	25.5	3591.2	26.6		

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
811	.15	2000	.04
		2182.4	.15

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

2000	2182.4		181	181	181
Ineffective Flow	num=	2			
Sta L	Sta R	Elev	Permanent		
811	2000	24.8	F		
2182.4	3591.2	24.8	F		

.3

.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.05	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	19.46	Flow Area (sq ft)		869.29	
E.G. Slope (ft/ft)	0.000101	Area (sq ft)		869.29	
Q Total (cfs)	928.00	Flow (cfs)		928.00	
Top Width (ft)	177.32	Top Width (ft)		177.32	
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)		1.07	
Max Chl Dpth (ft)	7.45	Hydr. Depth (ft)		4.90	
Conv. Total (cfs)	92556.1	Conv. (cfs)		92556.1	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		179.15	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	3596.59	4035.65	3395.34
C & E Loss (ft)	0.01	Cum SA (acres)	1604.57	401.72	1259.58

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.85	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	19.84	Flow Area (sq ft)		1012.91	
E.G. Slope (ft/ft)	0.000116	Area (sq ft)		1012.91	
Q Total (cfs)	1268.00	Flow (cfs)		1268.00	
Top Width (ft)	180.16	Top Width (ft)		180.16	
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)		1.25	
Max Chl Dpth (ft)	8.25	Hydr. Depth (ft)		5.62	
Conv. Total (cfs)	117927.5	Conv. (cfs)		117927.5	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		182.56	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5596.08	4555.99	5150.11
C & E Loss (ft)	0.00	Cum SA (acres)	1832.48	402.07	1808.63

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	

			LPGA Tomoka River EC-RAS Report _ DEM		
W.S. Elev (ft)	25.35	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	20.14	Flow Area (sq ft)		1102.72	
E.G. Slope (ft/ft)	0.000123	Area (sq ft)		1102.72	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	181.92	Top Width (ft)		181.92	
Vel Total (ft/s)	1.35	Avg. Vel. (ft/s)		1.35	
Max Chl Dpth (ft)	8.75	Hydr. Depth (ft)		6.06	
Conv. Total (cfs)	134822.7	Conv. (cfs)		134822.7	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		184.68	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	6927.31	4880.02	6532.29
C & E Loss (ft)	0.00	Cum SA (acres)	1913.34	402.22	1998.88

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.09	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	20.40	Flow Area (sq ft)	458.26	1237.11	219.46
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	458.26	1237.11	219.46
Q Total (cfs)	1866.00	Flow (cfs)	26.97	1828.28	10.75
Top Width (ft)	2121.16	Top Width (ft)	1189.00	182.40	749.76
Vel Total (ft/s)	0.97	Avg. Vel. (ft/s)	0.06	1.48	0.05
Max Chl Dpth (ft)	9.49	Hydr. Depth (ft)	0.39	6.78	0.29
Conv. Total (cfs)	166358.0	Conv. (cfs)	2404.1	162995.6	958.4
Length Wtd. (ft)	181.00	Wetted Per. (ft)	1189.09	185.21	749.76
Min Ch El (ft)	16.60	Shear (lb/sq ft)	0.00	0.05	0.00
Alpha	2.25	Stream Power (lb/ft s)	0.00	0.08	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	9006.72	5365.09	8859.62
C & E Loss (ft)	0.01	Cum SA (acres)	2018.57	402.44	2211.93

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.1

INPUT

Description: wide flood plain distance criteria not met

* 001

US92

*

001

Station	Elevation	Data	num=	21					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
406	26.6	651	25.6	1789	24	2000	22.6	2047	21.9
2075	22.2	2137	21.9	2155	20	2158	19.2	2164	16
2175	17.5	2186	19.2	2197	20.4	2222	20	2268	20.8

2294 19.9 2489 23 3076 23 3351
5576 26

24 4076 25

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
406	.15	2155	.04	2197	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2155	2197		500	500	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.00	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	458.85	239.53	1572.51
E.G. Slope (ft/ft)	0.000315	Area (sq ft)	458.85	239.53	1572.51
Q Total (cfs)	928.00	Flow (cfs)	93.82	494.38	339.80
Top Width (ft)	1560.25	Top Width (ft)	365.38	42.00	1152.87
Vel Total (ft/s)	0.41	Avg. Vel. (ft/s)	0.20	2.06	0.22
Max Chl Dpth (ft)	8.00	Hydr. Depth (ft)	1.26	5.70	1.36
Conv. Total (cfs)	52321.4	Conv. (cfs)	5289.7	27873.3	19158.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	365.49	43.20	1152.92
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.02	0.11	0.03
Alpha	13.72	Stream Power (lb/ft s)	0.01	0.22	0.01
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	3595.64	4033.34	3392.08
C & E Loss (ft)	0.01	Cum SA (acres)	1603.81	401.27	1257.18

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.82	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1001.31	274.22	2770.44
E.G. Slope (ft/ft)	0.000236	Area (sq ft)	1001.31	274.22	2770.44
Q Total (cfs)	1268.00	Flow (cfs)	157.88	536.92	573.20
Top Width (ft)	2742.33	Top Width (ft)	950.51	42.00	1749.81
Vel Total (ft/s)	0.31	Avg. Vel. (ft/s)	0.16	1.96	0.21
Max Chl Dpth (ft)	8.82	Hydr. Depth (ft)	1.05	6.53	1.58
Conv. Total (cfs)	82470.1	Conv. (cfs)	10268.7	34920.8	37280.6
Length Wtd. (ft)	500.00	Wetted Per. (ft)	950.63	43.20	1749.87
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	16.76	Stream Power (lb/ft s)	0.00	0.18	0.00
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	5594.00	4553.32	5144.35
C & E Loss (ft)	0.01	Cum SA (acres)	1830.51	401.61	1804.99

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

CROSS SECTION OUTPUT Profile #PF 3

			LPGA Tomoka River EC-RAS Report _ DEM		
E.G. Elev (ft)	25.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.33	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1570.37	295.37	3784.95
E.G. Slope (ft/ft)	0.000190	Area (sq ft)	1570.37	295.37	3784.95
Q Total (cfs)	1494.00	Flow (cfs)	242.18	544.98	706.85
Top Width (ft)	3718.13	Top Width (ft)	1308.80	42.00	2367.33
Vel Total (ft/s)	0.26	Avg. Vel. (ft/s)	0.15	1.85	0.19
Max Chl Dpth (ft)	9.33	Hydr. Depth (ft)	1.20	7.03	1.60
Conv. Total (cfs)	108355.8	Conv. (cfs)	17564.4	39525.9	51265.6
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1308.91	43.20	2367.38
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	18.06	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	6924.04	4877.12	6524.42
C & E Loss (ft)	0.01	Cum SA (acres)	1910.62	401.75	1993.96

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	2697.64	326.83	5974.61
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	2697.64	326.83	5974.61
Q Total (cfs)	1866.00	Flow (cfs)	409.94	510.97	945.09
Top Width (ft)	5041.26	Top Width (ft)	1620.26	42.00	3379.00
Vel Total (ft/s)	0.21	Avg. Vel. (ft/s)	0.15	1.56	0.16
Max Chl Dpth (ft)	10.07	Hydr. Depth (ft)	1.66	7.78	1.77
Conv. Total (cfs)	170865.4	Conv. (cfs)	37537.6	46787.9	86539.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1620.38	43.20	3379.13
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	15.98	Stream Power (lb/ft s)	0.00	0.09	0.00
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	9000.16	5361.84	8846.75
C & E Loss (ft)	0.01	Cum SA (acres)	2012.73	401.97	2203.35

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.3

INPUT

Description: INTERPOLATED SECTION

* 001

x-sec info from aerials and u/s,d/s
 surveyed channel sections

* 001

Station Elevation Data		num= 29							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
30	27	60	26	130	25	300	23	500	22

LPGA Tomoka River EC-RAS Report _ DEM

610	22	640	23	810	23	1010	22	1320	23
1400	24	1680	24	1700	23	1730	22	1820	21
1905	20	1945	19	1970	18	2020	18	2050	19
2070	20	2120	21	2150	22	2180	23	2500	23
2870	23	2930	24	3310	25	4886	26		

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
30 .2 1945 .04 2050 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1945 2050 830 830 830 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	23.56	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	1721.25	556.40	724.45
E.G. Slope (ft/ft)	0.000918	Area (sq ft)	1721.25	556.40	724.45
Q Total (cfs)	2554.00	Flow (cfs)	504.95	1902.89	146.16
Top Width (ft)	2327.44	Top Width (ft)	1368.78	105.00	853.66
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.29	3.42	0.20
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	1.26	5.30	0.85
Conv. Total (cfs)	84300.7	Conv. (cfs)	16667.1	62809.3	4824.2
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1368.87	105.04	853.73
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.07	0.30	0.05
Alpha	12.07	Stream Power (lb/ft s)	0.02	1.04	0.01
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	3583.13	4028.78	3378.89
C & E Loss (ft)	0.02	Cum SA (acres)	1593.86	400.42	1245.67

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.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	24.49	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	3205.15	654.38	1586.18
E.G. Slope (ft/ft)	0.000680	Area (sq ft)	3205.15	654.38	1586.18
Q Total (cfs)	3468.00	Flow (cfs)	921.78	2146.16	400.06
Top Width (ft)	2944.75	Top Width (ft)	1772.00	105.00	1067.76
Vel Total (ft/s)	0.64	Avg. Vel. (ft/s)	0.29	3.28	0.25
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)	1.81	6.23	1.49
Conv. Total (cfs)	132996.6	Conv. (cfs)	35349.9	82304.7	15342.1
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1772.10	105.04	1067.83
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.26	0.06
Alpha	16.49	Stream Power (lb/ft s)	0.02	0.87	0.02
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	5569.86	4547.99	5119.35
C & E Loss (ft)	0.01	Cum SA (acres)	1814.88	400.77	1788.82

CROSS SECTION OUTPUT Profile #PF 3

LPGA Tomoka River EC-RAS Report _ DEM

E.G. Elev (ft)	25.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	25.06	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	4221.28	713.79	2253.25
E.G. Slope (ft/ft)	0.000551	Area (sq ft)	4221.28	713.79	2253.25
Q Total (cfs)	4074.00	Flow (cfs)	1289.94	2232.48	551.58
Top Width (ft)	3278.54	Top Width (ft)	1819.19	105.00	1354.35
Vel Total (ft/s)	0.57	Avg. Vel. (ft/s)	0.31	3.13	0.24
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	2.32	6.80	1.66
Conv. Total (cfs)	173602.2	Conv. (cfs)	54967.1	95130.8	23504.2
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1819.30	105.04	1354.42
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.23	0.06
Alpha	16.81	Stream Power (lb/ft s)	0.02	0.73	0.01
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	6890.80	4871.32	6489.77
C & E Loss (ft)	0.01	Cum SA (acres)	1892.67	400.91	1972.60

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	25.87	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	5716.41	798.76	3865.35
E.G. Slope (ft/ft)	0.000442	Area (sq ft)	5716.41	798.76	3865.35
Q Total (cfs)	5071.00	Flow (cfs)	1877.24	2413.04	780.71
Top Width (ft)	4610.59	Top Width (ft)	1875.84	105.00	2629.75
Vel Total (ft/s)	0.49	Avg. Vel. (ft/s)	0.33	3.02	0.20
Max Chl Dpth (ft)	7.87	Hydr. Depth (ft)	3.05	7.61	1.47
Conv. Total (cfs)	241136.4	Conv. (cfs)	89266.7	114745.1	37124.6
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1875.95	105.04	2629.83
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.21	0.04
Alpha	18.39	Stream Power (lb/ft s)	0.03	0.63	0.01
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	8951.87	5355.38	8790.28
C & E Loss (ft)	0.00	Cum SA (acres)	1992.67	401.13	2168.86

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.2

INPUT

Description: INTERPOLATED SECTION

* 001

Station	Elevation	Data	num=	21					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26.6	1630	22	1710	23	1930	22	2750	21
2860	20	2900	19	2950	18	2980	17	3020	16
3040	16	3070	17	3110	18	3190	19	3220	20
3250	21	3280	22	3340	23	3420	24	3680	25
4510	26.2								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.18	2980	.04	3070	.18

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2980	3070		1000	1000	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	23.09	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	2386.02	602.99	859.28
E.G. Slope (ft/ft)	0.000442	Area (sq ft)	2386.02	602.99	859.28
Q Total (cfs)	2554.00	Flow (cfs)	564.30	1672.74	316.96
Top Width (ft)	1866.22	Top Width (ft)	1499.12	90.00	277.10
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.24	2.77	0.37
Max Chl Dpth (ft)	7.09	Hydr. Depth (ft)	1.59	6.70	3.10
Conv. Total (cfs)	121522.4	Conv. (cfs)	26850.1	79590.8	15081.5
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1499.17	90.03	277.18
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.04	0.18	0.09
Alpha	11.51	Stream Power (lb/ft s)	0.01	0.51	0.03
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	3544.00	4017.73	3363.80
C & E Loss (ft)	0.01	Cum SA (acres)	1566.54	398.57	1234.90

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	24.12	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	3999.69	695.52	1187.69
E.G. Slope (ft/ft)	0.000364	Area (sq ft)	3999.69	695.52	1187.69
Q Total (cfs)	3468.00	Flow (cfs)	1141.59	1926.79	399.62
Top Width (ft)	2110.32	Top Width (ft)	1639.92	90.00	380.40
Vel Total (ft/s)	0.59	Avg. Vel. (ft/s)	0.29	2.77	0.34
Max Chl Dpth (ft)	8.12	Hydr. Depth (ft)	2.44	7.73	3.12
Conv. Total (cfs)	181736.6	Conv. (cfs)	59823.8	100971.2	20941.6
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1639.99	90.03	380.48
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.06	0.18	0.07
Alpha	12.38	Stream Power (lb/ft s)	0.02	0.49	0.02
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	5501.22	4535.13	5092.92
C & E Loss (ft)	0.01	Cum SA (acres)	1782.38	398.91	1775.02

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	24.72	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	5019.16	750.09	1466.12
E.G. Slope (ft/ft)	0.000335	Area (sq ft)	5019.16	750.09	1466.12
Q Total (cfs)	4074.00	Flow (cfs)	1546.46	2095.52	432.03
Top Width (ft)	2351.00	Top Width (ft)	1722.96	90.00	538.03

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Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.31	2.79	0.29
Max Chl Dpth (ft)	8.72	Hydr. Depth (ft)	2.91	8.33	2.72
Conv. Total (cfs)	222636.8	Conv. (cfs)	84511.0	114516.4	23609.4
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1723.02	90.03	538.12
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.06	0.17	0.06
Alpha	12.80	Stream Power (lb/ft s)	0.02	0.49	0.02
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	6802.77	4857.38	6454.34
C & E Loss (ft)	0.01	Cum SA (acres)	1858.92	399.05	1954.57

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	25.57	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	6525.69	826.22	2084.21
E.G. Slope (ft/ft)	0.000310	Area (sq ft)	6525.69	826.22	2084.21
Q Total (cfs)	5071.00	Flow (cfs)	2207.78	2369.93	493.29
Top Width (ft)	2932.48	Top Width (ft)	1838.82	90.00	1003.66
Vel Total (ft/s)	0.54	Avg. Vel. (ft/s)	0.34	2.87	0.24
Max Chl Dpth (ft)	9.57	Hydr. Depth (ft)	3.55	9.18	2.08
Conv. Total (cfs)	287873.0	Conv. (cfs)	125332.5	134537.3	28003.3
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1838.88	90.03	1003.75
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.07	0.18	0.04
Alpha	13.51	Stream Power (lb/ft s)	0.02	0.51	0.01
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	8835.24	5339.90	8733.60
C & E Loss (ft)	0.01	Cum SA (acres)	1957.28	399.27	2134.25

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.1

INPUT

Description: INTERPOLATED SECTION

* 001

Station Elevation Data		num=		26					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	25	1240	24	1310	23	1380	22	1440	22
1460	23	1730	23	1815	22	2300	21	2480	20
2570	19	2640	18	2680	17	2730	16	2790	15
2810	15	2860	16	2900	17	2950	18	2980	19
3020	20	3060	21	3110	22	3140	23	3185	24
3235	25								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.17	2730	.04	2860	.17

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
2730	2860	1744	1744	1744	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

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E.G. Elev (ft)	22.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	22.85	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	2325.87	965.08	957.46
E.G. Slope (ft/ft)	0.000181	Area (sq ft)	2325.87	965.08	957.46
Q Total (cfs)	2554.00	Flow (cfs)	462.41	1833.51	258.08
Top Width (ft)	1528.59	Top Width (ft)	1123.19	130.00	275.40
Vel Total (ft/s)	0.60	Avg. Vel. (ft/s)	0.20	1.90	0.27
Max Chl Dpth (ft)	7.85	Hydr. Depth (ft)	2.07	7.42	3.48
Conv. Total (cfs)	190025.4	Conv. (cfs)	34404.9	136418.8	19201.6
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1123.26	130.02	275.49
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.02	0.08	0.04
Alpha	7.21	Stream Power (lb/ft s)	0.00	0.16	0.01
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	3489.91	3999.73	3342.95
C & E Loss (ft)	0.00	Cum SA (acres)	1536.44	396.04	1228.55

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.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	23.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	23.89	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	3785.16	1100.14	1265.65
E.G. Slope (ft/ft)	0.000179	Area (sq ft)	3785.16	1100.14	1265.65
Q Total (cfs)	3468.00	Flow (cfs)	827.13	2270.64	370.23
Top Width (ft)	1931.86	Top Width (ft)	1482.00	130.00	319.86
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.22	2.06	0.29
Max Chl Dpth (ft)	8.89	Hydr. Depth (ft)	2.55	8.46	3.96
Conv. Total (cfs)	259186.0	Conv. (cfs)	61816.7	169699.4	27669.9
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1482.08	130.02	319.96
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.03	0.09	0.04
Alpha	8.84	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	5411.86	4514.52	5064.76
C & E Loss (ft)	0.00	Cum SA (acres)	1746.54	396.39	1766.98

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	24.50	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	4733.02	1180.24	1471.91
E.G. Slope (ft/ft)	0.000174	Area (sq ft)	4733.02	1180.24	1471.91
Q Total (cfs)	4074.00	Flow (cfs)	1118.45	2514.03	441.52
Top Width (ft)	2090.54	Top Width (ft)	1610.45	130.00	350.09
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.24	2.13	0.30
Max Chl Dpth (ft)	9.50	Hydr. Depth (ft)	2.94	9.08	4.20
Conv. Total (cfs)	309173.7	Conv. (cfs)	84878.3	190788.4	33507.0

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Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1610.54	130.02	350.20
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.03	0.10	0.05
Alpha	9.28	Stream Power (lb/ft s)	0.01	0.21	0.01
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	6690.83	4835.22	6420.61
C & E Loss (ft)	0.00	Cum SA (acres)	1820.66	396.53	1944.38

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	25.36	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	6185.38	1291.62	1786.98
E.G. Slope (ft/ft)	0.000167	Area (sq ft)	6185.38	1291.62	1786.98
Q Total (cfs)	5071.00	Flow (cfs)	1633.72	2866.04	571.24
Top Width (ft)	2235.00	Top Width (ft)	1730.00	130.00	375.00
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.26	2.22	0.32
Max Chl Dpth (ft)	10.36	Hydr. Depth (ft)	3.58	9.94	4.77
Conv. Total (cfs)	392314.7	Conv. (cfs)	126391.8	221729.1	44193.7
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1730.45	130.02	375.47
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.04	0.10	0.05
Alpha	9.40	Stream Power (lb/ft s)	0.01	0.23	0.02
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	8689.34	5315.59	8689.16
C & E Loss (ft)	0.00	Cum SA (acres)	1916.31	396.75	2118.42

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 25

INPUT

Description:

Station Elevation Data			num=	25					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
334	25	1010	21	1300	20.5	1354	20.7	1413	20.4
1463	19.7	1514	17.9	1565	16.1	1618	15.3	1621	14.9
1637	12.6	1646	14	1651	15.2	1703	15.1	1760	15.1
1787	15.7	1809	17.1	1833	18.5	1883	19.5	2066	20
2110	21	2172	22	2272	23	2535	24	2672	25

Manning's n Values			num=	3		
Sta	n Val	Sta	n Val	Sta	n Val	
334	.15	1618	.04	1651	.15	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1618	1651		3391 3391	3391	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	22.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.31	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	1707.77	278.27	1977.45
E.G. Slope (ft/ft)	0.000518	Area (sq ft)	1707.77	278.27	1977.45
Q Total (cfs)	2633.00	Flow (cfs)	623.12	966.24	1043.64
Top Width (ft)	1414.72	Top Width (ft)	829.60	33.00	552.12
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.36	3.47	0.53
Max Chl Dpth (ft)	9.71	Hydr. Depth (ft)	2.06	8.43	3.58
Conv. Total (cfs)	115671.3	Conv. (cfs)	27374.5	42448.3	45848.4
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	829.68	33.44	552.25
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.07	0.27	0.12
Alpha	10.35	Stream Power (lb/ft s)	0.02	0.93	0.06
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	3409.16	3974.84	3284.20
C & E Loss (ft)	0.00	Cum SA (acres)	1497.35	392.78	1211.99

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	23.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	23.39	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	2696.89	313.73	2640.68
E.G. Slope (ft/ft)	0.000463	Area (sq ft)	2696.89	313.73	2640.68
Q Total (cfs)	3556.00	Flow (cfs)	1105.35	1115.39	1335.26
Top Width (ft)	1766.71	Top Width (ft)	1011.22	33.00	722.49
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.41	3.56	0.51
Max Chl Dpth (ft)	10.79	Hydr. Depth (ft)	2.67	9.51	3.65
Conv. Total (cfs)	165279.6	Conv. (cfs)	51375.6	51842.4	62061.6
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1011.30	33.44	722.62
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.27	0.11
Alpha	10.39	Stream Power (lb/ft s)	0.03	0.96	0.05
Frctn Loss (ft)	1.57	Cum Volume (acre-ft)	5282.10	4486.21	4986.57
C & E Loss (ft)	0.00	Cum SA (acres)	1696.63	393.12	1746.12

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.03	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	3382.11	334.96	3159.61
E.G. Slope (ft/ft)	0.000431	Area (sq ft)	3382.11	334.96	3159.61
Q Total (cfs)	4167.00	Flow (cfs)	1452.88	1200.08	1514.04
Top Width (ft)	2040.86	Top Width (ft)	1119.89	33.00	887.97
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.43	3.58	0.48
Max Chl Dpth (ft)	11.43	Hydr. Depth (ft)	3.02	10.15	3.56
Conv. Total (cfs)	200757.7	Conv. (cfs)	69996.7	57817.5	72943.4

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Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1119.98	33.44	888.10
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.27	0.10
Alpha	10.47	Stream Power (lb/ft s)	0.03	0.97	0.05
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	6528.38	4804.89	6327.90
C & E Loss (ft)	0.00	Cum SA (acres)	1766.00	393.26	1919.59

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	24.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.93	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	4463.21	364.78	4018.04
E.G. Slope (ft/ft)	0.000371	Area (sq ft)	4463.21	364.78	4018.04
Q Total (cfs)	5170.00	Flow (cfs)	1964.98	1283.29	1921.74
Top Width (ft)	2317.40	Top Width (ft)	1272.63	33.00	1011.78
Vel Total (ft/s)	0.58	Avg. Vel. (ft/s)	0.44	3.52	0.48
Max Chl Dpth (ft)	12.33	Hydr. Depth (ft)	3.51	11.05	3.97
Conv. Total (cfs)	268511.3	Conv. (cfs)	102053.7	66649.4	99808.1
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1272.71	33.44	1011.91
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.25	0.09
Alpha	9.46	Stream Power (lb/ft s)	0.04	0.89	0.04
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	8476.17	5282.43	8572.96
C & E Loss (ft)	0.01	Cum SA (acres)	1856.21	393.48	2090.66

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 24

INPUT

Description:

Station	Elevation	Data	num=	22					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1319	24	1525	19.3	1568	17.3	1599	14.9	1605	14.7
1661	15	1707	14.6	1753	14.5	1800	13.7	1810	12.9
1819	13.9	1825	14.4	1858	14.1	1870	13.3	1880	13
1888	13.5	1897	13.9	1929	14.2	1968	15.2	2008	18.5
2050	21.3	2100	23.1						

Manning's n Values	num=	3			
Sta	n Val	Sta	n Val	Sta	n Val
1319	.15	1825	.04	1897	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1825	1897		1839 1839	1839		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

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E.G. Elev (ft)	20.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	20.71	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	1700.09	495.91	639.03
E.G. Slope (ft/ft)	0.000434	Area (sq ft)	1700.09	495.91	639.03
Q Total (cfs)	2728.00	Flow (cfs)	983.69	1388.82	355.49
Top Width (ft)	578.15	Top Width (ft)	361.95	72.00	144.20
Vel Total (ft/s)	0.96	Avg. Vel. (ft/s)	0.58	2.80	0.56
Max Chl Dpth (ft)	7.81	Hydr. Depth (ft)	4.70	6.89	4.43
Conv. Total (cfs)	130925.6	Conv. (cfs)	47210.5	66654.0	17061.2
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	362.22	72.06	144.42
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.13	0.19	0.12
Alpha	4.49	Stream Power (lb/ft s)	0.07	0.52	0.07
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	3276.52	3944.71	3182.36
C & E Loss (ft)	0.01	Cum SA (acres)	1450.97	388.69	1184.88

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	21.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.80	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2117.37	573.82	805.40
E.G. Slope (ft/ft)	0.000465	Area (sq ft)	2117.37	573.82	805.40
Q Total (cfs)	3675.00	Flow (cfs)	1351.66	1832.42	490.92
Top Width (ft)	648.13	Top Width (ft)	409.37	72.00	166.76
Vel Total (ft/s)	1.05	Avg. Vel. (ft/s)	0.64	3.19	0.61
Max Chl Dpth (ft)	8.90	Hydr. Depth (ft)	5.17	7.97	4.83
Conv. Total (cfs)	170479.3	Conv. (cfs)	62702.2	85004.0	22773.2
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	409.66	72.06	167.01
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.15	0.23	0.14
Alpha	4.78	Stream Power (lb/ft s)	0.10	0.74	0.09
Frctn Loss (ft)	1.06	Cum Volume (acre-ft)	5094.71	4451.67	4852.43
C & E Loss (ft)	0.01	Cum SA (acres)	1641.34	389.04	1711.51

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	22.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.45	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2396.34	621.21	921.19
E.G. Slope (ft/ft)	0.000476	Area (sq ft)	2396.34	621.21	921.19
Q Total (cfs)	4302.00	Flow (cfs)	1606.23	2116.08	579.70
Top Width (ft)	695.27	Top Width (ft)	438.22	72.00	185.05
Vel Total (ft/s)	1.09	Avg. Vel. (ft/s)	0.67	3.41	0.63
Max Chl Dpth (ft)	9.55	Hydr. Depth (ft)	5.47	8.63	4.98

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Conv. Total (cfs)	197252.7	Conv. (cfs)	73647.7	97025.0	26580.0
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	438.52	72.06	185.31
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.16	0.26	0.15
Alpha	4.97	Stream Power (lb/ft s)	0.11	0.87	0.09
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	6303.46	4767.67	6169.06
C & E Loss (ft)	0.00	Cum SA (acres)	1705.35	389.18	1877.83

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	23.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	23.44	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2849.02	692.10	1115.24
E.G. Slope (ft/ft)	0.000482	Area (sq ft)	2849.02	692.10	1115.24
Q Total (cfs)	5332.00	Flow (cfs)	2027.03	2551.13	753.85
Top Width (ft)	756.37	Top Width (ft)	481.37	72.00	203.00
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.71	3.69	0.68
Max Chl Dpth (ft)	10.54	Hydr. Depth (ft)	5.92	9.61	5.49
Conv. Total (cfs)	242803.2	Conv. (cfs)	92304.6	116170.5	34328.0
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	481.68	72.06	203.61
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.18	0.29	0.16
Alpha	5.15	Stream Power (lb/ft s)	0.13	1.07	0.11
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	8191.55	5241.29	8373.15
C & E Loss (ft)	0.00	Cum SA (acres)	1787.93	389.40	2043.38

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 23

INPUT

Description:

Station Elevation Data		num=	35						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1025	23	1068	22	1100	21	1143	20	1370	19
1400	18.4	1440	18.6	1491	18.5	1541.1	17.8	1595	16.3
1649	14.3	1669	13.6	1682	14	1691	14.2	1707	13.9
1710	12.9	1718	6.6	1723	7	1735	10.1	1740	12.8
1742	15.4	1750	15.6	1756	14.5	1771	14.6	1785	15.2
1808	14.6	1845	15.4	1887	15.6	1937	15.4	2042	18
2150	19	2225	20	2250	21	2287	22	2325	23

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1025	.15	1707	.04
		1742	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1707	1742		3151	3151	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	19.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	19.46	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	870.10	340.83	1230.99
E.G. Slope (ft/ft)	0.000892	Area (sq ft)	870.10	340.83	1230.99
Q Total (cfs)	2710.00	Flow (cfs)	404.74	1585.00	720.27
Top Width (ft)	918.73	Top Width (ft)	441.28	35.00	442.45
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.47	4.65	0.59
Max Chl Dpth (ft)	12.86	Hydr. Depth (ft)	1.97	9.74	2.78
Conv. Total (cfs)	90736.1	Conv. (cfs)	13551.4	53068.8	24115.9
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	441.37	39.72	442.63
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.11	0.48	0.15
Alpha	10.37	Stream Power (lb/ft s)	0.05	2.22	0.09
Frctn Loss (ft)	2.03	Cum Volume (acre-ft)	3222.26	3927.04	3142.88
C & E Loss (ft)	0.05	Cum SA (acres)	1434.01	386.43	1172.50

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	20.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	20.65	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	1518.51	382.56	1801.21
E.G. Slope (ft/ft)	0.000736	Area (sq ft)	1518.51	382.56	1801.21
Q Total (cfs)	3649.00	Flow (cfs)	764.74	1745.69	1138.57
Top Width (ft)	1126.31	Top Width (ft)	592.02	35.00	499.29
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.50	4.56	0.63
Max Chl Dpth (ft)	14.05	Hydr. Depth (ft)	2.56	10.93	3.61
Conv. Total (cfs)	134477.2	Conv. (cfs)	28183.2	64334.2	41959.7
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	592.12	39.72	499.48
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.12	0.44	0.17
Alpha	10.44	Stream Power (lb/ft s)	0.06	2.02	0.10
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	5017.96	4431.48	4797.41
C & E Loss (ft)	0.03	Cum SA (acres)	1620.20	386.78	1697.45

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	21.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.42	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	1982.28	409.29	2190.89
E.G. Slope (ft/ft)	0.000624	Area (sq ft)	1982.28	409.29	2190.89
Q Total (cfs)	4271.00	Flow (cfs)	1064.24	1798.77	1407.99
Top Width (ft)	1178.67	Top Width (ft)	620.29	35.00	523.37

			LPGA Tomoka River EC-RAS Report _ DEM		
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.54	4.39	0.64
Max Chl Dpth (ft)	14.82	Hydr. Depth (ft)	3.20	11.69	4.19
Conv. Total (cfs)	170956.5	Conv. (cfs)	42598.6	72000.1	56357.9
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	620.41	39.72	523.57
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.12	0.40	0.16
Alpha	9.60	Stream Power (lb/ft s)	0.07	1.76	0.10
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	6211.03	4745.92	6103.37
C & E Loss (ft)	0.02	Cum SA (acres)	1683.01	386.92	1862.87

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	22.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.52	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	2685.97	447.82	2789.58
E.G. Slope (ft/ft)	0.000522	Area (sq ft)	2685.97	447.82	2789.58
Q Total (cfs)	5289.00	Flow (cfs)	1547.32	1910.89	1830.79
Top Width (ft)	1260.82	Top Width (ft)	661.20	35.00	564.62
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)	0.58	4.27	0.66
Max Chl Dpth (ft)	15.92	Hydr. Depth (ft)	4.06	12.79	4.94
Conv. Total (cfs)	231520.2	Conv. (cfs)	67732.1	83647.1	80141.0
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	661.33	39.72	564.84
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.13	0.37	0.16
Alpha	8.56	Stream Power (lb/ft s)	0.08	1.57	0.11
Frctn Loss (ft)	1.49	Cum Volume (acre-ft)	8074.72	5217.23	8290.73
C & E Loss (ft)	0.01	Cum SA (acres)	1763.82	387.14	2027.18

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1

RS: 22

INPUT

Description:

Station Elevation Data		num=	24
Sta	Elev	Sta	Elev
1432	21	1469	20
1811	12.5	1862	10.9
2021	7.5	2028	9.8
2216	10.9	2217	10.4
2246	11.3	2412	18.8

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1432	.15	2006	.04
		2032	.15

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

2006 2032 2497 2497 2497

.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	17.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	17.54	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	1579.41	216.06	1816.82
E.G. Slope (ft/ft)	0.000494	Area (sq ft)	1579.41	216.06	1816.82
Q Total (cfs)	2903.00	Flow (cfs)	994.22	716.01	1192.77
Top Width (ft)	704.75	Top Width (ft)	326.66	26.00	352.09
Vel Total (ft/s)	0.80	Avg. Vel. (ft/s)	0.63	3.31	0.66
Max Chl Dpth (ft)	10.04	Hydr. Depth (ft)	4.83	8.31	5.16
Conv. Total (cfs)	130592.0	Conv. (cfs)	44725.1	32209.8	53657.0
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	326.79	26.88	352.94
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.25	0.16
Alpha	4.68	Stream Power (lb/ft s)	0.09	0.82	0.10
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	3133.67	3906.90	3032.65
C & E Loss (ft)	0.01	Cum SA (acres)	1406.24	384.23	1143.76

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	18.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	18.93	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	2067.50	252.24	2328.17
E.G. Slope (ft/ft)	0.000462	Area (sq ft)	2067.50	252.24	2328.17
Q Total (cfs)	3893.00	Flow (cfs)	1350.97	895.79	1646.24
Top Width (ft)	793.86	Top Width (ft)	384.23	26.00	383.63
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.65	3.55	0.71
Max Chl Dpth (ft)	11.43	Hydr. Depth (ft)	5.38	9.70	6.07
Conv. Total (cfs)	181182.6	Conv. (cfs)	62874.9	41690.6	76617.1
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	384.37	26.88	384.51
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.16	0.27	0.17
Alpha	4.65	Stream Power (lb/ft s)	0.10	0.96	0.12
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	4888.26	4408.52	4648.06
C & E Loss (ft)	0.01	Cum SA (acres)	1584.89	384.57	1665.51

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	19.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	19.76	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	2421.93	273.91	2657.54
E.G. Slope (ft/ft)	0.000474	Area (sq ft)	2421.93	273.91	2657.54
Q Total (cfs)	4553.00	Flow (cfs)	1510.37	1041.79	2000.84
Top Width (ft)	925.62	Top Width (ft)	492.78	26.00	406.85
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.62	3.80	0.75
Max Chl Dpth (ft)	12.26	Hydr. Depth (ft)	4.91	10.53	6.53
Conv. Total (cfs)	209027.3	Conv. (cfs)	69340.6	47828.5	91858.1
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	492.92	26.88	407.74

			LPGA Tomoka River EC-RAS Report _ DEM		
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.30	0.19
Alpha	5.10	Stream Power (lb/ft s)	0.09	1.15	0.15
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	6051.74	4721.21	5928.01
C & E Loss (ft)	0.01	Cum SA (acres)	1642.75	384.71	1829.23

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	21.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.06	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	3133.61	307.61	3216.50
E.G. Slope (ft/ft)	0.000433	Area (sq ft)	3133.61	307.61	3216.50
Q Total (cfs)	5634.00	Flow (cfs)	2002.05	1207.55	2424.40
Top Width (ft)	1059.00	Top Width (ft)	574.00	26.00	459.00
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.64	3.93	0.75
Max Chl Dpth (ft)	13.56	Hydr. Depth (ft)	5.46	11.83	7.01
Conv. Total (cfs)	270771.9	Conv. (cfs)	96219.0	58035.3	116517.6
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	574.22	26.88	459.97
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.31	0.19
Alpha	5.16	Stream Power (lb/ft s)	0.09	1.21	0.14
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	7864.23	5189.91	8073.49
C & E Loss (ft)	0.01	Cum SA (acres)	1719.14	384.93	1990.15

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 21

INPUT
 Description: * 001

Station Elevation Data				num=	37
Sta	Elev	Sta	Elev	Sta	Elev
1349	20	1399	19	1443	18
1555	14.1	1607	12.8	1652	11.4
1798	9.3	1846	8.7	1858	7.5
1912	8.9	1915	7.5	1926	6.8
1957	8.9	1982	8.7	1994	8.2
2040	8.6	2051	8.1	2061	8.8
2171	9	2206	9.5	2231	9.6
2365	19.3	2418	21.1		

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
1349	.16	1915	.04	1934	.16

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1915	1934	2919	2919	2919	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

LPGA Tomoka River EC-RAS Report _ DEM					
E.G. Elev (ft)	16.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	16.73	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	2468.17	181.21	2551.14
E.G. Slope (ft/ft)	0.000238	Area (sq ft)	2468.17	181.21	2551.14
Q Total (cfs)	2903.00	Flow (cfs)	1130.75	465.93	1306.33
Top Width (ft)	826.94	Top Width (ft)	431.14	19.00	376.81
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.46	2.57	0.51
Max Chl Dpth (ft)	9.93	Hydr. Depth (ft)	5.72	9.54	6.77
Conv. Total (cfs)	188151.9	Conv. (cfs)	73287.1	30198.0	84666.8
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	431.73	19.07	377.64
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.08	0.14	0.10
Alpha	4.05	Stream Power (lb/ft s)	0.04	0.36	0.05
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	3017.66	3895.52	2907.46
C & E Loss (ft)	0.01	Cum SA (acres)	1384.52	382.94	1122.87

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	18.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	18.13	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	3101.38	207.86	3103.64
E.G. Slope (ft/ft)	0.000244	Area (sq ft)	3101.38	207.86	3103.64
Q Total (cfs)	3893.00	Flow (cfs)	1564.11	592.84	1736.05
Top Width (ft)	905.82	Top Width (ft)	477.80	19.00	409.01
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.50	2.85	0.56
Max Chl Dpth (ft)	11.33	Hydr. Depth (ft)	6.49	10.94	7.59
Conv. Total (cfs)	249236.9	Conv. (cfs)	100137.3	37954.6	111144.9
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	478.42	19.07	409.88
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.10	0.17	0.12
Alpha	4.02	Stream Power (lb/ft s)	0.05	0.47	0.06
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)	4740.11	4395.33	4492.37
C & E Loss (ft)	0.01	Cum SA (acres)	1560.18	383.28	1642.79

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	18.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	18.95	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	3507.24	223.41	3444.75
E.G. Slope (ft/ft)	0.000248	Area (sq ft)	3507.24	223.41	3444.75
Q Total (cfs)	4553.00	Flow (cfs)	1845.38	674.51	2033.11
Top Width (ft)	957.24	Top Width (ft)	513.82	19.00	424.42
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.53	3.02	0.59
Max Chl Dpth (ft)	12.15	Hydr. Depth (ft)	6.83	11.76	8.12
Conv. Total (cfs)	288937.7	Conv. (cfs)	117109.5	42804.9	129023.3
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	514.44	19.07	425.31
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.11	0.18	0.13
Alpha	4.02	Stream Power (lb/ft s)	0.06	0.55	0.07
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	5881.80	4706.96	5753.10
C & E Loss (ft)	0.01	Cum SA (acres)	1613.90	383.42	1805.40

CROSS SECTION OUTPUT Profile #PF 4

LPGA Tomoka River EC-RAS Report _ DEM

E.G. Elev (ft)	20.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	20.28	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	4234.98	248.76	4033.00
E.G. Slope (ft/ft)	0.000244	Area (sq ft)	4234.98	248.76	4033.00
Q Total (cfs)	5634.00	Flow (cfs)	2348.60	800.14	2485.27
Top Width (ft)	1045.00	Top Width (ft)	566.00	19.00	460.00
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.55	3.22	0.62
Max Chl Dpth (ft)	13.48	Hydr. Depth (ft)	7.48	13.09	8.77
Conv. Total (cfs)	360540.5	Conv. (cfs)	150295.5	51203.7	159041.4
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	566.92	19.07	460.91
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.11	0.20	0.13
Alpha	4.03	Stream Power (lb/ft s)	0.06	0.64	0.08
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	7653.04	5173.96	7865.71
C & E Loss (ft)	0.01	Cum SA (acres)	1686.47	383.64	1963.81

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 20

INPUT

Description: 1ST SEC SOUTH OF LPGA

* 001

Station Elevation Data		num= 41							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
793	20	830	19	868	18	918	17	968	16
980	15	1018	14	1093	13	1118	12	1155	11
1193	10	1230	9	1300	8.2	1320	8.2	1343	8.8
1361	6.4	1379	9.5	1402	9.9	1450	9.6	1502	8.8
1545	8.6	1549	7.1	1556	4.8	1566	4	1579	4.6
1589	7.3	1590	9.5	1596	9.9	1604	8.8	1623	8.6
1631	7.7	1636	8.2	1662	8.6	1707	10.3	1746	13
1768	13.2	1838	16	1999	17	2043	18	2118	19
2168	20								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
793	.2	1549	.04	1589	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1549	1589		2903 2903	2903	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	15.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.82	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	3137.15	431.75	1119.71
E.G. Slope (ft/ft)	0.000350	Area (sq ft)	3137.15	431.75	1119.71

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Q Total (cfs)	3219.00	Flow (cfs)	1344.46	1447.28	427.26
Top Width (ft)	863.34	Top Width (ft)	578.84	40.00	244.50
Vel Total (ft/s)	0.69	Avg. Vel. (ft/s)	0.43	3.35	0.38
Max Chl Dpth (ft)	11.82	Hydr. Depth (ft)	5.42	10.79	4.58
Conv. Total (cfs)	172018.2	Conv. (cfs)	71845.9	77340.4	22831.9
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	579.67	40.77	246.26
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.12	0.23	0.10
Alpha	10.92	Stream Power (lb/ft s)	0.05	0.78	0.04
Frctn Loss (ft)	1.72	Cum Volume (acre-ft)	2829.85	3874.98	2784.46
C & E Loss (ft)	0.02	Cum SA (acres)	1350.68	380.96	1102.05

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	17.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	17.14	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	3938.86	484.70	1553.07
E.G. Slope (ft/ft)	0.000394	Area (sq ft)	3938.86	484.70	1553.07
Q Total (cfs)	4361.00	Flow (cfs)	1951.51	1860.49	549.00
Top Width (ft)	1094.52	Top Width (ft)	638.19	40.00	416.33
Vel Total (ft/s)	0.73	Avg. Vel. (ft/s)	0.50	3.84	0.35
Max Chl Dpth (ft)	13.14	Hydr. Depth (ft)	6.17	12.12	3.73
Conv. Total (cfs)	219842.5	Conv. (cfs)	98377.7	93789.1	27675.6
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	639.04	40.77	418.10
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.15	0.29	0.09
Alpha	12.04	Stream Power (lb/ft s)	0.08	1.12	0.03
Frctn Loss (ft)	1.71	Cum Volume (acre-ft)	4504.23	4372.13	4336.35
C & E Loss (ft)	0.01	Cum SA (acres)	1522.79	381.30	1615.14

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	18.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	17.95	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	4468.78	516.90	1902.45
E.G. Slope (ft/ft)	0.000395	Area (sq ft)	4468.78	516.90	1902.45
Q Total (cfs)	5122.00	Flow (cfs)	2316.57	2074.81	730.62
Top Width (ft)	1170.19	Top Width (ft)	678.44	40.00	451.75
Vel Total (ft/s)	0.74	Avg. Vel. (ft/s)	0.52	4.01	0.38
Max Chl Dpth (ft)	13.95	Hydr. Depth (ft)	6.59	12.92	4.21
Conv. Total (cfs)	257731.4	Conv. (cfs)	116566.3	104401.3	36763.7
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	679.30	40.77	453.53
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.16	0.31	0.10
Alpha	12.06	Stream Power (lb/ft s)	0.08	1.25	0.04

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Frctn Loss (ft)	1.64	Cum Volume (acre-ft)	5614.56	4682.15	5573.94
C & E Loss (ft)	0.01	Cum SA (acres)	1573.95	381.45	1776.05

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	19.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	19.32	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	5437.90	571.88	2590.73
E.G. Slope (ft/ft)	0.000369	Area (sq ft)	5437.90	571.88	2590.73
Q Total (cfs)	6374.00	Flow (cfs)	2956.38	2374.38	1043.25
Top Width (ft)	1316.12	Top Width (ft)	730.96	40.00	545.16
Vel Total (ft/s)	0.74	Avg. Vel. (ft/s)	0.54	4.15	0.40
Max Chl Dpth (ft)	15.32	Hydr. Depth (ft)	7.44	14.30	4.75
Conv. Total (cfs)	331686.3	Conv. (cfs)	153842.1	123556.4	54287.9
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	731.84	40.77	546.95
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.17	0.32	0.11
Alpha	11.99	Stream Power (lb/ft s)	0.09	1.34	0.04
Frctn Loss (ft)	1.44	Cum Volume (acre-ft)	7328.94	5146.47	7643.78
C & E Loss (ft)	0.01	Cum SA (acres)	1643.01	381.67	1930.14

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19.4

INPUT

Description:

Station	Elevation	Data	num=	28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
431	19	471	18	534	17	621	16	646	15
659	14	771	13	1000	11.5	1063	10.4	1120	9.1
1174	8.6	1236	7.3	1256	6.3	1291	6.5	1310	5.1
1316	3.7	1321	5.2	1325	6.9	1338	6.3	1340	6.9
1345	6.9	1350	8.1	1358	9.8	1361	10.7	1387	13
1443	15.3	1495	17.3	1510	18				

Manning's n	Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
431	.17	1291	.04	1350	.17

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1291	1350		295	295	295		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	14.16	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.25	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.91	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)		Flow Area (sq ft)	1900.25	466.86	114.52
E.G. Slope (ft/ft)	0.001133	Area (sq ft)	1900.25	466.86	114.52
Q Total (cfs)	3520.00	Flow (cfs)	1176.50	2291.48	52.03
Top Width (ft)	740.59	Top Width (ft)	622.34	59.00	59.25
Vel Total (ft/s)	1.42	Avg. Vel. (ft/s)	0.62	4.91	0.45
Max Chl Dpth (ft)	10.21	Hydr. Depth (ft)	3.05	7.91	1.93
Conv. Total (cfs)	104583.3	Conv. (cfs)	34955.1	68082.5	1545.8
Length Wtd. (ft)	295.00	Wetted Per. (ft)	622.41	60.02	59.68
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.22	0.55	0.14
Alpha	7.86	Stream Power (lb/ft s)	0.13	2.70	0.06
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	2661.99	3845.04	2743.34
C & E Loss (ft)	0.06	Cum SA (acres)	1310.65	377.66	1091.93

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.30	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)		Flow Area (sq ft)	2787.49	548.65	220.05
E.G. Slope (ft/ft)	0.000933	Area (sq ft)	2787.49	548.65	220.05
Q Total (cfs)	4786.00	Flow (cfs)	1959.67	2722.32	104.01
Top Width (ft)	804.50	Top Width (ft)	652.50	59.00	93.00
Vel Total (ft/s)	1.35	Avg. Vel. (ft/s)	0.70	4.96	0.47
Max Chl Dpth (ft)	11.60	Hydr. Depth (ft)	4.27	9.30	2.37
Conv. Total (cfs)	156645.4	Conv. (cfs)	64139.9	89101.4	3404.1
Length Wtd. (ft)	295.00	Wetted Per. (ft)	652.62	60.02	93.46
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.25	0.53	0.14
Alpha	7.85	Stream Power (lb/ft s)	0.17	2.64	0.06
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	4280.09	4337.69	4277.26
C & E Loss (ft)	0.04	Cum SA (acres)	1479.78	378.01	1598.17

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	16.19	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)		Flow Area (sq ft)	3381.89	601.39	313.57
E.G. Slope (ft/ft)	0.000836	Area (sq ft)	3381.89	601.39	313.57
Q Total (cfs)	5628.00	Flow (cfs)	2473.07	3001.79	153.13
Top Width (ft)	862.11	Top Width (ft)	686.87	59.00	116.24
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)	0.73	4.99	0.49
Max Chl Dpth (ft)	12.49	Hydr. Depth (ft)	4.92	10.19	2.70
Conv. Total (cfs)	194666.0	Conv. (cfs)	85540.7	103828.5	5296.8
Length Wtd. (ft)	295.00	Wetted Per. (ft)	687.00	60.02	116.72
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.26	0.52	0.14
Alpha	7.89	Stream Power (lb/ft s)	0.19	2.61	0.07
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	5352.96	4644.89	5500.10
C & E Loss (ft)	0.03	Cum SA (acres)	1528.46	378.15	1757.12

CROSS SECTION OUTPUT Profile #PF 4

			LPGA Tomoka River EC-RAS Report _ DEM		
E.G. Elev (ft)	17.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.79	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)		Flow Area (sq ft)	4580.48	695.48	531.47
E.G. Slope (ft/ft)	0.000674	Area (sq ft)	4580.48	695.48	531.47
Q Total (cfs)	7015.00	Flow (cfs)	3307.62	3434.32	273.07
Top Width (ft)	1021.16	Top Width (ft)	806.69	59.00	155.47
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	0.72	4.94	0.51
Max Chl Dpth (ft)	14.09	Hydr. Depth (ft)	5.68	11.79	3.42
Conv. Total (cfs)	270222.3	Conv. (cfs)	127411.5	132292.1	10518.7
Length Wtd. (ft)	295.00	Wetted Per. (ft)	806.83	60.02	155.98
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.24	0.49	0.14
Alpha	8.36	Stream Power (lb/ft s)	0.17	2.41	0.07
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	6995.11	5104.24	7539.74
C & E Loss (ft)	0.02	Cum SA (acres)	1591.77	378.37	1906.79

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 19.3

INPUT

Description:

Station Elevation Data		num=	15						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
995	19.3	1000	17.1	1014	10.2	1060	9.1	1109	8.3
1147	7.5	1175	7.4	1180	6.5	1198	4.3	1204	6.2
1215	7.5	1228	8.9	1235	9.8	1250	17	1256	19.1

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
995	.17	995	.04	1250	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	995	1250		34.1	34.1		.3	.5

Ineffective Flow		num=	2		
Sta L	Sta R	Elev	Permanent		
995	995	21.1	F		
1250	1256	21.1	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	13.74	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	10.07	Flow Area (sq ft)		1276.18	
E.G. Slope (ft/ft)	0.000590	Area (sq ft)		1276.18	
Q Total (cfs)	3520.00	Flow (cfs)		3520.00	
Top Width (ft)	236.40	Top Width (ft)		236.40	
Vel Total (ft/s)	2.76	Avg. Vel. (ft/s)		2.76	
Max Chl Dpth (ft)	9.44	Hydr. Depth (ft)		5.40	
Conv. Total (cfs)	144881.5	Conv. (cfs)		144881.5	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		238.87	
Min Ch El (ft)	4.30	Shear (lb/sq ft)		0.20	

Alpha	1.00	Stream Power (lb/ft s)	LPGA Tomoka River EC-RAS Report _ DEM		
Frctn Loss (ft)		Cum Volume (acre-ft)	0.54		
C & E Loss (ft)		Cum SA (acres)	2655.56	3839.13	2742.95
			1308.55	376.66	1091.73

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	
W.S. Elev (ft)	15.14	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	10.55	Flow Area (sq ft)		1610.69	
E.G. Slope (ft/ft)	0.000520	Area (sq ft)		1610.69	
Q Total (cfs)	4786.00	Flow (cfs)		4786.00	
Top Width (ft)	242.15	Top Width (ft)		242.15	
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	10.84	Hydr. Depth (ft)		6.65	
Conv. Total (cfs)	209829.9	Conv. (cfs)		209829.9	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		245.26	
Min Ch El (ft)	4.30	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.63	
Frctn Loss (ft)		Cum Volume (acre-ft)	4270.65	4330.38	4276.52
C & E Loss (ft)		Cum SA (acres)	1477.57	376.99	1597.85

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	16.04	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	10.83	Flow Area (sq ft)		1830.71	
E.G. Slope (ft/ft)	0.000480	Area (sq ft)		1830.71	
Q Total (cfs)	5628.00	Flow (cfs)		5628.00	
Top Width (ft)	245.86	Top Width (ft)		245.86	
Vel Total (ft/s)	3.07	Avg. Vel. (ft/s)		3.07	
Max Chl Dpth (ft)	11.74	Hydr. Depth (ft)		7.45	
Conv. Total (cfs)	256873.1	Conv. (cfs)		256873.1	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		249.39	
Min Ch El (ft)	4.30	Shear (lb/sq ft)		0.22	
Alpha	1.00	Stream Power (lb/ft s)		0.68	
Frctn Loss (ft)		Cum Volume (acre-ft)	5341.51	4636.65	5499.04
C & E Loss (ft)		Cum SA (acres)	1526.13	377.11	1756.73

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	17.66	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	11.26	Flow Area (sq ft)		2232.58	
E.G. Slope (ft/ft)	0.000397	Area (sq ft)		2232.58	0.62

Q Total (cfs)	7015.00	Flow (cfs)	7015.00	LPGA Tomoka River EC-RAS Report _ DEM
Top Width (ft)	253.14	Top Width (ft)	251.27	1.88
Vel Total (ft/s)	3.14	Avg. Vel. (ft/s)	3.14	
Max Chl Dpth (ft)	13.36	Hydr. Depth (ft)	8.89	
Conv. Total (cfs)	351962.1	Conv. (cfs)	351962.1	
Length Wtd. (ft)	1.00	Wetted Per. (ft)	255.37	
Min Ch El (ft)	4.30	Shear (lb/sq ft)	0.22	
Alpha	1.00	Stream Power (lb/ft s)	0.68	
Frctn Loss (ft)		Cum Volume (acre-ft)	6979.60	5094.32 7537.94
C & E Loss (ft)		Cum SA (acres)	1589.04	377.32 1906.26

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 19.25

INPUT
 Description: Bridge #6

Distance from Upstream XS = 1
 Deck/Roadway Width = 33
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
995 21.1 16.6	1250 21.1 16.6

Upstream Bridge Cross Section Data

Station Elevation Data	num=	15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
995 19.3 1000 17.1 1014 10.2 1060 9.1 1109 8.3		
1147 7.5 1175 7.4 1180 6.5 1198 4.3 1204 6.2		
1215 7.5 1228 8.9 1235 9.8 1250 17 1256 19.1		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
995 .17 995 .04 1250 .17		

Bank Sta: Left Right	Coeff Contr.	Expan.
995 1250	.3	.5

Ineffective Flow	num=	2
Sta L Sta R Elev Permanent		
995 995 21.1 F		
1250 1256 21.1 F		

Downstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
995 21.1 16.6	1250 21.1 16.6

Downstream Bridge Cross Section Data

Station Elevation Data	num=	17

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Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
995	19.7	1000	17.6	1012	11.6	1026	8.4	1088	8.8
1139	7.4	1170	7.3	1173	5.7	1190	5.6	1205	5.3
1211	6.4	1212	7.7	1220	9.1	1234	8.6	1240	11.1
1250	17.2	1254	19.2						

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 995 .17 995 .04 1250 .17

Bank Sta: Left Right Coeff Contr. Expan.
 995 1250 .3 .5

Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 995 995 18.9 F
 1250 1254 18.9 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 21.1
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data
 Pier Station Upstream= 1122.5 Downstream= 1122.5
 Upstream num= 2
 Width Elev Width Elev
 6 4.3 6 16.6
 Downstream num= 2
 Width Elev Width Elev
 6 5.3 6 16.6

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
 Yarnell KVal = 1.05
 Selected Low Flow Methods = Yarnell

High Flow Method
 Pressure and Weir flow
 Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .7905694
 Max Low Cord = 16.6

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

BRIDGE OUTPUT Profile #PF 1

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E.G. US. (ft)	13.86	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	13.74	E.G. Elev (ft)	13.86	13.85
Q Total (cfs)	3520.00	W.S. Elev (ft)	13.74	13.74
Q Bridge (cfs)	3520.00	Crit W.S. (ft)	10.12	9.83
Q Weir (cfs)		Max Chl Dpth (ft)	9.44	8.44
Weir Sta Lft (ft)		Vel Total (ft/s)	2.84	2.70
Weir Sta Rgt (ft)		Flow Area (sq ft)	1240.92	1303.58
Weir Submerg		Froude # Chl	0.22	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	3952.58	4258.99
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	5.39	5.65
Min El Prs (ft)	16.60	W.P. Total (ft)	244.30	245.77
Delta EG (ft)	0.01	Conv. Total (cfs)	136216.9	147279.5
Delta WS (ft)	0.00	Top Width (ft)	230.39	230.60
BR Open Area (sq ft)	1916.97	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.84	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.21	0.19
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.60	0.51

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	15.28	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	15.14	E.G. Elev (ft)	15.28	15.27
Q Total (cfs)	4786.00	W.S. Elev (ft)	15.14	15.14
Q Bridge (cfs)	4786.00	Crit W.S. (ft)	10.59	10.30
Q Weir (cfs)		Max Chl Dpth (ft)	10.84	9.84
Weir Sta Lft (ft)		Vel Total (ft/s)	3.05	2.94
Weir Sta Rgt (ft)		Flow Area (sq ft)	1566.88	1629.38
Weir Submerg		Froude # Chl	0.21	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	6057.50	6448.96
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	6.64	6.91
Min El Prs (ft)	16.60	W.P. Total (ft)	253.48	254.38
Delta EG (ft)	0.01	Conv. Total (cfs)	196048.8	208764.2
Delta WS (ft)	0.00	Top Width (ft)	236.13	235.69
BR Open Area (sq ft)	1916.97	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.05	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.23	0.21
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.70	0.62

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	16.19	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	16.04	E.G. Elev (ft)	16.19	16.18
Q Total (cfs)	5628.00	W.S. Elev (ft)	16.04	16.04
Q Bridge (cfs)	5628.00	Crit W.S. (ft)	10.88	10.59
Q Weir (cfs)		Max Chl Dpth (ft)	11.74	10.74
Weir Sta Lft (ft)		Vel Total (ft/s)	3.16	3.05
Weir Sta Rgt (ft)		Flow Area (sq ft)	1781.41	1843.32

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Weir Submerg		Froude # Ch1	0.20	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	7664.62	8111.05
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	7.43	7.71
Min El Prs (ft)	16.60	W.P. Total (ft)	259.41	259.93
Delta EG (ft)	0.01	Conv. Total (cfs)	239085.1	252756.0
Delta WS (ft)	0.00	Top Width (ft)	239.84	238.97
BR Open Area (sq ft)	1916.97	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.16	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.24	0.22
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.75	0.67

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	17.81	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	17.66	E.G. Elev (ft)	17.81	17.63
Q Total (cfs)	7015.00	W.S. Elev (ft)	16.60	16.60
Q Bridge (cfs)	7015.00	Crit W.S. (ft)	11.32	11.04
Q Weir (cfs)		Max Chl Dpth (ft)	12.30	11.30
Weir Sta Lft (ft)		Vel Total (ft/s)	3.66	3.55
Weir Sta Rgt (ft)		Flow Area (sq ft)	1916.97	1978.31
Weir Submerg		Froude # Ch1	0.23	0.22
Weir Max Depth (ft)		Specif Force (cu ft)	8949.98	9424.90
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	7.92	8.21
Min El Prs (ft)	16.60	W.P. Total (ft)	263.10	263.39
Delta EG (ft)	0.18	Conv. Total (cfs)	267634.0	281856.6
Delta WS (ft)	0.18	Top Width (ft)	242.15	241.02
BR Open Area (sq ft)	1916.97	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.66	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.31	0.29
BR Sel Method	Press Only	Power Total (lb/ft s)	1.14	1.03

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
constriction * 001

Station	Elevation	Data	num=	17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
995	19.7	1000	17.6	1012	11.6	1026	8.4	1088	8.8

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1139	7.4	1170	7.3	1173	5.7	1190	5.6	1205	5.3
1211	6.4	1212	7.7	1220	9.1	1234	8.6	1240	11.1
1250	17.2	1254	19.2						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
995	.17	995	.04	1250	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	995	1250		295	295		.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
995	995	18.9	F					
1250	1254	18.9	F					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	
W.S. Elev (ft)	13.74	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)	9.79	Flow Area (sq ft)		1338.90	
E.G. Slope (ft/ft)	0.000506	Area (sq ft)		1338.90	
Q Total (cfs)	3520.00	Flow (cfs)		3520.00	
Top Width (ft)	236.60	Top Width (ft)		236.60	
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)		2.63	
Max Chl Dpth (ft)	8.44	Hydr. Depth (ft)		5.66	
Conv. Total (cfs)	156447.0	Conv. (cfs)		156447.0	
Length Wtd. (ft)	295.00	Wetted Per. (ft)		240.00	
Min Ch El (ft)	5.30	Shear (lb/sq ft)		0.18	
Alpha	1.00	Stream Power (lb/ft s)		0.46	
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	2655.56	3838.14	2742.95
C & E Loss (ft)	0.07	Cum SA (acres)	1308.55	376.48	1091.73

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.040	
W.S. Elev (ft)	15.14	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)	10.25	Flow Area (sq ft)		1673.08	
E.G. Slope (ft/ft)	0.000460	Area (sq ft)		1673.08	
Q Total (cfs)	4786.00	Flow (cfs)		4786.00	
Top Width (ft)	241.69	Top Width (ft)		241.69	
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)		2.86	
Max Chl Dpth (ft)	9.84	Hydr. Depth (ft)		6.92	
Conv. Total (cfs)	223217.3	Conv. (cfs)		223217.3	
Length Wtd. (ft)	295.00	Wetted Per. (ft)		245.81	
Min Ch El (ft)	5.30	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.56	
Frctn Loss (ft)	0.21	Cum Volume (acre-ft)	4270.65	4329.13	4276.52
C & E Loss (ft)	0.06	Cum SA (acres)	1477.57	376.80	1597.85

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	
W.S. Elev (ft)	16.04	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)	10.54	Flow Area (sq ft)		1892.42	
E.G. Slope (ft/ft)	0.000430	Area (sq ft)		1892.42	
Q Total (cfs)	5628.00	Flow (cfs)		5628.00	
Top Width (ft)	244.97	Top Width (ft)		244.97	
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	10.74	Hydr. Depth (ft)		7.73	
Conv. Total (cfs)	271341.7	Conv. (cfs)		271341.7	
Length Wtd. (ft)	295.00	Wetted Per. (ft)		249.56	
Min Ch El (ft)	5.30	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.61	
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	5341.51	4635.23	5499.04
C & E Loss (ft)	0.05	Cum SA (acres)	1526.13	376.93	1756.73

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	17.48	Reach Len. (ft)	295.00	295.00	295.00
Crit W.S. (ft)	10.98	Flow Area (sq ft)		2249.18	
E.G. Slope (ft/ft)	0.000387	Area (sq ft)		2249.18	0.08
Q Total (cfs)	7015.00	Flow (cfs)		7015.00	
Top Width (ft)	250.31	Top Width (ft)		249.76	0.56
Vel Total (ft/s)	3.12	Avg. Vel. (ft/s)		3.12	
Max Chl Dpth (ft)	12.18	Hydr. Depth (ft)		9.01	
Conv. Total (cfs)	356669.7	Conv. (cfs)		356669.7	
Length Wtd. (ft)	295.00	Wetted Per. (ft)		255.01	
Min Ch El (ft)	5.30	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.66	
Frctn Loss (ft)	0.18	Cum Volume (acre-ft)	6979.60	5092.79	7537.94
C & E Loss (ft)	0.05	Cum SA (acres)	1589.04	377.13	1906.26

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 19.1

INPUT

Description: 11TH STREET/LPGA BLVD

* 001

Station Elevation Data				num=	32				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
636	20	676	19	726	18	786	17	886	16
936	15	996	14	1000	11.6	1028	11.6	1071	12.3
1122	12.5	1172	10.7	1219	10.2	1229	7.9	1236	9.4
1307	8.5	1341	8	1352	5.4	1363	7.4	1371	7.9
1378	5.7	1387	8.9	1393	6	1410	5.3	1420	6.3
1421	6.5	1422	8.6	1437	9.8	1472	10.3	1510	13.6
1562	16.6	2301	19.2						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
636	.17	1341	.04	1422	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1341	1422		708	708	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.21	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	896.65	538.49	219.28
E.G. Slope (ft/ft)	0.001628	Area (sq ft)	896.65	538.49	219.28
Q Total (cfs)	3520.00	Flow (cfs)	598.17	2774.83	147.01
Top Width (ft)	508.16	Top Width (ft)	343.68	81.00	83.48
Vel Total (ft/s)	2.13	Avg. Vel. (ft/s)	0.67	5.15	0.67
Max Chl Dpth (ft)	7.91	Hydr. Depth (ft)	2.61	6.65	2.63
Conv. Total (cfs)	87250.3	Conv. (cfs)	14826.8	68779.6	3643.8
Length Wtd. (ft)	708.00	Wetted Per. (ft)	344.59	84.46	83.66
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.26	0.65	0.27
Alpha	4.64	Stream Power (lb/ft s)	0.18	3.34	0.18
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	2652.52	3831.78	2742.21
C & E Loss (ft)	0.04	Cum SA (acres)	1307.38	375.40	1091.45

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	14.68	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	1416.93	657.54	357.78
E.G. Slope (ft/ft)	0.001307	Area (sq ft)	1416.93	657.54	357.78
Q Total (cfs)	4786.00	Flow (cfs)	1064.12	3468.89	252.99
Top Width (ft)	573.29	Top Width (ft)	385.62	81.00	106.67
Vel Total (ft/s)	1.97	Avg. Vel. (ft/s)	0.75	5.28	0.71
Max Chl Dpth (ft)	9.38	Hydr. Depth (ft)	3.67	8.12	3.35
Conv. Total (cfs)	132376.8	Conv. (cfs)	29432.7	95946.6	6997.5
Length Wtd. (ft)	708.00	Wetted Per. (ft)	386.76	84.46	106.89
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.30	0.64	0.27
Alpha	5.25	Stream Power (lb/ft s)	0.22	3.35	0.19

Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	LPGA Tomoka River	EC-RAS Report _ DEM
C & E Loss (ft)	0.03	Cum SA (acres)	4265.86	4321.24
			1476.27	375.71
				4275.31
				1597.49

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.62	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	1804.11	733.70	465.73
E.G. Slope (ft/ft)	0.001155	Area (sq ft)	1804.11	733.70	465.73
Q Total (cfs)	5628.00	Flow (cfs)	1378.89	3913.47	335.64
Top Width (ft)	639.83	Top Width (ft)	435.86	81.00	122.97
Vel Total (ft/s)	1.87	Avg. Vel. (ft/s)	0.76	5.33	0.72
Max Chl Dpth (ft)	10.32	Hydr. Depth (ft)	4.14	9.06	3.79
Conv. Total (cfs)	165632.5	Conv. (cfs)	40581.0	115173.7	9877.8
Length Wtd. (ft)	708.00	Wetted Per. (ft)	437.01	84.46	123.22
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.30	0.63	0.27
Alpha	5.68	Stream Power (lb/ft s)	0.23	3.34	0.20
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	5335.40	4626.34	5497.46
C & E Loss (ft)	0.02	Cum SA (acres)	1524.66	375.82	1756.31

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.08	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	2521.99	851.86	693.81
E.G. Slope (ft/ft)	0.001026	Area (sq ft)	2521.99	851.86	693.81
Q Total (cfs)	7015.00	Flow (cfs)	1923.92	4731.61	359.47
Top Width (ft)	915.87	Top Width (ft)	559.56	81.00	275.31
Vel Total (ft/s)	1.72	Avg. Vel. (ft/s)	0.76	5.55	0.52
Max Chl Dpth (ft)	11.78	Hydr. Depth (ft)	4.51	10.52	2.52
Conv. Total (cfs)	219007.5	Conv. (cfs)	60064.6	147720.2	11222.7
Length Wtd. (ft)	708.00	Wetted Per. (ft)	560.72	84.46	275.59
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.29	0.65	0.16
Alpha	7.05	Stream Power (lb/ft s)	0.22	3.59	0.08
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	6971.06	5082.29	7535.59
C & E Loss (ft)	0.02	Cum SA (acres)	1587.15	376.01	1905.32

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 18.2

INPUT
 Description: INTERPOLATED SECTION

* 001

Station	Elevation	Data	num=	28
Sta	Elev	Sta	Elev	Sta
1000	18	1100	17	1380
1545	13	1565	12	1595
				1640
				15
				1510
				14
				9

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1695	8	1720	7	1740	6	1790
1850	6	1860	7	1880	8	1895
1970	11	1990	12	2030	13	2070
2110	16	2130	17	2150	18	

5	1800	5
9	1935	10
14	2090	15

Manning's n Values num= 3

Sta	n Val	Sta	n Val
1000	.2	1740	.04
		1850	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1740	1850		500	500		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.49	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	560.57	773.85	433.33
E.G. Slope (ft/ft)	0.000826	Area (sq ft)	560.57	773.85	433.33
Q Total (cfs)	3464.00	Flow (cfs)	250.74	3033.27	179.98
Top Width (ft)	454.37	Top Width (ft)	184.79	110.00	159.58
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)	0.45	3.92	0.42
Max Chl Dpth (ft)	7.49	Hydr. Depth (ft)	3.03	7.04	2.72
Conv. Total (cfs)	120517.2	Conv. (cfs)	8723.7	105531.6	6261.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	184.91	110.02	159.75
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.16	0.36	0.14
Alpha	3.51	Stream Power (lb/ft s)	0.07	1.42	0.06
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	2640.68	3821.12	2736.90
C & E Loss (ft)	0.05	Cum SA (acres)	1303.09	373.85	1089.47

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	886.03	947.63	735.31
E.G. Slope (ft/ft)	0.000713	Area (sq ft)	886.03	947.63	735.31
Q Total (cfs)	4703.00	Flow (cfs)	429.14	3949.34	324.52
Top Width (ft)	563.47	Top Width (ft)	232.08	110.00	221.39
Vel Total (ft/s)	1.83	Avg. Vel. (ft/s)	0.48	4.17	0.44
Max Chl Dpth (ft)	9.07	Hydr. Depth (ft)	3.82	8.61	3.32
Conv. Total (cfs)	176144.8	Conv. (cfs)	16073.0	147917.3	12154.5
Length Wtd. (ft)	500.00	Wetted Per. (ft)	232.23	110.02	221.57
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.17	0.38	0.15
Alpha	4.36	Stream Power (lb/ft s)	0.08	1.60	0.07
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	4247.14	4308.19	4266.42
C & E Loss (ft)	0.05	Cum SA (acres)	1471.25	374.16	1594.83

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1134.59	1058.17	967.89
E.G. Slope (ft/ft)	0.000643	Area (sq ft)	1134.59	1058.17	967.89
Q Total (cfs)	5527.00	Flow (cfs)	559.87	4507.37	459.76
Top Width (ft)	618.92	Top Width (ft)	267.43	110.00	241.49
Vel Total (ft/s)	1.75	Avg. Vel. (ft/s)	0.49	4.26	0.48
Max Chl Dpth (ft)	10.07	Hydr. Depth (ft)	4.24	9.62	4.01
Conv. Total (cfs)	217996.0	Conv. (cfs)	22082.4	177779.7	18133.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	267.60	110.02	241.70
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.17	0.39	0.16
Alpha	4.85	Stream Power (lb/ft s)	0.08	1.64	0.08
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	5311.52	4611.78	5485.81
C & E Loss (ft)	0.05	Cum SA (acres)	1518.94	374.27	1753.35

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.59	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1684.61	1224.58	1356.09
E.G. Slope (ft/ft)	0.000588	Area (sq ft)	1684.61	1224.58	1356.09
Q Total (cfs)	6875.00	Flow (cfs)	660.85	5500.90	713.25
Top Width (ft)	906.13	Top Width (ft)	524.39	110.00	271.74
Vel Total (ft/s)	1.61	Avg. Vel. (ft/s)	0.39	4.49	0.53
Max Chl Dpth (ft)	11.59	Hydr. Depth (ft)	3.21	11.13	4.99
Conv. Total (cfs)	283425.8	Conv. (cfs)	27243.9	226777.6	29404.3
Length Wtd. (ft)	500.00	Wetted Per. (ft)	524.56	110.02	271.99
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.12	0.41	0.18
Alpha	6.23	Stream Power (lb/ft s)	0.05	1.84	0.10
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	6936.88	5065.42	7518.93
C & E Loss (ft)	0.05	Cum SA (acres)	1578.34	374.45	1900.88

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 18.1

INPUT

Description: INTERPOLATED SECTION

* 001

Station	Elevation Data	num=	34						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

LPGA Tomoka River EC-RAS Report _ DEM

1000	20	1015	19	1030	18	1040	17	1050	16
1060	15	1090	14	1110	13	1140	12	1180	11
1215	10	1240	9	1260	8	1280	7	1310	6
1350	5	1410	4	1440	4	1530	5	1595	6
1640	7	1690	8	1710	9	1740	10	1770	11
1805	12	1830	13	1855	14	1870	15	1900	16
1920	17	1970	18	2020	19	2040	20		

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1350	.04	1530	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1350	1530		1378	1378	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.43	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	811.99	1441.52	1221.67
E.G. Slope (ft/ft)	0.000188	Area (sq ft)	811.99	1441.52	1221.67
Q Total (cfs)	3464.00	Flow (cfs)	195.92	2940.10	327.97
Top Width (ft)	688.38	Top Width (ft)	222.75	180.00	285.63
Vel Total (ft/s)	1.00	Avg. Vel. (ft/s)	0.24	2.04	0.27
Max Chl Dpth (ft)	8.43	Hydr. Depth (ft)	3.65	8.01	4.28
Conv. Total (cfs)	252532.2	Conv. (cfs)	14283.2	214339.1	23909.9
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	222.89	180.01	285.74
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.04	0.09	0.05
Alpha	3.56	Stream Power (lb/ft s)	0.01	0.19	0.01
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	2632.80	3808.40	2727.40
C & E Loss (ft)	0.00	Cum SA (acres)	1300.75	372.19	1086.92

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.03	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1201.76	1729.67	1710.94
E.G. Slope (ft/ft)	0.000177	Area (sq ft)	1201.76	1729.67	1710.94
Q Total (cfs)	4703.00	Flow (cfs)	328.77	3863.07	511.16
Top Width (ft)	766.17	Top Width (ft)	260.78	180.00	325.39
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)	0.27	2.23	0.30
Max Chl Dpth (ft)	10.03	Hydr. Depth (ft)	4.61	9.61	5.26
Conv. Total (cfs)	353545.9	Conv. (cfs)	24714.9	290404.8	38426.2
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	260.95	180.01	325.53
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	4.01	Stream Power (lb/ft s)	0.01	0.24	0.02
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4235.16	4292.83	4252.38
C & E Loss (ft)	0.00	Cum SA (acres)	1468.42	372.49	1591.69

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.04	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1481.84	1912.34	2048.89
E.G. Slope (ft/ft)	0.000168	Area (sq ft)	1481.84	1912.34	2048.89
Q Total (cfs)	5527.00	Flow (cfs)	422.99	4452.07	651.94
Top Width (ft)	811.63	Top Width (ft)	290.41	180.00	341.22
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.29	2.33	0.32
Max Chl Dpth (ft)	11.04	Hydr. Depth (ft)	5.10	10.62	6.00
Conv. Total (cfs)	426188.9	Conv. (cfs)	32616.9	343300.4	50271.7
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	290.59	180.01	341.40
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	4.25	Stream Power (lb/ft s)	0.02	0.26	0.02
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	5296.50	4594.73	5468.50
C & E Loss (ft)	0.00	Cum SA (acres)	1515.74	372.61	1750.01

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.57	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1939.13	2188.49	2606.03
E.G. Slope (ft/ft)	0.000157	Area (sq ft)	1939.13	2188.49	2606.03
Q Total (cfs)	6875.00	Flow (cfs)	617.97	5384.20	872.83
Top Width (ft)	867.25	Top Width (ft)	305.75	180.00	381.50
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.32	2.46	0.33
Max Chl Dpth (ft)	12.57	Hydr. Depth (ft)	6.34	12.16	6.83
Conv. Total (cfs)	548853.8	Conv. (cfs)	49334.7	429838.3	69680.8
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	306.01	180.01	381.70
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.06	0.12	0.07
Alpha	4.57	Stream Power (lb/ft s)	0.02	0.29	0.02
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	6916.08	5045.83	7496.19
C & E Loss (ft)	0.00	Cum SA (acres)	1573.57	372.79	1897.13

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 18

INPUT

Description: 1ST SEC NORTH OF LPGA

*

001

LPGA Tomoka River EC-RAS Report _ DEM

Station Elevation Data		num=		23					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	19.4	1072	15.5	1140	11.2	1176	7.3	1192	5.9
1258	4.4	1325	5.8	1329	3.1	1345	1.9	1359	2.1
1366	3.2	1379	4.6	1438	5.5	1507	5.3	1593	6
1663	5.9	1741	6	1820	6	1909	6.8	1928	6.9
2002	13.1	2062	16.5	2094	18.3				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1325	.04	1366	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1325	1366		2064	2064		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.04	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1112.25	389.18	3660.99
E.G. Slope (ft/ft)	0.000420	Area (sq ft)	1112.25	389.18	3660.99
Q Total (cfs)	3655.00	Flow (cfs)	533.97	1307.58	1813.45
Top Width (ft)	862.56	Top Width (ft)	198.24	41.00	623.32
Vel Total (ft/s)	0.71	Avg. Vel. (ft/s)	0.48	3.36	0.50
Max Chl Dpth (ft)	10.14	Hydr. Depth (ft)	5.61	9.49	5.87
Conv. Total (cfs)	178400.6	Conv. (cfs)	26063.1	63822.9	88514.7
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	198.57	41.96	623.62
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.15	0.24	0.15
Alpha	8.37	Stream Power (lb/ft s)	0.07	0.82	0.08
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	2602.37	3779.44	2650.17
C & E Loss (ft)	0.00	Cum SA (acres)	1294.09	368.69	1072.54

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	13.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.67	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1456.33	456.00	4693.58
E.G. Slope (ft/ft)	0.000391	Area (sq ft)	1456.33	456.00	4693.58
Q Total (cfs)	4971.00	Flow (cfs)	744.03	1642.60	2584.37
Top Width (ft)	911.02	Top Width (ft)	224.01	41.00	646.01
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.51	3.60	0.55
Max Chl Dpth (ft)	11.77	Hydr. Depth (ft)	6.50	11.12	7.27
Conv. Total (cfs)	251521.2	Conv. (cfs)	37646.3	83112.0	130762.9
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	224.40	41.96	646.37
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.16	0.27	0.18
Alpha	7.92	Stream Power (lb/ft s)	0.08	0.95	0.10
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	4193.11	4258.26	4151.08
C & E Loss (ft)	0.00	Cum SA (acres)	1460.75	369.00	1576.32

CROSS SECTION OUTPUT Profile #PF 3

		LPGA Tomoka River EC-RAS Report _ DEM			
E.G. Elev (ft)	14.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.70	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1696.55	498.42	5371.36
E.G. Slope (ft/ft)	0.000371	Area (sq ft)	1696.55	498.42	5371.36
Q Total (cfs)	5846.00	Flow (cfs)	892.53	1857.16	3096.31
Top Width (ft)	945.64	Top Width (ft)	240.37	41.00	664.26
Vel Total (ft/s)	0.77	Avg. Vel. (ft/s)	0.53	3.73	0.58
Max Chl Dpth (ft)	12.80	Hydr. Depth (ft)	7.06	12.16	8.09
Conv. Total (cfs)	303427.0	Conv. (cfs)	46325.3	96392.7	160709.0
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	240.79	41.96	664.66
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.16	0.28	0.19
Alpha	7.75	Stream Power (lb/ft s)	0.09	1.03	0.11
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	5246.23	4556.60	5351.13
C & E Loss (ft)	0.00	Cum SA (acres)	1507.34	369.11	1734.10

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.26	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	2091.04	562.30	6427.77
E.G. Slope (ft/ft)	0.000348	Area (sq ft)	2091.04	562.30	6427.77
Q Total (cfs)	7280.00	Flow (cfs)	1142.19	2199.75	3938.07
Top Width (ft)	999.79	Top Width (ft)	267.03	41.00	691.76
Vel Total (ft/s)	0.80	Avg. Vel. (ft/s)	0.55	3.91	0.61
Max Chl Dpth (ft)	14.36	Hydr. Depth (ft)	7.83	13.71	9.29
Conv. Total (cfs)	390026.7	Conv. (cfs)	61192.9	117851.5	210982.3
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	267.49	41.96	692.20
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.17	0.29	0.20
Alpha	7.58	Stream Power (lb/ft s)	0.09	1.14	0.12
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	6852.33	5002.32	7353.30
C & E Loss (ft)	0.00	Cum SA (acres)	1564.51	369.29	1880.15

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 17

INPUT
 Description: 2ND SEC NORTH OF LPGA

* 001

Station Elevation Data		num=	27						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
912	16	932	15	945	14	1000	13.2	1021	13
1054	8.6	1072	5.8	1117	5.4	1164	4.9	1226	4.4
1239	4.4	1269	2.9	1271	1.9	1278	.3	1285	.9
1288	2	1295	3.7	1356	3.6	1422	3.6	1518	3.4
1603	4.3	1670	3.5	1707	6.2	1757	11.3	1788	14.5
1813	15	2400	19						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
912	.2	1239	.04	1295	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1239	1295		3218	3218	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	11.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.22	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1131.72	477.66	3180.63
E.G. Slope (ft/ft)	0.000381	Area (sq ft)	1131.72	477.66	3180.63
Q Total (cfs)	3613.00	Flow (cfs)	512.48	1430.62	1669.90
Top Width (ft)	721.82	Top Width (ft)	204.63	56.00	461.19
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.45	3.00	0.53
Max Chl Dpth (ft)	10.92	Hydr. Depth (ft)	5.53	8.53	6.90
Conv. Total (cfs)	185146.9	Conv. (cfs)	26261.7	73311.6	85573.6
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	205.03	56.88	461.55
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.13	0.20	0.16
Alpha	6.52	Stream Power (lb/ft s)	0.06	0.60	0.09
Frctn Loss (ft)	1.34	Cum Volume (acre-ft)	2549.20	3758.91	2488.09
C & E Loss (ft)	0.00	Cum SA (acres)	1284.54	366.39	1046.85

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	12.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.89	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1485.54	571.61	3967.94
E.G. Slope (ft/ft)	0.000360	Area (sq ft)	1485.54	571.61	3967.94
Q Total (cfs)	4924.00	Flow (cfs)	753.49	1876.57	2293.94
Top Width (ft)	750.66	Top Width (ft)	217.21	56.00	477.45
Vel Total (ft/s)	0.82	Avg. Vel. (ft/s)	0.51	3.28	0.58
Max Chl Dpth (ft)	12.59	Hydr. Depth (ft)	6.84	10.21	8.31
Conv. Total (cfs)	259468.4	Conv. (cfs)	39704.9	98884.9	120878.6
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	217.72	56.88	477.90
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.15	0.23	0.19
Alpha	6.44	Stream Power (lb/ft s)	0.08	0.74	0.11
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	4123.42	4233.91	3945.88
C & E Loss (ft)	0.00	Cum SA (acres)	1450.30	366.70	1549.71

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	14.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.94	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1749.83	630.14	4472.28

LPGA Tomoka River EC-RAS Report _ DEM					
E.G. Slope (ft/ft)	0.000362	Area (sq ft)	1749.83	630.14	4472.28
Q Total (cfs)	5800.00	Flow (cfs)	818.97	2213.09	2767.94
Top Width (ft)	833.45	Top Width (ft)	289.87	56.00	487.57
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.47	3.51	0.62
Max Chl Dpth (ft)	13.64	Hydr. Depth (ft)	6.04	11.25	9.17
Conv. Total (cfs)	304877.3	Conv. (cfs)	43049.2	116331.3	145496.8
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	290.39	56.88	488.08
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.14	0.25	0.21
Alpha	6.87	Stream Power (lb/ft s)	0.06	0.88	0.13
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	5164.58	4529.86	5117.92
C & E Loss (ft)	0.00	Cum SA (acres)	1494.78	366.81	1706.81

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	15.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.49	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	2221.58	717.10	5272.72
E.G. Slope (ft/ft)	0.000375	Area (sq ft)	2221.58	717.10	5272.72
Q Total (cfs)	7230.00	Flow (cfs)	1169.86	2795.32	3264.82
Top Width (ft)	963.18	Top Width (ft)	316.86	56.00	590.33
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.53	3.90	0.62
Max Chl Dpth (ft)	15.19	Hydr. Depth (ft)	7.01	12.81	8.93
Conv. Total (cfs)	373229.8	Conv. (cfs)	60390.9	144300.9	168538.0
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	317.43	56.88	590.86
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.16	0.30	0.21
Alpha	7.86	Stream Power (lb/ft s)	0.09	1.15	0.13
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)	6750.16	4972.01	7076.10
C & E Loss (ft)	0.00	Cum SA (acres)	1550.68	367.00	1849.78

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 16

INPUT
 Description: 3RD SEC NORTH OF LPGA

* 001

Station Elevation Data		num=		30					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	20.3	1064	18	1124	14.3	1178	10.7	1236	6.4
1255	4.4	1270	2.9	1339	2	1409	2.2	1495	2.1
1568	1.2	1570	-.5	1577	-.7	1583	-.4	1591	-.4
1597	0	1600	1.6	1640	1.6	1651	1.4	1653	.2
1669	.4	1672	1.8	1709	2.1	1726	.7	1765	2
1841	2.3	1895	8	1939	12.4	1973	15.2	2005	17.1

LPGA Tomoka River EC-RAS Report _ DEM

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .2 1568 .04 1600 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1568 1600 2257 2257 2257 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	9.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.87	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	2579.85	324.69	2249.30
E.G. Slope (ft/ft)	0.000452	Area (sq ft)	2579.85	324.69	2249.30
Q Total (cfs)	3959.00	Flow (cfs)	1463.83	1176.74	1318.43
Top Width (ft)	724.54	Top Width (ft)	378.82	32.00	313.71
Vel Total (ft/s)	0.77	Avg. Vel. (ft/s)	0.57	3.62	0.59
Max Chl Dpth (ft)	10.57	Hydr. Depth (ft)	6.81	10.15	7.17
Conv. Total (cfs)	186143.6	Conv. (cfs)	68826.2	55327.6	61989.9
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	379.14	33.05	314.84
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.19	0.28	0.20
Alpha	7.01	Stream Power (lb/ft s)	0.11	1.01	0.12
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)	2412.11	3729.27	2287.52
C & E Loss (ft)	0.00	Cum SA (acres)	1262.99	363.14	1018.23

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	11.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.59	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	3251.51	379.69	2803.28
E.G. Slope (ft/ft)	0.000448	Area (sq ft)	3251.51	379.69	2803.28
Q Total (cfs)	5404.00	Flow (cfs)	2055.17	1520.61	1828.22
Top Width (ft)	766.26	Top Width (ft)	403.35	32.00	330.90
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.63	4.00	0.65
Max Chl Dpth (ft)	12.29	Hydr. Depth (ft)	8.06	11.87	8.47
Conv. Total (cfs)	255217.5	Conv. (cfs)	97060.4	71814.8	86342.3
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	403.73	33.05	332.11
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.23	0.32	0.24
Alpha	6.82	Stream Power (lb/ft s)	0.14	1.29	0.15
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	3948.44	4198.77	3695.77
C & E Loss (ft)	0.00	Cum SA (acres)	1427.38	363.45	1519.85

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	12.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.64	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	3684.20	413.36	3157.05
E.G. Slope (ft/ft)	0.000444	Area (sq ft)	3684.20	413.36	3157.05

			LPGA Tomoka River EC-RAS Report _ DEM		
Q Total (cfs)	6368.00	Flow (cfs)	2454.86	1743.37	2169.77
Top Width (ft)	793.08	Top Width (ft)	419.14	32.00	341.94
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.67	4.22	0.69
Max Chl Dpth (ft)	13.34	Hydr. Depth (ft)	8.79	12.92	9.23
Conv. Total (cfs)	302220.6	Conv. (cfs)	116505.7	82739.2	102975.7
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	419.55	33.05	343.20
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.24	0.35	0.25
Alpha	6.75	Stream Power (lb/ft s)	0.16	1.46	0.18
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	4963.86	4491.32	4836.11
C & E Loss (ft)	0.00	Cum SA (acres)	1468.59	363.56	1676.17

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	14.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.18	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	4345.90	462.53	3696.76
E.G. Slope (ft/ft)	0.000444	Area (sq ft)	4345.90	462.53	3696.76
Q Total (cfs)	7947.00	Flow (cfs)	3119.66	2102.70	2724.64
Top Width (ft)	834.78	Top Width (ft)	442.18	32.00	360.60
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.72	4.55	0.74
Max Chl Dpth (ft)	14.88	Hydr. Depth (ft)	9.83	14.45	10.25
Conv. Total (cfs)	377125.6	Conv. (cfs)	148043.9	99783.6	129298.2
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	442.65	33.05	361.92
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.27	0.39	0.28
Alpha	6.71	Stream Power (lb/ft s)	0.20	1.76	0.21
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	6507.57	4928.44	6744.79
C & E Loss (ft)	0.01	Cum SA (acres)	1522.64	363.75	1814.65

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 15

INPUT

Description: NORTH OF LPGA BLVD

* 001

Station Elevation Data				num=	30				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18	1051	14	1072	10.7	1091	2.3	1140	1.9
1190	1.7	1205	1.8	1210	1.5	1211	-.8	1217	-3.6
1222	-4	1227	-3.2	1237	.1	1245	1.4	1263	2
1336	1.5	1394	2	1467	1.7	1521	1.5	1557	1.4
1616	1.5	1692	1.8	1825	1.4	1837	2	1892	1.5
1951	1.7	2003	7.7	2066	15.7	2104	18.8	2135	20.7

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1210	.04	1245	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1210	1245		2800	2800	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.85	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	874.54	369.17	5302.35
E.G. Slope (ft/ft)	0.000454	Area (sq ft)	874.54	369.17	5302.35
Q Total (cfs)	4859.00	Flow (cfs)	480.56	1333.96	3044.48
Top Width (ft)	935.89	Top Width (ft)	133.82	35.00	767.07
Vel Total (ft/s)	0.74	Avg. Vel. (ft/s)	0.55	3.61	0.57
Max Chl Dpth (ft)	12.85	Hydr. Depth (ft)	6.54	10.55	6.91
Conv. Total (cfs)	228061.5	Conv. (cfs)	22555.3	62610.7	142895.5
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	135.22	37.84	767.52
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.18	0.28	0.20
Alpha	6.93	Stream Power (lb/ft s)	0.10	1.00	0.11
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	2322.62	3711.29	2091.88
C & E Loss (ft)	0.00	Cum SA (acres)	1249.71	361.41	990.23

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	10.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.61	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1113.59	430.78	6664.75
E.G. Slope (ft/ft)	0.000428	Area (sq ft)	1113.59	430.78	6664.75
Q Total (cfs)	6631.00	Flow (cfs)	683.07	1674.31	4273.63
Top Width (ft)	953.74	Top Width (ft)	137.80	35.00	780.93
Vel Total (ft/s)	0.81	Avg. Vel. (ft/s)	0.61	3.89	0.64
Max Chl Dpth (ft)	14.61	Hydr. Depth (ft)	8.08	12.31	8.53
Conv. Total (cfs)	320702.5	Conv. (cfs)	33035.9	80976.3	206690.4
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	139.57	37.84	781.50
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.21	0.30	0.23
Alpha	6.31	Stream Power (lb/ft s)	0.13	1.18	0.15
Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	3835.36	4177.78	3450.48
C & E Loss (ft)	0.01	Cum SA (acres)	1413.36	361.71	1491.04

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	11.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.69	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1264.80	468.34	7507.50
E.G. Slope (ft/ft)	0.000416	Area (sq ft)	1264.80	468.34	7507.50
Q Total (cfs)	7809.00	Flow (cfs)	807.78	1898.19	5103.03
Top Width (ft)	968.66	Top Width (ft)	144.27	35.00	789.39
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.64	4.05	0.68
Max Chl Dpth (ft)	15.69	Hydr. Depth (ft)	8.77	13.38	9.51
Conv. Total (cfs)	382942.8	Conv. (cfs)	39612.5	93084.8	250245.5
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	146.13	37.84	790.02
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.22	0.32	0.25
Alpha	6.07	Stream Power (lb/ft s)	0.14	1.30	0.17
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	4835.65	4468.47	4559.83
C & E Loss (ft)	0.01	Cum SA (acres)	1454.00	361.83	1646.86

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	13.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.23	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1495.22	522.40	8736.12
E.G. Slope (ft/ft)	0.000411	Area (sq ft)	1495.22	522.40	8736.12
Q Total (cfs)	9741.00	Flow (cfs)	1015.49	2263.19	6462.32
Top Width (ft)	990.65	Top Width (ft)	154.10	35.00	801.55
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.68	4.33	0.74
Max Chl Dpth (ft)	17.23	Hydr. Depth (ft)	9.70	14.93	10.90
Conv. Total (cfs)	480649.8	Conv. (cfs)	50107.5	111672.5	318869.8
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	156.08	37.84	802.28
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.25	0.35	0.28
Alpha	5.82	Stream Power (lb/ft s)	0.17	1.53	0.21
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	6356.25	4902.92	6422.70
C & E Loss (ft)	0.01	Cum SA (acres)	1507.20	362.01	1784.54

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 14.4

INPUT

Description: OLD TOMOKA ROAD

* 001

Station Elevation Data		num=		31					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
468	14	644	13	775	12	819	11	969	10
1000	5.2	1032	4.7	1081	4.1	1109	4.4	1139	5.5
1168	3	1171	1.4	1212	-8.4	1243	-4.2	1272	-2.6
1309	1	1313	1.8	1318	2.9	1379	4	1432	3.2
1457	4	1482	5	1507	6	1530	7	1580	8
1630	9	1661	10	1861	11	1874	12	1886	13
1901	14								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
468	.2	1168	.04	1318	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1168	1318		67	67		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.95	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	595.22	1635.51	817.14
E.G. Slope (ft/ft)	0.000217	Area (sq ft)	595.22	1635.51	817.14
Q Total (cfs)	4690.00	Flow (cfs)	141.39	4356.55	192.06

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Top Width (ft)	595.25	Top Width (ft)	185.76	150.00	259.49
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.24	2.66	0.24
Max Chl Dpth (ft)	16.35	Hydr. Depth (ft)	3.20	10.90	3.15
Conv. Total (cfs)	318423.8	Conv. (cfs)	9599.6	295784.3	13039.9
Length Wtd. (ft)	67.00	Wetted Per. (ft)	186.11	152.26	259.59
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.04	0.15	0.04
Alpha	2.79	Stream Power (lb/ft s)	0.01	0.39	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2275.38	3646.86	1895.20
C & E Loss (ft)	0.02	Cum SA (acres)	1239.44	355.46	957.23

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.68	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	925.87	1894.73	1335.86
E.G. Slope (ft/ft)	0.000231	Area (sq ft)	925.87	1894.73	1335.86
Q Total (cfs)	6420.00	Flow (cfs)	293.02	5746.15	380.83
Top Width (ft)	679.93	Top Width (ft)	196.92	150.00	333.01
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.32	3.03	0.29
Max Chl Dpth (ft)	18.08	Hydr. Depth (ft)	4.70	12.63	4.01
Conv. Total (cfs)	422300.7	Conv. (cfs)	19274.7	377975.3	25050.7
Length Wtd. (ft)	67.00	Wetted Per. (ft)	197.40	152.26	333.13
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.07	0.18	0.06
Alpha	3.45	Stream Power (lb/ft s)	0.02	0.54	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3769.81	4103.04	3193.34
C & E Loss (ft)	0.02	Cum SA (acres)	1402.60	355.77	1455.24

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.71	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	1168.25	2049.31	1737.90
E.G. Slope (ft/ft)	0.000247	Area (sq ft)	1168.25	2049.31	1737.90
Q Total (cfs)	7571.00	Flow (cfs)	333.06	6763.11	474.84
Top Width (ft)	939.93	Top Width (ft)	305.26	150.00	484.67
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	0.29	3.30	0.27
Max Chl Dpth (ft)	19.11	Hydr. Depth (ft)	3.83	13.66	3.59
Conv. Total (cfs)	482211.7	Conv. (cfs)	21212.9	430755.4	30243.4
Length Wtd. (ft)	67.00	Wetted Per. (ft)	305.76	152.26	484.80
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.06	0.21	0.06
Alpha	4.17	Stream Power (lb/ft s)	0.02	0.68	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4757.45	4387.56	4262.68
C & E Loss (ft)	0.03	Cum SA (acres)	1439.55	355.88	1605.92

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.24	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	1733.53	2279.33	2572.07
E.G. Slope (ft/ft)	0.000249	Area (sq ft)	1733.53	2279.33	2572.07

LPGA Tomoka River EC-RAS Report _ DEM					
Q Total (cfs)	9462.00	Flow (cfs)	518.30	8110.17	833.53
Top Width (ft)	1133.58	Top Width (ft)	424.68	150.00	558.90
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)	0.30	3.56	0.32
Max Chl Dpth (ft)	20.64	Hydr. Depth (ft)	4.08	15.20	4.60
Conv. Total (cfs)	600044.4	Conv. (cfs)	32868.9	514316.5	52859.1
Length Wtd. (ft)	67.00	Wetted Per. (ft)	425.20	152.26	559.08
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.06	0.23	0.07
Alpha	5.26	Stream Power (lb/ft s)	0.02	0.83	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	6252.48	4812.87	6059.25
C & E Loss (ft)	0.03	Cum SA (acres)	1488.59	356.06	1740.82

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 14.1

INPUT
Description: OLD TOMOKA ROAD
* 001

Station Elevation Data		num=		31					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
462	15	487	14	663	13	794	12	838	11
988	10	1000	5.4	1015	4.5	1054	2.9	1123	3.8
1154	3.3	1195	3.3	1199	1.5	1225	-3	1260	-5.1
1291	-4.2	1325	.8	1329	2.3	1354	4.2	1392	4.6
1448	5.7	1460	6	1485	7	1523	8	1573	9
1604	10	1804	11	1816	12	1829	13	1841	14
1855	15								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
462	.2	1000	.04	1448	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1000	1448		2673	2673		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.97	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	8.65	2688.09	80.40
E.G. Slope (ft/ft)	0.000202	Area (sq ft)	8.65	2688.09	80.40
Q Total (cfs)	4690.00	Flow (cfs)	1.03	4679.99	8.98
Top Width (ft)	528.75	Top Width (ft)	6.72	448.00	74.03
Vel Total (ft/s)	1.69	Avg. Vel. (ft/s)	0.12	1.74	0.11
Max Chl Dpth (ft)	13.07	Hydr. Depth (ft)	1.29	6.00	1.09
Conv. Total (cfs)	329629.8	Conv. (cfs)	72.6	328926.2	630.9
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	7.19	449.64	74.07
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.02	0.08	0.01
Alpha	1.06	Stream Power (lb/ft s)	0.00	0.13	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	2274.91	3643.54	1894.51
C & E Loss (ft)	0.00	Cum SA (acres)	1239.29	355.00	956.98

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.72	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	24.32	3469.25	280.07
E.G. Slope (ft/ft)	0.000161	Area (sq ft)	24.32	3469.25	280.07
Q Total (cfs)	6420.00	Flow (cfs)	3.65	6375.89	40.46
Top Width (ft)	606.53	Top Width (ft)	11.26	448.00	147.26
Vel Total (ft/s)	1.70	Avg. Vel. (ft/s)	0.15	1.84	0.14
Max Chl Dpth (ft)	14.82	Hydr. Depth (ft)	2.16	7.74	1.90
Conv. Total (cfs)	506694.0	Conv. (cfs)	288.4	503212.4	3193.2
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	12.06	449.64	147.32
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	1.16	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	3769.08	4098.91	3192.10
C & E Loss (ft)	0.00	Cum SA (acres)	1402.44	355.31	1454.87

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.76	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	80.37	3937.16	499.93
E.G. Slope (ft/ft)	0.000146	Area (sq ft)	80.37	3937.16	499.93
Q Total (cfs)	7571.00	Flow (cfs)	5.31	7503.82	61.87
Top Width (ft)	882.92	Top Width (ft)	126.40	448.00	308.53
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	0.07	1.91	0.12
Max Chl Dpth (ft)	15.86	Hydr. Depth (ft)	0.64	8.79	1.62
Conv. Total (cfs)	626904.4	Conv. (cfs)	439.6	621341.4	5123.5
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	127.25	449.64	308.59
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.01	0.08	0.01
Alpha	1.28	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4756.49	4382.95	4260.96
C & E Loss (ft)	0.00	Cum SA (acres)	1439.22	355.42	1605.31

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.31	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	367.76	4628.57	1054.01
E.G. Slope (ft/ft)	0.000129	Area (sq ft)	367.76	4628.57	1054.01
Q Total (cfs)	9462.00	Flow (cfs)	40.48	9243.42	178.10
Top Width (ft)	1066.06	Top Width (ft)	246.08	448.00	371.98
Vel Total (ft/s)	1.56	Avg. Vel. (ft/s)	0.11	2.00	0.17
Max Chl Dpth (ft)	17.41	Hydr. Depth (ft)	1.49	10.33	2.83
Conv. Total (cfs)	832888.6	Conv. (cfs)	3563.2	813648.3	15677.1
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	246.95	449.64	372.10
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	1.59	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	6250.86	4807.56	6056.47

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1488.08 355.60 1740.10

RIVER: RIVER-1
REACH: Reach-1

INPUT

```
Station Elevation Data      num=      23
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1000	16.6	1120	13.7	1164	11.9	1268	7.6	1285	5.2
1348	2.3	1412	1.8	1453	1.2	1498	1.1	1540	1.2
1562	.7	1574	-2.1	1597	-7.1	1625	-7.9	1652	-9.1
1686	-3.2	1722	.1	1759	1.9	1809	2.7	1931	7.9
2059	17.8	2109	19	2160	27.3				

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1562	.04	1722	.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1562	1722		225	225	225		.3	.5

E.G. Elev (ft)	7.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.60	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	1576.49	2035.03	791.40
E.G. Slope (ft/ft)	0.000097	Area (sq ft)	1576.49	2035.03	791.40
Q Total (cfs)	4521.00	Flow (cfs)	352.63	4024.76	143.62
Top Width (ft)	656.09	Top Width (ft)	294.06	160.00	202.02
Vel Total (ft/s)	1.03	Avg. Vel. (ft/s)	0.22	1.98	0.18
Max Chl Dpth (ft)	16.70	Hydr. Depth (ft)	5.36	12.72	3.92
Conv. Total (cfs)	459724.1	Conv. (cfs)	35857.2	409263.2	14603.8
Length Wtd. (ft)	225.00	Wetted Per. (ft)	294.31	161.56	202.18
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.03	0.08	0.02
Alpha	3.31	Stream Power (lb/ft s)	0.01	0.15	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2226.28	3498.63	1867.76
C & E Loss (ft)	0.01	Cum SA (acres)	1230.06	336.35	948.51

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.

E.G. Elev (ft)	9.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.34	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	2123.61	2312.88	1166.69
E.G. Slope (ft/ft)	0.000112	Area (sq ft)	2123.61	2312.88	1166.69
Q Total (cfs)	6206.00	Flow (cfs)	570.58	5362.79	272.63

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Top Width (ft)	723.67	Top Width (ft)	336.07	160.00	227.61
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.27	2.32	0.23
Max Chl Dpth (ft)	18.44	Hydr. Depth (ft)	6.32	14.46	5.13
Conv. Total (cfs)	586220.1	Conv. (cfs)	53897.1	506570.2	25752.8
Length Wtd. (ft)	225.00	Wetted Per. (ft)	336.35	161.56	227.82
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.04	0.10	0.04
Alpha	3.79	Stream Power (lb/ft s)	0.01	0.23	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3703.18	3921.50	3147.71
C & E Loss (ft)	0.02	Cum SA (acres)	1391.78	336.65	1443.37

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.38	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	2486.17	2479.26	1410.37
E.G. Slope (ft/ft)	0.000120	Area (sq ft)	2486.17	2479.26	1410.37
Q Total (cfs)	7332.00	Flow (cfs)	731.48	6228.21	372.32
Top Width (ft)	762.27	Top Width (ft)	361.22	160.00	241.05
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.29	2.51	0.26
Max Chl Dpth (ft)	19.48	Hydr. Depth (ft)	6.88	15.50	5.85
Conv. Total (cfs)	669548.4	Conv. (cfs)	66797.5	568751.6	33999.4
Length Wtd. (ft)	225.00	Wetted Per. (ft)	361.52	161.56	241.31
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.05	0.11	0.04
Alpha	4.06	Stream Power (lb/ft s)	0.02	0.29	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4677.74	4186.09	4202.35
C & E Loss (ft)	0.02	Cum SA (acres)	1424.26	336.77	1588.44

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.91	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	3069.14	2724.87	1795.63
E.G. Slope (ft/ft)	0.000131	Area (sq ft)	3069.14	2724.87	1795.63
Q Total (cfs)	9185.00	Flow (cfs)	1017.07	7616.15	551.78
Top Width (ft)	819.25	Top Width (ft)	398.35	160.00	260.90
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	0.33	2.80	0.31
Max Chl Dpth (ft)	21.01	Hydr. Depth (ft)	7.70	17.03	6.88
Conv. Total (cfs)	802857.0	Conv. (cfs)	88901.5	665724.5	48231.1
Length Wtd. (ft)	225.00	Wetted Per. (ft)	398.68	161.56	261.22
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.06	0.14	0.06
Alpha	4.44	Stream Power (lb/ft s)	0.02	0.39	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	6145.41	4581.94	5969.03
C & E Loss (ft)	0.02	Cum SA (acres)	1468.31	336.95	1720.69

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 13.3

INPUT

Description:

Station		Elevation Data		num=	11				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16	1024	3	1077	-2	1099	-6.5	1137	-5.8
1171	-9.1	1215	-6.1	1258	-2.7	1296	-2.4	1335	-1.1
1360	16								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1024	.04	1335	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1024	1335		43.1	43.1		.3	.5

Ineffective Flow		num=	2		
Sta L	Sta R	Elev	Permanent		
1000	1024	19.9	F		
1335	1360	19.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.60	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.57	Flow Area (sq ft)		3607.44	
E.G. Slope (ft/ft)	0.000044	Area (sq ft)	19.56	3607.44	55.37
Q Total (cfs)	4521.00	Flow (cfs)		4521.00	
Top Width (ft)	332.22	Top Width (ft)	8.50	311.00	12.72
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)		1.25	
Max Chl Dpth (ft)	16.70	Hydr. Depth (ft)		11.60	
Conv. Total (cfs)	685051.8	Conv. (cfs)		685051.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	2222.16	3484.05	1865.57
C & E Loss (ft)	0.00	Cum SA (acres)	1229.28	335.13	947.95

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.34	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.83	Flow Area (sq ft)		4147.96	
E.G. Slope (ft/ft)	0.000052	Area (sq ft)	37.12	4147.96	79.70
Q Total (cfs)	6206.00	Flow (cfs)		6206.00	

		LPGA Tomoka River EC-RAS Report _ DEM		
Top Width (ft)	337.97	Top Width (ft)	11.71	311.00
Vel Total (ft/s)	1.50	Avg. Vel. (ft/s)		1.50
Max Chl Dpth (ft)	18.44	Hydr. Depth (ft)		13.34
Conv. Total (cfs)	864534.2	Conv. (cfs)		864534.2
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.04
Alpha	1.00	Stream Power (lb/ft s)		0.06
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	3697.60	3904.82
C & E Loss (ft)	0.00	Cum SA (acres)	1390.88	335.43
				1442.74

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	10.38	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.19	Flow Area (sq ft)		4471.61	
E.G. Slope (ft/ft)	0.000056	Area (sq ft)	50.30	4471.61	96.37
Q Total (cfs)	7332.00	Flow (cfs)		7332.00	
Top Width (ft)	341.42	Top Width (ft)	13.63	311.00	16.79
Vel Total (ft/s)	1.64	Avg. Vel. (ft/s)		1.64	
Max Chl Dpth (ft)	19.48	Hydr. Depth (ft)		14.38	
Conv. Total (cfs)	979859.8	Conv. (cfs)		979859.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.08	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	4671.19	4168.13	4198.46
C & E Loss (ft)	0.00	Cum SA (acres)	1423.29	335.55	1587.78

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.92	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-1.58	Flow Area (sq ft)		4949.29	
E.G. Slope (ft/ft)	0.000063	Area (sq ft)	73.42	4949.29	123.88
Q Total (cfs)	9185.00	Flow (cfs)		9185.00	
Top Width (ft)	346.50	Top Width (ft)	16.46	311.00	19.03
Vel Total (ft/s)	1.86	Avg. Vel. (ft/s)		1.86	
Max Chl Dpth (ft)	21.02	Hydr. Depth (ft)		15.91	
Conv. Total (cfs)	1160460.0	Conv. (cfs)		1160460.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.12	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	6137.29	4562.12	5964.08
C & E Loss (ft)	0.00	Cum SA (acres)	1467.24	335.73	1719.96

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 13.25

INPUT
 Description: Bridge #5

Distance from Upstream XS = 1
 Deck/Roadway Width = 42
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	16.1	1360	19.9	16				

Upstream Bridge Cross Section Data

Station Elevation Data		num= 11							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16	1024	3	1077	-2	1099	-6.5	1137	-5.8
1171	-9.1	1215	-6.1	1258	-2.7	1296	-2.4	1335	-1.1
1360	16								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1024	.04	1335	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1024 1335 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1024	19.9	F
1335	1360	19.9	F

Downstream Deck/Roadway Coordinates
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	16.1	1360	19.9	16				

Downstream Bridge Cross Section Data

Station Elevation Data		num= 11							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16.1	1026	2.6	1059	1.7	1096	-3.2	1131	-8
1174	-8.6	1214	-2.8	1257	-.3	1284	-.3	1337	2.7
1360	15.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1026	.04	1337	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1026 1337 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1026	18	F
1337	1360	18	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 19.9
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1179.5	Downstream=	1181.5
Upstream	num=	2		
Width	Elev	Width	Elev	
12	-9.1	12	16.1	
Downstream	num=	2		
Width	Elev	Width	Elev	
12	-8.6	12	16.1	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05
 Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow
 Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .7905694
 Max Low Cord = 16.1

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	7.63	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.60	E.G. Elev (ft)	7.63	7.62
Q Total (cfs)	4521.00	W.S. Elev (ft)	7.60	7.58
Q Bridge (cfs)	4521.00	Crit W.S. (ft)	-3.22	-2.60
Q Weir (cfs)		Max Chl Dpth (ft)	16.70	16.18
Weir Sta Lft (ft)		Vel Total (ft/s)	1.32	1.54
Weir Sta Rgt (ft)		Flow Area (sq ft)	3412.83	2926.31
Weir Submerg		Froude # Chl	0.07	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	20920.08	16488.18
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	11.41	9.79
Min El Prs (ft)	16.10	W.P. Total (ft)	332.33	330.31
Delta EG (ft)	0.01	Conv. Total (cfs)	598982.4	465428.9
Delta WS (ft)	0.02	Top Width (ft)	320.21	317.17
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.54	C & E Loss (ft)	0.00	0.00

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BR Sluice Coef		Shear Total (lb/sq ft)	0.04	0.05
BR Sel Method	Energy only	Power Total (lb/ft s)	0.05	0.08

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	9.38	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	9.34	E.G. Elev (ft)	9.38	9.37
Q Total (cfs)	6206.00	W.S. Elev (ft)	9.34	9.32
Q Bridge (cfs)	6206.00	Crit W.S. (ft)	-2.26	-1.54
Q Weir (cfs)		Max Chl Dpth (ft)	18.44	17.92
Weir Sta Lft (ft)		Vel Total (ft/s)	1.58	1.80
Weir Sta Rgt (ft)		Flow Area (sq ft)	3932.08	3444.67
Weir Submerg		Froude # Chl	0.08	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	27415.99	22141.20
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	13.15	11.52
Min El Prs (ft)	16.10	W.P. Total (ft)	335.80	333.78
Delta EG (ft)	0.01	Conv. Total (cfs)	753210.2	606565.1
Delta WS (ft)	0.02	Top Width (ft)	325.96	323.56
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.80	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.05	0.07
BR Sel Method	Energy only	Power Total (lb/ft s)	0.08	0.12

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	10.42	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	10.38	E.G. Elev (ft)	10.42	10.41
Q Total (cfs)	7332.00	W.S. Elev (ft)	10.38	10.36
Q Bridge (cfs)	7332.00	Crit W.S. (ft)	-1.84	-0.96
Q Weir (cfs)		Max Chl Dpth (ft)	19.48	18.96
Weir Sta Lft (ft)		Vel Total (ft/s)	1.73	1.95
Weir Sta Rgt (ft)		Flow Area (sq ft)	4242.96	3755.05
Weir Submerg		Froude # Chl	0.08	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	31755.35	25975.48
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	14.19	12.56
Min El Prs (ft)	16.10	W.P. Total (ft)	337.88	335.85
Delta EG (ft)	0.01	Conv. Total (cfs)	851544.5	697474.1
Delta WS (ft)	0.02	Top Width (ft)	329.40	327.38

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BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.95	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.06	0.08
BR Sel Method	Energy only	Power Total (lb/ft s)	0.10	0.15

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	11.97	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	11.92	E.G. Elev (ft)	11.97	11.96
Q Total (cfs)	9185.00	W.S. Elev (ft)	11.91	11.89
Q Bridge (cfs)	9185.00	Crit W.S. (ft)	-1.22	0.05
Q Weir (cfs)		Max Chl Dpth (ft)	21.01	20.49
Weir Sta Lft (ft)		Vel Total (ft/s)	1.95	2.18
Weir Sta Rgt (ft)		Flow Area (sq ft)	4701.76	4213.07
Weir Submerg		Froude # Chl	0.09	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	38781.90	32255.85
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	15.72	14.09
Min El Prs (ft)	16.10	W.P. Total (ft)	340.95	338.92
Delta EG (ft)	0.01	Conv. Total (cfs)	1004406.0	839854.4
Delta WS (ft)	0.03	Top Width (ft)	334.47	333.02
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	2.18	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.07	0.09
BR Sel Method	Energy only	Power Total (lb/ft s)	0.14	0.20

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 13.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
constriction * 001

Station	Elevation	Data	num=	11						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
1000	16.1	1026	2.6	1059	1.7	1096	-3.2	1131	-8	

1174 -8.6 1214 -2.8 1257 -.3 1284
1360 15.8

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
1000 .2 1026 .04 1337 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1026 1337 225 225 225 .3 .5
Ineffective Flow num= 2
Sta L Sta R Elev Permanent
1000 1026 18 F
1337 1360 18 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.59	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-3.06	Flow Area (sq ft)		3108.11	
E.G. Slope (ft/ft)	0.000072	Area (sq ft)	23.94	3108.11	20.96
Q Total (cfs)	4521.00	Flow (cfs)		4521.00	
Top Width (ft)	329.18	Top Width (ft)	9.60	311.00	8.58
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)		1.45	
Max Chl Dpth (ft)	16.19	Hydr. Depth (ft)		9.99	
Conv. Total (cfs)	534279.4	Conv. (cfs)		534279.4	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2222.14	3480.91	1865.54
C & E Loss (ft)	0.01	Cum SA (acres)	1229.27	334.84	947.94

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.32	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-2.03	Flow Area (sq ft)		3647.48	
E.G. Slope (ft/ft)	0.000079	Area (sq ft)	43.49	3647.48	38.48
Q Total (cfs)	6206.00	Flow (cfs)		6206.00	
Top Width (ft)	335.57	Top Width (ft)	12.94	311.00	11.62
Vel Total (ft/s)	1.70	Avg. Vel. (ft/s)		1.70	
Max Chl Dpth (ft)	17.92	Hydr. Depth (ft)		11.73	
Conv. Total (cfs)	697581.1	Conv. (cfs)		697581.1	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3697.56	3901.16	3144.43
C & E Loss (ft)	0.01	Cum SA (acres)	1390.87	335.14	1442.73

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

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	10.41	Wt. n-Val.		0.040	
Vel Head (ft)	0.05	Reach Len. (ft)	225.00	225.00	225.00
W.S. Elev (ft)	10.36	Flow Area (sq ft)		3970.43	
Crit W.S. (ft)	-1.45	Area (sq ft)	57.97	3970.43	51.49
E.G. Slope (ft/ft)	0.000083	Flow (cfs)		7332.00	
Q Total (cfs)	7332.00	Top Width (ft)	14.94	311.00	13.45
Top Width (ft)	339.39	Avg. Vel. (ft/s)		1.85	
Vel Total (ft/s)	1.85	Hydr. Depth (ft)		12.77	
Max Chl Dpth (ft)	18.96	Conv. (cfs)		803532.7	
Conv. Total (cfs)	803532.7	Wetted Per. (ft)		312.24	
Length Wtd. (ft)	225.00	Shear (lb/sq ft)		0.07	
Min Ch El (ft)	-8.60	Stream Power (lb/ft s)		0.12	
Alpha	1.00	Cum Volume (acre-ft)	4671.14	4164.17	4198.39
Frctn Loss (ft)	0.02	Cum SA (acres)	1423.27	335.25	1587.76
C & E Loss (ft)	0.02				

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

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	11.96	Wt. n-Val.		0.040	
Vel Head (ft)	0.07	Reach Len. (ft)	225.00	225.00	225.00
W.S. Elev (ft)	11.89	Flow Area (sq ft)		4447.04	
Crit W.S. (ft)	-0.64	Area (sq ft)	83.13	4447.04	74.16
E.G. Slope (ft/ft)	0.000090	Flow (cfs)		9185.00	
Q Total (cfs)	9185.00	Top Width (ft)	17.89	311.00	16.14
Top Width (ft)	345.03	Avg. Vel. (ft/s)		2.07	
Vel Total (ft/s)	2.07	Hydr. Depth (ft)		14.30	
Max Chl Dpth (ft)	20.49	Conv. (cfs)		970640.8	
Conv. Total (cfs)	970640.8	Wetted Per. (ft)		312.24	
Length Wtd. (ft)	225.00	Shear (lb/sq ft)		0.08	
Min Ch El (ft)	-8.60	Stream Power (lb/ft s)		0.16	
Alpha	1.00	Cum Volume (acre-ft)	6137.22	4557.71	5963.98
Frctn Loss (ft)	0.02	Cum SA (acres)	1467.22	335.44	1719.95
C & E Loss (ft)	0.02				

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 13.1

INPUT

Description: SR40

* 001

Station Elevation Data		num=		19					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	17.9	1122	10.4	1202	6.1	1286	3.8	1361	2.7
1439	2	1466	2.6	1473	1.9	1496	-2.2	1532	-8.6

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1562	-5.9	1586	-3.2	1615	1.4	1637	2.5	1772	2.9
1911	4.5	2046	8.9	2151	13.6	2232	18.1		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1202	.04	1911	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1202	1911		935	935		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.58	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	20.25	4079.22	145.10
E.G. Slope (ft/ft)	0.000086	Area (sq ft)	20.25	4079.22	145.10
Q Total (cfs)	4521.00	Flow (cfs)	1.14	4506.54	13.32
Top Width (ft)	830.81	Top Width (ft)	27.45	709.00	94.36
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)	0.06	1.10	0.09
Max Chl Dpth (ft)	16.18	Hydr. Depth (ft)	0.74	5.75	1.54
Conv. Total (cfs)	487345.9	Conv. (cfs)	122.7	485787.5	1435.7
Length Wtd. (ft)	935.00	Wetted Per. (ft)	27.49	710.68	94.41
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.00	0.03	0.01
Alpha	1.07	Stream Power (lb/ft s)	0.00	0.03	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	2222.02	3462.35	1865.11
C & E Loss (ft)	0.01	Cum SA (acres)	1229.18	332.20	947.68

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.32	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	96.22	5313.41	355.12
E.G. Slope (ft/ft)	0.000067	Area (sq ft)	96.22	5313.41	355.12
Q Total (cfs)	6206.00	Flow (cfs)	8.00	6158.77	39.23
Top Width (ft)	913.13	Top Width (ft)	59.84	709.00	144.30
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)	0.08	1.16	0.11
Max Chl Dpth (ft)	17.92	Hydr. Depth (ft)	1.61	7.49	2.46
Conv. Total (cfs)	760486.1	Conv. (cfs)	980.3	754698.3	4807.5
Length Wtd. (ft)	935.00	Wetted Per. (ft)	59.92	710.68	144.38
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.15	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	3697.20	3878.02	3143.42
C & E Loss (ft)	0.01	Cum SA (acres)	1390.68	332.50	1442.33

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.36	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	168.69	6052.40	517.65
E.G. Slope (ft/ft)	0.000060	Area (sq ft)	168.69	6052.40	517.65
Q Total (cfs)	7332.00	Flow (cfs)	16.03	7252.90	63.07

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Top Width (ft)	955.81	Top Width (ft)	79.23	709.00	167.58
Vel Total (ft/s)	1.09	Avg. Vel. (ft/s)	0.10	1.20	0.12
Max Chl Dpth (ft)	18.96	Hydr. Depth (ft)	2.13	8.54	3.09
Conv. Total (cfs)	947853.3	Conv. (cfs)	2072.3	937627.1	8153.8
Length Wtd. (ft)	935.00	Wetted Per. (ft)	79.34	710.68	167.69
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.20	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	4670.55	4138.28	4196.92
C & E Loss (ft)	0.01	Cum SA (acres)	1423.03	332.62	1587.29

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.90	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	309.97	7143.10	801.89
E.G. Slope (ft/ft)	0.000054	Area (sq ft)	309.97	7143.10	801.89
Q Total (cfs)	9185.00	Flow (cfs)	34.78	9040.98	109.24
Top Width (ft)	1015.30	Top Width (ft)	104.35	709.00	201.95
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.11	1.27	0.14
Max Chl Dpth (ft)	20.50	Hydr. Depth (ft)	2.97	10.07	3.97
Conv. Total (cfs)	1255527.0	Conv. (cfs)	4754.0	1235841.0	14932.4
Length Wtd. (ft)	935.00	Wetted Per. (ft)	104.51	710.68	202.09
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.27	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	6136.20	4527.77	5961.72
C & E Loss (ft)	0.01	Cum SA (acres)	1466.90	332.80	1719.38

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 12.1

INPUT
 Description: INTERPOLATED SECTION

* 001

Station Elevation Data		num=	30
Sta	Elev	Sta	Elev
861	20	1000	15
1240	2.9	1299	2.6
1379	1.3	1396	-.6
1504	-10.4	1521	-5
1634	2.1	1652	1.7
1912	2.7	2564	5

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
861	.2	1377	.04
		1561	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1377	1561	500	500	500	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.41	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	978.36	2464.99	4272.59
E.G. Slope (ft/ft)	0.000133	Area (sq ft)	978.36	2464.99	4272.59
Q Total (cfs)	6997.00	Flow (cfs)	201.12	5876.18	919.70
Top Width (ft)	1519.79	Top Width (ft)	262.88	184.00	1072.91
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.21	2.38	0.22
Max Chl Dpth (ft)	18.31	Hydr. Depth (ft)	3.72	13.40	3.98
Conv. Total (cfs)	606724.2	Conv. (cfs)	17439.3	509535.9	79749.0
Length Wtd. (ft)	500.00	Wetted Per. (ft)	263.27	187.79	1072.97
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.03	0.11	0.03
Alpha	5.81	Stream Power (lb/ft s)	0.01	0.26	0.01
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	2211.30	3392.11	1817.70
C & E Loss (ft)	0.00	Cum SA (acres)	1226.06	322.62	935.15

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.14	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1444.21	2783.72	6174.59
E.G. Slope (ft/ft)	0.000147	Area (sq ft)	1444.21	2783.72	6174.59
Q Total (cfs)	9688.00	Flow (cfs)	392.45	7563.59	1731.96
Top Width (ft)	1582.15	Top Width (ft)	275.00	184.00	1123.15
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.27	2.72	0.28
Max Chl Dpth (ft)	20.04	Hydr. Depth (ft)	5.25	15.13	5.50
Conv. Total (cfs)	799275.9	Conv. (cfs)	32378.1	624008.6	142889.2
Length Wtd. (ft)	500.00	Wetted Per. (ft)	275.52	187.79	1123.23
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.05	0.14	0.05
Alpha	6.66	Stream Power (lb/ft s)	0.01	0.37	0.01
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	3680.66	3791.12	3073.34
C & E Loss (ft)	0.01	Cum SA (acres)	1387.09	322.92	1428.73

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.18	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1733.26	2974.47	7354.32
E.G. Slope (ft/ft)	0.000154	Area (sq ft)	1733.26	2974.47	7354.32
Q Total (cfs)	11504.00	Flow (cfs)	531.88	8639.74	2332.39
Top Width (ft)	1619.43	Top Width (ft)	284.45	184.00	1150.98
Vel Total (ft/s)	0.95	Avg. Vel. (ft/s)	0.31	2.90	0.32
Max Chl Dpth (ft)	21.08	Hydr. Depth (ft)	6.09	16.17	6.39
Conv. Total (cfs)	927923.7	Conv. (cfs)	42901.8	696889.4	188132.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	285.03	187.79	1151.09
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.06	0.15	0.06
Alpha	6.99	Stream Power (lb/ft s)	0.02	0.44	0.02
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	4650.14	4041.40	4112.43
C & E Loss (ft)	0.01	Cum SA (acres)	1419.13	323.04	1573.14

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.71	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	2190.56	3255.76	9133.33
E.G. Slope (ft/ft)	0.000163	Area (sq ft)	2190.56	3255.76	9133.33
Q Total (cfs)	14490.00	Flow (cfs)	757.53	10337.74	3394.73
Top Width (ft)	1674.16	Top Width (ft)	313.80	184.00	1176.36
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.35	3.18	0.37
Max Chl Dpth (ft)	22.61	Hydr. Depth (ft)	6.98	17.69	7.76
Conv. Total (cfs)	1135567.0	Conv. (cfs)	59367.2	810158.6	266041.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	314.42	187.79	1176.51
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.07	0.18	0.08
Alpha	7.32	Stream Power (lb/ft s)	0.02	0.56	0.03
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	6109.37	4416.17	5855.09
C & E Loss (ft)	0.01	Cum SA (acres)	1462.41	323.22	1704.59

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 12

INPUT

Description: 1ST SECTION NORTH OF SR40

* 001

Station Elevation Data		num=		28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.7	1050	11.8	1116	7.1	1187	3.3	1240	1.9
1299	1.6	1355	2.2	1373	4	1377	3	1379	.3
1396	-1.6	1427	-8.3	1449	-11.4	1470	-11.9	1504	-11.4
1521	-6	1550	-1.3	1561	1.2	1623	1	1634	1.1
1652	1.1	1719	.8	1766	1.3	1848	1.1	1912	1.7
1977	5.7	2407	10	2469	15				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1377	.04	1561	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1377	1561		1698	1698		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.29	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1116.15	2614.07	2517.24
E.G. Slope (ft/ft)	0.000180	Area (sq ft)	1116.15	2614.07	2517.24
Q Total (cfs)	8490.00	Flow (cfs)	290.61	7528.58	670.81
Top Width (ft)	1022.52	Top Width (ft)	263.65	184.00	574.87
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)	0.26	2.88	0.27

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Max Chl Dpth (ft)	19.19	Hydr. Depth (ft)	4.23	14.21	4.38
Conv. Total (cfs)	633432.1	Conv. (cfs)	21682.3	561701.3	50048.5
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	263.99	187.90	575.01
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.05	0.16	0.05
Alpha	3.99	Stream Power (lb/ft s)	0.01	0.45	0.01
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	2199.28	3362.96	1778.73
C & E Loss (ft)	0.01	Cum SA (acres)	1223.04	320.50	925.69

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.98	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1581.43	2924.81	3630.71
E.G. Slope (ft/ft)	0.000221	Area (sq ft)	1581.43	2924.81	3630.71
Q Total (cfs)	11760.00	Flow (cfs)	543.61	10063.28	1153.12
Top Width (ft)	1215.12	Top Width (ft)	287.37	184.00	743.75
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)	0.34	3.44	0.32
Max Chl Dpth (ft)	20.88	Hydr. Depth (ft)	5.50	15.90	4.88
Conv. Total (cfs)	791545.0	Conv. (cfs)	36589.3	677341.4	77614.3
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	287.77	187.90	743.90
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.08	0.21	0.07
Alpha	4.86	Stream Power (lb/ft s)	0.03	0.74	0.02
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	3663.30	3758.35	3017.06
C & E Loss (ft)	0.01	Cum SA (acres)	1383.86	320.81	1418.01

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.99	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1879.42	3111.01	4434.55
E.G. Slope (ft/ft)	0.000242	Area (sq ft)	1879.42	3111.01	4434.55
Q Total (cfs)	13955.00	Flow (cfs)	734.58	11673.41	1547.01
Top Width (ft)	1330.52	Top Width (ft)	301.58	184.00	844.95
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	0.39	3.75	0.35
Max Chl Dpth (ft)	21.89	Hydr. Depth (ft)	6.23	16.91	5.25
Conv. Total (cfs)	897454.6	Conv. (cfs)	47241.2	750724.1	99489.3
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	302.02	187.90	845.10
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.09	0.25	0.08
Alpha	5.38	Stream Power (lb/ft s)	0.04	0.94	0.03
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4629.41	4006.48	4044.77
C & E Loss (ft)	0.02	Cum SA (acres)	1415.76	320.92	1561.69

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.49	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	2347.83	3387.15	5717.94
E.G. Slope (ft/ft)	0.000265	Area (sq ft)	2347.83	3387.15	5717.94
Q Total (cfs)	17579.00	Flow (cfs)	1064.94	14078.27	2435.79
Top Width (ft)	1371.13	Top Width (ft)	322.65	184.00	864.48

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Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	0.45	4.16	0.43
Max Chl Dpth (ft)	23.39	Hydr. Depth (ft)	7.28	18.41	6.61
Conv. Total (cfs)	1080139.0	Conv. (cfs)	65435.3	865036.9	149666.6
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	323.14	187.90	864.69
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.12	0.30	0.11
Alpha	5.89	Stream Power (lb/ft s)	0.05	1.24	0.05
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	6083.32	4378.04	5769.85
C & E Loss (ft)	0.02	Cum SA (acres)	1458.76	321.11	1692.88

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.4

INPUT
 Description: * 001

Station Elevation Data		num=	20						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18.4	1117	13.2	1228	7.3	1404	3.3	1510	2
1534	-.2	1582	-5.5	1627	-13.2	1687	-9	1744	-1.5
1753	1.6	1762	2	1792	2	1865	1	1959	2.2
2047	2.8	2153	3.5	2215	4.8	2347	7	2498	17.5

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1510	.04	1753	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1510	1753		360	360		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.04	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	774.29	3212.57	2258.35
E.G. Slope (ft/ft)	0.000137	Area (sq ft)	774.29	3212.57	2258.35
Q Total (cfs)	8376.00	Flow (cfs)	135.63	7762.39	477.98
Top Width (ft)	1108.40	Top Width (ft)	270.76	243.00	594.64
Vel Total (ft/s)	1.34	Avg. Vel. (ft/s)	0.18	2.42	0.21
Max Chl Dpth (ft)	20.24	Hydr. Depth (ft)	2.86	13.22	3.80
Conv. Total (cfs)	715669.4	Conv. (cfs)	11588.5	663240.8	40840.0
Length Wtd. (ft)	360.00	Wetted Per. (ft)	270.81	245.20	594.70
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.02	0.11	0.03
Alpha	3.01	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	2162.44	3249.40	1685.65
C & E Loss (ft)	0.02	Cum SA (acres)	1212.63	312.18	902.90

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200

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W.S. Elev (ft)	8.68	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	1253.44	3611.15	3253.06
E.G. Slope (ft/ft)	0.000165	Area (sq ft)	1253.44	3611.15	3253.06
Q Total (cfs)	11610.00	Flow (cfs)	305.17	10364.69	940.14
Top Width (ft)	1169.28	Top Width (ft)	308.05	243.00	618.23
Vel Total (ft/s)	1.43	Avg. Vel. (ft/s)	0.24	2.87	0.29
Max Chl Dpth (ft)	21.88	Hydr. Depth (ft)	4.07	14.86	5.26
Conv. Total (cfs)	902822.7	Conv. (cfs)	23730.4	805984.4	73107.9
Length Wtd. (ft)	360.00	Wetted Per. (ft)	308.14	245.20	618.35
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.04	0.15	0.05
Alpha	3.60	Stream Power (lb/ft s)	0.01	0.44	0.02
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3608.05	3630.97	2882.90
C & E Loss (ft)	0.02	Cum SA (acres)	1372.26	312.49	1391.47

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.67	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	1566.60	3850.95	3870.15
E.G. Slope (ft/ft)	0.000180	Area (sq ft)	1566.60	3850.95	3870.15
Q Total (cfs)	13785.00	Flow (cfs)	444.47	12048.76	1291.77
Top Width (ft)	1202.04	Top Width (ft)	326.62	243.00	632.42
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	0.28	3.13	0.33
Max Chl Dpth (ft)	22.87	Hydr. Depth (ft)	4.80	15.85	6.12
Conv. Total (cfs)	1026427.0	Conv. (cfs)	33095.2	897147.7	96184.5
Length Wtd. (ft)	360.00	Wetted Per. (ft)	326.73	245.20	632.57
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.05	0.18	0.07
Alpha	3.89	Stream Power (lb/ft s)	0.02	0.55	0.02
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	4562.24	3870.79	3882.91
C & E Loss (ft)	0.02	Cum SA (acres)	1403.52	312.60	1532.89

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.14	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	2065.20	4206.89	4811.92
E.G. Slope (ft/ft)	0.000202	Area (sq ft)	2065.20	4206.89	4811.92
Q Total (cfs)	17387.00	Flow (cfs)	705.58	14760.54	1920.88
Top Width (ft)	1250.66	Top Width (ft)	354.18	243.00	653.48
Vel Total (ft/s)	1.57	Avg. Vel. (ft/s)	0.34	3.51	0.40
Max Chl Dpth (ft)	24.34	Hydr. Depth (ft)	5.83	17.31	7.36
Conv. Total (cfs)	1224544.0	Conv. (cfs)	49693.0	1039566.0	135284.8
Length Wtd. (ft)	360.00	Wetted Per. (ft)	354.33	245.20	653.69
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.07	0.22	0.09
Alpha	4.26	Stream Power (lb/ft s)	0.03	0.76	0.04
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	5997.31	4230.03	5564.62
C & E Loss (ft)	0.03	Cum SA (acres)	1445.57	312.79	1663.29

CROSS SECTION

LPGA Tomoka River EC-RAS Report _ DEM

RIVER: RIVER-1

REACH: Reach-1

RS: 11.3

INPUT

Description:

Station Elevation Data			num=	15					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.5	1021	4	1053	1.6	1101	1.3	1146	-9.3
1190	-11.4	1240	-9	1276	-4.7	1317	-2.5	1362	.5
1407	.4	1451	1.5	1476	1.9	1498	2.6	1523	13.9

Manning's n Values			num=	3		
Sta	n Val	Sta	n Val	Sta	n Val	
1000	.2	1021	.04	1498	.2	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1021	1498		174.1	174.1		.3	.5

Ineffective Flow			num=	2		
Sta L	Sta R	Elev	Permanent			
1000	1021	19.9	F			
1498	1523	19.9	F			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.02	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.34	Flow Area (sq ft)		4617.82	
E.G. Slope (ft/ft)	0.000116	Area (sq ft)	8.30	4617.82	21.57
Q Total (cfs)	8376.00	Flow (cfs)		8376.00	
Top Width (ft)	492.28	Top Width (ft)	5.51	477.00	9.77
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)		1.81	
Max Chl Dpth (ft)	18.42	Hydr. Depth (ft)		9.68	
Conv. Total (cfs)	777172.3	Conv. (cfs)		777172.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.13	
Frctn Loss (ft)		Cum Volume (acre-ft)	2159.20	3217.04	1676.23
C & E Loss (ft)		Cum SA (acres)	1211.48	309.21	900.40

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.65	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.06	Flow Area (sq ft)		5398.77	
E.G. Slope (ft/ft)	0.000133	Area (sq ft)	19.77	5398.77	40.53
Q Total (cfs)	11610.00	Flow (cfs)		11610.00	
Top Width (ft)	498.89	Top Width (ft)	8.50	477.00	13.39
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)		2.15	
Max Chl Dpth (ft)	20.05	Hydr. Depth (ft)		11.32	
Conv. Total (cfs)	1008355.0	Conv. (cfs)		1008355.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	

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Min Ch El (ft)	-11.40	Shear (lb/sq ft)	0.09		
Alpha	1.00	Stream Power (lb/ft s)	0.20		
Frctn Loss (ft)		Cum Volume (acre-ft)	3602.78	3593.74	2869.29
C & E Loss (ft)		Cum SA (acres)	1370.95	309.51	1388.86

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.64	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.34	Flow Area (sq ft)		5868.66	
E.G. Slope (ft/ft)	0.000142	Area (sq ft)	29.02	5868.66	54.79
Q Total (cfs)	13785.00	Flow (cfs)		13785.00	
Top Width (ft)	502.87	Top Width (ft)	10.30	477.00	15.57
Vel Total (ft/s)	2.35	Avg. Vel. (ft/s)		2.35	
Max Chl Dpth (ft)	21.04	Hydr. Depth (ft)		12.30	
Conv. Total (cfs)	1158832.0	Conv. (cfs)		1158832.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.25	
Frctn Loss (ft)		Cum Volume (acre-ft)	4555.65	3830.62	3866.69
C & E Loss (ft)		Cum SA (acres)	1402.13	309.63	1530.22

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.10	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-1.32	Flow Area (sq ft)		6565.99	
E.G. Slope (ft/ft)	0.000155	Area (sq ft)	46.02	6565.99	79.92
Q Total (cfs)	17387.00	Flow (cfs)		17387.00	
Top Width (ft)	508.77	Top Width (ft)	12.96	477.00	18.81
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)		2.65	
Max Chl Dpth (ft)	22.50	Hydr. Depth (ft)		13.77	
Conv. Total (cfs)	1397296.0	Conv. (cfs)		1397296.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.35	
Frctn Loss (ft)		Cum Volume (acre-ft)	5988.58	4185.52	5544.41
C & E Loss (ft)		Cum SA (acres)	1444.05	309.81	1660.51

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

BRIDGE

RIVER: RIVER-1

REACH: Reach-1

RS: 11.25

INPUT

Description: Bridge #4

Distance from Upstream XS = 1

Deck/Roadway Width = 173

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	15.85	1523	19.9	15.85				

Upstream Bridge Cross Section Data

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.5	1021	4	1053	1.6	1101	1.3	1146	-9.3
1190	-11.4	1240	-9	1276	-4.7	1317	-2.5	1362	.5
1407	.4	1451	1.5	1476	1.9	1498	2.6	1523	13.9

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1498	.2

Bank Sta: Left Right Coeff Contr. Expan.

1021	1498	.3	.5

Ineffective Flow

num= 2

Sta L Sta R Elev Permanent

1000	1021	19.9	F
1498	1523	19.9	F

Downstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	15.85	1523	19.9	15.85				

Downstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.3	1021	3.1	1037	2.4	1076	.8	1120	.6
1163	-.2	1202	-5	1252	-10.8	1301	-10.4	1332	-7.3
1383	-3.8	1424	-2.2	1468	-.8	1483	1.5	1504	3.1
1524	14.4								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1504	.2

Bank Sta: Left Right Coeff Contr. Expan.

1021	1504	.3	.5

Ineffective Flow

num= 2

Sta L Sta R Elev Permanent

1000	1021	17.9	F
1504	1524	17.9	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins = 19.9
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 1259.5 Downstream= 1262.5

Upstream num= 2

Width	Elev	Width	Elev
15	-11.4	15	15.85

Downstream num= 2

Width	Elev	Width	Elev
15	-10.8	15	15.85

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 15.85

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)		7.07	Element	Inside BR US	Inside BR DS
W.S. US. (ft)		7.02	E.G. Elev (ft)	7.07	7.06
Q Total (cfs)		8376.00	W.S. Elev (ft)	7.01	7.01
Q Bridge (cfs)		8376.00	Crit W.S. (ft)	-4.24	-3.50
Q Weir (cfs)			Max Chl Dpth (ft)	18.41	17.81
Weir Sta Lft (ft)			Vel Total (ft/s)	1.90	1.79
Weir Sta Rgt (ft)			Flow Area (sq ft)	4411.58	4684.51
Weir Submerg			Froude # Chl	0.11	0.10
Weir Max Depth (ft)			Specif Force (cu ft)	26773.51	27971.56
Min El Weir Flow (ft)		19.91	Hydr Depth (ft)	9.55	10.01
Min El Prs (ft)		15.85	W.P. Total (ft)	491.14	504.71
Delta EG (ft)		0.01	Conv. Total (cfs)	708148.7	768568.3
Delta WS (ft)		0.00	Top Width (ft)	477.27	482.98
BR Open Area (sq ft)		8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)		1.90	C & E Loss (ft)		
BR Sluice Coef			Shear Total (lb/sq ft)	0.08	0.07
BR Sel Method		Yarnell	Power Total (lb/ft s)	0.15	0.12

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	8.72	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	8.65	E.G. Elev (ft)	8.73	8.72
Q Total (cfs)	11610.00	W.S. Elev (ft)	8.65	8.65
Q Bridge (cfs)	11610.00	Crit W.S. (ft)	-2.85	-2.33
Q Weir (cfs)		Max Chl Dpth (ft)	20.05	19.45
Weir Sta Lft (ft)		Vel Total (ft/s)	2.25	2.13
Weir Sta Rgt (ft)		Flow Area (sq ft)	5167.59	5450.34
Weir Submerg		Froude # Chl	0.12	0.11
Weir Max Depth (ft)		Specif Force (cu ft)	34927.60	36567.05
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	11.19	11.65
Min El Prs (ft)	15.85	W.P. Total (ft)	494.41	507.98
Delta EG (ft)	0.01	Conv. Total (cfs)	917681.7	984941.8
Delta WS (ft)	0.00	Top Width (ft)	483.88	489.25
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.25	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.10	0.09
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.23	0.20

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	9.72	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	9.64	E.G. Elev (ft)	9.73	9.72
Q Total (cfs)	13785.00	W.S. Elev (ft)	9.63	9.63
Q Bridge (cfs)	13785.00	Crit W.S. (ft)	-2.10	-1.66
Q Weir (cfs)		Max Chl Dpth (ft)	21.03	20.43
Weir Sta Lft (ft)		Vel Total (ft/s)	2.45	2.33
Weir Sta Rgt (ft)		Flow Area (sq ft)	5622.46	5911.11
Weir Submerg		Froude # Chl	0.12	0.12
Weir Max Depth (ft)		Specif Force (cu ft)	40479.04	42390.53
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	12.17	12.63
Min El Prs (ft)	15.85	W.P. Total (ft)	496.38	509.95
Delta EG (ft)	0.01	Conv. Total (cfs)	1053426.0	1124691.0
Delta WS (ft)	0.00	Top Width (ft)	487.85	493.02
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.45	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.12	0.11
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.30	0.25

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	11.21	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	11.10	E.G. Elev (ft)	11.21	11.20
Q Total (cfs)	17387.00	W.S. Elev (ft)	11.10	11.10

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Q Bridge (cfs)	17387.00	Crit W.S. (ft)	-1.03	-0.74
Q Weir (cfs)		Max Chl Dpth (ft)	22.50	21.90
Weir Sta Lft (ft)		Vel Total (ft/s)	2.76	2.64
Weir Sta Rgt (ft)		Flow Area (sq ft)	6297.42	6594.84
Weir Submerg		Froude # Chl	0.13	0.12
Weir Max Depth (ft)		Specif Force (cu ft)	49627.89	51951.50
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	13.63	14.09
Min El Prs (ft)	15.85	W.P. Total (ft)	499.30	512.87
Delta EG (ft)	0.02	Conv. Total (cfs)	1267553.0	1344635.0
Delta WS (ft)	0.00	Top Width (ft)	493.75	498.61
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.76	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.15	0.13
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.41	0.35

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 11.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
constriction * 001

Station Elevation Data		num=	16						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.3	1021	3.1	1037	2.4	1076	.8	1120	.6
1163	-.2	1202	-5	1252	-10.8	1301	-10.4	1332	-7.3
1383	-3.8	1424	-2.2	1468	-.8	1483	1.5	1504	3.1
1524	14.4								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1504	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1021	1504		360	360		.3	.5

Ineffective Flow		num=	2		
Sta L	Sta R	Elev	Permanent		
1000	1021	17.9	F		
1504	1524	17.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.01	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-4.07	Flow Area (sq ft)		4950.43	
E.G. Slope (ft/ft)	0.000094	Area (sq ft)	15.77	4950.43	13.55
Q Total (cfs)	8376.00	Flow (cfs)		8376.00	
Top Width (ft)	497.98	Top Width (ft)	8.06	483.00	6.93

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Vel Total (ft/s)	1.69	Avg. Vel. (ft/s)	1.69
Max Chl Dpth (ft)	17.81	Hydr. Depth (ft)	10.25
Conv. Total (cfs)	866215.1	Conv. (cfs)	866215.1
Length Wtd. (ft)	360.00	Wetted Per. (ft)	484.25
Min Ch El (ft)	-10.80	Shear (lb/sq ft)	0.06
Alpha	1.00	Stream Power (lb/ft s)	0.10
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2159.16 3198.87 1676.16
C & E Loss (ft)	0.01	Cum SA (acres)	1211.46 307.35 900.37

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.65	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-2.91	Flow Area (sq ft)		5740.80	
E.G. Slope (ft/ft)	0.000110	Area (sq ft)	31.71	5740.80	27.26
Q Total (cfs)	11610.00	Flow (cfs)		11610.00	
Top Width (ft)	504.25	Top Width (ft)	11.43	483.00	9.82
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)		2.02	
Max Chl Dpth (ft)	19.45	Hydr. Depth (ft)		11.89	
Conv. Total (cfs)	1108773.0	Conv. (cfs)		1108773.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.16	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3602.68	3572.52	2869.15
C & E Loss (ft)	0.01	Cum SA (acres)	1370.91	307.65	1388.81

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.63	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-2.24	Flow Area (sq ft)		6216.34	
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	43.96	6216.34	37.79
Q Total (cfs)	13785.00	Flow (cfs)		13785.00	
Top Width (ft)	508.02	Top Width (ft)	13.45	483.00	11.57
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)		2.22	
Max Chl Dpth (ft)	20.43	Hydr. Depth (ft)		12.87	
Conv. Total (cfs)	1266038.0	Conv. (cfs)		1266038.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.21	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	4555.50	3807.58	3866.51
C & E Loss (ft)	0.01	Cum SA (acres)	1402.08	307.77	1530.16

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

CROSS SECTION OUTPUT Profile #PF 4

			LPGA Tomoka River EC-RAS Report _ DEM		
			Left OB	Channel	Right OB
E.G. Elev (ft)	11.19	Element			
Vel Head (ft)	0.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.10	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-1.27	Flow Area (sq ft)		6921.99	
E.G. Slope (ft/ft)	0.000132	Area (sq ft)	65.81	6921.99	56.57
Q Total (cfs)	17387.00	Flow (cfs)		17387.00	
Top Width (ft)	513.61	Top Width (ft)	16.46	483.00	14.15
Vel Total (ft/s)	2.51	Avg. Vel. (ft/s)		2.51	
Max Chl Dpth (ft)	21.90	Hydr. Depth (ft)		14.33	
Conv. Total (cfs)	1514514.0	Conv. (cfs)		1514514.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	5988.36	4159.75	5544.14
C & E Loss (ft)	0.01	Cum SA (acres)	1443.99	307.95	1660.45

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.1

INPUT

Description: I-95

* 001

Station Elevation Data		num=	17						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	21.9	1100	16.8	1240	5.5	1568	2	1643	2.4
1672	-2.9	1720	-12.5	1780	-10.1	1843	-4.6	1899	.2
1911	1.4	1922	2	1931	2	1972	3.1	2237	6.8
2350	8.3	2496	21.1						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1643	.04	1931	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1643	1931		4378	4378	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	7.01	Element			
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.94	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	1413.20	3592.51	706.97
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	1413.20	3592.51	706.97
Q Total (cfs)	8376.00	Flow (cfs)	263.98	8011.35	100.67
Top Width (ft)	1025.08	Top Width (ft)	420.80	288.00	316.28
Vel Total (ft/s)	1.47	Avg. Vel. (ft/s)	0.19	2.23	0.14
Max Chl Dpth (ft)	19.44	Hydr. Depth (ft)	3.36	12.47	2.24
Conv. Total (cfs)	747019.8	Conv. (cfs)	23543.3	714497.8	8978.7
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	420.88	290.00	316.33

Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.03	0.10	0.02
Alpha	2.21	Stream Power (lb/ft s)	0.00	0.22	0.00
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	2153.25	3163.56	1673.18
C & E Loss (ft)	0.00	Cum SA (acres)	1209.68	304.16	899.03

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.55	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	2109.64	4058.09	1314.66
E.G. Slope (ft/ft)	0.000152	Area (sq ft)	2109.64	4058.09	1314.66
Q Total (cfs)	11610.00	Flow (cfs)	549.21	10803.64	257.15
Top Width (ft)	1150.71	Top Width (ft)	440.83	288.00	421.89
Vel Total (ft/s)	1.55	Avg. Vel. (ft/s)	0.26	2.66	0.20
Max Chl Dpth (ft)	21.05	Hydr. Depth (ft)	4.79	14.09	3.12
Conv. Total (cfs)	940737.8	Conv. (cfs)	44501.5	875400.1	20836.1
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	440.97	290.00	421.95
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	2.74	Stream Power (lb/ft s)	0.01	0.35	0.01
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	3593.83	3532.03	2863.61
C & E Loss (ft)	0.01	Cum SA (acres)	1369.04	304.47	1387.03

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.53	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	2545.28	4338.86	1731.37
E.G. Slope (ft/ft)	0.000166	Area (sq ft)	2545.28	4338.86	1731.37
Q Total (cfs)	13785.00	Flow (cfs)	769.30	12598.59	417.10
Top Width (ft)	1173.91	Top Width (ft)	452.90	288.00	433.01
Vel Total (ft/s)	1.60	Avg. Vel. (ft/s)	0.30	2.90	0.24
Max Chl Dpth (ft)	22.03	Hydr. Depth (ft)	5.62	15.07	4.00
Conv. Total (cfs)	1070814.0	Conv. (cfs)	59759.2	978654.1	32400.4
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	453.09	290.00	433.11
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.06	0.15	0.04
Alpha	3.01	Stream Power (lb/ft s)	0.02	0.45	0.01
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	4544.80	3763.96	3859.20
C & E Loss (ft)	0.01	Cum SA (acres)	1400.15	304.58	1528.32

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.98	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	3214.01	4755.84	2370.27
E.G. Slope (ft/ft)	0.000185	Area (sq ft)	3214.01	4755.84	2370.27
Q Total (cfs)	17387.00	Flow (cfs)	1167.15	15495.14	724.71
Top Width (ft)	1208.36	Top Width (ft)	470.84	288.00	449.52
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	0.36	3.26	0.31
Max Chl Dpth (ft)	23.48	Hydr. Depth (ft)	6.83	16.51	5.27
Conv. Total (cfs)	1279612.0	Conv. (cfs)	85897.4	1140379.0	53335.8

			LPGA Tomoka River EC-RAS Report _ DEM		
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	471.08	290.00	449.69
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.08	0.19	0.06
Alpha	3.35	Stream Power (lb/ft s)	0.03	0.62	0.02
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	5974.81	4111.50	5534.11
C & E Loss (ft)	0.01	Cum SA (acres)	1441.98	304.77	1658.53

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 10

INPUT
 Description: SANDALWOOD LANE
 * 001

Station Elevation Data		num=	26
Sta	Elev	Sta	Elev
1300	20.6	1340	18.9
1485	6.8	1539	4.9
1696	-7.7	1744	-9.3
1907	.2	1977	1.9
2378	4	2541	5
2684	12		

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1300	.2	1598	.04
		1907	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1598	1907		3146	3146		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.45	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	211.25	3839.34	2464.84
E.G. Slope (ft/ft)	0.000102	Area (sq ft)	211.25	3839.34	2464.84
Q Total (cfs)	8175.00	Flow (cfs)	25.60	7707.17	442.23
Top Width (ft)	1080.12	Top Width (ft)	103.08	309.00	668.04
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)	0.12	2.01	0.18
Max Chl Dpth (ft)	15.75	Hydr. Depth (ft)	2.05	12.43	3.69
Conv. Total (cfs)	808230.8	Conv. (cfs)	2530.7	761978.6	43721.5
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	103.18	310.91	668.15
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	2.41	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	2071.62	2790.09	1513.79
C & E Loss (ft)	0.01	Cum SA (acres)	1183.36	274.16	849.57

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200

LPGA Tomoka River EC-RAS Report _ DEM					
W.S. Elev (ft)	7.96	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	413.10	4304.88	3496.55
E.G. Slope (ft/ft)	0.000127	Area (sq ft)	413.10	4304.88	3496.55
Q Total (cfs)	11317.00	Flow (cfs)	62.87	10399.42	854.71
Top Width (ft)	1179.19	Top Width (ft)	168.63	309.00	701.56
Vel Total (ft/s)	1.38	Avg. Vel. (ft/s)	0.15	2.42	0.24
Max Chl Dpth (ft)	17.26	Hydr. Depth (ft)	2.45	13.93	4.98
Conv. Total (cfs)	1003472.0	Conv. (cfs)	5574.8	922110.6	75786.7
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	168.75	310.91	701.71
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.11	0.04
Alpha	2.83	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	3467.06	3111.77	2621.83
C & E Loss (ft)	0.02	Cum SA (acres)	1338.41	274.47	1330.57

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	8.97	Wt. n-Val.	0.200	0.040	0.200
Vel Head (ft)	0.10	Reach Len. (ft)	3146.00	3146.00	3146.00
W.S. Elev (ft)	8.87	Flow Area (sq ft)	580.77	4588.27	4149.32
Crit W.S. (ft)		Area (sq ft)	580.77	4588.27	4149.32
E.G. Slope (ft/ft)	0.000141	Flow (cfs)	107.45	12159.87	1172.68
Q Total (cfs)	13440.00	Top Width (ft)	190.68	309.00	721.96
Top Width (ft)	1221.64	Avg. Vel. (ft/s)	0.19	2.65	0.28
Vel Total (ft/s)	1.44	Hydr. Depth (ft)	3.05	14.85	5.75
Max Chl Dpth (ft)	18.17	Conv. (cfs)	9061.6	1025486.0	98896.5
Conv. Total (cfs)	1133444.0	Wetted Per. (ft)	190.83	310.91	722.14
Length Wtd. (ft)	3146.00	Shear (lb/sq ft)	0.03	0.13	0.05
Min Ch El (ft)	-9.30	Stream Power (lb/ft s)	0.00	0.34	0.01
Alpha	3.06	Cum Volume (acre-ft)	4387.71	3315.35	3563.68
Frctn Loss (ft)	0.32	Cum SA (acres)	1367.81	274.58	1470.28
C & E Loss (ft)	0.02				

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	10.36	Wt. n-Val.	0.200	0.040	0.200
Vel Head (ft)	0.12	Reach Len. (ft)	3146.00	3146.00	3146.00
W.S. Elev (ft)	10.24	Flow Area (sq ft)	847.94	5010.43	5156.19
Crit W.S. (ft)		Area (sq ft)	847.94	5010.43	5156.19
E.G. Slope (ft/ft)	0.000160	Flow (cfs)	208.07	15006.20	1749.73
Q Total (cfs)	16964.00	Top Width (ft)	200.44	309.00	750.13
Top Width (ft)	1259.57	Avg. Vel. (ft/s)	0.25	2.99	0.34
Vel Total (ft/s)	1.54	Hydr. Depth (ft)	4.23	16.21	6.87
Max Chl Dpth (ft)	19.54	Conv. (cfs)	16465.3	1187520.0	138465.5
Conv. Total (cfs)	1342451.0	Wetted Per. (ft)	200.68	310.91	750.34
Length Wtd. (ft)	3146.00	Shear (lb/sq ft)	0.04	0.16	0.07
Min Ch El (ft)	-9.30	Stream Power (lb/ft s)	0.01	0.48	0.02
Alpha	3.35	Cum Volume (acre-ft)	5770.68	3620.72	5155.88
Frctn Loss (ft)	0.35	Cum SA (acres)	1408.25	274.76	1598.25
C & E Loss (ft)	0.02				

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 9

INPUT

Description: TWELVE OAKS TRAIL

*

001

Station Elevation Data		num=		40					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	20.4	1037	16.5	1077	7.6	1107	7.4	1160	1.3
1192	1	1198	.1	1214	-1.1	1230	-1.9	1250	-3.4
1280	-7.1	1315	-8.5	1343	-7.9	1389	-5.5	1412	-2.1
1430	-.6	1435	1.9	1472	1.8	1503	1	1563	1.1
1619	1	1695	.8	1737	1.4	1746	.9	1748	0
1763	-.8	1796	-2.6	1819	-4.1	1848	-6.1	1904	-5.3
1928	-2.4	1946	-.8	1948	1.1	1986	1.6	2018	1.8
2042	6.8	2053	10	2077	13.4	2094	15.4	2108	16.8

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1192	.04	1948	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1192	1948		4432	4432		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.21	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	266.94	6223.75	376.02
E.G. Slope (ft/ft)	0.000069	Area (sq ft)	266.94	6223.75	376.02
Q Total (cfs)	7885.00	Flow (cfs)	38.30	7787.40	59.30
Top Width (ft)	921.88	Top Width (ft)	74.69	756.00	91.19
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.14	1.25	0.16
Max Chl Dpth (ft)	14.71	Hydr. Depth (ft)	3.57	8.23	4.12
Conv. Total (cfs)	952064.3	Conv. (cfs)	4624.1	940280.1	7160.1
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	74.98	758.84	91.65
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.04	0.02
Alpha	1.17	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	2054.35	2426.70	1411.20
C & E Loss (ft)	0.00	Cum SA (acres)	1176.94	235.70	822.15

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	7.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.69	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	392.12	7340.40	515.41
E.G. Slope (ft/ft)	0.000075	Area (sq ft)	392.12	7340.40	515.41
Q Total (cfs)	10844.00	Flow (cfs)	56.72	10687.11	100.17
Top Width (ft)	968.47	Top Width (ft)	115.41	756.00	97.06
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)	0.14	1.46	0.19
Max Chl Dpth (ft)	16.19	Hydr. Depth (ft)	3.40	9.71	5.31
Conv. Total (cfs)	1256126.0	Conv. (cfs)	6570.5	1237951.0	11603.6

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Length Wtd. (ft)	4432.00	Wetted Per. (ft)	115.77	758.84	97.71
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.05	0.02
Alpha	1.21	Stream Power (lb/ft s)	0.00	0.07	0.00
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	3437.98	2691.24	2476.96
C & E Loss (ft)	0.01	Cum SA (acres)	1328.16	236.01	1301.73

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	8.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.59	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	498.20	8023.30	604.49
E.G. Slope (ft/ft)	0.000078	Area (sq ft)	498.20	8023.30	604.49
Q Total (cfs)	12859.00	Flow (cfs)	84.24	12644.34	130.43
Top Width (ft)	975.64	Top Width (ft)	119.47	756.00	100.17
Vel Total (ft/s)	1.41	Avg. Vel. (ft/s)	0.17	1.58	0.22
Max Chl Dpth (ft)	17.09	Hydr. Depth (ft)	4.17	10.61	6.03
Conv. Total (cfs)	1460170.0	Conv. (cfs)	9565.1	1435795.0	14810.2
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	119.93	758.84	100.94
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.05	0.03
Alpha	1.23	Stream Power (lb/ft s)	0.00	0.08	0.01
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	4348.75	2859.93	3392.01
C & E Loss (ft)	0.01	Cum SA (acres)	1356.61	236.12	1440.60

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	9.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.94	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	663.23	9041.81	742.55
E.G. Slope (ft/ft)	0.000082	Area (sq ft)	663.23	9041.81	742.55
Q Total (cfs)	16198.00	Flow (cfs)	135.03	15879.65	183.31
Top Width (ft)	986.32	Top Width (ft)	125.52	756.00	104.80
Vel Total (ft/s)	1.55	Avg. Vel. (ft/s)	0.20	1.76	0.25
Max Chl Dpth (ft)	18.44	Hydr. Depth (ft)	5.28	11.96	7.09
Conv. Total (cfs)	1787377.0	Conv. (cfs)	14900.1	1752249.0	20227.9
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	126.13	758.84	105.77
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.03	0.06	0.04
Alpha	1.26	Stream Power (lb/ft s)	0.01	0.11	0.01
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	5716.11	3113.27	4942.87
C & E Loss (ft)	0.01	Cum SA (acres)	1396.48	236.31	1567.37

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 8

INPUT

Description: PINE BLUFF DRIVE & FOREST OAK DRIVE
 *

Station Elevation Data num= 35

LPGA Tomoka River EC-RAS Report _ DEM

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	17.14	1045	20.8	1097	19.4	1140	16.8	1175	2.7
1271	2.2	1328	2.1	1398	2.3	1480	1.8	1523	1.4
1568	1.1	1607	.4	1614	-.7	1642	-3.7	1669	-6.2
1706	-10	1741	-13.3	1786	-11.9	1849	-7.3	1874	-3.5
1886	-1.5	1888	1.2	1903	1.1	1909	1.3	1973	2
2029	3	2073	4	2098	5	2148	6	2198	7
2261	8	2336	9	2361	10	2386	11	2429	12

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1607	.04	1888	.2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1607 1888 4924 4924 4924 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.84	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	1701.04	3881.94	707.53
E.G. Slope (ft/ft)	0.000085	Area (sq ft)	1701.04	3881.94	707.53
Q Total (cfs)	7988.00	Flow (cfs)	286.80	7604.78	96.43
Top Width (ft)	972.80	Top Width (ft)	439.79	281.00	252.01
Vel Total (ft/s)	1.27	Avg. Vel. (ft/s)	0.17	1.96	0.14
Max Chl Dpth (ft)	19.14	Hydr. Depth (ft)	3.87	13.81	2.81
Conv. Total (cfs)	866525.3	Conv. (cfs)	31111.1	824954.0	10460.1
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	440.42	283.71	252.06
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.02	0.07	0.01
Alpha	2.27	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	1954.24	1912.60	1356.08
C & E Loss (ft)	0.00	Cum SA (acres)	1150.76	182.95	804.69

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	7.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.23	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	2315.54	4273.02	1107.04
E.G. Slope (ft/ft)	0.000113	Area (sq ft)	2315.54	4273.02	1107.04
Q Total (cfs)	11022.00	Flow (cfs)	549.02	10275.21	197.77
Top Width (ft)	1048.86	Top Width (ft)	443.25	281.00	324.61
Vel Total (ft/s)	1.43	Avg. Vel. (ft/s)	0.24	2.40	0.18
Max Chl Dpth (ft)	20.53	Hydr. Depth (ft)	5.22	15.21	3.41
Conv. Total (cfs)	1038429.0	Conv. (cfs)	51725.4	968070.8	18632.4
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	444.14	283.71	324.68
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.04	0.11	0.02
Alpha	2.63	Stream Power (lb/ft s)	0.01	0.25	0.00
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)	3300.24	2100.44	2394.42
C & E Loss (ft)	0.00	Cum SA (acres)	1299.74	183.25	1280.28

CROSS SECTION OUTPUT Profile #PF 3

			LPGA Tomoka River EC-RAS Report _ DEM		
E.G. Elev (ft)	8.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.09	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	2694.92	4512.96	1407.23
E.G. Slope (ft/ft)	0.000129	Area (sq ft)	2694.92	4512.96	1407.23
Q Total (cfs)	13098.00	Flow (cfs)	754.88	12058.29	284.83
Top Width (ft)	1105.81	Top Width (ft)	445.37	281.00	379.44
Vel Total (ft/s)	1.52	Avg. Vel. (ft/s)	0.28	2.67	0.20
Max Chl Dpth (ft)	21.39	Hydr. Depth (ft)	6.05	16.06	3.71
Conv. Total (cfs)	1151783.0	Conv. (cfs)	66380.9	1060355.0	25047.2
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	446.43	283.71	379.51
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	2.85	Stream Power (lb/ft s)	0.01	0.34	0.01
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	4186.31	2222.18	3289.67
C & E Loss (ft)	0.00	Cum SA (acres)	1327.88	183.37	1416.20

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	9.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.36	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	3264.33	4870.96	1948.26
E.G. Slope (ft/ft)	0.000154	Area (sq ft)	3264.33	4870.96	1948.26
Q Total (cfs)	16542.00	Flow (cfs)	1127.95	14941.91	472.15
Top Width (ft)	1186.53	Top Width (ft)	448.53	281.00	457.00
Vel Total (ft/s)	1.64	Avg. Vel. (ft/s)	0.35	3.07	0.24
Max Chl Dpth (ft)	22.66	Hydr. Depth (ft)	7.28	17.33	4.26
Conv. Total (cfs)	1333176.0	Conv. (cfs)	90905.0	1204219.0	38052.2
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	449.83	283.71	457.08
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.07	0.17	0.04
Alpha	3.16	Stream Power (lb/ft s)	0.02	0.51	0.01
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	5516.31	2405.50	4805.99
C & E Loss (ft)	0.00	Cum SA (acres)	1367.27	183.55	1538.79

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 7

INPUT
 Description: TOMOKA VIEW DRIVE
 * 001

Station Elevation Data		num=	19
Sta	Elev	Sta	Elev
1000	18.37	1076	18.6
1192	-.2	1205	-2.5
1371	-9.2	1411	-2.5
2622	3	2684	4

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1000	.2	1191	.04
		1427	.2

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Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1191	1427		2187 2187	2187	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.41	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	14.75	3284.94	4936.98
E.G. Slope (ft/ft)	0.000090	Area (sq ft)	14.75	3284.94	4936.98
Q Total (cfs)	7489.00	Flow (cfs)	1.55	6644.73	842.72
Top Width (ft)	1552.06	Top Width (ft)	6.84	236.00	1309.22
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.11	2.02	0.17
Max Chl Dpth (ft)	18.11	Hydr. Depth (ft)	2.16	13.92	3.77
Conv. Total (cfs)	789694.9	Conv. (cfs)	163.6	700668.6	88862.7
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	8.09	238.75	1309.25
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	4.40	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	1857.26	1507.53	1037.05
C & E Loss (ft)	0.00	Cum SA (acres)	1125.52	153.73	716.45

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.67	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	24.58	3580.94	6594.81
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	24.58	3580.94	6594.81
Q Total (cfs)	10380.00	Flow (cfs)	3.53	8825.63	1550.84
Top Width (ft)	1579.13	Top Width (ft)	8.83	236.00	1334.30
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.14	2.46	0.24
Max Chl Dpth (ft)	19.37	Hydr. Depth (ft)	2.78	15.17	4.94
Conv. Total (cfs)	951512.4	Conv. (cfs)	323.2	809026.7	142162.6
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	10.44	238.75	1334.37
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.02	0.11	0.04
Alpha	5.00	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	3167.97	1656.53	1959.11
C & E Loss (ft)	0.00	Cum SA (acres)	1274.19	154.03	1186.52

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.44	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	31.87	3763.14	7630.89
E.G. Slope (ft/ft)	0.000136	Area (sq ft)	31.87	3763.14	7630.89
Q Total (cfs)	12366.00	Flow (cfs)	5.34	10260.09	2100.57
Top Width (ft)	1595.80	Top Width (ft)	10.06	236.00	1349.74
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)	0.17	2.73	0.28
Max Chl Dpth (ft)	20.14	Hydr. Depth (ft)	3.17	15.95	5.65
Conv. Total (cfs)	1059164.0	Conv. (cfs)	457.0	878789.9	179916.9
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	11.89	238.75	1349.83
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.02	0.13	0.05

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Alpha	5.28	Stream Power (lb/ft s)	0.00	0.37	0.01
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	4032.19	1754.42	2778.84
C & E Loss (ft)	0.00	Cum SA (acres)	1302.14	154.15	1318.47

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.59	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	44.52	4035.25	9200.44
E.G. Slope (ft/ft)	0.000162	Area (sq ft)	44.52	4035.25	9200.44
Q Total (cfs)	15670.00	Flow (cfs)	9.08	12567.83	3093.09
Top Width (ft)	1620.69	Top Width (ft)	11.89	236.00	1372.80
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)	0.20	3.11	0.34
Max Chl Dpth (ft)	21.29	Hydr. Depth (ft)	3.75	17.10	6.70
Conv. Total (cfs)	1230912.00	Conv. (cfs)	713.6	987229.9	242968.8
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	14.05	238.75	1372.92
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.03	0.17	0.07
Alpha	5.60	Stream Power (lb/ft s)	0.01	0.53	0.02
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	5329.29	1902.12	4175.86
C & E Loss (ft)	0.01	Cum SA (acres)	1341.25	154.33	1435.37

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.4

INPUT

Description:

Station		Elevation Data		num=	16				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.3	1064	9.2	1123	1.6	1224	1.2	1228	.4
1265	-3.5	1347	-10.2	1461	-10.3	1513	-2	1517	.9
1547	1.1	2602	2	2734	3	2871	4	3009	5
3421	10								

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1000	.2	1224	.04
		1517	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1224	1517		68	68		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.22	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	437.11	3636.77	4699.45
E.G. Slope (ft/ft)	0.000087	Area (sq ft)	437.11	3636.77	4699.45
Q Total (cfs)	7489.00	Flow (cfs)	68.25	6726.27	694.48
Top Width (ft)	1932.53	Top Width (ft)	129.13	293.00	1510.40
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.16	1.85	0.15

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Max Chl Dpth (ft)	15.52	Hydr. Depth (ft)	3.39	12.41	3.11
Conv. Total (cfs)	802436.1	Conv. (cfs)	7312.7	720710.8	74412.6
Length Wtd. (ft)	68.00	Wetted Per. (ft)	129.36	295.16	1510.41
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.02	0.07	0.02
Alpha	4.22	Stream Power (lb/ft s)	0.00	0.12	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1845.92	1333.78	795.15
C & E Loss (ft)	0.01	Cum SA (acres)	1122.11	140.45	645.67

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.42	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	597.30	3987.63	6567.17
E.G. Slope (ft/ft)	0.000113	Area (sq ft)	597.30	3987.63	6567.17
Q Total (cfs)	10380.00	Flow (cfs)	124.82	8930.81	1324.37
Top Width (ft)	2040.49	Top Width (ft)	138.42	293.00	1609.07
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.21	2.24	0.20
Max Chl Dpth (ft)	16.72	Hydr. Depth (ft)	4.32	13.61	4.08
Conv. Total (cfs)	976634.4	Conv. (cfs)	11744.5	840282.8	124607.1
Length Wtd. (ft)	68.00	Wetted Per. (ft)	138.73	295.16	1609.09
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.03	0.10	0.03
Alpha	4.99	Stream Power (lb/ft s)	0.01	0.21	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3152.36	1466.54	1628.70
C & E Loss (ft)	0.02	Cum SA (acres)	1270.49	140.75	1112.63

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.16	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	701.76	4204.24	7779.25
E.G. Slope (ft/ft)	0.000128	Area (sq ft)	701.76	4204.24	7779.25
Q Total (cfs)	12366.00	Flow (cfs)	169.01	10374.60	1822.39
Top Width (ft)	2107.15	Top Width (ft)	144.16	293.00	1669.99
Vel Total (ft/s)	0.97	Avg. Vel. (ft/s)	0.24	2.47	0.23
Max Chl Dpth (ft)	17.46	Hydr. Depth (ft)	4.87	14.35	4.66
Conv. Total (cfs)	1093883.0	Conv. (cfs)	14950.6	917726.2	161206.2
Length Wtd. (ft)	68.00	Wetted Per. (ft)	144.52	295.16	1670.01
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.04	0.11	0.04
Alpha	5.39	Stream Power (lb/ft s)	0.01	0.28	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4013.77	1554.41	2391.99
C & E Loss (ft)	0.03	Cum SA (acres)	1298.27	140.87	1242.66

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.27	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	865.90	4528.20	9676.05
E.G. Slope (ft/ft)	0.000149	Area (sq ft)	865.90	4528.20	9676.05
Q Total (cfs)	15670.00	Flow (cfs)	249.37	12686.42	2734.21
Top Width (ft)	2206.84	Top Width (ft)	152.75	293.00	1761.09

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Vel Total (ft/s)	1.04	Avg. Vel. (ft/s)	0.29	2.80	0.28
Max Chl Dpth (ft)	18.57	Hydr. Depth (ft)	5.67	15.45	5.49
Conv. Total (cfs)	1282841.0	Conv. (cfs)	20415.1	1038587.0	223838.7
Length Wtd. (ft)	68.00	Wetted Per. (ft)	153.18	295.16	1761.13
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.05	0.14	0.05
Alpha	5.89	Stream Power (lb/ft s)	0.02	0.40	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	5306.44	1687.15	3702.00
C & E Loss (ft)	0.04	Cum SA (acres)	1337.12	141.05	1356.70

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.3

INPUT

Description:

Station Elevation Data		num= 15							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	10.1	1030	1.6	1034	.6	1054	-2.7	1079	-5.4
1103	-8.1	1128	-9.3	1152	-10.3	1178	-11.1	1204	-13.4
1228	-11.4	1252	-7.1	1275	.7	1279	1.9	1298	9.7

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1030	.04	1279	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1030	1279		22.1	22.1		.3	.5

Ineffective Flow		num= 2		
Sta L	Sta R	Elev	Permanent	
1003	1030	14.6	F	
1279	1298	14.5	F	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.17	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-6.18	Flow Area (sq ft)		3204.01	
E.G. Slope (ft/ft)	0.000133	Area (sq ft)	20.22	3204.01	13.01
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	268.29	Top Width (ft)	11.33	249.00	7.96
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)		2.34	
Max Chl Dpth (ft)	18.57	Hydr. Depth (ft)		12.87	
Conv. Total (cfs)	648747.3	Conv. (cfs)		648747.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.25	
Frctn Loss (ft)		Cum Volume (acre-ft)	1845.56	1328.44	791.47
C & E Loss (ft)		Cum SA (acres)	1122.00	140.03	644.48

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.32	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.14	Flow Area (sq ft)		3490.80	
E.G. Slope (ft/ft)	0.000192	Area (sq ft)	35.38	3490.80	23.79
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	274.76	Top Width (ft)	14.99	249.00	10.77
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	19.72	Hydr. Depth (ft)		14.02	
Conv. Total (cfs)	748387.3	Conv. (cfs)		748387.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.50	
Frctn Loss (ft)		Cum Volume (acre-ft)	3151.87	1460.70	1623.56
C & E Loss (ft)		Cum SA (acres)	1270.37	140.33	1111.37

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.02	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.51	Flow Area (sq ft)		3665.71	
E.G. Slope (ft/ft)	0.000232	Area (sq ft)	46.69	3665.71	31.95
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	278.70	Top Width (ft)	17.22	249.00	12.48
Vel Total (ft/s)	3.37	Avg. Vel. (ft/s)		3.37	
Max Chl Dpth (ft)	20.42	Hydr. Depth (ft)		14.72	
Conv. Total (cfs)	811924.6	Conv. (cfs)		811924.6	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.71	
Frctn Loss (ft)		Cum Volume (acre-ft)	4013.19	1548.27	2385.90
C & E Loss (ft)		Cum SA (acres)	1298.14	140.44	1241.35

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.06	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.54	Flow Area (sq ft)		3923.72	
E.G. Slope (ft/ft)	0.000297	Area (sq ft)	66.24	3923.72	46.19
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	284.51	Top Width (ft)	20.51	249.00	15.00
Vel Total (ft/s)	3.99	Avg. Vel. (ft/s)		3.99	
Max Chl Dpth (ft)	21.46	Hydr. Depth (ft)		15.76	

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Conv. Total (cfs)	909386.9	Conv. (cfs)	909386.9		
Length Wtd. (ft)	1.00	Wetted Per. (ft)	251.78		
Min Ch El (ft)	-13.40	Shear (lb/sq ft)	0.29		
Alpha	1.00	Stream Power (lb/ft s)	1.15		
Frctn Loss (ft)		Cum Volume (acre-ft)	5305.71	1680.56	3694.41
C & E Loss (ft)		Cum SA (acres)	1336.98	140.63	1355.32

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

BRIDGE

RIVER: RIVER-1
REACH: Reach-1 RS: 6.25

INPUT
Description: Bridge #3

Distance from Upstream XS = 1
Deck/Roadway Width = 21
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1003 14.6 11.3	1298 14.5 11.1

Upstream Bridge Cross Section Data

Station Elevation Data	num=	15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1003 10.1 1030 1.6 1034 .6 1054 -2.7 1079 -5.4		
1103 -8.1 1128 -9.3 1152 -10.3 1178 -11.1 1204 -13.4		
1228 -11.4 1252 -7.1 1275 .7 1279 1.9 1298 9.7		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
1003 .2 1030 .04 1279 .2		

Bank Sta: Left Right	Coeff Contr.	Expan.
1030 1279	.3	.5

Ineffective Flow	num=	2
Sta L Sta R Elev Permanent		
1003 1030 14.6 F		
1279 1298 14.5 F		

Downstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1003 14.6 11.3	1298 14.5 11.1

Downstream Bridge Cross Section Data

Station Elevation Data	num=	15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1003 11 1027 2.1 1032 1.1 1054 -3.8 1079 -7.4		
1103 -9.6 1128 -9.3 1152 -11.6 1178 -13.2 1204 -13.3		
1228 -11.8 1254 -7.9 1275 .7 1278 1.8 1298 11		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1027	.04	1278	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1027	1278		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1003	1027	12.95	F		
1278	1298	12.95	F		

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	14.6
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1154.5	Downstream=	1152.5

Upstream	num=		2	
Width	Elev	Width	Elev	
17.6	-13.4	17.6	11.2	

Downstream	num=		2	
Width	Elev	Width	Elev	
17.6	-13.3	17.6	11.2	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell	KVal =	1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow	
Submerged Inlet Cd	=
Submerged Inlet + Outlet Cd	= .7905694
Max Low Cord	= 11.2

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	5.25	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5.17	E.G. Elev (ft)	5.26	5.25
Q Total (cfs)	7489.00	W.S. Elev (ft)	5.16	5.16
Q Bridge (cfs)	7489.00	Crit W.S. (ft)	-5.83	-6.70

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Q Weir (cfs)		Max Chl Dpth (ft)	18.56	18.46
Weir Sta Lft (ft)		Vel Total (ft/s)	2.56	2.38
Weir Sta Rgt (ft)		Flow Area (sq ft)	2929.09	3149.86
Weir Submerg		Froude # Chl	0.13	0.11
Weir Max Depth (ft)		Specif Force (cu ft)	21094.90	23938.78
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	12.66	13.50
Min El Prs (ft)	11.20	W.P. Total (ft)	265.18	270.03
Delta EG (ft)	0.02	Conv. Total (cfs)	539674.1	601842.7
Delta WS (ft)	0.01	Top Width (ft)	250.65	248.96
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.56	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.13	0.11
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.34	0.27

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

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BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	6.46	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.32	E.G. Elev (ft)	6.47	6.45
Q Total (cfs)	10380.00	W.S. Elev (ft)	6.31	6.31
Q Bridge (cfs)	10380.00	Crit W.S. (ft)	-4.71	-5.66
Q Weir (cfs)		Max Chl Dpth (ft)	19.71	19.61
Weir Sta Lft (ft)		Vel Total (ft/s)	3.25	3.04
Weir Sta Rgt (ft)		Flow Area (sq ft)	3194.52	3417.58
Weir Submerg		Froude # Chl	0.15	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	25060.16	28131.88
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	13.81	14.64
Min El Prs (ft)	11.20	W.P. Total (ft)	267.47	272.32
Delta EG (ft)	0.03	Conv. Total (cfs)	620048.8	685615.1
Delta WS (ft)	0.01	Top Width (ft)	257.09	254.55
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.25	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.21	0.18
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.68	0.55

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

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BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	7.20	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.02	E.G. Elev (ft)	7.22	7.19
Q Total (cfs)	12366.00	W.S. Elev (ft)	7.01	7.01
Q Bridge (cfs)	12366.00	Crit W.S. (ft)	-4.04	-5.02
Q Weir (cfs)		Max Chl Dpth (ft)	20.41	20.31
Weir Sta Lft (ft)		Vel Total (ft/s)	3.68	3.45
Weir Sta Rgt (ft)		Flow Area (sq ft)	3356.20	3580.66
Weir Submerg		Froude # Chl	0.17	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	27716.50	30924.21
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	14.50	15.34
Min El Prs (ft)	11.20	W.P. Total (ft)	268.87	273.72
Delta EG (ft)	0.04	Conv. Total (cfs)	670894.1	738479.4

Delta WS (ft)	0.02	Top Width (ft)	LPGA Tomoka River	EC-RAS Report _ DEM
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)	261.01	257.95
BR Open Vel (ft/s)	3.68	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.26	0.23
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.98	0.79

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

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BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	8.31	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	8.06	E.G. Elev (ft)	8.33	8.30
Q Total (cfs)	15670.00	W.S. Elev (ft)	8.04	8.04
Q Bridge (cfs)	15670.00	Crit W.S. (ft)	-3.02	-4.05
Q Weir (cfs)		Max Chl Dpth (ft)	21.44	21.34
Weir Sta Lft (ft)		Vel Total (ft/s)	4.36	4.10
Weir Sta Rgt (ft)		Flow Area (sq ft)	3594.29	3820.81
Weir Submerg		Froude # Chl	0.20	0.18
Weir Max Depth (ft)		Specif Force (cu ft)	31999.37	35401.98
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	15.53	16.37
Min El Prs (ft)	11.20	W.P. Total (ft)	270.93	275.78
Delta EG (ft)	0.05	Conv. Total (cfs)	748263.7	818758.8
Delta WS (ft)	0.02	Top Width (ft)	266.79	262.96
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.36	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.36	0.32
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.58	1.30

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 6.2

INPUT

Description:

Station Elevation Data	num=	15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1003 11 1027 2.1 1032 1.1 1054 -3.8 1079 -7.4		
1103 -9.6 1128 -9.3 1152 -11.6 1178 -13.2 1204 -13.3		
1228 -11.8 1254 -7.9 1275 .7 1278 1.8 1298 11		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
1003 .2 1027 .04 1278 .2		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1027	1278	74	74	74		.3	.5
Ineffective Flow	num=	2					
Sta L Sta R Elev	Permanent						

1003	1027	12.95	F
1278	1298	12.95	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.16	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-7.07	Flow Area (sq ft)		3444.22	
E.G. Slope (ft/ft)	0.000106	Area (sq ft)	12.63	3444.22	12.28
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	266.56	Top Width (ft)	8.25	251.00	7.31
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)		2.17	
Max Chl Dpth (ft)	18.46	Hydr. Depth (ft)		13.72	
Conv. Total (cfs)	726819.8	Conv. (cfs)		726819.8	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.20	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1845.55	1326.89	791.46
C & E Loss (ft)	0.01	Cum SA (acres)	1121.99	139.91	644.48

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.31	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-6.10	Flow Area (sq ft)		3732.13	
E.G. Slope (ft/ft)	0.000156	Area (sq ft)	23.88	3732.13	22.09
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	272.15	Top Width (ft)	11.35	251.00	9.80
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)		2.78	
Max Chl Dpth (ft)	19.61	Hydr. Depth (ft)		14.87	
Conv. Total (cfs)	830877.9	Conv. (cfs)		830877.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.14	
Alpha	1.00	Stream Power (lb/ft s)		0.40	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3151.85	1459.02	1623.55
C & E Loss (ft)	0.02	Cum SA (acres)	1270.36	140.21	1111.36

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.01	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-5.49	Flow Area (sq ft)		3907.50	
E.G. Slope (ft/ft)	0.000190	Area (sq ft)	32.46	3907.50	29.47
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	275.55	Top Width (ft)	13.23	251.00	11.32
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)		3.16	
Max Chl Dpth (ft)	20.31	Hydr. Depth (ft)		15.57	

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Conv. Total (cfs)	896963.9	Conv. (cfs)	896963.9		
Length Wtd. (ft)	74.00	Wetted Per. (ft)	254.38		
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.18		
Alpha	1.00	Stream Power (lb/ft s)	0.58		
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4013.17	1546.51	2385.88
C & E Loss (ft)	0.03	Cum SA (acres)	1298.13	140.33	1241.34

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.04	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-4.57	Flow Area (sq ft)		4165.76	
E.G. Slope (ft/ft)	0.000247	Area (sq ft)	47.50	4165.76	42.26
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	280.56	Top Width (ft)	16.01	251.00	13.56
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)		3.76	
Max Chl Dpth (ft)	21.34	Hydr. Depth (ft)		16.60	
Conv. Total (cfs)	997927.9	Conv. (cfs)		997927.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		0.95	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5305.68	1678.67	3694.39
C & E Loss (ft)	0.05	Cum SA (acres)	1336.97	140.51	1355.31

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.1

INPUT

Description: FEC RAILWAY BRIDGE

* 001

Station Elevation Data		num=	16						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	21.4	1134	11.5	1165	9	1184	3.5	1186	1.7
1267	-9.9	1316	-12.4	1361	-13.6	1464	-.2	1467	.8
1560	1	2326	2	2414	3	2439	4	2526	5
2801	10								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1184	.04	1467	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1184	1467	375	375	375	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

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E.G. Elev (ft)	5.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.16	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	4.78	3629.54	3537.99
E.G. Slope (ft/ft)	0.000089	Area (sq ft)	4.78	3629.54	3537.99
Q Total (cfs)	7489.00	Flow (cfs)	0.29	6936.84	551.87
Top Width (ft)	1356.78	Top Width (ft)	5.75	283.00	1068.03
Vel Total (ft/s)	1.04	Avg. Vel. (ft/s)	0.06	1.91	0.16
Max Chl Dpth (ft)	18.76	Hydr. Depth (ft)	0.83	12.83	3.31
Conv. Total (cfs)	792652.7	Conv. (cfs)	30.6	734211.1	58411.0
Length Wtd. (ft)	375.00	Wetted Per. (ft)	5.99	285.63	1068.07
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.00	0.07	0.02
Alpha	3.10	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	1845.54	1320.89	788.45
C & E Loss (ft)	0.00	Cum SA (acres)	1121.98	139.45	643.57

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.32	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	13.73	3956.32	4807.93
E.G. Slope (ft/ft)	0.000122	Area (sq ft)	13.73	3956.32	4807.93
Q Total (cfs)	10380.00	Flow (cfs)	1.38	9345.50	1033.12
Top Width (ft)	1424.28	Top Width (ft)	9.74	283.00	1131.54
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)	0.10	2.36	0.21
Max Chl Dpth (ft)	19.92	Hydr. Depth (ft)	1.41	13.98	4.25
Conv. Total (cfs)	941489.7	Conv. (cfs)	124.8	847658.4	93706.5
Length Wtd. (ft)	375.00	Wetted Per. (ft)	10.14	285.63	1131.59
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.01	0.11	0.03
Alpha	3.60	Stream Power (lb/ft s)	0.00	0.25	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3151.82	1452.49	1619.44
C & E Loss (ft)	0.00	Cum SA (acres)	1270.34	139.76	1110.39

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.02	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	21.46	4156.05	5620.22
E.G. Slope (ft/ft)	0.000142	Area (sq ft)	21.46	4156.05	5620.22
Q Total (cfs)	12366.00	Flow (cfs)	2.69	10949.13	1414.18
Top Width (ft)	1465.54	Top Width (ft)	12.18	283.00	1170.36
Vel Total (ft/s)	1.26	Avg. Vel. (ft/s)	0.13	2.63	0.25
Max Chl Dpth (ft)	20.62	Hydr. Depth (ft)	1.76	14.69	4.80
Conv. Total (cfs)	1039249.0	Conv. (cfs)	226.5	920173.8	118848.9
Length Wtd. (ft)	375.00	Wetted Per. (ft)	12.68	285.63	1170.41
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.01	0.13	0.04
Alpha	3.86	Stream Power (lb/ft s)	0.00	0.34	0.01
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	4013.12	1539.66	2381.08
C & E Loss (ft)	0.00	Cum SA (acres)	1298.11	139.87	1240.34

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.07	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	36.04	4451.33	6871.31
E.G. Slope (ft/ft)	0.000173	Area (sq ft)	36.04	4451.33	6871.31
Q Total (cfs)	15670.00	Flow (cfs)	5.94	13550.50	2113.56
Top Width (ft)	1526.53	Top Width (ft)	15.78	283.00	1227.75
Vel Total (ft/s)	1.38	Avg. Vel. (ft/s)	0.16	3.04	0.31
Max Chl Dpth (ft)	21.67	Hydr. Depth (ft)	2.28	15.73	5.60
Conv. Total (cfs)	1193069.0	Conv. (cfs)	452.2	1031696.0	160920.4
Length Wtd. (ft)	375.00	Wetted Per. (ft)	16.43	285.63	1227.81
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.02	0.17	0.06
Alpha	4.22	Stream Power (lb/ft s)	0.00	0.51	0.02
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	5305.61	1671.35	3688.52
C & E Loss (ft)	0.00	Cum SA (acres)	1336.95	140.06	1354.26

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 5.4

INPUT

Description:

Station Elevation Data				num=	18				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18.4	1018	17.2	1040	5.5	1048	3.5	1051	.9
1104	-3.9	1164	-11	1205	-11.3	1275	-9.6	1335	-.4
1341	.9	1399	1.1	1418	.9	1883	2	1908	3
1945	4	2020	5	2282	10				

Manning's n Values				num=	3		
Sta	n Val	Sta	n Val	Sta	n Val		
1000	.2	1048	.04	1341	.2		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1048	1341		89	89		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.12	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	5.24	3506.65	2194.79
E.G. Slope (ft/ft)	0.000110	Area (sq ft)	5.24	3506.65	2194.79
Q Total (cfs)	7489.00	Flow (cfs)	0.35	7116.62	372.04
Top Width (ft)	984.66	Top Width (ft)	6.47	293.00	685.19
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)	0.07	2.03	0.17
Max Chl Dpth (ft)	16.42	Hydr. Depth (ft)	0.81	11.97	3.20
Conv. Total (cfs)	713235.1	Conv. (cfs)	33.1	677770.0	35432.0
Length Wtd. (ft)	89.00	Wetted Per. (ft)	6.67	295.47	685.23
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	2.27	Stream Power (lb/ft s)	0.00	0.17	0.00

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Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1845.49	1290.17	763.77
C & E Loss (ft)	0.01	Cum SA (acres)	1121.93	136.97	636.02

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.25	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	14.55	3839.11	3005.99
E.G. Slope (ft/ft)	0.000151	Area (sq ft)	14.55	3839.11	3005.99
Q Total (cfs)	10380.00	Flow (cfs)	1.72	9682.76	695.52
Top Width (ft)	1047.06	Top Width (ft)	9.42	293.00	744.64
Vel Total (ft/s)	1.51	Avg. Vel. (ft/s)	0.12	2.52	0.23
Max Chl Dpth (ft)	17.55	Hydr. Depth (ft)	1.55	13.10	4.04
Conv. Total (cfs)	844975.9	Conv. (cfs)	140.3	788217.3	56618.3
Length Wtd. (ft)	89.00	Wetted Per. (ft)	9.85	295.47	744.70
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.01	0.12	0.04
Alpha	2.59	Stream Power (lb/ft s)	0.00	0.31	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3151.70	1418.94	1585.81
C & E Loss (ft)	0.02	Cum SA (acres)	1270.26	137.28	1102.31

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.95	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	21.52	4041.95	3534.05
E.G. Slope (ft/ft)	0.000176	Area (sq ft)	21.52	4041.95	3534.05
Q Total (cfs)	12366.00	Flow (cfs)	3.26	11408.53	954.21
Top Width (ft)	1084.64	Top Width (ft)	10.72	293.00	780.92
Vel Total (ft/s)	1.63	Avg. Vel. (ft/s)	0.15	2.82	0.27
Max Chl Dpth (ft)	18.25	Hydr. Depth (ft)	2.01	13.80	4.53
Conv. Total (cfs)	930920.3	Conv. (cfs)	245.4	858841.6	71833.3
Length Wtd. (ft)	89.00	Wetted Per. (ft)	11.32	295.47	780.98
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.02	0.15	0.05
Alpha	2.78	Stream Power (lb/ft s)	0.00	0.43	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4012.94	1504.37	2341.68
C & E Loss (ft)	0.03	Cum SA (acres)	1298.01	137.39	1231.94

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.97	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	33.45	4341.13	4358.78
E.G. Slope (ft/ft)	0.000216	Area (sq ft)	33.45	4341.13	4358.78
Q Total (cfs)	15670.00	Flow (cfs)	6.69	14229.34	1433.97
Top Width (ft)	1140.06	Top Width (ft)	12.64	293.00	834.43
Vel Total (ft/s)	1.79	Avg. Vel. (ft/s)	0.20	3.28	0.33
Max Chl Dpth (ft)	19.27	Hydr. Depth (ft)	2.65	14.82	5.22
Conv. Total (cfs)	1065332.0	Conv. (cfs)	455.0	967387.8	97489.2
Length Wtd. (ft)	89.00	Wetted Per. (ft)	13.50	295.47	834.50
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.03	0.20	0.07

Alpha	3.03	Stream Power (lb/ft s)	0.01	0.65	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5305.31	1633.51	3640.18
C & E Loss (ft)	0.04	Cum SA (acres)	1336.82	137.58	1345.38

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 5.3

INPUT

Description:

Station	Elevation	Data	num=	14
Sta	Elev	Sta	Elev	Sta
1036	11.2	1050	10	1062
1136	-9.1	1168	-11.7	1201
1294	-1.2	1303	2	1324

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
1036	.2	1062	.04
		1303	.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1062	1303		102.1	102.1	102.1		.3	.5
Ineffective Flow			num=	2					
Sta L	Sta R	Elev	Permanent						
1036	1062	15	F						
1303	1720	15	F						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.06	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.73	Flow Area (sq ft)		3012.89	
E.G. Slope (ft/ft)	0.000157	Area (sq ft)	2.00	3012.89	17.26
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	255.02	Top Width (ft)	2.74	241.00	11.28
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)		2.49	
Max Chl Dpth (ft)	16.76	Hydr. Depth (ft)		12.50	
Conv. Total (cfs)	597313.5	Conv. (cfs)		597313.5	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)		Cum Volume (acre-ft)	1845.49	1283.51	761.51
C & E Loss (ft)		Cum SA (acres)	1121.92	136.43	635.31

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.15	Reach Len. (ft)	1.00	1.00	1.00

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Crit W.S. (ft)	-4.68	Flow Area (sq ft)	3276.26	
E.G. Slope (ft/ft)	0.000228	Area (sq ft)	6.11	31.78
Q Total (cfs)	10380.00	Flow (cfs)	10380.00	
Top Width (ft)	261.09	Top Width (ft)	4.79	15.30
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	3.17	
Max Chl Dpth (ft)	17.85	Hydr. Depth (ft)	13.59	
Conv. Total (cfs)	686849.8	Conv. (cfs)	686849.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)	244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)	0.19	
Alpha	1.00	Stream Power (lb/ft s)	0.61	
Frctn Loss (ft)		Cum Volume (acre-ft)	3151.68	1582.71
C & E Loss (ft)		Cum SA (acres)	1270.25	1101.54

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.81	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.04	Flow Area (sq ft)		3435.04	
E.G. Slope (ft/ft)	0.000277	Area (sq ft)	9.67	3435.04	42.66
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	264.75	Top Width (ft)	6.02	241.00	17.73
Vel Total (ft/s)	3.60	Avg. Vel. (ft/s)		3.60	
Max Chl Dpth (ft)	18.51	Hydr. Depth (ft)		14.25	
Conv. Total (cfs)	743218.8	Conv. (cfs)		743218.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.87	
Frctn Loss (ft)		Cum Volume (acre-ft)	4012.91	1496.73	2338.02
C & E Loss (ft)		Cum SA (acres)	1297.99	136.85	1231.12

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.77	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.07	Flow Area (sq ft)		3665.80	
E.G. Slope (ft/ft)	0.000358	Area (sq ft)	16.30	3665.80	61.74
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	281.86	Top Width (ft)	7.82	241.00	33.04
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)		4.27	
Max Chl Dpth (ft)	19.47	Hydr. Depth (ft)		15.21	
Conv. Total (cfs)	828283.6	Conv. (cfs)		828283.6	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.34	
Alpha	1.00	Stream Power (lb/ft s)		1.43	
Frctn Loss (ft)		Cum Volume (acre-ft)	5305.26	1625.33	3635.66
C & E Loss (ft)		Cum SA (acres)	1336.80	137.03	1344.49

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

BRIDGE

RIVER: RIVER-1

REACH: Reach-1 RS: 5.25

INPUT

Description: Bridge #2

Distance from Upstream XS = 1

Deck/Roadway Width = 101

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1036		15	11.2		1324		15	11.2	

Upstream Bridge Cross Section Data

Station Elevation Data

num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1036	11.2	1050	10	1062	3.6	1066	.3	1095	-4.1
1136	-9.1	1168	-11.7	1201	-11.3	1234	-10	1267	-7.8
1294	-1.2	1303	2	1324	7.7	1720	10		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1036	.2	1062	.04	1303	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1062	1303		.3	.5

Ineffective Flow

num= 2

Sta L	Sta R	Elev	Permanent
1036	1062	15	F
1303	1720	15	F

Downstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1036		15	11.2		1324		15	11.2	

Downstream Bridge Cross Section Data

Station Elevation Data

num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11.2	1033	3.2	1045	2.1	1049	1.1	1070	-1.1
1103	-5.4	1136	-10.2	1169	-12.1	1203	-11.4	1235	-9.8
1267	-7	1298	-1.8	1335	1.3	1337	2.1	1345	3.1
1361	9.5								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1045	.04	1337	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1045	1337		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
1003	1045	13.2 F
1337	1361	13.2 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins = 15
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1182.5	Downstream=	1191
Upstream	num=	2		
Width	Elev	Width	Elev	
15	-11.7	15	11.2	
Downstream	num=	2		
Width	Elev	Width	Elev	
15	-12.1	15	11.2	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05
Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow
Submerged Inlet Cd =
Submerged Inlet + Outlet Cd = .7905694
Max Low Cord = 11.2

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	5.16	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5.06	E.G. Elev (ft)	5.17	5.14
Q Total (cfs)	7489.00	W.S. Elev (ft)	5.05	5.05
Q Bridge (cfs)	7489.00	Crit W.S. (ft)	-5.25	-5.47
Q Weir (cfs)		Max Chl Dpth (ft)	16.75	17.15
Weir Sta Lft (ft)		Vel Total (ft/s)	2.71	2.41
Weir Sta Rgt (ft)		Flow Area (sq ft)	2762.52	3101.12
Weir Submerg		Froude # Chl	0.14	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	19167.02	20622.83
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	12.22	11.20
Min El Prs (ft)	11.20	W.P. Total (ft)	262.53	321.55

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Delta EG (ft)	0.03	Conv. Total (cfs)	492788.0	521952.0
Delta WS (ft)	0.01	Top Width (ft)	239.98	308.84
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.71	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.15	0.12
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.41	0.30

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	6.31	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.15	E.G. Elev (ft)	6.33	6.29
Q Total (cfs)	10380.00	W.S. Elev (ft)	6.14	6.14
Q Bridge (cfs)	10380.00	Crit W.S. (ft)	-4.15	-4.36
Q Weir (cfs)		Max Chl Dpth (ft)	17.84	18.24
Weir Sta Lft (ft)		Vel Total (ft/s)	3.45	3.05
Weir Sta Rgt (ft)		Flow Area (sq ft)	3008.45	3402.54
Weir Submerg		Froude # Chl	0.17	0.13
Weir Max Depth (ft)		Specif Force (cu ft)	22789.02	24583.45
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	13.31	12.28
Min El Prs (ft)	11.20	W.P. Total (ft)	264.71	325.91
Delta EG (ft)	0.04	Conv. Total (cfs)	564933.8	603780.4
Delta WS (ft)	0.01	Top Width (ft)	246.03	315.64
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.45	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.24	0.19
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.83	0.59

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	7.01	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.81	E.G. Elev (ft)	7.04	6.98
Q Total (cfs)	12366.00	W.S. Elev (ft)	6.80	6.80
Q Bridge (cfs)	12366.00	Crit W.S. (ft)	-3.48	-3.69
Q Weir (cfs)		Max Chl Dpth (ft)	18.50	18.90
Weir Sta Lft (ft)		Vel Total (ft/s)	3.92	3.45
Weir Sta Rgt (ft)		Flow Area (sq ft)	3156.50	3584.01
Weir Submerg		Froude # Chl	0.18	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	25200.95	27213.82
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	13.97	12.94
Min El Prs (ft)	11.20	W.P. Total (ft)	266.02	328.53
Delta EG (ft)	0.06	Conv. Total (cfs)	610014.6	654890.9
Delta WS (ft)	0.02	Top Width (ft)	249.67	319.73
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.92	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.30	0.24
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.19	0.84

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	8.05	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.77	E.G. Elev (ft)	8.08	8.01
Q Total (cfs)	15670.00	W.S. Elev (ft)	7.75	7.75
Q Bridge (cfs)	15670.00	Crit W.S. (ft)	-2.49	-2.67
Q Weir (cfs)		Max Chl Dpth (ft)	19.45	19.85
Weir Sta Lft (ft)		Vel Total (ft/s)	4.65	4.07
Weir Sta Rgt (ft)		Flow Area (sq ft)	3371.28	3847.25
Weir Submerg		Froude # Chl	0.21	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	29060.82	31402.52
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	14.92	13.89
Min El Prs (ft)	11.20	W.P. Total (ft)	267.92	332.33
Delta EG (ft)	0.08	Conv. Total (cfs)	677526.8	731375.9
Delta WS (ft)	0.02	Top Width (ft)	254.78	325.67
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.65	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.42	0.33
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.95	1.35

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 5.2

INPUT

Description:

Station	Elevation	Data	num=	16						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta
1003	11.2	1033	3.2	1045	2.1	1049	1.1	1070	-1.1	
1103	-5.4	1136	-10.2	1169	-12.1	1203	-11.4	1235	-9.8	
1267	-7	1298	-1.8	1335	1.3	1337	2.1	1345	3.1	
1361	9.5									

Manning's n	Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1045	.04	1337	.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1045	1337		187	187	187		.3	.5
Ineffective Flow			num=	2					
Sta L	Sta R	Elev	Permanent						
1003	1045	13.2	F						
1337	1361	13.2	F						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.13	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.08	Wt. n-Val.	0.040		
W.S. Elev (ft)	5.05	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-5.95	Flow Area (sq ft)		3351.63	
E.G. Slope (ft/ft)	0.000141	Area (sq ft)	35.29	3351.63	24.40
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	323.84	Top Width (ft)	18.95	292.00	12.88
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)		2.23	
Max Chl Dpth (ft)	17.15	Hydr. Depth (ft)		11.48	
Conv. Total (cfs)	630942.8	Conv. (cfs)		630942.8	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.22	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	1845.44	1276.64	761.46
C & E Loss (ft)	0.02	Cum SA (acres)	1121.89	135.84	635.28

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.14	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-4.89	Flow Area (sq ft)		3669.38	
E.G. Slope (ft/ft)	0.000200	Area (sq ft)	58.13	3669.38	39.90
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	330.64	Top Width (ft)	23.03	292.00	15.60
Vel Total (ft/s)	2.83	Avg. Vel. (ft/s)		2.83	
Max Chl Dpth (ft)	18.24	Hydr. Depth (ft)		12.57	
Conv. Total (cfs)	733752.5	Conv. (cfs)		733752.5	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.44	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	3151.60	1404.16	1582.62
C & E Loss (ft)	0.04	Cum SA (acres)	1270.21	136.14	1101.50

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.80	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-4.24	Flow Area (sq ft)		3860.67	
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	74.02	3860.67	50.66
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	334.73	Top Width (ft)	25.49	292.00	17.24
Vel Total (ft/s)	3.20	Avg. Vel. (ft/s)		3.20	
Max Chl Dpth (ft)	18.90	Hydr. Depth (ft)		13.22	
Conv. Total (cfs)	798606.6	Conv. (cfs)		798606.6	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.63	

			LPGA Tomoka River EC-RAS Report _ DEM		
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	4012.81	1488.83	2337.92
C & E Loss (ft)	0.06	Cum SA (acres)	1297.96	136.26	1231.08

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.75	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-3.27	Flow Area (sq ft)		4138.17	
E.G. Slope (ft/ft)	0.000305	Area (sq ft)	99.94	4138.17	68.18
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	340.67	Top Width (ft)	29.05	292.00	19.62
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)		3.79	
Max Chl Dpth (ft)	19.85	Hydr. Depth (ft)		14.17	
Conv. Total (cfs)	896551.8	Conv. (cfs)		896551.8	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		1.02	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5305.13	1616.87	3635.51
C & E Loss (ft)	0.09	Cum SA (acres)	1336.76	136.44	1344.44

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

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 5.1

INPUT

Description: US HIGHWAY 1
 *

Station Elevation Data		num=	15
Sta	Elev	Sta	Elev
8724	10	9349	5
16108	-8.7	16152	-10.4
16322	-1.6	16374	2.7
16033	1.8	16073	1.8
16218	-11.2	16271	-7.7
16413	3.5	16484	6
16077	0	16303	-4.6
16549	10		

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
8724	.2	16073	.04
16073	.04	16374	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
16073	16374	2603	2603	2603	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

LPGA Tomoka River EC-RAS Report _ DEM					
E.G. Elev (ft)	5.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.05	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	11157.31	3512.19	110.15
E.G. Slope (ft/ft)	0.000091	Area (sq ft)	11157.31	3512.19	110.15
Q Total (cfs)	7489.00	Flow (cfs)	1107.86	6371.71	9.43
Top Width (ft)	7114.24	Top Width (ft)	6730.22	301.00	83.01
Vel Total (ft/s)	0.51	Avg. Vel. (ft/s)	0.10	1.81	0.09
Max Chl Dpth (ft)	16.25	Hydr. Depth (ft)	1.66	11.67	1.33
Conv. Total (cfs)	784905.1	Conv. (cfs)	116112.3	667805.0	987.9
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6730.22	303.30	83.05
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.01	0.07	0.01
Alpha	10.91	Stream Power (lb/ft s)	0.00	0.12	0.00
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	1821.42	1261.90	761.17
C & E Loss (ft)	0.00	Cum SA (acres)	1107.41	134.57	635.07

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.16	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	18676.94	3845.07	219.18
E.G. Slope (ft/ft)	0.000098	Area (sq ft)	18676.94	3845.07	219.18
Q Total (cfs)	10380.00	Flow (cfs)	2673.80	7681.09	25.11
Top Width (ft)	7282.00	Top Width (ft)	6868.47	301.00	112.53
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.14	2.00	0.11
Max Chl Dpth (ft)	17.36	Hydr. Depth (ft)	2.72	12.77	1.95
Conv. Total (cfs)	1049469.0	Conv. (cfs)	270334.6	776595.1	2538.8
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6868.47	303.30	112.59
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.02	0.08	0.01
Alpha	14.20	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	3111.39	1388.03	1582.07
C & E Loss (ft)	0.00	Cum SA (acres)	1255.42	134.87	1101.23

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.83	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	23308.02	4046.79	298.24
E.G. Slope (ft/ft)	0.000100	Area (sq ft)	23308.02	4046.79	298.24
Q Total (cfs)	12366.00	Flow (cfs)	3876.00	8450.15	39.85
Top Width (ft)	7376.66	Top Width (ft)	6952.24	301.00	123.42
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.17	2.09	0.13
Max Chl Dpth (ft)	18.03	Hydr. Depth (ft)	3.35	13.44	2.42
Conv. Total (cfs)	1237571.0	Conv. (cfs)	387904.1	845678.7	3988.4
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6952.24	303.30	123.50
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	14.94	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	3962.62	1471.86	2337.17
C & E Loss (ft)	0.00	Cum SA (acres)	1282.98	134.99	1230.78

CROSS SECTION OUTPUT Profile #PF 4

LPGA Tomoka River EC-RAS Report _ DEM

E.G. Elev (ft)	7.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.80	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	30170.33	4341.31	426.78
E.G. Slope (ft/ft)	0.000103	Area (sq ft)	30170.33	4341.31	426.78
Q Total (cfs)	15670.00	Flow (cfs)	5971.41	9630.88	67.71
Top Width (ft)	7514.86	Top Width (ft)	7074.54	301.00	139.32
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.20	2.22	0.16
Max Chl Dpth (ft)	19.00	Hydr. Depth (ft)	4.26	14.42	3.06
Conv. Total (cfs)	1546886.0	Conv. (cfs)	589476.1	950725.1	6684.6
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	7074.56	303.30	139.43
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.03	0.09	0.02
Alpha	15.11	Stream Power (lb/ft s)	0.01	0.20	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	5240.15	1598.67	3634.45
C & E Loss (ft)	0.00	Cum SA (acres)	1321.51	135.17	1344.10

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 4

INPUT

Description: 3RD SECTION SOUTH OF OLD DIXIE BEFORE US1

* 001

Station Elevation Data			num=	18						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
2744	10	3494	5	10000	1.2	10002	-7	10027	-3.3	
10065	-9.2	10087	-9.1	10114	-9.3	10195	-6.2	10210	-3.9	
10234	-.5	10237	1.3	10244	2.4	10264	3.8	10304	8.9	
10370	9.4	10433	9.5	10453	9.6					

Manning's n Values			num=	3					
Sta	n Val	Sta	n Val	Sta	n Val				
2744	.2	10000	.04	10237	.2				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	10000	10237		5815	5815	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.74	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	10721.38	2614.93	56.46
E.G. Slope (ft/ft)	0.000144	Area (sq ft)	10721.38	2614.93	56.46
Q Total (cfs)	7151.00	Flow (cfs)	1399.53	5744.48	6.99
Top Width (ft)	6330.43	Top Width (ft)	6059.06	237.00	34.36
Vel Total (ft/s)	0.53	Avg. Vel. (ft/s)	0.13	2.20	0.12
Max Chl Dpth (ft)	14.04	Hydr. Depth (ft)	1.77	11.03	1.64
Conv. Total (cfs)	595428.9	Conv. (cfs)	116532.3	478314.8	581.9
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6059.07	239.32	34.56
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.10	0.01

Alpha	13.61	Stream Power (lb/ft s)	0.00	0.22	0.00
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	1167.72	1078.84	756.20
C & E Loss (ft)	0.01	Cum SA (acres)	725.28	118.49	631.57

LPGA Tomoka River EC-RAS Report _ DEM

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	5.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.84	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	17852.63	2874.93	98.88
E.G. Slope (ft/ft)	0.000146	Area (sq ft)	17852.63	2874.93	98.88
Q Total (cfs)	9870.00	Flow (cfs)	3096.65	6757.97	15.38
Top Width (ft)	6911.36	Top Width (ft)	6631.40	237.00	42.97
Vel Total (ft/s)	0.47	Avg. Vel. (ft/s)	0.17	2.35	0.16
Max Chl Dpth (ft)	15.14	Hydr. Depth (ft)	2.69	12.13	2.30
Conv. Total (cfs)	818134.4	Conv. (cfs)	256684.1	560175.1	1275.2
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6631.40	239.32	43.23
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	16.89	Stream Power (lb/ft s)	0.00	0.26	0.00
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	2019.95	1187.24	1572.56
C & E Loss (ft)	0.00	Cum SA (acres)	852.07	118.80	1096.58

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.51	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	22341.96	3034.16	129.52
E.G. Slope (ft/ft)	0.000143	Area (sq ft)	22341.96	3034.16	129.52
Q Total (cfs)	11770.00	Flow (cfs)	4417.51	7330.35	22.14
Top Width (ft)	7017.42	Top Width (ft)	6732.18	237.00	48.24
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.20	2.42	0.17
Max Chl Dpth (ft)	15.81	Hydr. Depth (ft)	3.32	12.80	2.68
Conv. Total (cfs)	984001.3	Conv. (cfs)	369315.1	612835.1	1851.0
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6732.18	239.32	48.55
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.03	0.11	0.02
Alpha	17.14	Stream Power (lb/ft s)	0.01	0.27	0.00
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	2598.68	1260.29	2324.39
C & E Loss (ft)	0.00	Cum SA (acres)	874.11	118.91	1225.65

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.49	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	28999.90	3266.02	180.46
E.G. Slope (ft/ft)	0.000141	Area (sq ft)	28999.90	3266.02	180.46
Q Total (cfs)	14956.00	Flow (cfs)	6684.44	8236.90	34.66
Top Width (ft)	7171.83	Top Width (ft)	6878.92	237.00	55.91
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.23	2.52	0.19
Max Chl Dpth (ft)	16.79	Hydr. Depth (ft)	4.22	13.78	3.23
Conv. Total (cfs)	1258044.0	Conv. (cfs)	562270.9	692858.0	2915.4
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6878.93	239.32	56.28

			LPGA Tomoka River EC-RAS Report _ DEM		
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.04	0.12	0.03
Alpha	16.60	Stream Power (lb/ft s)	0.01	0.30	0.01
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	3472.24	1371.37	3616.31
C & E Loss (ft)	0.00	Cum SA (acres)	904.61	119.10	1338.27

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 3

INPUT
 Description: 2ND SECTION SOUTH OF OLD DIXIE HIGHWAY
 * 001

Station Elevation Data		num= 21							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3455	10	3955	5	6000	1.3	6002	.2	6010	-1
6050	-3	6073	-4.1	6100	-5.2	6125	-6.2	6150	-7.7
6170	-8.6	6200	-8.1	6220	-6.6	6245	-5.5	6270	-4.2
6290	-2.2	6300	-1.6	6308	-.7	6310	1	9355	5
10468	10								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
3455	.2	6000	.04	6310	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
6000	6310	6791	6791	6791	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.00	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	2021.02	2771.38	3435.45
E.G. Slope (ft/ft)	0.000111	Area (sq ft)	2021.02	2771.38	3435.45
Q Total (cfs)	5214.00	Flow (cfs)	193.83	4666.76	353.41
Top Width (ft)	4091.70	Top Width (ft)	1494.67	310.00	2287.02
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.10	1.68	0.10
Max Chl Dpth (ft)	12.60	Hydr. Depth (ft)	1.35	8.94	1.50
Conv. Total (cfs)	493905.3	Conv. (cfs)	18360.6	442066.8	33477.8
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	1494.68	311.47	2287.02
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	6.32	Stream Power (lb/ft s)	0.00	0.10	0.00
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)	317.20	719.31	523.12
C & E Loss (ft)	0.00	Cum SA (acres)	221.09	81.98	476.62

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

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

CROSS SECTION OUTPUT Profile #PF 2

LPGA Tomoka River EC-RAS Report _ DEM

E.G. Elev (ft)	5.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.06	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	3899.06	3097.58	6262.56
E.G. Slope (ft/ft)	0.000124	Area (sq ft)	3899.06	3097.58	6262.56
Q Total (cfs)	7242.00	Flow (cfs)	494.10	5913.94	833.96
Top Width (ft)	5418.24	Top Width (ft)	2050.66	310.00	3057.59
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.13	1.91	0.13
Max Chl Dpth (ft)	13.66	Hydr. Depth (ft)	1.90	9.99	2.05
Conv. Total (cfs)	651648.3	Conv. (cfs)	44460.1	532147.1	75041.1
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2050.66	311.47	3057.59
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	9.99	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	568.09	788.60	1147.96
C & E Loss (ft)	0.00	Cum SA (acres)	272.57	82.29	889.63

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	5.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.73	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	5300.07	3305.96	8368.11
E.G. Slope (ft/ft)	0.000125	Area (sq ft)	5300.07	3305.96	8368.11
Q Total (cfs)	8773.00	Flow (cfs)	812.67	6641.05	1319.29
Top Width (ft)	5635.09	Top Width (ft)	2117.87	310.00	3207.22
Vel Total (ft/s)	0.52	Avg. Vel. (ft/s)	0.15	2.01	0.16
Max Chl Dpth (ft)	14.33	Hydr. Depth (ft)	2.50	10.66	2.61
Conv. Total (cfs)	783551.8	Conv. (cfs)	72582.8	593138.4	117830.6
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2117.88	311.47	3207.22
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	11.46	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	1.18	Cum Volume (acre-ft)	753.65	837.11	1757.20
C & E Loss (ft)	0.00	Cum SA (acres)	283.40	82.40	1008.36

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	6.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.71	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	7419.48	3609.18	11611.69
E.G. Slope (ft/ft)	0.000127	Area (sq ft)	7419.48	3609.18	11611.69
Q Total (cfs)	11307.00	Flow (cfs)	1388.64	7727.10	2191.27
Top Width (ft)	5950.64	Top Width (ft)	2215.69	310.00	3424.95
Vel Total (ft/s)	0.50	Avg. Vel. (ft/s)	0.19	2.14	0.19
Max Chl Dpth (ft)	15.31	Hydr. Depth (ft)	3.35	11.64	3.39

			LPGA Tomoka River EC-RAS Report _ DEM		
Conv. Total (cfs)	1004630.0	Conv. (cfs)	123380.6	686554.3	194694.8
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2215.70	311.47	3424.96
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.03	0.09	0.03
Alpha	12.60	Stream Power (lb/ft s)	0.00	0.20	0.01
Frctn Loss (ft)	1.16	Cum Volume (acre-ft)	1041.36	912.47	2829.22
C & E Loss (ft)	0.00	Cum SA (acres)	297.57	82.58	1105.93

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 2

INPUT

Description: 1ST SECTION SOUTH OF OLD DIXIE HIGHWAY

* 001

Station Elevation Data		num=		21					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
324	10	511	5	750	1.5	1500	1	1501	-.3
1513	-1	1526	-1.8	1542	-2.2	1573	-4.1	1592	-5.7
1612	-6.4	1630	-8.5	1675	-9.7	1705	-6.9	1730	-4.6
1750	-2.6	1760	-1.5	1770	-.3	1772	1	6386	5
7074	10								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
324	.2	1500	.04	1772	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1500	1772		4000	4000		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	2.88	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	1289.02	2190.39	2042.32
E.G. Slope (ft/ft)	0.000241	Area (sq ft)	1289.02	2190.39	2042.32
Q Total (cfs)	5471.00	Flow (cfs)	196.94	5048.07	225.98
Top Width (ft)	3286.98	Top Width (ft)	844.36	272.00	2170.63
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.15	2.30	0.11
Max Chl Dpth (ft)	12.58	Hydr. Depth (ft)	1.53	8.05	0.94
Conv. Total (cfs)	352726.1	Conv. (cfs)	12697.3	325459.2	14569.6
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	844.37	273.82	2170.63
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.02	0.12	0.01
Alpha	4.99	Stream Power (lb/ft s)	0.00	0.28	0.00
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	59.18	332.54	96.13
C & E Loss (ft)	0.00	Cum SA (acres)	38.77	36.61	129.15

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

the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	3.84	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	2132.63	2451.98	4663.29
E.G. Slope (ft/ft)	0.000254	Area (sq ft)	2132.63	2451.98	4663.29
Q Total (cfs)	7399.00	Flow (cfs)	445.24	6256.04	697.72
Top Width (ft)	4462.00	Top Width (ft)	910.03	272.00	3279.97
Vel Total (ft/s)	0.80	Avg. Vel. (ft/s)	0.21	2.55	0.15
Max Chl Dpth (ft)	13.54	Hydr. Depth (ft)	2.34	9.01	1.42
Conv. Total (cfs)	464545.7	Conv. (cfs)	27954.4	392784.8	43806.5
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	910.04	273.82	3279.97
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.04	0.14	0.02
Alpha	8.61	Stream Power (lb/ft s)	0.01	0.36	0.00
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	97.92	356.01	296.29
C & E Loss (ft)	0.01	Cum SA (acres)	41.78	36.92	395.61

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	4.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.50	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	2749.09	2631.78	7083.38
E.G. Slope (ft/ft)	0.000254	Area (sq ft)	2749.09	2631.78	7083.38
Q Total (cfs)	8920.00	Flow (cfs)	658.53	7042.59	1218.88
Top Width (ft)	5269.61	Top Width (ft)	955.16	272.00	4042.44
Vel Total (ft/s)	0.72	Avg. Vel. (ft/s)	0.24	2.68	0.17
Max Chl Dpth (ft)	14.20	Hydr. Depth (ft)	2.88	9.68	1.75
Conv. Total (cfs)	559766.6	Conv. (cfs)	41325.7	441951.1	76489.8
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	955.19	273.82	4042.45
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.05	0.15	0.03
Alpha	11.06	Stream Power (lb/ft s)	0.01	0.41	0.00
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	126.22	374.26	552.75
C & E Loss (ft)	0.01	Cum SA (acres)	43.86	37.03	443.25

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	5.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.51	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	3738.08	2904.75	11590.08
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	3738.08	2904.75	11590.08
Q Total (cfs)	11547.00	Flow (cfs)	1031.23	8074.23	2441.54
Top Width (ft)	5963.92	Top Width (ft)	1008.00	272.00	4683.91
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.28	2.78	0.21

Max Chl Dpth (ft)	15.21	Hydr. Depth (ft)	3.71	10.68	2.47
Conv. Total (cfs)	745033.1	Conv. (cfs)	66536.8	520963.9	157532.4
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	1008.04	273.82	4683.92
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.06	0.16	0.04
Alpha	13.51	Stream Power (lb/ft s)	0.02	0.44	0.01
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	171.63	404.71	1020.64
C & E Loss (ft)	0.01	Cum SA (acres)	46.28	37.22	473.85

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 1.4

INPUT
Description: very wide flood plain, distance criteria very large
* 001

Station	Elevation	Data	num=	17						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
1000	9	1051	7.3	1092	5.3	1123	4.5	1126	1.3	
1131	1.2	1183	-10.3	1222	-13.7	1263	-10.6	1294	-7.1	
1327	.1	1340	2.4	1364	2.3	1394	2.1	1436	1.6	
4900	2.5	4982	10							

Manning's	n	Values	num=	3
Sta	n	Val	Sta	n
1000	.2	1123	.04	1340
				.2

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff Contr.	Expan.
	1123	1340	83	83	83		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	1.76	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		1947.99	50.32
E.G. Slope (ft/ft)	0.000300	Area (sq ft)		1947.99	50.32
Q Total (cfs)	5470.00	Flow (cfs)		5468.80	1.20
Top Width (ft)	839.96	Top Width (ft)		210.81	629.15
Vel Total (ft/s)	2.74	Avg. Vel. (ft/s)		2.81	0.02
Max Chl Dpth (ft)	15.46	Hydr. Depth (ft)		9.24	0.08
Conv. Total (cfs)	315889.0	Conv. (cfs)		315819.6	69.4
Length Wtd. (ft)	83.00	Wetted Per. (ft)		213.65	629.15
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.17	0.00
Alpha	1.05	Stream Power (lb/ft s)		0.48	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		142.54	0.05
C & E Loss (ft)	0.00	Cum SA (acres)		14.45	0.60

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.43	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2091.69	1373.86
E.G. Slope (ft/ft)	0.000431	Area (sq ft)		2091.69	1373.86
Q Total (cfs)	7396.00	Flow (cfs)		7278.04	117.95
Top Width (ft)	3523.06	Top Width (ft)		215.06	3308.00
Vel Total (ft/s)	2.13	Avg. Vel. (ft/s)		3.48	0.09
Max Chl Dpth (ft)	16.13	Hydr. Depth (ft)		9.73	0.42
Conv. Total (cfs)	356265.8	Conv. (cfs)		350583.8	5681.9
Length Wtd. (ft)	83.00	Wetted Per. (ft)		218.25	3308.00
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.26	0.01
Alpha	2.62	Stream Power (lb/ft s)		0.90	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		147.39	19.10
C & E Loss (ft)	0.00	Cum SA (acres)		14.56	93.14

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	3.02	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2218.42	3462.13
E.G. Slope (ft/ft)	0.000470	Area (sq ft)		2218.42	3462.13
Q Total (cfs)	8914.00	Flow (cfs)		8366.94	547.06
Top Width (ft)	3781.33	Top Width (ft)		215.62	3565.72
Vel Total (ft/s)	1.57	Avg. Vel. (ft/s)		3.77	0.16
Max Chl Dpth (ft)	16.72	Hydr. Depth (ft)		10.29	0.97
Conv. Total (cfs)	410965.7	Conv. (cfs)		385744.3	25221.4
Length Wtd. (ft)	83.00	Wetted Per. (ft)		219.06	3565.75
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.30	0.03
Alpha	5.42	Stream Power (lb/ft s)		1.12	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		151.57	68.57
C & E Loss (ft)	0.02	Cum SA (acres)		14.65	93.93

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	4.09	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2447.96	7255.62
E.G. Slope (ft/ft)	0.000457	Area (sq ft)		2447.96	7255.62
Q Total (cfs)	11522.00	Flow (cfs)		9675.32	1846.68
Top Width (ft)	3793.94	Top Width (ft)		216.61	3577.33
Vel Total (ft/s)	1.19	Avg. Vel. (ft/s)		3.95	0.25
Max Chl Dpth (ft)	17.79	Hydr. Depth (ft)		11.30	2.03
Conv. Total (cfs)	538906.1	Conv. (cfs)		452533.3	86372.8
Length Wtd. (ft)	83.00	Wetted Per. (ft)		220.52	3577.41
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.32	0.06
Alpha	9.31	Stream Power (lb/ft s)		1.25	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		158.95	155.36
C & E Loss (ft)	0.05	Cum SA (acres)		14.78	94.54

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 1.3

INPUT

Description:

Station		Elevation Data		num=	11						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1012	-.3	1026	-4.3	1052	-10.9	1079	-12.8		
1142	-10.5	1167	-5.7	1194	-1.1	1202	-.2	1209	.4		
1225	11.6										

Manning's n Values		num=	3			
Sta	n Val	Sta	n Val	Sta	n Val	
1000	.2	1000	.04	1225	.2	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1000	1225		34.1	34.1		.3	.5

Ineffective Flow		num=	2		
Sta L	Sta R	Elev	Permanent		
1000	1000	16.8	F		
1225	1225	15.3	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.040	
W.S. Elev (ft)	1.73	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-7.00	Flow Area (sq ft)		1926.67	
E.G. Slope (ft/ft)	0.000293	Area (sq ft)		1926.67	
Q Total (cfs)	5470.00	Flow (cfs)		5470.00	
Top Width (ft)	200.63	Top Width (ft)		200.63	
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)		2.84	
Max Chl Dpth (ft)	14.53	Hydr. Depth (ft)		9.60	
Conv. Total (cfs)	319362.9	Conv. (cfs)		319362.9	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		204.41	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.49	
Frctn Loss (ft)		Cum Volume (acre-ft)		138.84	
C & E Loss (ft)		Cum SA (acres)		14.06	

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.38	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-6.04	Flow Area (sq ft)		2056.88	
E.G. Slope (ft/ft)	0.000437	Area (sq ft)		2056.88	
Q Total (cfs)	7396.00	Flow (cfs)		7396.00	

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Top Width (ft)	202.11	Top Width (ft)	202.11	
Vel Total (ft/s)	3.60	Avg. Vel. (ft/s)	3.60	
Max Chl Dpth (ft)	15.18	Hydr. Depth (ft)	10.18	
Conv. Total (cfs)	353864.0	Conv. (cfs)	353864.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)	206.38	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)	0.27	
Alpha	1.00	Stream Power (lb/ft s)	0.98	
Frctn Loss (ft)		Cum Volume (acre-ft)	143.44	17.79
C & E Loss (ft)		Cum SA (acres)	14.16	89.99

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.91	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.37	Flow Area (sq ft)		2164.30	
E.G. Slope (ft/ft)	0.000541	Area (sq ft)		2164.30	
Q Total (cfs)	8914.00	Flow (cfs)		8914.00	
Top Width (ft)	203.31	Top Width (ft)		203.31	
Vel Total (ft/s)	4.12	Avg. Vel. (ft/s)		4.12	
Max Chl Dpth (ft)	15.71	Hydr. Depth (ft)		10.65	
Conv. Total (cfs)	383194.4	Conv. (cfs)		383194.4	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		208.00	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.35	
Alpha	1.00	Stream Power (lb/ft s)		1.45	
Frctn Loss (ft)		Cum Volume (acre-ft)		147.40	65.27
C & E Loss (ft)		Cum SA (acres)		14.25	90.53

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.040	
W.S. Elev (ft)	3.82	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.32	Flow Area (sq ft)		2350.29	
E.G. Slope (ft/ft)	0.000699	Area (sq ft)		2350.29	
Q Total (cfs)	11522.00	Flow (cfs)		11522.00	
Top Width (ft)	205.39	Top Width (ft)		205.39	
Vel Total (ft/s)	4.90	Avg. Vel. (ft/s)		4.90	
Max Chl Dpth (ft)	16.62	Hydr. Depth (ft)		11.44	
Conv. Total (cfs)	435757.2	Conv. (cfs)		435757.2	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		210.78	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		2.39	
Frctn Loss (ft)		Cum Volume (acre-ft)		154.38	148.45
C & E Loss (ft)		Cum SA (acres)		14.38	91.13

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.25

INPUT
 Description: Bridge #1

Distance from Upstream XS = 1
 Deck/Roadway Width = 33
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	3
Sta	Hi Cord Lo Cord
1000	16.8 13.8
1114	16.6 13.6
1225	15.3 12.3

Upstream Bridge Cross Section Data

Station	Elevation	Data	num=	11	
Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1012	-.3	1026	-4.3
1142	-10.5	1167	-5.7	1194	-1.1
1225	11.6			1202	-.2
				1079	-12.8
				1209	.4

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
1000	.2	1000	.04
		1225	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
1000		1225	.3		.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev
1000	1000	16.8
1225	1225	15.3

Downstream Deck/Roadway Coordinates

num=	3
Sta	Hi Cord Lo Cord
1000	16.8 13.8
1114	16.6 13.6
1225	15.3 12.3

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	13	
Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1009	3.1	1011	.1
1084	-13.2	1120	-10.8	1148	-11
1209	.1	1209.5	6	1225	11.6
				1031	-4.7
				1057	-10
				1197	-1.1

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
1000	.2	1000	.04
		1225	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
1000		1225	.3		.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev
1000	1000	14.45
1225	1225	13.9

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 = .98
 Elevation at which weir flow begins = 16.6
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1112.5	Downstream=	1112.5
Upstream	num=	2		
Width	Elev	Width	Elev	
10.5	-12.8	10.5	13.6	
Downstream	num=	2		
Width	Elev	Width	Elev	
10.5	-13.2	10.5	13.6	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05
 Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow
 Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .7905694
 Max Low Cord = 13.6

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	1.86	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	1.73	E.G. Elev (ft)	1.87	1.87
Q Total (cfs)	5470.00	W.S. Elev (ft)	1.72	1.72
Q Bridge (cfs)	5470.00	Crit W.S. (ft)	-6.66	-6.55
Q Weir (cfs)		Max Chl Dpth (ft)	14.52	14.92
Weir Sta Lft (ft)		Vel Total (ft/s)	3.06	3.06
Weir Sta Rgt (ft)		Flow Area (sq ft)	1784.80	1786.28
Weir Submerg		Froude # Chl	0.18	0.18
Weir Max Depth (ft)		Specif Force (cu ft)	10668.08	10589.37
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	9.39	9.47
Min El Prs (ft)	13.60	W.P. Total (ft)	220.46	219.52
Delta EG (ft)	0.01	Conv. Total (cfs)	267320.2	268454.9
Delta WS (ft)	0.01	Top Width (ft)	190.11	188.72
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.06	C & E Loss (ft)		

		LPGA Tomoka River EC-RAS Report _ DEM	
BR Sluice Coef		Shear Total (lb/sq ft)	0.21 0.21
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.65 0.65

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

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BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2.58	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2.38	E.G. Elev (ft)	2.59	2.59
Q Total (cfs)	7396.00	W.S. Elev (ft)	2.36	2.36
Q Bridge (cfs)	7396.00	Crit W.S. (ft)	-5.66	-5.56
Q Weir (cfs)		Max Chl Dpth (ft)	15.16	15.56
Weir Sta Lft (ft)		Vel Total (ft/s)	3.88	3.88
Weir Sta Rgt (ft)		Flow Area (sq ft)	1906.58	1906.87
Weir Submerg		Froude # Chl	0.22	0.22
Weir Max Depth (ft)		Specif Force (cu ft)	12216.54	12138.72
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	9.95	10.08
Min El Prs (ft)	13.60	W.P. Total (ft)	223.69	222.20
Delta EG (ft)	0.02	Conv. Total (cfs)	295529.1	296918.0
Delta WS (ft)	0.02	Top Width (ft)	191.56	189.20
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.88	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.33	0.33
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.29	1.29

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	3.17	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2.91	E.G. Elev (ft)	3.19	3.19
Q Total (cfs)	8914.00	W.S. Elev (ft)	2.88	2.88
Q Bridge (cfs)	8914.00	Crit W.S. (ft)	-4.95	-4.86
Q Weir (cfs)		Max Chl Dpth (ft)	15.68	16.08
Weir Sta Lft (ft)		Vel Total (ft/s)	4.44	4.44
Weir Sta Rgt (ft)		Flow Area (sq ft)	2006.90	2005.74
Weir Submerg		Froude # Chl	0.24	0.24
Weir Max Depth (ft)		Specif Force (cu ft)	13576.93	13499.75
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	10.41	10.58
Min El Prs (ft)	13.60	W.P. Total (ft)	226.33	224.40
Delta EG (ft)	0.03	Conv. Total (cfs)	319389.6	320909.4
Delta WS (ft)	0.03	Top Width (ft)	192.75	189.59
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.44	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.43	0.43
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.92	1.91

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

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

BRIDGE OUTPUT Profile #PF 4

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E.G. US. (ft)	4.19	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	3.82	E.G. Elev (ft)	4.21	4.21
Q Total (cfs)	11522.00	W.S. Elev (ft)	3.78	3.78
Q Bridge (cfs)	11522.00	Crit W.S. (ft)	-3.86	-3.79
Q Weir (cfs)		Max Chl Dpth (ft)	16.58	16.98
Weir Sta Lft (ft)		Vel Total (ft/s)	5.28	5.30
Weir Sta Rgt (ft)		Flow Area (sq ft)	2180.32	2175.76
Weir Submerg		Froude # Chl	0.28	0.28
Weir Max Depth (ft)		Specif Force (cu ft)	16112.39	16035.98
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	11.19	11.43
Min El Prs (ft)	13.60	W.P. Total (ft)	230.85	228.23
Delta EG (ft)	0.04	Conv. Total (cfs)	361891.8	363386.0
Delta WS (ft)	0.04	Top Width (ft)	194.79	190.38
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.30	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.60	0.60
BR Sel Method	Yarnell	Power Total (lb/ft s)	3.16	3.17

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

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.2

INPUT

Description: very wide flood plain, distance criteria very large
 * 001

Station	Elevation	Data	num=	13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1009	3.1	1011	.1	1031	-4.7	1057	-10
1084	-13.2	1120	-10.8	1148	-11	1172	-5.8	1197	-1.1
1209	.1	1209.5	6	1225	11.6				

Manning's n	Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1000	.04	1225	.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1000	1225		112	112	112		.3	.5

Ineffective Flow	num=	2	
Sta L	Sta R	Elev	Permanent
1000	1000	14.45	F
1225	1225	13.9	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.040	
W.S. Elev (ft)	1.72	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-6.87	Flow Area (sq ft)		1923.00	

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E.G. Slope (ft/ft)	0.000294	Area (sq ft)	1923.00
Q Total (cfs)	5470.00	Flow (cfs)	5470.00
Top Width (ft)	199.22	Top Width (ft)	199.22
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)	2.84
Max Chl Dpth (ft)	14.92	Hydr. Depth (ft)	9.65
Conv. Total (cfs)	318770.9	Conv. (cfs)	318770.9
Length Wtd. (ft)	112.00	Wetted Per. (ft)	204.00
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.17
Alpha	1.00	Stream Power (lb/ft s)	0.49
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	137.45
C & E Loss (ft)	0.00	Cum SA (acres)	13.91

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.36	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-5.92	Flow Area (sq ft)		2050.28	
E.G. Slope (ft/ft)	0.000439	Area (sq ft)		2050.28	
Q Total (cfs)	7396.00	Flow (cfs)		7396.00	
Top Width (ft)	199.70	Top Width (ft)		199.70	
Vel Total (ft/s)	3.61	Avg. Vel. (ft/s)		3.61	
Max Chl Dpth (ft)	15.56	Hydr. Depth (ft)		10.27	
Conv. Total (cfs)	353084.9	Conv. (cfs)		353084.9	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		205.41	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		0.99	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		141.94	17.79
C & E Loss (ft)	0.00	Cum SA (acres)		14.01	89.99

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.88	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-5.25	Flow Area (sq ft)		2154.64	
E.G. Slope (ft/ft)	0.000544	Area (sq ft)		2154.64	
Q Total (cfs)	8914.00	Flow (cfs)		8914.00	
Top Width (ft)	200.09	Top Width (ft)		200.09	
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)		4.14	
Max Chl Dpth (ft)	16.08	Hydr. Depth (ft)		10.77	
Conv. Total (cfs)	382117.8	Conv. (cfs)		382117.8	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		206.56	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.35	
Alpha	1.00	Stream Power (lb/ft s)		1.47	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)		145.82	65.27
C & E Loss (ft)	0.00	Cum SA (acres)		14.10	90.53

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.040	
W.S. Elev (ft)	3.78	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-4.23	Flow Area (sq ft)		2334.05	
E.G. Slope (ft/ft)	0.000706	Area (sq ft)		2334.05	
Q Total (cfs)	11522.00	Flow (cfs)		11522.00	
Top Width (ft)	200.88	Top Width (ft)		200.88	
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)		4.94	
Max Chl Dpth (ft)	16.98	Hydr. Depth (ft)		11.62	
Conv. Total (cfs)	433748.1	Conv. (cfs)		433748.1	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		208.60	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		2.43	
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)		152.67	148.45
C & E Loss (ft)	0.04	Cum SA (acres)		14.23	91.13

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.1

INPUT

Description: old dixie highway

* 001

Station Elevation Data				num=	13				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	14.2	1119	10	1144	8.8	1178	5.1	1226	-10.9
1266	-15.8	1313	-9.8	1370	.4	1374	3.4	1403	2.3
1422	2.1	3770	2.1	3776	10				

Manning's n Values				num=	3				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1178	.04	1374	.2				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1178	1374		3200	3200		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.040	
W.S. Elev (ft)	1.68	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		1884.13	
E.G. Slope (ft/ft)	0.000282	Area (sq ft)		1884.13	
Q Total (cfs)	5470.00	Flow (cfs)		5470.00	
Top Width (ft)	183.45	Top Width (ft)		183.45	
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)		2.90	
Max Chl Dpth (ft)	17.48	Hydr. Depth (ft)		10.27	

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Conv. Total (cfs)	325918.2	Conv. (cfs)	325918.2
Length Wtd. (ft)	3200.00	Wetted Per. (ft)	187.51
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.18
Alpha	1.00	Stream Power (lb/ft s)	0.51
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	132.55
C & E Loss (ft)	0.00	Cum SA (acres)	13.41

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.30	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		1998.19	467.94
E.G. Slope (ft/ft)	0.000429	Area (sq ft)		1998.19	467.94
Q Total (cfs)	7396.00	Flow (cfs)		7371.55	24.45
Top Width (ft)	2553.13	Top Width (ft)		186.13	2367.01
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)		3.69	0.05
Max Chl Dpth (ft)	18.10	Hydr. Depth (ft)		10.74	0.20
Conv. Total (cfs)	356880.1	Conv. (cfs)	355700.3		1179.8
Length Wtd. (ft)	3200.00	Wetted Per. (ft)	190.49		2367.11
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.28		0.01
Alpha	1.51	Stream Power (lb/ft s)	1.04		0.00
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)	136.74		17.19
C & E Loss (ft)	0.01	Cum SA (acres)	13.51		86.94

Warning: Divided flow computed for this cross-section.

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.82	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2096.70	1716.91
E.G. Slope (ft/ft)	0.000516	Area (sq ft)		2096.70	1716.91
Q Total (cfs)	8914.00	Flow (cfs)		8680.96	233.04
Top Width (ft)	2569.79	Top Width (ft)		188.41	2381.38
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)		4.14	0.14
Max Chl Dpth (ft)	18.62	Hydr. Depth (ft)		11.13	0.72
Conv. Total (cfs)	392271.8	Conv. (cfs)	382016.5		10255.3
Length Wtd. (ft)	3200.00	Wetted Per. (ft)	193.03		2381.75
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.35		0.02
Alpha	3.06	Stream Power (lb/ft s)	1.45		0.00
Frctn Loss (ft)	1.86	Cum Volume (acre-ft)	140.36		63.06
C & E Loss (ft)	0.01	Cum SA (acres)	13.60		87.47

Warning: Divided flow computed for this cross-section.

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

CROSS SECTION OUTPUT Profile #PF 4

		LPGA Tomoka River		EC-RAS Report	_ DEM
E.G. Elev (ft)	4.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	3.74	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2270.76	3904.91
E.G. Slope (ft/ft)	0.000599	Area (sq ft)		2270.76	3904.91
Q Total (cfs)	11522.00	Flow (cfs)		10539.21	982.79
Top Width (ft)	2589.16	Top Width (ft)		191.92	2397.25
Vel Total (ft/s)	1.87	Avg. Vel. (ft/s)		4.64	0.25
Max Chl Dpth (ft)	19.54	Hydr. Depth (ft)		11.83	1.63
Conv. Total (cfs)	470769.5	Conv. (cfs)		430614.3	40155.2
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		196.88	2398.08
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.43	0.06
Alpha	5.66	Stream Power (lb/ft s)		2.00	0.02
Frctn Loss (ft)	2.53	Cum Volume (acre-ft)		146.75	143.43
C & E Loss (ft)	0.04	Cum SA (acres)		13.73	88.05

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 1

INPUT

Description: very wide flood plains most of the length of the river, distance

criteria * 001

not met in most cases,

* 001

*

001

mouth AT TOMOKA BASIN

* 001

Station Elevation Data			num= 13						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	14.2	1119	10	1144	8.8	1178	5.1	1226	-10.9
1266	-15.8	1313	-9.8	1370	.4	1374	1	1403	1.3
1422	1.1	6160	1.1	6176	10				

Manning's	n	Values	num=	3
Sta	n	Val	Sta	n
1000	.2	1178	.0333	1374
				.2

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	1178	1374	0	0	0		.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	0.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.033	
W.S. Elev (ft)	0.80	Reach Len. (ft)			
Crit W.S. (ft)	-8.00	Flow Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.000253	Area (sq ft)		1724.57	

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Q Total (cfs)	5465.00	Flow (cfs)	5465.00
Top Width (ft)	181.77	Top Width (ft)	181.77
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)	3.17
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)	9.49
Conv. Total (cfs)	343606.7	Conv. (cfs)	343606.7
Length Wtd. (ft)		Wetted Per. (ft)	185.28
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.15
Alpha	1.00	Stream Power (lb/ft s)	0.47
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

CROSS SECTION OUTPUT Profile #PF 2

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1.08	Wt. n-Val.		0.033	
Vel Head (ft)	0.28	Reach Len. (ft)			
W.S. Elev (ft)	0.80	Flow Area (sq ft)		1724.57	
Crit W.S. (ft)	-6.96	Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.000458	Flow (cfs)		7356.00	
Q Total (cfs)	7356.00	Top Width (ft)		181.77	
Top Width (ft)	181.77	Avg. Vel. (ft/s)		4.27	
Vel Total (ft/s)	4.27	Hydr. Depth (ft)		9.49	
Max Chl Dpth (ft)	16.60	Conv. (cfs)		343606.7	
Conv. Total (cfs)	343606.7	Wetted Per. (ft)		185.28	
Length Wtd. (ft)		Shear (lb/sq ft)		0.27	
Min Ch El (ft)	-15.80	Stream Power (lb/ft s)		1.14	
Alpha	1.00	Cum Volume (acre-ft)			
Frctn Loss (ft)		Cum SA (acres)			
C & E Loss (ft)					

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1.21	Wt. n-Val.		0.033	
Vel Head (ft)	0.41	Reach Len. (ft)			
W.S. Elev (ft)	0.80	Flow Area (sq ft)		1724.57	
Crit W.S. (ft)	-6.22	Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.000662	Flow (cfs)		8839.00	
Q Total (cfs)	8839.00	Top Width (ft)		181.77	
Top Width (ft)	181.77	Avg. Vel. (ft/s)		5.13	
Vel Total (ft/s)	5.13	Hydr. Depth (ft)		9.49	
Max Chl Dpth (ft)	16.60	Conv. (cfs)		343606.7	
Conv. Total (cfs)	343606.7	Wetted Per. (ft)		185.28	
Length Wtd. (ft)		Shear (lb/sq ft)		0.38	
Min Ch El (ft)	-15.80	Stream Power (lb/ft s)		1.97	
Alpha	1.00	Cum Volume (acre-ft)			
Frctn Loss (ft)		Cum SA (acres)			
C & E Loss (ft)					

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1.48	Wt. n-Val.		0.033	
Vel Head (ft)	0.68	Reach Len. (ft)			
W.S. Elev (ft)	0.80	Flow Area (sq ft)		1724.57	
Crit W.S. (ft)	-5.11				

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E.G. Slope (ft/ft)	0.001097	Area (sq ft)	1724.57
Q Total (cfs)	11383.00	Flow (cfs)	11383.00
Top Width (ft)	181.77	Top Width (ft)	181.77
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	6.60
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)	9.49
Conv. Total (cfs)	343606.7	Conv. (cfs)	343606.7
Length Wtd. (ft)		Wetted Per. (ft)	185.28
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.64
Alpha	1.00	Stream Power (lb/ft s)	4.21
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

SUMMARY OF MANNING'S N VALUES

River:RIVER-1

Reach	River Sta.	n1	n2	n3
Reach-1	29	.15	.04	.15
Reach-1	28	.15	.04	.15
Reach-1	27	.15	.04	.15
Reach-1	26.4	.15	.04	.15
Reach-1	26.3	.15	.04	.15
Reach-1	26.25	Bridge		
Reach-1	26.2	.15	.04	.15
Reach-1	26.1	.15	.04	.15
Reach-1	25.3	.2	.04	.2
Reach-1	25.2	.18	.04	.18
Reach-1	25.1	.17	.04	.17
Reach-1	25	.15	.04	.15
Reach-1	24	.15	.04	.15
Reach-1	23	.15	.04	.15
Reach-1	22	.15	.04	.15
Reach-1	21	.16	.04	.16
Reach-1	20	.2	.04	.2
Reach-1	19.4	.17	.04	.17
Reach-1	19.3	.17	.04	.17
Reach-1	19.25	Bridge		
Reach-1	19.2	.17	.04	.17
Reach-1	19.1	.17	.04	.17
Reach-1	18.2	.2	.04	.2
Reach-1	18.1	.2	.04	.2
Reach-1	18	.2	.04	.2
Reach-1	17	.2	.04	.2
Reach-1	16	.2	.04	.2
Reach-1	15	.2	.04	.2
Reach-1	14.4	.2	.04	.2
Reach-1	14.1	.2	.04	.2
Reach-1	13.4	.2	.04	.2
Reach-1	13.3	.2	.04	.2
Reach-1	13.25	Bridge		
Reach-1	13.2	.2	.04	.2
Reach-1	13.1	.2	.04	.2

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Reach-1	12.1	.2	.04	.2
Reach-1	12	.2	.04	.2
Reach-1	11.4	.2	.04	.2
Reach-1	11.3	.2	.04	.2
Reach-1	11.25	Bridge		
Reach-1	11.2	.2	.04	.2
Reach-1	11.1	.2	.04	.2
Reach-1	10	.2	.04	.2
Reach-1	9	.2	.04	.2
Reach-1	8	.2	.04	.2
Reach-1	7	.2	.04	.2
Reach-1	6.4	.2	.04	.2
Reach-1	6.3	.2	.04	.2
Reach-1	6.25	Bridge		
Reach-1	6.2	.2	.04	.2
Reach-1	6.1	.2	.04	.2
Reach-1	5.4	.2	.04	.2
Reach-1	5.3	.2	.04	.2
Reach-1	5.25	Bridge		
Reach-1	5.2	.2	.04	.2
Reach-1	5.1	.2	.04	.2
Reach-1	4	.2	.04	.2
Reach-1	3	.2	.04	.2
Reach-1	2	.2	.04	.2
Reach-1	1.4	.2	.04	.2
Reach-1	1.3	.2	.04	.2
Reach-1	1.25	Bridge		
Reach-1	1.2	.2	.04	.2
Reach-1	1.1	.2	.04	.2
Reach-1	1	.2	.033	.2

SUMMARY OF REACH LENGTHS

River: RIVER-1

Reach	River Sta.	Left	Channel	Right
Reach-1	29	1398	1398	1398
Reach-1	28	1424	1424	1424
Reach-1	27	1912	1912	1912
Reach-1	26.4	350	350	350
Reach-1	26.3	96.1	96.1	96.1
Reach-1	26.25	Bridge		
Reach-1	26.2	181	181	181
Reach-1	26.1	500	500	500
Reach-1	25.3	830	830	830
Reach-1	25.2	1000	1000	1000
Reach-1	25.1	1744	1744	1744
Reach-1	25	3391	3391	3391
Reach-1	24	1839	1839	1839
Reach-1	23	3151	3151	3151
Reach-1	22	2497	2497	2497
Reach-1	21	2919	2919	2919

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Reach-1	20	2903	2903	2903
Reach-1	19.4	295	295	295
Reach-1	19.3	34.1	34.1	34.1
Reach-1	19.25	Bridge		
Reach-1	19.2	295	295	295
Reach-1	19.1	708	708	708
Reach-1	18.2	500	500	500
Reach-1	18.1	1378	1378	1378
Reach-1	18	2064	2064	2064
Reach-1	17	3218	3218	3218
Reach-1	16	2257	2257	2257
Reach-1	15	2800	2800	2800
Reach-1	14.4	67	67	67
Reach-1	14.1	2673	2673	2673
Reach-1	13.4	225	225	225
Reach-1	13.3	43.1	43.1	43.1
Reach-1	13.25	Bridge		
Reach-1	13.2	225	225	225
Reach-1	13.1	935	935	935
Reach-1	12.1	500	500	500
Reach-1	12	1698	1698	1698
Reach-1	11.4	360	360	360
Reach-1	11.3	174.1	174.1	174.1
Reach-1	11.25	Bridge		
Reach-1	11.2	360	360	360
Reach-1	11.1	4378	4378	4378
Reach-1	10	3146	3146	3146
Reach-1	9	4432	4432	4432
Reach-1	8	4924	4924	4924
Reach-1	7	2187	2187	2187
Reach-1	6.4	68	68	68
Reach-1	6.3	22.1	22.1	22.1
Reach-1	6.25	Bridge		
Reach-1	6.2	74	74	74
Reach-1	6.1	375	375	375
Reach-1	5.4	89	89	89
Reach-1	5.3	102.1	102.1	102.1
Reach-1	5.25	Bridge		
Reach-1	5.2	187	187	187
Reach-1	5.1	2603	2603	2603
Reach-1	4	5815	5815	5815
Reach-1	3	6791	6791	6791
Reach-1	2	4000	4000	4000
Reach-1	1.4	83	83	83
Reach-1	1.3	34.1	34.1	34.1
Reach-1	1.25	Bridge		
Reach-1	1.2	112	112	112
Reach-1	1.1	3200	3200	3200
Reach-1	1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: RIVER-1

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Reach	River Sta.	Contr.	Expan.
Reach-1	29	.1	.3
Reach-1	28	.1	.3
Reach-1	27	.1	.3
Reach-1	26.4	.3	.5
Reach-1	26.3	.3	.5
Reach-1	26.25	Bridge	
Reach-1	26.2	.3	.5
Reach-1	26.1	.1	.3
Reach-1	25.3	.1	.3
Reach-1	25.2	.1	.3
Reach-1	25.1	.1	.3
Reach-1	25	.1	.3
Reach-1	24	.1	.3
Reach-1	23	.1	.3
Reach-1	22	.1	.3
Reach-1	21	.1	.3
Reach-1	20	.1	.3
Reach-1	19.4	.3	.5
Reach-1	19.3	.3	.5
Reach-1	19.25	Bridge	
Reach-1	19.2	.3	.5
Reach-1	19.1	.1	.3
Reach-1	18.2	.1	.3
Reach-1	18.1	.1	.3
Reach-1	18	.1	.3
Reach-1	17	.1	.3
Reach-1	16	.1	.3
Reach-1	15	.1	.3
Reach-1	14.4	.1	.3
Reach-1	14.1	.1	.3
Reach-1	13.4	.3	.5
Reach-1	13.3	.3	.5
Reach-1	13.25	Bridge	
Reach-1	13.2	.3	.5
Reach-1	13.1	.1	.3
Reach-1	12.1	.1	.3
Reach-1	12	.1	.3
Reach-1	11.4	.3	.5
Reach-1	11.3	.3	.5
Reach-1	11.25	Bridge	
Reach-1	11.2	.3	.5
Reach-1	11.1	.1	.3
Reach-1	10	.1	.3
Reach-1	9	.1	.3
Reach-1	8	.1	.3
Reach-1	7	.1	.3
Reach-1	6.4	.3	.5
Reach-1	6.3	.3	.5
Reach-1	6.25	Bridge	
Reach-1	6.2	.3	.5
Reach-1	6.1	.1	.3
Reach-1	5.4	.3	.5
Reach-1	5.3	.3	.5

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Reach-1	5.25	Bridge		
Reach-1	5.2		.3	.5
Reach-1	5.1		.1	.3
Reach-1	4		.1	.3
Reach-1	3		.1	.3
Reach-1	2		.1	.3
Reach-1	1.4		.3	.5
Reach-1	1.3		.3	.5
Reach-1	1.25	Bridge		
Reach-1	1.2		.3	.5
Reach-1	1.1		.1	.3
Reach-1	1		.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach-1	29	PF 1	477.00	21.00	24.24		24.24	0.000010	0.25	2710.42	1286.00	0.02
Reach-1	29	PF 2	643.00	21.00	25.06		25.06	0.000008	0.26	4089.71	2022.93	0.02
Reach-1	29	PF 3	753.00	21.00	25.57		25.58	0.000007	0.26	5174.40	2200.64	0.02
Reach-1	29	PF 4	931.00	21.00	26.25		26.25	0.000006	0.26	6720.83	2348.00	0.02
Reach-1	28	PF 1	1203.00	20.00	24.18		24.19	0.000068	0.73	2400.28	1451.36	0.07
Reach-1	28	PF 2	1616.00	20.00	25.02		25.03	0.000055	0.75	3903.46	2150.10	0.06
Reach-1	28	PF 3	1885.00	20.00	25.54		25.54	0.000048	0.76	5121.86	2544.58	0.06
Reach-1	28	PF 4	2324.00	20.00	26.21		26.22	0.000042	0.77	6998.64	2897.00	0.06
Reach-1	27	PF 1	928.00	19.70	24.13		24.14	0.000020	0.45	3897.88	1519.65	0.04
Reach-1	27	PF 2	1268.00	19.70	24.97		24.98	0.000020	0.50	5490.21	2277.08	0.04
Reach-1	27	PF 3	1494.00	19.70	25.50		25.50	0.000019	0.52	6768.75	2602.52	0.04
Reach-1	27	PF 4	1866.00	19.70	26.18		26.18	0.000018	0.54	8667.11	2908.00	0.04
Reach-1	26.4	PF 1	928.00	17.60	24.10		24.10	0.000017	0.49	4293.78	1649.26	0.04
Reach-1	26.4	PF 2	1268.00	17.60	24.94		24.94	0.000017	0.54	5780.23	1896.59	0.04
Reach-1	26.4	PF 3	1494.00	17.60	25.46		25.47	0.000017	0.57	6805.68	2008.70	0.04
Reach-1	26.4	PF 4	1866.00	17.60	26.14		26.15	0.000018	0.61	8211.26	2100.00	0.04
Reach-1	26.3	PF 1	928.00	17.60	24.07	19.60	24.09	0.000088	1.01	921.11	186.49	0.08
Reach-1	26.3	PF 2	1268.00	17.60	24.90	19.86	24.92	0.000101	1.18	1078.20	402.56	0.09
Reach-1	26.3	PF 3	1494.00	17.60	25.42	20.01	25.45	0.000105	1.27	1177.60	1182.97	0.09
Reach-1	26.3	PF 4	1866.00	17.60	26.10	20.24	26.13	0.000102	1.34	2650.36	2050.00	0.09
Reach-1	26.25	Bridge										
Reach-1	26.2	PF 1	928.00	16.60	24.05	19.46	24.07	0.000101	1.07	869.29	177.32	0.09
Reach-1	26.2	PF 2	1268.00	16.60	24.85	19.84	24.88	0.000116	1.25	1012.91	180.16	0.09
Reach-1	26.2	PF 3	1494.00	16.60	25.35	20.14	25.38	0.000123	1.35	1102.72	181.92	0.10
Reach-1	26.2	PF 4	1866.00	16.60	26.09	20.40	26.12	0.000126	1.48	1914.83	2121.16	0.10
Reach-1	26.1	PF 1	928.00	16.00	24.00		24.03	0.000315	2.06	2270.88	1560.25	0.15
Reach-1	26.1	PF 2	1268.00	16.00	24.82		24.85	0.000236	1.96	4045.97	2742.33	0.14
Reach-1	26.1	PF 3	1494.00	16.00	25.33		25.35	0.000190	1.85	5650.69	3718.13	0.12
Reach-1	26.1	PF 4	1866.00	16.00	26.07		26.09	0.000119	1.56	8999.07	5041.26	0.10

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Reach-1	25.3	PF 1	2554.00	18.00	23.56	23.70	0.000918	3.42	3002.10	2327.44	0.26
Reach-1	25.3	PF 2	3468.00	18.00	24.49	24.60	0.000680	3.28	5445.72	2944.75	0.23
Reach-1	25.3	PF 3	4074.00	18.00	25.06	25.14	0.000551	3.13	7188.32	3278.54	0.21
Reach-1	25.3	PF 4	5071.00	18.00	25.87	25.94	0.000442	3.02	10380.51	4610.59	0.19
Reach-1	25.2	PF 1	2554.00	16.00	23.09	23.17	0.000442	2.77	3848.29	1866.22	0.19
Reach-1	25.2	PF 2	3468.00	16.00	24.12	24.18	0.000364	2.77	5882.91	2110.32	0.18
Reach-1	25.2	PF 3	4074.00	16.00	24.72	24.79	0.000335	2.79	7235.36	2351.00	0.17
Reach-1	25.2	PF 4	5071.00	16.00	25.57	25.63	0.000310	2.87	9436.12	2932.48	0.17
Reach-1	25.1	PF 1	2554.00	15.00	22.85	22.89	0.000181	1.90	4248.41	1528.59	0.12
Reach-1	25.1	PF 2	3468.00	15.00	23.89	23.93	0.000179	2.06	6150.95	1931.86	0.13
Reach-1	25.1	PF 3	4074.00	15.00	24.50	24.55	0.000174	2.13	7385.17	2090.54	0.12
Reach-1	25.1	PF 4	5071.00	15.00	25.36	25.40	0.000167	2.22	9263.98	2235.00	0.12
Reach-1	25	PF 1	2633.00	12.60	22.31	22.38	0.000518	3.47	3963.49	1414.72	0.21
Reach-1	25	PF 2	3556.00	12.60	23.39	23.45	0.000463	3.56	5651.30	1766.71	0.20
Reach-1	25	PF 3	4167.00	12.60	24.03	24.09	0.000431	3.58	6876.68	2040.86	0.20
Reach-1	25	PF 4	5170.00	12.60	24.93	24.98	0.000371	3.52	8846.02	2317.40	0.19
Reach-1	24	PF 1	2728.00	13.00	20.71	20.78	0.000434	2.80	2835.03	578.15	0.19
Reach-1	24	PF 2	3675.00	13.00	21.80	21.88	0.000465	3.19	3496.58	648.13	0.20
Reach-1	24	PF 3	4302.00	13.00	22.45	22.55	0.000476	3.41	3938.74	695.27	0.20
Reach-1	24	PF 4	5332.00	13.00	23.44	23.54	0.000482	3.69	4656.36	756.37	0.21
Reach-1	23	PF 1	2710.00	6.60	19.46	19.66	0.000892	4.65	2441.92	918.73	0.26
Reach-1	23	PF 2	3649.00	6.60	20.65	20.81	0.000736	4.56	3702.28	1126.31	0.24
Reach-1	23	PF 3	4271.00	6.60	21.42	21.55	0.000624	4.39	4582.47	1178.67	0.23
Reach-1	23	PF 4	5289.00	6.60	22.52	22.62	0.000522	4.27	5923.37	1260.82	0.21
Reach-1	22	PF 1	2903.00	7.50	17.54	17.59	0.000494	3.31	3612.29	704.75	0.20
Reach-1	22	PF 2	3893.00	7.50	18.93	18.98	0.000462	3.55	4647.91	793.86	0.20
Reach-1	22	PF 3	4553.00	7.50	19.76	19.82	0.000474	3.80	5353.38	925.62	0.21
Reach-1	22	PF 4	5634.00	7.50	21.06	21.12	0.000433	3.93	6657.72	1059.00	0.20
Reach-1	21	PF 1	2903.00	6.80	16.73	16.75	0.000238	2.57	5200.53	826.94	0.15
Reach-1	21	PF 2	3893.00	6.80	18.13	18.15	0.000244	2.85	6412.88	905.82	0.15
Reach-1	21	PF 3	4553.00	6.80	18.95	18.98	0.000248	3.02	7175.40	957.24	0.16
Reach-1	21	PF 4	5634.00	6.80	20.28	20.31	0.000244	3.22	8516.74	1045.00	0.16
Reach-1	20	PF 1	3219.00	4.00	15.82	15.90	0.000350	3.35	4688.60	863.34	0.18
Reach-1	20	PF 2	4361.00	4.00	17.14	17.24	0.000394	3.84	5976.64	1094.52	0.19
Reach-1	20	PF 3	5122.00	4.00	17.95	18.05	0.000395	4.01	6888.14	1170.19	0.20
Reach-1	20	PF 4	6374.00	4.00	19.32	19.43	0.000369	4.15	8600.51	1316.12	0.19
Reach-1	19.4	PF 1	3520.00	3.70	13.91	14.16	0.001133	4.91	2481.63	740.59	0.31
Reach-1	19.4	PF 2	4786.00	3.70	15.30	15.52	0.000933	4.96	3556.19	804.50	0.29
Reach-1	19.4	PF 3	5628.00	3.70	16.19	16.40	0.000836	4.99	4296.85	862.11	0.28
Reach-1	19.4	PF 4	7015.00	3.70	17.79	17.98	0.000674	4.94	5807.43	1021.16	0.25
Reach-1	19.3	PF 1	3520.00	4.30	13.74	10.07	0.000590	2.76	1276.18	236.40	0.21
Reach-1	19.3	PF 2	4786.00	4.30	15.14	10.55	0.000520	2.97	1610.69	242.15	0.20
Reach-1	19.3	PF 3	5628.00	4.30	16.04	10.83	0.000480	3.07	1830.71	245.86	0.20
Reach-1	19.3	PF 4	7015.00	4.30	17.66	11.26	0.000397	3.14	2232.58	253.14	0.19
Reach-1	19.25	Bridge									

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Reach-1	19.2	PF 1	3520.00	5.30	13.74	9.79	13.85	0.000506	2.63	1338.90	236.60	0.19
Reach-1	19.2	PF 2	4786.00	5.30	15.14	10.25	15.26	0.000460	2.86	1673.08	241.69	0.19
Reach-1	19.2	PF 3	5628.00	5.30	16.04	10.54	16.17	0.000430	2.97	1892.42	244.97	0.19
Reach-1	19.2	PF 4	7015.00	5.30	17.48	10.98	17.63	0.000387	3.12	2249.18	250.31	0.18
Reach-1	19.1	PF 1	3520.00	5.30	13.21		13.53	0.001628	5.15	1654.43	508.16	0.35
Reach-1	19.1	PF 2	4786.00	5.30	14.68		14.99	0.001307	5.28	2432.26	573.29	0.33
Reach-1	19.1	PF 3	5628.00	5.30	15.62		15.93	0.001155	5.33	3003.54	639.83	0.31
Reach-1	19.1	PF 4	7015.00	5.30	17.08		17.40	0.001026	5.55	4067.65	915.87	0.30
Reach-1	18.2	PF 1	3464.00	5.00	12.49		12.70	0.000826	3.92	1767.75	454.37	0.26
Reach-1	18.2	PF 2	4703.00	5.00	14.07		14.30	0.000713	4.17	2568.96	563.47	0.25
Reach-1	18.2	PF 3	5527.00	5.00	15.07		15.30	0.000643	4.26	3160.65	618.92	0.24
Reach-1	18.2	PF 4	6875.00	5.00	16.59		16.84	0.000588	4.49	4265.29	906.13	0.24
Reach-1	18.1	PF 1	3464.00	4.00	12.43		12.48	0.000188	2.04	3475.19	688.38	0.13
Reach-1	18.1	PF 2	4703.00	4.00	14.03		14.09	0.000177	2.23	4642.37	766.17	0.13
Reach-1	18.1	PF 3	5527.00	4.00	15.04		15.11	0.000168	2.33	5443.08	811.63	0.13
Reach-1	18.1	PF 4	6875.00	4.00	16.57		16.65	0.000157	2.46	6733.65	867.25	0.12
Reach-1	18	PF 1	3655.00	1.90	12.04		12.10	0.000420	3.36	5162.42	862.56	0.19
Reach-1	18	PF 2	4971.00	1.90	13.67		13.74	0.000391	3.60	6605.91	911.02	0.19
Reach-1	18	PF 3	5846.00	1.90	14.70		14.77	0.000371	3.73	7566.32	945.64	0.19
Reach-1	18	PF 4	7280.00	1.90	16.26		16.34	0.000348	3.91	9081.10	999.79	0.19
Reach-1	17	PF 1	3613.00	0.30	11.22		11.27	0.000381	3.00	4790.01	721.82	0.18
Reach-1	17	PF 2	4924.00	0.30	12.89		12.96	0.000360	3.28	6025.09	750.66	0.18
Reach-1	17	PF 3	5800.00	0.30	13.94		14.02	0.000362	3.51	6852.24	833.45	0.18
Reach-1	17	PF 4	7230.00	0.30	15.49		15.59	0.000375	3.90	8211.40	963.18	0.19
Reach-1	16	PF 1	3959.00	-0.70	9.87		9.94	0.000452	3.62	5153.83	724.54	0.20
Reach-1	16	PF 2	5404.00	-0.70	11.59		11.67	0.000448	4.00	6434.48	766.26	0.20
Reach-1	16	PF 3	6368.00	-0.70	12.64		12.72	0.000444	4.22	7254.60	793.08	0.21
Reach-1	16	PF 4	7947.00	-0.70	14.18		14.27	0.000444	4.55	8505.18	834.78	0.21
Reach-1	15	PF 1	4859.00	-4.00	8.85		8.91	0.000454	3.61	6546.06	935.89	0.20
Reach-1	15	PF 2	6631.00	-4.00	10.61		10.68	0.000428	3.89	8209.12	953.74	0.20
Reach-1	15	PF 3	7809.00	-4.00	11.69		11.75	0.000416	4.05	9240.64	968.66	0.20
Reach-1	15	PF 4	9741.00	-4.00	13.23		13.30	0.000411	4.33	10753.75	990.65	0.20
Reach-1	14.4	PF 1	4690.00	-8.40	7.95		8.05	0.000217	2.66	3047.88	595.25	0.14
Reach-1	14.4	PF 2	6420.00	-8.40	9.68		9.81	0.000231	3.03	4156.46	679.93	0.15
Reach-1	14.4	PF 3	7571.00	-8.40	10.71		10.86	0.000247	3.30	4955.45	939.93	0.16
Reach-1	14.4	PF 4	9462.00	-8.40	12.24		12.41	0.000249	3.56	6584.92	1133.58	0.16
Reach-1	14.1	PF 1	4690.00	-5.10	7.97		8.02	0.000202	1.74	2777.14	528.75	0.13
Reach-1	14.1	PF 2	6420.00	-5.10	9.72		9.77	0.000161	1.84	3773.65	606.53	0.12
Reach-1	14.1	PF 3	7571.00	-5.10	10.76		10.82	0.000146	1.91	4517.47	882.92	0.11
Reach-1	14.1	PF 4	9462.00	-5.10	12.31		12.37	0.000129	2.00	6050.34	1066.06	0.11
Reach-1	13.4	PF 1	4521.00	-9.10	7.60		7.66	0.000097	1.98	4402.91	656.09	0.10
Reach-1	13.4	PF 2	6206.00	-9.10	9.34		9.41	0.000112	2.32	5603.18	723.67	0.11
Reach-1	13.4	PF 3	7332.00	-9.10	10.38		10.46	0.000120	2.51	6375.80	762.27	0.11
Reach-1	13.4	PF 4	9185.00	-9.10	11.91		12.02	0.000131	2.80	7589.64	819.25	0.12

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Reach-1	13.3	PF 1	4521.00	-9.10	7.60	-3.57	7.63	0.000044	1.25	3607.44	332.22	0.06
Reach-1	13.3	PF 2	6206.00	-9.10	9.34	-2.83	9.38	0.000052	1.50	4147.96	337.97	0.07
Reach-1	13.3	PF 3	7332.00	-9.10	10.38	-2.19	10.42	0.000056	1.64	4471.61	341.42	0.08
Reach-1	13.3	PF 4	9185.00	-9.10	11.92	-1.58	11.97	0.000063	1.86	4949.29	346.50	0.08
Reach-1	13.25	Bridge										
Reach-1	13.2	PF 1	4521.00	-8.60	7.59	-3.06	7.62	0.000072	1.45	3108.11	329.18	0.08
Reach-1	13.2	PF 2	6206.00	-8.60	9.32	-2.03	9.37	0.000079	1.70	3647.48	335.57	0.09
Reach-1	13.2	PF 3	7332.00	-8.60	10.36	-1.45	10.41	0.000083	1.85	3970.43	339.39	0.09
Reach-1	13.2	PF 4	9185.00	-8.60	11.89	-0.64	11.96	0.000090	2.07	4447.04	345.03	0.10
Reach-1	13.1	PF 1	4521.00	-8.60	7.58		7.59	0.000086	1.10	4244.57	830.81	0.08
Reach-1	13.1	PF 2	6206.00	-8.60	9.32		9.34	0.000067	1.16	5764.75	913.13	0.07
Reach-1	13.1	PF 3	7332.00	-8.60	10.36		10.38	0.000060	1.20	6738.74	955.81	0.07
Reach-1	13.1	PF 4	9185.00	-8.60	11.90		11.92	0.000054	1.27	8254.96	1015.30	0.07
Reach-1	12.1	PF 1	6997.00	-10.90	7.41		7.49	0.000133	2.38	7715.94	1519.79	0.11
Reach-1	12.1	PF 2	9688.00	-10.90	9.14		9.23	0.000147	2.72	10402.52	1582.15	0.12
Reach-1	12.1	PF 3	11504.00	-10.90	10.18		10.28	0.000154	2.90	12062.04	1619.43	0.13
Reach-1	12.1	PF 4	14490.00	-10.90	11.71		11.82	0.000163	3.18	14579.65	1674.16	0.13
Reach-1	12	PF 1	8490.00	-11.90	7.29		7.40	0.000180	2.88	6247.46	1022.52	0.13
Reach-1	12	PF 2	11760.00	-11.90	8.98		9.14	0.000221	3.44	8136.95	1215.12	0.15
Reach-1	12	PF 3	13955.00	-11.90	9.99		10.17	0.000242	3.75	9424.99	1330.52	0.16
Reach-1	12	PF 4	17579.00	-11.90	11.49		11.71	0.000265	4.16	11452.92	1371.13	0.17
Reach-1	11.4	PF 1	8376.00	-13.20	7.04		7.13	0.000137	2.42	6245.21	1108.40	0.12
Reach-1	11.4	PF 2	11610.00	-13.20	8.68		8.80	0.000165	2.87	8117.65	1169.28	0.13
Reach-1	11.4	PF 3	13785.00	-13.20	9.67		9.80	0.000180	3.13	9287.70	1202.04	0.14
Reach-1	11.4	PF 4	17387.00	-13.20	11.14		11.30	0.000202	3.51	11084.00	1250.66	0.15
Reach-1	11.3	PF 1	8376.00	-11.40	7.02	-4.34	7.07	0.000116	1.81	4617.82	492.28	0.10
Reach-1	11.3	PF 2	11610.00	-11.40	8.65	-3.06	8.72	0.000133	2.15	5398.77	498.89	0.11
Reach-1	11.3	PF 3	13785.00	-11.40	9.64	-2.34	9.72	0.000142	2.35	5868.66	502.87	0.12
Reach-1	11.3	PF 4	17387.00	-11.40	11.10	-1.32	11.21	0.000155	2.65	6565.99	508.77	0.13
Reach-1	11.25	Bridge										
Reach-1	11.2	PF 1	8376.00	-10.80	7.01	-4.07	7.06	0.000094	1.69	4950.43	497.98	0.09
Reach-1	11.2	PF 2	11610.00	-10.80	8.65	-2.91	8.71	0.000110	2.02	5740.80	504.25	0.10
Reach-1	11.2	PF 3	13785.00	-10.80	9.63	-2.24	9.71	0.000119	2.22	6216.34	508.02	0.11
Reach-1	11.2	PF 4	17387.00	-10.80	11.10	-1.27	11.19	0.000132	2.51	6921.99	513.61	0.12
Reach-1	11.1	PF 1	8376.00	-12.50	6.94		7.01	0.000126	2.23	5712.68	1025.08	0.11
Reach-1	11.1	PF 2	11610.00	-12.50	8.55		8.66	0.000152	2.66	7482.40	1150.71	0.13
Reach-1	11.1	PF 3	13785.00	-12.50	9.53		9.65	0.000166	2.90	8615.52	1173.91	0.13
Reach-1	11.1	PF 4	17387.00	-12.50	10.98		11.12	0.000185	3.26	10340.12	1208.36	0.14
Reach-1	10	PF 1	8175.00	-9.30	6.45		6.51	0.000102	2.01	6515.43	1080.12	0.10
Reach-1	10	PF 2	11317.00	-9.30	7.96		8.04	0.000127	2.42	8214.52	1179.19	0.11
Reach-1	10	PF 3	13440.00	-9.30	8.87		8.97	0.000141	2.65	9318.35	1221.64	0.12
Reach-1	10	PF 4	16964.00	-9.30	10.24		10.36	0.000160	2.99	11014.56	1259.57	0.13
Reach-1	9	PF 1	7885.00	-8.50	6.21		6.24	0.000069	1.25	6866.71	921.88	0.08
Reach-1	9	PF 2	10844.00	-8.50	7.69		7.72	0.000075	1.46	8247.93	968.47	0.08

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Reach-1	9	PF 3	12859.00	-8.50	8.59		8.63	0.000078	1.58	9125.99	975.64	0.09
Reach-1	9	PF 4	16198.00	-8.50	9.94		9.99	0.000082	1.76	10447.59	986.32	0.09
Reach-1	8	PF 1	7988.00	-13.30	5.84		5.90	0.000085	1.96	6290.52	972.80	0.09
Reach-1	8	PF 2	11022.00	-13.30	7.23		7.32	0.000113	2.40	7695.60	1048.86	0.11
Reach-1	8	PF 3	13098.00	-13.30	8.09		8.19	0.000129	2.67	8615.12	1105.81	0.12
Reach-1	8	PF 4	16542.00	-13.30	9.36		9.49	0.000154	3.07	10083.55	1186.53	0.13
Reach-1	7	PF 1	7489.00	-12.70	5.41		5.47	0.000090	2.02	8236.67	1552.06	0.10
Reach-1	7	PF 2	10380.00	-12.70	6.67		6.75	0.000119	2.46	10200.33	1579.13	0.11
Reach-1	7	PF 3	12366.00	-12.70	7.44		7.53	0.000136	2.73	11425.90	1595.80	0.12
Reach-1	7	PF 4	15670.00	-12.70	8.59		8.71	0.000162	3.11	13280.22	1620.69	0.13
Reach-1	6.4	PF 1	7489.00	-10.30	5.22		5.27	0.000087	1.85	8773.33	1932.53	0.09
Reach-1	6.4	PF 2	10380.00	-10.30	6.42		6.49	0.000113	2.24	11152.11	2040.49	0.11
Reach-1	6.4	PF 3	12366.00	-10.30	7.16		7.24	0.000128	2.47	12685.25	2107.15	0.11
Reach-1	6.4	PF 4	15670.00	-10.30	8.27		8.36	0.000149	2.80	15070.14	2206.84	0.13
Reach-1	6.3	PF 1	7489.00	-13.40	5.17	-6.18	5.25	0.000133	2.34	3204.01	268.29	0.11
Reach-1	6.3	PF 2	10380.00	-13.40	6.32	-5.14	6.46	0.000192	2.97	3490.80	274.76	0.14
Reach-1	6.3	PF 3	12366.00	-13.40	7.02	-4.51	7.20	0.000232	3.37	3665.71	278.70	0.16
Reach-1	6.3	PF 4	15670.00	-13.40	8.06	-3.54	8.31	0.000297	3.99	3923.72	284.51	0.18
Reach-1	6.25	Bridge										
Reach-1	6.2	PF 1	7489.00	-13.30	5.16	-7.07	5.23	0.000106	2.17	3444.22	266.56	0.10
Reach-1	6.2	PF 2	10380.00	-13.30	6.31	-6.10	6.43	0.000156	2.78	3732.13	272.15	0.13
Reach-1	6.2	PF 3	12366.00	-13.30	7.01	-5.49	7.16	0.000190	3.16	3907.50	275.55	0.14
Reach-1	6.2	PF 4	15670.00	-13.30	8.04	-4.57	8.26	0.000247	3.76	4165.76	280.56	0.16
Reach-1	6.1	PF 1	7489.00	-13.60	5.16		5.22	0.000089	1.91	7172.31	1356.78	0.09
Reach-1	6.1	PF 2	10380.00	-13.60	6.32		6.40	0.000122	2.36	8777.97	1424.28	0.11
Reach-1	6.1	PF 3	12366.00	-13.60	7.02		7.12	0.000142	2.63	9797.72	1465.54	0.12
Reach-1	6.1	PF 4	15670.00	-13.60	8.07		8.19	0.000173	3.04	11358.68	1526.53	0.14
Reach-1	5.4	PF 1	7489.00	-11.30	5.12		5.18	0.000110	2.03	5706.68	984.66	0.10
Reach-1	5.4	PF 2	10380.00	-11.30	6.25		6.35	0.000151	2.52	6859.65	1047.06	0.12
Reach-1	5.4	PF 3	12366.00	-11.30	6.95		7.06	0.000176	2.82	7597.52	1084.64	0.13
Reach-1	5.4	PF 4	15670.00	-11.30	7.97		8.12	0.000216	3.28	8733.36	1140.06	0.15
Reach-1	5.3	PF 1	7489.00	-11.70	5.06	-5.73	5.16	0.000157	2.49	3012.89	255.02	0.12
Reach-1	5.3	PF 2	10380.00	-11.70	6.15	-4.68	6.31	0.000228	3.17	3276.26	261.09	0.15
Reach-1	5.3	PF 3	12366.00	-11.70	6.81	-4.04	7.01	0.000277	3.60	3435.04	264.75	0.17
Reach-1	5.3	PF 4	15670.00	-11.70	7.77	-3.07	8.05	0.000358	4.27	3665.80	281.86	0.19
Reach-1	5.25	Bridge										
Reach-1	5.2	PF 1	7489.00	-12.10	5.05	-5.95	5.13	0.000141	2.23	3351.63	323.84	0.12
Reach-1	5.2	PF 2	10380.00	-12.10	6.14	-4.89	6.27	0.000200	2.83	3669.38	330.64	0.14
Reach-1	5.2	PF 3	12366.00	-12.10	6.80	-4.24	6.96	0.000240	3.20	3860.67	334.73	0.16
Reach-1	5.2	PF 4	15670.00	-12.10	7.75	-3.27	7.97	0.000305	3.79	4138.17	340.67	0.18
Reach-1	5.1	PF 1	7489.00	-11.20	5.05		5.09	0.000091	1.81	14779.64	7114.24	0.09
Reach-1	5.1	PF 2	10380.00	-11.20	6.16		6.20	0.000098	2.00	22741.19	7282.00	0.10
Reach-1	5.1	PF 3	12366.00	-11.20	6.83		6.87	0.000100	2.09	27653.05	7376.66	0.10
Reach-1	5.1	PF 4	15670.00	-11.20	7.80		7.85	0.000103	2.22	34938.42	7514.86	0.10

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Reach-1	4	PF 1	7151.00	-9.30	4.74		4.80	0.000144	2.20	13392.77	6330.43	0.12
Reach-1	4	PF 2	9870.00	-9.30	5.84		5.89	0.000146	2.35	20826.43	6911.36	0.12
Reach-1	4	PF 3	11770.00	-9.30	6.51		6.56	0.000143	2.42	25505.64	7017.42	0.12
Reach-1	4	PF 4	14956.00	-9.30	7.49		7.54	0.000141	2.52	32446.38	7171.83	0.12
Reach-1	3	PF 1	5214.00	-8.60	4.00		4.04	0.000111	1.68	8227.85	4091.70	0.10
Reach-1	3	PF 2	7242.00	-8.60	5.06		5.10	0.000124	1.91	13259.21	5418.24	0.11
Reach-1	3	PF 3	8773.00	-8.60	5.73		5.78	0.000125	2.01	16974.13	5635.09	0.11
Reach-1	3	PF 4	11307.00	-8.60	6.71		6.76	0.000127	2.14	22640.35	5950.64	0.11
Reach-1	2	PF 1	5471.00	-9.70	2.88		2.96	0.000241	2.30	5521.73	3286.98	0.14
Reach-1	2	PF 2	7399.00	-9.70	3.84		3.93	0.000254	2.55	9247.90	4462.00	0.15
Reach-1	2	PF 3	8920.00	-9.70	4.50		4.59	0.000254	2.68	12464.24	5269.61	0.15
Reach-1	2	PF 4	11547.00	-9.70	5.51		5.59	0.000240	2.78	18232.90	5963.92	0.15
Reach-1	1.4	PF 1	5470.00	-13.70	1.76		1.88	0.000300	2.81	1998.31	839.96	0.16
Reach-1	1.4	PF 2	7396.00	-13.70	2.43		2.62	0.000431	3.48	3465.55	3523.06	0.20
Reach-1	1.4	PF 3	8914.00	-13.70	3.02		3.23	0.000470	3.77	5680.54	3781.33	0.21
Reach-1	1.4	PF 4	11522.00	-13.70	4.09		4.29	0.000457	3.95	9703.58	3793.94	0.21
Reach-1	1.3	PF 1	5470.00	-12.80	1.73	-7.00	1.86	0.000293	2.84	1926.67	200.63	0.16
Reach-1	1.3	PF 2	7396.00	-12.80	2.38	-6.04	2.58	0.000437	3.60	2056.88	202.11	0.20
Reach-1	1.3	PF 3	8914.00	-12.80	2.91	-5.37	3.17	0.000541	4.12	2164.30	203.31	0.22
Reach-1	1.3	PF 4	11522.00	-12.80	3.82	-4.32	4.19	0.000699	4.90	2350.29	205.39	0.26
Reach-1	1.25	Bridge										
Reach-1	1.2	PF 1	5470.00	-13.20	1.72	-6.87	1.85	0.000294	2.84	1923.00	199.22	0.16
Reach-1	1.2	PF 2	7396.00	-13.20	2.36	-5.92	2.56	0.000439	3.61	2050.28	199.70	0.20
Reach-1	1.2	PF 3	8914.00	-13.20	2.88	-5.25	3.15	0.000544	4.14	2154.64	200.09	0.22
Reach-1	1.2	PF 4	11522.00	-13.20	3.78	-4.23	4.15	0.000706	4.94	2334.05	200.88	0.26
Reach-1	1.1	PF 1	5470.00	-15.80	1.68		1.81	0.000282	2.90	1884.13	183.45	0.16
Reach-1	1.1	PF 2	7396.00	-15.80	2.30		2.51	0.000429	3.69	2466.13	2553.13	0.20
Reach-1	1.1	PF 3	8914.00	-15.80	2.82		3.08	0.000516	4.14	3813.61	2569.79	0.22
Reach-1	1.1	PF 4	11522.00	-15.80	3.74		4.05	0.000599	4.64	6175.67	2589.16	0.24
Reach-1	1	PF 1	5465.00	-15.80	0.80	-8.00	0.96	0.000253	3.17	1724.57	181.77	0.18
Reach-1	1	PF 2	7356.00	-15.80	0.80	-6.96	1.08	0.000458	4.27	1724.57	181.77	0.24
Reach-1	1	PF 3	8839.00	-15.80	0.80	-6.22	1.21	0.000662	5.13	1724.57	181.77	0.29
Reach-1	1	PF 4	11383.00	-15.80	0.80	-5.11	1.48	0.001097	6.60	1724.57	181.77	0.38

Profile Output Table - Standard Table 2

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Reach-1	29	PF 1	24.24	24.24	0.00	0.04	0.00	31.51	441.83	3.66	1286.00
Reach-1	29	PF 2	25.06	25.06	0.00	0.04	0.00	49.67	583.74	9.59	2022.93
Reach-1	29	PF 3	25.58	25.57	0.00	0.03	0.00	78.92	659.84	14.25	2200.64
Reach-1	29	PF 4	26.25	26.25	0.00	0.03	0.00	124.90	779.10	27.00	2348.00
Reach-1	28	PF 1	24.19	24.18	0.01	0.05	0.00	6.74	1141.88	54.37	1451.36
Reach-1	28	PF 2	25.03	25.02	0.01	0.05	0.00	30.99	1441.20	143.81	2150.10

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Reach-1	28	PF 3	25.54	25.54	0.01	0.04	0.00	68.68	1609.37	206.95	2544.58
Reach-1	28	PF 4	26.22	26.21	0.01	0.04	0.00	153.20	1859.88	310.92	2897.00
Reach-1	27	PF 1	24.14	24.13	0.00	0.04	0.00	57.82	781.69	88.49	1519.65
Reach-1	27	PF 2	24.98	24.97	0.00	0.04	0.00	86.88	1044.23	136.89	2277.08
Reach-1	27	PF 3	25.50	25.50	0.00	0.03	0.00	105.83	1185.85	202.32	2602.52
Reach-1	27	PF 4	26.18	26.18	0.00	0.03	0.00	160.64	1397.65	307.71	2908.00
Reach-1	26.4	PF 1	24.10	24.10	0.00	0.01	0.00	32.14	748.83	147.02	1649.26
Reach-1	26.4	PF 2	24.94	24.94	0.00	0.01	0.01	53.42	954.63	259.95	1896.59
Reach-1	26.4	PF 3	25.47	25.46	0.00	0.01	0.01	77.71	1077.28	339.02	2008.70
Reach-1	26.4	PF 4	26.15	26.14	0.00	0.01	0.01	126.12	1274.71	465.16	2100.00
Reach-1	26.3	PF 1	24.09	24.07	0.02				928.00		186.49
Reach-1	26.3	PF 2	24.92	24.90	0.02				1268.00		402.56
Reach-1	26.3	PF 3	25.45	25.42	0.03				1494.00		1182.97
Reach-1	26.3	PF 4	26.13	26.10	0.03			24.60	1757.46	83.94	2050.00
Reach-1	26.25		Bridge								
Reach-1	26.2	PF 1	24.07	24.05	0.02	0.03	0.01		928.00		177.32
Reach-1	26.2	PF 2	24.88	24.85	0.02	0.03	0.00		1268.00		180.16
Reach-1	26.2	PF 3	25.38	25.35	0.03	0.03	0.00		1494.00		181.92
Reach-1	26.2	PF 4	26.12	26.09	0.03	0.02	0.01	26.97	1828.28	10.75	2121.16
Reach-1	26.1	PF 1	24.03	24.00	0.04	0.32	0.01	93.82	494.38	339.80	1560.25
Reach-1	26.1	PF 2	24.85	24.82	0.03	0.24	0.01	157.88	536.92	573.20	2742.33
Reach-1	26.1	PF 3	25.35	25.33	0.02	0.19	0.01	242.18	544.98	706.85	3718.13
Reach-1	26.1	PF 4	26.09	26.07	0.01	0.14	0.01	409.94	510.97	945.09	5041.26
Reach-1	25.3	PF 1	23.70	23.56	0.14	0.51	0.02	504.95	1902.89	146.16	2327.44
Reach-1	25.3	PF 2	24.60	24.49	0.10	0.40	0.01	921.78	2146.16	400.06	2944.75
Reach-1	25.3	PF 3	25.14	25.06	0.08	0.35	0.01	1289.94	2232.48	551.58	3278.54
Reach-1	25.3	PF 4	25.94	25.87	0.07	0.31	0.00	1877.24	2413.04	780.71	4610.59
Reach-1	25.2	PF 1	23.17	23.09	0.08	0.27	0.01	564.30	1672.74	316.96	1866.22
Reach-1	25.2	PF 2	24.18	24.12	0.07	0.25	0.01	1141.59	1926.79	399.62	2110.32
Reach-1	25.2	PF 3	24.79	24.72	0.06	0.23	0.01	1546.46	2095.52	432.03	2351.00
Reach-1	25.2	PF 4	25.63	25.57	0.06	0.22	0.01	2207.78	2369.93	493.29	2932.48
Reach-1	25.1	PF 1	22.89	22.85	0.04	0.50	0.00	462.41	1833.51	258.08	1528.59
Reach-1	25.1	PF 2	23.93	23.89	0.04	0.48	0.00	827.13	2270.64	370.23	1931.86
Reach-1	25.1	PF 3	24.55	24.50	0.04	0.46	0.00	1118.45	2514.03	441.52	2090.54
Reach-1	25.1	PF 4	25.40	25.36	0.04	0.42	0.00	1633.72	2866.04	571.24	2235.00
Reach-1	25	PF 1	22.38	22.31	0.07	1.60	0.00	623.12	966.24	1043.64	1414.72
Reach-1	25	PF 2	23.45	23.39	0.06	1.57	0.00	1105.35	1115.39	1335.26	1766.71
Reach-1	25	PF 3	24.09	24.03	0.06	1.54	0.00	1452.88	1200.08	1514.04	2040.86
Reach-1	25	PF 4	24.98	24.93	0.05	1.43	0.01	1964.98	1283.29	1921.74	2317.40
Reach-1	24	PF 1	20.78	20.71	0.06	1.11	0.01	983.69	1388.82	355.49	578.15
Reach-1	24	PF 2	21.88	21.80	0.08	1.06	0.01	1351.66	1832.42	490.92	648.13
Reach-1	24	PF 3	22.55	22.45	0.09	1.00	0.00	1606.23	2116.08	579.70	695.27
Reach-1	24	PF 4	23.54	23.44	0.11	0.92	0.00	2027.03	2551.13	753.85	756.37
Reach-1	23	PF 1	19.66	19.46	0.20	2.03	0.05	404.74	1585.00	720.27	918.73

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Reach-1	23	PF 2	20.81	20.65	0.16	1.80	0.03	764.74	1745.69	1138.57	1126.31
Reach-1	23	PF 3	21.55	21.42	0.13	1.70	0.02	1064.24	1798.77	1407.99	1178.67
Reach-1	23	PF 4	22.62	22.52	0.11	1.49	0.01	1547.32	1910.89	1830.79	1260.82
Reach-1	22	PF 1	17.59	17.54	0.05	0.83	0.01	994.22	716.01	1192.77	704.75
Reach-1	22	PF 2	18.98	18.93	0.05	0.82	0.01	1350.97	895.79	1646.24	793.86
Reach-1	22	PF 3	19.82	19.76	0.06	0.83	0.01	1510.37	1041.79	2000.84	925.62
Reach-1	22	PF 4	21.12	21.06	0.06	0.80	0.01	2002.05	1207.55	2424.40	1059.00
Reach-1	21	PF 1	16.75	16.73	0.02	0.84	0.01	1130.75	465.93	1306.33	826.94
Reach-1	21	PF 2	18.15	18.13	0.02	0.90	0.01	1564.11	592.84	1736.05	905.82
Reach-1	21	PF 3	18.98	18.95	0.03	0.91	0.01	1845.38	674.51	2033.11	957.24
Reach-1	21	PF 4	20.31	20.28	0.03	0.88	0.01	2348.60	800.14	2485.27	1045.00
Reach-1	20	PF 1	15.90	15.82	0.08	1.72	0.02	1344.46	1447.28	427.26	863.34
Reach-1	20	PF 2	17.24	17.14	0.10	1.71	0.01	1951.51	1860.49	549.00	1094.52
Reach-1	20	PF 3	18.05	17.95	0.10	1.64	0.01	2316.57	2074.81	730.62	1170.19
Reach-1	20	PF 4	19.43	19.32	0.10	1.44	0.01	2956.38	2374.38	1043.25	1316.12
Reach-1	19.4	PF 1	14.16	13.91	0.25	0.23	0.06	1176.50	2291.48	52.03	740.59
Reach-1	19.4	PF 2	15.52	15.30	0.22	0.20	0.04	1959.67	2722.32	104.01	804.50
Reach-1	19.4	PF 3	16.40	16.19	0.21	0.18	0.03	2473.07	3001.79	153.13	862.11
Reach-1	19.4	PF 4	17.98	17.79	0.19	0.15	0.02	3307.62	3434.32	273.07	1021.16
Reach-1	19.3	PF 1	13.86	13.74	0.12				3520.00		236.40
Reach-1	19.3	PF 2	15.28	15.14	0.14				4786.00		242.15
Reach-1	19.3	PF 3	16.19	16.04	0.15				5628.00		245.86
Reach-1	19.3	PF 4	17.81	17.66	0.15				7015.00		253.14
Reach-1	19.25		Bridge								
Reach-1	19.2	PF 1	13.85	13.74	0.11	0.25	0.07		3520.00		236.60
Reach-1	19.2	PF 2	15.26	15.14	0.13	0.21	0.06		4786.00		241.69
Reach-1	19.2	PF 3	16.17	16.04	0.14	0.20	0.05		5628.00		244.97
Reach-1	19.2	PF 4	17.63	17.48	0.15	0.18	0.05		7015.00		250.31
Reach-1	19.1	PF 1	13.53	13.21	0.33	0.80	0.04	598.17	2774.83	147.01	508.16
Reach-1	19.1	PF 2	14.99	14.68	0.32	0.67	0.03	1064.12	3468.89	252.99	573.29
Reach-1	19.1	PF 3	15.93	15.62	0.31	0.60	0.02	1378.89	3913.47	335.64	639.83
Reach-1	19.1	PF 4	17.40	17.08	0.33	0.54	0.02	1923.92	4731.61	359.47	915.87
Reach-1	18.2	PF 1	12.70	12.49	0.21	0.17	0.05	250.74	3033.27	179.98	454.37
Reach-1	18.2	PF 2	14.30	14.07	0.23	0.16	0.05	429.14	3949.34	324.52	563.47
Reach-1	18.2	PF 3	15.30	15.07	0.23	0.15	0.05	559.87	4507.37	459.76	618.92
Reach-1	18.2	PF 4	16.84	16.59	0.25	0.14	0.05	660.85	5500.90	713.25	906.13
Reach-1	18.1	PF 1	12.48	12.43	0.06	0.38	0.00	195.92	2940.10	327.97	688.38
Reach-1	18.1	PF 2	14.09	14.03	0.06	0.35	0.00	328.77	3863.07	511.16	766.17
Reach-1	18.1	PF 3	15.11	15.04	0.07	0.33	0.00	422.99	4452.07	651.94	811.63
Reach-1	18.1	PF 4	16.65	16.57	0.07	0.31	0.00	617.97	5384.20	872.83	867.25
Reach-1	18	PF 1	12.10	12.04	0.07	0.82	0.00	533.97	1307.58	1813.45	862.56
Reach-1	18	PF 2	13.74	13.67	0.07	0.77	0.00	744.03	1642.60	2584.37	911.02
Reach-1	18	PF 3	14.77	14.70	0.07	0.76	0.00	892.53	1857.16	3096.31	945.64
Reach-1	18	PF 4	16.34	16.26	0.08	0.75	0.00	1142.19	2199.75	3938.07	999.79

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Reach-1	17	PF 1	11.27	11.22	0.06	1.34	0.00	512.48	1430.62	1669.90	721.82
Reach-1	17	PF 2	12.96	12.89	0.07	1.30	0.00	753.49	1876.57	2293.94	750.66
Reach-1	17	PF 3	14.02	13.94	0.08	1.29	0.00	818.97	2213.09	2767.94	833.45
Reach-1	17	PF 4	15.59	15.49	0.09	1.32	0.00	1169.86	2795.32	3264.82	963.18
Reach-1	16	PF 1	9.94	9.87	0.06	1.02	0.00	1463.83	1176.74	1318.43	724.54
Reach-1	16	PF 2	11.67	11.59	0.07	0.99	0.00	2055.17	1520.61	1828.22	766.26
Reach-1	16	PF 3	12.72	12.64	0.08	0.97	0.00	2454.86	1743.37	2169.77	793.08
Reach-1	16	PF 4	14.27	14.18	0.09	0.96	0.01	3119.66	2102.70	2724.64	834.78
Reach-1	15	PF 1	8.91	8.85	0.06	0.85	0.00	480.56	1333.96	3044.48	935.89
Reach-1	15	PF 2	10.68	10.61	0.06	0.86	0.01	683.07	1674.31	4273.63	953.74
Reach-1	15	PF 3	11.75	11.69	0.07	0.88	0.01	807.78	1898.19	5103.03	968.66
Reach-1	15	PF 4	13.30	13.23	0.07	0.88	0.01	1015.49	2263.19	6462.32	990.65
Reach-1	14.4	PF 1	8.05	7.95	0.10	0.01	0.02	141.39	4356.55	192.06	595.25
Reach-1	14.4	PF 2	9.81	9.68	0.13	0.01	0.02	293.02	5746.15	380.83	679.93
Reach-1	14.4	PF 3	10.86	10.71	0.15	0.01	0.03	333.06	6763.11	474.84	939.93
Reach-1	14.4	PF 4	12.41	12.24	0.17	0.01	0.03	518.30	8110.17	833.53	1133.58
Reach-1	14.1	PF 1	8.02	7.97	0.05	0.36	0.00	1.03	4679.99	8.98	528.75
Reach-1	14.1	PF 2	9.77	9.72	0.05	0.36	0.00	3.65	6375.89	40.46	606.53
Reach-1	14.1	PF 3	10.82	10.76	0.06	0.35	0.00	5.31	7503.82	61.87	882.92
Reach-1	14.1	PF 4	12.37	12.31	0.06	0.35	0.00	40.48	9243.42	178.10	1066.06
Reach-1	13.4	PF 1	7.66	7.60	0.05	0.01	0.01	352.63	4024.76	143.62	656.09
Reach-1	13.4	PF 2	9.41	9.34	0.07	0.02	0.02	570.58	5362.79	272.63	723.67
Reach-1	13.4	PF 3	10.46	10.38	0.08	0.02	0.02	731.48	6228.21	372.32	762.27
Reach-1	13.4	PF 4	12.02	11.91	0.10	0.02	0.02	1017.07	7616.15	551.78	819.25
Reach-1	13.3	PF 1	7.63	7.60	0.02	0.00	0.00		4521.00		332.22
Reach-1	13.3	PF 2	9.38	9.34	0.03	0.00	0.00		6206.00		337.97
Reach-1	13.3	PF 3	10.42	10.38	0.04	0.00	0.00		7332.00		341.42
Reach-1	13.3	PF 4	11.97	11.92	0.05	0.00	0.00		9185.00		346.50
Reach-1	13.25		Bridge								
Reach-1	13.2	PF 1	7.62	7.59	0.03	0.02	0.01		4521.00		329.18
Reach-1	13.2	PF 2	9.37	9.32	0.04	0.02	0.01		6206.00		335.57
Reach-1	13.2	PF 3	10.41	10.36	0.05	0.02	0.02		7332.00		339.39
Reach-1	13.2	PF 4	11.96	11.89	0.07	0.02	0.02		9185.00		345.03
Reach-1	13.1	PF 1	7.59	7.58	0.02	0.10	0.01	1.14	4506.54	13.32	830.81
Reach-1	13.1	PF 2	9.34	9.32	0.02	0.10	0.01	8.00	6158.77	39.23	913.13
Reach-1	13.1	PF 3	10.38	10.36	0.02	0.09	0.01	16.03	7252.90	63.07	955.81
Reach-1	13.1	PF 4	11.92	11.90	0.02	0.09	0.01	34.78	9040.98	109.24	1015.30
Reach-1	12.1	PF 1	7.49	7.41	0.07	0.08	0.00	201.12	5876.18	919.70	1519.79
Reach-1	12.1	PF 2	9.23	9.14	0.09	0.09	0.01	392.45	7563.59	1731.96	1582.15
Reach-1	12.1	PF 3	10.28	10.18	0.10	0.10	0.01	531.88	8639.74	2332.39	1619.43
Reach-1	12.1	PF 4	11.82	11.71	0.11	0.10	0.01	757.53	10337.74	3394.73	1674.16
Reach-1	12	PF 1	7.40	7.29	0.11	0.27	0.01	290.61	7528.58	670.81	1022.52
Reach-1	12	PF 2	9.14	8.98	0.16	0.32	0.01	543.61	10063.28	1153.12	1215.12
Reach-1	12	PF 3	10.17	9.99	0.18	0.35	0.02	734.58	11673.41	1547.01	1330.52
Reach-1	12	PF 4	11.71	11.49	0.22	0.39	0.02	1064.94	14078.27	2435.79	1371.13

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Reach-1	11.4	PF 1	7.13	7.04	0.08	0.05	0.02	135.63	7762.39	477.98	1108.40
Reach-1	11.4	PF 2	8.80	8.68	0.11	0.05	0.02	305.17	10364.69	940.14	1169.28
Reach-1	11.4	PF 3	9.80	9.67	0.13	0.06	0.02	444.47	12048.76	1291.77	1202.04
Reach-1	11.4	PF 4	11.30	11.14	0.16	0.06	0.03	705.58	14760.54	1920.88	1250.66
Reach-1	11.3	PF 1	7.07	7.02	0.05				8376.00		492.28
Reach-1	11.3	PF 2	8.72	8.65	0.07				11610.00		498.89
Reach-1	11.3	PF 3	9.72	9.64	0.09				13785.00		502.87
Reach-1	11.3	PF 4	11.21	11.10	0.11				17387.00		508.77
Reach-1	11.25		Bridge								
Reach-1	11.2	PF 1	7.06	7.01	0.04	0.04	0.01		8376.00		497.98
Reach-1	11.2	PF 2	8.71	8.65	0.06	0.05	0.01		11610.00		504.25
Reach-1	11.2	PF 3	9.71	9.63	0.08	0.05	0.01		13785.00		508.02
Reach-1	11.2	PF 4	11.19	11.10	0.10	0.06	0.01		17387.00		513.61
Reach-1	11.1	PF 1	7.01	6.94	0.07	0.50	0.00	263.98	8011.35	100.67	1025.08
Reach-1	11.1	PF 2	8.66	8.55	0.10	0.61	0.01	549.21	10803.64	257.15	1150.71
Reach-1	11.1	PF 3	9.65	9.53	0.12	0.67	0.01	769.30	12598.59	417.10	1173.91
Reach-1	11.1	PF 4	11.12	10.98	0.15	0.75	0.01	1167.15	15495.14	724.71	1208.36
Reach-1	10	PF 1	6.51	6.45	0.06	0.26	0.01	25.60	7707.17	442.23	1080.12
Reach-1	10	PF 2	8.04	7.96	0.08	0.30	0.02	62.87	10399.42	854.71	1179.19
Reach-1	10	PF 3	8.97	8.87	0.10	0.32	0.02	107.45	12159.87	1172.68	1221.64
Reach-1	10	PF 4	10.36	10.24	0.12	0.35	0.02	208.07	15006.20	1749.73	1259.57
Reach-1	9	PF 1	6.24	6.21	0.02	0.34	0.00	38.30	7787.40	59.30	921.88
Reach-1	9	PF 2	7.72	7.69	0.03	0.40	0.01	56.72	10687.11	100.17	968.47
Reach-1	9	PF 3	8.63	8.59	0.04	0.44	0.01	84.24	12644.34	130.43	975.64
Reach-1	9	PF 4	9.99	9.94	0.05	0.49	0.01	135.03	15879.65	183.31	986.32
Reach-1	8	PF 1	5.90	5.84	0.06	0.43	0.00	286.80	7604.78	96.43	972.80
Reach-1	8	PF 2	7.32	7.23	0.08	0.57	0.00	549.02	10275.21	197.77	1048.86
Reach-1	8	PF 3	8.19	8.09	0.10	0.65	0.00	754.88	12058.29	284.83	1105.81
Reach-1	8	PF 4	9.49	9.36	0.13	0.78	0.00	1127.95	14941.91	472.15	1186.53
Reach-1	7	PF 1	5.47	5.41	0.06	0.19	0.00	1.55	6644.73	842.72	1552.06
Reach-1	7	PF 2	6.75	6.67	0.08	0.25	0.00	3.53	8825.63	1550.84	1579.13
Reach-1	7	PF 3	7.53	7.44	0.10	0.29	0.00	5.34	10260.09	2100.57	1595.80
Reach-1	7	PF 4	8.71	8.59	0.12	0.34	0.01	9.08	12567.83	3093.09	1620.69
Reach-1	6.4	PF 1	5.27	5.22	0.05	0.01	0.01	68.25	6726.27	694.48	1932.53
Reach-1	6.4	PF 2	6.49	6.42	0.07	0.01	0.02	124.82	8930.81	1324.37	2040.49
Reach-1	6.4	PF 3	7.24	7.16	0.08	0.01	0.03	169.01	10374.60	1822.39	2107.15
Reach-1	6.4	PF 4	8.36	8.27	0.10	0.01	0.04	249.37	12686.42	2734.21	2206.84
Reach-1	6.3	PF 1	5.25	5.17	0.08				7489.00		268.29
Reach-1	6.3	PF 2	6.46	6.32	0.14				10380.00		274.76
Reach-1	6.3	PF 3	7.20	7.02	0.18				12366.00		278.70
Reach-1	6.3	PF 4	8.31	8.06	0.25				15670.00		284.51
Reach-1	6.25		Bridge								
Reach-1	6.2	PF 1	5.23	5.16	0.07	0.01	0.01		7489.00		266.56

LPGA Tomoka River EC-RAS Report _ DEM											
Reach-1	6.2	PF 2	6.43	6.31	0.12	0.01	0.02		10380.00		272.15
Reach-1	6.2	PF 3	7.16	7.01	0.16	0.01	0.03		12366.00		275.55
Reach-1	6.2	PF 4	8.26	8.04	0.22	0.02	0.05		15670.00		280.56
Reach-1	6.1	PF 1	5.22	5.16	0.05	0.04	0.00	0.29	6936.84	551.87	1356.78
Reach-1	6.1	PF 2	6.40	6.32	0.08	0.05	0.00	1.38	9345.50	1033.12	1424.28
Reach-1	6.1	PF 3	7.12	7.02	0.10	0.06	0.00	2.69	10949.13	1414.18	1465.54
Reach-1	6.1	PF 4	8.19	8.07	0.12	0.07	0.00	5.94	13550.50	2113.56	1526.53
Reach-1	5.4	PF 1	5.18	5.12	0.06	0.01	0.01	0.35	7116.62	372.04	984.66
Reach-1	5.4	PF 2	6.35	6.25	0.09	0.02	0.02	1.72	9682.76	695.52	1047.06
Reach-1	5.4	PF 3	7.06	6.95	0.11	0.02	0.03	3.26	11408.53	954.21	1084.64
Reach-1	5.4	PF 4	8.12	7.97	0.15	0.02	0.04	6.69	14229.34	1433.97	1140.06
Reach-1	5.3	PF 1	5.16	5.06	0.10				7489.00		255.02
Reach-1	5.3	PF 2	6.31	6.15	0.16				10380.00		261.09
Reach-1	5.3	PF 3	7.01	6.81	0.20				12366.00		264.75
Reach-1	5.3	PF 4	8.05	7.77	0.28				15670.00		281.86
Reach-1	5.25		Bridge								
Reach-1	5.2	PF 1	5.13	5.05	0.08	0.02	0.02		7489.00		323.84
Reach-1	5.2	PF 2	6.27	6.14	0.12	0.03	0.04		10380.00		330.64
Reach-1	5.2	PF 3	6.96	6.80	0.16	0.03	0.06		12366.00		334.73
Reach-1	5.2	PF 4	7.97	7.75	0.22	0.03	0.09		15670.00		340.67
Reach-1	5.1	PF 1	5.09	5.05	0.04	0.29	0.00	1107.86	6371.71	9.43	7114.24
Reach-1	5.1	PF 2	6.20	6.16	0.05	0.31	0.00	2673.80	7681.09	25.11	7282.00
Reach-1	5.1	PF 3	6.87	6.83	0.05	0.31	0.00	3876.00	8450.15	39.85	7376.66
Reach-1	5.1	PF 4	7.85	7.80	0.05	0.31	0.00	5971.41	9630.88	67.71	7514.86
Reach-1	4	PF 1	4.80	4.74	0.06	0.75	0.01	1399.53	5744.48	6.99	6330.43
Reach-1	4	PF 2	5.89	5.84	0.06	0.79	0.00	3096.65	6757.97	15.38	6911.36
Reach-1	4	PF 3	6.56	6.51	0.06	0.79	0.00	4417.51	7330.35	22.14	7017.42
Reach-1	4	PF 4	7.54	7.49	0.05	0.78	0.00	6684.44	8236.90	34.66	7171.83
Reach-1	3	PF 1	4.04	4.00	0.04	1.08	0.00	193.83	4666.76	353.41	4091.70
Reach-1	3	PF 2	5.10	5.06	0.05	1.17	0.00	494.10	5913.94	833.96	5418.24
Reach-1	3	PF 3	5.78	5.73	0.05	1.18	0.00	812.67	6641.05	1319.29	5635.09
Reach-1	3	PF 4	6.76	6.71	0.05	1.16	0.00	1388.64	7727.10	2191.27	5950.64
Reach-1	2	PF 1	2.96	2.88	0.08	1.07	0.00	196.94	5048.07	225.98	3286.98
Reach-1	2	PF 2	3.93	3.84	0.09	1.30	0.01	445.24	6256.04	697.72	4462.00
Reach-1	2	PF 3	4.59	4.50	0.09	1.35	0.01	658.53	7042.59	1218.88	5269.61
Reach-1	2	PF 4	5.59	5.51	0.08	1.29	0.01	1031.23	8074.23	2441.54	5963.92
Reach-1	1.4	PF 1	1.88	1.76	0.12	0.02	0.00		5468.80	1.20	839.96
Reach-1	1.4	PF 2	2.62	2.43	0.19	0.04	0.00		7278.04	117.95	3523.06
Reach-1	1.4	PF 3	3.23	3.02	0.21	0.04	0.02		8366.94	547.06	3781.33
Reach-1	1.4	PF 4	4.29	4.09	0.20	0.05	0.05		9675.32	1846.68	3793.94
Reach-1	1.3	PF 1	1.86	1.73	0.13				5470.00		200.63
Reach-1	1.3	PF 2	2.58	2.38	0.20				7396.00		202.11
Reach-1	1.3	PF 3	3.17	2.91	0.26				8914.00		203.31
Reach-1	1.3	PF 4	4.19	3.82	0.37				11522.00		205.39

LPGA Tomoka River EC-RAS Report _ DEM

Reach-1	1.25		Bridge							
Reach-1	1.2	PF 1	1.85	1.72	0.13	0.03	0.00	5470.00		199.22
Reach-1	1.2	PF 2	2.56	2.36	0.20	0.05	0.00	7396.00		199.70
Reach-1	1.2	PF 3	3.15	2.88	0.27	0.06	0.00	8914.00		200.09
Reach-1	1.2	PF 4	4.15	3.78	0.38	0.07	0.04	11522.00		200.88
Reach-1	1.1	PF 1	1.81	1.68	0.13	0.85	0.00	5470.00		183.45
Reach-1	1.1	PF 2	2.51	2.30	0.21	1.42	0.01	7371.55	24.45	2553.13
Reach-1	1.1	PF 3	3.08	2.82	0.26	1.86	0.01	8680.96	233.04	2569.79
Reach-1	1.1	PF 4	4.05	3.74	0.31	2.53	0.04	10539.21	982.79	2589.16
Reach-1	1	PF 1	0.96	0.80	0.16			5465.00		181.77
Reach-1	1	PF 2	1.08	0.80	0.28			7356.00		181.77
Reach-1	1	PF 3	1.21	0.80	0.41			8839.00		181.77
Reach-1	1	PF 4	1.48	0.80	0.68			11383.00		181.77

Corrected Effective Model

LPGA Tomoka River EC-RAS Report _ CEM

HEC-RAS HEC-RAS 6.1.0 September 2021
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X   X XXXXX   XXXX   XXXX   XX   XXXX
X   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 XXXXXX
```

PROJECT DATA

Project Title: Tomoka River
Project File : TomokaRiver.prj
Run Date and Time: 1/24/2023 5:06:20 PM

Project in English units

Project Description:

WATER SURFACE PROFILES FOR TOMOKA RIVER

T1 039
10 YEAR FLOOD

T2 040
TOMOKA RIVER

T3 041
WATER SURFACE

PROFILES FOR TOMOKA RIVER

T1 039

10 YEAR FLOOD
040

T2

TOMOKA RIVER
T3 041

PLAN DATA

Plan Title: CDEM

Plan File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.p06

Geometry Title: Corrected DEM

Geometry File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.g07

Flow Title : FEMA INPUT 02

Flow File : p:\D5 LPGA Drairage\HEC-RAS\TomokaRiver.f04

Plan Description:

Corrected Duplicate Effective Model

Plan Summary Information:

Number of:	Cross Sections =	58	Multiple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	7	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: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA INPUT 02

Flow File : p:\D5 LPGA Drainage\HEC-RAS\TomokaRiver.f04

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2	PF 3	PF 4
RIVER-1	Reach-1	29	477	643	753	931
RIVER-1	Reach-1	28	1203	1616	1885	2324
RIVER-1	Reach-1	27	928	1268	1494	1866
RIVER-1	Reach-1	26.4	928	1268	1494	1866
RIVER-1	Reach-1	25.3	2554	3468	4074	5071
RIVER-1	Reach-1	25.2	2554	3468	4074	5071
RIVER-1	Reach-1	25.1	2554	3468	4074	5071
RIVER-1	Reach-1	25	2633	3556	4167	5170
RIVER-1	Reach-1	24	2728	3675	4302	5332
RIVER-1	Reach-1	23	2710	3649	4271	5289
RIVER-1	Reach-1	22	2903	3893	4553	5634
RIVER-1	Reach-1	20	3219	4361	5122	6374
RIVER-1	Reach-1	19.4	3520	4786	5628	7015
RIVER-1	Reach-1	18.2	3464	4703	5527	6875
RIVER-1	Reach-1	18.1	3464	4703	5527	6875
RIVER-1	Reach-1	18	3655	4971	5846	7280
RIVER-1	Reach-1	17	3613	4924	5800	7230
RIVER-1	Reach-1	16	3959	5404	6368	7947
RIVER-1	Reach-1	15	4859	6631	7809	9741
RIVER-1	Reach-1	14.4	4690	6420	7571	9462
RIVER-1	Reach-1	13.4	4521	6206	7332	9185
RIVER-1	Reach-1	12.1	6997	9688	11504	14490
RIVER-1	Reach-1	12	8490	11760	13955	17579

LPGA Tomoka River EC-RAS Report _ CEM

RIVER-1	Reach-1	11.4	8376	11610	13785	17387
RIVER-1	Reach-1	10	8175	11317	13440	16964
RIVER-1	Reach-1	9	7885	10844	12859	16198
RIVER-1	Reach-1	8	7988	11022	13098	16542
RIVER-1	Reach-1	7	7489	10380	12366	15670
RIVER-1	Reach-1	4	7151	9870	11770	14956
RIVER-1	Reach-1	3	5214	7242	8773	11307
RIVER-1	Reach-1	2	5471	7399	8920	11547
RIVER-1	Reach-1	1.4	5470	7396	8914	11522
RIVER-1	Reach-1	1	5465	7356	8839	11383

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1		Known WS = 0.8
RIVER-1	Reach-1	PF 2		Known WS = 0.8
RIVER-1	Reach-1	PF 3		Known WS = 0.8
RIVER-1	Reach-1	PF 4		Known WS = 0.8

GEOMETRY DATA

Geometry Title: Corrected DEM

Geometry File : p:\D5 LPGA Draiange\HEC-RAS\TomokaRiver.g07

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 29

INPUT

Description:

Station Elevation Data		num=		12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1054	25	1862	24	1907	23	2008	22
2212	21	2632	21	2788	22	2818	23	2928	24
3056	25	3348	26						

Manning's n Values

num=		3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2212	.04	2788	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2212	2788		1398	1398		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.23	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	788.55	1785.35	136.43

LPGA Tomoka River EC-RAS Report _ CEM					
E.G. Slope (ft/ft)	0.000010	Area (sq ft)	788.55	1785.35	136.43
Q Total (cfs)	477.00	Flow (cfs)	31.51	441.83	3.66
Top Width (ft)	1285.94	Top Width (ft)	539.86	576.00	170.08
Vel Total (ft/s)	0.18	Avg. Vel. (ft/s)	0.04	0.25	0.03
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)	1.46	3.10	0.80
Conv. Total (cfs)	152213.0	Conv. (cfs)	10055.9	140990.4	1166.7
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	539.88	576.00	170.10
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	1.84	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	3654.55	4229.12	3530.65
C & E Loss (ft)	0.00	Cum SA (acres)	1643.40	448.16	1344.94

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	25.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.06	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	1507.96	2260.75	320.70
E.G. Slope (ft/ft)	0.000008	Area (sq ft)	1507.96	2260.75	320.70
Q Total (cfs)	643.00	Flow (cfs)	49.67	583.74	9.59
Top Width (ft)	2022.87	Top Width (ft)	1161.26	576.00	285.62
Vel Total (ft/s)	0.16	Avg. Vel. (ft/s)	0.03	0.26	0.03
Max Chl Dpth (ft)	4.06	Hydr. Depth (ft)	1.30	3.92	1.12
Conv. Total (cfs)	230176.2	Conv. (cfs)	17779.9	208964.6	3431.8
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1161.28	576.00	285.64
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	2.45	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	5706.75	4788.11	5368.94
C & E Loss (ft)	0.00	Cum SA (acres)	1915.86	448.49	1920.77

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.57	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	2111.44	2556.55	505.88
E.G. Slope (ft/ft)	0.000007	Area (sq ft)	2111.44	2556.55	505.88
Q Total (cfs)	753.00	Flow (cfs)	78.91	659.85	14.24
Top Width (ft)	2200.56	Top Width (ft)	1188.99	576.00	435.57
Vel Total (ft/s)	0.15	Avg. Vel. (ft/s)	0.04	0.26	0.03
Max Chl Dpth (ft)	4.57	Hydr. Depth (ft)	1.78	4.44	1.16
Conv. Total (cfs)	292703.1	Conv. (cfs)	30672.3	256494.0	5536.9
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1189.01	576.00	435.60
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	2.76	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	7088.14	5136.18	6813.15
C & E Loss (ft)	0.00	Cum SA (acres)	2021.07	448.61	2120.95

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.25	Reach Len. (ft)	1398.00	1398.00	1398.00

LPGA Tomoka River EC-RAS Report _ CEM					
Crit W.S. (ft)		Flow Area (sq ft)	2919.95	2943.13	855.21
E.G. Slope (ft/ft)	0.000006	Area (sq ft)	2919.95	2943.13	855.21
Q Total (cfs)	931.00	Flow (cfs)	124.86	779.16	26.98
Top Width (ft)	2348.00	Top Width (ft)	1212.00	576.00	560.00
Vel Total (ft/s)	0.14	Avg. Vel. (ft/s)	0.04	0.26	0.03
Max Chl Dpth (ft)	5.25	Hydr. Depth (ft)	2.41	5.11	1.53
Conv. Total (cfs)	387546.3	Conv. (cfs)	51975.3	324339.8	11231.1
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1212.27	576.00	560.27
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	3.07	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	9246.26	5651.83	9227.18
C & E Loss (ft)	0.00	Cum SA (acres)	2150.76	448.83	2345.32

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 28

INPUT

Description:

Station Elevation Data		num=	14						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1592	25	2309	24	2337	23	2390	22
2435	21	2440	20	2700	20	2731	21	2812	22
2989	23	3607	24	3729	25	3897	26		

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2390	.04	2812	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2390	2812		1424	1424		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.18	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	120.27	1558.11	721.80
E.G. Slope (ft/ft)	0.000068	Area (sq ft)	120.27	1558.11	721.80
Q Total (cfs)	1203.00	Flow (cfs)	6.74	1141.89	54.37
Top Width (ft)	1451.30	Top Width (ft)	212.01	422.00	817.29
Vel Total (ft/s)	0.50	Avg. Vel. (ft/s)	0.06	0.73	0.08
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)	0.57	3.69	0.88
Conv. Total (cfs)	145637.5	Conv. (cfs)	816.4	138239.4	6581.8
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	212.04	422.13	817.30
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.00
Alpha	2.03	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3639.97	4175.47	3516.88
C & E Loss (ft)	0.00	Cum SA (acres)	1631.34	432.15	1329.10

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	25.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.02	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	546.72	1910.21	1446.19
E.G. Slope (ft/ft)	0.000055	Area (sq ft)	546.72	1910.21	1446.19
Q Total (cfs)	1616.00	Flow (cfs)	30.98	1441.22	143.80
Top Width (ft)	2149.98	Top Width (ft)	808.11	422.00	919.87
Vel Total (ft/s)	0.41	Avg. Vel. (ft/s)	0.06	0.75	0.10
Max Chl Dpth (ft)	5.02	Hydr. Depth (ft)	0.68	4.53	1.57
Conv. Total (cfs)	217678.9	Conv. (cfs)	4173.7	194135.4	19369.9
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	808.14	422.13	919.88
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	2.97	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	5673.77	4721.18	5340.59
C & E Loss (ft)	0.00	Cum SA (acres)	1884.25	432.48	1901.43

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.54	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	1045.82	2129.21	1946.20
E.G. Slope (ft/ft)	0.000048	Area (sq ft)	1045.82	2129.21	1946.20
Q Total (cfs)	1885.00	Flow (cfs)	68.66	1609.40	206.94
Top Width (ft)	2544.40	Top Width (ft)	1115.34	422.00	1007.06
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)	0.07	0.76	0.11
Max Chl Dpth (ft)	5.54	Hydr. Depth (ft)	0.94	5.05	1.93
Conv. Total (cfs)	272468.0	Conv. (cfs)	9924.8	232631.4	29911.9
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	1115.37	422.13	1007.07
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	3.61	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	7037.48	5060.99	6773.80
C & E Loss (ft)	0.00	Cum SA (acres)	1984.09	432.60	2097.80

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.21	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	1920.60	2414.14	2660.68
E.G. Slope (ft/ft)	0.000042	Area (sq ft)	1920.60	2414.14	2660.68
Q Total (cfs)	2324.00	Flow (cfs)	153.06	1860.11	310.82
Top Width (ft)	2897.00	Top Width (ft)	1390.00	422.00	1085.00
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)	0.08	0.77	0.12
Max Chl Dpth (ft)	6.21	Hydr. Depth (ft)	1.38	5.72	2.45
Conv. Total (cfs)	358318.9	Conv. (cfs)	23599.7	286795.9	47923.2
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	1390.24	422.13	1085.22
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	4.33	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	9168.58	5565.87	9170.76
C & E Loss (ft)	0.00	Cum SA (acres)	2109.01	432.81	2318.92

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 27

INPUT

Description:

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1534	25	1815	24	1871	23	1999	22
2091	21	2181	20	2200	19.7	2500	19.7	2580	20
2737	21	2847	22	3075	23	3213	24	3835	25
3908	26								

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
1000	.15	2181	.04
		2580	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2181	2580		1912	1912		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.13	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	816.83	1754.57	1326.37
E.G. Slope (ft/ft)	0.000020	Area (sq ft)	816.83	1754.57	1326.37
Q Total (cfs)	928.00	Flow (cfs)	57.82	781.69	88.49
Top Width (ft)	1519.58	Top Width (ft)	403.83	399.00	716.75
Vel Total (ft/s)	0.24	Avg. Vel. (ft/s)	0.07	0.45	0.07
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	2.02	4.40	1.85
Conv. Total (cfs)	207691.0	Conv. (cfs)	12941.0	174945.7	19804.3
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	403.86	399.00	716.76
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	2.96	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	3624.65	4121.32	3483.41
C & E Loss (ft)	0.00	Cum SA (acres)	1621.27	418.73	1304.02

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.97	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	1254.35	2089.21	2146.26
E.G. Slope (ft/ft)	0.000020	Area (sq ft)	1254.35	2089.21	2146.26
Q Total (cfs)	1268.00	Flow (cfs)	86.88	1044.24	136.88
Top Width (ft)	2276.93	Top Width (ft)	639.51	399.00	1238.42
Vel Total (ft/s)	0.23	Avg. Vel. (ft/s)	0.07	0.50	0.06
Max Chl Dpth (ft)	5.27	Hydr. Depth (ft)	1.96	5.24	1.73
Conv. Total (cfs)	284167.0	Conv. (cfs)	19469.8	234021.6	30675.7

			LPGA Tomoka River EC-RAS Report _ CEM		
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	639.53	399.00	1238.43
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	3.87	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	5644.34	4655.81	5281.87
C & E Loss (ft)	0.00	Cum SA (acres)	1860.59	419.06	1866.15

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.50	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	1658.55	2297.95	2811.60
E.G. Slope (ft/ft)	0.000019	Area (sq ft)	1658.55	2297.95	2811.60
Q Total (cfs)	1494.00	Flow (cfs)	105.83	1185.87	202.30
Top Width (ft)	2602.37	Top Width (ft)	912.13	399.00	1291.24
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.52	0.07
Max Chl Dpth (ft)	5.80	Hydr. Depth (ft)	1.82	5.76	2.18
Conv. Total (cfs)	345540.4	Conv. (cfs)	24475.9	274274.8	46789.7
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	912.15	399.00	1291.26
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.36	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	6993.27	4988.63	6696.03
C & E Loss (ft)	0.00	Cum SA (acres)	1950.95	419.18	2060.23

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.17	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	2391.99	2568.61	3703.19
E.G. Slope (ft/ft)	0.000018	Area (sq ft)	2391.99	2568.61	3703.19
Q Total (cfs)	1866.00	Flow (cfs)	160.55	1397.82	307.63
Top Width (ft)	2908.00	Top Width (ft)	1181.00	399.00	1328.00
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.07	0.54	0.08
Max Chl Dpth (ft)	6.47	Hydr. Depth (ft)	2.03	6.44	2.79
Conv. Total (cfs)	440801.3	Conv. (cfs)	37927.4	330203.8	72670.1
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	1181.20	399.00	1328.20
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.82	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	9098.09	5484.42	9066.74
C & E Loss (ft)	0.00	Cum SA (acres)	2066.99	419.39	2279.48

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 26.4

INPUT

Description:

Station Elevation Data num= 26

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Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
387	25.9	547	25	817	24	917	23	1000	21.8
1035	21.3	1060	21.1	1098	20.4	1113	19.7	1119	19.2
1144	18.5	1189	17.6	1239	18.1	1295	18.3	1376	19.1
1380	19.4	1410	19.3	1477	20	1547	21	1747	22
1927	23	2117	23	2367	22	2427	23	2437	24
2487	26								

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
387	.15	1113	.04	1380	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1113	1380		350	350	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.10	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	551.96	1530.86	2210.82
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	551.96	1530.86	2210.82
Q Total (cfs)	928.00	Flow (cfs)	32.14	748.84	147.02
Top Width (ft)	1649.24	Top Width (ft)	322.76	267.00	1059.48
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.49	0.07
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	1.71	5.73	2.09
Conv. Total (cfs)	225727.8	Conv. (cfs)	7818.6	182148.1	35761.2
Length Wtd. (ft)	350.00	Wetted Per. (ft)	322.80	267.06	1059.56
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.15	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3594.61	4049.22	3405.78
C & E Loss (ft)	0.00	Cum SA (acres)	1605.32	404.11	1265.04

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.94	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	917.41	1754.69	3107.80
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	917.41	1754.69	3107.80
Q Total (cfs)	1268.00	Flow (cfs)	53.42	954.64	259.94
Top Width (ft)	1896.54	Top Width (ft)	549.11	267.00	1080.44
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.54	0.08
Max Chl Dpth (ft)	7.34	Hydr. Depth (ft)	1.67	6.57	2.88
Conv. Total (cfs)	303724.5	Conv. (cfs)	12795.4	228665.6	62263.5
Length Wtd. (ft)	350.00	Wetted Per. (ft)	549.15	267.06	1080.53
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.66	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	5596.67	4571.45	5166.56
C & E Loss (ft)	0.01	Cum SA (acres)	1834.51	404.44	1815.26

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.46	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	1232.65	1894.71	3677.81
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	1232.65	1894.71	3677.81
Q Total (cfs)	1494.00	Flow (cfs)	77.70	1077.30	339.00
Top Width (ft)	2008.65	Top Width (ft)	648.10	267.00	1093.55
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.57	0.09
Max Chl Dpth (ft)	7.86	Hydr. Depth (ft)	1.90	7.10	3.36
Conv. Total (cfs)	360398.7	Conv. (cfs)	18743.7	259877.5	81777.4
Length Wtd. (ft)	350.00	Wetted Per. (ft)	648.15	267.06	1093.65
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.88	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	6929.82	4896.61	6553.61
C & E Loss (ft)	0.01	Cum SA (acres)	1916.71	404.56	2007.90

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.14	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	1708.00	2075.80	4425.01
E.G. Slope (ft/ft)	0.000018	Area (sq ft)	1708.00	2075.80	4425.01
Q Total (cfs)	1866.00	Flow (cfs)	126.06	1274.84	465.10
Top Width (ft)	2100.00	Top Width (ft)	726.00	267.00	1107.00
Vel Total (ft/s)	0.23	Avg. Vel. (ft/s)	0.07	0.61	0.11
Max Chl Dpth (ft)	8.54	Hydr. Depth (ft)	2.35	7.77	4.00
Conv. Total (cfs)	442891.8	Conv. (cfs)	29921.1	302580.8	110390.0
Length Wtd. (ft)	350.00	Wetted Per. (ft)	726.29	267.06	1107.26
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	5.05	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	9008.11	5382.49	8888.35
C & E Loss (ft)	0.01	Cum SA (acres)	2025.13	404.78	2226.04

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.3

INPUT

Description:

LPGA Tomoka River EC-RAS Report _ CEM

Station Elevation Data			num=	16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1490	26	1994	24.9	2000	22.8	2012.2	19.8	2039.8	19
2071	18.7	2110.4	18.4	2121.4	18.2	2137.4	17.6	2158.3	17.9
2166.8	19.5	2173.3	21.2	2174	22	2180.1	23.3	2185.1	24.7
3540	26								

Manning's n Values			num=	3		
Sta	n Val	Sta	n Val	Sta	n Val	
1490	.15	1994	.04	2185.1	.15	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1994	2185.1		96.1	96.1		.3	.5

Ineffective Flow			num=	2	
Sta L	Sta R	Elev	Permanent		
1490	1994	25.9	F		
2185.1	3540	25.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.07	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	19.60	Flow Area (sq ft)		921.10	
E.G. Slope (ft/ft)	0.00088	Area (sq ft)		921.10	
Q Total (cfs)	928.00	Flow (cfs)		928.00	
Top Width (ft)	186.49	Top Width (ft)		186.49	
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)		1.01	
Max Chl Dpth (ft)	6.47	Hydr. Depth (ft)		4.94	
Conv. Total (cfs)	98681.2	Conv. (cfs)		98681.2	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		188.07	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)		Cum Volume (acre-ft)	3592.39	4039.37	3396.89
C & E Loss (ft)		Cum SA (acres)	1604.03	402.29	1260.78

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.90	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	19.86	Flow Area (sq ft)		1078.17	
E.G. Slope (ft/ft)	0.000101	Area (sq ft)	0.00	1078.17	21.23
Q Total (cfs)	1268.00	Flow (cfs)		1268.00	
Top Width (ft)	402.30	Top Width (ft)	0.84	191.10	210.36
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)		1.18	
Max Chl Dpth (ft)	7.30	Hydr. Depth (ft)		5.64	
Conv. Total (cfs)	126136.9	Conv. (cfs)		126136.9	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		192.91	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)		Cum Volume (acre-ft)	5592.99	4560.07	5153.99
C & E Loss (ft)		Cum SA (acres)	1832.30	402.60	1810.07

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	25.42	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	20.01	Flow Area (sq ft)		1177.55	
E.G. Slope (ft/ft)	0.000105	Area (sq ft)	62.39	1177.55	271.55
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	1182.57	Top Width (ft)	239.11	191.10	752.36
Vel Total (ft/s)	1.27	Avg. Vel. (ft/s)		1.27	
Max Chl Dpth (ft)	7.82	Hydr. Depth (ft)		6.16	
Conv. Total (cfs)	146104.0	Conv. (cfs)		146104.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		192.91	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)		Cum Volume (acre-ft)	6924.62	4884.27	6537.75
C & E Loss (ft)		Cum SA (acres)	1913.14	402.72	2000.48

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.10	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	20.24	Flow Area (sq ft)	326.86	1306.85	1014.18
E.G. Slope (ft/ft)	0.000102	Area (sq ft)	326.86	1306.85	1014.18
Q Total (cfs)	1866.00	Flow (cfs)	24.53	1757.72	83.75
Top Width (ft)	2050.00	Top Width (ft)	504.00	191.10	1354.90
Vel Total (ft/s)	0.70	Avg. Vel. (ft/s)	0.08	1.34	0.08
Max Chl Dpth (ft)	8.50	Hydr. Depth (ft)	0.65	6.84	0.75
Conv. Total (cfs)	184518.8	Conv. (cfs)	2425.6	173811.1	8282.0
Length Wtd. (ft)	1.00	Wetted Per. (ft)	504.10	192.91	1355.00
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.04	0.00
Alpha	3.43	Stream Power (lb/ft s)	0.00	0.06	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	8999.94	5368.90	8866.50
C & E Loss (ft)		Cum SA (acres)	2020.19	402.94	2216.15

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 26.25

INPUT
 Description: Bridge #7

Distance from Upstream XS = 1

Deck/Roadway Width = 95
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1994		25.9		23.7	2185		25.9		23.7

Upstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1490	26	1994	24.9	2000	22.8	2012.2	19.8	2039.8	19
2071	18.7	2110.4	18.4	2121.4	18.2	2137.4	17.6	2158.3	17.9
2166.8	19.5	2173.3	21.2	2174	22	2180.1	23.3	2185.1	24.7
3540	26								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1490	.15	1994	.04	2185.1	.15

Bank Sta: Left Right Coeff Contr. Expan.
 1994 2185.1 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1490	1994	25.9	F
2185.1	3540	25.9	F

Downstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1994		25.9		23.7	2185		25.9		23.7

Downstream Bridge Cross Section Data

Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
811	26	2000	25.4	2001.4	23.2	2011.7	20.3	2024.8	20
2040.4	19	2060	18.2	2067	17.6	2082	17.2	2098.9	16.6
2109.1	18.1	2115	18.7	2142.3	20	2165.7	19.9	2172.2	21.8
2172.9	22.2	2178.9	24.3	2182.4	25.5	3591.2	26.6		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
811	.15	2000	.04	2182.4	.15

Bank Sta: Left Right Coeff Contr. Expan.
 2000 2182.4 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
811	2000	24.8	F
2182.4	3591.2	24.8	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins = 25.9

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 2089.55 Downstream= 2091.2

Upstream	num=	2	
Width	Elev	Width	Elev
8.5	17.6	8.5	23.7
Downstream	num=	2	
Width	Elev	Width	Elev
8.5	16.6	8.5	23.7

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 23.7

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	24.09	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	24.07	E.G. Elev (ft)	24.09	24.07
Q Total (cfs)	928.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	928.00	Crit W.S. (ft)	19.64	19.70
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.15	1.24
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.09	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	2056.03	1887.99
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.02	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.02	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.24	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.04	0.04
BR Sel Method	Press Only	Power Total (lb/ft s)	0.04	0.05

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

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Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	24.92	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	24.90	E.G. Elev (ft)	24.92	24.88
Q Total (cfs)	1268.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	1268.00	Crit W.S. (ft)	19.91	20.15
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.57	1.69
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.13	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	2084.72	1918.95
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.05	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.05	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.69	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.07	0.08
BR Sel Method	Press Only	Power Total (lb/ft s)	0.11	0.14

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	25.45	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	25.42	E.G. Elev (ft)	25.45	25.38
Q Total (cfs)	1494.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	1494.00	Crit W.S. (ft)	20.06	20.33
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.85	1.99
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.15	0.17
Weir Max Depth (ft)		Specif Force (cu ft)	2108.72	1944.83
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.07	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.07	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.99	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.09	0.11
BR Sel Method	Press Only	Power Total (lb/ft s)	0.18	0.22

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- Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.
- Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
- Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.
- Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	26.13	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	26.10	E.G. Elev (ft)	26.13	26.12
Q Total (cfs)	1866.00	W.S. Elev (ft)	26.10	26.08
Q Bridge (cfs)	960.76	Crit W.S. (ft)	20.30	20.58
Q Weir (cfs)	905.24	Max Chl Dpth (ft)	8.50	9.48
Weir Sta Lft (ft)	811.00	Vel Total (ft/s)	0.85	1.28
Weir Sta Rgt (ft)	2982.87	Flow Area (sq ft)	2187.74	1454.61
Weir Submerg	0.95	Froude # Chl	0.09	0.12
Weir Max Depth (ft)	0.72	Specif Force (cu ft)	4656.99	3906.90
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	1.07	0.69
Min El Prs (ft)	23.70	W.P. Total (ft)	2415.38	2471.05
Delta EG (ft)	0.01	Conv. Total (cfs)		
Delta WS (ft)	0.01	Top Width (ft)	2050.00	2119.64
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.28	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)		
BR Sel Method	Press/Weir	Power Total (lb/ft s)		

- Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.
- Note: The downstream water surface is above the minimum elevation required for orifice flow. The orifice flow equation was used for pressure flow.
- 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.
- 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 and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 26.2

INPUT

Description:

Station Elevation Data		num= 19							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
811	26	2000	25.4	2001.4	23.2	2011.7	20.3	2024.8	20
2040.4	19	2060	18.2	2067	17.6	2082	17.2	2098.9	16.6
2109.1	18.1	2115	18.7	2142.3	20	2165.7	19.9	2172.2	21.8
2172.9	22.2	2178.9	24.3	2182.4	25.5	3591.2	26.6		

Manning's n Values num= 3

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Sta	n Val	Sta	n Val	Sta	n Val
811	.15	2000	.04	2182.4	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2000	2182.4		181	181		.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
811	2000	24.8	F					
2182.4	3591.2	24.8	F					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.05	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	19.46	Flow Area (sq ft)		869.28	
E.G. Slope (ft/ft)	0.000101	Area (sq ft)		869.28	
Q Total (cfs)	928.00	Flow (cfs)		928.00	
Top Width (ft)	177.32	Top Width (ft)		177.32	
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)		1.07	
Max Chl Dpth (ft)	7.45	Hydr. Depth (ft)		4.90	
Conv. Total (cfs)	92553.7	Conv. (cfs)		92553.7	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		179.15	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	3592.39	4037.64	3396.89
C & E Loss (ft)	0.01	Cum SA (acres)	1604.03	401.91	1260.78

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.85	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	19.84	Flow Area (sq ft)		1012.88	
E.G. Slope (ft/ft)	0.000116	Area (sq ft)		1012.88	
Q Total (cfs)	1268.00	Flow (cfs)		1268.00	
Top Width (ft)	180.16	Top Width (ft)		180.16	
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)		1.25	
Max Chl Dpth (ft)	8.25	Hydr. Depth (ft)		5.62	
Conv. Total (cfs)	117921.9	Conv. (cfs)		117921.9	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		182.56	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5592.99	4558.35	5153.99
C & E Loss (ft)	0.00	Cum SA (acres)	1832.30	402.22	1810.07

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	25.35	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	20.14	Flow Area (sq ft)		1102.67	
E.G. Slope (ft/ft)	0.000123	Area (sq ft)		1102.67	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	181.92	Top Width (ft)		181.92	
Vel Total (ft/s)	1.35	Avg. Vel. (ft/s)		1.35	
Max Chl Dpth (ft)	8.75	Hydr. Depth (ft)		6.06	
Conv. Total (cfs)	134813.5	Conv. (cfs)		134813.5	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		184.68	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	6924.62	4882.55	6537.74
C & E Loss (ft)	0.00	Cum SA (acres)	1913.14	402.34	2000.47

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.08	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	20.40	Flow Area (sq ft)	456.85	1236.89	218.57
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	456.85	1236.89	218.57
Q Total (cfs)	1866.00	Flow (cfs)	26.84	1828.47	10.70
Top Width (ft)	2119.64	Top Width (ft)	1189.00	182.40	748.24
Vel Total (ft/s)	0.98	Avg. Vel. (ft/s)	0.06	1.48	0.05
Max Chl Dpth (ft)	9.48	Hydr. Depth (ft)	0.38	6.78	0.29
Conv. Total (cfs)	166293.1	Conv. (cfs)	2391.8	162948.1	953.2
Length Wtd. (ft)	181.00	Wetted Per. (ft)	1189.08	185.21	748.24
Min Ch El (ft)	16.60	Shear (lb/sq ft)	0.00	0.05	0.00
Alpha	2.25	Stream Power (lb/ft s)	0.00	0.08	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	8999.07	5367.10	8865.13
C & E Loss (ft)	0.01	Cum SA (acres)	2018.33	402.53	2213.83

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 26.1

INPUT

Description: wide flood plain distance criteria not met

*

001

US92

*

001

Station Elevation Data num= 21

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Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
406	26.6	651	25.6	1789	24	2000	22.6	2047	21.9
2075	22.2	2137	21.9	2155	20	2158	19.2	2164	16
2175	17.5	2186	19.2	2197	20.4	2222	20	2268	20.8
2294	19.9	2489	23	3076	23	3351	24	4076	25
5576	26								

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
406	.15	2155	.04	2197	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2155	2197		500	500		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.00	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	458.82	239.52	1572.41
E.G. Slope (ft/ft)	0.000315	Area (sq ft)	458.82	239.52	1572.41
Q Total (cfs)	928.00	Flow (cfs)	93.82	494.39	339.79
Top Width (ft)	1560.21	Top Width (ft)	365.37	42.00	1152.85
Vel Total (ft/s)	0.41	Avg. Vel. (ft/s)	0.20	2.06	0.22
Max Chl Dpth (ft)	8.00	Hydr. Depth (ft)	1.26	5.70	1.36
Conv. Total (cfs)	52318.5	Conv. (cfs)	5289.2	27872.6	19156.7
Length Wtd. (ft)	500.00	Wetted Per. (ft)	365.48	43.20	1152.90
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.02	0.11	0.03
Alpha	13.72	Stream Power (lb/ft s)	0.01	0.22	0.01
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	3591.44	4035.34	3393.63
C & E Loss (ft)	0.01	Cum SA (acres)	1603.27	401.46	1258.39

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.82	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1001.14	274.21	2770.13
E.G. Slope (ft/ft)	0.000236	Area (sq ft)	1001.14	274.21	2770.13
Q Total (cfs)	1268.00	Flow (cfs)	157.87	536.95	573.18
Top Width (ft)	2742.07	Top Width (ft)	950.39	42.00	1749.68
Vel Total (ft/s)	0.31	Avg. Vel. (ft/s)	0.16	1.96	0.21
Max Chl Dpth (ft)	8.82	Hydr. Depth (ft)	1.05	6.53	1.58
Conv. Total (cfs)	82461.3	Conv. (cfs)	10266.7	34919.2	37275.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	950.50	43.20	1749.74
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	16.76	Stream Power (lb/ft s)	0.00	0.18	0.00
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	5590.91	4555.67	5148.23
C & E Loss (ft)	0.01	Cum SA (acres)	1830.32	401.76	1806.44

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.33	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1570.02	295.36	3784.32
E.G. Slope (ft/ft)	0.000190	Area (sq ft)	1570.02	295.36	3784.32
Q Total (cfs)	1494.00	Flow (cfs)	242.14	545.02	706.83
Top Width (ft)	3717.54	Top Width (ft)	1308.61	42.00	2366.93
Vel Total (ft/s)	0.26	Avg. Vel. (ft/s)	0.15	1.85	0.19
Max Chl Dpth (ft)	9.33	Hydr. Depth (ft)	1.20	7.03	1.60
Conv. Total (cfs)	108340.0	Conv. (cfs)	17559.5	39523.4	51257.1
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1308.72	43.20	2366.98
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	18.06	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	6921.36	4879.64	6529.88
C & E Loss (ft)	0.01	Cum SA (acres)	1910.42	401.87	1995.55

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	2695.67	326.78	5970.51
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	2695.67	326.78	5970.51
Q Total (cfs)	1866.00	Flow (cfs)	409.86	511.29	944.85
Top Width (ft)	5040.96	Top Width (ft)	1619.96	42.00	3379.00
Vel Total (ft/s)	0.21	Avg. Vel. (ft/s)	0.15	1.56	0.16
Max Chl Dpth (ft)	10.07	Hydr. Depth (ft)	1.66	7.78	1.77
Conv. Total (cfs)	170713.6	Conv. (cfs)	37496.6	46775.8	86441.2
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1620.08	43.20	3379.13
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	15.99	Stream Power (lb/ft s)	0.00	0.09	0.00
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	8992.52	5363.85	8852.27
C & E Loss (ft)	0.01	Cum SA (acres)	2012.50	402.06	2205.25

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 25.3

INPUT

Description: INTERPOLATED SECTION

* 001

x-sec info from aerials and u/s,d/s
surveyed channel sections

*

001

LPGA Tomoka River EC-RAS Report _ CEM

Station Elevation Data		num=		29					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
30	27	60	26	130	25	300	23	500	22
610	22	640	23	810	23	1010	22	1320	23
1400	24	1680	24	1700	23	1730	22	1820	21
1905	20	1945	19	1970	18	2020	18	2050	19
2070	20	2120	21	2150	22	2180	23	2500	23
2870	23	2930	24	3310	25	4886	26		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
30	.2	1945	.04	2050	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1945	2050		830	830	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	23.56	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	1721.04	556.39	724.31
E.G. Slope (ft/ft)	0.000918	Area (sq ft)	1721.04	556.39	724.31
Q Total (cfs)	2554.00	Flow (cfs)	504.91	1902.96	146.13
Top Width (ft)	2327.40	Top Width (ft)	1368.75	105.00	853.65
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.29	3.42	0.20
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	1.26	5.30	0.85
Conv. Total (cfs)	84293.3	Conv. (cfs)	16664.3	62806.2	4822.8
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1368.84	105.04	853.72
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.07	0.30	0.05
Alpha	12.07	Stream Power (lb/ft s)	0.02	1.04	0.01
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	3578.93	4030.77	3380.45
C & E Loss (ft)	0.02	Cum SA (acres)	1593.32	400.61	1246.87

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.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	24.49	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	3204.69	654.35	1585.91
E.G. Slope (ft/ft)	0.000680	Area (sq ft)	3204.69	654.35	1585.91
Q Total (cfs)	3468.00	Flow (cfs)	921.68	2146.30	400.02
Top Width (ft)	2944.63	Top Width (ft)	1771.98	105.00	1067.66
Vel Total (ft/s)	0.64	Avg. Vel. (ft/s)	0.29	3.28	0.25
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)	1.81	6.23	1.49
Conv. Total (cfs)	132979.1	Conv. (cfs)	35341.6	82298.9	15338.6
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1772.08	105.04	1067.73
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.26	0.06
Alpha	16.49	Stream Power (lb/ft s)	0.02	0.87	0.02
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	5566.77	4550.34	5123.23

C & E Loss (ft)	0.01	Cum SA (acres)	LPGA Tomoka River	EC-RAS Report _ CEM
			1814.70	400.92
				1790.27

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	25.06	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	4220.68	713.75	2252.80
E.G. Slope (ft/ft)	0.000551	Area (sq ft)	4220.68	713.75	2252.80
Q Total (cfs)	4074.00	Flow (cfs)	1289.81	2232.58	551.61
Top Width (ft)	3277.99	Top Width (ft)	1819.17	105.00	1353.82
Vel Total (ft/s)	0.57	Avg. Vel. (ft/s)	0.31	3.13	0.24
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	2.32	6.80	1.66
Conv. Total (cfs)	173580.0	Conv. (cfs)	54954.5	95123.1	23502.4
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1819.28	105.04	1353.90
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.23	0.06
Alpha	16.80	Stream Power (lb/ft s)	0.02	0.73	0.01
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	6888.12	4873.85	6495.23
C & E Loss (ft)	0.01	Cum SA (acres)	1892.47	401.03	1974.20

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	25.87	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	5713.62	798.60	3861.44
E.G. Slope (ft/ft)	0.000443	Area (sq ft)	5713.62	798.60	3861.44
Q Total (cfs)	5071.00	Flow (cfs)	1876.93	2413.73	780.34
Top Width (ft)	4608.14	Top Width (ft)	1875.74	105.00	2627.40
Vel Total (ft/s)	0.49	Avg. Vel. (ft/s)	0.33	3.02	0.20
Max Chl Dpth (ft)	7.87	Hydr. Depth (ft)	3.05	7.61	1.47
Conv. Total (cfs)	240989.1	Conv. (cfs)	89197.4	114707.7	37084.1
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1875.85	105.04	2627.48
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.21	0.04
Alpha	18.39	Stream Power (lb/ft s)	0.03	0.64	0.01
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	8944.26	5357.39	8795.84
C & E Loss (ft)	0.00	Cum SA (acres)	1992.43	401.22	2170.78

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.2

INPUT

Description: INTERPOLATED SECTION
 *

001

Station	Elevation	Data	num=	21						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
1000	26.6	1630	22	1710	23	1930	22	2750	21	
2860	20	2900	19	2950	18	2980	17	3020	16	
3040	16	3070	17	3110	18	3190	19	3220	20	

3250 21 3280 22 3340 23 3420 24 3680 25
4510 26.2

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
1000 .18 2980 .04 3070 .18

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
2980 3070 1000 1000 1000 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	23.09	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	2385.64	602.97	859.21
E.G. Slope (ft/ft)	0.000442	Area (sq ft)	2385.64	602.97	859.21
Q Total (cfs)	2554.00	Flow (cfs)	564.22	1672.81	316.97
Top Width (ft)	1866.16	Top Width (ft)	1499.08	90.00	277.08
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.24	2.77	0.37
Max Chl Dpth (ft)	7.09	Hydr. Depth (ft)	1.59	6.70	3.10
Conv. Total (cfs)	121509.4	Conv. (cfs)	26843.4	79585.8	15080.2
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1499.14	90.03	277.16
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.04	0.18	0.09
Alpha	11.51	Stream Power (lb/ft s)	0.01	0.51	0.03
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	3539.80	4019.73	3365.36
C & E Loss (ft)	0.01	Cum SA (acres)	1565.99	398.76	1236.10

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	24.12	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	3999.11	695.49	1187.56
E.G. Slope (ft/ft)	0.000364	Area (sq ft)	3999.11	695.49	1187.56
Q Total (cfs)	3468.00	Flow (cfs)	1141.47	1926.87	399.66
Top Width (ft)	2110.18	Top Width (ft)	1639.88	90.00	380.30
Vel Total (ft/s)	0.59	Avg. Vel. (ft/s)	0.29	2.77	0.34
Max Chl Dpth (ft)	8.12	Hydr. Depth (ft)	2.44	7.73	3.12
Conv. Total (cfs)	181715.1	Conv. (cfs)	59810.6	100963.5	20941.0
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1639.94	90.03	380.39
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.06	0.18	0.07
Alpha	12.38	Stream Power (lb/ft s)	0.02	0.49	0.02
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	5498.14	4537.48	5096.81
C & E Loss (ft)	0.01	Cum SA (acres)	1782.19	399.06	1776.47

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	24.72	Reach Len. (ft)	1000.00	1000.00	1000.00

LPGA Tomoka River EC-RAS Report _ CEM					
Crit W.S. (ft)		Flow Area (sq ft)	5018.43	750.05	1465.89
E.G. Slope (ft/ft)	0.000335	Area (sq ft)	5018.43	750.05	1465.89
Q Total (cfs)	4074.00	Flow (cfs)	1546.33	2095.64	432.03
Top Width (ft)	2350.83	Top Width (ft)	1722.90	90.00	537.92
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.31	2.79	0.29
Max Chl Dpth (ft)	8.72	Hydr. Depth (ft)	2.91	8.33	2.73
Conv. Total (cfs)	222605.6	Conv. (cfs)	84492.4	114506.7	23606.5
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1722.97	90.03	538.01
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.06	0.17	0.06
Alpha	12.80	Stream Power (lb/ft s)	0.02	0.49	0.02
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	6800.10	4859.90	6459.80
C & E Loss (ft)	0.01	Cum SA (acres)	1858.72	399.17	1956.18

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	25.57	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	6522.33	826.06	2082.38
E.G. Slope (ft/ft)	0.000311	Area (sq ft)	6522.33	826.06	2082.38
Q Total (cfs)	5071.00	Flow (cfs)	2207.30	2370.45	493.25
Top Width (ft)	2930.97	Top Width (ft)	1838.57	90.00	1002.40
Vel Total (ft/s)	0.54	Avg. Vel. (ft/s)	0.34	2.87	0.24
Max Chl Dpth (ft)	9.57	Hydr. Depth (ft)	3.55	9.18	2.08
Conv. Total (cfs)	287714.9	Conv. (cfs)	125236.5	134492.7	27985.7
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1838.63	90.03	1002.49
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.07	0.18	0.04
Alpha	13.50	Stream Power (lb/ft s)	0.02	0.51	0.01
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	8827.69	5341.91	8739.22
C & E Loss (ft)	0.01	Cum SA (acres)	1957.05	399.36	2136.20

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.1

INPUT

Description: INTERPOLATED SECTION
 *

001

Station Elevation Data		num=		26					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	25	1240	24	1310	23	1380	22	1440	22
1460	23	1730	23	1815	22	2300	21	2480	20
2570	19	2640	18	2680	17	2730	16	2790	15
2810	15	2860	16	2900	17	2950	18	2980	19
3020	20	3060	21	3110	22	3140	23	3185	24
3235	25								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.17	2730	.04	2860	.17

LPGA Tomoka River EC-RAS Report _ CEM

Bank Sta: Left Right Lengths: Left Channel Right
2730 2860 1744 1744 1744

Coeff Contr. Expan.
.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	22.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	22.85	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	2325.53	965.04	957.37
E.G. Slope (ft/ft)	0.000181	Area (sq ft)	2325.53	965.04	957.37
Q Total (cfs)	2554.00	Flow (cfs)	462.36	1833.57	258.07
Top Width (ft)	1528.53	Top Width (ft)	1123.14	130.00	275.40
Vel Total (ft/s)	0.60	Avg. Vel. (ft/s)	0.20	1.90	0.27
Max Chl Dpth (ft)	7.85	Hydr. Depth (ft)	2.07	7.42	3.48
Conv. Total (cfs)	190006.4	Conv. (cfs)	34397.6	136409.5	19199.3
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1123.21	130.02	275.48
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.02	0.08	0.04
Alpha	7.21	Stream Power (lb/ft s)	0.00	0.16	0.01
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	3485.73	4001.73	3344.51
C & E Loss (ft)	0.00	Cum SA (acres)	1535.90	396.23	1229.76

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.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	23.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	23.89	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	3784.55	1100.09	1265.52
E.G. Slope (ft/ft)	0.000179	Area (sq ft)	3784.55	1100.09	1265.52
Q Total (cfs)	3468.00	Flow (cfs)	827.02	2270.75	370.23
Top Width (ft)	1931.81	Top Width (ft)	1481.97	130.00	319.84
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.22	2.06	0.29
Max Chl Dpth (ft)	8.89	Hydr. Depth (ft)	2.55	8.46	3.96
Conv. Total (cfs)	259152.6	Conv. (cfs)	61800.9	169685.6	27666.1
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1482.05	130.02	319.94
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.03	0.09	0.04
Alpha	8.84	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	5408.79	4516.87	5068.65
C & E Loss (ft)	0.00	Cum SA (acres)	1746.36	396.53	1768.44

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	24.50	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	4732.24	1180.18	1471.74
E.G. Slope (ft/ft)	0.000174	Area (sq ft)	4732.24	1180.18	1471.74
Q Total (cfs)	4074.00	Flow (cfs)	1118.34	2514.14	441.52

LPGA Tomoka River EC-RAS Report _ CEM					
Top Width (ft)	2090.40	Top Width (ft)	1610.33	130.00	350.07
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.24	2.13	0.30
Max Chl Dpth (ft)	9.50	Hydr. Depth (ft)	2.94	9.08	4.20
Conv. Total (cfs)	309132.5	Conv. (cfs)	84859.0	190771.3	33502.1
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1610.42	130.02	350.18
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.03	0.10	0.05
Alpha	9.28	Stream Power (lb/ft s)	0.01	0.21	0.01
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	6688.18	4837.75	6426.09
C & E Loss (ft)	0.00	Cum SA (acres)	1820.46	396.65	1945.98

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	25.36	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	6181.80	1291.35	1786.20
E.G. Slope (ft/ft)	0.000167	Area (sq ft)	6181.80	1291.35	1786.20
Q Total (cfs)	5071.00	Flow (cfs)	1633.11	2866.73	571.17
Top Width (ft)	2235.00	Top Width (ft)	1730.00	130.00	375.00
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.26	2.22	0.32
Max Chl Dpth (ft)	10.36	Hydr. Depth (ft)	3.57	9.93	4.76
Conv. Total (cfs)	392084.1	Conv. (cfs)	126270.0	221652.2	44161.9
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1730.44	130.02	375.47
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.04	0.10	0.05
Alpha	9.40	Stream Power (lb/ft s)	0.01	0.23	0.02
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	8681.87	5317.61	8694.81
C & E Loss (ft)	0.00	Cum SA (acres)	1916.09	396.83	2120.39

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 25

INPUT

Description:

Station Elevation Data		num=	25						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
334	25	1010	21	1300	20.5	1354	20.7	1413	20.4
1463	19.7	1514	17.9	1565	16.1	1618	15.3	1621	14.9
1637	12.6	1646	14	1651	15.2	1703	15.1	1760	15.1
1787	15.7	1809	17.1	1833	18.5	1883	19.5	2066	20
2110	21	2172	22	2272	23	2535	24	2672	25

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
334	.15	1618	.04	1651	.15

LPGA Tomoka River EC-RAS Report _ CEM

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1618	1651		3391 3391	3391	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	22.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.31	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	1707.40	278.26	1977.20
E.G. Slope (ft/ft)	0.000518	Area (sq ft)	1707.40	278.26	1977.20
Q Total (cfs)	2633.00	Flow (cfs)	623.04	966.32	1043.65
Top Width (ft)	1414.60	Top Width (ft)	829.52	33.00	552.08
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.36	3.47	0.53
Max Chl Dpth (ft)	9.71	Hydr. Depth (ft)	2.06	8.43	3.58
Conv. Total (cfs)	115652.1	Conv. (cfs)	27366.2	42444.5	45841.3
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	829.60	33.44	552.20
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.07	0.27	0.12
Alpha	10.35	Stream Power (lb/ft s)	0.02	0.94	0.06
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	3404.99	3976.84	3285.76
C & E Loss (ft)	0.00	Cum SA (acres)	1496.81	392.97	1213.19

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	23.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	23.39	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	2696.33	313.72	2640.27
E.G. Slope (ft/ft)	0.000463	Area (sq ft)	2696.33	313.72	2640.27
Q Total (cfs)	3556.00	Flow (cfs)	1105.22	1115.47	1335.32
Top Width (ft)	1766.47	Top Width (ft)	1011.12	33.00	722.34
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.41	3.56	0.51
Max Chl Dpth (ft)	10.79	Hydr. Depth (ft)	2.67	9.51	3.66
Conv. Total (cfs)	165252.4	Conv. (cfs)	51360.9	51837.3	62054.2
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1011.21	33.44	722.47
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.27	0.11
Alpha	10.39	Stream Power (lb/ft s)	0.03	0.96	0.05
Frctn Loss (ft)	1.57	Cum Volume (acre-ft)	5279.06	4488.57	4990.46
C & E Loss (ft)	0.00	Cum SA (acres)	1696.45	393.27	1747.57

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.03	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	3381.37	334.93	3159.02
E.G. Slope (ft/ft)	0.000431	Area (sq ft)	3381.37	334.93	3159.02
Q Total (cfs)	4167.00	Flow (cfs)	1452.77	1200.22	1514.01

LPGA Tomoka River EC-RAS Report _ CEM					
Top Width (ft)	2040.66	Top Width (ft)	1119.78	33.00	887.88
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.43	3.58	0.48
Max Chl Dpth (ft)	11.43	Hydr. Depth (ft)	3.02	10.15	3.56
Conv. Total (cfs)	200712.9	Conv. (cfs)	69975.8	57811.3	72925.8
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1119.87	33.44	888.01
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.27	0.10
Alpha	10.47	Stream Power (lb/ft s)	0.03	0.97	0.05
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	6525.76	4807.42	6333.39
C & E Loss (ft)	0.00	Cum SA (acres)	1765.81	393.39	1921.20

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	24.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.93	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	4459.79	364.69	4015.32
E.G. Slope (ft/ft)	0.000371	Area (sq ft)	4459.79	364.69	4015.32
Q Total (cfs)	5170.00	Flow (cfs)	1964.55	1283.83	1921.62
Top Width (ft)	2316.58	Top Width (ft)	1272.17	33.00	1011.41
Vel Total (ft/s)	0.58	Avg. Vel. (ft/s)	0.44	3.52	0.48
Max Chl Dpth (ft)	12.33	Hydr. Depth (ft)	3.51	11.05	3.97
Conv. Total (cfs)	268290.4	Conv. (cfs)	101947.9	66622.5	99719.9
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1272.26	33.44	1011.54
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.25	0.09
Alpha	9.46	Stream Power (lb/ft s)	0.04	0.89	0.04
Frctn Loss (ft)	1.43	Cum Volume (acre-ft)	8468.84	5284.46	8578.68
C & E Loss (ft)	0.01	Cum SA (acres)	1855.99	393.57	2092.63

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 24

INPUT

Description:

Station		Elevation Data		num=	22				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1319	24	1525	19.3	1568	17.3	1599	14.9	1605	14.7
1661	15	1707	14.6	1753	14.5	1800	13.7	1810	12.9
1819	13.9	1825	14.4	1858	14.1	1870	13.3	1880	13
1888	13.5	1897	13.9	1929	14.2	1968	15.2	2008	18.5
2050	21.3	2100	23.1						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1319	.15	1825	.04	1897	.15

LPGA Tomoka River EC-RAS Report _ CEM

Bank Sta: Left Right Lengths: Left Channel Right
1825 1897 1839 1839 1839

Coeff Contr. Expan.
.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	20.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	20.71	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	1699.63	495.82	638.84
E.G. Slope (ft/ft)	0.000434	Area (sq ft)	1699.63	495.82	638.84
Q Total (cfs)	2728.00	Flow (cfs)	983.67	1388.86	355.47
Top Width (ft)	578.07	Top Width (ft)	361.89	72.00	144.18
Vel Total (ft/s)	0.96	Avg. Vel. (ft/s)	0.58	2.80	0.56
Max Chl Dpth (ft)	7.81	Hydr. Depth (ft)	4.70	6.89	4.43
Conv. Total (cfs)	130882.3	Conv. (cfs)	47194.1	66633.7	17054.5
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	362.17	72.06	144.41
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.13	0.19	0.12
Alpha	4.49	Stream Power (lb/ft s)	0.07	0.52	0.07
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	3272.38	3946.71	3183.94
C & E Loss (ft)	0.01	Cum SA (acres)	1450.43	388.88	1186.09

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	21.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.79	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2116.83	573.72	805.18
E.G. Slope (ft/ft)	0.000465	Area (sq ft)	2116.83	573.72	805.18
Q Total (cfs)	3675.00	Flow (cfs)	1351.62	1832.46	490.91
Top Width (ft)	648.04	Top Width (ft)	409.31	72.00	166.72
Vel Total (ft/s)	1.05	Avg. Vel. (ft/s)	0.64	3.19	0.61
Max Chl Dpth (ft)	8.89	Hydr. Depth (ft)	5.17	7.97	4.83
Conv. Total (cfs)	170427.9	Conv. (cfs)	62681.4	84980.4	22766.1
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	409.60	72.06	166.98
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.15	0.23	0.14
Alpha	4.78	Stream Power (lb/ft s)	0.10	0.74	0.09
Frctn Loss (ft)	1.06	Cum Volume (acre-ft)	5091.71	4454.03	4856.36
C & E Loss (ft)	0.01	Cum SA (acres)	1641.16	389.18	1712.97

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	22.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.45	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2395.63	621.09	920.89
E.G. Slope (ft/ft)	0.000476	Area (sq ft)	2395.63	621.09	920.89

LPGA Tomoka River EC-RAS Report _ CEM					
Q Total (cfs)	4302.00	Flow (cfs)	1606.17	2116.15	579.68
Top Width (ft)	695.15	Top Width (ft)	438.15	72.00	185.00
Vel Total (ft/s)	1.09	Avg. Vel. (ft/s)	0.67	3.41	0.63
Max Chl Dpth (ft)	9.55	Hydr. Depth (ft)	5.47	8.63	4.98
Conv. Total (cfs)	197183.9	Conv. (cfs)	73619.4	96994.7	26569.9
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	438.45	72.06	185.26
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.16	0.26	0.15
Alpha	4.97	Stream Power (lb/ft s)	0.11	0.87	0.09
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	6300.90	4770.21	6174.58
C & E Loss (ft)	0.00	Cum SA (acres)	1705.17	389.30	1879.44

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	23.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	23.43	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2846.24	691.68	1114.07
E.G. Slope (ft/ft)	0.000483	Area (sq ft)	2846.24	691.68	1114.07
Q Total (cfs)	5332.00	Flow (cfs)	2026.89	2551.66	753.45
Top Width (ft)	756.12	Top Width (ft)	481.12	72.00	203.00
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.71	3.69	0.68
Max Chl Dpth (ft)	10.53	Hydr. Depth (ft)	5.92	9.61	5.49
Conv. Total (cfs)	242509.6	Conv. (cfs)	92186.9	116054.2	34268.6
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	481.43	72.06	203.61
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.18	0.29	0.17
Alpha	5.15	Stream Power (lb/ft s)	0.13	1.07	0.11
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	8184.46	5243.34	8379.02
C & E Loss (ft)	0.00	Cum SA (acres)	1787.74	389.48	2045.37

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 23

INPUT

Description:

Station Elevation Data		num=		35					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1025	23	1068	22	1100	21	1143	20	1370	19
1400	18.4	1440	18.6	1491	18.5	1541.1	17.8	1595	16.3
1649	14.3	1669	13.6	1682	14	1691	14.2	1707	13.9
1710	12.9	1718	6.6	1723	7	1735	10.1	1740	12.8
1742	15.4	1750	15.6	1756	14.5	1771	14.6	1785	15.2
1808	14.6	1845	15.4	1887	15.6	1937	15.4	2042	18
2150	19	2225	20	2250	21	2287	22	2325	23

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val

1025 .15 1707 .04 1742 .15

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1707 1742 3151 3151 3151 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	19.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	19.46	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	868.87	340.73	1229.75
E.G. Slope (ft/ft)	0.000894	Area (sq ft)	868.87	340.73	1229.75
Q Total (cfs)	2710.00	Flow (cfs)	404.51	1585.59	719.90
Top Width (ft)	917.89	Top Width (ft)	440.64	35.00	442.24
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.47	4.65	0.59
Max Chl Dpth (ft)	12.86	Hydr. Depth (ft)	1.97	9.74	2.78
Conv. Total (cfs)	90658.7	Conv. (cfs)	13532.4	53043.3	24083.1
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	440.74	39.72	442.42
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.11	0.48	0.16
Alpha	10.37	Stream Power (lb/ft s)	0.05	2.23	0.09
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)	3218.16	3929.05	3144.49
C & E Loss (ft)	0.05	Cum SA (acres)	1433.49	386.62	1173.72

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	20.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	20.65	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	1516.79	382.46	1799.76
E.G. Slope (ft/ft)	0.000738	Area (sq ft)	1516.79	382.46	1799.76
Q Total (cfs)	3649.00	Flow (cfs)	764.15	1746.61	1138.25
Top Width (ft)	1126.12	Top Width (ft)	591.90	35.00	499.22
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.50	4.57	0.63
Max Chl Dpth (ft)	14.05	Hydr. Depth (ft)	2.56	10.93	3.61
Conv. Total (cfs)	134347.0	Conv. (cfs)	28133.9	64305.6	41907.4
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	592.00	39.72	499.41
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.12	0.44	0.17
Alpha	10.44	Stream Power (lb/ft s)	0.06	2.03	0.10
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	5015.01	4433.85	4801.37
C & E Loss (ft)	0.03	Cum SA (acres)	1620.03	386.92	1698.91

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	21.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.41	Reach Len. (ft)	3151.00	3151.00	3151.00

LPGA Tomoka River EC-RAS Report _ CEM					
Crit W.S. (ft)		Flow Area (sq ft)	1980.39	409.18	2189.30
E.G. Slope (ft/ft)	0.000625	Area (sq ft)	1980.39	409.18	2189.30
Q Total (cfs)	4271.00	Flow (cfs)	1063.62	1799.62	1407.75
Top Width (ft)	1178.46	Top Width (ft)	620.20	35.00	523.26
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.54	4.40	0.64
Max Chl Dpth (ft)	14.81	Hydr. Depth (ft)	3.19	11.69	4.18
Conv. Total (cfs)	170801.5	Conv. (cfs)	42535.3	71968.7	56297.5
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	620.31	39.72	523.46
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.12	0.40	0.16
Alpha	9.61	Stream Power (lb/ft s)	0.07	1.77	0.10
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	6208.53	4748.46	6108.93
C & E Loss (ft)	0.02	Cum SA (acres)	1682.83	387.04	1864.49

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	22.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.51	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	2679.71	447.49	2784.24
E.G. Slope (ft/ft)	0.000524	Area (sq ft)	2679.71	447.49	2784.24
Q Total (cfs)	5289.00	Flow (cfs)	1545.68	1913.16	1830.16
Top Width (ft)	1260.05	Top Width (ft)	660.79	35.00	564.26
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)	0.58	4.28	0.66
Max Chl Dpth (ft)	15.91	Hydr. Depth (ft)	4.06	12.79	4.93
Conv. Total (cfs)	230960.0	Conv. (cfs)	67496.9	83544.0	79919.2
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	660.92	39.72	564.48
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.13	0.37	0.16
Alpha	8.57	Stream Power (lb/ft s)	0.08	1.58	0.11
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	8067.82	5219.29	8296.73
C & E Loss (ft)	0.01	Cum SA (acres)	1763.64	387.22	2029.17

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 22

INPUT

Description:

Station Elevation Data		num=		24					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1432	21	1469	20	1600	19.3	1653	18.4	1705	16.7
1811	12.5	1862	10.9	1940	10.9	2006	10.8	2011	9.8
2021	7.5	2028	9.8	2032	10.9	2080	11.3	2168	10.9
2216	10.9	2217	10.4	2219	9.8	2222	10.5	2223	11.5
2246	11.3	2412	18.8	2451	20.2	2491	21		

Manning's n Values num= 3

LPGA Tomoka River EC-RAS Report _ CEM

Sta	n Val	Sta	n Val	Sta	n Val
1432	.15	2006	.04	2032	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2006	2032		2497	2497		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	17.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	17.53	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	1575.77	215.77	1812.90
E.G. Slope (ft/ft)	0.000497	Area (sq ft)	1575.77	215.77	1812.90
Q Total (cfs)	2903.00	Flow (cfs)	993.99	716.50	1192.51
Top Width (ft)	704.17	Top Width (ft)	326.32	26.00	351.84
Vel Total (ft/s)	0.81	Avg. Vel. (ft/s)	0.63	3.32	0.66
Max Chl Dpth (ft)	10.03	Hydr. Depth (ft)	4.83	8.30	5.15
Conv. Total (cfs)	130211.4	Conv. (cfs)	44584.5	32137.8	53489.0
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	326.44	26.88	352.69
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.25	0.16
Alpha	4.68	Stream Power (lb/ft s)	0.09	0.83	0.10
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	3129.74	3908.92	3034.44
C & E Loss (ft)	0.01	Cum SA (acres)	1405.75	384.41	1144.99

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	18.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	18.92	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	2064.88	252.06	2325.56
E.G. Slope (ft/ft)	0.000463	Area (sq ft)	2064.88	252.06	2325.56
Q Total (cfs)	3893.00	Flow (cfs)	1350.97	896.01	1646.03
Top Width (ft)	793.27	Top Width (ft)	383.83	26.00	383.44
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.65	3.55	0.71
Max Chl Dpth (ft)	11.42	Hydr. Depth (ft)	5.38	9.69	6.06
Conv. Total (cfs)	180927.1	Conv. (cfs)	62786.1	41641.9	76499.1
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	383.97	26.88	384.32
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.16	0.27	0.17
Alpha	4.65	Stream Power (lb/ft s)	0.10	0.96	0.12
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	4885.47	4410.90	4652.16
C & E Loss (ft)	0.01	Cum SA (acres)	1584.74	384.72	1666.99

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	19.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	19.76	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	2419.07	273.76	2655.18
E.G. Slope (ft/ft)	0.000475	Area (sq ft)	2419.07	273.76	2655.18
Q Total (cfs)	4553.00	Flow (cfs)	1510.99	1041.78	2000.22
Top Width (ft)	924.37	Top Width (ft)	491.69	26.00	406.68

			LPGA Tomoka River EC-RAS Report _ CEM		
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.62	3.81	0.75
Max Chl Dpth (ft)	12.26	Hydr. Depth (ft)	4.92	10.53	6.53
Conv. Total (cfs)	208837.0	Conv. (cfs)	69306.2	47784.6	91746.3
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	491.84	26.88	407.57
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.30	0.19
Alpha	5.09	Stream Power (lb/ft s)	0.09	1.15	0.15
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	6049.40	4723.76	5933.71
C & E Loss (ft)	0.01	Cum SA (acres)	1642.62	384.83	1830.86

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	21.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.04	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	3121.60	307.07	3206.89
E.G. Slope (ft/ft)	0.000437	Area (sq ft)	3121.60	307.07	3206.89
Q Total (cfs)	5634.00	Flow (cfs)	1999.35	1210.07	2424.59
Top Width (ft)	1059.00	Top Width (ft)	574.00	26.00	459.00
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.64	3.94	0.76
Max Chl Dpth (ft)	13.54	Hydr. Depth (ft)	5.44	11.81	6.99
Conv. Total (cfs)	269413.1	Conv. (cfs)	95607.2	57864.3	115941.6
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	574.20	26.88	459.95
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.31	0.19
Alpha	5.17	Stream Power (lb/ft s)	0.10	1.23	0.14
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	7857.99	5192.00	8080.04
C & E Loss (ft)	0.01	Cum SA (acres)	1718.98	385.02	1992.16

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 21

INPUT
 Description: * 001

Station Elevation Data		num=		37	
Sta	Elev	Sta	Elev	Sta	Elev
1349	20	1399	19	1443	18
1555	14.1	1607	12.8	1652	11.4
1798	9.3	1846	8.7	1858	7.5
1912	8.9	1915	7.5	1926	6.8
1957	8.9	1982	8.7	1994	8.2
2040	8.6	2051	8.1	2061	8.8
2171	9	2206	9.5	2231	9.6
2365	19.3	2418	21.1		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1349	.16	1915	.04	1934	.16

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

1915 1934 2919 2919 2919

.1

.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	16.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	16.71	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	2460.96	180.90	2544.84
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	2460.96	180.90	2544.84
Q Total (cfs)	2903.00	Flow (cfs)	1129.88	466.30	1306.81
Top Width (ft)	826.28	Top Width (ft)	430.90	19.00	376.38
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.46	2.58	0.51
Max Chl Dpth (ft)	9.91	Hydr. Depth (ft)	5.71	9.52	6.76
Conv. Total (cfs)	187449.4	Conv. (cfs)	72957.5	30109.7	84382.2
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	431.49	19.07	377.21
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.09	0.14	0.10
Alpha	4.05	Stream Power (lb/ft s)	0.04	0.37	0.05
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	3014.05	3897.56	2909.55
C & E Loss (ft)	0.01	Cum SA (acres)	1384.05	383.13	1124.12

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	18.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	18.12	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	3096.91	207.68	3099.80
E.G. Slope (ft/ft)	0.000245	Area (sq ft)	3096.91	207.68	3099.80
Q Total (cfs)	3893.00	Flow (cfs)	1563.98	593.03	1736.00
Top Width (ft)	905.23	Top Width (ft)	477.39	19.00	408.84
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.51	2.86	0.56
Max Chl Dpth (ft)	11.32	Hydr. Depth (ft)	6.49	10.93	7.58
Conv. Total (cfs)	248802.6	Conv. (cfs)	99954.0	37900.4	110948.2
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	478.01	19.07	409.70
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.10	0.17	0.12
Alpha	4.02	Stream Power (lb/ft s)	0.05	0.48	0.06
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	4737.52	4397.72	4496.66
C & E Loss (ft)	0.01	Cum SA (acres)	1560.05	383.43	1644.28

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	18.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	18.94	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	3503.27	223.26	3441.46
E.G. Slope (ft/ft)	0.000249	Area (sq ft)	3503.27	223.26	3441.46
Q Total (cfs)	4553.00	Flow (cfs)	1845.21	674.68	2033.11
Top Width (ft)	956.75	Top Width (ft)	513.48	19.00	424.27
Vel Total (ft/s)	0.64	Avg. Vel. (ft/s)	0.53	3.02	0.59
Max Chl Dpth (ft)	12.14	Hydr. Depth (ft)	6.82	11.75	8.11
Conv. Total (cfs)	288545.8	Conv. (cfs)	116940.0	42758.0	128847.8
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	514.10	19.07	425.16
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.11	0.18	0.13
Alpha	4.02	Stream Power (lb/ft s)	0.06	0.55	0.07
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	5879.66	4709.51	5758.97

C & E Loss (ft)	0.01	Cum SA (acres)	LPGA Tomoka River	EC-RAS Report _ CEM
			1613.81	383.54
				1807.04

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	20.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	20.26	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	4218.71	248.22	4019.80
E.G. Slope (ft/ft)	0.000247	Area (sq ft)	4218.71	248.22	4019.80
Q Total (cfs)	5634.00	Flow (cfs)	2345.48	801.25	2487.28
Top Width (ft)	1044.15	Top Width (ft)	566.00	19.00	459.15
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.56	3.23	0.62
Max Chl Dpth (ft)	13.46	Hydr. Depth (ft)	7.45	13.06	8.75
Conv. Total (cfs)	358724.6	Conv. (cfs)	149339.8	51016.5	158368.3
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	566.89	19.07	460.07
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.11	0.20	0.13
Alpha	4.04	Stream Power (lb/ft s)	0.06	0.65	0.08
Frctn Loss (ft)	0.89	Cum Volume (acre-ft)	7647.61	5176.08	7872.91
C & E Loss (ft)	0.01	Cum SA (acres)	1686.30	383.73	1965.84

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 20

INPUT
 Description: 1ST SEC SOUTH OF LPGA
 * 001

Station	Elevation	Data	num=	41
Sta	Elev	Sta	Elev	Sta Elev Sta Elev
793	20	830	19	868 18 918 17 968 16
980	15	1018	14	1093 13 1118 12 1155 11
1193	10	1230	9	1300 8.2 1320 8.2 1343 8.8
1361	6.4	1379	9.5	1402 9.9 1450 9.6 1502 8.8
1545	8.6	1549	7.1	1556 4.8 1566 4 1579 4.6
1589	7.3	1590	9.5	1596 9.9 1604 8.8 1623 8.6
1631	7.7	1636	8.2	1662 8.6 1707 10.3 1746 13
1768	13.2	1838	16	1999 17 2043 18 2118 19
2168	20			

Manning's n Values	num=	3
Sta n Val Sta n Val		
793 .2 1549 .04 1589 .2		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1549	1589	2903	2903	2903	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	15.88	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.79	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	3122.29	430.72	1113.44
E.G. Slope (ft/ft)	0.000354	Area (sq ft)	3122.29	430.72	1113.44
Q Total (cfs)	3219.00	Flow (cfs)	1342.30	1450.15	426.55
Top Width (ft)	862.39	Top Width (ft)	578.53	40.00	243.86
Vel Total (ft/s)	0.69	Avg. Vel. (ft/s)	0.43	3.37	0.38
Max Chl Dpth (ft)	11.79	Hydr. Depth (ft)	5.40	10.77	4.57
Conv. Total (cfs)	170997.8	Conv. (cfs)	71305.1	77034.1	22658.7
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	579.36	40.77	245.62
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.12	0.23	0.10
Alpha	10.93	Stream Power (lb/ft s)	0.05	0.79	0.04
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	2826.98	3877.06	2786.97
C & E Loss (ft)	0.02	Cum SA (acres)	1350.23	381.15	1103.34

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

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

CROSS SECTION OUTPUT Profile #PF 2

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	17.23	Wt. n-Val.	0.200	0.040	0.200
Vel Head (ft)	0.10	Reach Len. (ft)	2903.00	2903.00	2903.00
W.S. Elev (ft)	17.13	Flow Area (sq ft)	3929.96	484.14	1547.26
Crit W.S. (ft)		Area (sq ft)	3929.96	484.14	1547.26
E.G. Slope (ft/ft)	0.000396	Flow (cfs)	1951.12	1862.21	547.67
Q Total (cfs)	4361.00	Top Width (ft)	637.49	40.00	415.71
Top Width (ft)	1093.21	Avg. Vel. (ft/s)	0.50	3.85	0.35
Vel Total (ft/s)	0.73	Hydr. Depth (ft)	6.16	12.10	3.72
Max Chl Dpth (ft)	13.13	Conv. (cfs)	98078.9	93609.2	27530.3
Conv. Total (cfs)	219218.4	Wetted Per. (ft)	638.35	40.77	417.49
Length Wtd. (ft)	2903.00	Shear (lb/sq ft)	0.15	0.29	0.09
Min Ch El (ft)	4.00	Stream Power (lb/ft s)	0.08	1.13	0.03
Alpha	12.04	Cum Volume (acre-ft)	4502.08	4374.54	4340.96
Frctn Loss (ft)	1.74	Cum SA (acres)	1522.70	381.45	1616.65
C & E Loss (ft)	0.01				

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

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

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	18.04	Wt. n-Val.	0.200	0.040	0.200
Vel Head (ft)	0.10	Reach Len. (ft)	2903.00	2903.00	2903.00
W.S. Elev (ft)	17.94	Flow Area (sq ft)	4461.09	516.45	1897.33
Crit W.S. (ft)		Area (sq ft)	4461.09	516.45	1897.33
E.G. Slope (ft/ft)	0.000397	Flow (cfs)	2316.25	2076.29	729.47
Q Total (cfs)	5122.00	Top Width (ft)	677.87	40.00	451.25
Top Width (ft)	1169.12	Avg. Vel. (ft/s)	0.52	4.02	0.38
Vel Total (ft/s)	0.75	Hydr. Depth (ft)	6.58	12.91	4.20
Max Chl Dpth (ft)	13.94				

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Conv. Total (cfs)	257171.6	Conv. (cfs)	116297.0	104248.7	36625.9
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	678.73	40.77	453.03
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.16	0.31	0.10
Alpha	12.06	Stream Power (lb/ft s)	0.08	1.26	0.04
Frctn Loss (ft)	1.65	Cum Volume (acre-ft)	5612.81	4684.73	5580.09
C & E Loss (ft)	0.01	Cum SA (acres)	1573.89	381.57	1777.71

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	19.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	19.28	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	5408.05	570.24	2568.48
E.G. Slope (ft/ft)	0.000375	Area (sq ft)	5408.05	570.24	2568.48
Q Total (cfs)	6374.00	Flow (cfs)	2955.01	2380.47	1038.52
Top Width (ft)	1312.56	Top Width (ft)	729.45	40.00	543.12
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.55	4.17	0.40
Max Chl Dpth (ft)	15.28	Hydr. Depth (ft)	7.41	14.26	4.73
Conv. Total (cfs)	329262.8	Conv. (cfs)	152647.6	122968.2	53647.0
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	730.32	40.77	544.91
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.17	0.33	0.11
Alpha	12.00	Stream Power (lb/ft s)	0.09	1.37	0.04
Frctn Loss (ft)	1.47	Cum Volume (acre-ft)	7325.06	5148.66	7652.17
C & E Loss (ft)	0.01	Cum SA (acres)	1642.90	381.75	1932.26

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 19.4

INPUT

Description:

Station Elevation Data		num=	28
Sta	Elev	Sta	Elev
431	19	471	18
659	14	771	13
1174	8.6	1236	7.3
1316	3.7	1321	5.2
1345	6.9	1350	8.1
1443	15.3	1495	17.3

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
431	.17	1291	.04
		1350	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1291	1350		240	240		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	14.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.84	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	1854.04	462.45	110.16
E.G. Slope (ft/ft)	0.001183	Area (sq ft)	1854.04	462.45	110.16
Q Total (cfs)	3520.00	Flow (cfs)	1164.34	2304.79	50.87
Top Width (ft)	730.39	Top Width (ft)	613.97	59.00	57.43
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)	0.63	4.98	0.46
Max Chl Dpth (ft)	10.14	Hydr. Depth (ft)	3.02	7.84	1.92
Conv. Total (cfs)	102347.2	Conv. (cfs)	33854.2	67013.9	1479.2
Length Wtd. (ft)	240.00	Wetted Per. (ft)	614.04	60.02	57.86
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.22	0.57	0.14
Alpha	7.79	Stream Power (lb/ft s)	0.14	2.84	0.06
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)	2661.16	3847.30	2746.20
C & E Loss (ft)	0.09	Cum SA (acres)	1310.49	377.85	1093.30

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.26	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	2759.28	546.10	216.05
E.G. Slope (ft/ft)	0.000955	Area (sq ft)	2759.28	546.10	216.05
Q Total (cfs)	4786.00	Flow (cfs)	1950.98	2732.22	102.80
Top Width (ft)	802.37	Top Width (ft)	651.42	59.00	91.95
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)	0.71	5.00	0.48
Max Chl Dpth (ft)	11.56	Hydr. Depth (ft)	4.24	9.26	2.35
Conv. Total (cfs)	154869.8	Conv. (cfs)	63131.6	88411.5	3326.7
Length Wtd. (ft)	240.00	Wetted Per. (ft)	651.54	60.02	92.41
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.25	0.54	0.14
Alpha	7.85	Stream Power (lb/ft s)	0.18	2.71	0.07
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	4279.19	4340.21	4282.20
C & E Loss (ft)	0.07	Cum SA (acres)	1479.75	378.15	1599.74

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	16.17	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	3363.43	599.80	310.45
E.G. Slope (ft/ft)	0.000845	Area (sq ft)	3363.43	599.80	310.45
Q Total (cfs)	5628.00	Flow (cfs)	2470.25	3005.68	152.07
Top Width (ft)	859.07	Top Width (ft)	684.53	59.00	115.54
Vel Total (ft/s)	1.32	Avg. Vel. (ft/s)	0.73	5.01	0.49
Max Chl Dpth (ft)	12.47	Hydr. Depth (ft)	4.91	10.17	2.69

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Conv. Total (cfs)	193559.5	Conv. (cfs)	84957.3	103372.0	5230.2
Length Wtd. (ft)	240.00	Wetted Per. (ft)	684.66	60.02	116.02
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.26	0.53	0.14
Alpha	7.87	Stream Power (lb/ft s)	0.19	2.64	0.07
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	5352.08	4647.53	5506.53
C & E Loss (ft)	0.06	Cum SA (acres)	1528.49	378.27	1758.82

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.72	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	4521.57	691.16	520.14
E.G. Slope (ft/ft)	0.000694	Area (sq ft)	4521.57	691.16	520.14
Q Total (cfs)	7015.00	Flow (cfs)	3297.14	3448.74	269.11
Top Width (ft)	1014.98	Top Width (ft)	802.07	59.00	153.90
Vel Total (ft/s)	1.22	Avg. Vel. (ft/s)	0.73	4.99	0.52
Max Chl Dpth (ft)	14.02	Hydr. Depth (ft)	5.64	11.71	3.38
Conv. Total (cfs)	266311.3	Conv. (cfs)	125169.9	130925.1	10216.3
Length Wtd. (ft)	240.00	Wetted Per. (ft)	802.22	60.02	154.41
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.24	0.50	0.15
Alpha	8.35	Stream Power (lb/ft s)	0.18	2.49	0.08
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	6994.18	5106.63	7549.25
C & E Loss (ft)	0.04	Cum SA (acres)	1591.87	378.45	1909.04

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19.35

INPUT

Description: Upstream xs for new bridge

Station Elevation Data		num= 51							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	18.6	93.21	18.15	117.03	18.58	142.01	18.15	160.18	17.96
171.49	18.15	192.67	17.15	218.88	16.15	239.82	15.15	262.29	14.15
284.7	13.15	300.93	12.15	310.8	11.15	319.81	10.15	330.02	9.15
339.92	8.15	342.97	7.15	344.39	6.15	345.78	5.15	347.17	4.15
354.98	3.44	366.47	4.15	374.56	5.15	382.59	6.15	392.87	7.15
412.73	8.15	426.9	8.54	448.33	8.15	469.66	7.15	523.61	6.55
565.62	9.05	575.55	10.15	585.98	10.95	599.52	10.15	610.8	9.25
621.43	10.15	676	10.15	703.26	11.15	708.21	10.56	717.53	11.15
740.03	12.15	763.01	12.76	784.72	12.15	799.91	13.15	814.26	14.15
824.61	15.15	843.84	16.15	900	16.38	919.42	17.15	928.01	18.15
937.52	19.15								

Manning's n Values num= 3

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Sta	n Val	Sta	n Val	Sta	n Val
0	.17	330.02	.04	565.62	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	330.02	565.62		146	146		.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
0	262.62	20	F					
621.43	937.52	20	F					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.81	Reach Len. (ft)	60.50	60.50	60.50
Crit W.S. (ft)	8.97	Flow Area (sq ft)	116.19	1587.74	210.20
E.G. Slope (ft/ft)	0.000267	Area (sq ft)	116.19	1587.74	668.80
Q Total (cfs)	3520.00	Flow (cfs)	25.66	3421.87	72.47
Top Width (ft)	539.60	Top Width (ft)	60.19	235.60	243.81
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)	0.22	2.16	0.34
Max Chl Dpth (ft)	10.37	Hydr. Depth (ft)	1.93	6.74	3.77
Conv. Total (cfs)	215534.3	Conv. (cfs)	1570.9	209525.9	4437.5
Length Wtd. (ft)	60.50	Wetted Per. (ft)	60.39	237.13	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.03	0.11	0.06
Alpha	1.34	Stream Power (lb/ft s)	0.01	0.24	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2655.73	3841.65	2744.05
C & E Loss (ft)	0.00	Cum SA (acres)	1308.63	377.04	1092.47

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.22	Reach Len. (ft)	60.50	60.50	60.50
Crit W.S. (ft)	9.42	Flow Area (sq ft)	209.79	1918.98	288.66
E.G. Slope (ft/ft)	0.000257	Area (sq ft)	222.99	1918.98	1023.51
Q Total (cfs)	4786.00	Flow (cfs)	62.49	4602.90	120.61
Top Width (ft)	587.58	Top Width (ft)	91.66	235.60	260.33
Vel Total (ft/s)	1.98	Avg. Vel. (ft/s)	0.30	2.40	0.42
Max Chl Dpth (ft)	11.78	Hydr. Depth (ft)	3.11	8.15	5.17
Conv. Total (cfs)	298765.8	Conv. (cfs)	3901.1	287335.6	7529.1
Length Wtd. (ft)	60.50	Wetted Per. (ft)	67.61	237.13	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.05	0.13	0.08
Alpha	1.41	Stream Power (lb/ft s)	0.01	0.31	0.03
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4270.97	4333.42	4278.79
C & E Loss (ft)	0.01	Cum SA (acres)	1477.70	377.34	1598.77

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.170	0.040	0.170

			LPGA Tomoka River EC-RAS Report _ CEM		
W.S. Elev (ft)	16.13	Reach Len. (ft)	60.50	60.50	60.50
Crit W.S. (ft)	9.69	Flow Area (sq ft)	270.88	2132.53	339.25
E.G. Slope (ft/ft)	0.000247	Area (sq ft)	314.67	2132.53	1267.37
Q Total (cfs)	5628.00	Flow (cfs)	93.79	5379.47	154.74
Top Width (ft)	623.99	Top Width (ft)	110.64	235.60	277.76
Vel Total (ft/s)	2.05	Avg. Vel. (ft/s)	0.35	2.52	0.46
Max Chl Dpth (ft)	12.69	Hydr. Depth (ft)	4.02	9.05	6.08
Conv. Total (cfs)	358410.3	Conv. (cfs)	5972.8	342583.1	9854.3
Length Wtd. (ft)	60.50	Wetted Per. (ft)	67.61	237.13	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.06	0.14	0.09
Alpha	1.45	Stream Power (lb/ft s)	0.02	0.35	0.04
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5341.95	4640.01	5502.18
C & E Loss (ft)	0.01	Cum SA (acres)	1526.30	377.46	1757.74

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.67	Reach Len. (ft)	60.50	60.50	60.50
Crit W.S. (ft)	10.11	Flow Area (sq ft)	375.17	2497.08	425.61
E.G. Slope (ft/ft)	0.000222	Area (sq ft)	516.35	2497.08	1795.76
Q Total (cfs)	7015.00	Flow (cfs)	153.31	6647.19	214.50
Top Width (ft)	742.33	Top Width (ft)	148.43	235.60	358.29
Vel Total (ft/s)	2.13	Avg. Vel. (ft/s)	0.41	2.66	0.50
Max Chl Dpth (ft)	14.23	Hydr. Depth (ft)	5.57	10.60	7.63
Conv. Total (cfs)	470308.9	Conv. (cfs)	10278.5	445649.9	14380.5
Length Wtd. (ft)	60.50	Wetted Per. (ft)	67.61	237.13	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.08	0.15	0.11
Alpha	1.49	Stream Power (lb/ft s)	0.03	0.39	0.05
Frctn Loss (ft)		Cum Volume (acre-ft)	6980.31	5097.85	7542.87
C & E Loss (ft)		Cum SA (acres)	1589.25	377.64	1907.63

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 19.25

INPUT

Description: Bridge #6

Distance from Upstream XS = 60.5
 Deck/Roadway Width = 33
 Weir Coefficient = 2.6
 Upstream Deck/Roadway Coordinates

num=	2				
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord				
321 21.1 16.44	571 21.1 16.44				

Upstream Bridge Cross Section Data

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Station Elevation Data									
Sta		Elev		Sta		Elev		Sta	
0		18.6		93.21		18.15		117.03	
171.49		18.15		192.67		17.15		218.88	
284.7		13.15		300.93		12.15		310.8	
339.92		8.15		342.97		7.15		344.39	
354.98		3.44		366.47		4.15		374.56	
412.73		8.15		426.9		8.54		448.33	
565.62		9.05		575.55		10.15		585.98	
621.43		10.15		676		10.15		703.26	
740.03		12.15		763.01		12.76		784.72	
824.61		15.15		843.84		16.15		900	
937.52		19.15				16.38		919.42	
						17.15		928.01	
								18.15	

Manning's n Values					
Sta		n Val		Sta	
0		.17		330.02	
				.04	
				565.62	
				.17	

Bank Sta:		Left	Right	Coeff	Contr.	Expan.
		330.02	565.62		.3	.5
Ineffective Flow				num= 2		
Sta L		Sta R	Elev	Permanent		
0		262.62	20	F		
621.43		937.52	20	F		

Downstream Deck/Roadway Coordinates						
num=		2				
Sta		Hi	Cord	Lo	Cord	Sta
186		21.1	16.44	436	21.1	16.44

Downstream Bridge Cross Section Data									
Sta		Elev		Sta		Elev		Sta	
0		19.15		41		18.154		41.15	
100.58		15.15		109.74		14.15		119.03	
178.08		10.15		193		9.15		206.9	
218.76		5.15		221.08		4.99		224.43	
235.94		5.42		241.64		5.15		251.19	
278.16		6.15		282.58		7.15		285.65	
369.73		9.15		384.08		10.15		426.58	
588.22		13.15		631.77		14.15		665.22	
809.45		17.15		820.48		18.15		835.61	
						19.15		848.31	
								19.4	

Manning's n Values					
Sta		n Val		Sta	
0		.17		193	
				.04	
				426.58	
				.17	

Bank Sta:		Left	Right	Coeff	Contr.	Expan.
		193	426.58		.3	.5
Ineffective Flow				num= 2		
Sta L		Sta R	Elev	Permanent		
0		132.58	20	F		
486.02		848.31	20	F		

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 21.1
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Abutments = 2

Abutment Data

Upstream	num=	4					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	21	321	21	321	16.6	336	6.6
Downstream	num=	4					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	21	186	21	186	16.6	201	6.6

Abutment Data

Upstream	num=	4					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
556	6.6	571	16.6	571	21.1	937	21.1
Downstream	num=	4					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
421	6.6	436	16.6	436	21.1	848	21.1

Number of Piers = 4

Pier Data

Pier Station	Upstream=	371	Downstream=	236
Upstream	num=	2		
Width	Elev	Width	Elev	
1.5	2	1.5	16.6	
Downstream	num=	2		
Width	Elev	Width	Elev	
1.5	2	1.5	16.6	

Pier Data

Pier Station	Upstream=	421	Downstream=	286
Upstream	num=	2		
Width	Elev	Width	Elev	
1.5	2	1.5	16.6	
Downstream	num=	2		
Width	Elev	Width	Elev	
1.5	2	1.5	16.6	

Pier Data

Pier Station	Upstream=	471	Downstream=	336
Upstream	num=	2		
Width	Elev	Width	Elev	
1.5	2	1.5	16.6	
Downstream	num=	2		
Width	Elev	Width	Elev	
1.5	2	1.5	16.6	

Pier Data

Pier Station	Upstream=	521	Downstream=	386
Upstream	num=	2		

Width	Elev	Width	Elev
1.5	2	1.5	16.6
Downstream	num=	2	
Width	Elev	Width	Elev
1.5	2	1.5	16.6

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 = .7905694

Max Low Cord = 16.6

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	13.88	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	13.81	E.G. Elev (ft)	13.86	13.83
Q Total (cfs)	3520.00	W.S. Elev (ft)	13.78	13.72
Q Bridge (cfs)	3520.00	Crit W.S. (ft)	9.00	9.65
Q Weir (cfs)		Max Chl Dpth (ft)	10.34	8.90
Weir Sta Lft (ft)		Vel Total (ft/s)	2.30	2.72
Weir Sta Rgt (ft)		Flow Area (sq ft)	1529.96	1296.21
Weir Submerg		Froude # Chl	0.16	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	5563.05	4402.43
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	6.50	5.51
Min El Prs (ft)	16.60	W.P. Total (ft)	296.67	283.46
Delta EG (ft)	0.09	Conv. Total (cfs)	170993.3	133846.2
Delta WS (ft)	0.12	Top Width (ft)	235.53	235.35
BR Open Area (sq ft)	1948.38	Frctn Loss (ft)	0.02	0.03
BR Open Vel (ft/s)	2.72	C & E Loss (ft)	0.01	0.01
BR Sluice Coef		Shear Total (lb/sq ft)	0.14	0.20
BR Sel Method	Energy only	Power Total (lb/ft s)	0.31	0.54

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	15.31	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	15.22	E.G. Elev (ft)	15.28	15.25
Q Total (cfs)	4786.00	W.S. Elev (ft)	15.18	15.12
Q Bridge (cfs)	4786.00	Crit W.S. (ft)	9.46	10.21
Q Weir (cfs)		Max Chl Dpth (ft)	11.74	10.30

LPGA Tomoka River EC-RAS Report _ CEM

Weir Sta Lft (ft)		Vel Total (ft/s)	2.57	2.94
Weir Sta Rgt (ft)		Flow Area (sq ft)	1862.38	1628.45
Weir Submerg		Froude # Chl	0.16	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	8067.79	6591.17
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	7.77	6.80
Min El Prs (ft)	16.60	W.P. Total (ft)	312.90	299.70
Delta EG (ft)	0.09	Conv. Total (cfs)	229533.0	188612.5
Delta WS (ft)	0.12	Top Width (ft)	239.73	239.55
BR Open Area (sq ft)	1948.38	Frctn Loss (ft)	0.02	0.03
BR Open Vel (ft/s)	2.94	C & E Loss (ft)	0.01	0.01
BR Sluice Coef		Shear Total (lb/sq ft)	0.16	0.22
BR Sel Method	Energy only	Power Total (lb/ft s)	0.42	0.64

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	16.22	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	16.13	E.G. Elev (ft)	16.19	16.17
Q Total (cfs)	5628.00	W.S. Elev (ft)	16.08	16.02
Q Bridge (cfs)	5628.00	Crit W.S. (ft)	9.74	10.60
Q Weir (cfs)		Max Chl Dpth (ft)	12.64	11.20
Weir Sta Lft (ft)		Vel Total (ft/s)	2.71	3.05
Weir Sta Rgt (ft)		Flow Area (sq ft)	2079.91	1846.06
Weir Submerg		Froude # Chl	0.16	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	9939.48	8259.48
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	8.58	7.62
Min El Prs (ft)	16.60	W.P. Total (ft)	323.37	310.19
Delta EG (ft)	0.09	Conv. Total (cfs)	269957.6	226938.6
Delta WS (ft)	0.12	Top Width (ft)	242.43	242.26
BR Open Area (sq ft)	1948.38	Frctn Loss (ft)	0.02	0.02
BR Open Vel (ft/s)	3.05	C & E Loss (ft)	0.01	0.01
BR Sluice Coef		Shear Total (lb/sq ft)	0.17	0.23
BR Sel Method	Energy only	Power Total (lb/ft s)	0.47	0.70

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	17.78	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	17.67	E.G. Elev (ft)	17.78	17.59
Q Total (cfs)	7015.00	W.S. Elev (ft)	16.44	16.44
Q Bridge (cfs)	7015.00	Crit W.S. (ft)	10.17	11.15
Q Weir (cfs)		Max Chl Dpth (ft)	13.00	11.62
Weir Sta Lft (ft)		Vel Total (ft/s)	3.24	3.60
Weir Sta Rgt (ft)		Flow Area (sq ft)	2167.83	1948.38
Weir Submerg		Froude # Chl	0.19	0.22
Weir Max Depth (ft)		Specif Force (cu ft)	10943.77	9315.73
Min El Weir Flow (ft)	21.10	Hydr Depth (ft)	8.90	8.00
Min El Prs (ft)	16.60	W.P. Total (ft)	327.57	315.08
Delta EG (ft)	0.19	Conv. Total (cfs)	286703.8	245531.3
Delta WS (ft)	0.22	Top Width (ft)	243.52	243.52

LPGA Tomoka River EC-RAS Report _ CEM

BR Open Area (sq ft)	1948.38	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.60	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.25	0.32
BR Sel Method	Press Only	Power Total (lb/ft s)	0.80	1.13

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

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19.15

INPUT

Description: New XS at Downstream of proposed bridge

Station		Elevation Data		num=		44			
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	19.15	41	18.154	41.15	18.15	64.59	17.15	81.54	16.15
100.58	15.15	109.74	14.15	119.03	13.15	132.58	12.15	148.16	11.15
178.08	10.15	193	9.15	206.9	8.15	211.14	7.15	214.57	6.15
218.76	5.15	221.08	4.99	224.43	5	226.9	4.82	229.7	5.15
235.94	5.42	241.64	5.15	251.19	4.93	261.86	4.9	268.72	5.15
278.16	6.15	282.58	7.15	285.65	8.15	305.21	8.6	341.49	8.67
369.73	9.15	384.08	10.15	426.58	11.15	465.74	11.87	486.02	12.15
588.22	13.15	631.77	14.15	665.22	15.15	695.87	16.15	756.83	16.89
809.45	17.15	820.48	18.15	835.61	19.15	848.31	19.4		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.17	193	.04	426.58	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	193	426.58		238	238		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
0	132.58	20	F		
486.02	848.31	20	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.69	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	9.61	Flow Area (sq ft)	183.26	1320.72	119.68
E.G. Slope (ft/ft)	0.000482	Area (sq ft)	198.78	1320.72	232.81
Q Total (cfs)	3520.00	Flow (cfs)	73.60	3409.79	36.61
Top Width (ft)	497.93	Top Width (ft)	79.02	233.58	185.33
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)	0.40	2.58	0.31
Max Chl Dpth (ft)	8.87	Hydr. Depth (ft)	3.03	5.65	2.01
Conv. Total (cfs)	160363.0	Conv. (cfs)	3353.2	155342.1	1667.7
Length Wtd. (ft)	238.00	Wetted Per. (ft)	60.50	234.42	59.45
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.09	0.17	0.06

			LPGA Tomoka River EC-RAS Report _ CEM		
Alpha	1.37	Stream Power (lb/ft s)	0.04	0.44	0.02
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	2655.52	3836.86	2743.44
C & E Loss (ft)	0.07	Cum SA (acres)	1308.54	376.26	1092.18

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.10	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	10.15	Flow Area (sq ft)	268.22	1649.18	203.26
E.G. Slope (ft/ft)	0.000414	Area (sq ft)	319.02	1649.18	531.91
Q Total (cfs)	4786.00	Flow (cfs)	128.69	4575.29	82.02
Top Width (ft)	562.51	Top Width (ft)	91.96	233.58	236.97
Vel Total (ft/s)	2.26	Avg. Vel. (ft/s)	0.48	2.77	0.40
Max Chl Dpth (ft)	10.28	Hydr. Depth (ft)	4.44	7.06	3.42
Conv. Total (cfs)	235288.4	Conv. (cfs)	6326.7	224929.7	4032.1
Length Wtd. (ft)	238.00	Wetted Per. (ft)	60.50	234.42	59.45
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.11	0.18	0.09
Alpha	1.45	Stream Power (lb/ft s)	0.05	0.50	0.04
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	4270.60	4327.54	4277.74
C & E Loss (ft)	0.06	Cum SA (acres)	1477.57	376.57	1598.43

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	16.01	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	10.53	Flow Area (sq ft)	323.03	1861.10	257.19
E.G. Slope (ft/ft)	0.000377	Area (sq ft)	409.86	1861.10	759.65
Q Total (cfs)	5628.00	Flow (cfs)	167.55	5344.52	115.94
Top Width (ft)	607.24	Top Width (ft)	108.74	233.58	264.92
Vel Total (ft/s)	2.31	Avg. Vel. (ft/s)	0.52	2.87	0.45
Max Chl Dpth (ft)	11.19	Hydr. Depth (ft)	5.35	7.97	4.33
Conv. Total (cfs)	289731.6	Conv. (cfs)	8625.4	275137.7	5968.5
Length Wtd. (ft)	238.00	Wetted Per. (ft)	60.50	234.42	59.45
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.13	0.19	0.10
Alpha	1.48	Stream Power (lb/ft s)	0.07	0.54	0.05
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	5341.45	4633.43	5500.81
C & E Loss (ft)	0.06	Cum SA (acres)	1526.14	376.68	1757.37

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

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

CROSS SECTION OUTPUT Profile #PF 4

LPGA Tomoka River EC-RAS Report _ CEM

E.G. Elev (ft)	17.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.46	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	11.08	Flow Area (sq ft)	410.56	2199.46	343.29
E.G. Slope (ft/ft)	0.000330	Area (sq ft)	585.89	2199.46	1229.95
Q Total (cfs)	7015.00	Flow (cfs)	233.77	6605.71	175.53
Top Width (ft)	755.41	Top Width (ft)	135.58	233.58	386.25
Vel Total (ft/s)	2.38	Avg. Vel. (ft/s)	0.57	3.00	0.51
Max Chl Dpth (ft)	12.64	Hydr. Depth (ft)	6.80	9.42	5.78
Conv. Total (cfs)	385986.3	Conv. (cfs)	12862.5	363465.7	9658.1
Length Wtd. (ft)	238.00	Wetted Per. (ft)	60.50	234.42	59.45
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.14	0.19	0.12
Alpha	1.51	Stream Power (lb/ft s)	0.08	0.58	0.06
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	6979.55	5090.63	7540.85
C & E Loss (ft)	0.06	Cum SA (acres)	1589.05	376.87	1907.13

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

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 19.1

INPUT
 Description: 11TH STREET/LPGA BLVD

* 001

Station Elevation Data				num=	32				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
636	20	676	19	726	18	786	17	886	16
936	15	996	14	1000	11.6	1028	11.6	1071	12.3
1122	12.5	1172	10.7	1219	10.2	1229	7.9	1236	9.4
1307	8.5	1341	8	1352	5.4	1363	7.4	1371	7.9
1378	5.7	1387	8.9	1393	6	1410	5.3	1420	6.3
1421	6.5	1422	8.6	1437	9.8	1472	10.3	1510	13.6
1562	16.6	2301	19.2						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
636	.17	1341	.04	1422	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1341	1422		708	708	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.21	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	896.65	538.49	219.28
E.G. Slope (ft/ft)	0.001628	Area (sq ft)	896.65	538.49	219.28

LPGA Tomoka River EC-RAS Report _ CEM					
Q Total (cfs)	3520.00	Flow (cfs)	598.17	2774.83	147.01
Top Width (ft)	508.16	Top Width (ft)	343.68	81.00	83.48
Vel Total (ft/s)	2.13	Avg. Vel. (ft/s)	0.67	5.15	0.67
Max Chl Dpth (ft)	7.91	Hydr. Depth (ft)	2.61	6.65	2.63
Conv. Total (cfs)	87250.3	Conv. (cfs)	14826.8	68779.6	3643.8
Length Wtd. (ft)	708.00	Wetted Per. (ft)	344.59	84.46	83.66
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.26	0.65	0.27
Alpha	4.64	Stream Power (lb/ft s)	0.18	3.34	0.18
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	2652.52	3831.78	2742.21
C & E Loss (ft)	0.04	Cum SA (acres)	1307.38	375.40	1091.45

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	14.68	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	1416.93	657.54	357.78
E.G. Slope (ft/ft)	0.001307	Area (sq ft)	1416.93	657.54	357.78
Q Total (cfs)	4786.00	Flow (cfs)	1064.12	3468.89	252.99
Top Width (ft)	573.29	Top Width (ft)	385.62	81.00	106.67
Vel Total (ft/s)	1.97	Avg. Vel. (ft/s)	0.75	5.28	0.71
Max Chl Dpth (ft)	9.38	Hydr. Depth (ft)	3.67	8.12	3.35
Conv. Total (cfs)	132376.8	Conv. (cfs)	29432.7	95946.6	6997.5
Length Wtd. (ft)	708.00	Wetted Per. (ft)	386.76	84.46	106.89
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.30	0.64	0.27
Alpha	5.25	Stream Power (lb/ft s)	0.22	3.35	0.19
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	4265.86	4321.24	4275.31
C & E Loss (ft)	0.03	Cum SA (acres)	1476.27	375.71	1597.49

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.62	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	1804.11	733.70	465.73
E.G. Slope (ft/ft)	0.001155	Area (sq ft)	1804.11	733.70	465.73
Q Total (cfs)	5628.00	Flow (cfs)	1378.89	3913.47	335.64
Top Width (ft)	639.83	Top Width (ft)	435.86	81.00	122.97
Vel Total (ft/s)	1.87	Avg. Vel. (ft/s)	0.76	5.33	0.72
Max Chl Dpth (ft)	10.32	Hydr. Depth (ft)	4.14	9.06	3.79
Conv. Total (cfs)	165632.5	Conv. (cfs)	40581.0	115173.7	9877.8
Length Wtd. (ft)	708.00	Wetted Per. (ft)	437.01	84.46	123.22
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.30	0.63	0.27
Alpha	5.68	Stream Power (lb/ft s)	0.23	3.34	0.20
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	5335.40	4626.34	5497.46
C & E Loss (ft)	0.02	Cum SA (acres)	1524.66	375.82	1756.31

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.08	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	2521.99	851.86	693.81

LPGA Tomoka River EC-RAS Report _ CEM					
E.G. Slope (ft/ft)	0.001026	Area (sq ft)	2521.99	851.86	693.81
Q Total (cfs)	7015.00	Flow (cfs)	1923.92	4731.61	359.47
Top Width (ft)	915.87	Top Width (ft)	559.56	81.00	275.31
Vel Total (ft/s)	1.72	Avg. Vel. (ft/s)	0.76	5.55	0.52
Max Chl Dpth (ft)	11.78	Hydr. Depth (ft)	4.51	10.52	2.52
Conv. Total (cfs)	219007.5	Conv. (cfs)	60064.6	147720.2	11222.7
Length Wtd. (ft)	708.00	Wetted Per. (ft)	560.72	84.46	275.59
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.29	0.65	0.16
Alpha	7.05	Stream Power (lb/ft s)	0.22	3.59	0.08
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	6971.06	5082.29	7535.59
C & E Loss (ft)	0.02	Cum SA (acres)	1587.15	376.01	1905.32

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 18.2

INPUT

Description: INTERPOLATED SECTION

* 001

Station Elevation Data		num=		28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18	1100	17	1380	16	1480	15	1510	14
1545	13	1565	12	1595	11	1640	10	1665	9
1695	8	1720	7	1740	6	1790	5	1800	5
1850	6	1860	7	1880	8	1895	9	1935	10
1970	11	1990	12	2030	13	2070	14	2090	15
2110	16	2130	17	2150	18				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1740	.04	1850	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1740	1850		500	500		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.49	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	560.57	773.85	433.33
E.G. Slope (ft/ft)	0.000826	Area (sq ft)	560.57	773.85	433.33
Q Total (cfs)	3464.00	Flow (cfs)	250.74	3033.27	179.98
Top Width (ft)	454.37	Top Width (ft)	184.79	110.00	159.58
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)	0.45	3.92	0.42
Max Chl Dpth (ft)	7.49	Hydr. Depth (ft)	3.03	7.04	2.72
Conv. Total (cfs)	120517.2	Conv. (cfs)	8723.7	105531.6	6261.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	184.91	110.02	159.75
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.16	0.36	0.14
Alpha	3.51	Stream Power (lb/ft s)	0.07	1.42	0.06
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	2640.68	3821.12	2736.90
C & E Loss (ft)	0.05	Cum SA (acres)	1303.09	373.85	1089.47

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	886.03	947.63	735.31
E.G. Slope (ft/ft)	0.000713	Area (sq ft)	886.03	947.63	735.31
Q Total (cfs)	4703.00	Flow (cfs)	429.14	3949.34	324.52
Top Width (ft)	563.47	Top Width (ft)	232.08	110.00	221.39
Vel Total (ft/s)	1.83	Avg. Vel. (ft/s)	0.48	4.17	0.44
Max Chl Dpth (ft)	9.07	Hydr. Depth (ft)	3.82	8.61	3.32
Conv. Total (cfs)	176144.8	Conv. (cfs)	16073.0	147917.3	12154.5
Length Wtd. (ft)	500.00	Wetted Per. (ft)	232.23	110.02	221.57
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.17	0.38	0.15
Alpha	4.36	Stream Power (lb/ft s)	0.08	1.60	0.07
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	4247.14	4308.19	4266.42
C & E Loss (ft)	0.05	Cum SA (acres)	1471.25	374.16	1594.83

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1134.59	1058.17	967.89
E.G. Slope (ft/ft)	0.000643	Area (sq ft)	1134.59	1058.17	967.89
Q Total (cfs)	5527.00	Flow (cfs)	559.87	4507.37	459.76
Top Width (ft)	618.92	Top Width (ft)	267.43	110.00	241.49
Vel Total (ft/s)	1.75	Avg. Vel. (ft/s)	0.49	4.26	0.48
Max Chl Dpth (ft)	10.07	Hydr. Depth (ft)	4.24	9.62	4.01
Conv. Total (cfs)	217996.0	Conv. (cfs)	22082.4	177779.7	18133.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	267.60	110.02	241.70
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.17	0.39	0.16
Alpha	4.85	Stream Power (lb/ft s)	0.08	1.64	0.08
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	5311.52	4611.78	5485.81
C & E Loss (ft)	0.05	Cum SA (acres)	1518.94	374.27	1753.35

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.59	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1684.61	1224.58	1356.09
E.G. Slope (ft/ft)	0.000588	Area (sq ft)	1684.61	1224.58	1356.09

LPGA Tomoka River EC-RAS Report _ CEM					
Q Total (cfs)	6875.00	Flow (cfs)	660.85	5500.90	713.25
Top Width (ft)	906.13	Top Width (ft)	524.39	110.00	271.74
Vel Total (ft/s)	1.61	Avg. Vel. (ft/s)	0.39	4.49	0.53
Max Chl Dpth (ft)	11.59	Hydr. Depth (ft)	3.21	11.13	4.99
Conv. Total (cfs)	283425.8	Conv. (cfs)	27243.9	226777.6	29404.3
Length Wtd. (ft)	500.00	Wetted Per. (ft)	524.56	110.02	271.99
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.12	0.41	0.18
Alpha	6.23	Stream Power (lb/ft s)	0.05	1.84	0.10
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	6936.88	5065.42	7518.93
C & E Loss (ft)	0.05	Cum SA (acres)	1578.34	374.45	1900.88

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 18.1

INPUT
Description: INTERPOLATED SECTION
* 001

Station Elevation Data num= 34									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	20	1015	19	1030	18	1040	17	1050	16
1060	15	1090	14	1110	13	1140	12	1180	11
1215	10	1240	9	1260	8	1280	7	1310	6
1350	5	1410	4	1440	4	1530	5	1595	6
1640	7	1690	8	1710	9	1740	10	1770	11
1805	12	1830	13	1855	14	1870	15	1900	16
1920	17	1970	18	2020	19	2040	20		

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1350	.04	1530	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1350	1530		1378	1378		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.43	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	811.99	1441.52	1221.67
E.G. Slope (ft/ft)	0.000188	Area (sq ft)	811.99	1441.52	1221.67
Q Total (cfs)	3464.00	Flow (cfs)	195.92	2940.10	327.97
Top Width (ft)	688.38	Top Width (ft)	222.75	180.00	285.63
Vel Total (ft/s)	1.00	Avg. Vel. (ft/s)	0.24	2.04	0.27
Max Chl Dpth (ft)	8.43	Hydr. Depth (ft)	3.65	8.01	4.28
Conv. Total (cfs)	252532.2	Conv. (cfs)	14283.2	214339.1	23909.9
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	222.89	180.01	285.74
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.04	0.09	0.05

			LPGA Tomoka River EC-RAS Report _ CEM		
Alpha	3.56	Stream Power (lb/ft s)	0.01	0.19	0.01
Frctn Loss (ft)	0.38	Cum Volume (acre-ft)	2632.80	3808.40	2727.40
C & E Loss (ft)	0.00	Cum SA (acres)	1300.75	372.19	1086.92

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.03	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1201.76	1729.67	1710.94
E.G. Slope (ft/ft)	0.000177	Area (sq ft)	1201.76	1729.67	1710.94
Q Total (cfs)	4703.00	Flow (cfs)	328.77	3863.07	511.16
Top Width (ft)	766.17	Top Width (ft)	260.78	180.00	325.39
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)	0.27	2.23	0.30
Max Chl Dpth (ft)	10.03	Hydr. Depth (ft)	4.61	9.61	5.26
Conv. Total (cfs)	353545.9	Conv. (cfs)	24714.9	290404.8	38426.2
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	260.95	180.01	325.53
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	4.01	Stream Power (lb/ft s)	0.01	0.24	0.02
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4235.16	4292.83	4252.38
C & E Loss (ft)	0.00	Cum SA (acres)	1468.42	372.49	1591.69

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.04	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1481.84	1912.34	2048.89
E.G. Slope (ft/ft)	0.000168	Area (sq ft)	1481.84	1912.34	2048.89
Q Total (cfs)	5527.00	Flow (cfs)	422.99	4452.07	651.94
Top Width (ft)	811.63	Top Width (ft)	290.41	180.00	341.22
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.29	2.33	0.32
Max Chl Dpth (ft)	11.04	Hydr. Depth (ft)	5.10	10.62	6.00
Conv. Total (cfs)	426188.9	Conv. (cfs)	32616.9	343300.4	50271.7
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	290.59	180.01	341.40
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	4.25	Stream Power (lb/ft s)	0.02	0.26	0.02
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	5296.50	4594.73	5468.50
C & E Loss (ft)	0.00	Cum SA (acres)	1515.74	372.61	1750.01

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200

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W.S. Elev (ft)	16.57	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1939.13	2188.49	2606.03
E.G. Slope (ft/ft)	0.000157	Area (sq ft)	1939.13	2188.49	2606.03
Q Total (cfs)	6875.00	Flow (cfs)	617.97	5384.20	872.83
Top Width (ft)	867.25	Top Width (ft)	305.75	180.00	381.50
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.32	2.46	0.33
Max Chl Dpth (ft)	12.57	Hydr. Depth (ft)	6.34	12.16	6.83
Conv. Total (cfs)	548853.8	Conv. (cfs)	49334.7	429838.3	69680.8
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	306.01	180.01	381.70
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.06	0.12	0.07
Alpha	4.57	Stream Power (lb/ft s)	0.02	0.29	0.02
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	6916.08	5045.83	7496.19
C & E Loss (ft)	0.00	Cum SA (acres)	1573.57	372.79	1897.13

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 18

INPUT
Description: 1ST SEC NORTH OF LPGA
* 001

Station Elevation Data		num= 23							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	19.4	1072	15.5	1140	11.2	1176	7.3	1192	5.9
1258	4.4	1325	5.8	1329	3.1	1345	1.9	1359	2.1
1366	3.2	1379	4.6	1438	5.5	1507	5.3	1593	6
1663	5.9	1741	6	1820	6	1909	6.8	1928	6.9
2002	13.1	2062	16.5	2094	18.3				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1325	.04	1366	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1325	1366		2064	2064	2064	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.04	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1112.25	389.18	3660.99
E.G. Slope (ft/ft)	0.000420	Area (sq ft)	1112.25	389.18	3660.99
Q Total (cfs)	3655.00	Flow (cfs)	533.97	1307.58	1813.45
Top Width (ft)	862.56	Top Width (ft)	198.24	41.00	623.32
Vel Total (ft/s)	0.71	Avg. Vel. (ft/s)	0.48	3.36	0.50
Max Chl Dpth (ft)	10.14	Hydr. Depth (ft)	5.61	9.49	5.87
Conv. Total (cfs)	178400.6	Conv. (cfs)	26063.1	63822.9	88514.7
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	198.57	41.96	623.62

Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.15	0.24	0.15
Alpha	8.37	Stream Power (lb/ft s)	0.07	0.82	0.08
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	2602.37	3779.44	2650.17
C & E Loss (ft)	0.00	Cum SA (acres)	1294.09	368.69	1072.54

LPGA Tomoka River EC-RAS Report _ CEM

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	13.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.67	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1456.33	456.00	4693.58
E.G. Slope (ft/ft)	0.000391	Area (sq ft)	1456.33	456.00	4693.58
Q Total (cfs)	4971.00	Flow (cfs)	744.03	1642.60	2584.37
Top Width (ft)	911.02	Top Width (ft)	224.01	41.00	646.01
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.51	3.60	0.55
Max Chl Dpth (ft)	11.77	Hydr. Depth (ft)	6.50	11.12	7.27
Conv. Total (cfs)	251521.2	Conv. (cfs)	37646.3	83112.0	130762.9
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	224.40	41.96	646.37
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.16	0.27	0.18
Alpha	7.92	Stream Power (lb/ft s)	0.08	0.95	0.10
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	4193.11	4258.26	4151.08
C & E Loss (ft)	0.00	Cum SA (acres)	1460.75	369.00	1576.32

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	14.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.70	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1696.55	498.42	5371.36
E.G. Slope (ft/ft)	0.000371	Area (sq ft)	1696.55	498.42	5371.36
Q Total (cfs)	5846.00	Flow (cfs)	892.53	1857.16	3096.31
Top Width (ft)	945.64	Top Width (ft)	240.37	41.00	664.26
Vel Total (ft/s)	0.77	Avg. Vel. (ft/s)	0.53	3.73	0.58
Max Chl Dpth (ft)	12.80	Hydr. Depth (ft)	7.06	12.16	8.09
Conv. Total (cfs)	303427.0	Conv. (cfs)	46325.3	96392.7	160709.0
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	240.79	41.96	664.66
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.16	0.28	0.19
Alpha	7.75	Stream Power (lb/ft s)	0.09	1.03	0.11
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	5246.23	4556.60	5351.13
C & E Loss (ft)	0.00	Cum SA (acres)	1507.34	369.11	1734.10

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.26	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	2091.04	562.30	6427.77
E.G. Slope (ft/ft)	0.000348	Area (sq ft)	2091.04	562.30	6427.77
Q Total (cfs)	7280.00	Flow (cfs)	1142.19	2199.75	3938.07
Top Width (ft)	999.79	Top Width (ft)	267.03	41.00	691.76
Vel Total (ft/s)	0.80	Avg. Vel. (ft/s)	0.55	3.91	0.61
Max Chl Dpth (ft)	14.36	Hydr. Depth (ft)	7.83	13.71	9.29
Conv. Total (cfs)	390026.7	Conv. (cfs)	61192.9	117851.5	210982.3

			LPGA Tomoka River EC-RAS Report _ CEM		
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	267.49	41.96	692.20
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.17	0.29	0.20
Alpha	7.58	Stream Power (lb/ft s)	0.09	1.14	0.12
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	6852.33	5002.32	7353.30
C & E Loss (ft)	0.00	Cum SA (acres)	1564.51	369.29	1880.15

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 17

INPUT
Description: 2ND SEC NORTH OF LPGA
* 001

Station Elevation Data		num=		27	
Sta	Elev	Sta	Elev	Sta	Elev
912	16	932	15	945	14
1054	8.6	1072	5.8	1117	5.4
1239	4.4	1269	2.9	1271	1.9
1288	2	1295	3.7	1356	3.6
1603	4.3	1670	3.5	1707	6.2
1813	15	2400	19	1757	11.3
				1788	14.5

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
912	.2	1239	.04	1295	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1239	1295		3218	3218		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	11.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.22	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1131.72	477.66	3180.63
E.G. Slope (ft/ft)	0.000381	Area (sq ft)	1131.72	477.66	3180.63
Q Total (cfs)	3613.00	Flow (cfs)	512.48	1430.62	1669.90
Top Width (ft)	721.82	Top Width (ft)	204.63	56.00	461.19
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.45	3.00	0.53
Max Chl Dpth (ft)	10.92	Hydr. Depth (ft)	5.53	8.53	6.90
Conv. Total (cfs)	185146.9	Conv. (cfs)	26261.7	73311.6	85573.6
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	205.03	56.88	461.55
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.13	0.20	0.16
Alpha	6.52	Stream Power (lb/ft s)	0.06	0.60	0.09
Frctn Loss (ft)	1.34	Cum Volume (acre-ft)	2549.20	3758.91	2488.09
C & E Loss (ft)	0.00	Cum SA (acres)	1284.54	366.39	1046.85

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

CROSS SECTION OUTPUT Profile #PF 2

LPGA Tomoka River EC-RAS Report _ CEM

E.G. Elev (ft)	12.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.89	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1485.54	571.61	3967.94
E.G. Slope (ft/ft)	0.000360	Area (sq ft)	1485.54	571.61	3967.94
Q Total (cfs)	4924.00	Flow (cfs)	753.49	1876.57	2293.94
Top Width (ft)	750.66	Top Width (ft)	217.21	56.00	477.45
Vel Total (ft/s)	0.82	Avg. Vel. (ft/s)	0.51	3.28	0.58
Max Chl Dpth (ft)	12.59	Hydr. Depth (ft)	6.84	10.21	8.31
Conv. Total (cfs)	259468.4	Conv. (cfs)	39704.9	98884.9	120878.6
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	217.72	56.88	477.90
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.15	0.23	0.19
Alpha	6.44	Stream Power (lb/ft s)	0.08	0.74	0.11
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	4123.42	4233.91	3945.88
C & E Loss (ft)	0.00	Cum SA (acres)	1450.30	366.70	1549.71

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	14.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.94	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1749.83	630.14	4472.28
E.G. Slope (ft/ft)	0.000362	Area (sq ft)	1749.83	630.14	4472.28
Q Total (cfs)	5800.00	Flow (cfs)	818.97	2213.09	2767.94
Top Width (ft)	833.45	Top Width (ft)	289.87	56.00	487.57
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.47	3.51	0.62
Max Chl Dpth (ft)	13.64	Hydr. Depth (ft)	6.04	11.25	9.17
Conv. Total (cfs)	304877.3	Conv. (cfs)	43049.2	116331.3	145496.8
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	290.39	56.88	488.08
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.14	0.25	0.21
Alpha	6.87	Stream Power (lb/ft s)	0.06	0.88	0.13
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	5164.58	4529.86	5117.92
C & E Loss (ft)	0.00	Cum SA (acres)	1494.78	366.81	1706.81

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	15.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.49	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	2221.58	717.10	5272.72
E.G. Slope (ft/ft)	0.000375	Area (sq ft)	2221.58	717.10	5272.72
Q Total (cfs)	7230.00	Flow (cfs)	1169.86	2795.32	3264.82
Top Width (ft)	963.18	Top Width (ft)	316.86	56.00	590.33
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.53	3.90	0.62
Max Chl Dpth (ft)	15.19	Hydr. Depth (ft)	7.01	12.81	8.93
Conv. Total (cfs)	373229.8	Conv. (cfs)	60390.9	144300.9	168538.0
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	317.43	56.88	590.86

			LPGA Tomoka River EC-RAS Report _ CEM		
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.16	0.30	0.21
Alpha	7.86	Stream Power (lb/ft s)	0.09	1.15	0.13
Frctn Loss (ft)	1.32	Cum Volume (acre-ft)	6750.16	4972.01	7076.10
C & E Loss (ft)	0.00	Cum SA (acres)	1550.68	367.00	1849.78

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 16

INPUT
 Description: 3RD SEC NORTH OF LPGA
 * 001

Station Elevation Data		num=	30						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	20.3	1064	18	1124	14.3	1178	10.7	1236	6.4
1255	4.4	1270	2.9	1339	2	1409	2.2	1495	2.1
1568	1.2	1570	-1.5	1577	-1.7	1583	-1.4	1591	-1.4
1597	0	1600	1.6	1640	1.6	1651	1.4	1653	.2
1669	.4	1672	1.8	1709	2.1	1726	.7	1765	2
1841	2.3	1895	8	1939	12.4	1973	15.2	2005	17.1

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1000	.2	1568	.04
		1600	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1568	1600		2257	2257		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	9.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.87	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	2579.85	324.69	2249.30
E.G. Slope (ft/ft)	0.000452	Area (sq ft)	2579.85	324.69	2249.30
Q Total (cfs)	3959.00	Flow (cfs)	1463.83	1176.74	1318.43
Top Width (ft)	724.54	Top Width (ft)	378.82	32.00	313.71
Vel Total (ft/s)	0.77	Avg. Vel. (ft/s)	0.57	3.62	0.59
Max Chl Dpth (ft)	10.57	Hydr. Depth (ft)	6.81	10.15	7.17
Conv. Total (cfs)	186143.6	Conv. (cfs)	68826.2	55327.6	61989.9
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	379.14	33.05	314.84
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.19	0.28	0.20
Alpha	7.01	Stream Power (lb/ft s)	0.11	1.01	0.12
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)	2412.11	3729.27	2287.52
C & E Loss (ft)	0.00	Cum SA (acres)	1262.99	363.14	1018.23

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	11.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.59	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	3251.51	379.69	2803.28
E.G. Slope (ft/ft)	0.000448	Area (sq ft)	3251.51	379.69	2803.28
Q Total (cfs)	5404.00	Flow (cfs)	2055.17	1520.61	1828.22
Top Width (ft)	766.26	Top Width (ft)	403.35	32.00	330.90
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.63	4.00	0.65
Max Chl Dpth (ft)	12.29	Hydr. Depth (ft)	8.06	11.87	8.47
Conv. Total (cfs)	255217.5	Conv. (cfs)	97060.4	71814.8	86342.3
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	403.73	33.05	332.11
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.23	0.32	0.24
Alpha	6.82	Stream Power (lb/ft s)	0.14	1.29	0.15
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	3948.44	4198.77	3695.77
C & E Loss (ft)	0.00	Cum SA (acres)	1427.38	363.45	1519.85

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	12.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.64	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	3684.20	413.36	3157.05
E.G. Slope (ft/ft)	0.000444	Area (sq ft)	3684.20	413.36	3157.05
Q Total (cfs)	6368.00	Flow (cfs)	2454.86	1743.37	2169.77
Top Width (ft)	793.08	Top Width (ft)	419.14	32.00	341.94
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.67	4.22	0.69
Max Chl Dpth (ft)	13.34	Hydr. Depth (ft)	8.79	12.92	9.23
Conv. Total (cfs)	302220.6	Conv. (cfs)	116505.7	82739.2	102975.7
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	419.55	33.05	343.20
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.24	0.35	0.25
Alpha	6.75	Stream Power (lb/ft s)	0.16	1.46	0.18
Frctn Loss (ft)	0.97	Cum Volume (acre-ft)	4963.86	4491.32	4836.11
C & E Loss (ft)	0.00	Cum SA (acres)	1468.59	363.56	1676.17

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	14.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.18	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	4345.90	462.53	3696.76
E.G. Slope (ft/ft)	0.000444	Area (sq ft)	4345.90	462.53	3696.76
Q Total (cfs)	7947.00	Flow (cfs)	3119.66	2102.70	2724.64
Top Width (ft)	834.78	Top Width (ft)	442.18	32.00	360.60
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.72	4.55	0.74
Max Chl Dpth (ft)	14.88	Hydr. Depth (ft)	9.83	14.45	10.25
Conv. Total (cfs)	377125.6	Conv. (cfs)	148043.9	99783.6	129298.2
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	442.65	33.05	361.92
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.27	0.39	0.28
Alpha	6.71	Stream Power (lb/ft s)	0.20	1.76	0.21
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	6507.57	4928.44	6744.79
C & E Loss (ft)	0.01	Cum SA (acres)	1522.64	363.75	1814.65

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 15

INPUT

Description: NORTH OF LPGA BLVD

*

001

Station Elevation Data		num=		30					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18	1051	14	1072	10.7	1091	2.3	1140	1.9
1190	1.7	1205	1.8	1210	1.5	1211	-.8	1217	-3.6
1222	-4	1227	-3.2	1237	.1	1245	1.4	1263	2
1336	1.5	1394	2	1467	1.7	1521	1.5	1557	1.4
1616	1.5	1692	1.8	1825	1.4	1837	2	1892	1.5
1951	1.7	2003	7.7	2066	15.7	2104	18.8	2135	20.7

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1210	.04	1245	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1210	1245		2800	2800		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.85	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	874.54	369.17	5302.35
E.G. Slope (ft/ft)	0.000454	Area (sq ft)	874.54	369.17	5302.35
Q Total (cfs)	4859.00	Flow (cfs)	480.56	1333.96	3044.48
Top Width (ft)	935.89	Top Width (ft)	133.82	35.00	767.07
Vel Total (ft/s)	0.74	Avg. Vel. (ft/s)	0.55	3.61	0.57
Max Chl Dpth (ft)	12.85	Hydr. Depth (ft)	6.54	10.55	6.91
Conv. Total (cfs)	228061.5	Conv. (cfs)	22555.3	62610.7	142895.5
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	135.22	37.84	767.52
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.18	0.28	0.20
Alpha	6.93	Stream Power (lb/ft s)	0.10	1.00	0.11
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	2322.62	3711.29	2091.88
C & E Loss (ft)	0.00	Cum SA (acres)	1249.71	361.41	990.23

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	10.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.61	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1113.59	430.78	6664.75
E.G. Slope (ft/ft)	0.000428	Area (sq ft)	1113.59	430.78	6664.75
Q Total (cfs)	6631.00	Flow (cfs)	683.07	1674.31	4273.63
Top Width (ft)	953.74	Top Width (ft)	137.80	35.00	780.93

			LPGA Tomoka River EC-RAS Report _ CEM		
Vel Total (ft/s)	0.81	Avg. Vel. (ft/s)	0.61	3.89	0.64
Max Chl Dpth (ft)	14.61	Hydr. Depth (ft)	8.08	12.31	8.53
Conv. Total (cfs)	320702.5	Conv. (cfs)	33035.9	80976.3	206690.4
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	139.57	37.84	781.50
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.21	0.30	0.23
Alpha	6.31	Stream Power (lb/ft s)	0.13	1.18	0.15
Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	3835.36	4177.78	3450.48
C & E Loss (ft)	0.01	Cum SA (acres)	1413.36	361.71	1491.04

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	11.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.69	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1264.80	468.34	7507.50
E.G. Slope (ft/ft)	0.000416	Area (sq ft)	1264.80	468.34	7507.50
Q Total (cfs)	7809.00	Flow (cfs)	807.78	1898.19	5103.03
Top Width (ft)	968.66	Top Width (ft)	144.27	35.00	789.39
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.64	4.05	0.68
Max Chl Dpth (ft)	15.69	Hydr. Depth (ft)	8.77	13.38	9.51
Conv. Total (cfs)	382942.8	Conv. (cfs)	39612.5	93084.8	250245.5
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	146.13	37.84	790.02
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.22	0.32	0.25
Alpha	6.07	Stream Power (lb/ft s)	0.14	1.30	0.17
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	4835.65	4468.47	4559.83
C & E Loss (ft)	0.01	Cum SA (acres)	1454.00	361.83	1646.86

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	13.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.23	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1495.22	522.40	8736.12
E.G. Slope (ft/ft)	0.000411	Area (sq ft)	1495.22	522.40	8736.12
Q Total (cfs)	9741.00	Flow (cfs)	1015.49	2263.19	6462.32
Top Width (ft)	990.65	Top Width (ft)	154.10	35.00	801.55
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.68	4.33	0.74
Max Chl Dpth (ft)	17.23	Hydr. Depth (ft)	9.70	14.93	10.90
Conv. Total (cfs)	480649.8	Conv. (cfs)	50107.5	111672.5	318869.8
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	156.08	37.84	802.28
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.25	0.35	0.28
Alpha	5.82	Stream Power (lb/ft s)	0.17	1.53	0.21
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	6356.25	4902.92	6422.70
C & E Loss (ft)	0.01	Cum SA (acres)	1507.20	362.01	1784.54

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 14.4

INPUT

Description: OLD TOMOKA ROAD

* 001

Station Elevation Data		num=		31					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
468	14	644	13	775	12	819	11	969	10
1000	5.2	1032	4.7	1081	4.1	1109	4.4	1139	5.5
1168	3	1171	1.4	1212	-8.4	1243	-4.2	1272	-2.6
1309	1	1313	1.8	1318	2.9	1379	4	1432	3.2
1457	4	1482	5	1507	6	1530	7	1580	8
1630	9	1661	10	1861	11	1874	12	1886	13
1901	14								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
468	.2	1168	.04	1318	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1168	1318		67	67	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.95	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	595.22	1635.51	817.14
E.G. Slope (ft/ft)	0.000217	Area (sq ft)	595.22	1635.51	817.14
Q Total (cfs)	4690.00	Flow (cfs)	141.39	4356.55	192.06
Top Width (ft)	595.25	Top Width (ft)	185.76	150.00	259.49
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.24	2.66	0.24
Max Chl Dpth (ft)	16.35	Hydr. Depth (ft)	3.20	10.90	3.15
Conv. Total (cfs)	318423.8	Conv. (cfs)	9599.6	295784.3	13039.9
Length Wtd. (ft)	67.00	Wetted Per. (ft)	186.11	152.26	259.59
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.04	0.15	0.04
Alpha	2.79	Stream Power (lb/ft s)	0.01	0.39	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2275.38	3646.86	1895.20
C & E Loss (ft)	0.02	Cum SA (acres)	1239.44	355.46	957.23

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.68	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	925.87	1894.73	1335.86
E.G. Slope (ft/ft)	0.000231	Area (sq ft)	925.87	1894.73	1335.86
Q Total (cfs)	6420.00	Flow (cfs)	293.02	5746.15	380.83
Top Width (ft)	679.93	Top Width (ft)	196.92	150.00	333.01
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.32	3.03	0.29
Max Chl Dpth (ft)	18.08	Hydr. Depth (ft)	4.70	12.63	4.01
Conv. Total (cfs)	422300.7	Conv. (cfs)	19274.7	377975.3	25050.7
Length Wtd. (ft)	67.00	Wetted Per. (ft)	197.40	152.26	333.13
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.07	0.18	0.06
Alpha	3.45	Stream Power (lb/ft s)	0.02	0.54	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3769.81	4103.04	3193.34
C & E Loss (ft)	0.02	Cum SA (acres)	1402.60	355.77	1455.24

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.71	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	1168.25	2049.31	1737.90
E.G. Slope (ft/ft)	0.000247	Area (sq ft)	1168.25	2049.31	1737.90
Q Total (cfs)	7571.00	Flow (cfs)	333.06	6763.11	474.84
Top Width (ft)	939.93	Top Width (ft)	305.26	150.00	484.67
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	0.29	3.30	0.27
Max Chl Dpth (ft)	19.11	Hydr. Depth (ft)	3.83	13.66	3.59
Conv. Total (cfs)	482211.7	Conv. (cfs)	21212.9	430755.4	30243.4
Length Wtd. (ft)	67.00	Wetted Per. (ft)	305.76	152.26	484.80
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.06	0.21	0.06
Alpha	4.17	Stream Power (lb/ft s)	0.02	0.68	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4757.45	4387.56	4262.68
C & E Loss (ft)	0.03	Cum SA (acres)	1439.55	355.88	1605.92

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.24	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	1733.53	2279.33	2572.07
E.G. Slope (ft/ft)	0.000249	Area (sq ft)	1733.53	2279.33	2572.07
Q Total (cfs)	9462.00	Flow (cfs)	518.30	8110.17	833.53
Top Width (ft)	1133.58	Top Width (ft)	424.68	150.00	558.90
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)	0.30	3.56	0.32
Max Chl Dpth (ft)	20.64	Hydr. Depth (ft)	4.08	15.20	4.60
Conv. Total (cfs)	600044.4	Conv. (cfs)	32868.9	514316.5	52859.1
Length Wtd. (ft)	67.00	Wetted Per. (ft)	425.20	152.26	559.08
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.06	0.23	0.07
Alpha	5.26	Stream Power (lb/ft s)	0.02	0.83	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	6252.48	4812.87	6059.25
C & E Loss (ft)	0.03	Cum SA (acres)	1488.59	356.06	1740.82

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 14.1

INPUT

Description: OLD TOMOKA ROAD

*

001

Station Elevation Data				num=	31				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
462	15	487	14	663	13	794	12	838	11
988	10	1000	5.4	1015	4.5	1054	2.9	1123	3.8
1154	3.3	1195	3.3	1199	1.5	1225	-3	1260	-5.1
1291	-4.2	1325	.8	1329	2.3	1354	4.2	1392	4.6
1448	5.7	1460	6	1485	7	1523	8	1573	9

LPGA Tomoka River EC-RAS Report _ CEM

1604 10 1804 11 1816 12 1829 13 1841 14
1855 15

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
462 .2 1000 .04 1448 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
1000 1448 2673 2673 2673 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.97	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	8.65	2688.09	80.40
E.G. Slope (ft/ft)	0.000202	Area (sq ft)	8.65	2688.09	80.40
Q Total (cfs)	4690.00	Flow (cfs)	1.03	4679.99	8.98
Top Width (ft)	528.75	Top Width (ft)	6.72	448.00	74.03
Vel Total (ft/s)	1.69	Avg. Vel. (ft/s)	0.12	1.74	0.11
Max Chl Dpth (ft)	13.07	Hydr. Depth (ft)	1.29	6.00	1.09
Conv. Total (cfs)	329629.8	Conv. (cfs)	72.6	328926.2	630.9
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	7.19	449.64	74.07
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.02	0.08	0.01
Alpha	1.06	Stream Power (lb/ft s)	0.00	0.13	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	2274.91	3643.54	1894.51
C & E Loss (ft)	0.00	Cum SA (acres)	1239.29	355.00	956.98

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.72	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	24.32	3469.25	280.07
E.G. Slope (ft/ft)	0.000161	Area (sq ft)	24.32	3469.25	280.07
Q Total (cfs)	6420.00	Flow (cfs)	3.65	6375.89	40.46
Top Width (ft)	606.53	Top Width (ft)	11.26	448.00	147.26
Vel Total (ft/s)	1.70	Avg. Vel. (ft/s)	0.15	1.84	0.14
Max Chl Dpth (ft)	14.82	Hydr. Depth (ft)	2.16	7.74	1.90
Conv. Total (cfs)	506694.0	Conv. (cfs)	288.4	503212.4	3193.2
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	12.06	449.64	147.32
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	1.16	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	3769.08	4098.91	3192.10
C & E Loss (ft)	0.00	Cum SA (acres)	1402.44	355.31	1454.87

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.76	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	80.37	3937.16	499.93
E.G. Slope (ft/ft)	0.000146	Area (sq ft)	80.37	3937.16	499.93
Q Total (cfs)	7571.00	Flow (cfs)	5.31	7503.82	61.87

			LPGA Tomoka River EC-RAS Report _ CEM		
Top Width (ft)	882.92	Top Width (ft)	126.40	448.00	308.53
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	0.07	1.91	0.12
Max Chl Dpth (ft)	15.86	Hydr. Depth (ft)	0.64	8.79	1.62
Conv. Total (cfs)	626904.4	Conv. (cfs)	439.6	621341.4	5123.5
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	127.25	449.64	308.59
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.01	0.08	0.01
Alpha	1.28	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4756.49	4382.95	4260.96
C & E Loss (ft)	0.00	Cum SA (acres)	1439.22	355.42	1605.31

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.31	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	367.76	4628.57	1054.01
E.G. Slope (ft/ft)	0.000129	Area (sq ft)	367.76	4628.57	1054.01
Q Total (cfs)	9462.00	Flow (cfs)	40.48	9243.42	178.10
Top Width (ft)	1066.06	Top Width (ft)	246.08	448.00	371.98
Vel Total (ft/s)	1.56	Avg. Vel. (ft/s)	0.11	2.00	0.17
Max Chl Dpth (ft)	17.41	Hydr. Depth (ft)	1.49	10.33	2.83
Conv. Total (cfs)	832888.6	Conv. (cfs)	3563.2	813648.3	15677.1
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	246.95	449.64	372.10
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	1.59	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	6250.86	4807.56	6056.47
C & E Loss (ft)	0.00	Cum SA (acres)	1488.08	355.60	1740.10

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 13.4

INPUT

Description:

Station Elevation Data		num=	23						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16.6	1120	13.7	1164	11.9	1268	7.6	1285	5.2
1348	2.3	1412	1.8	1453	1.2	1498	1.1	1540	1.2
1562	.7	1574	-2.1	1597	-7.1	1625	-7.9	1652	-9.1
1686	-3.2	1722	.1	1759	1.9	1809	2.7	1931	7.9
2059	17.8	2109	19	2160	27.3				

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1562	.04	1722	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1562	1722		225	225		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.66	Element	Left OB	Channel	Right OB

LPGA Tomoka River EC-RAS Report _ CEM					
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.60	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	1576.49	2035.03	791.40
E.G. Slope (ft/ft)	0.000097	Area (sq ft)	1576.49	2035.03	791.40
Q Total (cfs)	4521.00	Flow (cfs)	352.63	4024.76	143.62
Top Width (ft)	656.09	Top Width (ft)	294.06	160.00	202.02
Vel Total (ft/s)	1.03	Avg. Vel. (ft/s)	0.22	1.98	0.18
Max Chl Dpth (ft)	16.70	Hydr. Depth (ft)	5.36	12.72	3.92
Conv. Total (cfs)	459724.1	Conv. (cfs)	35857.2	409263.2	14603.8
Length Wtd. (ft)	225.00	Wetted Per. (ft)	294.31	161.56	202.18
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.03	0.08	0.02
Alpha	3.31	Stream Power (lb/ft s)	0.01	0.15	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2226.28	3498.63	1867.76
C & E Loss (ft)	0.01	Cum SA (acres)	1230.06	336.35	948.51

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.34	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	2123.61	2312.88	1166.69
E.G. Slope (ft/ft)	0.000112	Area (sq ft)	2123.61	2312.88	1166.69
Q Total (cfs)	6206.00	Flow (cfs)	570.58	5362.79	272.63
Top Width (ft)	723.67	Top Width (ft)	336.07	160.00	227.61
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.27	2.32	0.23
Max Chl Dpth (ft)	18.44	Hydr. Depth (ft)	6.32	14.46	5.13
Conv. Total (cfs)	586220.1	Conv. (cfs)	53897.1	506570.2	25752.8
Length Wtd. (ft)	225.00	Wetted Per. (ft)	336.35	161.56	227.82
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.04	0.10	0.04
Alpha	3.79	Stream Power (lb/ft s)	0.01	0.23	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3703.18	3921.50	3147.71
C & E Loss (ft)	0.02	Cum SA (acres)	1391.78	336.65	1443.37

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.38	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	2486.17	2479.26	1410.37
E.G. Slope (ft/ft)	0.000120	Area (sq ft)	2486.17	2479.26	1410.37
Q Total (cfs)	7332.00	Flow (cfs)	731.48	6228.21	372.32
Top Width (ft)	762.27	Top Width (ft)	361.22	160.00	241.05
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.29	2.51	0.26
Max Chl Dpth (ft)	19.48	Hydr. Depth (ft)	6.88	15.50	5.85
Conv. Total (cfs)	669548.4	Conv. (cfs)	66797.5	568751.6	33999.4
Length Wtd. (ft)	225.00	Wetted Per. (ft)	361.52	161.56	241.31
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.05	0.11	0.04
Alpha	4.06	Stream Power (lb/ft s)	0.02	0.29	0.01

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Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4677.74	4186.09	4202.35
C & E Loss (ft)	0.02	Cum SA (acres)	1424.26	336.77	1588.44

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.91	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	3069.14	2724.87	1795.63
E.G. Slope (ft/ft)	0.000131	Area (sq ft)	3069.14	2724.87	1795.63
Q Total (cfs)	9185.00	Flow (cfs)	1017.07	7616.15	551.78
Top Width (ft)	819.25	Top Width (ft)	398.35	160.00	260.90
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	0.33	2.80	0.31
Max Chl Dpth (ft)	21.01	Hydr. Depth (ft)	7.70	17.03	6.88
Conv. Total (cfs)	802857.0	Conv. (cfs)	88901.5	665724.5	48231.1
Length Wtd. (ft)	225.00	Wetted Per. (ft)	398.68	161.56	261.22
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.06	0.14	0.06
Alpha	4.44	Stream Power (lb/ft s)	0.02	0.39	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	6145.41	4581.94	5969.03
C & E Loss (ft)	0.02	Cum SA (acres)	1468.31	336.95	1720.69

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 13.3

INPUT

Description:

Station Elevation Data	num=	11							
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev									
1000 16 1024 3 1077 -2 1099 -6.5 1137 -5.8									
1171 -9.1 1215 -6.1 1258 -2.7 1296 -2.4 1335 -1.1									
1360 16									

Manning's n Values	num=	3			
Sta n Val Sta n Val Sta n Val					
1000 .2 1024 .04 1335 .2					

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1024	1335	43.1	43.1	43.1	.3		.5
Ineffective Flow	num=	2					
Sta L Sta R Elev Permanent							
1000 1024 19.9 F							
1335 1360 19.9 F							

CROSS SECTION OUTPUT Profile #PF 1

			LPGA Tomoka River		EC-RAS Report _ CEM
		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	7.63	Wt. n-Val.		0.040	
Vel Head (ft)	0.02	Reach Len. (ft)	1.00	1.00	1.00
W.S. Elev (ft)	7.60	Flow Area (sq ft)		3607.44	
Crit W.S. (ft)	-3.57	Area (sq ft)	19.56	3607.44	55.37
E.G. Slope (ft/ft)	0.000044	Flow (cfs)		4521.00	
Q Total (cfs)	4521.00	Top Width (ft)	8.50	311.00	12.72
Top Width (ft)	332.22	Avg. Vel. (ft/s)		1.25	
Vel Total (ft/s)	1.25	Hydr. Depth (ft)		11.60	
Max Chl Dpth (ft)	16.70	Conv. (cfs)		685051.8	
Conv. Total (cfs)	685051.8	Wetted Per. (ft)		312.12	
Length Wtd. (ft)	1.00	Shear (lb/sq ft)		0.03	
Min Ch El (ft)	-9.10	Stream Power (lb/ft s)		0.04	
Alpha	1.00	Cum Volume (acre-ft)	2222.16	3484.05	1865.57
Frctn Loss (ft)	0.00	Cum SA (acres)	1229.28	335.13	947.95
C & E Loss (ft)	0.00				

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

CROSS SECTION OUTPUT Profile #PF 2

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	9.38	Wt. n-Val.		0.040	
Vel Head (ft)	0.03	Reach Len. (ft)	1.00	1.00	1.00
W.S. Elev (ft)	9.34	Flow Area (sq ft)		4147.96	
Crit W.S. (ft)	-2.83	Area (sq ft)	37.12	4147.96	79.70
E.G. Slope (ft/ft)	0.000052	Flow (cfs)		6206.00	
Q Total (cfs)	6206.00	Top Width (ft)	11.71	311.00	15.27
Top Width (ft)	337.97	Avg. Vel. (ft/s)		1.50	
Vel Total (ft/s)	1.50	Hydr. Depth (ft)		13.34	
Max Chl Dpth (ft)	18.44	Conv. (cfs)		864534.2	
Conv. Total (cfs)	864534.2	Wetted Per. (ft)		312.12	
Length Wtd. (ft)	1.00	Shear (lb/sq ft)		0.04	
Min Ch El (ft)	-9.10	Stream Power (lb/ft s)		0.06	
Alpha	1.00	Cum Volume (acre-ft)	3697.60	3904.82	3144.49
Frctn Loss (ft)	0.00	Cum SA (acres)	1390.88	335.43	1442.74
C & E Loss (ft)	0.00				

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

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	10.42	Wt. n-Val.		0.040	
Vel Head (ft)	0.04	Reach Len. (ft)	1.00	1.00	1.00
W.S. Elev (ft)	10.38	Flow Area (sq ft)		4471.61	
Crit W.S. (ft)	-2.19	Area (sq ft)	50.30	4471.61	96.37
E.G. Slope (ft/ft)	0.000056	Flow (cfs)		7332.00	
Q Total (cfs)	7332.00	Top Width (ft)	13.63	311.00	16.79
Top Width (ft)	341.42	Avg. Vel. (ft/s)		1.64	
Vel Total (ft/s)	1.64	Hydr. Depth (ft)		14.38	
Max Chl Dpth (ft)	19.48	Conv. (cfs)		979859.8	
Conv. Total (cfs)	979859.8	Wetted Per. (ft)		312.12	
Length Wtd. (ft)	1.00	Shear (lb/sq ft)		0.05	
Min Ch El (ft)	-9.10	Stream Power (lb/ft s)		0.08	
Alpha	1.00	Cum Volume (acre-ft)	4671.19	4168.13	4198.46
Frctn Loss (ft)	0.00				

C & E Loss (ft) 0.00 Cum SA (acres) LPGA Tomoka River EC-RAS Report _ CEM
1423.29 335.55 1587.78

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.92	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-1.58	Flow Area (sq ft)		4949.29	
E.G. Slope (ft/ft)	0.000063	Area (sq ft)	73.42	4949.29	123.88
Q Total (cfs)	9185.00	Flow (cfs)		9185.00	
Top Width (ft)	346.50	Top Width (ft)	16.46	311.00	19.03
Vel Total (ft/s)	1.86	Avg. Vel. (ft/s)		1.86	
Max Chl Dpth (ft)	21.02	Hydr. Depth (ft)		15.91	
Conv. Total (cfs)	1160460.0	Conv. (cfs)		1160460.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.12	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	6137.29	4562.12	5964.08
C & E Loss (ft)	0.00	Cum SA (acres)	1467.24	335.73	1719.96

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

BRIDGE

RIVER: RIVER-1
REACH: Reach-1 RS: 13.25

INPUT
Description: Bridge #5

Distance from Upstream XS = 1
Deck/Roadway Width = 42
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates
num= 2
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
1000 19.9 16.1 1360 19.9 16

Upstream Bridge Cross Section Data
Station Elevation Data num= 11
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
1000 16 1024 3 1077 -2 1099 -6.5 1137 -5.8
1171 -9.1 1215 -6.1 1258 -2.7 1296 -2.4 1335 -1.1
1360 16

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
1000 .2 1024 .04 1335 .2

Bank Sta: Left Right Coeff Contr. Expan.
1024 1335 .3 .5

Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 1000 1024 19.9 F
 1335 1360 19.9 F

Downstream Deck/Roadway Coordinates
 num= 2
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
 1000 19.9 16.1 1360 19.9 16

Downstream Bridge Cross Section Data
 Station Elevation Data num= 11
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
 1000 16.1 1026 2.6 1059 1.7 1096 -3.2 1131 -8
 1174 -8.6 1214 -2.8 1257 -.3 1284 -.3 1337 2.7
 1360 15.8

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .2 1026 .04 1337 .2

Bank Sta: Left Right Coeff Contr. Expan.
 1026 1337 .3 .5

Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 1000 1026 18 F
 1337 1360 18 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 19.9
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data
 Pier Station Upstream= 1179.5 Downstream= 1181.5
 Upstream num= 2
 Width Elev Width Elev
 12 -9.1 12 16.1
 Downstream num= 2
 Width Elev Width Elev
 12 -8.6 12 16.1

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data
 Yarnell KVal = 1.05
 Selected Low Flow Methods = Yarnell

High Flow Method
 Pressure and Weir flow
 Submerged Inlet Cd =

Submerged Inlet + Outlet Cd =.7905694
 Max Low Cord = 16.1

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	7.63	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.60	E.G. Elev (ft)	7.63	7.62
Q Total (cfs)	4521.00	W.S. Elev (ft)	7.60	7.58
Q Bridge (cfs)	4521.00	Crit W.S. (ft)	-3.22	-2.60
Q Weir (cfs)		Max Chl Dpth (ft)	16.70	16.18
Weir Sta Lft (ft)		Vel Total (ft/s)	1.32	1.54
Weir Sta Rgt (ft)		Flow Area (sq ft)	3412.83	2926.31
Weir Submerg		Froude # Chl	0.07	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	20920.08	16488.18
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	11.41	9.79
Min El Prs (ft)	16.10	W.P. Total (ft)	332.33	330.31
Delta EG (ft)	0.01	Conv. Total (cfs)	598982.4	465428.9
Delta WS (ft)	0.02	Top Width (ft)	320.21	317.17
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.54	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.04	0.05
BR Sel Method	Energy only	Power Total (lb/ft s)	0.05	0.08

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	9.38	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	9.34	E.G. Elev (ft)	9.38	9.37
Q Total (cfs)	6206.00	W.S. Elev (ft)	9.34	9.32
Q Bridge (cfs)	6206.00	Crit W.S. (ft)	-2.26	-1.54
Q Weir (cfs)		Max Chl Dpth (ft)	18.44	17.92
Weir Sta Lft (ft)		Vel Total (ft/s)	1.58	1.80
Weir Sta Rgt (ft)		Flow Area (sq ft)	3932.08	3444.67
Weir Submerg		Froude # Chl	0.08	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	27415.99	22141.20
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	13.15	11.52
Min El Prs (ft)	16.10	W.P. Total (ft)	335.80	333.78
Delta EG (ft)	0.01	Conv. Total (cfs)	753210.2	606565.1
Delta WS (ft)	0.02	Top Width (ft)	325.96	323.56
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.80	C & E Loss (ft)	0.00	0.00

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BR Sluice Coef		Shear Total (lb/sq ft)	0.05	0.07
BR Sel Method	Energy only	Power Total (lb/ft s)	0.08	0.12

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	10.42	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	10.38	E.G. Elev (ft)	10.42	10.41
Q Total (cfs)	7332.00	W.S. Elev (ft)	10.38	10.36
Q Bridge (cfs)	7332.00	Crit W.S. (ft)	-1.84	-0.96
Q Weir (cfs)		Max Chl Dpth (ft)	19.48	18.96
Weir Sta Lft (ft)		Vel Total (ft/s)	1.73	1.95
Weir Sta Rgt (ft)		Flow Area (sq ft)	4242.96	3755.05
Weir Submerg		Froude # Chl	0.08	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	31755.35	25975.48
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	14.19	12.56
Min El Prs (ft)	16.10	W.P. Total (ft)	337.88	335.85
Delta EG (ft)	0.01	Conv. Total (cfs)	851544.5	697474.1
Delta WS (ft)	0.02	Top Width (ft)	329.40	327.38
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.95	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.06	0.08
BR Sel Method	Energy only	Power Total (lb/ft s)	0.10	0.15

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	11.97	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	11.92	E.G. Elev (ft)	11.97	11.96
Q Total (cfs)	9185.00	W.S. Elev (ft)	11.91	11.89
Q Bridge (cfs)	9185.00	Crit W.S. (ft)	-1.22	0.05
Q Weir (cfs)		Max Chl Dpth (ft)	21.01	20.49
Weir Sta Lft (ft)		Vel Total (ft/s)	1.95	2.18
Weir Sta Rgt (ft)		Flow Area (sq ft)	4701.76	4213.07
Weir Submerg		Froude # Chl	0.09	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	38781.90	32255.85
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	15.72	14.09
Min El Prs (ft)	16.10	W.P. Total (ft)	340.95	338.92
Delta EG (ft)	0.01	Conv. Total (cfs)	1004406.0	839854.4
Delta WS (ft)	0.03	Top Width (ft)	334.47	333.02

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BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	2.18	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.07	0.09
BR Sel Method	Energy only	Power Total (lb/ft s)	0.14	0.20

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 13.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
constriction * 001

Station	Elevation	Data	num=	11					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16.1	1026	2.6	1059	1.7	1096	-3.2	1131	-8
1174	-8.6	1214	-2.8	1257	-.3	1284	-.3	1337	2.7
1360	15.8								

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1000	.2	1026	.04
		1337	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1026	1337		225	225		.3	.5

Ineffective Flow		num=	2
Sta L	Sta R	Elev	Permanent
1000	1026	18	F
1337	1360	18	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.59	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-3.06	Flow Area (sq ft)		3108.11	
E.G. Slope (ft/ft)	0.000072	Area (sq ft)	23.94	3108.11	20.96
Q Total (cfs)	4521.00	Flow (cfs)		4521.00	
Top Width (ft)	329.18	Top Width (ft)	9.60	311.00	8.58
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)		1.45	
Max Chl Dpth (ft)	16.19	Hydr. Depth (ft)		9.99	
Conv. Total (cfs)	534279.4	Conv. (cfs)		534279.4	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.06	

			LPGA Tomoka River EC-RAS Report _ CEM		
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2222.14	3480.91	1865.54
C & E Loss (ft)	0.01	Cum SA (acres)	1229.27	334.84	947.94

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.32	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-2.03	Flow Area (sq ft)		3647.48	
E.G. Slope (ft/ft)	0.000079	Area (sq ft)	43.49	3647.48	38.48
Q Total (cfs)	6206.00	Flow (cfs)		6206.00	
Top Width (ft)	335.57	Top Width (ft)	12.94	311.00	11.62
Vel Total (ft/s)	1.70	Avg. Vel. (ft/s)		1.70	
Max Chl Dpth (ft)	17.92	Hydr. Depth (ft)		11.73	
Conv. Total (cfs)	697581.1	Conv. (cfs)		697581.1	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3697.56	3901.16	3144.43
C & E Loss (ft)	0.01	Cum SA (acres)	1390.87	335.14	1442.73

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	10.36	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-1.45	Flow Area (sq ft)		3970.43	
E.G. Slope (ft/ft)	0.000083	Area (sq ft)	57.97	3970.43	51.49
Q Total (cfs)	7332.00	Flow (cfs)		7332.00	
Top Width (ft)	339.39	Top Width (ft)	14.94	311.00	13.45
Vel Total (ft/s)	1.85	Avg. Vel. (ft/s)		1.85	
Max Chl Dpth (ft)	18.96	Hydr. Depth (ft)		12.77	
Conv. Total (cfs)	803532.7	Conv. (cfs)		803532.7	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.12	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4671.14	4164.17	4198.39
C & E Loss (ft)	0.02	Cum SA (acres)	1423.27	335.25	1587.76

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.89	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-0.64	Flow Area (sq ft)		4447.04	
E.G. Slope (ft/ft)	0.000090	Area (sq ft)	83.13	4447.04	74.16
Q Total (cfs)	9185.00	Flow (cfs)		9185.00	

			LPGA Tomoka River EC-RAS Report _ CEM		
Top Width (ft)	345.03	Top Width (ft)	17.89	311.00	16.14
Vel Total (ft/s)	2.07	Avg. Vel. (ft/s)		2.07	
Max Chl Dpth (ft)	20.49	Hydr. Depth (ft)		14.30	
Conv. Total (cfs)	970640.8	Conv. (cfs)		970640.8	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.16	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	6137.22	4557.71	5963.98
C & E Loss (ft)	0.02	Cum SA (acres)	1467.22	335.44	1719.95

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 13.1

INPUT

Description: SR40

* 001

Station Elevation Data			num=	19
Sta	Elev	Sta	Elev	Sta
1000	17.9	1122	10.4	1202
1439	2	1466	2.6	1473
1562	-5.9	1586	-3.2	1615
1911	4.5	2046	8.9	2151

Manning's n Values			num=	3
Sta	n Val	Sta	n Val	Sta
1000	.2	1202	.04	1911
				2232

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1202	1911		935	935		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.58	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	20.25	4079.22	145.10
E.G. Slope (ft/ft)	0.000086	Area (sq ft)	20.25	4079.22	145.10
Q Total (cfs)	4521.00	Flow (cfs)	1.14	4506.54	13.32
Top Width (ft)	830.81	Top Width (ft)	27.45	709.00	94.36
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)	0.06	1.10	0.09
Max Chl Dpth (ft)	16.18	Hydr. Depth (ft)	0.74	5.75	1.54
Conv. Total (cfs)	487345.9	Conv. (cfs)	122.7	485787.5	1435.7
Length Wtd. (ft)	935.00	Wetted Per. (ft)	27.49	710.68	94.41
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.00	0.03	0.01
Alpha	1.07	Stream Power (lb/ft s)	0.00	0.03	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	2222.02	3462.35	1865.11
C & E Loss (ft)	0.01	Cum SA (acres)	1229.18	332.20	947.68

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.32	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	96.22	5313.41	355.12
E.G. Slope (ft/ft)	0.000067	Area (sq ft)	96.22	5313.41	355.12
Q Total (cfs)	6206.00	Flow (cfs)	8.00	6158.77	39.23
Top Width (ft)	913.13	Top Width (ft)	59.84	709.00	144.30
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)	0.08	1.16	0.11
Max Chl Dpth (ft)	17.92	Hydr. Depth (ft)	1.61	7.49	2.46
Conv. Total (cfs)	760486.1	Conv. (cfs)	980.3	754698.3	4807.5
Length Wtd. (ft)	935.00	Wetted Per. (ft)	59.92	710.68	144.38
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.15	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	3697.20	3878.02	3143.42
C & E Loss (ft)	0.01	Cum SA (acres)	1390.68	332.50	1442.33

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.36	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	168.69	6052.40	517.65
E.G. Slope (ft/ft)	0.000060	Area (sq ft)	168.69	6052.40	517.65
Q Total (cfs)	7332.00	Flow (cfs)	16.03	7252.90	63.07
Top Width (ft)	955.81	Top Width (ft)	79.23	709.00	167.58
Vel Total (ft/s)	1.09	Avg. Vel. (ft/s)	0.10	1.20	0.12
Max Chl Dpth (ft)	18.96	Hydr. Depth (ft)	2.13	8.54	3.09
Conv. Total (cfs)	947853.3	Conv. (cfs)	2072.3	937627.1	8153.8
Length Wtd. (ft)	935.00	Wetted Per. (ft)	79.34	710.68	167.69
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.20	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	4670.55	4138.28	4196.92
C & E Loss (ft)	0.01	Cum SA (acres)	1423.03	332.62	1587.29

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.90	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	309.97	7143.10	801.89
E.G. Slope (ft/ft)	0.000054	Area (sq ft)	309.97	7143.10	801.89
Q Total (cfs)	9185.00	Flow (cfs)	34.78	9040.98	109.24
Top Width (ft)	1015.30	Top Width (ft)	104.35	709.00	201.95
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.11	1.27	0.14
Max Chl Dpth (ft)	20.50	Hydr. Depth (ft)	2.97	10.07	3.97
Conv. Total (cfs)	1255527.0	Conv. (cfs)	4754.0	1235841.0	14932.4
Length Wtd. (ft)	935.00	Wetted Per. (ft)	104.51	710.68	202.09
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.27	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	6136.20	4527.77	5961.72
C & E Loss (ft)	0.01	Cum SA (acres)	1466.90	332.80	1719.38

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 12.1

INPUT

Description: INTERPOLATED SECTION

*

001

Station Elevation Data		num=		30					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
861	20	1000	15	1096	10	1131	5	1187	4.3
1240	2.9	1299	2.6	1355	3.2	1373	4.8	1377	3.8
1379	1.3	1396	-6	1427	-7.6	1449	-10.6	1470	-10.9
1504	-10.4	1521	-5	1550	-.3	1561	2.2	1623	2
1634	2.1	1652	1.7	1719	1.8	1766	2.3	1848	2.1
1912	2.7	2564	5	2709	10	2792	15	2895	20

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
861	.2	1377	.04	1561	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1377	1561		500	500		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.41	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	978.36	2464.99	4272.59
E.G. Slope (ft/ft)	0.000133	Area (sq ft)	978.36	2464.99	4272.59
Q Total (cfs)	6997.00	Flow (cfs)	201.12	5876.18	919.70
Top Width (ft)	1519.79	Top Width (ft)	262.88	184.00	1072.91
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.21	2.38	0.22
Max Chl Dpth (ft)	18.31	Hydr. Depth (ft)	3.72	13.40	3.98
Conv. Total (cfs)	606724.2	Conv. (cfs)	17439.3	509535.9	79749.0
Length Wtd. (ft)	500.00	Wetted Per. (ft)	263.27	187.79	1072.97
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.03	0.11	0.03
Alpha	5.81	Stream Power (lb/ft s)	0.01	0.26	0.01
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	2211.30	3392.11	1817.70
C & E Loss (ft)	0.00	Cum SA (acres)	1226.06	322.62	935.15

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.14	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1444.21	2783.72	6174.59
E.G. Slope (ft/ft)	0.000147	Area (sq ft)	1444.21	2783.72	6174.59
Q Total (cfs)	9688.00	Flow (cfs)	392.45	7563.59	1731.96
Top Width (ft)	1582.15	Top Width (ft)	275.00	184.00	1123.15
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.27	2.72	0.28

			LPGA Tomoka River EC-RAS Report _ CEM		
Max Chl Dpth (ft)	20.04	Hydr. Depth (ft)	5.25	15.13	5.50
Conv. Total (cfs)	799275.9	Conv. (cfs)	32378.1	624008.6	142889.2
Length Wtd. (ft)	500.00	Wetted Per. (ft)	275.52	187.79	1123.23
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.05	0.14	0.05
Alpha	6.66	Stream Power (lb/ft s)	0.01	0.37	0.01
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	3680.66	3791.12	3073.34
C & E Loss (ft)	0.01	Cum SA (acres)	1387.09	322.92	1428.73

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.18	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1733.26	2974.47	7354.32
E.G. Slope (ft/ft)	0.000154	Area (sq ft)	1733.26	2974.47	7354.32
Q Total (cfs)	11504.00	Flow (cfs)	531.88	8639.74	2332.39
Top Width (ft)	1619.43	Top Width (ft)	284.45	184.00	1150.98
Vel Total (ft/s)	0.95	Avg. Vel. (ft/s)	0.31	2.90	0.32
Max Chl Dpth (ft)	21.08	Hydr. Depth (ft)	6.09	16.17	6.39
Conv. Total (cfs)	927923.7	Conv. (cfs)	42901.8	696889.4	188132.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	285.03	187.79	1151.09
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.06	0.15	0.06
Alpha	6.99	Stream Power (lb/ft s)	0.02	0.44	0.02
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	4650.14	4041.40	4112.43
C & E Loss (ft)	0.01	Cum SA (acres)	1419.13	323.04	1573.14

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.71	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	2190.56	3255.76	9133.33
E.G. Slope (ft/ft)	0.000163	Area (sq ft)	2190.56	3255.76	9133.33
Q Total (cfs)	14490.00	Flow (cfs)	757.53	10337.74	3394.73
Top Width (ft)	1674.16	Top Width (ft)	313.80	184.00	1176.36
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.35	3.18	0.37
Max Chl Dpth (ft)	22.61	Hydr. Depth (ft)	6.98	17.69	7.76
Conv. Total (cfs)	1135567.0	Conv. (cfs)	59367.2	810158.6	266041.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	314.42	187.79	1176.51
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.07	0.18	0.08
Alpha	7.32	Stream Power (lb/ft s)	0.02	0.56	0.03
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	6109.37	4416.17	5855.09
C & E Loss (ft)	0.01	Cum SA (acres)	1462.41	323.22	1704.59

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 12

INPUT

Description: 1ST SECTION NORTH OF SR40

*

001

LPGA Tomoka River EC-RAS Report _ CEM

Station Elevation Data		num=		28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.7	1050	11.8	1116	7.1	1187	3.3	1240	1.9
1299	1.6	1355	2.2	1373	4	1377	3	1379	.3
1396	-1.6	1427	-8.3	1449	-11.4	1470	-11.9	1504	-11.4
1521	-6	1550	-1.3	1561	1.2	1623	1	1634	1.1
1652	1.1	1719	.8	1766	1.3	1848	1.1	1912	1.7
1977	5.7	2407	10	2469	15				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1377	.04	1561	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1377	1561		1698	1698		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.29	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1116.15	2614.07	2517.24
E.G. Slope (ft/ft)	0.000180	Area (sq ft)	1116.15	2614.07	2517.24
Q Total (cfs)	8490.00	Flow (cfs)	290.61	7528.58	670.81
Top Width (ft)	1022.52	Top Width (ft)	263.65	184.00	574.87
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)	0.26	2.88	0.27
Max Chl Dpth (ft)	19.19	Hydr. Depth (ft)	4.23	14.21	4.38
Conv. Total (cfs)	633432.1	Conv. (cfs)	21682.3	561701.3	50048.5
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	263.99	187.90	575.01
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.05	0.16	0.05
Alpha	3.99	Stream Power (lb/ft s)	0.01	0.45	0.01
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	2199.28	3362.96	1778.73
C & E Loss (ft)	0.01	Cum SA (acres)	1223.04	320.50	925.69

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.98	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1581.43	2924.81	3630.71
E.G. Slope (ft/ft)	0.000221	Area (sq ft)	1581.43	2924.81	3630.71
Q Total (cfs)	11760.00	Flow (cfs)	543.61	10063.28	1153.12
Top Width (ft)	1215.12	Top Width (ft)	287.37	184.00	743.75
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)	0.34	3.44	0.32
Max Chl Dpth (ft)	20.88	Hydr. Depth (ft)	5.50	15.90	4.88
Conv. Total (cfs)	791545.0	Conv. (cfs)	36589.3	677341.4	77614.3
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	287.77	187.90	743.90
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.08	0.21	0.07
Alpha	4.86	Stream Power (lb/ft s)	0.03	0.74	0.02
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	3663.30	3758.35	3017.06
C & E Loss (ft)	0.01	Cum SA (acres)	1383.86	320.81	1418.01

CROSS SECTION OUTPUT Profile #PF 3

LPGA Tomoka River EC-RAS Report _ CEM

E.G. Elev (ft)	10.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.99	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1879.42	3111.01	4434.55
E.G. Slope (ft/ft)	0.000242	Area (sq ft)	1879.42	3111.01	4434.55
Q Total (cfs)	13955.00	Flow (cfs)	734.58	11673.41	1547.01
Top Width (ft)	1330.52	Top Width (ft)	301.58	184.00	844.95
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	0.39	3.75	0.35
Max Chl Dpth (ft)	21.89	Hydr. Depth (ft)	6.23	16.91	5.25
Conv. Total (cfs)	897454.6	Conv. (cfs)	47241.2	750724.1	99489.3
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	302.02	187.90	845.10
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.09	0.25	0.08
Alpha	5.38	Stream Power (lb/ft s)	0.04	0.94	0.03
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4629.41	4006.48	4044.77
C & E Loss (ft)	0.02	Cum SA (acres)	1415.76	320.92	1561.69

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.49	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	2347.83	3387.15	5717.94
E.G. Slope (ft/ft)	0.000265	Area (sq ft)	2347.83	3387.15	5717.94
Q Total (cfs)	17579.00	Flow (cfs)	1064.94	14078.27	2435.79
Top Width (ft)	1371.13	Top Width (ft)	322.65	184.00	864.48
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	0.45	4.16	0.43
Max Chl Dpth (ft)	23.39	Hydr. Depth (ft)	7.28	18.41	6.61
Conv. Total (cfs)	1080139.0	Conv. (cfs)	65435.3	865036.9	149666.6
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	323.14	187.90	864.69
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.12	0.30	0.11
Alpha	5.89	Stream Power (lb/ft s)	0.05	1.24	0.05
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	6083.32	4378.04	5769.85
C & E Loss (ft)	0.02	Cum SA (acres)	1458.76	321.11	1692.88

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 11.4

INPUT

Description: * 001

Station Elevation Data		num=	20						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18.4	1117	13.2	1228	7.3	1404	3.3	1510	2
1534	-.2	1582	-5.5	1627	-13.2	1687	-9	1744	-1.5
1753	1.6	1762	2	1792	2	1865	1	1959	2.2
2047	2.8	2153	3.5	2215	4.8	2347	7	2498	17.5

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1510	.04	1753	.2

LPGA Tomoka River EC-RAS Report _ CEM

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1510 1753 360 360 360 .3 .5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.04	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	774.29	3212.57	2258.35
E.G. Slope (ft/ft)	0.000137	Area (sq ft)	774.29	3212.57	2258.35
Q Total (cfs)	8376.00	Flow (cfs)	135.63	7762.39	477.98
Top Width (ft)	1108.40	Top Width (ft)	270.76	243.00	594.64
Vel Total (ft/s)	1.34	Avg. Vel. (ft/s)	0.18	2.42	0.21
Max Chl Dpth (ft)	20.24	Hydr. Depth (ft)	2.86	13.22	3.80
Conv. Total (cfs)	715669.4	Conv. (cfs)	11588.5	663240.8	40840.0
Length Wtd. (ft)	360.00	Wetted Per. (ft)	270.81	245.20	594.70
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.02	0.11	0.03
Alpha	3.01	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	2162.44	3249.40	1685.65
C & E Loss (ft)	0.02	Cum SA (acres)	1212.63	312.18	902.90

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.68	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	1253.44	3611.15	3253.06
E.G. Slope (ft/ft)	0.000165	Area (sq ft)	1253.44	3611.15	3253.06
Q Total (cfs)	11610.00	Flow (cfs)	305.17	10364.69	940.14
Top Width (ft)	1169.28	Top Width (ft)	308.05	243.00	618.23
Vel Total (ft/s)	1.43	Avg. Vel. (ft/s)	0.24	2.87	0.29
Max Chl Dpth (ft)	21.88	Hydr. Depth (ft)	4.07	14.86	5.26
Conv. Total (cfs)	902822.7	Conv. (cfs)	23730.4	805984.4	73107.9
Length Wtd. (ft)	360.00	Wetted Per. (ft)	308.14	245.20	618.35
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.04	0.15	0.05
Alpha	3.60	Stream Power (lb/ft s)	0.01	0.44	0.02
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3608.05	3630.97	2882.90
C & E Loss (ft)	0.02	Cum SA (acres)	1372.26	312.49	1391.47

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.67	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	1566.60	3850.95	3870.15
E.G. Slope (ft/ft)	0.000180	Area (sq ft)	1566.60	3850.95	3870.15
Q Total (cfs)	13785.00	Flow (cfs)	444.47	12048.76	1291.77
Top Width (ft)	1202.04	Top Width (ft)	326.62	243.00	632.42
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	0.28	3.13	0.33
Max Chl Dpth (ft)	22.87	Hydr. Depth (ft)	4.80	15.85	6.12
Conv. Total (cfs)	1026427.0	Conv. (cfs)	33095.2	897147.7	96184.5
Length Wtd. (ft)	360.00	Wetted Per. (ft)	326.73	245.20	632.57
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.05	0.18	0.07

Alpha	3.89	Stream Power (lb/ft s)	0.02	0.55	0.02
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	4562.24	3870.79	3882.91
C & E Loss (ft)	0.02	Cum SA (acres)	1403.52	312.60	1532.89

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.14	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	2065.20	4206.89	4811.92
E.G. Slope (ft/ft)	0.000202	Area (sq ft)	2065.20	4206.89	4811.92
Q Total (cfs)	17387.00	Flow (cfs)	705.58	14760.54	1920.88
Top Width (ft)	1250.66	Top Width (ft)	354.18	243.00	653.48
Vel Total (ft/s)	1.57	Avg. Vel. (ft/s)	0.34	3.51	0.40
Max Chl Dpth (ft)	24.34	Hydr. Depth (ft)	5.83	17.31	7.36
Conv. Total (cfs)	1224544.0	Conv. (cfs)	49693.0	1039566.0	135284.8
Length Wtd. (ft)	360.00	Wetted Per. (ft)	354.33	245.20	653.69
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.07	0.22	0.09
Alpha	4.26	Stream Power (lb/ft s)	0.03	0.76	0.04
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	5997.31	4230.03	5564.62
C & E Loss (ft)	0.03	Cum SA (acres)	1445.57	312.79	1663.29

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.3

INPUT

Description:

Station	Elevation	Data	num=	15
Sta	Elev	Sta	Elev	Sta
1000	15.5	1021	4	1053
1190	-11.4	1240	-9	1276
1407	.4	1451	1.5	1476

Manning's n Values	num=	3
Sta	n Val	Sta
1000	.2	1021

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1021	1498	174.1	174.1	174.1	.3	.5	

Ineffective Flow	num=	2
Sta L	Sta R	Elev
1000	1021	19.9
1498	1523	19.9

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.02	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.34	Flow Area (sq ft)		4617.82	
E.G. Slope (ft/ft)	0.000116	Area (sq ft)	8.30	4617.82	21.57

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Q Total (cfs)	8376.00	Flow (cfs)	8376.00		
Top Width (ft)	492.28	Top Width (ft)	5.51	477.00	9.77
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)	1.81		
Max Chl Dpth (ft)	18.42	Hydr. Depth (ft)	9.68		
Conv. Total (cfs)	777172.3	Conv. (cfs)	777172.3		
Length Wtd. (ft)	1.00	Wetted Per. (ft)	478.87		
Min Ch El (ft)	-11.40	Shear (lb/sq ft)	0.07		
Alpha	1.00	Stream Power (lb/ft s)	0.13		
Frctn Loss (ft)		Cum Volume (acre-ft)	2159.20	3217.04	1676.23
C & E Loss (ft)		Cum SA (acres)	1211.48	309.21	900.40

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.65	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.06	Flow Area (sq ft)		5398.77	
E.G. Slope (ft/ft)	0.000133	Area (sq ft)	19.77	5398.77	40.53
Q Total (cfs)	11610.00	Flow (cfs)		11610.00	
Top Width (ft)	498.89	Top Width (ft)	8.50	477.00	13.39
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)		2.15	
Max Chl Dpth (ft)	20.05	Hydr. Depth (ft)		11.32	
Conv. Total (cfs)	1008355.0	Conv. (cfs)		1008355.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.20	
Frctn Loss (ft)		Cum Volume (acre-ft)	3602.78	3593.74	2869.29
C & E Loss (ft)		Cum SA (acres)	1370.95	309.51	1388.86

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.64	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.34	Flow Area (sq ft)		5868.66	
E.G. Slope (ft/ft)	0.000142	Area (sq ft)	29.02	5868.66	54.79
Q Total (cfs)	13785.00	Flow (cfs)		13785.00	
Top Width (ft)	502.87	Top Width (ft)	10.30	477.00	15.57
Vel Total (ft/s)	2.35	Avg. Vel. (ft/s)		2.35	
Max Chl Dpth (ft)	21.04	Hydr. Depth (ft)		12.30	
Conv. Total (cfs)	1158832.0	Conv. (cfs)		1158832.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.25	
Frctn Loss (ft)		Cum Volume (acre-ft)	4555.65	3830.62	3866.69
C & E Loss (ft)		Cum SA (acres)	1402.13	309.63	1530.22

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.10	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-1.32	Flow Area (sq ft)		6565.99	
E.G. Slope (ft/ft)	0.000155	Area (sq ft)	46.02	6565.99	79.92
Q Total (cfs)	17387.00	Flow (cfs)		17387.00	
Top Width (ft)	508.77	Top Width (ft)	12.96	477.00	18.81
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)		2.65	
Max Chl Dpth (ft)	22.50	Hydr. Depth (ft)		13.77	
Conv. Total (cfs)	1397296.0	Conv. (cfs)		1397296.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.35	
Frctn Loss (ft)		Cum Volume (acre-ft)	5988.58	4185.52	5544.41
C & E Loss (ft)		Cum SA (acres)	1444.05	309.81	1660.51

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.25

INPUT

Description: Bridge #4

Distance from Upstream XS = 1
 Deck/Roadway Width = 173
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1000 19.9 15.85	1523 19.9 15.85

Upstream Bridge Cross Section Data

Station	Elevation	Data	num=	15
Sta	Elev	Sta	Elev	Sta Elev Sta Elev Sta Elev
1000	15.5	1021	4	1053 1.6 1101 1.3 1146 -9.3
1190	-11.4	1240	-9	1276 -4.7 1317 -2.5 1362 .5
1407	.4	1451	1.5	1476 1.9 1498 2.6 1523 13.9

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
1000 .2	1021 .04	1498 .2

Bank Sta: Left	Right	Coeff Contr.	Expan.
1021	1498	.3	.5

Ineffective Flow	num=	2	
Sta L	Sta R	Elev	Permanent
1000	1021	19.9	F
1498	1523	19.9	F

Downstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	15.85	1523	19.9	15.85				

Downstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.3	1021	3.1	1037	2.4	1076	.8	1120	.6
1163	-.2	1202	-5	1252	-10.8	1301	-10.4	1332	-7.3
1383	-3.8	1424	-2.2	1468	-.8	1483	1.5	1504	3.1
1524	14.4								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1504	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1021 1504 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1021	17.9	F
1504	1524	17.9	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 19.9
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 1259.5 Downstream= 1262.5

Upstream num= 2

Width	Elev	Width	Elev
15	-11.4	15	15.85

Downstream num= 2

Width	Elev	Width	Elev
15	-10.8	15	15.85

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05
 Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd	=
Submerged Inlet + Outlet Cd	= .7905694
Max Low Cord	= 15.85

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	7.07	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.02	E.G. Elev (ft)	7.07	7.06
Q Total (cfs)	8376.00	W.S. Elev (ft)	7.01	7.01
Q Bridge (cfs)	8376.00	Crit W.S. (ft)	-4.24	-3.50
Q Weir (cfs)		Max Chl Dpth (ft)	18.41	17.81
Weir Sta Lft (ft)		Vel Total (ft/s)	1.90	1.79
Weir Sta Rgt (ft)		Flow Area (sq ft)	4411.58	4684.51
Weir Submerg		Froude # Chl	0.11	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	26773.51	27971.56
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	9.55	10.01
Min El Prs (ft)	15.85	W.P. Total (ft)	491.14	504.71
Delta EG (ft)	0.01	Conv. Total (cfs)	708148.7	768568.3
Delta WS (ft)	0.00	Top Width (ft)	477.27	482.98
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.90	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.08	0.07
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.15	0.12

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	8.72	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	8.65	E.G. Elev (ft)	8.73	8.72
Q Total (cfs)	11610.00	W.S. Elev (ft)	8.65	8.65
Q Bridge (cfs)	11610.00	Crit W.S. (ft)	-2.85	-2.33
Q Weir (cfs)		Max Chl Dpth (ft)	20.05	19.45
Weir Sta Lft (ft)		Vel Total (ft/s)	2.25	2.13
Weir Sta Rgt (ft)		Flow Area (sq ft)	5167.59	5450.34
Weir Submerg		Froude # Chl	0.12	0.11
Weir Max Depth (ft)		Specif Force (cu ft)	34927.60	36567.05
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	11.19	11.65
Min El Prs (ft)	15.85	W.P. Total (ft)	494.41	507.98
Delta EG (ft)	0.01	Conv. Total (cfs)	917681.7	984941.8
Delta WS (ft)	0.00	Top Width (ft)	483.88	489.25
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.25	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.10	0.09
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.23	0.20

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

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

BRIDGE OUTPUT Profile #PF 3

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		Element	Inside BR US	Inside BR DS
E.G. US. (ft)	9.72	E.G. Elev (ft)	9.73	9.72
W.S. US. (ft)	9.64	W.S. Elev (ft)	9.63	9.63
Q Total (cfs)	13785.00	Crit W.S. (ft)	-2.10	-1.66
Q Bridge (cfs)	13785.00	Max Chl Dpth (ft)	21.03	20.43
Q Weir (cfs)		Vel Total (ft/s)	2.45	2.33
Weir Sta Lft (ft)		Flow Area (sq ft)	5622.46	5911.11
Weir Sta Rgt (ft)		Froude # Chl	0.12	0.12
Weir Submerg		Specif Force (cu ft)	40479.04	42390.53
Weir Max Depth (ft)		Hydr Depth (ft)	12.17	12.63
Min El Weir Flow (ft)	19.91	W.P. Total (ft)	496.38	509.95
Min El Prs (ft)	15.85	Conv. Total (cfs)	1053426.0	1124691.0
Delta EG (ft)	0.01	Top Width (ft)	487.85	493.02
Delta WS (ft)	0.00	Frctn Loss (ft)		
BR Open Area (sq ft)	8493.99	C & E Loss (ft)		
BR Open Vel (ft/s)	2.45	Shear Total (lb/sq ft)	0.12	0.11
BR Sluice Coef		Power Total (lb/ft s)	0.30	0.25
BR Sel Method	Yarnell			

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

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

BRIDGE OUTPUT Profile #PF 4

		Element	Inside BR US	Inside BR DS
E.G. US. (ft)	11.21	E.G. Elev (ft)	11.21	11.20
W.S. US. (ft)	11.10	W.S. Elev (ft)	11.10	11.10
Q Total (cfs)	17387.00	Crit W.S. (ft)	-1.03	-0.74
Q Bridge (cfs)	17387.00	Max Chl Dpth (ft)	22.50	21.90
Q Weir (cfs)		Vel Total (ft/s)	2.76	2.64
Weir Sta Lft (ft)		Flow Area (sq ft)	6297.42	6594.84
Weir Sta Rgt (ft)		Froude # Chl	0.13	0.12
Weir Submerg		Specif Force (cu ft)	49627.89	51951.50
Weir Max Depth (ft)		Hydr Depth (ft)	13.63	14.09
Min El Weir Flow (ft)	19.91	W.P. Total (ft)	499.30	512.87
Min El Prs (ft)	15.85	Conv. Total (cfs)	1267553.0	1344635.0
Delta EG (ft)	0.02	Top Width (ft)	493.75	498.61
Delta WS (ft)	0.00	Frctn Loss (ft)		
BR Open Area (sq ft)	8493.99	C & E Loss (ft)		
BR Open Vel (ft/s)	2.76	Shear Total (lb/sq ft)	0.15	0.13
BR Sluice Coef		Power Total (lb/ft s)	0.41	0.35
BR Sel Method	Yarnell			

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 11.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
constriction * 001

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Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.3	1021	3.1	1037	2.4	1076	.8	1120	.6
1163	-.2	1202	-5	1252	-10.8	1301	-10.4	1332	-7.3
1383	-3.8	1424	-2.2	1468	-.8	1483	1.5	1504	3.1
1524	14.4								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1504	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1021	1504		360	360		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1000	1021	17.9	F		
1504	1524	17.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.01	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-4.07	Flow Area (sq ft)		4950.43	
E.G. Slope (ft/ft)	0.00094	Area (sq ft)	15.77	4950.43	13.55
Q Total (cfs)	8376.00	Flow (cfs)		8376.00	
Top Width (ft)	497.98	Top Width (ft)	8.06	483.00	6.93
Vel Total (ft/s)	1.69	Avg. Vel. (ft/s)		1.69	
Max Chl Dpth (ft)	17.81	Hydr. Depth (ft)		10.25	
Conv. Total (cfs)	866215.1	Conv. (cfs)		866215.1	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2159.16	3198.87	1676.16
C & E Loss (ft)	0.01	Cum SA (acres)	1211.46	307.35	900.37

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.65	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-2.91	Flow Area (sq ft)		5740.80	
E.G. Slope (ft/ft)	0.00110	Area (sq ft)	31.71	5740.80	27.26
Q Total (cfs)	11610.00	Flow (cfs)		11610.00	
Top Width (ft)	504.25	Top Width (ft)	11.43	483.00	9.82
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)		2.02	
Max Chl Dpth (ft)	19.45	Hydr. Depth (ft)		11.89	
Conv. Total (cfs)	1108773.0	Conv. (cfs)		1108773.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.16	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3602.68	3572.52	2869.15
C & E Loss (ft)	0.01	Cum SA (acres)	1370.91	307.65	1388.81

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.63	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-2.24	Flow Area (sq ft)		6216.34	
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	43.96	6216.34	37.79
Q Total (cfs)	13785.00	Flow (cfs)		13785.00	
Top Width (ft)	508.02	Top Width (ft)	13.45	483.00	11.57
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)		2.22	
Max Chl Dpth (ft)	20.43	Hydr. Depth (ft)		12.87	
Conv. Total (cfs)	1266038.0	Conv. (cfs)		1266038.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.21	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	4555.50	3807.58	3866.51
C & E Loss (ft)	0.01	Cum SA (acres)	1402.08	307.77	1530.16

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.10	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-1.27	Flow Area (sq ft)		6921.99	
E.G. Slope (ft/ft)	0.000132	Area (sq ft)	65.81	6921.99	56.57
Q Total (cfs)	17387.00	Flow (cfs)		17387.00	
Top Width (ft)	513.61	Top Width (ft)	16.46	483.00	14.15
Vel Total (ft/s)	2.51	Avg. Vel. (ft/s)		2.51	
Max Chl Dpth (ft)	21.90	Hydr. Depth (ft)		14.33	
Conv. Total (cfs)	1514514.0	Conv. (cfs)		1514514.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	5988.36	4159.75	5544.14
C & E Loss (ft)	0.01	Cum SA (acres)	1443.99	307.95	1660.45

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.1

INPUT
 Description: I-95

*

001

LPGA Tomoka River EC-RAS Report _ CEM

Station Elevation Data				num=	17				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	21.9	1100	16.8	1240	5.5	1568	2	1643	2.4
1672	-2.9	1720	-12.5	1780	-10.1	1843	-4.6	1899	.2
1911	1.4	1922	2	1931	2	1972	3.1	2237	6.8
2350	8.3	2496	21.1						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1643	.04	1931	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1643	1931		4378	4378		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.94	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	1413.20	3592.51	706.97
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	1413.20	3592.51	706.97
Q Total (cfs)	8376.00	Flow (cfs)	263.98	8011.35	100.67
Top Width (ft)	1025.08	Top Width (ft)	420.80	288.00	316.28
Vel Total (ft/s)	1.47	Avg. Vel. (ft/s)	0.19	2.23	0.14
Max Chl Dpth (ft)	19.44	Hydr. Depth (ft)	3.36	12.47	2.24
Conv. Total (cfs)	747019.8	Conv. (cfs)	23543.3	714497.8	8978.7
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	420.88	290.00	316.33
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.03	0.10	0.02
Alpha	2.21	Stream Power (lb/ft s)	0.00	0.22	0.00
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	2153.25	3163.56	1673.18
C & E Loss (ft)	0.00	Cum SA (acres)	1209.68	304.16	899.03

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.55	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	2109.64	4058.09	1314.66
E.G. Slope (ft/ft)	0.000152	Area (sq ft)	2109.64	4058.09	1314.66
Q Total (cfs)	11610.00	Flow (cfs)	549.21	10803.64	257.15
Top Width (ft)	1150.71	Top Width (ft)	440.83	288.00	421.89
Vel Total (ft/s)	1.55	Avg. Vel. (ft/s)	0.26	2.66	0.20
Max Chl Dpth (ft)	21.05	Hydr. Depth (ft)	4.79	14.09	3.12
Conv. Total (cfs)	940737.8	Conv. (cfs)	44501.5	875400.1	20836.1
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	440.97	290.00	421.95
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	2.74	Stream Power (lb/ft s)	0.01	0.35	0.01
Frctn Loss (ft)	0.61	Cum Volume (acre-ft)	3593.83	3532.03	2863.61
C & E Loss (ft)	0.01	Cum SA (acres)	1369.04	304.47	1387.03

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200

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W.S. Elev (ft)	9.53	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	2545.28	4338.86	1731.37
E.G. Slope (ft/ft)	0.000166	Area (sq ft)	2545.28	4338.86	1731.37
Q Total (cfs)	13785.00	Flow (cfs)	769.30	12598.59	417.10
Top Width (ft)	1173.91	Top Width (ft)	452.90	288.00	433.01
Vel Total (ft/s)	1.60	Avg. Vel. (ft/s)	0.30	2.90	0.24
Max Chl Dpth (ft)	22.03	Hydr. Depth (ft)	5.62	15.07	4.00
Conv. Total (cfs)	1070814.0	Conv. (cfs)	59759.2	978654.1	32400.4
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	453.09	290.00	433.11
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.06	0.15	0.04
Alpha	3.01	Stream Power (lb/ft s)	0.02	0.45	0.01
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	4544.80	3763.96	3859.20
C & E Loss (ft)	0.01	Cum SA (acres)	1400.15	304.58	1528.32

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.98	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	3214.01	4755.84	2370.27
E.G. Slope (ft/ft)	0.000185	Area (sq ft)	3214.01	4755.84	2370.27
Q Total (cfs)	17387.00	Flow (cfs)	1167.15	15495.14	724.71
Top Width (ft)	1208.36	Top Width (ft)	470.84	288.00	449.52
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	0.36	3.26	0.31
Max Chl Dpth (ft)	23.48	Hydr. Depth (ft)	6.83	16.51	5.27
Conv. Total (cfs)	1279612.0	Conv. (cfs)	85897.4	1140379.0	53335.8
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	471.08	290.00	449.69
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.08	0.19	0.06
Alpha	3.35	Stream Power (lb/ft s)	0.03	0.62	0.02
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	5974.81	4111.50	5534.11
C & E Loss (ft)	0.01	Cum SA (acres)	1441.98	304.77	1658.53

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 10

INPUT

Description: SANDALWOOD LANE

* 001

Station Elevation Data		num=	26
Sta	Elev	Sta	Elev
1300	20.6	1340	18.9
1485	6.8	1539	4.9
1696	-7.7	1744	-9.3
1907	.2	1977	1.9
2378	4	2541	5
2684	12		

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1300	.2	1598	.04
		1907	.2

LPGA Tomoka River EC-RAS Report _ CEM

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1598	1907	3146	3146	3146	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.45	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	211.25	3839.34	2464.84
E.G. Slope (ft/ft)	0.000102	Area (sq ft)	211.25	3839.34	2464.84
Q Total (cfs)	8175.00	Flow (cfs)	25.60	7707.17	442.23
Top Width (ft)	1080.12	Top Width (ft)	103.08	309.00	668.04
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)	0.12	2.01	0.18
Max Chl Dpth (ft)	15.75	Hydr. Depth (ft)	2.05	12.43	3.69
Conv. Total (cfs)	808230.8	Conv. (cfs)	2530.7	761978.6	43721.5
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	103.18	310.91	668.15
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	2.41	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	2071.62	2790.09	1513.79
C & E Loss (ft)	0.01	Cum SA (acres)	1183.36	274.16	849.57

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.96	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	413.10	4304.88	3496.55
E.G. Slope (ft/ft)	0.000127	Area (sq ft)	413.10	4304.88	3496.55
Q Total (cfs)	11317.00	Flow (cfs)	62.87	10399.42	854.71
Top Width (ft)	1179.19	Top Width (ft)	168.63	309.00	701.56
Vel Total (ft/s)	1.38	Avg. Vel. (ft/s)	0.15	2.42	0.24
Max Chl Dpth (ft)	17.26	Hydr. Depth (ft)	2.45	13.93	4.98
Conv. Total (cfs)	1003472.0	Conv. (cfs)	5574.8	922110.6	75786.7
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	168.75	310.91	701.71
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.11	0.04
Alpha	2.83	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	3467.06	3111.77	2621.83
C & E Loss (ft)	0.02	Cum SA (acres)	1338.41	274.47	1330.57

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	8.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.87	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	580.77	4588.27	4149.32
E.G. Slope (ft/ft)	0.000141	Area (sq ft)	580.77	4588.27	4149.32
Q Total (cfs)	13440.00	Flow (cfs)	107.45	12159.87	1172.68
Top Width (ft)	1221.64	Top Width (ft)	190.68	309.00	721.96
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)	0.19	2.65	0.28
Max Chl Dpth (ft)	18.17	Hydr. Depth (ft)	3.05	14.85	5.75
Conv. Total (cfs)	1133444.0	Conv. (cfs)	9061.6	1025486.0	98896.5
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	190.83	310.91	722.14
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.03	0.13	0.05

Alpha	3.06	Stream Power (lb/ft s)	0.00	0.34	0.01
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	4387.71	3315.35	3563.68
C & E Loss (ft)	0.02	Cum SA (acres)	1367.81	274.58	1470.28

LPGA Tomoka River EC-RAS Report _ CEM

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	10.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.24	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	847.94	5010.43	5156.19
E.G. Slope (ft/ft)	0.000160	Area (sq ft)	847.94	5010.43	5156.19
Q Total (cfs)	16964.00	Flow (cfs)	208.07	15006.20	1749.73
Top Width (ft)	1259.57	Top Width (ft)	200.44	309.00	750.13
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.25	2.99	0.34
Max Chl Dpth (ft)	19.54	Hydr. Depth (ft)	4.23	16.21	6.87
Conv. Total (cfs)	1342451.0	Conv. (cfs)	16465.3	1187520.0	138465.5
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	200.68	310.91	750.34
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.04	0.16	0.07
Alpha	3.35	Stream Power (lb/ft s)	0.01	0.48	0.02
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	5770.68	3620.72	5155.88
C & E Loss (ft)	0.02	Cum SA (acres)	1408.25	274.76	1598.25

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 9

INPUT
 Description: TWELVE OAKS TRAIL
 *

001

Station	Elevation	Data	num=	40
Sta	Elev	Sta	Elev	Sta
1000	20.4	1037	16.5	1077
1192	1	1198	.1	1214
1280	-7.1	1315	-8.5	1343
1430	-.6	1435	1.9	1472
1619	1	1695	.8	1737
1763	-.8	1796	-2.6	1819
1928	-2.4	1946	-.8	1948
2042	6.8	2053	10	2077

Manning's n Values	num=	3
Sta	n Val	Sta
1000	.2	1192
		1948

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1192	1948	4432	4432	4432	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200

LPGA Tomoka River EC-RAS Report _ CEM					
W.S. Elev (ft)	6.21	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	266.94	6223.75	376.02
E.G. Slope (ft/ft)	0.000069	Area (sq ft)	266.94	6223.75	376.02
Q Total (cfs)	7885.00	Flow (cfs)	38.30	7787.40	59.30
Top Width (ft)	921.88	Top Width (ft)	74.69	756.00	91.19
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.14	1.25	0.16
Max Chl Dpth (ft)	14.71	Hydr. Depth (ft)	3.57	8.23	4.12
Conv. Total (cfs)	952064.3	Conv. (cfs)	4624.1	940280.1	7160.1
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	74.98	758.84	91.65
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.04	0.02
Alpha	1.17	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	2054.35	2426.70	1411.20
C & E Loss (ft)	0.00	Cum SA (acres)	1176.94	235.70	822.15

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	7.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.69	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	392.12	7340.40	515.41
E.G. Slope (ft/ft)	0.000075	Area (sq ft)	392.12	7340.40	515.41
Q Total (cfs)	10844.00	Flow (cfs)	56.72	10687.11	100.17
Top Width (ft)	968.47	Top Width (ft)	115.41	756.00	97.06
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)	0.14	1.46	0.19
Max Chl Dpth (ft)	16.19	Hydr. Depth (ft)	3.40	9.71	5.31
Conv. Total (cfs)	1256126.0	Conv. (cfs)	6570.5	1237951.0	11603.6
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	115.77	758.84	97.71
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.05	0.02
Alpha	1.21	Stream Power (lb/ft s)	0.00	0.07	0.00
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	3437.98	2691.24	2476.96
C & E Loss (ft)	0.01	Cum SA (acres)	1328.16	236.01	1301.73

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	8.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.59	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	498.20	8023.30	604.49
E.G. Slope (ft/ft)	0.000078	Area (sq ft)	498.20	8023.30	604.49
Q Total (cfs)	12859.00	Flow (cfs)	84.24	12644.34	130.43
Top Width (ft)	975.64	Top Width (ft)	119.47	756.00	100.17
Vel Total (ft/s)	1.41	Avg. Vel. (ft/s)	0.17	1.58	0.22
Max Chl Dpth (ft)	17.09	Hydr. Depth (ft)	4.17	10.61	6.03
Conv. Total (cfs)	1460170.0	Conv. (cfs)	9565.1	1435795.0	14810.2
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	119.93	758.84	100.94
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.05	0.03
Alpha	1.23	Stream Power (lb/ft s)	0.00	0.08	0.01
Frctn Loss (ft)	0.44	Cum Volume (acre-ft)	4348.75	2859.93	3392.01
C & E Loss (ft)	0.01	Cum SA (acres)	1356.61	236.12	1440.60

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	9.99	Element	Left OB	Channel	Right OB

LPGA Tomoka River EC-RAS Report _ CEM					
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.94	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	663.23	9041.81	742.55
E.G. Slope (ft/ft)	0.000082	Area (sq ft)	663.23	9041.81	742.55
Q Total (cfs)	16198.00	Flow (cfs)	135.03	15879.65	183.31
Top Width (ft)	986.32	Top Width (ft)	125.52	756.00	104.80
Vel Total (ft/s)	1.55	Avg. Vel. (ft/s)	0.20	1.76	0.25
Max Chl Dpth (ft)	18.44	Hydr. Depth (ft)	5.28	11.96	7.09
Conv. Total (cfs)	1787377.0	Conv. (cfs)	14900.1	1752249.0	20227.9
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	126.13	758.84	105.77
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.03	0.06	0.04
Alpha	1.26	Stream Power (lb/ft s)	0.01	0.11	0.01
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	5716.11	3113.27	4942.87
C & E Loss (ft)	0.01	Cum SA (acres)	1396.48	236.31	1567.37

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 8

INPUT

Description: PINE BLUFF DRIVE & FOREST OAK DRIVE

* 001

Station Elevation Data num= 35									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	17.14	1045	20.8	1097	19.4	1140	16.8	1175	2.7
1271	2.2	1328	2.1	1398	2.3	1480	1.8	1523	1.4
1568	1.1	1607	.4	1614	-.7	1642	-3.7	1669	-6.2
1706	-10	1741	-13.3	1786	-11.9	1849	-7.3	1874	-3.5
1886	-1.5	1888	1.2	1903	1.1	1909	1.3	1973	2
2029	3	2073	4	2098	5	2148	6	2198	7
2261	8	2336	9	2361	10	2386	11	2429	12

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1607	.04	1888	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1607	1888		4924	4924	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.84	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	1701.04	3881.94	707.53
E.G. Slope (ft/ft)	0.000085	Area (sq ft)	1701.04	3881.94	707.53
Q Total (cfs)	7988.00	Flow (cfs)	286.80	7604.78	96.43
Top Width (ft)	972.80	Top Width (ft)	439.79	281.00	252.01
Vel Total (ft/s)	1.27	Avg. Vel. (ft/s)	0.17	1.96	0.14
Max Chl Dpth (ft)	19.14	Hydr. Depth (ft)	3.87	13.81	2.81
Conv. Total (cfs)	866525.3	Conv. (cfs)	31111.1	824954.0	10460.1
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	440.42	283.71	252.06

Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.02	0.07	0.01
Alpha	2.27	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	1954.24	1912.60	1356.08
C & E Loss (ft)	0.00	Cum SA (acres)	1150.76	182.95	804.69

LPGA Tomoka River EC-RAS Report _ CEM

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	7.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.23	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	2315.54	4273.02	1107.04
E.G. Slope (ft/ft)	0.000113	Area (sq ft)	2315.54	4273.02	1107.04
Q Total (cfs)	11022.00	Flow (cfs)	549.02	10275.21	197.77
Top Width (ft)	1048.86	Top Width (ft)	443.25	281.00	324.61
Vel Total (ft/s)	1.43	Avg. Vel. (ft/s)	0.24	2.40	0.18
Max Chl Dpth (ft)	20.53	Hydr. Depth (ft)	5.22	15.21	3.41
Conv. Total (cfs)	1038429.0	Conv. (cfs)	51725.4	968070.8	18632.4
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	444.14	283.71	324.68
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.04	0.11	0.02
Alpha	2.63	Stream Power (lb/ft s)	0.01	0.25	0.00
Frctn Loss (ft)	0.57	Cum Volume (acre-ft)	3300.24	2100.44	2394.42
C & E Loss (ft)	0.00	Cum SA (acres)	1299.74	183.25	1280.28

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	8.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.09	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	2694.92	4512.96	1407.23
E.G. Slope (ft/ft)	0.000129	Area (sq ft)	2694.92	4512.96	1407.23
Q Total (cfs)	13098.00	Flow (cfs)	754.88	12058.29	284.83
Top Width (ft)	1105.81	Top Width (ft)	445.37	281.00	379.44
Vel Total (ft/s)	1.52	Avg. Vel. (ft/s)	0.28	2.67	0.20
Max Chl Dpth (ft)	21.39	Hydr. Depth (ft)	6.05	16.06	3.71
Conv. Total (cfs)	1151783.0	Conv. (cfs)	66380.9	1060355.0	25047.2
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	446.43	283.71	379.51
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	2.85	Stream Power (lb/ft s)	0.01	0.34	0.01
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	4186.31	2222.18	3289.67
C & E Loss (ft)	0.00	Cum SA (acres)	1327.88	183.37	1416.20

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	9.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.36	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	3264.33	4870.96	1948.26
E.G. Slope (ft/ft)	0.000154	Area (sq ft)	3264.33	4870.96	1948.26
Q Total (cfs)	16542.00	Flow (cfs)	1127.95	14941.91	472.15
Top Width (ft)	1186.53	Top Width (ft)	448.53	281.00	457.00
Vel Total (ft/s)	1.64	Avg. Vel. (ft/s)	0.35	3.07	0.24
Max Chl Dpth (ft)	22.66	Hydr. Depth (ft)	7.28	17.33	4.26
Conv. Total (cfs)	1333176.0	Conv. (cfs)	90905.0	1204219.0	38052.2

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Length Wtd. (ft)	4924.00	Wetted Per. (ft)	449.83	283.71	457.08
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.07	0.17	0.04
Alpha	3.16	Stream Power (lb/ft s)	0.02	0.51	0.01
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	5516.31	2405.50	4805.99
C & E Loss (ft)	0.00	Cum SA (acres)	1367.27	183.55	1538.79

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 7

INPUT
Description: TOMOKA VIEW DRIVE
* 001

Station Elevation Data		num=	19
Sta	Elev	Sta	Elev
1000	18.37	1076	18.6
1192	-.2	1205	-2.5
1371	-9.2	1411	-2.5
2622	3	2684	4

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1000	.2	1191	.04
		1427	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1191	1427	2187	2187	2187	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.41	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	14.75	3284.94	4936.98
E.G. Slope (ft/ft)	0.000090	Area (sq ft)	14.75	3284.94	4936.98
Q Total (cfs)	7489.00	Flow (cfs)	1.55	6644.73	842.72
Top Width (ft)	1552.06	Top Width (ft)	6.84	236.00	1309.22
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.11	2.02	0.17
Max Chl Dpth (ft)	18.11	Hydr. Depth (ft)	2.16	13.92	3.77
Conv. Total (cfs)	789694.9	Conv. (cfs)	163.6	700668.6	88862.7
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	8.09	238.75	1309.25
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	4.40	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	1857.26	1507.53	1037.05
C & E Loss (ft)	0.00	Cum SA (acres)	1125.52	153.73	716.45

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.67	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	24.58	3580.94	6594.81

			LPGA Tomoka River EC-RAS Report _ CEM		
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	24.58	3580.94	6594.81
Q Total (cfs)	10380.00	Flow (cfs)	3.53	8825.63	1550.84
Top Width (ft)	1579.13	Top Width (ft)	8.83	236.00	1334.30
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.14	2.46	0.24
Max Chl Dpth (ft)	19.37	Hydr. Depth (ft)	2.78	15.17	4.94
Conv. Total (cfs)	951512.4	Conv. (cfs)	323.2	809026.7	142162.6
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	10.44	238.75	1334.37
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.02	0.11	0.04
Alpha	5.00	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	3167.97	1656.53	1959.11
C & E Loss (ft)	0.00	Cum SA (acres)	1274.19	154.03	1186.52

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.44	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	31.87	3763.14	7630.89
E.G. Slope (ft/ft)	0.000136	Area (sq ft)	31.87	3763.14	7630.89
Q Total (cfs)	12366.00	Flow (cfs)	5.34	10260.09	2100.57
Top Width (ft)	1595.80	Top Width (ft)	10.06	236.00	1349.74
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)	0.17	2.73	0.28
Max Chl Dpth (ft)	20.14	Hydr. Depth (ft)	3.17	15.95	5.65
Conv. Total (cfs)	1059164.0	Conv. (cfs)	457.0	878789.9	179916.9
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	11.89	238.75	1349.83
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.02	0.13	0.05
Alpha	5.28	Stream Power (lb/ft s)	0.00	0.37	0.01
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	4032.19	1754.42	2778.84
C & E Loss (ft)	0.00	Cum SA (acres)	1302.14	154.15	1318.47

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.59	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	44.52	4035.25	9200.44
E.G. Slope (ft/ft)	0.000162	Area (sq ft)	44.52	4035.25	9200.44
Q Total (cfs)	15670.00	Flow (cfs)	9.08	12567.83	3093.09
Top Width (ft)	1620.69	Top Width (ft)	11.89	236.00	1372.80
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)	0.20	3.11	0.34
Max Chl Dpth (ft)	21.29	Hydr. Depth (ft)	3.75	17.10	6.70
Conv. Total (cfs)	1230912.0	Conv. (cfs)	713.6	987229.9	242968.8
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	14.05	238.75	1372.92
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.03	0.17	0.07
Alpha	5.60	Stream Power (lb/ft s)	0.01	0.53	0.02
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	5329.29	1902.12	4175.86
C & E Loss (ft)	0.01	Cum SA (acres)	1341.25	154.33	1435.37

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 6.4

INPUT

Description:

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.3	1064	9.2	1123	1.6	1224	1.2	1228	.4
1265	-3.5	1347	-10.2	1461	-10.3	1513	-2	1517	.9
1547	1.1	2602	2	2734	3	2871	4	3009	5
3421	10								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1224	.04	1517	.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1224	1517		68	68	68		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.22	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	437.11	3636.77	4699.45
E.G. Slope (ft/ft)	0.000087	Area (sq ft)	437.11	3636.77	4699.45
Q Total (cfs)	7489.00	Flow (cfs)	68.25	6726.27	694.48
Top Width (ft)	1932.53	Top Width (ft)	129.13	293.00	1510.40
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.16	1.85	0.15
Max Chl Dpth (ft)	15.52	Hydr. Depth (ft)	3.39	12.41	3.11
Conv. Total (cfs)	802436.1	Conv. (cfs)	7312.7	720710.8	74412.6
Length Wtd. (ft)	68.00	Wetted Per. (ft)	129.36	295.16	1510.41
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.02	0.07	0.02
Alpha	4.22	Stream Power (lb/ft s)	0.00	0.12	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1845.92	1333.78	795.15
C & E Loss (ft)	0.01	Cum SA (acres)	1122.11	140.45	645.67

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.42	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	597.30	3987.63	6567.17
E.G. Slope (ft/ft)	0.000113	Area (sq ft)	597.30	3987.63	6567.17
Q Total (cfs)	10380.00	Flow (cfs)	124.82	8930.81	1324.37
Top Width (ft)	2040.49	Top Width (ft)	138.42	293.00	1609.07
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.21	2.24	0.20
Max Chl Dpth (ft)	16.72	Hydr. Depth (ft)	4.32	13.61	4.08
Conv. Total (cfs)	976634.4	Conv. (cfs)	11744.5	840282.8	124607.1
Length Wtd. (ft)	68.00	Wetted Per. (ft)	138.73	295.16	1609.09
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.03	0.10	0.03
Alpha	4.99	Stream Power (lb/ft s)	0.01	0.21	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3152.36	1466.54	1628.70
C & E Loss (ft)	0.02	Cum SA (acres)	1270.49	140.75	1112.63

CROSS SECTION OUTPUT Profile #PF 3

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E.G. Elev (ft)	7.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.16	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	701.76	4204.24	7779.25
E.G. Slope (ft/ft)	0.000128	Area (sq ft)	701.76	4204.24	7779.25
Q Total (cfs)	12366.00	Flow (cfs)	169.01	10374.60	1822.39
Top Width (ft)	2107.15	Top Width (ft)	144.16	293.00	1669.99
Vel Total (ft/s)	0.97	Avg. Vel. (ft/s)	0.24	2.47	0.23
Max Chl Dpth (ft)	17.46	Hydr. Depth (ft)	4.87	14.35	4.66
Conv. Total (cfs)	1093883.0	Conv. (cfs)	14950.6	917726.2	161206.2
Length Wtd. (ft)	68.00	Wetted Per. (ft)	144.52	295.16	1670.01
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.04	0.11	0.04
Alpha	5.39	Stream Power (lb/ft s)	0.01	0.28	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4013.77	1554.41	2391.99
C & E Loss (ft)	0.03	Cum SA (acres)	1298.27	140.87	1242.66

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.27	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	865.90	4528.20	9676.05
E.G. Slope (ft/ft)	0.000149	Area (sq ft)	865.90	4528.20	9676.05
Q Total (cfs)	15670.00	Flow (cfs)	249.37	12686.42	2734.21
Top Width (ft)	2206.84	Top Width (ft)	152.75	293.00	1761.09
Vel Total (ft/s)	1.04	Avg. Vel. (ft/s)	0.29	2.80	0.28
Max Chl Dpth (ft)	18.57	Hydr. Depth (ft)	5.67	15.45	5.49
Conv. Total (cfs)	1282841.0	Conv. (cfs)	20415.1	1038587.0	223838.7
Length Wtd. (ft)	68.00	Wetted Per. (ft)	153.18	295.16	1761.13
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.05	0.14	0.05
Alpha	5.89	Stream Power (lb/ft s)	0.02	0.40	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	5306.44	1687.15	3702.00
C & E Loss (ft)	0.04	Cum SA (acres)	1337.12	141.05	1356.70

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.3

INPUT

Description:

Station	Elevation	Data	num=	15					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	10.1	1030	1.6	1034	.6	1054	-2.7	1079	-5.4
1103	-8.1	1128	-9.3	1152	-10.3	1178	-11.1	1204	-13.4
1228	-11.4	1252	-7.1	1275	.7	1279	1.9	1298	9.7

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val

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1003	.2	1030	.04	1279	.2		
Bank Sta: Left	Right	Lengths: Left	Channel	Right		Coeff Contr.	Expan.
1030	1279	22.1	22.1	22.1		.3	.5
Ineffective Flow	num=	2					
Sta L	Sta R	Elev	Permanent				
1003	1030	14.6	F				
1279	1298	14.5	F				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.17	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-6.18	Flow Area (sq ft)		3204.01	
E.G. Slope (ft/ft)	0.000133	Area (sq ft)	20.22	3204.01	13.01
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	268.29	Top Width (ft)	11.33	249.00	7.96
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)		2.34	
Max Chl Dpth (ft)	18.57	Hydr. Depth (ft)		12.87	
Conv. Total (cfs)	648747.3	Conv. (cfs)		648747.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.25	
Frctn Loss (ft)		Cum Volume (acre-ft)	1845.56	1328.44	791.47
C & E Loss (ft)		Cum SA (acres)	1122.00	140.03	644.48

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.32	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.14	Flow Area (sq ft)		3490.80	
E.G. Slope (ft/ft)	0.000192	Area (sq ft)	35.38	3490.80	23.79
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	274.76	Top Width (ft)	14.99	249.00	10.77
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	19.72	Hydr. Depth (ft)		14.02	
Conv. Total (cfs)	748387.3	Conv. (cfs)		748387.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.50	
Frctn Loss (ft)		Cum Volume (acre-ft)	3151.87	1460.70	1623.56
C & E Loss (ft)		Cum SA (acres)	1270.37	140.33	1111.37

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.02	Reach Len. (ft)	1.00	1.00	1.00

Crit W.S. (ft)	-4.51	Flow Area (sq ft)	LPGA Tomoka River EC-RAS Report _ CEM	
E.G. Slope (ft/ft)	0.000232	Area (sq ft)	3665.71	
Q Total (cfs)	12366.00	Flow (cfs)	46.69	31.95
Top Width (ft)	278.70	Top Width (ft)	17.22	12.48
Vel Total (ft/s)	3.37	Avg. Vel. (ft/s)		
Max Chl Dpth (ft)	20.42	Hydr. Depth (ft)		
Conv. Total (cfs)	811924.6	Conv. (cfs)	811924.6	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		
Alpha	1.00	Stream Power (lb/ft s)		
Frctn Loss (ft)		Cum Volume (acre-ft)	4013.19	2385.90
C & E Loss (ft)		Cum SA (acres)	1298.14	1241.35

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.06	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.54	Flow Area (sq ft)		3923.72	
E.G. Slope (ft/ft)	0.000297	Area (sq ft)	66.24	3923.72	46.19
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	284.51	Top Width (ft)	20.51	249.00	15.00
Vel Total (ft/s)	3.99	Avg. Vel. (ft/s)		3.99	
Max Chl Dpth (ft)	21.46	Hydr. Depth (ft)		15.76	
Conv. Total (cfs)	909386.9	Conv. (cfs)		909386.9	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.29	
Alpha	1.00	Stream Power (lb/ft s)		1.15	
Frctn Loss (ft)		Cum Volume (acre-ft)	5305.71	1680.56	3694.41
C & E Loss (ft)		Cum SA (acres)	1336.98	140.63	1355.32

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.25

INPUT

Description: Bridge #3

Distance from Upstream XS = 1
 Deck/Roadway Width = 21
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	2				
Sta	Hi	Cord	Lo	Cord	Lo
1003	14.6	11.3	1298	14.5	11.1

Upstream Bridge Cross Section Data

Station Elevation Data num= 15

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Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	10.1	1030	1.6	1034	.6	1054	-2.7	1079	-5.4
1103	-8.1	1128	-9.3	1152	-10.3	1178	-11.1	1204	-13.4
1228	-11.4	1252	-7.1	1275	.7	1279	1.9	1298	9.7

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1030	.04	1279	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1030	1279		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1003	1030	14.6	F		
1279	1298	14.5	F		

Downstream		Deck/Roadway		Coordinates					
num=		2							
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1003		14.6		11.3	1298		14.5		11.1

Downstream Bridge Cross Section Data									
Station	Elevation	Data	num= 15						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11	1027	2.1	1032	1.1	1054	-3.8	1079	-7.4
1103	-9.6	1128	-9.3	1152	-11.6	1178	-13.2	1204	-13.3
1228	-11.8	1254	-7.9	1275	.7	1278	1.8	1298	11

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1027	.04	1278	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1027	1278		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1003	1027	12.95	F		
1278	1298	12.95	F		

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
Downstream Embankment side slope = 0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .98
Elevation at which weir flow begins = 14.6
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data		Upstream=		1154.5	Downstream=		1152.5
Pier Station		num=		2			
Width	Elev	Width	Elev				
17.6	-13.4	17.6	11.2				
Downstream		num=		2			
Width	Elev	Width	Elev				

17.6 -13.3 17.6 11.2

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 11.2

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	5.25	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5.17	E.G. Elev (ft)	5.26	5.25
Q Total (cfs)	7489.00	W.S. Elev (ft)	5.16	5.16
Q Bridge (cfs)	7489.00	Crit W.S. (ft)	-5.83	-6.70
Q Weir (cfs)		Max Chl Dpth (ft)	18.56	18.46
Weir Sta Lft (ft)		Vel Total (ft/s)	2.56	2.38
Weir Sta Rgt (ft)		Flow Area (sq ft)	2929.09	3149.86
Weir Submerg		Froude # Chl	0.13	0.11
Weir Max Depth (ft)		Specif Force (cu ft)	21094.90	23938.78
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	12.66	13.50
Min El Prs (ft)	11.20	W.P. Total (ft)	265.18	270.03
Delta EG (ft)	0.02	Conv. Total (cfs)	539674.1	601842.7
Delta WS (ft)	0.01	Top Width (ft)	250.65	248.96
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.56	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.13	0.11
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.34	0.27

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

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BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	6.46	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.32	E.G. Elev (ft)	6.47	6.45
Q Total (cfs)	10380.00	W.S. Elev (ft)	6.31	6.31
Q Bridge (cfs)	10380.00	Crit W.S. (ft)	-4.71	-5.66
Q Weir (cfs)		Max Chl Dpth (ft)	19.71	19.61
Weir Sta Lft (ft)		Vel Total (ft/s)	3.25	3.04
Weir Sta Rgt (ft)		Flow Area (sq ft)	3194.52	3417.58
Weir Submerg		Froude # Chl	0.15	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	25060.16	28131.88

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Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	13.81	14.64
Min El Prs (ft)	11.20	W.P. Total (ft)	267.47	272.32
Delta EG (ft)	0.03	Conv. Total (cfs)	620048.8	685615.1
Delta WS (ft)	0.01	Top Width (ft)	257.09	254.55
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.25	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.21	0.18
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.68	0.55

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

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BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	7.20	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.02	E.G. Elev (ft)	7.22	7.19
Q Total (cfs)	12366.00	W.S. Elev (ft)	7.01	7.01
Q Bridge (cfs)	12366.00	Crit W.S. (ft)	-4.04	-5.02
Q Weir (cfs)		Max Chl Dpth (ft)	20.41	20.31
Weir Sta Lft (ft)		Vel Total (ft/s)	3.68	3.45
Weir Sta Rgt (ft)		Flow Area (sq ft)	3356.20	3580.66
Weir Submerg		Froude # Chl	0.17	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	27716.50	30924.21
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	14.50	15.34
Min El Prs (ft)	11.20	W.P. Total (ft)	268.87	273.72
Delta EG (ft)	0.04	Conv. Total (cfs)	670894.1	738479.4
Delta WS (ft)	0.02	Top Width (ft)	261.01	257.95
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.68	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.26	0.23
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.98	0.79

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	8.31	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	8.06	E.G. Elev (ft)	8.33	8.30
Q Total (cfs)	15670.00	W.S. Elev (ft)	8.04	8.04
Q Bridge (cfs)	15670.00	Crit W.S. (ft)	-3.02	-4.05
Q Weir (cfs)		Max Chl Dpth (ft)	21.44	21.34
Weir Sta Lft (ft)		Vel Total (ft/s)	4.36	4.10
Weir Sta Rgt (ft)		Flow Area (sq ft)	3594.29	3820.81
Weir Submerg		Froude # Chl	0.20	0.18
Weir Max Depth (ft)		Specif Force (cu ft)	31999.37	35401.98
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	15.53	16.37
Min El Prs (ft)	11.20	W.P. Total (ft)	270.93	275.78
Delta EG (ft)	0.05	Conv. Total (cfs)	748263.7	818758.8
Delta WS (ft)	0.02	Top Width (ft)	266.79	262.96
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.36	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.36	0.32
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.58	1.30

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.2

INPUT

Description:

Station		Elevation Data		num=	15	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11	1027	2.1	1032	1.1	1054	-3.8	1079	-7.4				
1103	-9.6	1128	-9.3	1152	-11.6	1178	-13.2	1204	-13.3				
1228	-11.8	1254	-7.9	1275	.7	1278	1.8	1298	11				

Manning's n Values		num=	3	Sta	n Val	Sta	n Val
1003	.2	1027	.04	1278	.2		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1027	1278		74	74		.3	.5
Ineffective Flow			num=	2				
Sta L	Sta R	Elev	Permanent					
1003	1027	12.95	F					
1278	1298	12.95	F					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.16	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-7.07	Flow Area (sq ft)		3444.22	
E.G. Slope (ft/ft)	0.000106	Area (sq ft)	12.63	3444.22	12.28
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	266.56	Top Width (ft)	8.25	251.00	7.31
Vel Total (ft/s)	2.17	Avg. Vel. (ft/s)		2.17	
Max Chl Dpth (ft)	18.46	Hydr. Depth (ft)		13.72	
Conv. Total (cfs)	726819.8	Conv. (cfs)		726819.8	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.20	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1845.55	1326.89	791.46
C & E Loss (ft)	0.01	Cum SA (acres)	1121.99	139.91	644.48

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.31	Reach Len. (ft)	74.00	74.00	74.00

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Crit W.S. (ft)	-6.10	Flow Area (sq ft)	3732.13	
E.G. Slope (ft/ft)	0.000156	Area (sq ft)	23.88	22.09
Q Total (cfs)	10380.00	Flow (cfs)	10380.00	
Top Width (ft)	272.15	Top Width (ft)	11.35	9.80
Vel Total (ft/s)	2.78	Avg. Vel. (ft/s)	2.78	
Max Chl Dpth (ft)	19.61	Hydr. Depth (ft)	14.87	
Conv. Total (cfs)	830877.9	Conv. (cfs)	830877.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)	254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.14	
Alpha	1.00	Stream Power (lb/ft s)	0.40	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3151.85	1623.55
C & E Loss (ft)	0.02	Cum SA (acres)	1270.36	1111.36

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.01	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-5.49	Flow Area (sq ft)		3907.50	
E.G. Slope (ft/ft)	0.000190	Area (sq ft)	32.46	3907.50	29.47
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	275.55	Top Width (ft)	13.23	251.00	11.32
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)		3.16	
Max Chl Dpth (ft)	20.31	Hydr. Depth (ft)		15.57	
Conv. Total (cfs)	896963.9	Conv. (cfs)		896963.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.18	
Alpha	1.00	Stream Power (lb/ft s)		0.58	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4013.17	1546.51	2385.88
C & E Loss (ft)	0.03	Cum SA (acres)	1298.13	140.33	1241.34

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.04	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-4.57	Flow Area (sq ft)		4165.76	
E.G. Slope (ft/ft)	0.000247	Area (sq ft)	47.50	4165.76	42.26
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	280.56	Top Width (ft)	16.01	251.00	13.56
Vel Total (ft/s)	3.76	Avg. Vel. (ft/s)		3.76	
Max Chl Dpth (ft)	21.34	Hydr. Depth (ft)		16.60	
Conv. Total (cfs)	997927.9	Conv. (cfs)		997927.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		0.95	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5305.68	1678.67	3694.39
C & E Loss (ft)	0.05	Cum SA (acres)	1336.97	140.51	1355.31

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 6.1

INPUT

Description: FEC RAILWAY BRIDGE

* 001

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	21.4	1134	11.5	1165	9	1184	3.5	1186	1.7
1267	-9.9	1316	-12.4	1361	-13.6	1464	-.2	1467	.8
1560	1	2326	2	2414	3	2439	4	2526	5
2801	10								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1184	.04	1467	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1184	1467		375	375		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.16	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	4.78	3629.54	3537.99
E.G. Slope (ft/ft)	0.000089	Area (sq ft)	4.78	3629.54	3537.99
Q Total (cfs)	7489.00	Flow (cfs)	0.29	6936.84	551.87
Top Width (ft)	1356.78	Top Width (ft)	5.75	283.00	1068.03
Vel Total (ft/s)	1.04	Avg. Vel. (ft/s)	0.06	1.91	0.16
Max Chl Dpth (ft)	18.76	Hydr. Depth (ft)	0.83	12.83	3.31
Conv. Total (cfs)	792652.7	Conv. (cfs)	30.6	734211.1	58411.0
Length Wtd. (ft)	375.00	Wetted Per. (ft)	5.99	285.63	1068.07
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.00	0.07	0.02
Alpha	3.10	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	1845.54	1320.89	788.45
C & E Loss (ft)	0.00	Cum SA (acres)	1121.98	139.45	643.57

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.32	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	13.73	3956.32	4807.93
E.G. Slope (ft/ft)	0.000122	Area (sq ft)	13.73	3956.32	4807.93
Q Total (cfs)	10380.00	Flow (cfs)	1.38	9345.50	1033.12
Top Width (ft)	1424.28	Top Width (ft)	9.74	283.00	1131.54
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)	0.10	2.36	0.21
Max Chl Dpth (ft)	19.92	Hydr. Depth (ft)	1.41	13.98	4.25

Conv. Total (cfs)	941489.7	Conv. (cfs)	124.8	847658.4	93706.5
Length Wtd. (ft)	375.00	Wetted Per. (ft)	10.14	285.63	1131.59
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.01	0.11	0.03
Alpha	3.60	Stream Power (lb/ft s)	0.00	0.25	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3151.82	1452.49	1619.44
C & E Loss (ft)	0.00	Cum SA (acres)	1270.34	139.76	1110.39

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.02	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	21.46	4156.05	5620.22
E.G. Slope (ft/ft)	0.000142	Area (sq ft)	21.46	4156.05	5620.22
Q Total (cfs)	12366.00	Flow (cfs)	2.69	10949.13	1414.18
Top Width (ft)	1465.54	Top Width (ft)	12.18	283.00	1170.36
Vel Total (ft/s)	1.26	Avg. Vel. (ft/s)	0.13	2.63	0.25
Max Chl Dpth (ft)	20.62	Hydr. Depth (ft)	1.76	14.69	4.80
Conv. Total (cfs)	1039249.0	Conv. (cfs)	226.5	920173.8	118848.9
Length Wtd. (ft)	375.00	Wetted Per. (ft)	12.68	285.63	1170.41
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.01	0.13	0.04
Alpha	3.86	Stream Power (lb/ft s)	0.00	0.34	0.01
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	4013.12	1539.66	2381.08
C & E Loss (ft)	0.00	Cum SA (acres)	1298.11	139.87	1240.34

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.07	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	36.04	4451.33	6871.31
E.G. Slope (ft/ft)	0.000173	Area (sq ft)	36.04	4451.33	6871.31
Q Total (cfs)	15670.00	Flow (cfs)	5.94	13550.50	2113.56
Top Width (ft)	1526.53	Top Width (ft)	15.78	283.00	1227.75
Vel Total (ft/s)	1.38	Avg. Vel. (ft/s)	0.16	3.04	0.31
Max Chl Dpth (ft)	21.67	Hydr. Depth (ft)	2.28	15.73	5.60
Conv. Total (cfs)	1193069.0	Conv. (cfs)	452.2	1031696.0	160920.4
Length Wtd. (ft)	375.00	Wetted Per. (ft)	16.43	285.63	1227.81
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.02	0.17	0.06
Alpha	4.22	Stream Power (lb/ft s)	0.00	0.51	0.02
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	5305.61	1671.35	3688.52
C & E Loss (ft)	0.00	Cum SA (acres)	1336.95	140.06	1354.26

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 5.4

INPUT

Description:

Station Elevation Data	num=	18
Sta Elev Sta Elev	Sta Elev	Sta Elev

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1000	18.4	1018	17.2	1040	5.5	1048
1104	-3.9	1164	-11	1205	-11.3	1275
1341	.9	1399	1.1	1418	.9	1883
1945	4	2020	5	2282	10	

3.5	1051	.9
-9.6	1335	-.4
2	1908	3

Manning's n Values num= 3

Sta	n Val	Sta	n Val
1000	.2	1048	.04
		1341	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1048	1341		89	89		.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.12	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	5.24	3506.65	2194.79
E.G. Slope (ft/ft)	0.000110	Area (sq ft)	5.24	3506.65	2194.79
Q Total (cfs)	7489.00	Flow (cfs)	0.35	7116.62	372.04
Top Width (ft)	984.66	Top Width (ft)	6.47	293.00	685.19
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)	0.07	2.03	0.17
Max Chl Dpth (ft)	16.42	Hydr. Depth (ft)	0.81	11.97	3.20
Conv. Total (cfs)	713235.1	Conv. (cfs)	33.1	677770.0	35432.0
Length Wtd. (ft)	89.00	Wetted Per. (ft)	6.67	295.47	685.23
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	2.27	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	1845.49	1290.17	763.77
C & E Loss (ft)	0.01	Cum SA (acres)	1121.93	136.97	636.02

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.25	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	14.55	3839.11	3005.99
E.G. Slope (ft/ft)	0.000151	Area (sq ft)	14.55	3839.11	3005.99
Q Total (cfs)	10380.00	Flow (cfs)	1.72	9682.76	695.52
Top Width (ft)	1047.06	Top Width (ft)	9.42	293.00	744.64
Vel Total (ft/s)	1.51	Avg. Vel. (ft/s)	0.12	2.52	0.23
Max Chl Dpth (ft)	17.55	Hydr. Depth (ft)	1.55	13.10	4.04
Conv. Total (cfs)	844975.9	Conv. (cfs)	140.3	788217.3	56618.3
Length Wtd. (ft)	89.00	Wetted Per. (ft)	9.85	295.47	744.70
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.01	0.12	0.04
Alpha	2.59	Stream Power (lb/ft s)	0.00	0.31	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3151.70	1418.94	1585.81
C & E Loss (ft)	0.02	Cum SA (acres)	1270.26	137.28	1102.31

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.95	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	21.52	4041.95	3534.05

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E.G. Slope (ft/ft)	0.000176	Area (sq ft)	21.52	4041.95	3534.05
Q Total (cfs)	12366.00	Flow (cfs)	3.26	11408.53	954.21
Top Width (ft)	1084.64	Top Width (ft)	10.72	293.00	780.92
Vel Total (ft/s)	1.63	Avg. Vel. (ft/s)	0.15	2.82	0.27
Max Chl Dpth (ft)	18.25	Hydr. Depth (ft)	2.01	13.80	4.53
Conv. Total (cfs)	930920.3	Conv. (cfs)	245.4	858841.6	71833.3
Length Wtd. (ft)	89.00	Wetted Per. (ft)	11.32	295.47	780.98
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.02	0.15	0.05
Alpha	2.78	Stream Power (lb/ft s)	0.00	0.43	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4012.94	1504.37	2341.68
C & E Loss (ft)	0.03	Cum SA (acres)	1298.01	137.39	1231.94

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.97	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	33.45	4341.13	4358.78
E.G. Slope (ft/ft)	0.000216	Area (sq ft)	33.45	4341.13	4358.78
Q Total (cfs)	15670.00	Flow (cfs)	6.69	14229.34	1433.97
Top Width (ft)	1140.06	Top Width (ft)	12.64	293.00	834.43
Vel Total (ft/s)	1.79	Avg. Vel. (ft/s)	0.20	3.28	0.33
Max Chl Dpth (ft)	19.27	Hydr. Depth (ft)	2.65	14.82	5.22
Conv. Total (cfs)	1065332.0	Conv. (cfs)	455.0	967387.8	97489.2
Length Wtd. (ft)	89.00	Wetted Per. (ft)	13.50	295.47	834.50
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.03	0.20	0.07
Alpha	3.03	Stream Power (lb/ft s)	0.01	0.65	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5305.31	1633.51	3640.18
C & E Loss (ft)	0.04	Cum SA (acres)	1336.82	137.58	1345.38

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 5.3

INPUT

Description:

Station Elevation Data		num=	14
Sta	Elev	Sta	Elev
1036	11.2	1050	10
1136	-9.1	1168	-11.7
1294	-1.2	1303	2

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1036	.2	1062	.04
		1303	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1062	1303	102.1	102.1	102.1	.3	.5	

Ineffective Flow		num=	2
Sta L	Sta R	Elev	Permanent
1036	1062	15	F
1303	1720	15	F

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CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.06	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.73	Flow Area (sq ft)		3012.89	
E.G. Slope (ft/ft)	0.000157	Area (sq ft)	2.00	3012.89	17.26
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	255.02	Top Width (ft)	2.74	241.00	11.28
Vel Total (ft/s)	2.49	Avg. Vel. (ft/s)		2.49	
Max Chl Dpth (ft)	16.76	Hydr. Depth (ft)		12.50	
Conv. Total (cfs)	597313.5	Conv. (cfs)		597313.5	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)		Cum Volume (acre-ft)	1845.49	1283.51	761.51
C & E Loss (ft)		Cum SA (acres)	1121.92	136.43	635.31

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.15	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.68	Flow Area (sq ft)		3276.26	
E.G. Slope (ft/ft)	0.000228	Area (sq ft)	6.11	3276.26	31.78
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	261.09	Top Width (ft)	4.79	241.00	15.30
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)		3.17	
Max Chl Dpth (ft)	17.85	Hydr. Depth (ft)		13.59	
Conv. Total (cfs)	686849.8	Conv. (cfs)		686849.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.19	
Alpha	1.00	Stream Power (lb/ft s)		0.61	
Frctn Loss (ft)		Cum Volume (acre-ft)	3151.68	1411.67	1582.71
C & E Loss (ft)		Cum SA (acres)	1270.25	136.73	1101.54

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.81	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.04	Flow Area (sq ft)		3435.04	
E.G. Slope (ft/ft)	0.000277	Area (sq ft)	9.67	3435.04	42.66
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	264.75	Top Width (ft)	6.02	241.00	17.73
Vel Total (ft/s)	3.60	Avg. Vel. (ft/s)		3.60	
Max Chl Dpth (ft)	18.51	Hydr. Depth (ft)		14.25	
Conv. Total (cfs)	743218.8	Conv. (cfs)		743218.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	

			LPGA Tomoka River EC-RAS Report _ CEM		
Min Ch El (ft)	-11.70	Shear (lb/sq ft)	0.24		
Alpha	1.00	Stream Power (lb/ft s)	0.87		
Frctn Loss (ft)		Cum Volume (acre-ft)	4012.91	1496.73	2338.02
C & E Loss (ft)		Cum SA (acres)	1297.99	136.85	1231.12

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.040		
W.S. Elev (ft)	7.77	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.07	Flow Area (sq ft)	3665.80		
E.G. Slope (ft/ft)	0.000358	Area (sq ft)	16.30	3665.80	61.74
Q Total (cfs)	15670.00	Flow (cfs)	15670.00		
Top Width (ft)	281.86	Top Width (ft)	7.82	241.00	33.04
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	4.27		
Max Chl Dpth (ft)	19.47	Hydr. Depth (ft)	15.21		
Conv. Total (cfs)	828283.6	Conv. (cfs)	828283.6		
Length Wtd. (ft)	1.00	Wetted Per. (ft)	244.37		
Min Ch El (ft)	-11.70	Shear (lb/sq ft)	0.34		
Alpha	1.00	Stream Power (lb/ft s)	1.43		
Frctn Loss (ft)		Cum Volume (acre-ft)	5305.26	1625.33	3635.66
C & E Loss (ft)		Cum SA (acres)	1336.80	137.03	1344.49

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 5.25

INPUT

Description: Bridge #2

Distance from Upstream XS = 1
 Deck/Roadway Width = 101
 Weir Coefficient = 2.6
 Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1036 15 11.2	1324 15 11.2

Upstream Bridge Cross Section Data

Station Elevation Data	num=	14
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1036 11.2 1050 10 1062 3.6 1066 .3 1095 -4.1		
1136 -9.1 1168 -11.7 1201 -11.3 1234 -10 1267 -7.8		
1294 -1.2 1303 2 1324 7.7 1720 10		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
1036 .2 1062 .04 1303 .2		

Bank Sta: Left Right Coeff Contr. Expan.
 1062 1303 .3 .5

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

1036 1062 15 F

1303 1720 15 F

Downstream Deck/Roadway Coordinates

num= 2

Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord

1036 15 11.2 1324 15 11.2

Downstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta Elev Sta Elev Sta Elev Sta Elev

1003 11.2 1033 3.2 1045 2.1 1049 1.1 1070 -1.1

1103 -5.4 1136 -10.2 1169 -12.1 1203 -11.4 1235 -9.8

1267 -7 1298 -1.8 1335 1.3 1337 2.1 1345 3.1

1361 9.5

Manning's n Values num= 3

Sta n Val Sta n Val Sta n Val

1003 .2 1045 .04 1337 .2

Bank Sta: Left Right Coeff Contr. Expan.
 1045 1337 .3 .5

Ineffective Flow num= 2

Sta L Sta R Elev Permanent

1003 1045 13.2 F

1337 1361 13.2 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins = 15

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 1182.5 Downstream= 1191

Upstream num= 2

Width Elev Width Elev

15 -11.7 15 11.2

Downstream num= 2

Width Elev Width Elev

15 -12.1 15 11.2

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow
 Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .7905694
 Max Low Cord = 11.2

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	5.16	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5.06	E.G. Elev (ft)	5.17	5.14
Q Total (cfs)	7489.00	W.S. Elev (ft)	5.05	5.05
Q Bridge (cfs)	7489.00	Crit W.S. (ft)	-5.25	-5.47
Q Weir (cfs)		Max Chl Dpth (ft)	16.75	17.15
Weir Sta Lft (ft)		Vel Total (ft/s)	2.71	2.41
Weir Sta Rgt (ft)		Flow Area (sq ft)	2762.52	3101.12
Weir Submerg		Froude # Chl	0.14	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	19167.02	20622.83
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	12.22	11.20
Min El Prs (ft)	11.20	W.P. Total (ft)	262.53	321.55
Delta EG (ft)	0.03	Conv. Total (cfs)	492788.0	521952.0
Delta WS (ft)	0.01	Top Width (ft)	239.98	308.84
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.71	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.15	0.12
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.41	0.30

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	6.31	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.15	E.G. Elev (ft)	6.33	6.29
Q Total (cfs)	10380.00	W.S. Elev (ft)	6.14	6.14
Q Bridge (cfs)	10380.00	Crit W.S. (ft)	-4.15	-4.36
Q Weir (cfs)		Max Chl Dpth (ft)	17.84	18.24
Weir Sta Lft (ft)		Vel Total (ft/s)	3.45	3.05
Weir Sta Rgt (ft)		Flow Area (sq ft)	3008.45	3402.54
Weir Submerg		Froude # Chl	0.17	0.13
Weir Max Depth (ft)		Specif Force (cu ft)	22789.02	24583.45
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	13.31	12.28
Min El Prs (ft)	11.20	W.P. Total (ft)	264.71	325.91
Delta EG (ft)	0.04	Conv. Total (cfs)	564933.8	603780.4
Delta WS (ft)	0.01	Top Width (ft)	246.03	315.64
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.45	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.24	0.19

BR Sel Method	Yarnell	Power Total (lb/ft s)	LPGA Tomoka River EC-RAS Report _ CEM
			0.83 0.59

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	7.01	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.81	E.G. Elev (ft)	7.04	6.98
Q Total (cfs)	12366.00	W.S. Elev (ft)	6.80	6.80
Q Bridge (cfs)	12366.00	Crit W.S. (ft)	-3.48	-3.69
Q Weir (cfs)		Max Chl Dpth (ft)	18.50	18.90
Weir Sta Lft (ft)		Vel Total (ft/s)	3.92	3.45
Weir Sta Rgt (ft)		Flow Area (sq ft)	3156.50	3584.01
Weir Submerg		Froude # Chl	0.18	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	25200.95	27213.82
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	13.97	12.94
Min El Prs (ft)	11.20	W.P. Total (ft)	266.02	328.53
Delta EG (ft)	0.06	Conv. Total (cfs)	610014.6	654890.9
Delta WS (ft)	0.02	Top Width (ft)	249.67	319.73
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.92	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.30	0.24
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.19	0.84

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	8.05	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.77	E.G. Elev (ft)	8.08	8.01
Q Total (cfs)	15670.00	W.S. Elev (ft)	7.75	7.75
Q Bridge (cfs)	15670.00	Crit W.S. (ft)	-2.49	-2.67
Q Weir (cfs)		Max Chl Dpth (ft)	19.45	19.85
Weir Sta Lft (ft)		Vel Total (ft/s)	4.65	4.07
Weir Sta Rgt (ft)		Flow Area (sq ft)	3371.28	3847.25
Weir Submerg		Froude # Chl	0.21	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	29060.82	31402.52
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	14.92	13.89
Min El Prs (ft)	11.20	W.P. Total (ft)	267.92	332.33
Delta EG (ft)	0.08	Conv. Total (cfs)	677526.8	731375.9
Delta WS (ft)	0.02	Top Width (ft)	254.78	325.67
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.65	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.42	0.33
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.95	1.35

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

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

CROSS SECTION

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RIVER: RIVER-1

REACH: Reach-1 RS: 5.2

INPUT

Description:

Station Elevation Data		num= 16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11.2	1033	3.2	1045	2.1	1049	1.1	1070	-1.1
1103	-5.4	1136	-10.2	1169	-12.1	1203	-11.4	1235	-9.8
1267	-7	1298	-1.8	1335	1.3	1337	2.1	1345	3.1
1361	9.5								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1045	.04	1337	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1045	1337		187	187		.3	.5

Ineffective Flow		num= 2	
Sta L	Sta R	Elev	Permanent
1003	1045	13.2	F
1337	1361	13.2	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.05	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-5.95	Flow Area (sq ft)		3351.63	
E.G. Slope (ft/ft)	0.000141	Area (sq ft)	35.29	3351.63	24.40
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	323.84	Top Width (ft)	18.95	292.00	12.88
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)		2.23	
Max Chl Dpth (ft)	17.15	Hydr. Depth (ft)		11.48	
Conv. Total (cfs)	630942.8	Conv. (cfs)		630942.8	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.22	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	1845.44	1276.64	761.46
C & E Loss (ft)	0.02	Cum SA (acres)	1121.89	135.84	635.28

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.14	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-4.89	Flow Area (sq ft)		3669.38	
E.G. Slope (ft/ft)	0.000200	Area (sq ft)	58.13	3669.38	39.90
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	330.64	Top Width (ft)	23.03	292.00	15.60
Vel Total (ft/s)	2.83	Avg. Vel. (ft/s)		2.83	
Max Chl Dpth (ft)	18.24	Hydr. Depth (ft)		12.57	

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Conv. Total (cfs)	733752.5	Conv. (cfs)	733752.5		
Length Wtd. (ft)	187.00	Wetted Per. (ft)	293.81		
Min Ch El (ft)	-12.10	Shear (lb/sq ft)	0.16		
Alpha	1.00	Stream Power (lb/ft s)	0.44		
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	3151.60	1404.16	1582.62
C & E Loss (ft)	0.04	Cum SA (acres)	1270.21	136.14	1101.50

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.80	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-4.24	Flow Area (sq ft)		3860.67	
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	74.02	3860.67	50.66
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	334.73	Top Width (ft)	25.49	292.00	17.24
Vel Total (ft/s)	3.20	Avg. Vel. (ft/s)		3.20	
Max Chl Dpth (ft)	18.90	Hydr. Depth (ft)		13.22	
Conv. Total (cfs)	798606.6	Conv. (cfs)		798606.6	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.20	
Alpha	1.00	Stream Power (lb/ft s)		0.63	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	4012.81	1488.83	2337.92
C & E Loss (ft)	0.06	Cum SA (acres)	1297.96	136.26	1231.08

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.75	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-3.27	Flow Area (sq ft)		4138.17	
E.G. Slope (ft/ft)	0.000305	Area (sq ft)	99.94	4138.17	68.18
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	340.67	Top Width (ft)	29.05	292.00	19.62
Vel Total (ft/s)	3.79	Avg. Vel. (ft/s)		3.79	
Max Chl Dpth (ft)	19.85	Hydr. Depth (ft)		14.17	
Conv. Total (cfs)	896551.8	Conv. (cfs)		896551.8	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		1.02	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5305.13	1616.87	3635.51
C & E Loss (ft)	0.09	Cum SA (acres)	1336.76	136.44	1344.44

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 5.1

INPUT

Description: US HIGHWAY 1

*

001

Station Elevation Data		num=		15					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8724	10	9349	5	16033	1.8	16073	1.8	16077	0
16108	-8.7	16152	-10.4	16218	-11.2	16271	-7.7	16303	-4.6
16322	-1.6	16374	2.7	16413	3.5	16484	6	16549	10

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
8724	.2	16073	.04	16374	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	16073	16374		2603	2603	2603	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.05	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	11157.31	3512.19	110.15
E.G. Slope (ft/ft)	0.000091	Area (sq ft)	11157.31	3512.19	110.15
Q Total (cfs)	7489.00	Flow (cfs)	1107.86	6371.71	9.43
Top Width (ft)	7114.24	Top Width (ft)	6730.22	301.00	83.01
Vel Total (ft/s)	0.51	Avg. Vel. (ft/s)	0.10	1.81	0.09
Max Chl Dpth (ft)	16.25	Hydr. Depth (ft)	1.66	11.67	1.33
Conv. Total (cfs)	784905.1	Conv. (cfs)	116112.3	667805.0	987.9
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6730.22	303.30	83.05
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.01	0.07	0.01
Alpha	10.91	Stream Power (lb/ft s)	0.00	0.12	0.00
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	1821.42	1261.90	761.17
C & E Loss (ft)	0.00	Cum SA (acres)	1107.41	134.57	635.07

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.16	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	18676.94	3845.07	219.18
E.G. Slope (ft/ft)	0.000098	Area (sq ft)	18676.94	3845.07	219.18
Q Total (cfs)	10380.00	Flow (cfs)	2673.80	7681.09	25.11
Top Width (ft)	7282.00	Top Width (ft)	6868.47	301.00	112.53
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.14	2.00	0.11
Max Chl Dpth (ft)	17.36	Hydr. Depth (ft)	2.72	12.77	1.95
Conv. Total (cfs)	1049469.0	Conv. (cfs)	270334.6	776595.1	2538.8

			LPGA Tomoka River EC-RAS Report _ CEM		
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6868.47	303.30	112.59
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.02	0.08	0.01
Alpha	14.20	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	3111.39	1388.03	1582.07
C & E Loss (ft)	0.00	Cum SA (acres)	1255.42	134.87	1101.23

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.83	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	23308.02	4046.79	298.24
E.G. Slope (ft/ft)	0.000100	Area (sq ft)	23308.02	4046.79	298.24
Q Total (cfs)	12366.00	Flow (cfs)	3876.00	8450.15	39.85
Top Width (ft)	7376.66	Top Width (ft)	6952.24	301.00	123.42
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.17	2.09	0.13
Max Chl Dpth (ft)	18.03	Hydr. Depth (ft)	3.35	13.44	2.42
Conv. Total (cfs)	1237571.0	Conv. (cfs)	387904.1	845678.7	3988.4
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6952.24	303.30	123.50
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	14.94	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	3962.62	1471.86	2337.17
C & E Loss (ft)	0.00	Cum SA (acres)	1282.98	134.99	1230.78

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.80	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	30170.33	4341.31	426.78
E.G. Slope (ft/ft)	0.000103	Area (sq ft)	30170.33	4341.31	426.78
Q Total (cfs)	15670.00	Flow (cfs)	5971.41	9630.88	67.71
Top Width (ft)	7514.86	Top Width (ft)	7074.54	301.00	139.32
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.20	2.22	0.16
Max Chl Dpth (ft)	19.00	Hydr. Depth (ft)	4.26	14.42	3.06
Conv. Total (cfs)	1546886.0	Conv. (cfs)	589476.1	950725.1	6684.6
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	7074.56	303.30	139.43
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.03	0.09	0.02
Alpha	15.11	Stream Power (lb/ft s)	0.01	0.20	0.00
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	5240.15	1598.67	3634.45
C & E Loss (ft)	0.00	Cum SA (acres)	1321.51	135.17	1344.10

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 4

INPUT

Description: 3RD SECTION SOUTH OF OLD DIXIE BEFORE US1
 *

Station Elevation Data num= 18

LPGA Tomoka River EC-RAS Report _ CEM

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2744	10	3494	5	10000	1.2	10002	-7	10027	-3.3
10065	-9.2	10087	-9.1	10114	-9.3	10195	-6.2	10210	-3.9
10234	-.5	10237	1.3	10244	2.4	10264	3.8	10304	8.9
10370	9.4	10433	9.5	10453	9.6				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
2744	.2	10000	.04	10237	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	10000	10237		5815	5815		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.74	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	10721.38	2614.93	56.46
E.G. Slope (ft/ft)	0.000144	Area (sq ft)	10721.38	2614.93	56.46
Q Total (cfs)	7151.00	Flow (cfs)	1399.53	5744.48	6.99
Top Width (ft)	6330.43	Top Width (ft)	6059.06	237.00	34.36
Vel Total (ft/s)	0.53	Avg. Vel. (ft/s)	0.13	2.20	0.12
Max Chl Dpth (ft)	14.04	Hydr. Depth (ft)	1.77	11.03	1.64
Conv. Total (cfs)	595428.9	Conv. (cfs)	116532.3	478314.8	581.9
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6059.07	239.32	34.56
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.10	0.01
Alpha	13.61	Stream Power (lb/ft s)	0.00	0.22	0.00
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	1167.72	1078.84	756.20
C & E Loss (ft)	0.01	Cum SA (acres)	725.28	118.49	631.57

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	5.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.84	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	17852.63	2874.93	98.88
E.G. Slope (ft/ft)	0.000146	Area (sq ft)	17852.63	2874.93	98.88
Q Total (cfs)	9870.00	Flow (cfs)	3096.65	6757.97	15.38
Top Width (ft)	6911.36	Top Width (ft)	6631.40	237.00	42.97
Vel Total (ft/s)	0.47	Avg. Vel. (ft/s)	0.17	2.35	0.16
Max Chl Dpth (ft)	15.14	Hydr. Depth (ft)	2.69	12.13	2.30
Conv. Total (cfs)	818134.4	Conv. (cfs)	256684.1	560175.1	1275.2
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6631.40	239.32	43.23
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.11	0.02
Alpha	16.89	Stream Power (lb/ft s)	0.00	0.26	0.00
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	2019.95	1187.24	1572.56
C & E Loss (ft)	0.00	Cum SA (acres)	852.07	118.80	1096.58

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.51	Reach Len. (ft)	5815.00	5815.00	5815.00

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Crit W.S. (ft)		Flow Area (sq ft)	22341.96	3034.16	129.52
E.G. Slope (ft/ft)	0.000143	Area (sq ft)	22341.96	3034.16	129.52
Q Total (cfs)	11770.00	Flow (cfs)	4417.51	7330.35	22.14
Top Width (ft)	7017.42	Top Width (ft)	6732.18	237.00	48.24
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.20	2.42	0.17
Max Chl Dpth (ft)	15.81	Hydr. Depth (ft)	3.32	12.80	2.68
Conv. Total (cfs)	984001.3	Conv. (cfs)	369315.1	612835.1	1851.0
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6732.18	239.32	48.55
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.03	0.11	0.02
Alpha	17.14	Stream Power (lb/ft s)	0.01	0.27	0.00
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	2598.68	1260.29	2324.39
C & E Loss (ft)	0.00	Cum SA (acres)	874.11	118.91	1225.65

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.49	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	28999.90	3266.02	180.46
E.G. Slope (ft/ft)	0.000141	Area (sq ft)	28999.90	3266.02	180.46
Q Total (cfs)	14956.00	Flow (cfs)	6684.44	8236.90	34.66
Top Width (ft)	7171.83	Top Width (ft)	6878.92	237.00	55.91
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.23	2.52	0.19
Max Chl Dpth (ft)	16.79	Hydr. Depth (ft)	4.22	13.78	3.23
Conv. Total (cfs)	1258044.0	Conv. (cfs)	562270.9	692858.0	2915.4
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6878.93	239.32	56.28
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.04	0.12	0.03
Alpha	16.60	Stream Power (lb/ft s)	0.01	0.30	0.01
Frctn Loss (ft)	0.78	Cum Volume (acre-ft)	3472.24	1371.37	3616.31
C & E Loss (ft)	0.00	Cum SA (acres)	904.61	119.10	1338.27

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 3

INPUT

Description: 2ND SECTION SOUTH OF OLD DIXIE HIGHWAY
* 001

Station Elevation Data		num= 21							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3455	10	3955	5	6000	1.3	6002	.2	6010	-1
6050	-3	6073	-4.1	6100	-5.2	6125	-6.2	6150	-7.7
6170	-8.6	6200	-8.1	6220	-6.6	6245	-5.5	6270	-4.2
6290	-2.2	6300	-1.6	6308	-.7	6310	1	9355	5
10468	10								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
3455	.2	6000	.04	6310	.2

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

6000 6310 6791 6791 6791

.1

.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.00	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	2021.02	2771.38	3435.45
E.G. Slope (ft/ft)	0.000111	Area (sq ft)	2021.02	2771.38	3435.45
Q Total (cfs)	5214.00	Flow (cfs)	193.83	4666.76	353.41
Top Width (ft)	4091.70	Top Width (ft)	1494.67	310.00	2287.02
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.10	1.68	0.10
Max Chl Dpth (ft)	12.60	Hydr. Depth (ft)	1.35	8.94	1.50
Conv. Total (cfs)	493905.3	Conv. (cfs)	18360.6	442066.8	33477.8
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	1494.68	311.47	2287.02
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	6.32	Stream Power (lb/ft s)	0.00	0.10	0.00
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)	317.20	719.31	523.12
C & E Loss (ft)	0.00	Cum SA (acres)	221.09	81.98	476.62

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	5.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.06	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	3899.06	3097.58	6262.56
E.G. Slope (ft/ft)	0.000124	Area (sq ft)	3899.06	3097.58	6262.56
Q Total (cfs)	7242.00	Flow (cfs)	494.10	5913.94	833.96
Top Width (ft)	5418.24	Top Width (ft)	2050.66	310.00	3057.59
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.13	1.91	0.13
Max Chl Dpth (ft)	13.66	Hydr. Depth (ft)	1.90	9.99	2.05
Conv. Total (cfs)	651648.3	Conv. (cfs)	44460.1	532147.1	75041.1
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2050.66	311.47	3057.59
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	9.99	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	1.17	Cum Volume (acre-ft)	568.09	788.60	1147.96
C & E Loss (ft)	0.00	Cum SA (acres)	272.57	82.29	889.63

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	5.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.73	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	5300.07	3305.96	8368.11

LPGA Tomoka River EC-RAS Report _ CEM					
E.G. Slope (ft/ft)	0.000125	Area (sq ft)	5300.07	3305.96	8368.11
Q Total (cfs)	8773.00	Flow (cfs)	812.67	6641.05	1319.29
Top Width (ft)	5635.09	Top Width (ft)	2117.87	310.00	3207.22
Vel Total (ft/s)	0.52	Avg. Vel. (ft/s)	0.15	2.01	0.16
Max Chl Dpth (ft)	14.33	Hydr. Depth (ft)	2.50	10.66	2.61
Conv. Total (cfs)	783551.8	Conv. (cfs)	72582.8	593138.4	117830.6
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2117.88	311.47	3207.22
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	11.46	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	1.18	Cum Volume (acre-ft)	753.65	837.11	1757.20
C & E Loss (ft)	0.00	Cum SA (acres)	283.40	82.40	1008.36

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	6.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.71	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	7419.48	3609.18	11611.69
E.G. Slope (ft/ft)	0.000127	Area (sq ft)	7419.48	3609.18	11611.69
Q Total (cfs)	11307.00	Flow (cfs)	1388.64	7727.10	2191.27
Top Width (ft)	5950.64	Top Width (ft)	2215.69	310.00	3424.95
Vel Total (ft/s)	0.50	Avg. Vel. (ft/s)	0.19	2.14	0.19
Max Chl Dpth (ft)	15.31	Hydr. Depth (ft)	3.35	11.64	3.39
Conv. Total (cfs)	1004630.0	Conv. (cfs)	123380.6	686554.3	194694.8
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2215.70	311.47	3424.96
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.03	0.09	0.03
Alpha	12.60	Stream Power (lb/ft s)	0.00	0.20	0.01
Frctn Loss (ft)	1.16	Cum Volume (acre-ft)	1041.36	912.47	2829.22
C & E Loss (ft)	0.00	Cum SA (acres)	297.57	82.58	1105.93

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 2

INPUT
Description: 1ST SECTION SOUTH OF OLD DIXIE HIGHWAY
* 001

Station Elevation Data		num=		21					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
324	10	511	5	750	1.5	1500	1	1501	-.3
1513	-1	1526	-1.8	1542	-2.2	1573	-4.1	1592	-5.7
1612	-6.4	1630	-8.5	1675	-9.7	1705	-6.9	1730	-4.6
1750	-2.6	1760	-1.5	1770	-.3	1772	1	6386	5
7074	10								

LPGA Tomoka River EC-RAS Report _ CEM

Manning's n Values num= 3
 Sta n Val Sta n Val
 324 .2 1500 .04 1772 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1500 1772 4000 4000 4000 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	2.88	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	1289.02	2190.39	2042.32
E.G. Slope (ft/ft)	0.000241	Area (sq ft)	1289.02	2190.39	2042.32
Q Total (cfs)	5471.00	Flow (cfs)	196.94	5048.07	225.98
Top Width (ft)	3286.98	Top Width (ft)	844.36	272.00	2170.63
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.15	2.30	0.11
Max Chl Dpth (ft)	12.58	Hydr. Depth (ft)	1.53	8.05	0.94
Conv. Total (cfs)	352726.1	Conv. (cfs)	12697.3	325459.2	14569.6
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	844.37	273.82	2170.63
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.02	0.12	0.01
Alpha	4.99	Stream Power (lb/ft s)	0.00	0.28	0.00
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	59.18	332.54	96.13
C & E Loss (ft)	0.00	Cum SA (acres)	38.77	36.61	129.15

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	3.84	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	2132.63	2451.98	4663.29
E.G. Slope (ft/ft)	0.000254	Area (sq ft)	2132.63	2451.98	4663.29
Q Total (cfs)	7399.00	Flow (cfs)	445.24	6256.04	697.72
Top Width (ft)	4462.00	Top Width (ft)	910.03	272.00	3279.97
Vel Total (ft/s)	0.80	Avg. Vel. (ft/s)	0.21	2.55	0.15
Max Chl Dpth (ft)	13.54	Hydr. Depth (ft)	2.34	9.01	1.42
Conv. Total (cfs)	464545.7	Conv. (cfs)	27954.4	392784.8	43806.5
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	910.04	273.82	3279.97
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.04	0.14	0.02
Alpha	8.61	Stream Power (lb/ft s)	0.01	0.36	0.00
Frctn Loss (ft)	1.30	Cum Volume (acre-ft)	97.92	356.01	296.29
C & E Loss (ft)	0.01	Cum SA (acres)	41.78	36.92	395.61

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	4.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.50	Reach Len. (ft)	4000.00	4000.00	4000.00

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Crit W.S. (ft)		Flow Area (sq ft)	2749.09	2631.78	7083.38
E.G. Slope (ft/ft)	0.000254	Area (sq ft)	2749.09	2631.78	7083.38
Q Total (cfs)	8920.00	Flow (cfs)	658.53	7042.59	1218.88
Top Width (ft)	5269.61	Top Width (ft)	955.16	272.00	4042.44
Vel Total (ft/s)	0.72	Avg. Vel. (ft/s)	0.24	2.68	0.17
Max Chl Dpth (ft)	14.20	Hydr. Depth (ft)	2.88	9.68	1.75
Conv. Total (cfs)	559766.6	Conv. (cfs)	41325.7	441951.1	76489.8
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	955.19	273.82	4042.45
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.05	0.15	0.03
Alpha	11.06	Stream Power (lb/ft s)	0.01	0.41	0.00
Frctn Loss (ft)	1.35	Cum Volume (acre-ft)	126.22	374.26	552.75
C & E Loss (ft)	0.01	Cum SA (acres)	43.86	37.03	443.25

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	5.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.51	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	3738.08	2904.75	11590.08
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	3738.08	2904.75	11590.08
Q Total (cfs)	11547.00	Flow (cfs)	1031.23	8074.23	2441.54
Top Width (ft)	5963.92	Top Width (ft)	1008.00	272.00	4683.91
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.28	2.78	0.21
Max Chl Dpth (ft)	15.21	Hydr. Depth (ft)	3.71	10.68	2.47
Conv. Total (cfs)	745033.1	Conv. (cfs)	66536.8	520963.9	157532.4
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	1008.04	273.82	4683.92
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.06	0.16	0.04
Alpha	13.51	Stream Power (lb/ft s)	0.02	0.44	0.01
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	171.63	404.71	1020.64
C & E Loss (ft)	0.01	Cum SA (acres)	46.28	37.22	473.85

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 1.4

INPUT
Description: very wide flood plain, distance criteria very large
* 001

Station Elevation Data		num=		17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	9	1051	7.3	1092	5.3	1123	4.5	1126	1.3
1131	1.2	1183	-10.3	1222	-13.7	1263	-10.6	1294	-7.1
1327	.1	1340	2.4	1364	2.3	1394	2.1	1436	1.6
4900	2.5	4982	10						

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Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 1000 .2 1123 .04 1340 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 1123 1340 83 83 83 .3 .5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	1.76	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		1947.99	50.32
E.G. Slope (ft/ft)	0.000300	Area (sq ft)		1947.99	50.32
Q Total (cfs)	5470.00	Flow (cfs)		5468.80	1.20
Top Width (ft)	839.96	Top Width (ft)		210.81	629.15
Vel Total (ft/s)	2.74	Avg. Vel. (ft/s)		2.81	0.02
Max Chl Dpth (ft)	15.46	Hydr. Depth (ft)		9.24	0.08
Conv. Total (cfs)	315889.0	Conv. (cfs)		315819.6	69.4
Length Wtd. (ft)	83.00	Wetted Per. (ft)		213.65	629.15
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.17	0.00
Alpha	1.05	Stream Power (lb/ft s)		0.48	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		142.54	0.05
C & E Loss (ft)	0.00	Cum SA (acres)		14.45	0.60

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.43	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2091.69	1373.86
E.G. Slope (ft/ft)	0.000431	Area (sq ft)		2091.69	1373.86
Q Total (cfs)	7396.00	Flow (cfs)		7278.04	117.95
Top Width (ft)	3523.06	Top Width (ft)		215.06	3308.00
Vel Total (ft/s)	2.13	Avg. Vel. (ft/s)		3.48	0.09
Max Chl Dpth (ft)	16.13	Hydr. Depth (ft)		9.73	0.42
Conv. Total (cfs)	356265.8	Conv. (cfs)		350583.8	5681.9
Length Wtd. (ft)	83.00	Wetted Per. (ft)		218.25	3308.00
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.26	0.01
Alpha	2.62	Stream Power (lb/ft s)		0.90	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		147.39	19.10
C & E Loss (ft)	0.00	Cum SA (acres)		14.56	93.14

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	3.02	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2218.42	3462.13
E.G. Slope (ft/ft)	0.000470	Area (sq ft)		2218.42	3462.13
Q Total (cfs)	8914.00	Flow (cfs)		8366.94	547.06
Top Width (ft)	3781.33	Top Width (ft)		215.62	3565.72

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Vel Total (ft/s)	1.57	Avg. Vel. (ft/s)	3.77	0.16
Max Chl Dpth (ft)	16.72	Hydr. Depth (ft)	10.29	0.97
Conv. Total (cfs)	410965.7	Conv. (cfs)	385744.3	25221.4
Length Wtd. (ft)	83.00	Wetted Per. (ft)	219.06	3565.75
Min Ch El (ft)	-13.70	Shear (lb/sq ft)	0.30	0.03
Alpha	5.42	Stream Power (lb/ft s)	1.12	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	151.57	68.57
C & E Loss (ft)	0.02	Cum SA (acres)	14.65	93.93

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	4.09	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2447.96	7255.62
E.G. Slope (ft/ft)	0.000457	Area (sq ft)		2447.96	7255.62
Q Total (cfs)	11522.00	Flow (cfs)		9675.32	1846.68
Top Width (ft)	3793.94	Top Width (ft)		216.61	3577.33
Vel Total (ft/s)	1.19	Avg. Vel. (ft/s)		3.95	0.25
Max Chl Dpth (ft)	17.79	Hydr. Depth (ft)		11.30	2.03
Conv. Total (cfs)	538906.1	Conv. (cfs)		452533.3	86372.8
Length Wtd. (ft)	83.00	Wetted Per. (ft)		220.52	3577.41
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.32	0.06
Alpha	9.31	Stream Power (lb/ft s)		1.25	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		158.95	155.36
C & E Loss (ft)	0.05	Cum SA (acres)		14.78	94.54

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 1.3

INPUT

Description:

Station	Elevation	Data	num=	11					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1012	-3	1026	-4.3	1052	-10.9	1079	-12.8
1142	-10.5	1167	-5.7	1194	-1.1	1202	-.2	1209	.4
1225	11.6								

Manning's n Values	num=	3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1000	.04	1225	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1000	1225		34.1	34.1		.3	.5

Ineffective Flow	num=	2			
Sta L	Sta R	Elev	Permanent		
1000	1000	16.8	F		
1225	1225	15.3	F		

CROSS SECTION OUTPUT Profile #PF 1

		LPGA Tomoka River		EC-RAS Report _ CEM
		Left OB	Channel	Right OB
E.G. Elev (ft)	1.86			
Vel Head (ft)	0.13		0.040	
W.S. Elev (ft)	1.73	1.00	1.00	1.00
Crit W.S. (ft)	-7.00			
E.G. Slope (ft/ft)	0.000293		1926.67	
Q Total (cfs)	5470.00		1926.67	
Top Width (ft)	200.63		5470.00	
Vel Total (ft/s)	2.84		200.63	
Max Chl Dpth (ft)	14.53		2.84	
Conv. Total (cfs)	319362.9		9.60	
Length Wtd. (ft)	1.00		319362.9	
Min Ch El (ft)	-12.80		204.41	
Alpha	1.00		0.17	
Frctn Loss (ft)			Stream Power (lb/ft s)	
C & E Loss (ft)			Cum Volume (acre-ft)	
			138.84	
			Cum SA (acres)	
			14.06	

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

CROSS SECTION OUTPUT Profile #PF 2

		Left OB	Channel	Right OB
E.G. Elev (ft)	2.58			
Vel Head (ft)	0.20		0.040	
W.S. Elev (ft)	2.38	1.00	1.00	1.00
Crit W.S. (ft)	-6.04			
E.G. Slope (ft/ft)	0.000437		2056.88	
Q Total (cfs)	7396.00		2056.88	
Top Width (ft)	202.11		7396.00	
Vel Total (ft/s)	3.60		202.11	
Max Chl Dpth (ft)	15.18		3.60	
Conv. Total (cfs)	353864.0		10.18	
Length Wtd. (ft)	1.00		353864.0	
Min Ch El (ft)	-12.80		206.38	
Alpha	1.00		0.27	
Frctn Loss (ft)			Stream Power (lb/ft s)	
C & E Loss (ft)			Cum Volume (acre-ft)	
			143.44	17.79
			14.16	89.99
			Cum SA (acres)	

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

CROSS SECTION OUTPUT Profile #PF 3

		Left OB	Channel	Right OB
E.G. Elev (ft)	3.17			
Vel Head (ft)	0.26		0.040	
W.S. Elev (ft)	2.91	1.00	1.00	1.00
Crit W.S. (ft)	-5.37			
E.G. Slope (ft/ft)	0.000541		2164.30	
Q Total (cfs)	8914.00		2164.30	
Top Width (ft)	203.31		8914.00	
Vel Total (ft/s)	4.12		203.31	
Max Chl Dpth (ft)	15.71		4.12	
Conv. Total (cfs)	383194.4		10.65	
Length Wtd. (ft)	1.00		383194.4	
Min Ch El (ft)	-12.80		208.00	
Alpha	1.00		0.35	
Frctn Loss (ft)			Stream Power (lb/ft s)	
			Cum Volume (acre-ft)	
			147.40	65.27
			Cum SA (acres)	

C & E Loss (ft)

Cum SA (acres)

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14.25

90.53

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.		0.040	
W.S. Elev (ft)	3.82	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.32	Flow Area (sq ft)		2350.29	
E.G. Slope (ft/ft)	0.000699	Area (sq ft)		2350.29	
Q Total (cfs)	11522.00	Flow (cfs)		11522.00	
Top Width (ft)	205.39	Top Width (ft)		205.39	
Vel Total (ft/s)	4.90	Avg. Vel. (ft/s)		4.90	
Max Chl Dpth (ft)	16.62	Hydr. Depth (ft)		11.44	
Conv. Total (cfs)	435757.2	Conv. (cfs)		435757.2	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		210.78	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		2.39	
Frctn Loss (ft)		Cum Volume (acre-ft)		154.38	148.45
C & E Loss (ft)		Cum SA (acres)		14.38	91.13

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

BRIDGE

RIVER: RIVER-1

REACH: Reach-1

RS: 1.25

INPUT

Description: Bridge #1

Distance from Upstream XS = 1

Deck/Roadway Width = 33

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 3

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000		16.8		13.8	1114		16.6		13.6	1225		15.3		12.3

Upstream Bridge Cross Section Data

Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1012	-.3	1026	-4.3	1052	-10.9	1079	-12.8
1142	-10.5	1167	-5.7	1194	-1.1	1202	-.2	1209	.4
1225	11.6								

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1000	.04	1225	.2

Bank Sta: Left Right Coeff Contr. Expan.

1000	1225	.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
1000	1000	16.8 F
1225	1225	15.3 F

Downstream Deck/Roadway Coordinates

num=	3							
Sta Hi	Cord Lo	Cord	Sta Hi	Cord Lo	Cord	Sta Hi	Cord Lo	Cord
1000	16.8	13.8	1114	16.6	13.6	1225	15.3	12.3

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1009	3.1	1011	.1	1031	-4.7	1057	-10
1084	-13.2	1120	-10.8	1148	-11	1172	-5.8	1197	-1.1
1209	.1	1209.5	6	1225	11.6				

Manning's n Values

num=	3				
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1000	.04	1225	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1000	1225		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
1000	1000	14.45 F
1225	1225	13.9 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 16.6
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1112.5	Downstream=	1112.5
Upstream	num=	2		
Width	Elev	Width	Elev	
10.5	-12.8	10.5	13.6	
Downstream	num=	2		
Width	Elev	Width	Elev	
10.5	-13.2	10.5	13.6	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell	KVal =	1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow	
Submerged Inlet Cd	=

Submerged Inlet + Outlet Cd =.7905694
 Max Low Cord = 13.6

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	1.86	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	1.73	E.G. Elev (ft)	1.87	1.87
Q Total (cfs)	5470.00	W.S. Elev (ft)	1.72	1.72
Q Bridge (cfs)	5470.00	Crit W.S. (ft)	-6.66	-6.55
Q Weir (cfs)		Max Chl Dpth (ft)	14.52	14.92
Weir Sta Lft (ft)		Vel Total (ft/s)	3.06	3.06
Weir Sta Rgt (ft)		Flow Area (sq ft)	1784.80	1786.28
Weir Submerg		Froude # Chl	0.18	0.18
Weir Max Depth (ft)		Specif Force (cu ft)	10668.08	10589.37
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	9.39	9.47
Min El Prs (ft)	13.60	W.P. Total (ft)	220.46	219.52
Delta EG (ft)	0.01	Conv. Total (cfs)	267320.2	268454.9
Delta WS (ft)	0.01	Top Width (ft)	190.11	188.72
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.06	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.21	0.21
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.65	0.65

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	2.58	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2.38	E.G. Elev (ft)	2.59	2.59
Q Total (cfs)	7396.00	W.S. Elev (ft)	2.36	2.36
Q Bridge (cfs)	7396.00	Crit W.S. (ft)	-5.66	-5.56
Q Weir (cfs)		Max Chl Dpth (ft)	15.16	15.56
Weir Sta Lft (ft)		Vel Total (ft/s)	3.88	3.88
Weir Sta Rgt (ft)		Flow Area (sq ft)	1906.58	1906.87
Weir Submerg		Froude # Chl	0.22	0.22
Weir Max Depth (ft)		Specif Force (cu ft)	12216.54	12138.72
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	9.95	10.08
Min El Prs (ft)	13.60	W.P. Total (ft)	223.69	222.20
Delta EG (ft)	0.02	Conv. Total (cfs)	295529.1	296917.9
Delta WS (ft)	0.02	Top Width (ft)	191.56	189.20
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.88	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.33	0.33
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.29	1.29

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	3.17	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2.91	E.G. Elev (ft)	3.19	3.19
Q Total (cfs)	8914.00	W.S. Elev (ft)	2.88	2.88
Q Bridge (cfs)	8914.00	Crit W.S. (ft)	-4.95	-4.86
Q Weir (cfs)		Max Chl Dpth (ft)	15.68	16.08
Weir Sta Lft (ft)		Vel Total (ft/s)	4.44	4.44
Weir Sta Rgt (ft)		Flow Area (sq ft)	2006.90	2005.74
Weir Submerg		Froude # Chl	0.24	0.24
Weir Max Depth (ft)		Specif Force (cu ft)	13576.93	13499.75
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	10.41	10.58
Min El Prs (ft)	13.60	W.P. Total (ft)	226.33	224.40
Delta EG (ft)	0.03	Conv. Total (cfs)	319389.6	320909.4
Delta WS (ft)	0.03	Top Width (ft)	192.75	189.59
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.44	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.43	0.43
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.92	1.91

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	4.19	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	3.82	E.G. Elev (ft)	4.21	4.21
Q Total (cfs)	11522.00	W.S. Elev (ft)	3.78	3.78
Q Bridge (cfs)	11522.00	Crit W.S. (ft)	-3.86	-3.79
Q Weir (cfs)		Max Chl Dpth (ft)	16.58	16.98
Weir Sta Lft (ft)		Vel Total (ft/s)	5.28	5.30
Weir Sta Rgt (ft)		Flow Area (sq ft)	2180.32	2175.76
Weir Submerg		Froude # Chl	0.28	0.28
Weir Max Depth (ft)		Specif Force (cu ft)	16112.39	16035.98
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	11.19	11.43
Min El Prs (ft)	13.60	W.P. Total (ft)	230.85	228.23
Delta EG (ft)	0.04	Conv. Total (cfs)	361891.8	363386.0
Delta WS (ft)	0.04	Top Width (ft)	194.79	190.38
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.30	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.60	0.60
BR Sel Method	Yarnell	Power Total (lb/ft s)	3.16	3.17

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 1.2

INPUT

Description: very wide flood plain, distance criteria very large

* 001

Station Elevation Data		num=		13	
Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1009	3.1	1011	.1
1084	-13.2	1120	-10.8	1148	-11
1209	.1	1209.5	6	1225	11.6

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1000	.04	1225	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1000	1225		112	112		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1000	1000	14.45	F		
1225	1225	13.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.040	
W.S. Elev (ft)	1.72	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-6.87	Flow Area (sq ft)		1923.00	
E.G. Slope (ft/ft)	0.000294	Area (sq ft)		1923.00	
Q Total (cfs)	5470.00	Flow (cfs)		5470.00	
Top Width (ft)	199.22	Top Width (ft)		199.22	
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)		2.84	
Max Chl Dpth (ft)	14.92	Hydr. Depth (ft)		9.65	
Conv. Total (cfs)	318770.9	Conv. (cfs)		318770.9	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		204.00	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.49	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		137.45	
C & E Loss (ft)	0.00	Cum SA (acres)		13.91	

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.36	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-5.92	Flow Area (sq ft)		2050.28	
E.G. Slope (ft/ft)	0.000439	Area (sq ft)		2050.28	
Q Total (cfs)	7396.00	Flow (cfs)		7396.00	
Top Width (ft)	199.70	Top Width (ft)		199.70	
Vel Total (ft/s)	3.61	Avg. Vel. (ft/s)		3.61	
Max Chl Dpth (ft)	15.56	Hydr. Depth (ft)		10.27	
Conv. Total (cfs)	353084.9	Conv. (cfs)		353084.9	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		205.41	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.27	

Alpha	1.00	Stream Power (lb/ft s)	LPGA Tomoka River	EC-RAS Report _ CEM
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	0.99	
C & E Loss (ft)	0.00	Cum SA (acres)	141.94	17.79
			14.01	89.99

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	3.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.88	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-5.25	Flow Area (sq ft)		2154.64	
E.G. Slope (ft/ft)	0.000544	Area (sq ft)		2154.64	
Q Total (cfs)	8914.00	Flow (cfs)		8914.00	
Top Width (ft)	200.09	Top Width (ft)		200.09	
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)		4.14	
Max Chl Dpth (ft)	16.08	Hydr. Depth (ft)		10.77	
Conv. Total (cfs)	382117.8	Conv. (cfs)		382117.8	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		206.56	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.35	
Alpha	1.00	Stream Power (lb/ft s)		1.47	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)		145.82	65.27
C & E Loss (ft)	0.00	Cum SA (acres)		14.10	90.53

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.040	
W.S. Elev (ft)	3.78	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-4.23	Flow Area (sq ft)		2334.05	
E.G. Slope (ft/ft)	0.000706	Area (sq ft)		2334.05	
Q Total (cfs)	11522.00	Flow (cfs)		11522.00	
Top Width (ft)	200.88	Top Width (ft)		200.88	
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)		4.94	
Max Chl Dpth (ft)	16.98	Hydr. Depth (ft)		11.62	
Conv. Total (cfs)	433748.1	Conv. (cfs)		433748.1	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		208.60	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		2.43	
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)		152.67	148.45
C & E Loss (ft)	0.04	Cum SA (acres)		14.23	91.13

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.1

INPUT

Description: old dixie highway

* 001

Station Elevation Data		num=		13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	14.2	1119	10	1144	8.8	1178	5.1	1226	-10.9
1266	-15.8	1313	-9.8	1370	.4	1374	3.4	1403	2.3
1422	2.1	3770	2.1	3776	10				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1178	.04	1374	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1178	1374		3200	3200		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.040	
W.S. Elev (ft)	1.68	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		1884.13	
E.G. Slope (ft/ft)	0.000282	Area (sq ft)		1884.13	
Q Total (cfs)	5470.00	Flow (cfs)		5470.00	
Top Width (ft)	183.45	Top Width (ft)		183.45	
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)		2.90	
Max Chl Dpth (ft)	17.48	Hydr. Depth (ft)		10.27	
Conv. Total (cfs)	325918.2	Conv. (cfs)		325918.2	
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		187.51	
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.18	
Alpha	1.00	Stream Power (lb/ft s)		0.51	
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)		132.55	
C & E Loss (ft)	0.00	Cum SA (acres)		13.41	

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	2.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.30	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		1998.19	467.94
E.G. Slope (ft/ft)	0.000429	Area (sq ft)		1998.19	467.94
Q Total (cfs)	7396.00	Flow (cfs)		7371.55	24.45
Top Width (ft)	2553.13	Top Width (ft)		186.13	2367.01
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)		3.69	0.05
Max Chl Dpth (ft)	18.10	Hydr. Depth (ft)		10.74	0.20
Conv. Total (cfs)	356880.1	Conv. (cfs)		355700.3	1179.8
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		190.49	2367.11
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.28	0.01
Alpha	1.51	Stream Power (lb/ft s)		1.04	0.00
Frctn Loss (ft)	1.42	Cum Volume (acre-ft)		136.74	17.19
C & E Loss (ft)	0.01	Cum SA (acres)		13.51	86.94

Warning: Divided flow computed for this cross-section.

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

the need for additional cross sections.

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	3.08				
Vel Head (ft)	0.26	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.82	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2096.70	1716.91
E.G. Slope (ft/ft)	0.000516	Area (sq ft)		2096.70	1716.91
Q Total (cfs)	8914.00	Flow (cfs)		8680.96	233.04
Top Width (ft)	2569.79	Top Width (ft)		188.41	2381.38
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)		4.14	0.14
Max Chl Dpth (ft)	18.62	Hydr. Depth (ft)		11.13	0.72
Conv. Total (cfs)	392271.8	Conv. (cfs)		382016.5	10255.3
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		193.03	2381.75
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.35	0.02
Alpha	3.06	Stream Power (lb/ft s)		1.45	0.00
Frctn Loss (ft)	1.86	Cum Volume (acre-ft)		140.36	63.06
C & E Loss (ft)	0.01	Cum SA (acres)		13.60	87.47

Warning: Divided flow computed for this cross-section.

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

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	4.05				
Vel Head (ft)	0.31	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	3.74	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2270.76	3904.91
E.G. Slope (ft/ft)	0.000599	Area (sq ft)		2270.76	3904.91
Q Total (cfs)	11522.00	Flow (cfs)		10539.21	982.79
Top Width (ft)	2589.16	Top Width (ft)		191.92	2397.25
Vel Total (ft/s)	1.87	Avg. Vel. (ft/s)		4.64	0.25
Max Chl Dpth (ft)	19.54	Hydr. Depth (ft)		11.83	1.63
Conv. Total (cfs)	470769.5	Conv. (cfs)		430614.3	40155.2
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		196.88	2398.08
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.43	0.06
Alpha	5.66	Stream Power (lb/ft s)		2.00	0.02
Frctn Loss (ft)	2.53	Cum Volume (acre-ft)		146.75	143.43
C & E Loss (ft)	0.04	Cum SA (acres)		13.73	88.05

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 1

INPUT

Description: very wide flood plains most of the length of the river, distance
criteria * 001

not met in most cases,

* 001

*

001

mouth AT TOMOKA BASIN

* 001

Station Elevation Data		num=		13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	14.2	1119	10	1144	8.8	1178	5.1	1226	-10.9
1266	-15.8	1313	-9.8	1370	.4	1374	1	1403	1.3
1422	1.1	6160	1.1	6176	10				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1178	.033	1374	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1178	1374		0	0		.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	0.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.033	
W.S. Elev (ft)	0.80	Reach Len. (ft)			
Crit W.S. (ft)	-8.00	Flow Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.000253	Area (sq ft)		1724.57	
Q Total (cfs)	5465.00	Flow (cfs)		5465.00	
Top Width (ft)	181.77	Top Width (ft)		181.77	
Vel Total (ft/s)	3.17	Avg. Vel. (ft/s)		3.17	
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)		9.49	
Conv. Total (cfs)	343606.7	Conv. (cfs)		343606.7	
Length Wtd. (ft)		Wetted Per. (ft)		185.28	
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.47	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.033	
W.S. Elev (ft)	0.80	Reach Len. (ft)			
Crit W.S. (ft)	-6.96	Flow Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.000458	Area (sq ft)		1724.57	
Q Total (cfs)	7356.00	Flow (cfs)		7356.00	
Top Width (ft)	181.77	Top Width (ft)		181.77	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)		4.27	
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)		9.49	
Conv. Total (cfs)	343606.7	Conv. (cfs)		343606.7	
Length Wtd. (ft)		Wetted Per. (ft)		185.28	
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		1.14	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	1.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.033	
W.S. Elev (ft)	0.80	Reach Len. (ft)			
Crit W.S. (ft)	-6.22	Flow Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.000662	Area (sq ft)		1724.57	
Q Total (cfs)	8839.00	Flow (cfs)		8839.00	
Top Width (ft)	181.77	Top Width (ft)		181.77	
Vel Total (ft/s)	5.13	Avg. Vel. (ft/s)		5.13	
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)		9.49	
Conv. Total (cfs)	343606.7	Conv. (cfs)		343606.7	
Length Wtd. (ft)		Wetted Per. (ft)		185.28	
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.38	
Alpha	1.00	Stream Power (lb/ft s)		1.97	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	1.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.		0.033	
W.S. Elev (ft)	0.80	Reach Len. (ft)			
Crit W.S. (ft)	-5.11	Flow Area (sq ft)		1724.57	
E.G. Slope (ft/ft)	0.001097	Area (sq ft)		1724.57	
Q Total (cfs)	11383.00	Flow (cfs)		11383.00	
Top Width (ft)	181.77	Top Width (ft)		181.77	
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)		6.60	
Max Chl Dpth (ft)	16.60	Hydr. Depth (ft)		9.49	
Conv. Total (cfs)	343606.7	Conv. (cfs)		343606.7	
Length Wtd. (ft)		Wetted Per. (ft)		185.28	
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.64	
Alpha	1.00	Stream Power (lb/ft s)		4.21	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:RIVER-1

Reach	River Sta.	n1	n2	n3
Reach-1	29	.15	.04	.15
Reach-1	28	.15	.04	.15
Reach-1	27	.15	.04	.15
Reach-1	26.4	.15	.04	.15
Reach-1	26.3	.15	.04	.15
Reach-1	26.25	Bridge		
Reach-1	26.2	.15	.04	.15
Reach-1	26.1	.15	.04	.15

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Reach-1	25.3	.2	.04	.2
Reach-1	25.2	.18	.04	.18
Reach-1	25.1	.17	.04	.17
Reach-1	25	.15	.04	.15
Reach-1	24	.15	.04	.15
Reach-1	23	.15	.04	.15
Reach-1	22	.15	.04	.15
Reach-1	21	.16	.04	.16
Reach-1	20	.2	.04	.2
Reach-1	19.4	.17	.04	.17
Reach-1	19.35	.17	.04	.17
Reach-1	19.25	Bridge		
Reach-1	19.15	.17	.04	.17
Reach-1	19.1	.17	.04	.17
Reach-1	18.2	.2	.04	.2
Reach-1	18.1	.2	.04	.2
Reach-1	18	.2	.04	.2
Reach-1	17	.2	.04	.2
Reach-1	16	.2	.04	.2
Reach-1	15	.2	.04	.2
Reach-1	14.4	.2	.04	.2
Reach-1	14.1	.2	.04	.2
Reach-1	13.4	.2	.04	.2
Reach-1	13.3	.2	.04	.2
Reach-1	13.25	Bridge		
Reach-1	13.2	.2	.04	.2
Reach-1	13.1	.2	.04	.2
Reach-1	12.1	.2	.04	.2
Reach-1	12	.2	.04	.2
Reach-1	11.4	.2	.04	.2
Reach-1	11.3	.2	.04	.2
Reach-1	11.25	Bridge		
Reach-1	11.2	.2	.04	.2
Reach-1	11.1	.2	.04	.2
Reach-1	10	.2	.04	.2
Reach-1	9	.2	.04	.2
Reach-1	8	.2	.04	.2
Reach-1	7	.2	.04	.2
Reach-1	6.4	.2	.04	.2
Reach-1	6.3	.2	.04	.2
Reach-1	6.25	Bridge		
Reach-1	6.2	.2	.04	.2
Reach-1	6.1	.2	.04	.2
Reach-1	5.4	.2	.04	.2
Reach-1	5.3	.2	.04	.2
Reach-1	5.25	Bridge		
Reach-1	5.2	.2	.04	.2
Reach-1	5.1	.2	.04	.2
Reach-1	4	.2	.04	.2
Reach-1	3	.2	.04	.2
Reach-1	2	.2	.04	.2
Reach-1	1.4	.2	.04	.2
Reach-1	1.3	.2	.04	.2
Reach-1	1.25	Bridge		
Reach-1	1.2	.2	.04	.2
Reach-1	1.1	.2	.04	.2

Reach-1	1	.2	.033	.2

SUMMARY OF REACH LENGTHS

River: RIVER-1

Reach	River Sta.	Left	Channel	Right
Reach-1	29	1398	1398	1398
Reach-1	28	1424	1424	1424
Reach-1	27	1912	1912	1912
Reach-1	26.4	350	350	350
Reach-1	26.3	96.1	96.1	96.1
Reach-1	26.25	Bridge		
Reach-1	26.2	181	181	181
Reach-1	26.1	500	500	500
Reach-1	25.3	830	830	830
Reach-1	25.2	1000	1000	1000
Reach-1	25.1	1744	1744	1744
Reach-1	25	3391	3391	3391
Reach-1	24	1839	1839	1839
Reach-1	23	3151	3151	3151
Reach-1	22	2497	2497	2497
Reach-1	21	2919	2919	2919
Reach-1	20	2903	2903	2903
Reach-1	19.4	240	240	240
Reach-1	19.35	146	146	146
Reach-1	19.25	Bridge		
Reach-1	19.15	238	238	238
Reach-1	19.1	708	708	708
Reach-1	18.2	500	500	500
Reach-1	18.1	1378	1378	1378
Reach-1	18	2064	2064	2064
Reach-1	17	3218	3218	3218
Reach-1	16	2257	2257	2257
Reach-1	15	2800	2800	2800
Reach-1	14.4	67	67	67
Reach-1	14.1	2673	2673	2673
Reach-1	13.4	225	225	225
Reach-1	13.3	43.1	43.1	43.1
Reach-1	13.25	Bridge		
Reach-1	13.2	225	225	225
Reach-1	13.1	935	935	935
Reach-1	12.1	500	500	500
Reach-1	12	1698	1698	1698
Reach-1	11.4	360	360	360
Reach-1	11.3	174.1	174.1	174.1
Reach-1	11.25	Bridge		
Reach-1	11.2	360	360	360
Reach-1	11.1	4378	4378	4378
Reach-1	10	3146	3146	3146
Reach-1	9	4432	4432	4432
Reach-1	8	4924	4924	4924

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Reach-1	7	2187	2187	2187
Reach-1	6.4	68	68	68
Reach-1	6.3	22.1	22.1	22.1
Reach-1	6.25	Bridge		
Reach-1	6.2	74	74	74
Reach-1	6.1	375	375	375
Reach-1	5.4	89	89	89
Reach-1	5.3	102.1	102.1	102.1
Reach-1	5.25	Bridge		
Reach-1	5.2	187	187	187
Reach-1	5.1	2603	2603	2603
Reach-1	4	5815	5815	5815
Reach-1	3	6791	6791	6791
Reach-1	2	4000	4000	4000
Reach-1	1.4	83	83	83
Reach-1	1.3	34.1	34.1	34.1
Reach-1	1.25	Bridge		
Reach-1	1.2	112	112	112
Reach-1	1.1	3200	3200	3200
Reach-1	1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: RIVER-1

Reach	River Sta.	Contr.	Expan.
Reach-1	29	.1	.3
Reach-1	28	.1	.3
Reach-1	27	.1	.3
Reach-1	26.4	.3	.5
Reach-1	26.3	.3	.5
Reach-1	26.25	Bridge	
Reach-1	26.2	.3	.5
Reach-1	26.1	.1	.3
Reach-1	25.3	.1	.3
Reach-1	25.2	.1	.3
Reach-1	25.1	.1	.3
Reach-1	25	.1	.3
Reach-1	24	.1	.3
Reach-1	23	.1	.3
Reach-1	22	.1	.3
Reach-1	21	.1	.3
Reach-1	20	.1	.3
Reach-1	19.4	.3	.5
Reach-1	19.35	.3	.5
Reach-1	19.25	Bridge	
Reach-1	19.15	.3	.5
Reach-1	19.1	.1	.3
Reach-1	18.2	.1	.3
Reach-1	18.1	.1	.3
Reach-1	18	.1	.3
Reach-1	17	.1	.3

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Reach-1	16	.1	.3
Reach-1	15	.1	.3
Reach-1	14.4	.1	.3
Reach-1	14.1	.1	.3
Reach-1	13.4	.3	.5
Reach-1	13.3	.3	.5
Reach-1	13.25	Bridge	
Reach-1	13.2	.3	.5
Reach-1	13.1	.1	.3
Reach-1	12.1	.1	.3
Reach-1	12	.1	.3
Reach-1	11.4	.3	.5
Reach-1	11.3	.3	.5
Reach-1	11.25	Bridge	
Reach-1	11.2	.3	.5
Reach-1	11.1	.1	.3
Reach-1	10	.1	.3
Reach-1	9	.1	.3
Reach-1	8	.1	.3
Reach-1	7	.1	.3
Reach-1	6.4	.3	.5
Reach-1	6.3	.3	.5
Reach-1	6.25	Bridge	
Reach-1	6.2	.3	.5
Reach-1	6.1	.1	.3
Reach-1	5.4	.3	.5
Reach-1	5.3	.3	.5
Reach-1	5.25	Bridge	
Reach-1	5.2	.3	.5
Reach-1	5.1	.1	.3
Reach-1	4	.1	.3
Reach-1	3	.1	.3
Reach-1	2	.1	.3
Reach-1	1.4	.3	.5
Reach-1	1.3	.3	.5
Reach-1	1.25	Bridge	
Reach-1	1.2	.3	.5
Reach-1	1.1	.1	.3
Reach-1	1	.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Ch1
Reach-1	29	PF 1	477.00	21.00	24.23		24.24	0.000010	0.25	2710.32	1285.94	0.02
Reach-1	29	PF 2	643.00	21.00	25.06		25.06	0.000008	0.26	4089.41	2022.87	0.02
Reach-1	29	PF 3	753.00	21.00	25.57		25.57	0.000007	0.26	5173.88	2200.56	0.02
Reach-1	29	PF 4	931.00	21.00	26.25		26.25	0.000006	0.26	6718.28	2348.00	0.02
Reach-1	28	PF 1	1203.00	20.00	24.18		24.19	0.000068	0.73	2400.17	1451.30	0.07
Reach-1	28	PF 2	1616.00	20.00	25.02		25.02	0.000055	0.75	3903.12	2149.98	0.06
Reach-1	28	PF 3	1885.00	20.00	25.54		25.54	0.000048	0.76	5121.23	2544.40	0.06
Reach-1	28	PF 4	2324.00	20.00	26.21		26.22	0.000042	0.77	6995.42	2897.00	0.06

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Reach-1	27	PF 1	928.00	19.70	24.13		24.14	0.000020	0.45	3897.76	1519.58	0.04
Reach-1	27	PF 2	1268.00	19.70	24.97		24.98	0.000020	0.50	5489.83	2276.93	0.04
Reach-1	27	PF 3	1494.00	19.70	25.50		25.50	0.000019	0.52	6768.10	2602.37	0.04
Reach-1	27	PF 4	1866.00	19.70	26.17		26.18	0.000018	0.54	8663.79	2908.00	0.04
Reach-1	26.4	PF 1	928.00	17.60	24.10		24.10	0.000017	0.49	4293.64	1649.24	0.04
Reach-1	26.4	PF 2	1268.00	17.60	24.94		24.94	0.000017	0.54	5779.90	1896.54	0.04
Reach-1	26.4	PF 3	1494.00	17.60	25.46		25.47	0.000017	0.57	6805.16	2008.65	0.04
Reach-1	26.4	PF 4	1866.00	17.60	26.14		26.14	0.000018	0.61	8208.81	2100.00	0.04
Reach-1	26.3	PF 1	928.00	17.60	24.07	19.60	24.09	0.000088	1.01	921.10	186.49	0.08
Reach-1	26.3	PF 2	1268.00	17.60	24.90	19.86	24.92	0.000101	1.18	1078.17	402.30	0.09
Reach-1	26.3	PF 3	1494.00	17.60	25.42	20.01	25.45	0.000105	1.27	1177.55	1182.57	0.09
Reach-1	26.3	PF 4	1866.00	17.60	26.10	20.24	26.13	0.000102	1.34	2647.89	2050.00	0.09
Reach-1	26.25		Bridge									
Reach-1	26.2	PF 1	928.00	16.60	24.05	19.46	24.07	0.000101	1.07	869.28	177.32	0.09
Reach-1	26.2	PF 2	1268.00	16.60	24.85	19.84	24.88	0.000116	1.25	1012.88	180.16	0.09
Reach-1	26.2	PF 3	1494.00	16.60	25.35	20.14	25.38	0.000123	1.35	1102.67	181.92	0.10
Reach-1	26.2	PF 4	1866.00	16.60	26.08	20.40	26.12	0.000126	1.48	1912.32	2119.64	0.10
Reach-1	26.1	PF 1	928.00	16.00	24.00		24.03	0.000315	2.06	2270.75	1560.21	0.15
Reach-1	26.1	PF 2	1268.00	16.00	24.82		24.85	0.000236	1.96	4045.48	2742.07	0.14
Reach-1	26.1	PF 3	1494.00	16.00	25.33		25.34	0.000190	1.85	5649.70	3717.54	0.12
Reach-1	26.1	PF 4	1866.00	16.00	26.07		26.08	0.000119	1.56	8992.97	5040.96	0.10
Reach-1	25.3	PF 1	2554.00	18.00	23.56		23.70	0.000918	3.42	3001.74	2327.40	0.26
Reach-1	25.3	PF 2	3468.00	18.00	24.49		24.60	0.000680	3.28	5444.95	2944.63	0.23
Reach-1	25.3	PF 3	4074.00	18.00	25.06		25.14	0.000551	3.13	7187.23	3277.99	0.21
Reach-1	25.3	PF 4	5071.00	18.00	25.87		25.94	0.000443	3.02	10373.66	4608.14	0.19
Reach-1	25.2	PF 1	2554.00	16.00	23.09		23.17	0.000442	2.77	3847.83	1866.16	0.19
Reach-1	25.2	PF 2	3468.00	16.00	24.12		24.18	0.000364	2.77	5882.16	2110.18	0.18
Reach-1	25.2	PF 3	4074.00	16.00	24.72		24.79	0.000335	2.79	7234.37	2350.83	0.17
Reach-1	25.2	PF 4	5071.00	16.00	25.57		25.63	0.000311	2.87	9430.77	2930.97	0.17
Reach-1	25.1	PF 1	2554.00	15.00	22.85		22.89	0.000181	1.90	4247.95	1528.53	0.12
Reach-1	25.1	PF 2	3468.00	15.00	23.89		23.93	0.000179	2.06	6150.16	1931.81	0.13
Reach-1	25.1	PF 3	4074.00	15.00	24.50		24.55	0.000174	2.13	7384.15	2090.40	0.12
Reach-1	25.1	PF 4	5071.00	15.00	25.36		25.40	0.000167	2.22	9259.35	2235.00	0.12
Reach-1	25	PF 1	2633.00	12.60	22.31		22.38	0.000518	3.47	3962.86	1414.60	0.21
Reach-1	25	PF 2	3556.00	12.60	23.39		23.45	0.000463	3.56	5650.32	1766.47	0.20
Reach-1	25	PF 3	4167.00	12.60	24.03		24.09	0.000431	3.58	6875.33	2040.66	0.20
Reach-1	25	PF 4	5170.00	12.60	24.93		24.98	0.000371	3.52	8839.81	2316.58	0.19
Reach-1	24	PF 1	2728.00	13.00	20.71		20.78	0.000434	2.80	2834.30	578.07	0.19
Reach-1	24	PF 2	3675.00	13.00	21.79		21.88	0.000465	3.19	3495.73	648.04	0.20
Reach-1	24	PF 3	4302.00	13.00	22.45		22.54	0.000476	3.41	3937.62	695.15	0.20
Reach-1	24	PF 4	5332.00	13.00	23.43		23.54	0.000483	3.69	4651.99	756.12	0.21
Reach-1	23	PF 1	2710.00	6.60	19.46		19.66	0.000894	4.65	2439.35	917.89	0.26
Reach-1	23	PF 2	3649.00	6.60	20.65		20.81	0.000738	4.57	3699.00	1126.12	0.24
Reach-1	23	PF 3	4271.00	6.60	21.41		21.54	0.000625	4.40	4578.87	1178.46	0.23
Reach-1	23	PF 4	5289.00	6.60	22.51		22.61	0.000524	4.28	5911.43	1260.05	0.21

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Reach-1	22	PF 1	2903.00	7.50	17.53		17.58	0.000497	3.32	3604.44	704.17	0.20
Reach-1	22	PF 2	3893.00	7.50	18.92		18.97	0.000463	3.55	4642.50	793.27	0.20
Reach-1	22	PF 3	4553.00	7.50	19.76		19.82	0.000475	3.81	5348.00	924.37	0.21
Reach-1	22	PF 4	5634.00	7.50	21.04		21.10	0.000437	3.94	6635.55	1059.00	0.20
Reach-1	21	PF 1	2903.00	6.80	16.71		16.73	0.000240	2.58	5186.70	826.28	0.15
Reach-1	21	PF 2	3893.00	6.80	18.12		18.15	0.000245	2.86	6404.39	905.23	0.15
Reach-1	21	PF 3	4553.00	6.80	18.94		18.97	0.000249	3.02	7167.99	956.75	0.16
Reach-1	21	PF 4	5634.00	6.80	20.26		20.28	0.000247	3.23	8486.72	1044.15	0.16
Reach-1	20	PF 1	3219.00	4.00	15.79		15.88	0.000354	3.37	4666.45	862.39	0.18
Reach-1	20	PF 2	4361.00	4.00	17.13		17.23	0.000396	3.85	5961.37	1093.21	0.19
Reach-1	20	PF 3	5122.00	4.00	17.94		18.04	0.000397	4.02	6874.88	1169.12	0.20
Reach-1	20	PF 4	6374.00	4.00	19.28		19.39	0.000375	4.17	8546.78	1312.56	0.19
Reach-1	19.4	PF 1	3520.00	3.70	13.84		14.09	0.001183	4.98	2426.65	730.39	0.31
Reach-1	19.4	PF 2	4786.00	3.70	15.26		15.48	0.000955	5.00	3521.43	802.37	0.29
Reach-1	19.4	PF 3	5628.00	3.70	16.17		16.38	0.000845	5.01	4273.68	859.07	0.28
Reach-1	19.4	PF 4	7015.00	3.70	17.72		17.91	0.000694	4.99	5732.87	1014.98	0.26
Reach-1	19.35	PF 1	3520.00	3.44	13.81	8.97	13.88	0.000267	2.16	1914.12	539.60	0.15
Reach-1	19.35	PF 2	4786.00	3.44	15.22	9.42	15.31	0.000257	2.40	2417.43	587.58	0.15
Reach-1	19.35	PF 3	5628.00	3.44	16.13	9.69	16.22	0.000247	2.52	2742.66	623.99	0.15
Reach-1	19.35	PF 4	7015.00	3.44	17.67	10.11	17.78	0.000222	2.66	3297.85	742.33	0.14
Reach-1	19.25	Bridge										
Reach-1	19.15	PF 1	3520.00	4.82	13.69	9.61	13.79	0.000482	2.58	1623.66	497.93	0.19
Reach-1	19.15	PF 2	4786.00	4.82	15.10	10.15	15.21	0.000414	2.77	2120.65	562.51	0.18
Reach-1	19.15	PF 3	5628.00	4.82	16.01	10.53	16.13	0.000377	2.87	2441.32	607.24	0.18
Reach-1	19.15	PF 4	7015.00	4.82	17.46	11.08	17.59	0.000330	3.00	2953.31	755.41	0.17
Reach-1	19.1	PF 1	3520.00	5.30	13.21		13.53	0.001628	5.15	1654.43	508.16	0.35
Reach-1	19.1	PF 2	4786.00	5.30	14.68		14.99	0.001307	5.28	2432.26	573.29	0.33
Reach-1	19.1	PF 3	5628.00	5.30	15.62		15.93	0.001155	5.33	3003.54	639.83	0.31
Reach-1	19.1	PF 4	7015.00	5.30	17.08		17.40	0.001026	5.55	4067.65	915.87	0.30
Reach-1	18.2	PF 1	3464.00	5.00	12.49		12.70	0.000826	3.92	1767.75	454.37	0.26
Reach-1	18.2	PF 2	4703.00	5.00	14.07		14.30	0.000713	4.17	2568.96	563.47	0.25
Reach-1	18.2	PF 3	5527.00	5.00	15.07		15.30	0.000643	4.26	3160.65	618.92	0.24
Reach-1	18.2	PF 4	6875.00	5.00	16.59		16.84	0.000588	4.49	4265.29	906.13	0.24
Reach-1	18.1	PF 1	3464.00	4.00	12.43		12.48	0.000188	2.04	3475.19	688.38	0.13
Reach-1	18.1	PF 2	4703.00	4.00	14.03		14.09	0.000177	2.23	4642.37	766.17	0.13
Reach-1	18.1	PF 3	5527.00	4.00	15.04		15.11	0.000168	2.33	5443.08	811.63	0.13
Reach-1	18.1	PF 4	6875.00	4.00	16.57		16.65	0.000157	2.46	6733.65	867.25	0.12
Reach-1	18	PF 1	3655.00	1.90	12.04		12.10	0.000420	3.36	5162.42	862.56	0.19
Reach-1	18	PF 2	4971.00	1.90	13.67		13.74	0.000391	3.60	6605.91	911.02	0.19
Reach-1	18	PF 3	5846.00	1.90	14.70		14.77	0.000371	3.73	7566.32	945.64	0.19
Reach-1	18	PF 4	7280.00	1.90	16.26		16.34	0.000348	3.91	9081.10	999.79	0.19
Reach-1	17	PF 1	3613.00	0.30	11.22		11.27	0.000381	3.00	4790.01	721.82	0.18
Reach-1	17	PF 2	4924.00	0.30	12.89		12.96	0.000360	3.28	6025.09	750.66	0.18
Reach-1	17	PF 3	5800.00	0.30	13.94		14.02	0.000362	3.51	6852.24	833.45	0.18

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Reach-1	17	PF 4	7230.00	0.30	15.49		15.59	0.000375	3.90	8211.40	963.18	0.19
Reach-1	16	PF 1	3959.00	-0.70	9.87		9.94	0.000452	3.62	5153.83	724.54	0.20
Reach-1	16	PF 2	5404.00	-0.70	11.59		11.67	0.000448	4.00	6434.48	766.26	0.20
Reach-1	16	PF 3	6368.00	-0.70	12.64		12.72	0.000444	4.22	7254.60	793.08	0.21
Reach-1	16	PF 4	7947.00	-0.70	14.18		14.27	0.000444	4.55	8505.18	834.78	0.21
Reach-1	15	PF 1	4859.00	-4.00	8.85		8.91	0.000454	3.61	6546.06	935.89	0.20
Reach-1	15	PF 2	6631.00	-4.00	10.61		10.68	0.000428	3.89	8209.12	953.74	0.20
Reach-1	15	PF 3	7809.00	-4.00	11.69		11.75	0.000416	4.05	9240.64	968.66	0.20
Reach-1	15	PF 4	9741.00	-4.00	13.23		13.30	0.000411	4.33	10753.75	990.65	0.20
Reach-1	14.4	PF 1	4690.00	-8.40	7.95		8.05	0.000217	2.66	3047.88	595.25	0.14
Reach-1	14.4	PF 2	6420.00	-8.40	9.68		9.81	0.000231	3.03	4156.46	679.93	0.15
Reach-1	14.4	PF 3	7571.00	-8.40	10.71		10.86	0.000247	3.30	4955.45	939.93	0.16
Reach-1	14.4	PF 4	9462.00	-8.40	12.24		12.41	0.000249	3.56	6584.92	1133.58	0.16
Reach-1	14.1	PF 1	4690.00	-5.10	7.97		8.02	0.000202	1.74	2777.14	528.75	0.13
Reach-1	14.1	PF 2	6420.00	-5.10	9.72		9.77	0.000161	1.84	3773.65	606.53	0.12
Reach-1	14.1	PF 3	7571.00	-5.10	10.76		10.82	0.000146	1.91	4517.47	882.92	0.11
Reach-1	14.1	PF 4	9462.00	-5.10	12.31		12.37	0.000129	2.00	6050.34	1066.06	0.11
Reach-1	13.4	PF 1	4521.00	-9.10	7.60		7.66	0.000097	1.98	4402.91	656.09	0.10
Reach-1	13.4	PF 2	6206.00	-9.10	9.34		9.41	0.000112	2.32	5603.18	723.67	0.11
Reach-1	13.4	PF 3	7332.00	-9.10	10.38		10.46	0.000120	2.51	6375.80	762.27	0.11
Reach-1	13.4	PF 4	9185.00	-9.10	11.91		12.02	0.000131	2.80	7589.64	819.25	0.12
Reach-1	13.3	PF 1	4521.00	-9.10	7.60	-3.57	7.63	0.000044	1.25	3607.44	332.22	0.06
Reach-1	13.3	PF 2	6206.00	-9.10	9.34	-2.83	9.38	0.000052	1.50	4147.96	337.97	0.07
Reach-1	13.3	PF 3	7332.00	-9.10	10.38	-2.19	10.42	0.000056	1.64	4471.61	341.42	0.08
Reach-1	13.3	PF 4	9185.00	-9.10	11.92	-1.58	11.97	0.000063	1.86	4949.29	346.50	0.08
Reach-1	13.25	Bridge										
Reach-1	13.2	PF 1	4521.00	-8.60	7.59	-3.06	7.62	0.000072	1.45	3108.11	329.18	0.08
Reach-1	13.2	PF 2	6206.00	-8.60	9.32	-2.03	9.37	0.000079	1.70	3647.48	335.57	0.09
Reach-1	13.2	PF 3	7332.00	-8.60	10.36	-1.45	10.41	0.000083	1.85	3970.43	339.39	0.09
Reach-1	13.2	PF 4	9185.00	-8.60	11.89	-0.64	11.96	0.000090	2.07	4447.04	345.03	0.10
Reach-1	13.1	PF 1	4521.00	-8.60	7.58		7.59	0.000086	1.10	4244.57	830.81	0.08
Reach-1	13.1	PF 2	6206.00	-8.60	9.32		9.34	0.000067	1.16	5764.75	913.13	0.07
Reach-1	13.1	PF 3	7332.00	-8.60	10.36		10.38	0.000060	1.20	6738.74	955.81	0.07
Reach-1	13.1	PF 4	9185.00	-8.60	11.90		11.92	0.000054	1.27	8254.96	1015.30	0.07
Reach-1	12.1	PF 1	6997.00	-10.90	7.41		7.49	0.000133	2.38	7715.94	1519.79	0.11
Reach-1	12.1	PF 2	9688.00	-10.90	9.14		9.23	0.000147	2.72	10402.52	1582.15	0.12
Reach-1	12.1	PF 3	11504.00	-10.90	10.18		10.28	0.000154	2.90	12062.04	1619.43	0.13
Reach-1	12.1	PF 4	14490.00	-10.90	11.71		11.82	0.000163	3.18	14579.65	1674.16	0.13
Reach-1	12	PF 1	8490.00	-11.90	7.29		7.40	0.000180	2.88	6247.46	1022.52	0.13
Reach-1	12	PF 2	11760.00	-11.90	8.98		9.14	0.000221	3.44	8136.95	1215.12	0.15
Reach-1	12	PF 3	13955.00	-11.90	9.99		10.17	0.000242	3.75	9424.99	1330.52	0.16
Reach-1	12	PF 4	17579.00	-11.90	11.49		11.71	0.000265	4.16	11452.92	1371.13	0.17
Reach-1	11.4	PF 1	8376.00	-13.20	7.04		7.13	0.000137	2.42	6245.21	1108.40	0.12
Reach-1	11.4	PF 2	11610.00	-13.20	8.68		8.80	0.000165	2.87	8117.65	1169.28	0.13

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Reach-1	11.4	PF 3	13785.00	-13.20	9.67		9.80	0.000180	3.13	9287.70	1202.04	0.14
Reach-1	11.4	PF 4	17387.00	-13.20	11.14		11.30	0.000202	3.51	11084.00	1250.66	0.15
Reach-1	11.3	PF 1	8376.00	-11.40	7.02	-4.34	7.07	0.000116	1.81	4617.82	492.28	0.10
Reach-1	11.3	PF 2	11610.00	-11.40	8.65	-3.06	8.72	0.000133	2.15	5398.77	498.89	0.11
Reach-1	11.3	PF 3	13785.00	-11.40	9.64	-2.34	9.72	0.000142	2.35	5868.66	502.87	0.12
Reach-1	11.3	PF 4	17387.00	-11.40	11.10	-1.32	11.21	0.000155	2.65	6565.99	508.77	0.13
Reach-1	11.25		Bridge									
Reach-1	11.2	PF 1	8376.00	-10.80	7.01	-4.07	7.06	0.000094	1.69	4950.43	497.98	0.09
Reach-1	11.2	PF 2	11610.00	-10.80	8.65	-2.91	8.71	0.000110	2.02	5740.80	504.25	0.10
Reach-1	11.2	PF 3	13785.00	-10.80	9.63	-2.24	9.71	0.000119	2.22	6216.34	508.02	0.11
Reach-1	11.2	PF 4	17387.00	-10.80	11.10	-1.27	11.19	0.000132	2.51	6921.99	513.61	0.12
Reach-1	11.1	PF 1	8376.00	-12.50	6.94		7.01	0.000126	2.23	5712.68	1025.08	0.11
Reach-1	11.1	PF 2	11610.00	-12.50	8.55		8.66	0.000152	2.66	7482.40	1150.71	0.13
Reach-1	11.1	PF 3	13785.00	-12.50	9.53		9.65	0.000166	2.90	8615.52	1173.91	0.13
Reach-1	11.1	PF 4	17387.00	-12.50	10.98		11.12	0.000185	3.26	10340.12	1208.36	0.14
Reach-1	10	PF 1	8175.00	-9.30	6.45		6.51	0.000102	2.01	6515.43	1080.12	0.10
Reach-1	10	PF 2	11317.00	-9.30	7.96		8.04	0.000127	2.42	8214.52	1179.19	0.11
Reach-1	10	PF 3	13440.00	-9.30	8.87		8.97	0.000141	2.65	9318.35	1221.64	0.12
Reach-1	10	PF 4	16964.00	-9.30	10.24		10.36	0.000160	2.99	11014.56	1259.57	0.13
Reach-1	9	PF 1	7885.00	-8.50	6.21		6.24	0.000069	1.25	6866.71	921.88	0.08
Reach-1	9	PF 2	10844.00	-8.50	7.69		7.72	0.000075	1.46	8247.93	968.47	0.08
Reach-1	9	PF 3	12859.00	-8.50	8.59		8.63	0.000078	1.58	9125.99	975.64	0.09
Reach-1	9	PF 4	16198.00	-8.50	9.94		9.99	0.000082	1.76	10447.59	986.32	0.09
Reach-1	8	PF 1	7988.00	-13.30	5.84		5.90	0.000085	1.96	6290.52	972.80	0.09
Reach-1	8	PF 2	11022.00	-13.30	7.23		7.32	0.000113	2.40	7695.60	1048.86	0.11
Reach-1	8	PF 3	13098.00	-13.30	8.09		8.19	0.000129	2.67	8615.12	1105.81	0.12
Reach-1	8	PF 4	16542.00	-13.30	9.36		9.49	0.000154	3.07	10083.55	1186.53	0.13
Reach-1	7	PF 1	7489.00	-12.70	5.41		5.47	0.000090	2.02	8236.67	1552.06	0.10
Reach-1	7	PF 2	10380.00	-12.70	6.67		6.75	0.000119	2.46	10200.33	1579.13	0.11
Reach-1	7	PF 3	12366.00	-12.70	7.44		7.53	0.000136	2.73	11425.90	1595.80	0.12
Reach-1	7	PF 4	15670.00	-12.70	8.59		8.71	0.000162	3.11	13280.22	1620.69	0.13
Reach-1	6.4	PF 1	7489.00	-10.30	5.22		5.27	0.000087	1.85	8773.33	1932.53	0.09
Reach-1	6.4	PF 2	10380.00	-10.30	6.42		6.49	0.000113	2.24	11152.11	2040.49	0.11
Reach-1	6.4	PF 3	12366.00	-10.30	7.16		7.24	0.000128	2.47	12685.25	2107.15	0.11
Reach-1	6.4	PF 4	15670.00	-10.30	8.27		8.36	0.000149	2.80	15070.14	2206.84	0.13
Reach-1	6.3	PF 1	7489.00	-13.40	5.17	-6.18	5.25	0.000133	2.34	3204.01	268.29	0.11
Reach-1	6.3	PF 2	10380.00	-13.40	6.32	-5.14	6.46	0.000192	2.97	3490.80	274.76	0.14
Reach-1	6.3	PF 3	12366.00	-13.40	7.02	-4.51	7.20	0.000232	3.37	3665.71	278.70	0.16
Reach-1	6.3	PF 4	15670.00	-13.40	8.06	-3.54	8.31	0.000297	3.99	3923.72	284.51	0.18
Reach-1	6.25		Bridge									
Reach-1	6.2	PF 1	7489.00	-13.30	5.16	-7.07	5.23	0.000106	2.17	3444.22	266.56	0.10
Reach-1	6.2	PF 2	10380.00	-13.30	6.31	-6.10	6.43	0.000156	2.78	3732.13	272.15	0.13
Reach-1	6.2	PF 3	12366.00	-13.30	7.01	-5.49	7.16	0.000190	3.16	3907.50	275.55	0.14
Reach-1	6.2	PF 4	15670.00	-13.30	8.04	-4.57	8.26	0.000247	3.76	4165.76	280.56	0.16

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Reach-1	6.1	PF 1	7489.00	-13.60	5.16		5.22	0.000089	1.91	7172.31	1356.78	0.09
Reach-1	6.1	PF 2	10380.00	-13.60	6.32		6.40	0.000122	2.36	8777.97	1424.28	0.11
Reach-1	6.1	PF 3	12366.00	-13.60	7.02		7.12	0.000142	2.63	9797.72	1465.54	0.12
Reach-1	6.1	PF 4	15670.00	-13.60	8.07		8.19	0.000173	3.04	11358.68	1526.53	0.14
Reach-1	5.4	PF 1	7489.00	-11.30	5.12		5.18	0.000110	2.03	5706.68	984.66	0.10
Reach-1	5.4	PF 2	10380.00	-11.30	6.25		6.35	0.000151	2.52	6859.65	1047.06	0.12
Reach-1	5.4	PF 3	12366.00	-11.30	6.95		7.06	0.000176	2.82	7597.52	1084.64	0.13
Reach-1	5.4	PF 4	15670.00	-11.30	7.97		8.12	0.000216	3.28	8733.36	1140.06	0.15
Reach-1	5.3	PF 1	7489.00	-11.70	5.06	-5.73	5.16	0.000157	2.49	3012.89	255.02	0.12
Reach-1	5.3	PF 2	10380.00	-11.70	6.15	-4.68	6.31	0.000228	3.17	3276.26	261.09	0.15
Reach-1	5.3	PF 3	12366.00	-11.70	6.81	-4.04	7.01	0.000277	3.60	3435.04	264.75	0.17
Reach-1	5.3	PF 4	15670.00	-11.70	7.77	-3.07	8.05	0.000358	4.27	3665.80	281.86	0.19
Reach-1	5.25		Bridge									
Reach-1	5.2	PF 1	7489.00	-12.10	5.05	-5.95	5.13	0.000141	2.23	3351.63	323.84	0.12
Reach-1	5.2	PF 2	10380.00	-12.10	6.14	-4.89	6.27	0.000200	2.83	3669.38	330.64	0.14
Reach-1	5.2	PF 3	12366.00	-12.10	6.80	-4.24	6.96	0.000240	3.20	3860.67	334.73	0.16
Reach-1	5.2	PF 4	15670.00	-12.10	7.75	-3.27	7.97	0.000305	3.79	4138.17	340.67	0.18
Reach-1	5.1	PF 1	7489.00	-11.20	5.05		5.09	0.000091	1.81	14779.64	7114.24	0.09
Reach-1	5.1	PF 2	10380.00	-11.20	6.16		6.20	0.000098	2.00	22741.19	7282.00	0.10
Reach-1	5.1	PF 3	12366.00	-11.20	6.83		6.87	0.000100	2.09	27653.05	7376.66	0.10
Reach-1	5.1	PF 4	15670.00	-11.20	7.80		7.85	0.000103	2.22	34938.42	7514.86	0.10
Reach-1	4	PF 1	7151.00	-9.30	4.74		4.80	0.000144	2.20	13392.77	6330.43	0.12
Reach-1	4	PF 2	9870.00	-9.30	5.84		5.89	0.000146	2.35	20826.43	6911.36	0.12
Reach-1	4	PF 3	11770.00	-9.30	6.51		6.56	0.000143	2.42	25505.64	7017.42	0.12
Reach-1	4	PF 4	14956.00	-9.30	7.49		7.54	0.000141	2.52	32446.38	7171.83	0.12
Reach-1	3	PF 1	5214.00	-8.60	4.00		4.04	0.000111	1.68	8227.85	4091.70	0.10
Reach-1	3	PF 2	7242.00	-8.60	5.06		5.10	0.000124	1.91	13259.21	5418.24	0.11
Reach-1	3	PF 3	8773.00	-8.60	5.73		5.78	0.000125	2.01	16974.13	5635.09	0.11
Reach-1	3	PF 4	11307.00	-8.60	6.71		6.76	0.000127	2.14	22640.35	5950.64	0.11
Reach-1	2	PF 1	5471.00	-9.70	2.88		2.96	0.000241	2.30	5521.73	3286.98	0.14
Reach-1	2	PF 2	7399.00	-9.70	3.84		3.93	0.000254	2.55	9247.90	4462.00	0.15
Reach-1	2	PF 3	8920.00	-9.70	4.50		4.59	0.000254	2.68	12464.24	5269.61	0.15
Reach-1	2	PF 4	11547.00	-9.70	5.51		5.59	0.000240	2.78	18232.90	5963.92	0.15
Reach-1	1.4	PF 1	5470.00	-13.70	1.76		1.88	0.000300	2.81	1998.31	839.96	0.16
Reach-1	1.4	PF 2	7396.00	-13.70	2.43		2.62	0.000431	3.48	3465.55	3523.06	0.20
Reach-1	1.4	PF 3	8914.00	-13.70	3.02		3.23	0.000470	3.77	5680.54	3781.33	0.21
Reach-1	1.4	PF 4	11522.00	-13.70	4.09		4.29	0.000457	3.95	9703.58	3793.94	0.21
Reach-1	1.3	PF 1	5470.00	-12.80	1.73	-7.00	1.86	0.000293	2.84	1926.67	200.63	0.16
Reach-1	1.3	PF 2	7396.00	-12.80	2.38	-6.04	2.58	0.000437	3.60	2056.88	202.11	0.20
Reach-1	1.3	PF 3	8914.00	-12.80	2.91	-5.37	3.17	0.000541	4.12	2164.30	203.31	0.22
Reach-1	1.3	PF 4	11522.00	-12.80	3.82	-4.32	4.19	0.000699	4.90	2350.29	205.39	0.26
Reach-1	1.25		Bridge									
Reach-1	1.2	PF 1	5470.00	-13.20	1.72	-6.87	1.85	0.000294	2.84	1923.00	199.22	0.16

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Reach-1	1.2	PF 2	7396.00	-13.20	2.36	-5.92	2.56	0.000439	3.61	2050.28	199.70	0.20
Reach-1	1.2	PF 3	8914.00	-13.20	2.88	-5.25	3.15	0.000544	4.14	2154.64	200.09	0.22
Reach-1	1.2	PF 4	11522.00	-13.20	3.78	-4.23	4.15	0.000706	4.94	2334.05	200.88	0.26
Reach-1	1.1	PF 1	5470.00	-15.80	1.68		1.81	0.000282	2.90	1884.13	183.45	0.16
Reach-1	1.1	PF 2	7396.00	-15.80	2.30		2.51	0.000429	3.69	2466.13	2553.13	0.20
Reach-1	1.1	PF 3	8914.00	-15.80	2.82		3.08	0.000516	4.14	3813.61	2569.79	0.22
Reach-1	1.1	PF 4	11522.00	-15.80	3.74		4.05	0.000599	4.64	6175.67	2589.16	0.24
Reach-1	1	PF 1	5465.00	-15.80	0.80	-8.00	0.96	0.000253	3.17	1724.57	181.77	0.18
Reach-1	1	PF 2	7356.00	-15.80	0.80	-6.96	1.08	0.000458	4.27	1724.57	181.77	0.24
Reach-1	1	PF 3	8839.00	-15.80	0.80	-6.22	1.21	0.000662	5.13	1724.57	181.77	0.29
Reach-1	1	PF 4	11383.00	-15.80	0.80	-5.11	1.48	0.001097	6.60	1724.57	181.77	0.38

Profile Output Table - Standard Table 2

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Reach-1	29	PF 1	24.24	24.23	0.00	0.04	0.00	31.51	441.83	3.66	1285.94
Reach-1	29	PF 2	25.06	25.06	0.00	0.04	0.00	49.67	583.74	9.59	2022.87
Reach-1	29	PF 3	25.57	25.57	0.00	0.03	0.00	78.91	659.85	14.24	2200.56
Reach-1	29	PF 4	26.25	26.25	0.00	0.03	0.00	124.86	779.16	26.98	2348.00
Reach-1	28	PF 1	24.19	24.18	0.01	0.05	0.00	6.74	1141.89	54.37	1451.30
Reach-1	28	PF 2	25.02	25.02	0.01	0.05	0.00	30.98	1441.22	143.80	2149.98
Reach-1	28	PF 3	25.54	25.54	0.01	0.04	0.00	68.66	1609.40	206.94	2544.40
Reach-1	28	PF 4	26.22	26.21	0.01	0.04	0.00	153.06	1860.11	310.82	2897.00
Reach-1	27	PF 1	24.14	24.13	0.00	0.04	0.00	57.82	781.69	88.49	1519.58
Reach-1	27	PF 2	24.98	24.97	0.00	0.04	0.00	86.88	1044.24	136.88	2276.93
Reach-1	27	PF 3	25.50	25.50	0.00	0.03	0.00	105.83	1185.87	202.30	2602.37
Reach-1	27	PF 4	26.18	26.17	0.00	0.03	0.00	160.55	1397.82	307.63	2908.00
Reach-1	26.4	PF 1	24.10	24.10	0.00	0.01	0.00	32.14	748.84	147.02	1649.24
Reach-1	26.4	PF 2	24.94	24.94	0.00	0.01	0.01	53.42	954.64	259.94	1896.54
Reach-1	26.4	PF 3	25.47	25.46	0.00	0.01	0.01	77.70	1077.30	339.00	2008.65
Reach-1	26.4	PF 4	26.14	26.14	0.00	0.01	0.01	126.06	1274.84	465.10	2100.00
Reach-1	26.3	PF 1	24.09	24.07	0.02				928.00		186.49
Reach-1	26.3	PF 2	24.92	24.90	0.02				1268.00		402.30
Reach-1	26.3	PF 3	25.45	25.42	0.03				1494.00		1182.57
Reach-1	26.3	PF 4	26.13	26.10	0.03			24.53	1757.72	83.75	2050.00
Reach-1	26.25		Bridge								
Reach-1	26.2	PF 1	24.07	24.05	0.02	0.03	0.01		928.00		177.32
Reach-1	26.2	PF 2	24.88	24.85	0.02	0.03	0.00		1268.00		180.16
Reach-1	26.2	PF 3	25.38	25.35	0.03	0.03	0.00		1494.00		181.92
Reach-1	26.2	PF 4	26.12	26.08	0.03	0.02	0.01	26.84	1828.47	10.70	2119.64
Reach-1	26.1	PF 1	24.03	24.00	0.04	0.32	0.01	93.82	494.39	339.79	1560.21
Reach-1	26.1	PF 2	24.85	24.82	0.03	0.24	0.01	157.87	536.95	573.18	2742.07
Reach-1	26.1	PF 3	25.34	25.33	0.02	0.20	0.01	242.14	545.02	706.83	3717.54
Reach-1	26.1	PF 4	26.08	26.07	0.01	0.14	0.01	409.86	511.29	944.85	5040.96

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Reach-1	25.3	PF 1	23.70	23.56	0.14	0.51	0.02	504.91	1902.96	146.13	2327.40
Reach-1	25.3	PF 2	24.60	24.49	0.10	0.40	0.01	921.68	2146.30	400.02	2944.63
Reach-1	25.3	PF 3	25.14	25.06	0.08	0.35	0.01	1289.81	2232.58	551.61	3277.99
Reach-1	25.3	PF 4	25.94	25.87	0.07	0.31	0.00	1876.93	2413.73	780.34	4608.14
Reach-1	25.2	PF 1	23.17	23.09	0.08	0.27	0.01	564.22	1672.81	316.97	1866.16
Reach-1	25.2	PF 2	24.18	24.12	0.07	0.25	0.01	1141.47	1926.87	399.66	2110.18
Reach-1	25.2	PF 3	24.79	24.72	0.06	0.23	0.01	1546.33	2095.64	432.03	2350.83
Reach-1	25.2	PF 4	25.63	25.57	0.06	0.22	0.01	2207.30	2370.45	493.25	2930.97
Reach-1	25.1	PF 1	22.89	22.85	0.04	0.50	0.00	462.36	1833.57	258.07	1528.53
Reach-1	25.1	PF 2	23.93	23.89	0.04	0.48	0.00	827.02	2270.75	370.23	1931.81
Reach-1	25.1	PF 3	24.55	24.50	0.04	0.46	0.00	1118.34	2514.14	441.52	2090.40
Reach-1	25.1	PF 4	25.40	25.36	0.04	0.42	0.00	1633.11	2866.73	571.17	2235.00
Reach-1	25	PF 1	22.38	22.31	0.07	1.60	0.00	623.04	966.32	1043.65	1414.60
Reach-1	25	PF 2	23.45	23.39	0.06	1.57	0.00	1105.22	1115.47	1335.32	1766.47
Reach-1	25	PF 3	24.09	24.03	0.06	1.54	0.00	1452.77	1200.22	1514.01	2040.66
Reach-1	25	PF 4	24.98	24.93	0.05	1.43	0.01	1964.55	1283.83	1921.62	2316.58
Reach-1	24	PF 1	20.78	20.71	0.06	1.11	0.01	983.67	1388.86	355.47	578.07
Reach-1	24	PF 2	21.88	21.79	0.08	1.06	0.01	1351.62	1832.46	490.91	648.04
Reach-1	24	PF 3	22.54	22.45	0.09	1.00	0.00	1606.17	2116.15	579.68	695.15
Reach-1	24	PF 4	23.54	23.43	0.11	0.93	0.00	2026.89	2551.66	753.45	756.12
Reach-1	23	PF 1	19.66	19.46	0.20	2.04	0.05	404.51	1585.59	719.90	917.89
Reach-1	23	PF 2	20.81	20.65	0.16	1.80	0.03	764.15	1746.61	1138.25	1126.12
Reach-1	23	PF 3	21.54	21.41	0.13	1.70	0.02	1063.62	1799.62	1407.75	1178.46
Reach-1	23	PF 4	22.61	22.51	0.11	1.50	0.01	1545.68	1913.16	1830.16	1260.05
Reach-1	22	PF 1	17.58	17.53	0.05	0.83	0.01	993.99	716.50	1192.51	704.17
Reach-1	22	PF 2	18.97	18.92	0.05	0.82	0.01	1350.97	896.01	1646.03	793.27
Reach-1	22	PF 3	19.82	19.76	0.06	0.84	0.01	1510.99	1041.78	2000.22	924.37
Reach-1	22	PF 4	21.10	21.04	0.06	0.80	0.01	1999.35	1210.07	2424.59	1059.00
Reach-1	21	PF 1	16.73	16.71	0.02	0.85	0.01	1129.88	466.30	1306.81	826.28
Reach-1	21	PF 2	18.15	18.12	0.02	0.91	0.01	1563.98	593.03	1736.00	905.23
Reach-1	21	PF 3	18.97	18.94	0.03	0.92	0.01	1845.21	674.68	2033.11	956.75
Reach-1	21	PF 4	20.28	20.26	0.03	0.89	0.01	2345.48	801.25	2487.28	1044.15
Reach-1	20	PF 1	15.88	15.79	0.08	1.76	0.02	1342.30	1450.15	426.55	862.39
Reach-1	20	PF 2	17.23	17.13	0.10	1.74	0.01	1951.12	1862.21	547.67	1093.21
Reach-1	20	PF 3	18.04	17.94	0.10	1.65	0.01	2316.25	2076.29	729.47	1169.12
Reach-1	20	PF 4	19.39	19.28	0.10	1.47	0.01	2955.01	2380.47	1038.52	1312.56
Reach-1	19.4	PF 1	14.09	13.84	0.25	0.12	0.09	1164.34	2304.79	50.87	730.39
Reach-1	19.4	PF 2	15.48	15.26	0.23	0.11	0.07	1950.98	2732.22	102.80	802.37
Reach-1	19.4	PF 3	16.38	16.17	0.21	0.10	0.06	2470.25	3005.68	152.07	859.07
Reach-1	19.4	PF 4	17.91	17.72	0.19	0.09	0.04	3297.14	3448.74	269.11	1014.98
Reach-1	19.35	PF 1	13.88	13.81	0.07	0.02	0.00	25.66	3421.87	72.47	539.60
Reach-1	19.35	PF 2	15.31	15.22	0.09	0.02	0.01	62.49	4602.90	120.61	587.58
Reach-1	19.35	PF 3	16.22	16.13	0.09	0.02	0.01	93.79	5379.47	154.74	623.99
Reach-1	19.35	PF 4	17.78	17.67	0.10			153.31	6647.19	214.50	742.33

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Reach-1	19.25		Bridge								
Reach-1	19.15	PF 1	13.79	13.69	0.10	0.19	0.07	73.60	3409.79	36.61	497.93
Reach-1	19.15	PF 2	15.21	15.10	0.11	0.16	0.06	128.69	4575.29	82.02	562.51
Reach-1	19.15	PF 3	16.13	16.01	0.12	0.15	0.06	167.55	5344.52	115.94	607.24
Reach-1	19.15	PF 4	17.59	17.46	0.13	0.13	0.06	233.77	6605.71	175.53	755.41
Reach-1	19.1	PF 1	13.53	13.21	0.33	0.80	0.04	598.17	2774.83	147.01	508.16
Reach-1	19.1	PF 2	14.99	14.68	0.32	0.67	0.03	1064.12	3468.89	252.99	573.29
Reach-1	19.1	PF 3	15.93	15.62	0.31	0.60	0.02	1378.89	3913.47	335.64	639.83
Reach-1	19.1	PF 4	17.40	17.08	0.33	0.54	0.02	1923.92	4731.61	359.47	915.87
Reach-1	18.2	PF 1	12.70	12.49	0.21	0.17	0.05	250.74	3033.27	179.98	454.37
Reach-1	18.2	PF 2	14.30	14.07	0.23	0.16	0.05	429.14	3949.34	324.52	563.47
Reach-1	18.2	PF 3	15.30	15.07	0.23	0.15	0.05	559.87	4507.37	459.76	618.92
Reach-1	18.2	PF 4	16.84	16.59	0.25	0.14	0.05	660.85	5500.90	713.25	906.13
Reach-1	18.1	PF 1	12.48	12.43	0.06	0.38	0.00	195.92	2940.10	327.97	688.38
Reach-1	18.1	PF 2	14.09	14.03	0.06	0.35	0.00	328.77	3863.07	511.16	766.17
Reach-1	18.1	PF 3	15.11	15.04	0.07	0.33	0.00	422.99	4452.07	651.94	811.63
Reach-1	18.1	PF 4	16.65	16.57	0.07	0.31	0.00	617.97	5384.20	872.83	867.25
Reach-1	18	PF 1	12.10	12.04	0.07	0.82	0.00	533.97	1307.58	1813.45	862.56
Reach-1	18	PF 2	13.74	13.67	0.07	0.77	0.00	744.03	1642.60	2584.37	911.02
Reach-1	18	PF 3	14.77	14.70	0.07	0.76	0.00	892.53	1857.16	3096.31	945.64
Reach-1	18	PF 4	16.34	16.26	0.08	0.75	0.00	1142.19	2199.75	3938.07	999.79
Reach-1	17	PF 1	11.27	11.22	0.06	1.34	0.00	512.48	1430.62	1669.90	721.82
Reach-1	17	PF 2	12.96	12.89	0.07	1.30	0.00	753.49	1876.57	2293.94	750.66
Reach-1	17	PF 3	14.02	13.94	0.08	1.29	0.00	818.97	2213.09	2767.94	833.45
Reach-1	17	PF 4	15.59	15.49	0.09	1.32	0.00	1169.86	2795.32	3264.82	963.18
Reach-1	16	PF 1	9.94	9.87	0.06	1.02	0.00	1463.83	1176.74	1318.43	724.54
Reach-1	16	PF 2	11.67	11.59	0.07	0.99	0.00	2055.17	1520.61	1828.22	766.26
Reach-1	16	PF 3	12.72	12.64	0.08	0.97	0.00	2454.86	1743.37	2169.77	793.08
Reach-1	16	PF 4	14.27	14.18	0.09	0.96	0.01	3119.66	2102.70	2724.64	834.78
Reach-1	15	PF 1	8.91	8.85	0.06	0.85	0.00	480.56	1333.96	3044.48	935.89
Reach-1	15	PF 2	10.68	10.61	0.06	0.86	0.01	683.07	1674.31	4273.63	953.74
Reach-1	15	PF 3	11.75	11.69	0.07	0.88	0.01	807.78	1898.19	5103.03	968.66
Reach-1	15	PF 4	13.30	13.23	0.07	0.88	0.01	1015.49	2263.19	6462.32	990.65
Reach-1	14.4	PF 1	8.05	7.95	0.10	0.01	0.02	141.39	4356.55	192.06	595.25
Reach-1	14.4	PF 2	9.81	9.68	0.13	0.01	0.02	293.02	5746.15	380.83	679.93
Reach-1	14.4	PF 3	10.86	10.71	0.15	0.01	0.03	333.06	6763.11	474.84	939.93
Reach-1	14.4	PF 4	12.41	12.24	0.17	0.01	0.03	518.30	8110.17	833.53	1133.58
Reach-1	14.1	PF 1	8.02	7.97	0.05	0.36	0.00	1.03	4679.99	8.98	528.75
Reach-1	14.1	PF 2	9.77	9.72	0.05	0.36	0.00	3.65	6375.89	40.46	606.53
Reach-1	14.1	PF 3	10.82	10.76	0.06	0.35	0.00	5.31	7503.82	61.87	882.92
Reach-1	14.1	PF 4	12.37	12.31	0.06	0.35	0.00	40.48	9243.42	178.10	1066.06
Reach-1	13.4	PF 1	7.66	7.60	0.05	0.01	0.01	352.63	4024.76	143.62	656.09
Reach-1	13.4	PF 2	9.41	9.34	0.07	0.02	0.02	570.58	5362.79	272.63	723.67
Reach-1	13.4	PF 3	10.46	10.38	0.08	0.02	0.02	731.48	6228.21	372.32	762.27
Reach-1	13.4	PF 4	12.02	11.91	0.10	0.02	0.02	1017.07	7616.15	551.78	819.25

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Reach-1	13.3	PF 1	7.63	7.60	0.02	0.00	0.00		4521.00		332.22
Reach-1	13.3	PF 2	9.38	9.34	0.03	0.00	0.00		6206.00		337.97
Reach-1	13.3	PF 3	10.42	10.38	0.04	0.00	0.00		7332.00		341.42
Reach-1	13.3	PF 4	11.97	11.92	0.05	0.00	0.00		9185.00		346.50
Reach-1	13.25		Bridge								
Reach-1	13.2	PF 1	7.62	7.59	0.03	0.02	0.01		4521.00		329.18
Reach-1	13.2	PF 2	9.37	9.32	0.04	0.02	0.01		6206.00		335.57
Reach-1	13.2	PF 3	10.41	10.36	0.05	0.02	0.02		7332.00		339.39
Reach-1	13.2	PF 4	11.96	11.89	0.07	0.02	0.02		9185.00		345.03
Reach-1	13.1	PF 1	7.59	7.58	0.02	0.10	0.01	1.14	4506.54	13.32	830.81
Reach-1	13.1	PF 2	9.34	9.32	0.02	0.10	0.01	8.00	6158.77	39.23	913.13
Reach-1	13.1	PF 3	10.38	10.36	0.02	0.09	0.01	16.03	7252.90	63.07	955.81
Reach-1	13.1	PF 4	11.92	11.90	0.02	0.09	0.01	34.78	9040.98	109.24	1015.30
Reach-1	12.1	PF 1	7.49	7.41	0.07	0.08	0.00	201.12	5876.18	919.70	1519.79
Reach-1	12.1	PF 2	9.23	9.14	0.09	0.09	0.01	392.45	7563.59	1731.96	1582.15
Reach-1	12.1	PF 3	10.28	10.18	0.10	0.10	0.01	531.88	8639.74	2332.39	1619.43
Reach-1	12.1	PF 4	11.82	11.71	0.11	0.10	0.01	757.53	10337.74	3394.73	1674.16
Reach-1	12	PF 1	7.40	7.29	0.11	0.27	0.01	290.61	7528.58	670.81	1022.52
Reach-1	12	PF 2	9.14	8.98	0.16	0.32	0.01	543.61	10063.28	1153.12	1215.12
Reach-1	12	PF 3	10.17	9.99	0.18	0.35	0.02	734.58	11673.41	1547.01	1330.52
Reach-1	12	PF 4	11.71	11.49	0.22	0.39	0.02	1064.94	14078.27	2435.79	1371.13
Reach-1	11.4	PF 1	7.13	7.04	0.08	0.05	0.02	135.63	7762.39	477.98	1108.40
Reach-1	11.4	PF 2	8.80	8.68	0.11	0.05	0.02	305.17	10364.69	940.14	1169.28
Reach-1	11.4	PF 3	9.80	9.67	0.13	0.06	0.02	444.47	12048.76	1291.77	1202.04
Reach-1	11.4	PF 4	11.30	11.14	0.16	0.06	0.03	705.58	14760.54	1920.88	1250.66
Reach-1	11.3	PF 1	7.07	7.02	0.05				8376.00		492.28
Reach-1	11.3	PF 2	8.72	8.65	0.07				11610.00		498.89
Reach-1	11.3	PF 3	9.72	9.64	0.09				13785.00		502.87
Reach-1	11.3	PF 4	11.21	11.10	0.11				17387.00		508.77
Reach-1	11.25		Bridge								
Reach-1	11.2	PF 1	7.06	7.01	0.04	0.04	0.01		8376.00		497.98
Reach-1	11.2	PF 2	8.71	8.65	0.06	0.05	0.01		11610.00		504.25
Reach-1	11.2	PF 3	9.71	9.63	0.08	0.05	0.01		13785.00		508.02
Reach-1	11.2	PF 4	11.19	11.10	0.10	0.06	0.01		17387.00		513.61
Reach-1	11.1	PF 1	7.01	6.94	0.07	0.50	0.00	263.98	8011.35	100.67	1025.08
Reach-1	11.1	PF 2	8.66	8.55	0.10	0.61	0.01	549.21	10803.64	257.15	1150.71
Reach-1	11.1	PF 3	9.65	9.53	0.12	0.67	0.01	769.30	12598.59	417.10	1173.91
Reach-1	11.1	PF 4	11.12	10.98	0.15	0.75	0.01	1167.15	15495.14	724.71	1208.36
Reach-1	10	PF 1	6.51	6.45	0.06	0.26	0.01	25.60	7707.17	442.23	1080.12
Reach-1	10	PF 2	8.04	7.96	0.08	0.30	0.02	62.87	10399.42	854.71	1179.19
Reach-1	10	PF 3	8.97	8.87	0.10	0.32	0.02	107.45	12159.87	1172.68	1221.64
Reach-1	10	PF 4	10.36	10.24	0.12	0.35	0.02	208.07	15006.20	1749.73	1259.57
Reach-1	9	PF 1	6.24	6.21	0.02	0.34	0.00	38.30	7787.40	59.30	921.88

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Reach-1	9	PF 2	7.72	7.69	0.03	0.40	0.01	56.72	10687.11	100.17	968.47
Reach-1	9	PF 3	8.63	8.59	0.04	0.44	0.01	84.24	12644.34	130.43	975.64
Reach-1	9	PF 4	9.99	9.94	0.05	0.49	0.01	135.03	15879.65	183.31	986.32
Reach-1	8	PF 1	5.90	5.84	0.06	0.43	0.00	286.80	7604.78	96.43	972.80
Reach-1	8	PF 2	7.32	7.23	0.08	0.57	0.00	549.02	10275.21	197.77	1048.86
Reach-1	8	PF 3	8.19	8.09	0.10	0.65	0.00	754.88	12058.29	284.83	1105.81
Reach-1	8	PF 4	9.49	9.36	0.13	0.78	0.00	1127.95	14941.91	472.15	1186.53
Reach-1	7	PF 1	5.47	5.41	0.06	0.19	0.00	1.55	6644.73	842.72	1552.06
Reach-1	7	PF 2	6.75	6.67	0.08	0.25	0.00	3.53	8825.63	1550.84	1579.13
Reach-1	7	PF 3	7.53	7.44	0.10	0.29	0.00	5.34	10260.09	2100.57	1595.80
Reach-1	7	PF 4	8.71	8.59	0.12	0.34	0.01	9.08	12567.83	3093.09	1620.69
Reach-1	6.4	PF 1	5.27	5.22	0.05	0.01	0.01	68.25	6726.27	694.48	1932.53
Reach-1	6.4	PF 2	6.49	6.42	0.07	0.01	0.02	124.82	8930.81	1324.37	2040.49
Reach-1	6.4	PF 3	7.24	7.16	0.08	0.01	0.03	169.01	10374.60	1822.39	2107.15
Reach-1	6.4	PF 4	8.36	8.27	0.10	0.01	0.04	249.37	12686.42	2734.21	2206.84
Reach-1	6.3	PF 1	5.25	5.17	0.08				7489.00		268.29
Reach-1	6.3	PF 2	6.46	6.32	0.14				10380.00		274.76
Reach-1	6.3	PF 3	7.20	7.02	0.18				12366.00		278.70
Reach-1	6.3	PF 4	8.31	8.06	0.25				15670.00		284.51
Reach-1	6.25		Bridge								
Reach-1	6.2	PF 1	5.23	5.16	0.07	0.01	0.01		7489.00		266.56
Reach-1	6.2	PF 2	6.43	6.31	0.12	0.01	0.02		10380.00		272.15
Reach-1	6.2	PF 3	7.16	7.01	0.16	0.01	0.03		12366.00		275.55
Reach-1	6.2	PF 4	8.26	8.04	0.22	0.02	0.05		15670.00		280.56
Reach-1	6.1	PF 1	5.22	5.16	0.05	0.04	0.00	0.29	6936.84	551.87	1356.78
Reach-1	6.1	PF 2	6.40	6.32	0.08	0.05	0.00	1.38	9345.50	1033.12	1424.28
Reach-1	6.1	PF 3	7.12	7.02	0.10	0.06	0.00	2.69	10949.13	1414.18	1465.54
Reach-1	6.1	PF 4	8.19	8.07	0.12	0.07	0.00	5.94	13550.50	2113.56	1526.53
Reach-1	5.4	PF 1	5.18	5.12	0.06	0.01	0.01	0.35	7116.62	372.04	984.66
Reach-1	5.4	PF 2	6.35	6.25	0.09	0.02	0.02	1.72	9682.76	695.52	1047.06
Reach-1	5.4	PF 3	7.06	6.95	0.11	0.02	0.03	3.26	11408.53	954.21	1084.64
Reach-1	5.4	PF 4	8.12	7.97	0.15	0.02	0.04	6.69	14229.34	1433.97	1140.06
Reach-1	5.3	PF 1	5.16	5.06	0.10				7489.00		255.02
Reach-1	5.3	PF 2	6.31	6.15	0.16				10380.00		261.09
Reach-1	5.3	PF 3	7.01	6.81	0.20				12366.00		264.75
Reach-1	5.3	PF 4	8.05	7.77	0.28				15670.00		281.86
Reach-1	5.25		Bridge								
Reach-1	5.2	PF 1	5.13	5.05	0.08	0.02	0.02		7489.00		323.84
Reach-1	5.2	PF 2	6.27	6.14	0.12	0.03	0.04		10380.00		330.64
Reach-1	5.2	PF 3	6.96	6.80	0.16	0.03	0.06		12366.00		334.73
Reach-1	5.2	PF 4	7.97	7.75	0.22	0.03	0.09		15670.00		340.67
Reach-1	5.1	PF 1	5.09	5.05	0.04	0.29	0.00	1107.86	6371.71	9.43	7114.24
Reach-1	5.1	PF 2	6.20	6.16	0.05	0.31	0.00	2673.80	7681.09	25.11	7282.00
Reach-1	5.1	PF 3	6.87	6.83	0.05	0.31	0.00	3876.00	8450.15	39.85	7376.66

LPGA Tomoka River EC-RAS Report _ CEM											
Reach-1	5.1	PF 4	7.85	7.80	0.05	0.31	0.00	5971.41	9630.88	67.71	7514.86
Reach-1	4	PF 1	4.80	4.74	0.06	0.75	0.01	1399.53	5744.48	6.99	6330.43
Reach-1	4	PF 2	5.89	5.84	0.06	0.79	0.00	3096.65	6757.97	15.38	6911.36
Reach-1	4	PF 3	6.56	6.51	0.06	0.79	0.00	4417.51	7330.35	22.14	7017.42
Reach-1	4	PF 4	7.54	7.49	0.05	0.78	0.00	6684.44	8236.90	34.66	7171.83
Reach-1	3	PF 1	4.04	4.00	0.04	1.08	0.00	193.83	4666.76	353.41	4091.70
Reach-1	3	PF 2	5.10	5.06	0.05	1.17	0.00	494.10	5913.94	833.96	5418.24
Reach-1	3	PF 3	5.78	5.73	0.05	1.18	0.00	812.67	6641.05	1319.29	5635.09
Reach-1	3	PF 4	6.76	6.71	0.05	1.16	0.00	1388.64	7727.10	2191.27	5950.64
Reach-1	2	PF 1	2.96	2.88	0.08	1.07	0.00	196.94	5048.07	225.98	3286.98
Reach-1	2	PF 2	3.93	3.84	0.09	1.30	0.01	445.24	6256.04	697.72	4462.00
Reach-1	2	PF 3	4.59	4.50	0.09	1.35	0.01	658.53	7042.59	1218.88	5269.61
Reach-1	2	PF 4	5.59	5.51	0.08	1.29	0.01	1031.23	8074.23	2441.54	5963.92
Reach-1	1.4	PF 1	1.88	1.76	0.12	0.02	0.00		5468.80	1.20	839.96
Reach-1	1.4	PF 2	2.62	2.43	0.19	0.04	0.00		7278.04	117.95	3523.06
Reach-1	1.4	PF 3	3.23	3.02	0.21	0.04	0.02		8366.94	547.06	3781.33
Reach-1	1.4	PF 4	4.29	4.09	0.20	0.05	0.05		9675.32	1846.68	3793.94
Reach-1	1.3	PF 1	1.86	1.73	0.13				5470.00		200.63
Reach-1	1.3	PF 2	2.58	2.38	0.20				7396.00		202.11
Reach-1	1.3	PF 3	3.17	2.91	0.26				8914.00		203.31
Reach-1	1.3	PF 4	4.19	3.82	0.37				11522.00		205.39
Reach-1	1.25		Bridge								
Reach-1	1.2	PF 1	1.85	1.72	0.13	0.03	0.00		5470.00		199.22
Reach-1	1.2	PF 2	2.56	2.36	0.20	0.05	0.00		7396.00		199.70
Reach-1	1.2	PF 3	3.15	2.88	0.27	0.06	0.00		8914.00		200.09
Reach-1	1.2	PF 4	4.15	3.78	0.38	0.07	0.04		11522.00		200.88
Reach-1	1.1	PF 1	1.81	1.68	0.13	0.85	0.00		5470.00		183.45
Reach-1	1.1	PF 2	2.51	2.30	0.21	1.42	0.01		7371.55	24.45	2553.13
Reach-1	1.1	PF 3	3.08	2.82	0.26	1.86	0.01		8680.96	233.04	2569.79
Reach-1	1.1	PF 4	4.05	3.74	0.31	2.53	0.04		10539.21	982.79	2589.16
Reach-1	1	PF 1	0.96	0.80	0.16				5465.00		181.77
Reach-1	1	PF 2	1.08	0.80	0.28				7356.00		181.77
Reach-1	1	PF 3	1.21	0.80	0.41				8839.00		181.77
Reach-1	1	PF 4	1.48	0.80	0.68				11383.00		181.77

Proposed Model

LPGA Tomoka River EC-RAS Report _ PM

HEC-RAS HEC-RAS 6.1.0 September 2021
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X   X  XXXXXX   XXXX   XXXX   XX   XXXX
X   X  X        X  X        X  X   X  X   X
X   X  X        X        X  X   X  X   X
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: Tomoka River

Project File : TomokaRiver.prj

Run Date and Time: 1/31/2023 4:43:46 PM

Project in English units

Project Description:

WATER SURFACE PROFILES FOR TOMOKA RIVER

T1 039
10 YEAR FLOOD

T2 040
TOMOKA RIVER

T3 041
WATER SURFACE

PROFILES FOR TOMOKA RIVER

T1

039

10 YEAR FLOOD

T2

040

TOMOKA RIVER

T3

041

PLAN DATA

Plan Title: Prop TR

Plan File : p:\D5 LPGA Draiange\HEC-RAS\TomokaRiver.p08

Geometry Title: proposed Condition

Geometry File : p:\D5 LPGA Draiange\HEC-RAS\TomokaRiver.g08

Flow Title : FEMA INPUT 02 with Tidal Rise

Flow File : p:\D5 LPGA Draiange\HEC-RAS\TomokaRiver.f05

Plan Summary Information:

Number of: Cross Sections	=	58	Multiple Openings	=	0
Culverts	=	0	Inline Structures	=	0

Bridges = 7 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: At breaks in n values only
 Friction Slope Method: Average Conveyance
 Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FEMA INPUT 02 with Tidal Rise

Flow File : p:\D5 LPGA Draiange\HEC-RAS\TomokaRiver.f05

Flow Data (cfs)

River	Reach	RS	PF 1	PF 2	PF 3	PF 4
RIVER-1	Reach-1	29	477	643	753	931
RIVER-1	Reach-1	28	1203	1616	1885	2324
RIVER-1	Reach-1	27	928	1268	1494	1866
RIVER-1	Reach-1	26.4	928	1268	1494	1866
RIVER-1	Reach-1	25.3	2554	3468	4074	5071
RIVER-1	Reach-1	25.2	2554	3468	4074	5071
RIVER-1	Reach-1	25.1	2554	3468	4074	5071
RIVER-1	Reach-1	25	2633	3556	4167	5170
RIVER-1	Reach-1	24	2728	3675	4302	5332
RIVER-1	Reach-1	23	2710	3649	4271	5289
RIVER-1	Reach-1	22	2903	3893	4553	5634
RIVER-1	Reach-1	20	3219	4361	5122	6374
RIVER-1	Reach-1	19.4	3520	4786	5628	7015
RIVER-1	Reach-1	18.2	3464	4703	5527	6875
RIVER-1	Reach-1	18.1	3464	4703	5527	6875
RIVER-1	Reach-1	18	3655	4971	5846	7280
RIVER-1	Reach-1	17	3613	4924	5800	7230
RIVER-1	Reach-1	16	3959	5404	6368	7947
RIVER-1	Reach-1	15	4859	6631	7809	9741
RIVER-1	Reach-1	14.4	4690	6420	7571	9462
RIVER-1	Reach-1	13.4	4521	6206	7332	9185
RIVER-1	Reach-1	12.1	6997	9688	11504	14490
RIVER-1	Reach-1	12	8490	11760	13955	17579
RIVER-1	Reach-1	11.4	8376	11610	13785	17387
RIVER-1	Reach-1	10	8175	11317	13440	16964
RIVER-1	Reach-1	9	7885	10844	12859	16198
RIVER-1	Reach-1	8	7988	11022	13098	16542
RIVER-1	Reach-1	7	7489	10380	12366	15670
RIVER-1	Reach-1	4	7151	9870	11770	14956
RIVER-1	Reach-1	3	5214	7242	8773	11307
RIVER-1	Reach-1	2	5471	7399	8920	11547
RIVER-1	Reach-1	1.4	5470	7396	8914	11522
RIVER-1	Reach-1	1	5465	7356	8839	11383

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
RIVER-1	Reach-1	PF 1		Known WS = 1.71
RIVER-1	Reach-1	PF 2		Known WS = 1.71
RIVER-1	Reach-1	PF 3		Known WS = 1.71
RIVER-1	Reach-1	PF 4		Known WS = 1.71

GEOMETRY DATA

Geometry Title: proposed Condition

Geometry File : p:\D5 LPGA Draianage\HEC-RAS\TomokaRiver.g08

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 29

INPUT

Description:

Station Elevation Data				num=	12				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1054	25	1862	24	1907	23	2008	22
2212	21	2632	21	2788	22	2818	23	2928	24
3056	25	3348	26						

Manning's n Values				num=	3		
Sta	n Val	Sta	n Val	Sta	n Val		
1000	.15	2212	.04	2788	.15		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2212	2788		1398	1398	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.23	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	788.54	1785.34	136.43
E.G. Slope (ft/ft)	0.000010	Area (sq ft)	788.54	1785.34	136.43
Q Total (cfs)	477.00	Flow (cfs)	31.51	441.83	3.66
Top Width (ft)	1285.93	Top Width (ft)	539.85	576.00	170.08
Vel Total (ft/s)	0.18	Avg. Vel. (ft/s)	0.04	0.25	0.03
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)	1.46	3.10	0.80
Conv. Total (cfs)	152212.2	Conv. (cfs)	10055.9	140989.7	1166.7
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	539.87	576.00	170.10
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	1.84	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	3897.29	4298.88	3972.17
C & E Loss (ft)	0.00	Cum SA (acres)	1695.04	448.54	1825.10

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	25.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.06	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	1507.92	2260.73	320.69
E.G. Slope (ft/ft)	0.000008	Area (sq ft)	1507.92	2260.73	320.69
Q Total (cfs)	643.00	Flow (cfs)	49.67	583.75	9.59
Top Width (ft)	2022.86	Top Width (ft)	1161.26	576.00	285.61
Vel Total (ft/s)	0.16	Avg. Vel. (ft/s)	0.03	0.26	0.03
Max Chl Dpth (ft)	4.06	Hydr. Depth (ft)	1.30	3.92	1.12
Conv. Total (cfs)	230173.0	Conv. (cfs)	17779.2	208962.0	3431.7
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1161.28	576.00	285.63
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	2.45	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	5856.27	4831.46	5802.48
C & E Loss (ft)	0.00	Cum SA (acres)	1921.88	448.67	2151.98

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.57	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	2111.36	2556.51	505.85
E.G. Slope (ft/ft)	0.000007	Area (sq ft)	2111.36	2556.51	505.85
Q Total (cfs)	753.00	Flow (cfs)	78.90	659.85	14.24
Top Width (ft)	2200.54	Top Width (ft)	1188.99	576.00	435.55
Vel Total (ft/s)	0.15	Avg. Vel. (ft/s)	0.04	0.26	0.03
Max Chl Dpth (ft)	4.57	Hydr. Depth (ft)	1.78	4.44	1.16
Conv. Total (cfs)	292693.8	Conv. (cfs)	30670.2	256487.0	5536.5
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1189.01	576.00	435.58
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	2.76	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	7202.30	5170.17	7188.92
C & E Loss (ft)	0.00	Cum SA (acres)	2025.59	448.76	2328.98

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.24	Reach Len. (ft)	1398.00	1398.00	1398.00
Crit W.S. (ft)		Flow Area (sq ft)	2917.37	2941.90	854.01
E.G. Slope (ft/ft)	0.000006	Area (sq ft)	2917.37	2941.90	854.01
Q Total (cfs)	931.00	Flow (cfs)	124.78	779.28	26.94
Top Width (ft)	2348.00	Top Width (ft)	1212.00	576.00	560.00
Vel Total (ft/s)	0.14	Avg. Vel. (ft/s)	0.04	0.26	0.03
Max Chl Dpth (ft)	5.24	Hydr. Depth (ft)	2.41	5.11	1.53
Conv. Total (cfs)	387218.6	Conv. (cfs)	51898.8	324114.7	11205.1
Length Wtd. (ft)	1398.00	Wetted Per. (ft)	1212.27	576.00	560.27
Min Ch El (ft)	21.00	Shear (lb/sq ft)	0.00	0.00	0.00
Alpha	3.07	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	9305.68	5673.88	9499.26
C & E Loss (ft)	0.00	Cum SA (acres)	2152.36	448.93	2524.74

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 28

INPUT

Description:

Station Elevation Data				num=	14				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1592	25	2309	24	2337	23	2390	22
2435	21	2440	20	2700	20	2731	21	2812	22
2989	23	3607	24	3729	25	3897	26		

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2390	.04	2812	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2390	2812		1424	1424	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.18	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	120.27	1558.10	721.79
E.G. Slope (ft/ft)	0.000068	Area (sq ft)	120.27	1558.10	721.79
Q Total (cfs)	1203.00	Flow (cfs)	6.74	1141.89	54.37
Top Width (ft)	1451.29	Top Width (ft)	212.00	422.00	817.29
Vel Total (ft/s)	0.50	Avg. Vel. (ft/s)	0.06	0.73	0.08
Max Chl Dpth (ft)	4.18	Hydr. Depth (ft)	0.57	3.69	0.88
Conv. Total (cfs)	145636.8	Conv. (cfs)	816.4	138238.8	6581.7
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	212.03	422.13	817.29
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.00
Alpha	2.03	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3882.71	4245.23	3958.40
C & E Loss (ft)	0.00	Cum SA (acres)	1682.97	432.53	1809.26

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	25.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.02	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	546.69	1910.20	1446.16
E.G. Slope (ft/ft)	0.000055	Area (sq ft)	546.69	1910.20	1446.16
Q Total (cfs)	1616.00	Flow (cfs)	30.98	1441.22	143.80
Top Width (ft)	2149.96	Top Width (ft)	808.10	422.00	919.87
Vel Total (ft/s)	0.41	Avg. Vel. (ft/s)	0.06	0.75	0.10
Max Chl Dpth (ft)	5.02	Hydr. Depth (ft)	0.68	4.53	1.57
Conv. Total (cfs)	217675.9	Conv. (cfs)	4173.4	194133.2	19369.3
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	808.12	422.13	919.87
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	2.97	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	5823.29	4764.53	5774.12
C & E Loss (ft)	0.00	Cum SA (acres)	1890.27	432.65	2132.64

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.54	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	1045.74	2129.18	1946.12
E.G. Slope (ft/ft)	0.000048	Area (sq ft)	1045.74	2129.18	1946.12
Q Total (cfs)	1885.00	Flow (cfs)	68.66	1609.41	206.93
Top Width (ft)	2544.34	Top Width (ft)	1115.30	422.00	1007.04
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)	0.07	0.76	0.11
Max Chl Dpth (ft)	5.54	Hydr. Depth (ft)	0.94	5.05	1.93
Conv. Total (cfs)	272459.6	Conv. (cfs)	9923.8	232625.7	29910.2
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	1115.33	422.13	1007.05
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	3.61	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	7151.64	5094.98	7149.57
C & E Loss (ft)	0.00	Cum SA (acres)	1988.61	432.75	2305.83

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.21	Reach Len. (ft)	1424.00	1424.00	1424.00
Crit W.S. (ft)		Flow Area (sq ft)	1917.57	2413.22	2658.31
E.G. Slope (ft/ft)	0.000042	Area (sq ft)	1917.57	2413.22	2658.31
Q Total (cfs)	2324.00	Flow (cfs)	152.80	1860.57	310.64
Top Width (ft)	2897.00	Top Width (ft)	1390.00	422.00	1085.00
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)	0.08	0.77	0.12
Max Chl Dpth (ft)	6.21	Hydr. Depth (ft)	1.38	5.72	2.45
Conv. Total (cfs)	358003.0	Conv. (cfs)	23537.6	286613.3	47852.1
Length Wtd. (ft)	1424.00	Wetted Per. (ft)	1390.24	422.13	1085.22
Min Ch El (ft)	20.00	Shear (lb/sq ft)	0.00	0.02	0.01
Alpha	4.32	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	9228.09	5587.95	9442.90
C & E Loss (ft)	0.00	Cum SA (acres)	2110.61	432.92	2498.34

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 27

INPUT

Description:

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26	1534	25	1815	24	1871	23	1999	22
2091	21	2181	20	2200	19.7	2500	19.7	2580	20
2737	21	2847	22	3075	23	3213	24	3835	25
3908	26								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.15	2181	.04	2580	.15

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Bank Sta: Left Right Lengths: Left Channel Right
 2181 2580 1912 1912 1912

Coeff Contr. Expan.
 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.13	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	816.82	1754.57	1326.36
E.G. Slope (ft/ft)	0.000020	Area (sq ft)	816.82	1754.57	1326.36
Q Total (cfs)	928.00	Flow (cfs)	57.82	781.69	88.49
Top Width (ft)	1519.57	Top Width (ft)	403.83	399.00	716.74
Vel Total (ft/s)	0.24	Avg. Vel. (ft/s)	0.07	0.45	0.07
Max Chl Dpth (ft)	4.43	Hydr. Depth (ft)	2.02	4.40	1.85
Conv. Total (cfs)	207690.3	Conv. (cfs)	12940.9	174945.0	19804.3
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	403.86	399.00	716.75
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	2.96	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	3867.39	4191.08	3924.93
C & E Loss (ft)	0.00	Cum SA (acres)	1672.91	419.11	1784.18

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.97	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	1254.33	2089.20	2146.22
E.G. Slope (ft/ft)	0.000020	Area (sq ft)	1254.33	2089.20	2146.22
Q Total (cfs)	1268.00	Flow (cfs)	86.88	1044.25	136.88
Top Width (ft)	2276.90	Top Width (ft)	639.50	399.00	1238.40
Vel Total (ft/s)	0.23	Avg. Vel. (ft/s)	0.07	0.50	0.06
Max Chl Dpth (ft)	5.27	Hydr. Depth (ft)	1.96	5.24	1.73
Conv. Total (cfs)	284163.6	Conv. (cfs)	19469.4	234019.2	30675.1
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	639.53	399.00	1238.41
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	3.87	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	5793.86	4699.16	5715.40
C & E Loss (ft)	0.00	Cum SA (acres)	1866.61	419.23	2097.36

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.50	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	1658.48	2297.92	2811.50
E.G. Slope (ft/ft)	0.000019	Area (sq ft)	1658.48	2297.92	2811.50
Q Total (cfs)	1494.00	Flow (cfs)	105.82	1185.88	202.30
Top Width (ft)	2602.32	Top Width (ft)	912.09	399.00	1291.24
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.52	0.07
Max Chl Dpth (ft)	5.80	Hydr. Depth (ft)	1.82	5.76	2.18
Conv. Total (cfs)	345530.6	Conv. (cfs)	24474.9	274268.6	46787.0
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	912.11	399.00	1291.26
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.36	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	7107.44	5022.62	7071.81
C & E Loss (ft)	0.00	Cum SA (acres)	1955.47	419.33	2268.27

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.17	Reach Len. (ft)	1912.00	1912.00	1912.00
Crit W.S. (ft)		Flow Area (sq ft)	2389.33	2567.72	3700.21
E.G. Slope (ft/ft)	0.000018	Area (sq ft)	2389.33	2567.72	3700.21
Q Total (cfs)	1866.00	Flow (cfs)	160.39	1398.15	307.47
Top Width (ft)	2908.00	Top Width (ft)	1181.00	399.00	1328.00
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.07	0.54	0.08
Max Chl Dpth (ft)	6.47	Hydr. Depth (ft)	2.02	6.44	2.79
Conv. Total (cfs)	440441.7	Conv. (cfs)	37857.3	330011.7	72572.6
Length Wtd. (ft)	1912.00	Wetted Per. (ft)	1181.20	399.00	1328.19
Min Ch El (ft)	19.70	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.81	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	9157.70	5506.53	9338.96
C & E Loss (ft)	0.00	Cum SA (acres)	2068.58	419.50	2458.90

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.4

INPUT

Description:

Station Elevation Data		num=	26						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
387	25.9	547	25	817	24	917	23	1000	21.8
1035	21.3	1060	21.1	1098	20.4	1113	19.7	1119	19.2
1144	18.5	1189	17.6	1239	18.1	1295	18.3	1376	19.1
1380	19.4	1410	19.3	1477	20	1547	21	1747	22
1927	23	2117	23	2367	22	2427	23	2437	24
2487	26								

Manning's n Values

num=

3

Sta	n Val	Sta	n Val	Sta	n Val
387	.15	1113	.04	1380	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1113	1380		350	350	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.10	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	551.96	1530.86	2210.81
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	551.96	1530.86	2210.81
Q Total (cfs)	928.00	Flow (cfs)	32.14	748.84	147.02
Top Width (ft)	1649.23	Top Width (ft)	322.75	267.00	1059.48
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.49	0.07
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	1.71	5.73	2.09
Conv. Total (cfs)	225727.1	Conv. (cfs)	7818.6	182147.6	35760.9
Length Wtd. (ft)	350.00	Wetted Per. (ft)	322.80	267.06	1059.56

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Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.15	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3837.35	4118.98	3847.30
C & E Loss (ft)	0.00	Cum SA (acres)	1656.96	404.49	1745.20

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.94	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	917.39	1754.68	3107.76
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	917.39	1754.68	3107.76
Q Total (cfs)	1268.00	Flow (cfs)	53.42	954.64	259.94
Top Width (ft)	1896.53	Top Width (ft)	549.10	267.00	1080.44
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.54	0.08
Max Chl Dpth (ft)	7.34	Hydr. Depth (ft)	1.67	6.57	2.88
Conv. Total (cfs)	303720.9	Conv. (cfs)	12795.1	228663.6	62262.3
Length Wtd. (ft)	350.00	Wetted Per. (ft)	549.14	267.06	1080.53
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.66	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	5746.19	4614.80	5600.10
C & E Loss (ft)	0.01	Cum SA (acres)	1840.53	404.62	2046.47

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.46	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	1232.60	1894.69	3677.72
E.G. Slope (ft/ft)	0.000017	Area (sq ft)	1232.60	1894.69	3677.72
Q Total (cfs)	1494.00	Flow (cfs)	77.70	1077.31	339.00
Top Width (ft)	2008.63	Top Width (ft)	648.09	267.00	1093.54
Vel Total (ft/s)	0.22	Avg. Vel. (ft/s)	0.06	0.57	0.09
Max Chl Dpth (ft)	7.86	Hydr. Depth (ft)	1.90	7.10	3.36
Conv. Total (cfs)	360389.6	Conv. (cfs)	18742.7	259872.6	81774.3
Length Wtd. (ft)	350.00	Wetted Per. (ft)	648.13	267.06	1093.65
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	4.88	Stream Power (lb/ft s)	0.00	0.00	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	7043.99	4930.60	6929.39
C & E Loss (ft)	0.01	Cum SA (acres)	1921.23	404.71	2215.93

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.14	Reach Len. (ft)	350.00	350.00	350.00
Crit W.S. (ft)		Flow Area (sq ft)	1706.33	2075.19	4422.47

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E.G. Slope (ft/ft)	0.000018	Area (sq ft)	1706.33	2075.19	4422.47
Q Total (cfs)	1866.00	Flow (cfs)	125.95	1275.08	464.97
Top Width (ft)	2100.00	Top Width (ft)	726.00	267.00	1107.00
Vel Total (ft/s)	0.23	Avg. Vel. (ft/s)	0.07	0.61	0.11
Max Chl Dpth (ft)	8.54	Hydr. Depth (ft)	2.35	7.77	4.00
Conv. Total (cfs)	442589.0	Conv. (cfs)	29872.5	302432.0	110284.6
Length Wtd. (ft)	350.00	Wetted Per. (ft)	726.28	267.06	1107.25
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.01	0.00
Alpha	5.05	Stream Power (lb/ft s)	0.00	0.01	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	9067.81	5404.64	9160.70
C & E Loss (ft)	0.01	Cum SA (acres)	2026.73	404.88	2405.46

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 26.3

INPUT

Description:

Station Elevation Data		num=		16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1490	26	1994	24.9	2000	22.8	2012.2	19.8	2039.8	19		
2071	18.7	2110.4	18.4	2121.4	18.2	2137.4	17.6	2158.3	17.9		
2166.8	19.5	2173.3	21.2	2174	22	2180.1	23.3	2185.1	24.7		
3540	26										

Manning's n Values		num=		3			
Sta	n Val	Sta	n Val	Sta	n Val		
1490	.15	1994	.04	2185.1	.15		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1994	2185.1		96.1	96.1	.3	.5

Ineffective Flow		num=	2
Sta L	Sta R	Elev	Permanent
1490	1994	25.9	F
2185.1	3540	25.9	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.07	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	19.60	Flow Area (sq ft)		921.10	
E.G. Slope (ft/ft)	0.000088	Area (sq ft)		921.10	
Q Total (cfs)	928.00	Flow (cfs)		928.00	
Top Width (ft)	186.49	Top Width (ft)		186.49	
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)		1.01	
Max Chl Dpth (ft)	6.47	Hydr. Depth (ft)		4.94	
Conv. Total (cfs)	98680.9	Conv. (cfs)		98680.9	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		188.07	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)		Cum Volume (acre-ft)	3835.14	4109.13	3838.41

C & E Loss (ft)	Cum SA (acres)	1655.67	402.67	1740.94

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.90	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	19.86	Flow Area (sq ft)		1078.16	
E.G. Slope (ft/ft)	0.000101	Area (sq ft)	0.00	1078.16	21.22
Q Total (cfs)	1268.00	Flow (cfs)		1268.00	
Top Width (ft)	402.25	Top Width (ft)	0.83	191.10	210.32
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)		1.18	
Max Chl Dpth (ft)	7.30	Hydr. Depth (ft)		5.64	
Conv. Total (cfs)	126135.6	Conv. (cfs)		126135.6	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		192.91	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)		Cum Volume (acre-ft)	5742.51	4603.42	5587.53
C & E Loss (ft)		Cum SA (acres)	1838.32	402.78	2041.29

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	25.42	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	20.01	Flow Area (sq ft)		1177.53	
E.G. Slope (ft/ft)	0.000105	Area (sq ft)	62.37	1177.53	271.49
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	1182.45	Top Width (ft)	239.08	191.10	752.27
Vel Total (ft/s)	1.27	Avg. Vel. (ft/s)		1.27	
Max Chl Dpth (ft)	7.82	Hydr. Depth (ft)		6.16	
Conv. Total (cfs)	146100.7	Conv. (cfs)		146100.7	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		192.91	
Min Ch El (ft)	17.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)		Cum Volume (acre-ft)	7038.78	4918.26	6913.52
C & E Loss (ft)		Cum SA (acres)	1917.67	402.87	2208.51

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.10	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	20.24	Flow Area (sq ft)	325.67	1306.40	1010.98
E.G. Slope (ft/ft)	0.000102	Area (sq ft)	325.67	1306.40	1010.98
Q Total (cfs)	1866.00	Flow (cfs)	24.40	1758.21	83.39
Top Width (ft)	2050.00	Top Width (ft)	504.00	191.10	1354.90
Vel Total (ft/s)	0.71	Avg. Vel. (ft/s)	0.07	1.35	0.08
Max Chl Dpth (ft)	8.50	Hydr. Depth (ft)	0.65	6.84	0.75
Conv. Total (cfs)	184360.7	Conv. (cfs)	2411.0	173711.2	8238.6

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Length Wtd. (ft)	1.00	Wetted Per. (ft)	504.10	192.91	1355.00
Min Ch El (ft)	17.60	Shear (lb/sq ft)	0.00	0.04	0.00
Alpha	3.42	Stream Power (lb/ft s)	0.00	0.06	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)	9059.65	5391.05	9138.87
C & E Loss (ft)		Cum SA (acres)	2021.79	403.04	2395.57

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

BRIDGE

RIVER: RIVER-1
REACH: Reach-1 RS: 26.25

INPUT

Description: Bridge #7

Distance from Upstream XS = 1
Deck/Roadway Width = 95
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates
num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1994	25.9	23.7	2185	25.9	23.7				

Upstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1490	26	1994	24.9	2000	22.8	2012.2	19.8	2039.8	19
2071	18.7	2110.4	18.4	2121.4	18.2	2137.4	17.6	2158.3	17.9
2166.8	19.5	2173.3	21.2	2174	22	2180.1	23.3	2185.1	24.7
3540	26								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1490	.15	1994	.04	2185.1	.15

Bank Sta: Left Right Coeff Contr. Expan.
1994 2185.1 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1490	1994	25.9	F
2185.1	3540	25.9	F

Downstream Deck/Roadway Coordinates

num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1994	25.9	23.7	2185	25.9	23.7				

Downstream Bridge Cross Section Data

Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
811	26	2000	25.4	2001.4	23.2	2011.7	20.3	2024.8	20
2040.4	19	2060	18.2	2067	17.6	2082	17.2	2098.9	16.6
2109.1	18.1	2115	18.7	2142.3	20	2165.7	19.9	2172.2	21.8
2172.9	22.2	2178.9	24.3	2182.4	25.5	3591.2	26.6		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
811	.15	2000	.04	2182.4	.15

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	2000	2182.4		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev
811	2000	24.8
2182.4	3591.2	24.8

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	=	.98
Elevation at which weir flow begins	=	25.9
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	2089.55	Downstream=	2091.2
Upstream	num=	2		
Width	Elev	Width	Elev	
8.5	17.6	8.5	23.7	
Downstream	num=	2		
Width	Elev	Width	Elev	
8.5	16.6	8.5	23.7	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell	KVal =	1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow	
Submerged Inlet Cd	=
Submerged Inlet + Outlet Cd	= .7905694
Max Low Cord	= 23.7

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	24.09	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	24.07	E.G. Elev (ft)	24.09	24.07
Q Total (cfs)	928.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	928.00	Crit W.S. (ft)	19.64	19.70
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.15	1.24
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.09	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	2056.03	1887.99

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Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.02	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.02	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.24	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.04	0.04
BR Sel Method	Press Only	Power Total (lb/ft s)	0.04	0.05

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	24.92	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	24.90	E.G. Elev (ft)	24.92	24.88
Q Total (cfs)	1268.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	1268.00	Crit W.S. (ft)	19.91	20.15
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.57	1.69
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.13	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	2084.72	1918.95
Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.05	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.05	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.69	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.07	0.08
BR Sel Method	Press Only	Power Total (lb/ft s)	0.11	0.14

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	25.45	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	25.42	E.G. Elev (ft)	25.45	25.38
Q Total (cfs)	1494.00	W.S. Elev (ft)	23.70	23.70
Q Bridge (cfs)	1494.00	Crit W.S. (ft)	20.06	20.33
Q Weir (cfs)		Max Chl Dpth (ft)	6.10	7.10
Weir Sta Lft (ft)		Vel Total (ft/s)	1.85	1.99
Weir Sta Rgt (ft)		Flow Area (sq ft)	808.64	749.62
Weir Submerg		Froude # Chl	0.15	0.17
Weir Max Depth (ft)		Specif Force (cu ft)	2108.72	1944.83

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Min El Weir Flow (ft)	25.90	Hydr Depth (ft)	4.60	4.47
Min El Prs (ft)	23.70	W.P. Total (ft)	187.35	182.82
Delta EG (ft)	0.07	Conv. Total (cfs)	79632.1	71336.5
Delta WS (ft)	0.07	Top Width (ft)	175.60	167.60
BR Open Area (sq ft)	749.62	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.99	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.09	0.11
BR Sel Method	Press Only	Power Total (lb/ft s)	0.18	0.22

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

BRIDGE OUTPUT Profile #PF 4

		Element	Inside BR US	Inside BR DS
E.G. US. (ft)	26.12	E.G. Elev (ft)	26.12	26.12
W.S. US. (ft)	26.10	W.S. Elev (ft)	26.10	26.08
Q Total (cfs)	1866.00	Crit W.S. (ft)	20.30	20.58
Q Bridge (cfs)	960.76	Max Chl Dpth (ft)	8.50	9.48
Q Weir (cfs)	905.24	Vel Total (ft/s)	0.85	1.29
Weir Sta Lft (ft)	811.00	Flow Area (sq ft)	2182.90	1449.71
Weir Sta Rgt (ft)	2979.90	Froude # Chl	0.10	0.12
Weir Submerg	0.95	Specif Force (cu ft)	4652.01	3903.76
Weir Max Depth (ft)	0.72	Hydr Depth (ft)	1.06	0.68
Min El Weir Flow (ft)	25.90	W.P. Total (ft)	2415.38	2468.08
Min El Prs (ft)	23.70	Conv. Total (cfs)		
Delta EG (ft)	0.01	Top Width (ft)	2050.00	2116.67
Delta WS (ft)	0.01	Frctn Loss (ft)		
BR Open Area (sq ft)	749.62	C & E Loss (ft)		
BR Open Vel (ft/s)	1.28	Shear Total (lb/sq ft)		
BR Sluice Coef		Power Total (lb/ft s)		
BR Sel Method	Press/Weir			

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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.

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 and energy have been projected from the downstream cross section. The selected bridge modeling method does not compute answers inside the bridge.

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 26.2

INPUT

Description:

Station Elevation Data num= 19

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Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
811	26	2000	25.4	2001.4	23.2	2011.7	20.3	2024.8	20
2040.4	19	2060	18.2	2067	17.6	2082	17.2	2098.9	16.6
2109.1	18.1	2115	18.7	2142.3	20	2165.7	19.9	2172.2	21.8
2172.9	22.2	2178.9	24.3	2182.4	25.5	3591.2	26.6		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
811	.15	2000	.04	2182.4	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2000	2182.4		181	181	.3	.5
Ineffective Flow	num=		2				
Sta L	Sta R	Elev	Permanent				
811	2000	24.8	F				
2182.4	3591.2	24.8	F				

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.05	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	19.46	Flow Area (sq ft)		869.27	
E.G. Slope (ft/ft)	0.000101	Area (sq ft)		869.27	
Q Total (cfs)	928.00	Flow (cfs)		928.00	
Top Width (ft)	177.32	Top Width (ft)		177.32	
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)		1.07	
Max Chl Dpth (ft)	7.45	Hydr. Depth (ft)		4.90	
Conv. Total (cfs)	92553.4	Conv. (cfs)		92553.4	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		179.15	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	3835.14	4107.41	3838.41
C & E Loss (ft)	0.01	Cum SA (acres)	1655.67	402.29	1740.94

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	24.85	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	19.84	Flow Area (sq ft)		1012.88	
E.G. Slope (ft/ft)	0.000116	Area (sq ft)		1012.88	
Q Total (cfs)	1268.00	Flow (cfs)		1268.00	
Top Width (ft)	180.16	Top Width (ft)		180.16	
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)		1.25	
Max Chl Dpth (ft)	8.25	Hydr. Depth (ft)		5.62	
Conv. Total (cfs)	117920.6	Conv. (cfs)		117920.6	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		182.56	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5742.51	4601.69	5587.53
C & E Loss (ft)	0.00	Cum SA (acres)	1838.32	402.40	2041.28

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	25.35	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	20.14	Flow Area (sq ft)		1102.66	
E.G. Slope (ft/ft)	0.000123	Area (sq ft)		1102.66	
Q Total (cfs)	1494.00	Flow (cfs)		1494.00	
Top Width (ft)	181.92	Top Width (ft)		181.92	
Vel Total (ft/s)	1.35	Avg. Vel. (ft/s)		1.35	
Max Chl Dpth (ft)	8.75	Hydr. Depth (ft)		6.06	
Conv. Total (cfs)	134810.8	Conv. (cfs)		134810.8	
Length Wtd. (ft)	181.00	Wetted Per. (ft)		184.68	
Min Ch El (ft)	16.60	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	7038.78	4916.54	6913.52
C & E Loss (ft)	0.00	Cum SA (acres)	1917.67	402.49	2208.50

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.08	Reach Len. (ft)	181.00	181.00	181.00
Crit W.S. (ft)	20.40	Flow Area (sq ft)	454.09	1236.47	216.84
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	454.09	1236.47	216.84
Q Total (cfs)	1866.00	Flow (cfs)	26.59	1828.82	10.59
Top Width (ft)	2116.67	Top Width (ft)	1189.00	182.40	745.27
Vel Total (ft/s)	0.98	Avg. Vel. (ft/s)	0.06	1.48	0.05
Max Chl Dpth (ft)	9.48	Hydr. Depth (ft)	0.38	6.78	0.29
Conv. Total (cfs)	166166.3	Conv. (cfs)	2367.8	162855.4	943.2
Length Wtd. (ft)	181.00	Wetted Per. (ft)	1189.08	185.21	745.27
Min Ch El (ft)	16.60	Shear (lb/sq ft)	0.00	0.05	0.00
Alpha	2.24	Stream Power (lb/ft s)	0.00	0.08	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	9058.79	5389.25	9137.51
C & E Loss (ft)	0.01	Cum SA (acres)	2019.93	402.63	2393.25

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

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 26.1

INPUT

Description: wide flood plain distance criteria not met

* 001

US92 * 001

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Station Elevation Data num= 21									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
406	26.6	651	25.6	1789	24	2000	22.6	2047	21.9
2075	22.2	2137	21.9	2155	20	2158	19.2	2164	16
2175	17.5	2186	19.2	2197	20.4	2222	20	2268	20.8
2294	19.9	2489	23	3076	23	3351	24	4076	25
5576	26								

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
406	.15	2155	.04	2197	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2155	2197		500 500	500	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	24.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.00	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	458.81	239.52	1572.40
E.G. Slope (ft/ft)	0.000315	Area (sq ft)	458.81	239.52	1572.40
Q Total (cfs)	928.00	Flow (cfs)	93.82	494.39	339.79
Top Width (ft)	1560.21	Top Width (ft)	365.37	42.00	1152.84
Vel Total (ft/s)	0.41	Avg. Vel. (ft/s)	0.20	2.06	0.22
Max Chl Dpth (ft)	8.00	Hydr. Depth (ft)	1.26	5.70	1.36
Conv. Total (cfs)	52318.1	Conv. (cfs)	5289.2	27872.5	19156.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	365.48	43.20	1152.90
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.02	0.11	0.03
Alpha	13.72	Stream Power (lb/ft s)	0.01	0.22	0.01
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	3834.18	4105.10	3835.15
C & E Loss (ft)	0.01	Cum SA (acres)	1654.91	401.83	1738.55

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.82	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1001.11	274.21	2770.06
E.G. Slope (ft/ft)	0.000236	Area (sq ft)	1001.11	274.21	2770.06
Q Total (cfs)	1268.00	Flow (cfs)	157.87	536.96	573.18
Top Width (ft)	2742.02	Top Width (ft)	950.36	42.00	1749.66
Vel Total (ft/s)	0.31	Avg. Vel. (ft/s)	0.16	1.96	0.21
Max Chl Dpth (ft)	8.82	Hydr. Depth (ft)	1.05	6.53	1.58
Conv. Total (cfs)	82459.5	Conv. (cfs)	10266.3	34918.9	37274.3
Length Wtd. (ft)	500.00	Wetted Per. (ft)	950.47	43.20	1749.71
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.02	0.09	0.02
Alpha	16.76	Stream Power (lb/ft s)	0.00	0.18	0.00
Frctn Loss (ft)	0.24	Cum Volume (acre-ft)	5740.43	4599.02	5581.77
C & E Loss (ft)	0.01	Cum SA (acres)	1836.34	401.94	2037.65

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	25.33	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1569.91	295.36	3784.12
E.G. Slope (ft/ft)	0.000190	Area (sq ft)	1569.91	295.36	3784.12
Q Total (cfs)	1494.00	Flow (cfs)	242.13	545.04	706.83
Top Width (ft)	3717.35	Top Width (ft)	1308.55	42.00	2366.80
Vel Total (ft/s)	0.26	Avg. Vel. (ft/s)	0.15	1.85	0.19
Max Chl Dpth (ft)	9.33	Hydr. Depth (ft)	1.20	7.03	1.60
Conv. Total (cfs)	108335.0	Conv. (cfs)	17558.0	39522.6	51254.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1308.66	43.20	2366.86
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	18.05	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.20	Cum Volume (acre-ft)	7035.52	4913.63	6905.66
C & E Loss (ft)	0.01	Cum SA (acres)	1914.95	402.03	2203.59

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	26.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	26.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	2691.82	326.68	5962.48
E.G. Slope (ft/ft)	0.000120	Area (sq ft)	2691.82	326.68	5962.48
Q Total (cfs)	1866.00	Flow (cfs)	409.70	511.92	944.38
Top Width (ft)	5040.38	Top Width (ft)	1619.38	42.00	3379.00
Vel Total (ft/s)	0.21	Avg. Vel. (ft/s)	0.15	1.57	0.16
Max Chl Dpth (ft)	10.07	Hydr. Depth (ft)	1.66	7.78	1.76
Conv. Total (cfs)	170415.9	Conv. (cfs)	37416.4	46752.0	86247.5
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1619.50	43.20	3379.12
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	16.02	Stream Power (lb/ft s)	0.00	0.09	0.00
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	9052.26	5386.00	9124.67
C & E Loss (ft)	0.01	Cum SA (acres)	2014.10	402.17	2384.68

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.3

INPUT

Description: INTERPOLATED SECTION

* 001

x-sec info from aeriels and u/s,d/s

surveyed channel sections * 001

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
30	27	60	26	130	25	300	23	500	22
610	22	640	23	810	23	1010	22	1320	23

1400	24	1680	24	1700	23	1730	22	1820	21
1905	20	1945	19	1970	18	2020	18	2050	19
2070	20	2120	21	2150	22	2180	23	2500	23
2870	23	2930	24	3310	25	4886	26		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
30	.2	1945	.04	2050	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1945	2050		830 830	830	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	23.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	23.56	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	1721.01	556.38	724.29
E.G. Slope (ft/ft)	0.000918	Area (sq ft)	1721.01	556.38	724.29
Q Total (cfs)	2554.00	Flow (cfs)	504.90	1902.97	146.12
Top Width (ft)	2327.40	Top Width (ft)	1368.75	105.00	853.65
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.29	3.42	0.20
Max Chl Dpth (ft)	5.56	Hydr. Depth (ft)	1.26	5.30	0.85
Conv. Total (cfs)	84292.2	Conv. (cfs)	16663.9	62805.8	4822.6
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1368.83	105.04	853.72
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.07	0.30	0.05
Alpha	12.07	Stream Power (lb/ft s)	0.02	1.04	0.01
Frctn Loss (ft)	0.51	Cum Volume (acre-ft)	3821.67	4100.53	3821.97
C & E Loss (ft)	0.02	Cum SA (acres)	1644.95	400.99	1727.03

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.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	24.49	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	3204.60	654.35	1585.85
E.G. Slope (ft/ft)	0.000680	Area (sq ft)	3204.60	654.35	1585.85
Q Total (cfs)	3468.00	Flow (cfs)	921.67	2146.32	400.01
Top Width (ft)	2944.61	Top Width (ft)	1771.97	105.00	1067.64
Vel Total (ft/s)	0.64	Avg. Vel. (ft/s)	0.29	3.28	0.25
Max Chl Dpth (ft)	6.49	Hydr. Depth (ft)	1.81	6.23	1.49
Conv. Total (cfs)	132975.6	Conv. (cfs)	35340.0	82297.7	15337.9
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1772.08	105.04	1067.71
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.26	0.06
Alpha	16.49	Stream Power (lb/ft s)	0.02	0.87	0.02
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	5716.29	4593.69	5556.77
C & E Loss (ft)	0.01	Cum SA (acres)	1820.72	401.09	2021.48

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	25.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	25.06	Reach Len. (ft)	830.00	830.00	830.00

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Crit W.S. (ft)		Flow Area (sq ft)	4220.48	713.74	2252.66
E.G. Slope (ft/ft)	0.000551	Area (sq ft)	4220.48	713.74	2252.66
Q Total (cfs)	4074.00	Flow (cfs)	1289.76	2232.61	551.62
Top Width (ft)	3277.82	Top Width (ft)	1819.16	105.00	1353.66
Vel Total (ft/s)	0.57	Avg. Vel. (ft/s)	0.31	3.13	0.24
Max Chl Dpth (ft)	7.06	Hydr. Depth (ft)	2.32	6.80	1.66
Conv. Total (cfs)	173573.0	Conv. (cfs)	54950.5	95120.7	23501.9
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1819.27	105.04	1353.74
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.23	0.06
Alpha	16.80	Stream Power (lb/ft s)	0.02	0.73	0.01
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	7002.29	4907.84	6871.01
C & E Loss (ft)	0.01	Cum SA (acres)	1897.00	401.18	2182.23

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	25.86	Reach Len. (ft)	830.00	830.00	830.00
Crit W.S. (ft)		Flow Area (sq ft)	5708.15	798.30	3853.78
E.G. Slope (ft/ft)	0.000444	Area (sq ft)	5708.15	798.30	3853.78
Q Total (cfs)	5071.00	Flow (cfs)	1876.32	2415.08	779.60
Top Width (ft)	4603.34	Top Width (ft)	1875.53	105.00	2622.81
Vel Total (ft/s)	0.49	Avg. Vel. (ft/s)	0.33	3.03	0.20
Max Chl Dpth (ft)	7.86	Hydr. Depth (ft)	3.04	7.60	1.47
Conv. Total (cfs)	240700.7	Conv. (cfs)	89061.6	114634.4	37004.8
Length Wtd. (ft)	830.00	Wetted Per. (ft)	1875.64	105.04	2622.89
Min Ch El (ft)	18.00	Shear (lb/sq ft)	0.08	0.21	0.04
Alpha	18.39	Stream Power (lb/ft s)	0.03	0.64	0.01
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	9004.05	5379.54	9068.33
C & E Loss (ft)	0.00	Cum SA (acres)	1994.04	401.32	2350.23

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 25.2

INPUT

Description: INTERPOLATED SECTION

* 001

Station Elevation Data		num=	21						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	26.6	1630	22	1710	23	1930	22	2750	21
2860	20	2900	19	2950	18	2980	17	3020	16
3040	16	3070	17	3110	18	3190	19	3220	20
3250	21	3280	22	3340	23	3420	24	3680	25
4510	26.2								

Manning's n Values		num=	3			
Sta	n Val	Sta	n Val	Sta	n Val	
1000	.18	2980	.04	3070	.18	

Bank Sta: Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
2980	3070		1000 1000	1000	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

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E.G. Elev (ft)	23.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	23.09	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	2385.59	602.96	859.20
E.G. Slope (ft/ft)	0.000442	Area (sq ft)	2385.59	602.96	859.20
Q Total (cfs)	2554.00	Flow (cfs)	564.21	1672.82	316.97
Top Width (ft)	1866.15	Top Width (ft)	1499.08	90.00	277.08
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.24	2.77	0.37
Max Chl Dpth (ft)	7.09	Hydr. Depth (ft)	1.59	6.70	3.10
Conv. Total (cfs)	121507.5	Conv. (cfs)	26842.4	79585.1	15080.0
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1499.13	90.03	277.16
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.04	0.18	0.09
Alpha	11.51	Stream Power (lb/ft s)	0.01	0.51	0.03
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	3782.55	4089.49	3806.88
C & E Loss (ft)	0.01	Cum SA (acres)	1617.63	399.13	1716.26

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	24.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	24.12	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	3999.00	695.48	1187.53
E.G. Slope (ft/ft)	0.000364	Area (sq ft)	3999.00	695.48	1187.53
Q Total (cfs)	3468.00	Flow (cfs)	1141.45	1926.89	399.66
Top Width (ft)	2110.15	Top Width (ft)	1639.87	90.00	380.28
Vel Total (ft/s)	0.59	Avg. Vel. (ft/s)	0.29	2.77	0.34
Max Chl Dpth (ft)	8.12	Hydr. Depth (ft)	2.44	7.73	3.12
Conv. Total (cfs)	181710.7	Conv. (cfs)	59807.9	100961.9	20940.9
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1639.93	90.03	380.37
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.06	0.18	0.07
Alpha	12.38	Stream Power (lb/ft s)	0.02	0.49	0.02
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	5647.66	4580.83	5530.35
C & E Loss (ft)	0.01	Cum SA (acres)	1788.21	399.23	2007.69

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	24.72	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	5018.20	750.04	1465.82
E.G. Slope (ft/ft)	0.000335	Area (sq ft)	5018.20	750.04	1465.82
Q Total (cfs)	4074.00	Flow (cfs)	1546.29	2095.67	432.04
Top Width (ft)	2350.77	Top Width (ft)	1722.89	90.00	537.89
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.31	2.79	0.29
Max Chl Dpth (ft)	8.72	Hydr. Depth (ft)	2.91	8.33	2.73
Conv. Total (cfs)	222595.8	Conv. (cfs)	84486.6	114503.6	23605.6
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1722.95	90.03	537.97
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.06	0.17	0.06
Alpha	12.80	Stream Power (lb/ft s)	0.02	0.49	0.02
Frctn Loss (ft)	0.23	Cum Volume (acre-ft)	6914.27	4893.90	6835.59
C & E Loss (ft)	0.01	Cum SA (acres)	1863.25	399.33	2164.21

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.180	0.040	0.180
W.S. Elev (ft)	25.56	Reach Len. (ft)	1000.00	1000.00	1000.00
Crit W.S. (ft)		Flow Area (sq ft)	6515.75	825.74	2078.80
E.G. Slope (ft/ft)	0.000311	Area (sq ft)	6515.75	825.74	2078.80
Q Total (cfs)	5071.00	Flow (cfs)	2206.36	2371.46	493.18
Top Width (ft)	2928.00	Top Width (ft)	1838.08	90.00	999.93
Vel Total (ft/s)	0.54	Avg. Vel. (ft/s)	0.34	2.87	0.24
Max Chl Dpth (ft)	9.56	Hydr. Depth (ft)	3.54	9.17	2.08
Conv. Total (cfs)	287405.1	Conv. (cfs)	125048.3	134405.3	27951.6
Length Wtd. (ft)	1000.00	Wetted Per. (ft)	1838.14	90.03	1000.01
Min Ch El (ft)	16.00	Shear (lb/sq ft)	0.07	0.18	0.04
Alpha	13.50	Stream Power (lb/ft s)	0.02	0.51	0.01
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	8887.59	5364.07	9011.81
C & E Loss (ft)	0.01	Cum SA (acres)	1958.66	399.46	2315.72

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 25.1

INPUT

Description: INTERPOLATED SECTION

* 001

Station Elevation Data			num=	26					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	25	1240	24	1310	23	1380	22	1440	22
1460	23	1730	23	1815	22	2300	21	2480	20
2570	19	2640	18	2680	17	2730	16	2790	15
2810	15	2860	16	2900	17	2950	18	2980	19
3020	20	3060	21	3110	22	3140	23	3185	24
3235	25								

Manning's n Values			num=	3		
Sta	n Val	Sta	n Val	Sta	n Val	
1000	.17	2730	.04	2860	.17	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2730	2860		1744 1744	1744	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	22.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	22.85	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	2325.48	965.04	957.36
E.G. Slope (ft/ft)	0.000181	Area (sq ft)	2325.48	965.04	957.36
Q Total (cfs)	2554.00	Flow (cfs)	462.35	1833.58	258.07
Top Width (ft)	1528.52	Top Width (ft)	1123.13	130.00	275.39
Vel Total (ft/s)	0.60	Avg. Vel. (ft/s)	0.20	1.90	0.27
Max Chl Dpth (ft)	7.85	Hydr. Depth (ft)	2.07	7.42	3.48
Conv. Total (cfs)	190003.5	Conv. (cfs)	34396.5	136408.1	19198.9
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1123.20	130.02	275.48
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.02	0.08	0.04

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Alpha	7.21	Stream Power (lb/ft s)	0.00	0.16	0.01
Frctn Loss (ft)	0.50	Cum Volume (acre-ft)	3728.47	4071.49	3786.03
C & E Loss (ft)	0.00	Cum SA (acres)	1587.53	396.61	1709.92

Warning: Divided flow computed for this cross-section.

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	23.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	23.89	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	3784.43	1100.08	1265.49
E.G. Slope (ft/ft)	0.000179	Area (sq ft)	3784.43	1100.08	1265.49
Q Total (cfs)	3468.00	Flow (cfs)	827.00	2270.77	370.23
Top Width (ft)	1931.80	Top Width (ft)	1481.97	130.00	319.83
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.22	2.06	0.29
Max Chl Dpth (ft)	8.89	Hydr. Depth (ft)	2.55	8.46	3.96
Conv. Total (cfs)	259145.8	Conv. (cfs)	61797.6	169682.8	27665.4
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1482.05	130.02	319.94
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.03	0.09	0.04
Alpha	8.84	Stream Power (lb/ft s)	0.01	0.20	0.01
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	5558.32	4560.22	5502.19
C & E Loss (ft)	0.00	Cum SA (acres)	1752.38	396.71	1999.65

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	24.50	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	4731.99	1180.16	1471.68
E.G. Slope (ft/ft)	0.000174	Area (sq ft)	4731.99	1180.16	1471.68
Q Total (cfs)	4074.00	Flow (cfs)	1118.31	2514.18	441.52
Top Width (ft)	2090.36	Top Width (ft)	1610.30	130.00	350.06
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.24	2.13	0.30
Max Chl Dpth (ft)	9.50	Hydr. Depth (ft)	2.94	9.08	4.20
Conv. Total (cfs)	309119.7	Conv. (cfs)	84853.0	190766.1	33500.6
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1610.38	130.02	350.17
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.03	0.10	0.05
Alpha	9.28	Stream Power (lb/ft s)	0.01	0.21	0.01
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	6802.35	4871.74	6801.87
C & E Loss (ft)	0.00	Cum SA (acres)	1824.99	396.80	2154.02

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	25.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	25.35	Reach Len. (ft)	1744.00	1744.00	1744.00
Crit W.S. (ft)		Flow Area (sq ft)	6174.78	1290.82	1784.68

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E.G. Slope (ft/ft)	0.000168	Area (sq ft)	6174.78	1290.82	1784.68
Q Total (cfs)	5071.00	Flow (cfs)	1631.90	2868.08	571.02
Top Width (ft)	2235.00	Top Width (ft)	1730.00	130.00	375.00
Vel Total (ft/s)	0.55	Avg. Vel. (ft/s)	0.26	2.22	0.32
Max Chl Dpth (ft)	10.35	Hydr. Depth (ft)	3.57	9.93	4.76
Conv. Total (cfs)	391632.0	Conv. (cfs)	126031.2	221501.2	44099.5
Length Wtd. (ft)	1744.00	Wetted Per. (ft)	1730.44	130.02	375.46
Min Ch El (ft)	15.00	Shear (lb/sq ft)	0.04	0.10	0.05
Alpha	9.40	Stream Power (lb/ft s)	0.01	0.23	0.02
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	8741.92	5339.78	8967.46
C & E Loss (ft)	0.00	Cum SA (acres)	1917.70	396.94	2299.94

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 25

INPUT

Description:

Station Elevation Data		num= 25							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
334	25	1010	21	1300	20.5	1354	20.7	1413	20.4
1463	19.7	1514	17.9	1565	16.1	1618	15.3	1621	14.9
1637	12.6	1646	14	1651	15.2	1703	15.1	1760	15.1
1787	15.7	1809	17.1	1833	18.5	1883	19.5	2066	20
2110	21	2172	22	2272	23	2535	24	2672	25

Manning's n Values

num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
334	.15	1618	.04	1651	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1618	1651		3391 3391	3391	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	22.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.31	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	1707.35	278.25	1977.17
E.G. Slope (ft/ft)	0.000518	Area (sq ft)	1707.35	278.25	1977.17
Q Total (cfs)	2633.00	Flow (cfs)	623.02	966.33	1043.65
Top Width (ft)	1414.59	Top Width (ft)	829.51	33.00	552.07
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.36	3.47	0.53
Max Chl Dpth (ft)	9.71	Hydr. Depth (ft)	2.06	8.43	3.58
Conv. Total (cfs)	115649.4	Conv. (cfs)	27365.1	42444.0	45840.3
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	829.59	33.44	552.20
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.07	0.27	0.12
Alpha	10.35	Stream Power (lb/ft s)	0.02	0.94	0.06
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	3647.74	4046.60	3727.28
C & E Loss (ft)	0.00	Cum SA (acres)	1548.44	393.34	1693.35

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	23.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	23.39	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	2696.21	313.71	2640.19
E.G. Slope (ft/ft)	0.000463	Area (sq ft)	2696.21	313.71	2640.19
Q Total (cfs)	3556.00	Flow (cfs)	1105.19	1115.48	1335.33
Top Width (ft)	1766.42	Top Width (ft)	1011.10	33.00	722.31
Vel Total (ft/s)	0.63	Avg. Vel. (ft/s)	0.41	3.56	0.51
Max Chl Dpth (ft)	10.79	Hydr. Depth (ft)	2.67	9.51	3.66
Conv. Total (cfs)	165246.8	Conv. (cfs)	51357.9	51836.2	62052.7
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1011.19	33.44	722.44
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.27	0.11
Alpha	10.39	Stream Power (lb/ft s)	0.03	0.96	0.05
Frctn Loss (ft)	1.57	Cum Volume (acre-ft)	5428.59	4531.92	5424.01
C & E Loss (ft)	0.00	Cum SA (acres)	1702.47	393.45	1978.79

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	24.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.03	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	3381.15	334.93	3158.84
E.G. Slope (ft/ft)	0.000431	Area (sq ft)	3381.15	334.93	3158.84
Q Total (cfs)	4167.00	Flow (cfs)	1452.73	1200.26	1514.00
Top Width (ft)	2040.60	Top Width (ft)	1119.75	33.00	887.85
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.43	3.58	0.48
Max Chl Dpth (ft)	11.43	Hydr. Depth (ft)	3.02	10.15	3.56
Conv. Total (cfs)	200699.1	Conv. (cfs)	69969.4	57809.3	72920.4
Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1119.83	33.44	887.98
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.27	0.10
Alpha	10.47	Stream Power (lb/ft s)	0.03	0.97	0.05
Frctn Loss (ft)	1.54	Cum Volume (acre-ft)	6639.94	4841.41	6709.17
C & E Loss (ft)	0.00	Cum SA (acres)	1770.34	393.54	2129.24

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	24.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	24.92	Reach Len. (ft)	3391.00	3391.00	3391.00
Crit W.S. (ft)		Flow Area (sq ft)	4453.10	364.52	4010.00
E.G. Slope (ft/ft)	0.000373	Area (sq ft)	4453.10	364.52	4010.00
Q Total (cfs)	5170.00	Flow (cfs)	1963.73	1284.88	1921.39
Top Width (ft)	2314.97	Top Width (ft)	1271.28	33.00	1010.69
Vel Total (ft/s)	0.59	Avg. Vel. (ft/s)	0.44	3.52	0.48
Max Chl Dpth (ft)	12.32	Hydr. Depth (ft)	3.50	11.05	3.97
Conv. Total (cfs)	267857.1	Conv. (cfs)	101740.4	66569.6	99547.1

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Length Wtd. (ft)	3391.00	Wetted Per. (ft)	1271.37	33.44	1010.82
Min Ch El (ft)	12.60	Shear (lb/sq ft)	0.08	0.25	0.09
Alpha	9.47	Stream Power (lb/ft s)	0.04	0.89	0.04
Frctn Loss (ft)	1.44	Cum Volume (acre-ft)	8529.17	5306.64	8851.46
C & E Loss (ft)	0.01	Cum SA (acres)	1857.62	393.68	2272.20

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 24

INPUT

Description:

Station	Elevation	Data	num=	22					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1319	24	1525	19.3	1568	17.3	1599	14.9	1605	14.7
1661	15	1707	14.6	1753	14.5	1800	13.7	1810	12.9
1819	13.9	1825	14.4	1858	14.1	1870	13.3	1880	13
1888	13.5	1897	13.9	1929	14.2	1968	15.2	2008	18.5
2050	21.3	2100	23.1						

Sta	n Val	Sta	n Val	Sta	n Val
1319	.15	1825	.04	1897	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1825	1897		1839	1839	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	20.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	20.71	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	1699.57	495.81	638.82
E.G. Slope (ft/ft)	0.000434	Area (sq ft)	1699.57	495.81	638.82
Q Total (cfs)	2728.00	Flow (cfs)	983.67	1388.86	355.47
Top Width (ft)	578.06	Top Width (ft)	361.88	72.00	144.18
Vel Total (ft/s)	0.96	Avg. Vel. (ft/s)	0.58	2.80	0.56
Max Chl Dpth (ft)	7.81	Hydr. Depth (ft)	4.70	6.89	4.43
Conv. Total (cfs)	130876.3	Conv. (cfs)	47191.9	66630.8	17053.6
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	362.16	72.06	144.40
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.13	0.19	0.12
Alpha	4.49	Stream Power (lb/ft s)	0.07	0.52	0.07
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	3515.13	4016.47	3625.46
C & E Loss (ft)	0.01	Cum SA (acres)	1502.07	389.26	1666.25

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

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

CROSS SECTION OUTPUT Profile #PF 2

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E.G. Elev (ft)	21.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.79	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2116.71	573.70	805.13
E.G. Slope (ft/ft)	0.000465	Area (sq ft)	2116.71	573.70	805.13
Q Total (cfs)	3675.00	Flow (cfs)	1351.61	1832.47	490.91
Top Width (ft)	648.02	Top Width (ft)	409.30	72.00	166.72
Vel Total (ft/s)	1.05	Avg. Vel. (ft/s)	0.64	3.19	0.61
Max Chl Dpth (ft)	8.89	Hydr. Depth (ft)	5.17	7.97	4.83
Conv. Total (cfs)	170417.1	Conv. (cfs)	62677.0	84975.5	22764.6
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	409.59	72.06	166.97
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.15	0.23	0.14
Alpha	4.78	Stream Power (lb/ft s)	0.10	0.74	0.09
Frctn Loss (ft)	1.06	Cum Volume (acre-ft)	5241.25	4497.38	5289.90
C & E Loss (ft)	0.01	Cum SA (acres)	1647.19	389.36	1944.18

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	22.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.45	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2395.42	621.06	920.80
E.G. Slope (ft/ft)	0.000476	Area (sq ft)	2395.42	621.06	920.80
Q Total (cfs)	4302.00	Flow (cfs)	1606.15	2116.18	579.67
Top Width (ft)	695.12	Top Width (ft)	438.13	72.00	184.99
Vel Total (ft/s)	1.09	Avg. Vel. (ft/s)	0.67	3.41	0.63
Max Chl Dpth (ft)	9.55	Hydr. Depth (ft)	5.47	8.63	4.98
Conv. Total (cfs)	197163.0	Conv. (cfs)	73610.7	96985.4	26566.8
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	438.43	72.06	185.25
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.16	0.26	0.15
Alpha	4.97	Stream Power (lb/ft s)	0.11	0.87	0.09
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	6415.10	4804.20	6550.38
C & E Loss (ft)	0.00	Cum SA (acres)	1709.70	389.45	2087.48

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	23.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	23.42	Reach Len. (ft)	1839.00	1839.00	1839.00
Crit W.S. (ft)		Flow Area (sq ft)	2840.77	690.86	1111.76
E.G. Slope (ft/ft)	0.000486	Area (sq ft)	2840.77	690.86	1111.76
Q Total (cfs)	5332.00	Flow (cfs)	2026.63	2552.70	752.67
Top Width (ft)	755.62	Top Width (ft)	480.62	72.00	203.00
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.71	3.69	0.68
Max Chl Dpth (ft)	10.52	Hydr. Depth (ft)	5.91	9.60	5.48
Conv. Total (cfs)	241931.4	Conv. (cfs)	91955.1	115825.0	34151.4
Length Wtd. (ft)	1839.00	Wetted Per. (ft)	480.93	72.06	203.60
Min Ch El (ft)	13.00	Shear (lb/sq ft)	0.18	0.29	0.17
Alpha	5.15	Stream Power (lb/ft s)	0.13	1.07	0.11
Frctn Loss (ft)	0.93	Cum Volume (acre-ft)	8245.27	5265.56	8652.11
C & E Loss (ft)	0.00	Cum SA (acres)	1789.43	389.59	2224.96

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 23

INPUT

Description:

Station Elevation Data		num=		35					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1025	23	1068	22	1100	21	1143	20	1370	19
1400	18.4	1440	18.6	1491	18.5	1541.1	17.8	1595	16.3
1649	14.3	1669	13.6	1682	14	1691	14.2	1707	13.9
1710	12.9	1718	6.6	1723	7	1735	10.1	1740	12.8
1742	15.4	1750	15.6	1756	14.5	1771	14.6	1785	15.2
1808	14.6	1845	15.4	1887	15.6	1937	15.4	2042	18
2150	19	2225	20	2250	21	2287	22	2325	23

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1025	.15	1707	.04	1742	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1707	1742		3151 3151	3151	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	19.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	19.46	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	868.69	340.72	1229.58
E.G. Slope (ft/ft)	0.000894	Area (sq ft)	868.69	340.72	1229.58
Q Total (cfs)	2710.00	Flow (cfs)	404.48	1585.67	719.85
Top Width (ft)	917.77	Top Width (ft)	440.55	35.00	442.21
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.47	4.65	0.59
Max Chl Dpth (ft)	12.86	Hydr. Depth (ft)	1.97	9.73	2.78
Conv. Total (cfs)	90647.9	Conv. (cfs)	13529.7	53039.7	24078.5
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	440.65	39.72	442.39
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.11	0.48	0.16
Alpha	10.37	Stream Power (lb/ft s)	0.05	2.23	0.09
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)	3460.92	3998.81	3586.02
C & E Loss (ft)	0.05	Cum SA (acres)	1485.13	387.00	1653.88

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	20.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	20.65	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	1516.43	382.44	1799.46

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E.G. Slope (ft/ft)	0.000738	Area (sq ft)	1516.43	382.44	1799.46
Q Total (cfs)	3649.00	Flow (cfs)	764.02	1746.80	1138.18
Top Width (ft)	1126.07	Top Width (ft)	591.87	35.00	499.20
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.50	4.57	0.63
Max Chl Dpth (ft)	14.05	Hydr. Depth (ft)	2.56	10.93	3.60
Conv. Total (cfs)	134319.9	Conv. (cfs)	28123.7	64299.7	41896.5
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	591.97	39.72	499.39
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.12	0.44	0.17
Alpha	10.44	Stream Power (lb/ft s)	0.06	2.03	0.11
Frctn Loss (ft)	1.80	Cum Volume (acre-ft)	5164.56	4477.19	5234.92
C & E Loss (ft)	0.03	Cum SA (acres)	1626.05	387.10	1930.13

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	21.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.41	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	1979.81	409.15	2188.81
E.G. Slope (ft/ft)	0.000626	Area (sq ft)	1979.81	409.15	2188.81
Q Total (cfs)	4271.00	Flow (cfs)	1063.43	1799.88	1407.68
Top Width (ft)	1178.39	Top Width (ft)	620.17	35.00	523.22
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.54	4.40	0.64
Max Chl Dpth (ft)	14.81	Hydr. Depth (ft)	3.19	11.69	4.18
Conv. Total (cfs)	170754.3	Conv. (cfs)	42516.0	71959.2	56279.1
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	620.28	39.72	523.43
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.12	0.40	0.16
Alpha	9.61	Stream Power (lb/ft s)	0.07	1.77	0.11
Frctn Loss (ft)	1.70	Cum Volume (acre-ft)	6322.74	4782.46	6484.74
C & E Loss (ft)	0.02	Cum SA (acres)	1687.36	387.19	2072.53

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	22.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	22.49	Reach Len. (ft)	3151.00	3151.00	3151.00
Crit W.S. (ft)		Flow Area (sq ft)	2667.32	446.83	2773.66
E.G. Slope (ft/ft)	0.000529	Area (sq ft)	2667.32	446.83	2773.66
Q Total (cfs)	5289.00	Flow (cfs)	1542.44	1917.68	1828.88
Top Width (ft)	1258.53	Top Width (ft)	659.99	35.00	563.55
Vel Total (ft/s)	0.90	Avg. Vel. (ft/s)	0.58	4.29	0.66
Max Chl Dpth (ft)	15.89	Hydr. Depth (ft)	4.04	12.77	4.92
Conv. Total (cfs)	229852.6	Conv. (cfs)	67032.2	83339.8	79480.7
Length Wtd. (ft)	3151.00	Wetted Per. (ft)	660.11	39.72	563.76
Min Ch El (ft)	6.60	Shear (lb/sq ft)	0.13	0.37	0.16
Alpha	8.58	Stream Power (lb/ft s)	0.08	1.60	0.11
Frctn Loss (ft)	1.52	Cum Volume (acre-ft)	8129.00	5241.54	8570.09
C & E Loss (ft)	0.01	Cum SA (acres)	1765.35	387.33	2208.77

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 22

INPUT

Description:

Station Elevation Data				num=	24
Sta	Elev	Sta	Elev	Sta	Elev
1432	21	1469	20	1600	19.3
1811	12.5	1862	10.9	1940	10.9
2021	7.5	2028	9.8	2032	10.9
2216	10.9	2217	10.4	2219	9.8
2246	11.3	2412	18.8	2451	20.2

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
1432	.15	2006	.04	2032	.15

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	2006	2032		2497	2497	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	17.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	17.53	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	1575.26	215.73	1812.35
E.G. Slope (ft/ft)	0.000497	Area (sq ft)	1575.26	215.73	1812.35
Q Total (cfs)	2903.00	Flow (cfs)	993.96	716.57	1192.48
Top Width (ft)	704.08	Top Width (ft)	326.28	26.00	351.81
Vel Total (ft/s)	0.81	Avg. Vel. (ft/s)	0.63	3.32	0.66
Max Chl Dpth (ft)	10.03	Hydr. Depth (ft)	4.83	8.30	5.15
Conv. Total (cfs)	130158.3	Conv. (cfs)	44564.9	32127.8	53465.6
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	326.40	26.88	352.65
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.25	0.16
Alpha	4.68	Stream Power (lb/ft s)	0.09	0.83	0.11
Frctn Loss (ft)	0.83	Cum Volume (acre-ft)	3372.53	3978.69	3476.00
C & E Loss (ft)	0.01	Cum SA (acres)	1457.40	384.79	1625.16

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	18.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	18.92	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	2064.34	252.03	2325.02
E.G. Slope (ft/ft)	0.000463	Area (sq ft)	2064.34	252.03	2325.02
Q Total (cfs)	3893.00	Flow (cfs)	1350.97	896.05	1645.98
Top Width (ft)	793.15	Top Width (ft)	383.75	26.00	383.40
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.65	3.56	0.71
Max Chl Dpth (ft)	11.42	Hydr. Depth (ft)	5.38	9.69	6.06
Conv. Total (cfs)	180873.9	Conv. (cfs)	62767.6	41631.7	76474.6
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	383.89	26.88	384.28

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Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.16	0.27	0.17
Alpha	4.65	Stream Power (lb/ft s)	0.10	0.96	0.12
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	5035.05	4454.25	5085.75
C & E Loss (ft)	0.01	Cum SA (acres)	1590.77	384.89	1898.20

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	19.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	19.76	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	2418.20	273.71	2654.46
E.G. Slope (ft/ft)	0.000476	Area (sq ft)	2418.20	273.71	2654.46
Q Total (cfs)	4553.00	Flow (cfs)	1511.18	1041.78	2000.04
Top Width (ft)	923.99	Top Width (ft)	491.36	26.00	406.63
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.62	3.81	0.75
Max Chl Dpth (ft)	12.26	Hydr. Depth (ft)	4.92	10.53	6.53
Conv. Total (cfs)	208779.1	Conv. (cfs)	69295.7	47771.2	91712.2
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	491.50	26.88	407.53
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.30	0.19
Alpha	5.09	Stream Power (lb/ft s)	0.09	1.15	0.15
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	6163.67	4757.76	6309.57
C & E Loss (ft)	0.01	Cum SA (acres)	1647.16	384.99	2038.90

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	21.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.150	0.040	0.150
W.S. Elev (ft)	21.00	Reach Len. (ft)	2497.00	2497.00	2497.00
Crit W.S. (ft)		Flow Area (sq ft)	3097.67	305.99	3187.75
E.G. Slope (ft/ft)	0.000446	Area (sq ft)	3097.67	305.99	3187.75
Q Total (cfs)	5634.00	Flow (cfs)	1993.91	1214.98	2425.10
Top Width (ft)	1058.78	Top Width (ft)	573.91	26.00	458.88
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.64	3.97	0.76
Max Chl Dpth (ft)	13.50	Hydr. Depth (ft)	5.40	11.77	6.95
Conv. Total (cfs)	266745.8	Conv. (cfs)	94403.3	57524.3	114818.2
Length Wtd. (ft)	2497.00	Wetted Per. (ft)	574.07	26.88	459.78
Min Ch El (ft)	7.50	Shear (lb/sq ft)	0.15	0.32	0.19
Alpha	5.20	Stream Power (lb/ft s)	0.10	1.26	0.15
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	7920.49	5214.32	8354.48
C & E Loss (ft)	0.01	Cum SA (acres)	1720.73	385.12	2171.79

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 21

INPUT
 Description: * 001

Station Elevation Data num= 37									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1349	20	1399	19	1443	18	1480	17	1500	15.6
1555	14.1	1607	12.8	1652	11.4	1700	9.3	1750	9
1798	9.3	1846	8.7	1858	7.5	1871	8.8	1895	9.2
1912	8.9	1915	7.5	1926	6.8	1934	7.7	1936	9

1957	8.9	1982	8.7	1994	8.2	2002	8.8	2020	8.9
2040	8.6	2051	8.1	2061	8.8	2078	8.8	2125	8.9
2171	9	2206	9.5	2231	9.6	2282	15.6	2333	17.6
2365	19.3	2418	21.1						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1349	.16	1915	.04	1934	.16

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1915	1934		2919	2919	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	16.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	16.71	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	2459.95	180.85	2543.96
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	2459.95	180.85	2543.96
Q Total (cfs)	2903.00	Flow (cfs)	1129.76	466.36	1306.88
Top Width (ft)	826.19	Top Width (ft)	430.87	19.00	376.32
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.46	2.58	0.51
Max Chl Dpth (ft)	9.91	Hydr. Depth (ft)	5.71	9.52	6.76
Conv. Total (cfs)	187351.3	Conv. (cfs)	72911.5	30097.4	84342.4
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	431.46	19.07	377.15
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.09	0.14	0.10
Alpha	4.05	Stream Power (lb/ft s)	0.04	0.37	0.05
Frctn Loss (ft)	0.85	Cum Volume (acre-ft)	3256.87	3967.32	3351.14
C & E Loss (ft)	0.01	Cum SA (acres)	1435.70	383.50	1604.29

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	18.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	18.12	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	3095.98	207.64	3099.01
E.G. Slope (ft/ft)	0.000245	Area (sq ft)	3095.98	207.64	3099.01
Q Total (cfs)	3893.00	Flow (cfs)	1563.95	593.06	1735.99
Top Width (ft)	905.10	Top Width (ft)	477.30	19.00	408.80
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.51	2.86	0.56
Max Chl Dpth (ft)	11.32	Hydr. Depth (ft)	6.49	10.93	7.58
Conv. Total (cfs)	248712.2	Conv. (cfs)	99915.9	37889.1	110907.2
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	477.92	19.07	409.67
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.10	0.17	0.12
Alpha	4.02	Stream Power (lb/ft s)	0.05	0.48	0.06
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	4887.15	4441.07	4930.29
C & E Loss (ft)	0.01	Cum SA (acres)	1566.09	383.60	1875.50

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	18.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	18.94	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	3502.05	223.22	3440.46
E.G. Slope (ft/ft)	0.000249	Area (sq ft)	3502.05	223.22	3440.46
Q Total (cfs)	4553.00	Flow (cfs)	1845.16	674.74	2033.10
Top Width (ft)	956.61	Top Width (ft)	513.38	19.00	424.23

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Vel Total (ft/s)	0.64	Avg. Vel. (ft/s)	0.53	3.02	0.59
Max Chl Dpth (ft)	12.14	Hydr. Depth (ft)	6.82	11.75	8.11
Conv. Total (cfs)	288426.3	Conv. (cfs)	116888.3	42743.7	128794.3
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	514.00	19.07	425.12
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.11	0.18	0.13
Alpha	4.02	Stream Power (lb/ft s)	0.06	0.55	0.07
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	5993.99	4743.51	6134.88
C & E Loss (ft)	0.01	Cum SA (acres)	1618.36	383.70	2015.09

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	20.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.160	0.040	0.160
W.S. Elev (ft)	20.20	Reach Len. (ft)	2919.00	2919.00	2919.00
Crit W.S. (ft)		Flow Area (sq ft)	4186.22	247.13	3993.49
E.G. Slope (ft/ft)	0.000252	Area (sq ft)	4186.22	247.13	3993.49
Q Total (cfs)	5634.00	Flow (cfs)	2339.17	803.48	2491.35
Top Width (ft)	1042.46	Top Width (ft)	566.00	19.00	457.46
Vel Total (ft/s)	0.67	Avg. Vel. (ft/s)	0.56	3.25	0.62
Max Chl Dpth (ft)	13.40	Hydr. Depth (ft)	7.40	13.01	8.73
Conv. Total (cfs)	355111.0	Conv. (cfs)	147437.8	50643.5	157029.8
Length Wtd. (ft)	2919.00	Wetted Per. (ft)	566.83	19.07	458.38
Min Ch El (ft)	6.80	Shear (lb/sq ft)	0.12	0.20	0.14
Alpha	4.05	Stream Power (lb/ft s)	0.06	0.66	0.09
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	7711.72	5198.46	8148.65
C & E Loss (ft)	0.01	Cum SA (acres)	1688.05	383.83	2145.53

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 20

INPUT

Description: 1ST SEC SOUTH OF LPGA

* 001

Station Elevation Data		num=		41					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
793	20	830	19	868	18	918	17	968	16
980	15	1018	14	1093	13	1118	12	1155	11
1193	10	1230	9	1300	8.2	1320	8.2	1343	8.8
1361	6.4	1379	9.5	1402	9.9	1450	9.6	1502	8.8
1545	8.6	1549	7.1	1556	4.8	1566	4	1579	4.6
1589	7.3	1590	9.5	1596	9.9	1604	8.8	1623	8.6
1631	7.7	1636	8.2	1662	8.6	1707	10.3	1746	13
1768	13.2	1838	16	1999	17	2043	18	2118	19
2168	20								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
793	.2	1549	.04	1589	.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff Contr.	Expan.
	1549	1589		2903	2903	2903	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	15.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.79	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	3120.21	430.57	1112.56
E.G. Slope (ft/ft)	0.000355	Area (sq ft)	3120.21	430.57	1112.56
Q Total (cfs)	3219.00	Flow (cfs)	1342.00	1450.56	426.45
Top Width (ft)	862.25	Top Width (ft)	578.49	40.00	243.77
Vel Total (ft/s)	0.69	Avg. Vel. (ft/s)	0.43	3.37	0.38
Max Chl Dpth (ft)	11.79	Hydr. Depth (ft)	5.39	10.76	4.56
Conv. Total (cfs)	170854.8	Conv. (cfs)	71229.3	76991.1	22634.5
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	579.32	40.77	245.53
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.12	0.23	0.10
Alpha	10.94	Stream Power (lb/ft s)	0.05	0.79	0.04
Frctn Loss (ft)	1.77	Cum Volume (acre-ft)	3069.91	3946.84	3228.63
C & E Loss (ft)	0.02	Cum SA (acres)	1401.88	381.53	1583.51

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	17.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	17.13	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	3928.11	484.03	1546.06
E.G. Slope (ft/ft)	0.000396	Area (sq ft)	3928.11	484.03	1546.06
Q Total (cfs)	4361.00	Flow (cfs)	1951.04	1862.56	547.40
Top Width (ft)	1092.93	Top Width (ft)	637.35	40.00	415.59
Vel Total (ft/s)	0.73	Avg. Vel. (ft/s)	0.50	3.85	0.35
Max Chl Dpth (ft)	13.13	Hydr. Depth (ft)	6.16	12.10	3.72
Conv. Total (cfs)	219088.5	Conv. (cfs)	98016.7	93571.7	27500.1
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	638.20	40.77	417.36
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.15	0.29	0.09
Alpha	12.04	Stream Power (lb/ft s)	0.08	1.13	0.03
Frctn Loss (ft)	1.74	Cum Volume (acre-ft)	4651.80	4417.90	4774.65
C & E Loss (ft)	0.01	Cum SA (acres)	1528.74	381.63	1847.88

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	18.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	17.93	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	4458.75	516.31	1895.77
E.G. Slope (ft/ft)	0.000397	Area (sq ft)	4458.75	516.31	1895.77
Q Total (cfs)	5122.00	Flow (cfs)	2316.15	2076.74	729.11
Top Width (ft)	1168.79	Top Width (ft)	677.70	40.00	451.09
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.52	4.02	0.38

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Max Chl Dpth (ft)	13.93	Hydr. Depth (ft)	6.58	12.91	4.20
Conv. Total (cfs)	257000.6	Conv. (cfs)	116214.8	104202.1	36583.8
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	678.56	40.77	452.88
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.16	0.31	0.10
Alpha	12.06	Stream Power (lb/ft s)	0.08	1.26	0.04
Frctn Loss (ft)	1.65	Cum Volume (acre-ft)	5727.26	4718.74	5956.08
C & E Loss (ft)	0.01	Cum SA (acres)	1578.46	381.72	1985.76

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	19.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	19.20	Reach Len. (ft)	2903.00	2903.00	2903.00
Crit W.S. (ft)		Flow Area (sq ft)	5348.11	566.95	2523.93
E.G. Slope (ft/ft)	0.000386	Area (sq ft)	5348.11	566.95	2523.93
Q Total (cfs)	6374.00	Flow (cfs)	2952.22	2392.84	1028.94
Top Width (ft)	1305.40	Top Width (ft)	726.40	40.00	539.00
Vel Total (ft/s)	0.76	Avg. Vel. (ft/s)	0.55	4.22	0.41
Max Chl Dpth (ft)	15.20	Hydr. Depth (ft)	7.36	14.17	4.68
Conv. Total (cfs)	324412.2	Conv. (cfs)	150256.5	121786.6	52369.1
Length Wtd. (ft)	2903.00	Wetted Per. (ft)	727.28	40.77	540.79
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.18	0.34	0.11
Alpha	12.02	Stream Power (lb/ft s)	0.10	1.41	0.05
Frctn Loss (ft)	1.53	Cum Volume (acre-ft)	7392.27	5171.19	7930.28
C & E Loss (ft)	0.01	Cum SA (acres)	1644.75	381.86	2112.14

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19.4

INPUT

Description:

Station Elevation Data		num=	28						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
431	19	471	18	534	17	621	16	646	15
659	14	771	13	1000	11.5	1063	10.4	1120	9.1
1174	8.6	1236	7.3	1256	6.3	1291	6.5	1310	5.1
1316	3.7	1321	5.2	1325	6.9	1338	6.3	1340	6.9
1345	6.9	1350	8.1	1358	9.8	1361	10.7	1387	13
1443	15.3	1495	17.3	1510	18				

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
431	.17	1291	.04	1350	.17

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1291	1350	240	240	240	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

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E.G. Elev (ft)	14.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.83	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	1847.48	461.82	109.55
E.G. Slope (ft/ft)	0.001190	Area (sq ft)	1847.48	461.82	109.55
Q Total (cfs)	3520.00	Flow (cfs)	1162.59	2306.70	50.71
Top Width (ft)	728.94	Top Width (ft)	612.77	59.00	57.17
Vel Total (ft/s)	1.46	Avg. Vel. (ft/s)	0.63	4.99	0.46
Max Chl Dpth (ft)	10.13	Hydr. Depth (ft)	3.01	7.83	1.92
Conv. Total (cfs)	102030.3	Conv. (cfs)	33698.7	66861.6	1469.9
Length Wtd. (ft)	240.00	Wetted Per. (ft)	612.84	60.02	57.60
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.22	0.57	0.14
Alpha	7.78	Stream Power (lb/ft s)	0.14	2.86	0.07
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)	2904.37	3917.10	3187.90
C & E Loss (ft)	0.10	Cum SA (acres)	1362.18	378.23	1573.48

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.25	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	2754.16	545.63	215.33
E.G. Slope (ft/ft)	0.000959	Area (sq ft)	2754.16	545.63	215.33
Q Total (cfs)	4786.00	Flow (cfs)	1949.39	2734.03	102.59
Top Width (ft)	801.98	Top Width (ft)	651.22	59.00	91.76
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)	0.71	5.01	0.48
Max Chl Dpth (ft)	11.55	Hydr. Depth (ft)	4.23	9.25	2.35
Conv. Total (cfs)	154548.0	Conv. (cfs)	62949.0	88286.3	3312.7
Length Wtd. (ft)	240.00	Wetted Per. (ft)	651.34	60.02	92.21
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.25	0.54	0.14
Alpha	7.85	Stream Power (lb/ft s)	0.18	2.73	0.07
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	4429.14	4383.59	4715.96
C & E Loss (ft)	0.07	Cum SA (acres)	1485.80	378.33	1830.97

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	16.16	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	3358.34	599.36	309.59
E.G. Slope (ft/ft)	0.000848	Area (sq ft)	3358.34	599.36	309.59
Q Total (cfs)	5628.00	Flow (cfs)	2469.47	3006.75	151.78
Top Width (ft)	858.23	Top Width (ft)	683.88	59.00	115.35
Vel Total (ft/s)	1.32	Avg. Vel. (ft/s)	0.74	5.02	0.49
Max Chl Dpth (ft)	12.46	Hydr. Depth (ft)	4.91	10.16	2.68
Conv. Total (cfs)	193254.3	Conv. (cfs)	84796.6	103245.9	5211.9
Length Wtd. (ft)	240.00	Wetted Per. (ft)	684.01	60.02	115.82
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.26	0.53	0.14
Alpha	7.87	Stream Power (lb/ft s)	0.19	2.65	0.07
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	5466.78	4681.56	5882.60

C & E Loss (ft)	0.06	Cum SA (acres)	1533.09	378.42	1966.88

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.56	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)		Flow Area (sq ft)	4395.32	681.82	496.03
E.G. Slope (ft/ft)	0.000739	Area (sq ft)	4395.32	681.82	496.03
Q Total (cfs)	7015.00	Flow (cfs)	3274.07	3480.41	260.52
Top Width (ft)	1001.60	Top Width (ft)	792.10	59.00	150.51
Vel Total (ft/s)	1.26	Avg. Vel. (ft/s)	0.74	5.10	0.53
Max Chl Dpth (ft)	13.86	Hydr. Depth (ft)	5.55	11.56	3.30
Conv. Total (cfs)	257968.9	Conv. (cfs)	120400.2	127988.2	9580.5
Length Wtd. (ft)	240.00	Wetted Per. (ft)	792.24	60.02	151.01
Min Ch El (ft)	3.70	Shear (lb/sq ft)	0.26	0.52	0.15
Alpha	8.33	Stream Power (lb/ft s)	0.19	2.68	0.08
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	7067.60	5129.58	7829.65
C & E Loss (ft)	0.05	Cum SA (acres)	1594.15	378.56	2089.17

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 19.35

INPUT

Description: Upstream xs for new bridge

Station	Elevation	Data	num=	53						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
0	18.6	93.21	18.15	117.03	18.58	120.8	18.515	142.01	18.15	
160.18	17.96	171.49	18.15	192.67	17.15	218.88	16.15	239.82	15.15	
262.29	10.5	284.7	10.5	300.93	10.5	310.8	10.5	319.81	10.15	
330.02	9.15	339.92	8.15	342.97	7.15	344.39	6.15	345.78	5.15	
347.17	4.15	354.98	3.44	366.47	4.15	374.56	5.15	382.59	6.15	
392.87	7.15	412.73	8.15	426.9	8.54	448.33	8.15	461	7.556	
469.66	7.15	523.61	6.55	565.62	9.05	575.55	10.15	585.98	10.95	
599.52	10.15	610.8	9.25	621.43	10.15	676	10.15	703.26	10.15	
708.21	10.56	717.53	11.15	740.03	12.15	763.01	12.76	784.72	12.15	
799.91	13.15	814.26	14.15	824.61	15.15	843.84	16.15	900	16.38	
919.42	17.15	928.01	18.15	937.52	19.15					

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
0 .17	319.81	.04 565.62 .17

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
319.81	565.62	146	146	146	.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
0	218.88	20 F

621.43 937.52 20 F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.81	Reach Len. (ft)	5.00	5.00	5.00
Crit W.S. (ft)	8.97	Flow Area (sq ft)	218.44	1629.39	210.00
E.G. Slope (ft/ft)	0.000254	Area (sq ft)	218.44	1629.39	684.06
Q Total (cfs)	3520.00	Flow (cfs)	62.65	3386.80	70.56
Top Width (ft)	563.09	Top Width (ft)	73.52	245.81	243.76
Vel Total (ft/s)	1.71	Avg. Vel. (ft/s)	0.29	2.08	0.34
Max Chl Dpth (ft)	10.37	Hydr. Depth (ft)	2.97	6.63	3.76
Conv. Total (cfs)	221040.6	Conv. (cfs)	3934.0	212676.0	4430.6
Length Wtd. (ft)	5.00	Wetted Per. (ft)	73.86	247.39	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.05	0.10	0.06
Alpha	1.42	Stream Power (lb/ft s)	0.01	0.22	0.02
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	2898.68	3911.34	3185.72
C & E Loss (ft)	0.00	Cum SA (acres)	1360.29	377.39	1572.66

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.22	Reach Len. (ft)	5.00	5.00	5.00
Crit W.S. (ft)	9.43	Flow Area (sq ft)	326.92	1975.90	288.68
E.G. Slope (ft/ft)	0.000241	Area (sq ft)	326.92	1975.90	1039.68
Q Total (cfs)	4786.00	Flow (cfs)	111.70	4557.30	117.00
Top Width (ft)	587.59	Top Width (ft)	81.45	245.81	260.33
Vel Total (ft/s)	1.85	Avg. Vel. (ft/s)	0.34	2.31	0.41
Max Chl Dpth (ft)	11.78	Hydr. Depth (ft)	4.01	8.04	5.17
Conv. Total (cfs)	308001.1	Conv. (cfs)	7188.4	293283.0	7529.7
Length Wtd. (ft)	5.00	Wetted Per. (ft)	81.94	247.39	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.06	0.12	0.08
Alpha	1.49	Stream Power (lb/ft s)	0.02	0.28	0.03
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	4420.65	4376.64	4712.50
C & E Loss (ft)	0.00	Cum SA (acres)	1483.78	377.49	1830.00

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	16.13	Reach Len. (ft)	5.00	5.00	5.00
Crit W.S. (ft)	9.70	Flow Area (sq ft)	409.36	2198.74	339.27
E.G. Slope (ft/ft)	0.000232	Area (sq ft)	409.36	2198.74	1283.58
Q Total (cfs)	5628.00	Flow (cfs)	138.63	5339.22	150.15
Top Width (ft)	624.01	Top Width (ft)	100.43	245.81	277.76
Vel Total (ft/s)	1.91	Avg. Vel. (ft/s)	0.34	2.43	0.44
Max Chl Dpth (ft)	12.69	Hydr. Depth (ft)	4.08	8.94	6.08
Conv. Total (cfs)	369412.5	Conv. (cfs)	9099.5	350457.7	9855.4
Length Wtd. (ft)	5.00	Wetted Per. (ft)	100.94	247.39	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.06	0.13	0.09
Alpha	1.54	Stream Power (lb/ft s)	0.02	0.31	0.04

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Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	5456.40	4673.85	5878.21
C & E Loss (ft)	0.00	Cum SA (acres)	1530.92	377.58	1965.80

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.52	Reach Len. (ft)	5.00	5.00	5.00
Crit W.S. (ft)	10.13	Flow Area (sq ft)	550.28	2541.94	417.19
E.G. Slope (ft/ft)	0.000218	Area (sq ft)	574.61	2541.94	1757.96
Q Total (cfs)	7015.00	Flow (cfs)	219.28	6590.32	205.40
Top Width (ft)	737.84	Top Width (ft)	135.03	245.81	357.00
Vel Total (ft/s)	2.00	Avg. Vel. (ft/s)	0.40	2.59	0.49
Max Chl Dpth (ft)	14.08	Hydr. Depth (ft)	5.45	10.34	7.48
Conv. Total (cfs)	475054.2	Conv. (cfs)	14849.7	446294.6	13909.9
Length Wtd. (ft)	5.00	Wetted Per. (ft)	101.44	247.39	56.00
Min Ch El (ft)	3.44	Shear (lb/sq ft)	0.07	0.14	0.10
Alpha	1.58	Stream Power (lb/ft s)	0.03	0.36	0.05
Frctn Loss (ft)		Cum Volume (acre-ft)	7053.91	5120.70	7823.44
C & E Loss (ft)		Cum SA (acres)	1591.60	377.72	2087.77

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

BRIDGE

RIVER: RIVER-1

REACH: Reach-1 RS: 19.25

INPUT

Description: Bridge #6

Distance from Upstream XS = 5
 Deck/Roadway Width = 133
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
254.13 22 16.98	595.13 22 16.98

Upstream Bridge Cross Section Data

Station	Elevation	Data	num=	53
Sta	Elev	Sta	Elev	Sta
0	18.6	93.21	18.15	117.03
160.18	17.96	171.49	18.15	192.67
262.29	10.5	284.7	10.5	300.93
330.02	9.15	339.92	8.15	342.97
347.17	4.15	354.98	3.44	366.47
392.87	7.15	412.73	8.15	426.9
469.66	7.15	523.61	6.55	565.62
599.52	10.15	610.8	9.25	621.43
708.21	10.56	717.53	11.15	740.03
799.91	13.15	814.26	14.15	824.61
919.42	17.15	928.01	18.15	937.52

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 0 .17 319.81 .04 565.62 .17

Bank Sta: Left Right Coeff Contr. Expan.
 319.81 565.62 .3 .5

Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 0 218.88 20 F
 621.43 937.52 20 F

Downstream Deck/Roadway Coordinates
 num= 2
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord
 120.8 22 16.98 461.8 22 16.98

Downstream Bridge Cross Section Data

Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	19.15	41	18.154	41.15	18.15	64.59	17.15	81.54	16.15
100.58	15.15	109.74	14.15	119.03	13.15	132.58	10.5	148.16	10.5
178.08	10.15	193	9.15	206.9	8.15	211.14	7.15	214.57	6.15
218.76	5.15	221.08	4.99	224.43	5	226.9	4.82	229.7	5.15
235.94	5.42	241.64	5.15	251.19	4.93	261.86	4.9	268.72	5.15
278.16	6.15	282.58	7.15	285.65	8.15	305.21	8.6	341.49	8.67
369.73	9.15	384.08	10.15	426.58	10.15	465.74	11.87	486.02	12.15
588.22	13.15	631.77	14.15	665.22	15.15	695.87	16.15	756.83	16.89
809.45	17.15	820.48	18.15	835.61	19.15	848.31	19.4		

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 0 .17 178.08 .04 384.08 .17

Bank Sta: Left Right Coeff Contr. Expan.
 178.08 384.08 .3 .5

Ineffective Flow num= 2
 Sta L Sta R Elev Permanent
 0 81.54 20 F
 486.02 848.31 20 F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 22
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Abutments = 2

Abutment Data

Upstream num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	22	254.13	22	254.13	17.25	267.63	10.5	292.63	10.5

 Downstream num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	22	120.8	22	120.8	17.25	134.3	10.5	159.3	10.5

Abutment Data

Upstream	num=	5							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
556.13	10.15	581.13	10.15	595.13	17.25	595.13	22	937	22
Downstream	num=	5							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
420.8	10.15	445.8	10.15	461.8	17.25	461.8	22	848.31	22

Number of Piers = 3

Pier Data

Pier Station	Upstream=	339.88	Downstream=	206.55
Upstream	num=	2		
Width	Elev	Width	Elev	
2	2	2	17.5	
Downstream	num=	2		
Width	Elev	Width	Elev	
2	2	2	17.5	

Pier Data

Pier Station	Upstream=	424.88	Downstream=	291.55
Upstream	num=	2		
Width	Elev	Width	Elev	
2	2	2	17.5	
Downstream	num=	2		
Width	Elev	Width	Elev	
2	2	2	17.5	

Pier Data

Pier Station	Upstream=	509.88	Downstream=	376.55
Upstream	num=	2		
Width	Elev	Width	Elev	
2	2	2	17.5	
Downstream	num=	2		
Width	Elev	Width	Elev	
2	2	2	17.5	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd	=
Submerged Inlet + Outlet Cd	= .7905694
Max Low Cord	= 16.98

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	13.87	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	13.81	E.G. Elev (ft)	13.87	13.80

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Q Total (cfs)	3520.00	W.S. Elev (ft)	13.80	13.69
Q Bridge (cfs)	3520.00	Crit W.S. (ft)	8.98	9.64
Q Weir (cfs)		Max Chl Dpth (ft)	10.36	8.87
Weir Sta Lft (ft)		Vel Total (ft/s)	1.92	2.20
Weir Sta Rgt (ft)		Flow Area (sq ft)	1830.33	1598.58
Weir Submerg		Froude # Chl	0.15	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	6115.35	4944.47
Min El Weir Flow (ft)	22.01	Hydr Depth (ft)	5.70	5.00
Min El Prs (ft)	16.98	W.P. Total (ft)	362.36	352.22
Delta EG (ft)	0.08	Conv. Total (cfs)	190473.6	144663.0
Delta WS (ft)	0.12	Top Width (ft)	321.29	319.85
BR Open Area (sq ft)	2674.17	Frctn Loss (ft)	0.06	0.00
BR Open Vel (ft/s)	2.20	C & E Loss (ft)	0.01	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.11	0.17
BR Sel Method	Energy only	Power Total (lb/ft s)	0.21	0.37

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	15.30	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	15.22	E.G. Elev (ft)	15.29	15.22
Q Total (cfs)	4786.00	W.S. Elev (ft)	15.21	15.09
Q Bridge (cfs)	4786.00	Crit W.S. (ft)	9.44	10.21
Q Weir (cfs)		Max Chl Dpth (ft)	11.77	10.27
Weir Sta Lft (ft)		Vel Total (ft/s)	2.09	2.33
Weir Sta Rgt (ft)		Flow Area (sq ft)	2286.38	2052.33
Weir Submerg		Froude # Chl	0.15	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	9127.75	7642.65
Min El Weir Flow (ft)	22.01	Hydr Depth (ft)	6.99	6.30
Min El Prs (ft)	16.98	W.P. Total (ft)	377.06	367.26
Delta EG (ft)	0.08	Conv. Total (cfs)	260068.3	202531.0
Delta WS (ft)	0.13	Top Width (ft)	326.88	325.83
BR Open Area (sq ft)	2674.17	Frctn Loss (ft)	0.06	0.00
BR Open Vel (ft/s)	2.33	C & E Loss (ft)	0.01	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.13	0.19
BR Sel Method	Energy only	Power Total (lb/ft s)	0.27	0.45

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	16.21	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	16.13	E.G. Elev (ft)	16.21	16.14
Q Total (cfs)	5628.00	W.S. Elev (ft)	16.11	16.00

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Q Bridge (cfs)	5628.00	Crit W.S. (ft)	9.72	10.53
Q Weir (cfs)		Max Chl Dpth (ft)	12.67	11.18
Weir Sta Lft (ft)		Vel Total (ft/s)	2.18	2.40
Weir Sta Rgt (ft)		Flow Area (sq ft)	2584.10	2349.34
Weir Submerg		Froude # Chl	0.15	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	11414.60	9728.11
Min El Weir Flow (ft)	22.01	Hydr Depth (ft)	7.82	7.13
Min El Prs (ft)	16.98	W.P. Total (ft)	386.52	376.96
Delta EG (ft)	0.08	Conv. Total (cfs)	308614.8	243201.3
Delta WS (ft)	0.12	Top Width (ft)	330.48	329.69
BR Open Area (sq ft)	2674.17	Frctn Loss (ft)	0.06	0.00
BR Open Vel (ft/s)	2.40	C & E Loss (ft)	0.01	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.14	0.21
BR Sel Method	Energy only	Power Total (lb/ft s)	0.30	0.50

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	17.62	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	17.52	E.G. Elev (ft)	17.62	17.59
Q Total (cfs)	7015.00	W.S. Elev (ft)	16.98	16.98
Q Bridge (cfs)	7015.00	Crit W.S. (ft)	10.21	11.01
Q Weir (cfs)		Max Chl Dpth (ft)	13.54	12.16
Weir Sta Lft (ft)		Vel Total (ft/s)	2.44	2.62
Weir Sta Rgt (ft)		Flow Area (sq ft)	2872.38	2674.17
Weir Submerg		Froude # Chl	0.16	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	13956.88	12378.45
Min El Weir Flow (ft)	22.01	Hydr Depth (ft)	8.60	8.01
Min El Prs (ft)	16.98	W.P. Total (ft)	395.58	387.43
Delta EG (ft)	0.03	Conv. Total (cfs)	357637.0	289815.9
Delta WS (ft)	0.07	Top Width (ft)	333.93	333.85
BR Open Area (sq ft)	2674.17	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.62	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.17	0.25
BR Sel Method	Press Only	Power Total (lb/ft s)	0.43	0.66

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 19.15

INPUT

Description: Downstream XS for the proposed bridge

Station Elevation Data		num=		44					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	19.15	41	18.154	41.15	18.15	64.59	17.15	81.54	16.15
100.58	15.15	109.74	14.15	119.03	13.15	132.58	10.5	148.16	10.5
178.08	10.15	193	9.15	206.9	8.15	211.14	7.15	214.57	6.15
218.76	5.15	221.08	4.99	224.43	5	226.9	4.82	229.7	5.15
235.94	5.42	241.64	5.15	251.19	4.93	261.86	4.9	268.72	5.15
278.16	6.15	282.58	7.15	285.65	8.15	305.21	8.6	341.49	8.67
369.73	9.15	384.08	10.15	426.58	10.15	465.74	11.87	486.02	12.15
588.22	13.15	631.77	14.15	665.22	15.15	695.87	16.15	756.83	16.89
809.45	17.15	820.48	18.15	835.61	19.15	848.31	19.4		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
0	.17	178.08	.04	384.08	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	178.08	384.08		238	238		.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
0	81.54	20	F					
486.02	848.31	20	F					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.69	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	9.63	Flow Area (sq ft)	176.86	1250.42	289.24
E.G. Slope (ft/ft)	0.000471	Area (sq ft)	176.86	1250.42	401.60
Q Total (cfs)	3520.00	Flow (cfs)	65.82	3344.27	109.91
Top Width (ft)	497.61	Top Width (ft)	64.05	206.00	227.56
Vel Total (ft/s)	2.05	Avg. Vel. (ft/s)	0.37	2.67	0.38
Max Chl Dpth (ft)	8.87	Hydr. Depth (ft)	2.76	6.07	2.84
Conv. Total (cfs)	162234.7	Conv. (cfs)	3033.8	154135.2	5065.7
Length Wtd. (ft)	238.00	Wetted Per. (ft)	64.33	206.86	101.98
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.08	0.18	0.08
Alpha	1.62	Stream Power (lb/ft s)	0.03	0.48	0.03
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	2898.11	3906.66	3185.17
C & E Loss (ft)	0.07	Cum SA (acres)	1360.11	376.65	1572.47

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

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.09	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	10.18	Flow Area (sq ft)	276.11	1540.25	432.67
E.G. Slope (ft/ft)	0.000419	Area (sq ft)	276.11	1540.25	760.37
Q Total (cfs)	4786.00	Flow (cfs)	115.42	4467.62	202.96
Top Width (ft)	562.29	Top Width (ft)	76.99	206.00	279.29

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Vel Total (ft/s)	2.13	Avg. Vel. (ft/s)	0.42	2.90	0.47
Max Chl Dpth (ft)	10.27	Hydr. Depth (ft)	3.59	7.48	4.24
Conv. Total (cfs)	233718.6	Conv. (cfs)	5636.6	218170.7	9911.2
Length Wtd. (ft)	238.00	Wetted Per. (ft)	77.36	206.86	101.98
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.09	0.19	0.11
Alpha	1.74	Stream Power (lb/ft s)	0.04	0.57	0.05
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	4419.81	4370.92	4711.69
C & E Loss (ft)	0.06	Cum SA (acres)	1483.59	376.75	1829.80

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	16.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	16.00	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	10.50	Flow Area (sq ft)	353.28	1727.05	525.11
E.G. Slope (ft/ft)	0.000389	Area (sq ft)	353.28	1727.05	1026.37
Q Total (cfs)	5628.00	Flow (cfs)	147.20	5210.70	270.10
Top Width (ft)	606.95	Top Width (ft)	93.71	206.00	307.24
Vel Total (ft/s)	2.16	Avg. Vel. (ft/s)	0.42	3.02	0.51
Max Chl Dpth (ft)	11.18	Hydr. Depth (ft)	3.77	8.38	5.15
Conv. Total (cfs)	285175.8	Conv. (cfs)	7458.9	264030.6	13686.3
Length Wtd. (ft)	238.00	Wetted Per. (ft)	94.10	206.86	101.98
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.09	0.20	0.13
Alpha	1.81	Stream Power (lb/ft s)	0.04	0.61	0.06
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	5455.38	4667.47	5877.21
C & E Loss (ft)	0.05	Cum SA (acres)	1530.72	376.84	1965.59

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.45	Reach Len. (ft)	238.00	238.00	238.00
Crit W.S. (ft)	10.97	Flow Area (sq ft)	492.93	2025.49	672.79
E.G. Slope (ft/ft)	0.000345	Area (sq ft)	507.55	2025.49	1557.58
Q Total (cfs)	7015.00	Flow (cfs)	236.58	6394.33	384.09
Top Width (ft)	755.21	Top Width (ft)	120.53	206.00	428.68
Vel Total (ft/s)	2.20	Avg. Vel. (ft/s)	0.48	3.16	0.57
Max Chl Dpth (ft)	12.63	Hydr. Depth (ft)	5.11	9.83	6.60
Conv. Total (cfs)	377799.1	Conv. (cfs)	12741.0	344372.3	20685.8
Length Wtd. (ft)	238.00	Wetted Per. (ft)	96.93	206.86	101.98
Min Ch El (ft)	4.82	Shear (lb/sq ft)	0.11	0.21	0.14
Alpha	1.89	Stream Power (lb/ft s)	0.05	0.67	0.08
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)	7052.69	5113.62	7822.20
C & E Loss (ft)	0.06	Cum SA (acres)	1591.38	376.98	2087.54

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

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 19.1

INPUT

Description: 11TH STREET/LPGA BLVD

* 001

Station Elevation Data				num=	32				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
636	20	676	19	726	18	786	17	886	16
936	15	996	14	1000	11.6	1028	11.6	1071	12.3
1122	12.5	1172	10.7	1219	10.2	1229	7.9	1236	9.4
1307	8.5	1341	8	1352	5.4	1363	7.4	1371	7.9
1378	5.7	1387	8.9	1393	6	1410	5.3	1420	6.3
1421	6.5	1422	8.6	1437	9.8	1472	10.3	1510	13.6
1562	16.6	2301	19.2						

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
636	.17	1341	.04	1422	.17

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1341	1422		708 708	708	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	13.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	13.21	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	898.34	538.89	219.69
E.G. Slope (ft/ft)	0.001622	Area (sq ft)	898.34	538.89	219.69
Q Total (cfs)	3520.00	Flow (cfs)	599.07	2773.77	147.16
Top Width (ft)	508.22	Top Width (ft)	343.69	81.00	83.53
Vel Total (ft/s)	2.12	Avg. Vel. (ft/s)	0.67	5.15	0.67
Max Chl Dpth (ft)	7.91	Hydr. Depth (ft)	2.61	6.65	2.63
Conv. Total (cfs)	87390.8	Conv. (cfs)	14873.0	68864.3	3653.5
Length Wtd. (ft)	708.00	Wetted Per. (ft)	344.60	84.46	83.71
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.26	0.65	0.27
Alpha	4.65	Stream Power (lb/ft s)	0.18	3.33	0.18
Frctn Loss (ft)	0.80	Cum Volume (acre-ft)	2895.17	3901.77	3183.47
C & E Loss (ft)	0.04	Cum SA (acres)	1358.99	375.87	1571.62

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	15.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	14.68	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	1418.50	657.87	358.22
E.G. Slope (ft/ft)	0.001305	Area (sq ft)	1418.50	657.87	358.22
Q Total (cfs)	4786.00	Flow (cfs)	1064.57	3468.30	253.14
Top Width (ft)	573.61	Top Width (ft)	385.87	81.00	106.74
Vel Total (ft/s)	1.97	Avg. Vel. (ft/s)	0.75	5.27	0.71
Max Chl Dpth (ft)	9.38	Hydr. Depth (ft)	3.68	8.12	3.36
Conv. Total (cfs)	132510.0	Conv. (cfs)	29474.7	96026.7	7008.6

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Length Wtd. (ft)	708.00	Wetted Per. (ft)	387.01	84.46	106.96
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.30	0.63	0.27
Alpha	5.25	Stream Power (lb/ft s)	0.22	3.34	0.19
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	4415.18	4364.92	4708.63
C & E Loss (ft)	0.03	Cum SA (acres)	1482.32	375.97	1828.75

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	15.62	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	1805.86	734.02	466.23
E.G. Slope (ft/ft)	0.001152	Area (sq ft)	1805.86	734.02	466.23
Q Total (cfs)	5628.00	Flow (cfs)	1379.44	3912.77	335.80
Top Width (ft)	640.10	Top Width (ft)	436.06	81.00	123.04
Vel Total (ft/s)	1.87	Avg. Vel. (ft/s)	0.76	5.33	0.72
Max Chl Dpth (ft)	10.32	Hydr. Depth (ft)	4.14	9.06	3.79
Conv. Total (cfs)	165784.8	Conv. (cfs)	40634.3	115259.0	9891.6
Length Wtd. (ft)	708.00	Wetted Per. (ft)	437.21	84.46	123.29
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.30	0.63	0.27
Alpha	5.69	Stream Power (lb/ft s)	0.23	3.33	0.20
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	5449.48	4660.74	5873.13
C & E Loss (ft)	0.02	Cum SA (acres)	1529.27	376.06	1964.42

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	17.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.170	0.040	0.170
W.S. Elev (ft)	17.08	Reach Len. (ft)	708.00	708.00	708.00
Crit W.S. (ft)		Flow Area (sq ft)	2523.81	852.12	694.71
E.G. Slope (ft/ft)	0.001025	Area (sq ft)	2523.81	852.12	694.71
Q Total (cfs)	7015.00	Flow (cfs)	1924.62	4731.16	359.23
Top Width (ft)	917.00	Top Width (ft)	559.76	81.00	276.24
Vel Total (ft/s)	1.72	Avg. Vel. (ft/s)	0.76	5.55	0.52
Max Chl Dpth (ft)	11.78	Hydr. Depth (ft)	4.51	10.52	2.51
Conv. Total (cfs)	219141.5	Conv. (cfs)	60123.1	147796.5	11221.8
Length Wtd. (ft)	708.00	Wetted Per. (ft)	560.92	84.46	276.52
Min Ch El (ft)	5.30	Shear (lb/sq ft)	0.29	0.65	0.16
Alpha	7.06	Stream Power (lb/ft s)	0.22	3.58	0.08
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)	7044.41	5105.75	7816.05
C & E Loss (ft)	0.02	Cum SA (acres)	1589.53	376.20	2085.61

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 18.2

INPUT
 Description: INTERPOLATED SECTION

* 001

Station Elevation Data		num=	28						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18	1100	17	1380	16	1480	15	1510	14
1545	13	1565	12	1595	11	1640	10	1665	9

1695	8	1720	7	1740	6	1790	5	1800	5
1850	6	1860	7	1880	8	1895	9	1935	10
1970	11	1990	12	2030	13	2070	14	2090	15
2110	16	2130	17	2150	18				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1740	.04	1850	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1740	1850		500 500	500	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.50	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	561.99	774.70	434.56
E.G. Slope (ft/ft)	0.000823	Area (sq ft)	561.99	774.70	434.56
Q Total (cfs)	3464.00	Flow (cfs)	251.15	3032.61	180.24
Top Width (ft)	454.83	Top Width (ft)	184.94	110.00	159.89
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)	0.45	3.91	0.41
Max Chl Dpth (ft)	7.50	Hydr. Depth (ft)	3.04	7.04	2.72
Conv. Total (cfs)	120763.3	Conv. (cfs)	8755.8	105724.0	6283.5
Length Wtd. (ft)	500.00	Wetted Per. (ft)	185.07	110.02	160.06
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.16	0.36	0.14
Alpha	3.51	Stream Power (lb/ft s)	0.07	1.42	0.06
Frctn Loss (ft)	0.17	Cum Volume (acre-ft)	2883.31	3891.09	3178.16
C & E Loss (ft)	0.05	Cum SA (acres)	1354.70	374.31	1569.64

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.07	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	887.31	948.24	736.54
E.G. Slope (ft/ft)	0.000711	Area (sq ft)	887.31	948.24	736.54
Q Total (cfs)	4703.00	Flow (cfs)	429.44	3948.65	324.91
Top Width (ft)	563.75	Top Width (ft)	232.25	110.00	221.50
Vel Total (ft/s)	1.83	Avg. Vel. (ft/s)	0.48	4.16	0.44
Max Chl Dpth (ft)	9.07	Hydr. Depth (ft)	3.82	8.62	3.33
Conv. Total (cfs)	176364.7	Conv. (cfs)	16104.3	148076.2	12184.3
Length Wtd. (ft)	500.00	Wetted Per. (ft)	232.40	110.02	221.69
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.17	0.38	0.15
Alpha	4.37	Stream Power (lb/ft s)	0.08	1.59	0.07
Frctn Loss (ft)	0.16	Cum Volume (acre-ft)	4396.44	4351.86	4699.73
C & E Loss (ft)	0.05	Cum SA (acres)	1477.30	374.42	1826.08

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.31	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.23	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.08	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1135.94	1058.73	969.10
E.G. Slope (ft/ft)	0.000642	Area (sq ft)	1135.94	1058.73	969.10
Q Total (cfs)	5527.00	Flow (cfs)	559.75	4507.08	460.16
Top Width (ft)	619.52	Top Width (ft)	267.93	110.00	241.59
Vel Total (ft/s)	1.75	Avg. Vel. (ft/s)	0.49	4.26	0.47
Max Chl Dpth (ft)	10.08	Hydr. Depth (ft)	4.24	9.62	4.01
Conv. Total (cfs)	218199.6	Conv. (cfs)	22098.4	177934.4	18166.8
Length Wtd. (ft)	500.00	Wetted Per. (ft)	268.10	110.02	241.80
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.17	0.39	0.16
Alpha	4.86	Stream Power (lb/ft s)	0.08	1.64	0.08
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)	5425.58	4646.17	5861.47
C & E Loss (ft)	0.05	Cum SA (acres)	1523.55	374.51	1961.45

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.59	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1686.65	1225.01	1357.15
E.G. Slope (ft/ft)	0.000588	Area (sq ft)	1686.65	1225.01	1357.15
Q Total (cfs)	6875.00	Flow (cfs)	660.84	5500.57	713.59
Top Width (ft)	907.30	Top Width (ft)	525.48	110.00	271.82
Vel Total (ft/s)	1.61	Avg. Vel. (ft/s)	0.39	4.49	0.53
Max Chl Dpth (ft)	11.59	Hydr. Depth (ft)	3.21	11.14	4.99
Conv. Total (cfs)	283607.7	Conv. (cfs)	27261.2	226909.6	29436.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	525.65	110.02	272.07
Min Ch El (ft)	5.00	Shear (lb/sq ft)	0.12	0.41	0.18
Alpha	6.24	Stream Power (lb/ft s)	0.05	1.83	0.10
Frctn Loss (ft)	0.14	Cum Volume (acre-ft)	7010.19	5088.87	7799.38
C & E Loss (ft)	0.05	Cum SA (acres)	1580.71	374.65	2081.16

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 18.1

INPUT

Description: INTERPOLATED SECTION

* 001

Station Elevation Data				num=	34				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	20	1015	19	1030	18	1040	17	1050	16
1060	15	1090	14	1110	13	1140	12	1180	11
1215	10	1240	9	1260	8	1280	7	1310	6
1350	5	1410	4	1440	4	1530	5	1595	6
1640	7	1690	8	1710	9	1740	10	1770	11
1805	12	1830	13	1855	14	1870	15	1900	16

1920	17	1970	18	2020	19	2040	20
Manning's n Values		num=		3			
Sta	n Val	Sta	n Val	Sta	n Val		
1000	.2	1350	.04	1530	.2		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1350	1530		1378 1378	1378	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.43	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	813.78	1442.97	1223.97
E.G. Slope (ft/ft)	0.000187	Area (sq ft)	813.78	1442.97	1223.97
Q Total (cfs)	3464.00	Flow (cfs)	196.14	2939.62	328.24
Top Width (ft)	688.82	Top Width (ft)	222.99	180.00	285.83
Vel Total (ft/s)	1.00	Avg. Vel. (ft/s)	0.24	2.04	0.27
Max Chl Dpth (ft)	8.43	Hydr. Depth (ft)	3.65	8.02	4.28
Conv. Total (cfs)	252996.1	Conv. (cfs)	14325.4	214697.3	23973.5
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	223.13	180.01	285.94
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.04	0.09	0.05
Alpha	3.57	Stream Power (lb/ft s)	0.01	0.19	0.01
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	2875.41	3878.37	3168.64
C & E Loss (ft)	0.00	Cum SA (acres)	1352.36	372.65	1567.09

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	14.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.03	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1203.24	1730.70	1712.79
E.G. Slope (ft/ft)	0.000177	Area (sq ft)	1203.24	1730.70	1712.79
Q Total (cfs)	4703.00	Flow (cfs)	328.94	3862.63	511.43
Top Width (ft)	766.42	Top Width (ft)	260.95	180.00	325.47
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)	0.27	2.23	0.30
Max Chl Dpth (ft)	10.03	Hydr. Depth (ft)	4.61	9.61	5.26
Conv. Total (cfs)	353935.4	Conv. (cfs)	24755.0	290691.6	38488.8
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	261.12	180.01	325.62
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	4.01	Stream Power (lb/ft s)	0.01	0.24	0.02
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4384.45	4336.49	4685.68
C & E Loss (ft)	0.00	Cum SA (acres)	1474.47	372.75	1822.94

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	15.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.05	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1483.33	1913.27	2050.65

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E.G. Slope (ft/ft)	0.000168	Area (sq ft)	1483.33	1913.27	2050.65
Q Total (cfs)	5527.00	Flow (cfs)	423.27	4451.64	652.09
Top Width (ft)	811.84	Top Width (ft)	290.46	180.00	341.38
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)	0.29	2.33	0.32
Max Chl Dpth (ft)	11.05	Hydr. Depth (ft)	5.11	10.63	6.01
Conv. Total (cfs)	426574.1	Conv. (cfs)	32667.9	343577.9	50328.4
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	290.65	180.01	341.55
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.05	0.11	0.06
Alpha	4.25	Stream Power (lb/ft s)	0.02	0.26	0.02
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	5410.54	4629.12	5844.13
C & E Loss (ft)	0.00	Cum SA (acres)	1520.35	372.84	1958.11

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.58	Reach Len. (ft)	1378.00	1378.00	1378.00
Crit W.S. (ft)		Flow Area (sq ft)	1940.34	2189.20	2607.54
E.G. Slope (ft/ft)	0.000157	Area (sq ft)	1940.34	2189.20	2607.54
Q Total (cfs)	6875.00	Flow (cfs)	618.18	5383.81	873.01
Top Width (ft)	867.37	Top Width (ft)	305.79	180.00	381.58
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.32	2.46	0.33
Max Chl Dpth (ft)	12.58	Hydr. Depth (ft)	6.35	12.16	6.83
Conv. Total (cfs)	549190.6	Conv. (cfs)	49381.6	430070.8	69738.3
Length Wtd. (ft)	1378.00	Wetted Per. (ft)	306.05	180.01	381.78
Min Ch El (ft)	4.00	Shear (lb/sq ft)	0.06	0.12	0.07
Alpha	4.57	Stream Power (lb/ft s)	0.02	0.29	0.02
Frctn Loss (ft)	0.31	Cum Volume (acre-ft)	6989.37	5069.28	7776.62
C & E Loss (ft)	0.00	Cum SA (acres)	1575.94	372.98	2077.41

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 18

INPUT

Description: 1ST SEC NORTH OF LPGA

* 001

Station Elevation Data		num=	23						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	19.4	1072	15.5	1140	11.2	1176	7.3	1192	5.9
1258	4.4	1325	5.8	1329	3.1	1345	1.9	1359	2.1
1366	3.2	1379	4.6	1438	5.5	1507	5.3	1593	6
1663	5.9	1741	6	1820	6	1909	6.8	1928	6.9
2002	13.1	2062	16.5	2094	18.3				

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1325	.04	1366	.2

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Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1325	1366		2064 2064	2064	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	12.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.05	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1114.16	389.58	3667.00
E.G. Slope (ft/ft)	0.000418	Area (sq ft)	1114.16	389.58	3667.00
Q Total (cfs)	3655.00	Flow (cfs)	534.03	1306.86	1814.12
Top Width (ft)	862.83	Top Width (ft)	198.39	41.00	623.43
Vel Total (ft/s)	0.71	Avg. Vel. (ft/s)	0.48	3.35	0.49
Max Chl Dpth (ft)	10.15	Hydr. Depth (ft)	5.62	9.50	5.88
Conv. Total (cfs)	178801.6	Conv. (cfs)	26124.4	63931.0	88746.1
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	198.72	41.96	623.74
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.15	0.24	0.15
Alpha	8.36	Stream Power (lb/ft s)	0.07	0.81	0.08
Frctn Loss (ft)	0.82	Cum Volume (acre-ft)	2844.92	3849.38	3091.28
C & E Loss (ft)	0.00	Cum SA (acres)	1345.69	369.15	1552.70

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	13.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.67	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1457.80	456.27	4697.82
E.G. Slope (ft/ft)	0.000390	Area (sq ft)	1457.80	456.27	4697.82
Q Total (cfs)	4971.00	Flow (cfs)	744.12	1642.17	2584.71
Top Width (ft)	911.24	Top Width (ft)	224.12	41.00	646.12
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.51	3.60	0.55
Max Chl Dpth (ft)	11.77	Hydr. Depth (ft)	6.50	11.13	7.27
Conv. Total (cfs)	251835.7	Conv. (cfs)	37698.0	83193.7	130944.0
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	224.50	41.96	646.49
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.16	0.26	0.18
Alpha	7.92	Stream Power (lb/ft s)	0.08	0.95	0.10
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	4342.36	4301.90	4584.28
C & E Loss (ft)	0.00	Cum SA (acres)	1466.80	369.26	1807.57

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	14.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.71	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	1697.95	498.65	5375.22
E.G. Slope (ft/ft)	0.000370	Area (sq ft)	1697.95	498.65	5375.22
Q Total (cfs)	5846.00	Flow (cfs)	892.63	1856.77	3096.60
Top Width (ft)	945.83	Top Width (ft)	240.47	41.00	664.37
Vel Total (ft/s)	0.77	Avg. Vel. (ft/s)	0.53	3.72	0.58
Max Chl Dpth (ft)	12.81	Hydr. Depth (ft)	7.06	12.16	8.09
Conv. Total (cfs)	303731.7	Conv. (cfs)	46377.1	96469.5	160885.0
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	240.88	41.96	664.76
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.16	0.27	0.19
Alpha	7.75	Stream Power (lb/ft s)	0.09	1.02	0.11
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	5360.22	4590.97	5726.68
C & E Loss (ft)	0.00	Cum SA (acres)	1511.95	369.35	1942.20

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	16.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	16.26	Reach Len. (ft)	2064.00	2064.00	2064.00
Crit W.S. (ft)		Flow Area (sq ft)	2092.20	562.48	6430.78
E.G. Slope (ft/ft)	0.000348	Area (sq ft)	2092.20	562.48	6430.78
Q Total (cfs)	7280.00	Flow (cfs)	1142.27	2199.47	3938.27
Top Width (ft)	999.94	Top Width (ft)	267.11	41.00	691.84
Vel Total (ft/s)	0.80	Avg. Vel. (ft/s)	0.55	3.91	0.61
Max Chl Dpth (ft)	14.36	Hydr. Depth (ft)	7.83	13.72	9.30
Conv. Total (cfs)	390282.9	Conv. (cfs)	61237.4	117913.9	211131.5
Length Wtd. (ft)	2064.00	Wetted Per. (ft)	267.57	41.96	692.27
Min Ch El (ft)	1.90	Shear (lb/sq ft)	0.17	0.29	0.20
Alpha	7.58	Stream Power (lb/ft s)	0.09	1.14	0.12
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	6925.59	5025.76	7633.66
C & E Loss (ft)	0.00	Cum SA (acres)	1566.87	369.49	2060.43

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 17

INPUT

Description: 2ND SEC NORTH OF LPGA

* 001

Station Elevation Data		num=	27						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
912	16	932	15	945	14	1000	13.2	1021	13
1054	8.6	1072	5.8	1117	5.4	1164	4.9	1226	4.4
1239	4.4	1269	2.9	1271	1.9	1278	.3	1285	.9
1288	2	1295	3.7	1356	3.6	1422	3.6	1518	3.4
1603	4.3	1670	3.5	1707	6.2	1757	11.3	1788	14.5
1813	15	2400	19						

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
912	.2	1239	.04	1295	.2

Bank Sta: Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
1239	1295		3218 3218	3218	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	11.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.23	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1134.60	478.45	3187.13
E.G. Slope (ft/ft)	0.000378	Area (sq ft)	1134.60	478.45	3187.13
Q Total (cfs)	3613.00	Flow (cfs)	512.87	1430.09	1670.04
Top Width (ft)	722.06	Top Width (ft)	204.73	56.00	461.33
Vel Total (ft/s)	0.75	Avg. Vel. (ft/s)	0.45	2.99	0.52
Max Chl Dpth (ft)	10.93	Hydr. Depth (ft)	5.54	8.54	6.91
Conv. Total (cfs)	185725.6	Conv. (cfs)	26364.2	73513.5	85848.0

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Length Wtd. (ft)	3218.00	Wetted Per. (ft)	205.13	56.88	461.69
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.13	0.20	0.16
Alpha	6.52	Stream Power (lb/ft s)	0.06	0.59	0.09
Frctn Loss (ft)	1.33	Cum Volume (acre-ft)	2791.64	3828.81	2928.89
C & E Loss (ft)	0.00	Cum SA (acres)	1336.14	366.86	1527.00

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	12.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.90	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1487.45	572.10	3972.13
E.G. Slope (ft/ft)	0.000359	Area (sq ft)	1487.45	572.10	3972.13
Q Total (cfs)	4924.00	Flow (cfs)	753.74	1876.24	2294.02
Top Width (ft)	750.81	Top Width (ft)	217.28	56.00	477.53
Vel Total (ft/s)	0.82	Avg. Vel. (ft/s)	0.51	3.28	0.58
Max Chl Dpth (ft)	12.60	Hydr. Depth (ft)	6.85	10.22	8.32
Conv. Total (cfs)	259885.4	Conv. (cfs)	39781.8	99026.7	121077.0
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	217.78	56.88	477.98
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.15	0.23	0.19
Alpha	6.44	Stream Power (lb/ft s)	0.08	0.74	0.11
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	4272.58	4277.53	4378.87
C & E Loss (ft)	0.00	Cum SA (acres)	1456.34	366.96	1780.95

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	14.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.95	Reach Len. (ft)	3218.00	3218.00	3218.00
Crit W.S. (ft)		Flow Area (sq ft)	1751.98	630.55	4475.90
E.G. Slope (ft/ft)	0.000361	Area (sq ft)	1751.98	630.55	4475.90
Q Total (cfs)	5800.00	Flow (cfs)	818.76	2213.00	2768.24
Top Width (ft)	834.03	Top Width (ft)	290.38	56.00	487.65
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)	0.47	3.51	0.62
Max Chl Dpth (ft)	13.65	Hydr. Depth (ft)	6.03	11.26	9.18
Conv. Total (cfs)	305225.4	Conv. (cfs)	43087.1	116459.4	145678.9
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	290.91	56.88	488.15
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.14	0.25	0.21
Alpha	6.87	Stream Power (lb/ft s)	0.06	0.88	0.13
Frctn Loss (ft)	1.29	Cum Volume (acre-ft)	5278.49	4564.21	5493.29
C & E Loss (ft)	0.00	Cum SA (acres)	1499.37	367.05	1914.91

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	15.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	15.50	Reach Len. (ft)	3218.00	3218.00	3218.00

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Crit W.S. (ft)		Flow Area (sq ft)	2223.21	717.39	5275.76
E.G. Slope (ft/ft)	0.000375	Area (sq ft)	2223.21	717.39	5275.76
Q Total (cfs)	7230.00	Flow (cfs)	1170.49	2795.87	3263.64
Top Width (ft)	964.04	Top Width (ft)	316.96	56.00	591.08
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.53	3.90	0.62
Max Chl Dpth (ft)	15.20	Hydr. Depth (ft)	7.01	12.81	8.93
Conv. Total (cfs)	373405.5	Conv. (cfs)	60451.7	144397.5	168556.3
Length Wtd. (ft)	3218.00	Wetted Per. (ft)	317.53	56.88	591.62
Min Ch El (ft)	0.30	Shear (lb/sq ft)	0.16	0.30	0.21
Alpha	7.87	Stream Power (lb/ft s)	0.09	1.15	0.13
Frctn Loss (ft)	1.31	Cum Volume (acre-ft)	6823.35	4995.43	7356.32
C & E Loss (ft)	0.00	Cum SA (acres)	1553.04	367.19	2030.04

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 16

INPUT

Description: 3RD SEC NORTH OF LPGA

* 001

Station Elevation Data		num=		30					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	20.3	1064	18	1124	14.3	1178	10.7	1236	6.4
1255	4.4	1270	2.9	1339	2	1409	2.2	1495	2.1
1568	1.2	1570	-.5	1577	-.7	1583	-.4	1591	-.4
1597	0	1600	1.6	1640	1.6	1651	1.4	1653	.2
1669	.4	1672	1.8	1709	2.1	1726	.7	1765	2
1841	2.3	1895	8	1939	12.4	1973	15.2	2005	17.1

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1568	.04	1600	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1568	1600		2257	2257	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	9.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.90	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	2589.43	325.50	2257.23
E.G. Slope (ft/ft)	0.000448	Area (sq ft)	2589.43	325.50	2257.23
Q Total (cfs)	3959.00	Flow (cfs)	1464.57	1175.65	1318.78
Top Width (ft)	725.13	Top Width (ft)	379.17	32.00	313.97
Vel Total (ft/s)	0.77	Avg. Vel. (ft/s)	0.57	3.61	0.58
Max Chl Dpth (ft)	10.60	Hydr. Depth (ft)	6.83	10.17	7.19
Conv. Total (cfs)	187089.6	Conv. (cfs)	69211.0	55557.5	62321.1
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	379.49	33.05	315.09
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.19	0.28	0.20
Alpha	7.01	Stream Power (lb/ft s)	0.11	0.99	0.12
Frctn Loss (ft)	1.01	Cum Volume (acre-ft)	2654.08	3799.12	2727.79

C & E Loss (ft)	0.00	Cum SA (acres)	1314.57	363.61	1498.37

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	11.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.60	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	3257.16	380.14	2807.92
E.G. Slope (ft/ft)	0.000446	Area (sq ft)	3257.16	380.14	2807.92
Q Total (cfs)	5404.00	Flow (cfs)	2055.55	1520.02	1828.43
Top Width (ft)	766.61	Top Width (ft)	403.56	32.00	331.04
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.63	4.00	0.65
Max Chl Dpth (ft)	12.30	Hydr. Depth (ft)	8.07	11.88	8.48
Conv. Total (cfs)	255820.6	Conv. (cfs)	97308.1	71956.3	86556.2
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	403.95	33.05	332.25
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.22	0.32	0.24
Alpha	6.82	Stream Power (lb/ft s)	0.14	1.28	0.15
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)	4097.32	4242.36	4128.44
C & E Loss (ft)	0.00	Cum SA (acres)	1433.41	363.71	1751.09

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	12.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.65	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	3688.90	413.72	3160.88
E.G. Slope (ft/ft)	0.000442	Area (sq ft)	3688.90	413.72	3160.88
Q Total (cfs)	6368.00	Flow (cfs)	2455.22	1742.91	2169.87
Top Width (ft)	793.39	Top Width (ft)	419.30	32.00	342.08
Vel Total (ft/s)	0.88	Avg. Vel. (ft/s)	0.67	4.21	0.69
Max Chl Dpth (ft)	13.35	Hydr. Depth (ft)	8.80	12.93	9.24
Conv. Total (cfs)	302738.3	Conv. (cfs)	116722.3	82859.0	103157.0
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	419.72	33.05	343.34
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.24	0.35	0.25
Alpha	6.75	Stream Power (lb/ft s)	0.16	1.46	0.17
Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	5077.52	4525.64	5211.21
C & E Loss (ft)	0.00	Cum SA (acres)	1473.16	363.80	1884.26

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	14.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	14.19	Reach Len. (ft)	2257.00	2257.00	2257.00
Crit W.S. (ft)		Flow Area (sq ft)	4349.04	462.75	3699.33
E.G. Slope (ft/ft)	0.000443	Area (sq ft)	4349.04	462.75	3699.33
Q Total (cfs)	7947.00	Flow (cfs)	3119.90	2102.38	2724.72
Top Width (ft)	834.98	Top Width (ft)	442.29	32.00	360.69
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.72	4.54	0.74
Max Chl Dpth (ft)	14.89	Hydr. Depth (ft)	9.83	14.46	10.26
Conv. Total (cfs)	377491.3	Conv. (cfs)	148198.6	99865.5	129427.1
Length Wtd. (ft)	2257.00	Wetted Per. (ft)	442.76	33.05	362.01
Min Ch El (ft)	-0.70	Shear (lb/sq ft)	0.27	0.39	0.28
Alpha	6.71	Stream Power (lb/ft s)	0.19	1.76	0.21

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Frctn Loss (ft)	0.96	Cum Volume (acre-ft)	6580.59	4951.84	7024.80
C & E Loss (ft)	0.01	Cum SA (acres)	1524.99	363.94	1994.88

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 15

INPUT

Description: NORTH OF LPGA BLVD
 * 001

Station Elevation Data		num=	30
Sta	Elev	Sta	Elev
1000	18	1051	14
1190	1.7	1205	1.8
1222	-4	1227	-3.2
1336	1.5	1394	2
1616	1.5	1692	1.8
1951	1.7	2003	7.7

Manning's n Values		num=	3
Sta	n Val	Sta	n Val
1000	.2	1210	.04
		1245	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
1210	1245	2800	2800	2800	.1	.3	

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.95	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.89	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	879.84	370.56	5332.73
E.G. Slope (ft/ft)	0.000446	Area (sq ft)	879.84	370.56	5332.73
Q Total (cfs)	4859.00	Flow (cfs)	481.10	1331.01	3046.89
Top Width (ft)	936.29	Top Width (ft)	133.91	35.00	767.38
Vel Total (ft/s)	0.74	Avg. Vel. (ft/s)	0.55	3.59	0.57
Max Chl Dpth (ft)	12.89	Hydr. Depth (ft)	6.57	10.59	6.95
Conv. Total (cfs)	229998.6	Conv. (cfs)	22772.6	63002.9	144223.2
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	135.31	37.84	767.84
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.18	0.27	0.19
Alpha	6.92	Stream Power (lb/ft s)	0.10	0.98	0.11
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	2564.20	3781.09	2531.16
C & E Loss (ft)	0.00	Cum SA (acres)	1301.28	361.87	1470.35

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	10.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.63	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1116.35	431.48	6680.35
E.G. Slope (ft/ft)	0.000425	Area (sq ft)	1116.35	431.48	6680.35
Q Total (cfs)	6631.00	Flow (cfs)	683.32	1672.96	4274.72
Top Width (ft)	953.94	Top Width (ft)	137.85	35.00	781.09
Vel Total (ft/s)	0.81	Avg. Vel. (ft/s)	0.61	3.88	0.64

Max Chl Dpth (ft)	14.63	Hydr. Depth (ft)	8.10	12.33	8.55
Conv. Total (cfs)	321829.1	Conv. (cfs)	33164.3	81195.5	207469.3
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	139.62	37.84	781.66
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.21	0.30	0.23
Alpha	6.31	Stream Power (lb/ft s)	0.13	1.17	0.14
Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	3984.02	4221.33	3882.63
C & E Loss (ft)	0.01	Cum SA (acres)	1419.38	361.97	1722.27

E.G. Elev (ft)	11.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.70	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1267.00	468.88	7519.57
E.G. Slope (ft/ft)	0.000414	Area (sq ft)	1267.00	468.88	7519.57
Q Total (cfs)	7809.00	Flow (cfs)	807.83	1897.25	5103.92
Top Width (ft)	968.88	Top Width (ft)	144.37	35.00	789.51
Vel Total (ft/s)	0.84	Avg. Vel. (ft/s)	0.64	4.05	0.68
Max Chl Dpth (ft)	15.70	Hydr. Depth (ft)	8.78	13.40	9.52
Conv. Total (cfs)	383863.1	Conv. (cfs)	39710.0	93262.2	250890.9
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	146.23	37.84	790.14
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.22	0.32	0.25
Alpha	6.07	Stream Power (lb/ft s)	0.14	1.30	0.17
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	4949.13	4502.78	4934.51
C & E Loss (ft)	0.01	Cum SA (acres)	1458.56	362.06	1854.94

E.G. Elev (ft)	13.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	13.24	Reach Len. (ft)	2800.00	2800.00	2800.00
Crit W.S. (ft)		Flow Area (sq ft)	1496.66	522.73	8743.60
E.G. Slope (ft/ft)	0.000410	Area (sq ft)	1496.66	522.73	8743.60
Q Total (cfs)	9741.00	Flow (cfs)	1015.55	2262.63	6462.81
Top Width (ft)	990.78	Top Width (ft)	154.16	35.00	801.62
Vel Total (ft/s)	0.91	Avg. Vel. (ft/s)	0.68	4.33	0.74
Max Chl Dpth (ft)	17.24	Hydr. Depth (ft)	9.71	14.94	10.91
Conv. Total (cfs)	481269.3	Conv. (cfs)	50175.0	111788.9	319305.4
Length Wtd. (ft)	2800.00	Wetted Per. (ft)	156.14	37.84	802.35
Min Ch El (ft)	-4.00	Shear (lb/sq ft)	0.25	0.35	0.28
Alpha	5.81	Stream Power (lb/ft s)	0.17	1.53	0.21
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	6429.14	4926.31	6702.44
C & E Loss (ft)	0.01	Cum SA (acres)	1509.54	362.20	1964.77

Station		Elevation Data		num=	31				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

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468	14	644	13	775	12	819	11	969	10
1000	5.2	1032	4.7	1081	4.1	1109	4.4	1139	5.5
1168	3	1171	1.4	1212	-8.4	1243	-4.2	1272	-2.6
1309	1	1313	1.8	1318	2.9	1379	4	1432	3.2
1457	4	1482	5	1507	6	1530	7	1580	8
1630	9	1661	10	1861	11	1874	12	1886	13
1901	14								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
468	.2	1168	.04	1318	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1168	1318		67	67	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.01	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	605.58	1643.87	831.68
E.G. Slope (ft/ft)	0.000213	Area (sq ft)	605.58	1643.87	831.68
Q Total (cfs)	4690.00	Flow (cfs)	143.93	4351.56	194.50
Top Width (ft)	598.39	Top Width (ft)	186.12	150.00	262.27
Vel Total (ft/s)	1.52	Avg. Vel. (ft/s)	0.24	2.65	0.23
Max Chl Dpth (ft)	16.41	Hydr. Depth (ft)	3.25	10.96	3.17
Conv. Total (cfs)	321507.9	Conv. (cfs)	9866.8	298307.5	13333.5
Length Wtd. (ft)	67.00	Wetted Per. (ft)	186.47	152.26	262.37
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.04	0.14	0.04
Alpha	2.81	Stream Power (lb/ft s)	0.01	0.38	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2516.46	3716.34	2333.04
C & E Loss (ft)	0.02	Cum SA (acres)	1291.00	355.92	1437.26

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.70	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	931.22	1898.80	1344.91
E.G. Slope (ft/ft)	0.000229	Area (sq ft)	931.22	1898.80	1344.91
Q Total (cfs)	6420.00	Flow (cfs)	294.44	5742.68	382.89
Top Width (ft)	680.95	Top Width (ft)	197.09	150.00	333.85
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.32	3.02	0.28
Max Chl Dpth (ft)	18.10	Hydr. Depth (ft)	4.72	12.66	4.03
Conv. Total (cfs)	424070.2	Conv. (cfs)	19448.9	379329.8	25291.5
Length Wtd. (ft)	67.00	Wetted Per. (ft)	197.58	152.26	333.98
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.07	0.18	0.06
Alpha	3.46	Stream Power (lb/ft s)	0.02	0.54	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3918.21	4146.44	3624.70
C & E Loss (ft)	0.02	Cum SA (acres)	1408.62	356.03	1686.44

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.73	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	1174.35	2052.29	1747.57

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E.G. Slope (ft/ft)	0.000245	Area (sq ft)	1174.35	2052.29	1747.57
Q Total (cfs)	7571.00	Flow (cfs)	332.96	6762.58	475.46
Top Width (ft)	946.89	Top Width (ft)	308.24	150.00	488.65
Vel Total (ft/s)	1.52	Avg. Vel. (ft/s)	0.28	3.30	0.27
Max Chl Dpth (ft)	19.13	Hydr. Depth (ft)	3.81	13.68	3.58
Conv. Total (cfs)	483419.0	Conv. (cfs)	21259.8	431800.5	30358.7
Length Wtd. (ft)	67.00	Wetted Per. (ft)	308.75	152.26	488.78
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.06	0.21	0.05
Alpha	4.19	Stream Power (lb/ft s)	0.02	0.68	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4870.66	4421.75	4636.67
C & E Loss (ft)	0.03	Cum SA (acres)	1444.01	356.12	1813.86

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.17	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.25	Reach Len. (ft)	67.00	67.00	67.00
Crit W.S. (ft)		Flow Area (sq ft)	1738.76	2281.17	2578.94
E.G. Slope (ft/ft)	0.000248	Area (sq ft)	1738.76	2281.17	2578.94
Q Total (cfs)	9462.00	Flow (cfs)	518.74	8107.57	835.70
Top Width (ft)	1135.34	Top Width (ft)	426.29	150.00	559.05
Vel Total (ft/s)	1.43	Avg. Vel. (ft/s)	0.30	3.55	0.32
Max Chl Dpth (ft)	20.65	Hydr. Depth (ft)	4.08	15.21	4.61
Conv. Total (cfs)	601046.9	Conv. (cfs)	32951.2	515010.3	53085.4
Length Wtd. (ft)	67.00	Wetted Per. (ft)	426.81	152.26	559.23
Min Ch El (ft)	-8.40	Shear (lb/sq ft)	0.06	0.23	0.07
Alpha	5.27	Stream Power (lb/ft s)	0.02	0.82	0.02
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	6325.16	4836.20	6338.54
C & E Loss (ft)	0.03	Cum SA (acres)	1490.88	356.26	1921.04

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 14.1

INPUT

Description: OLD TOMOKA ROAD

* 001

Station Elevation Data		num=	31						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
462	15	487	14	663	13	794	12	838	11
988	10	1000	5.4	1015	4.5	1054	2.9	1123	3.8
1154	3.3	1195	3.3	1199	1.5	1225	-3	1260	-5.1
1291	-4.2	1325	.8	1329	2.3	1354	4.2	1392	4.6
1448	5.7	1460	6	1485	7	1523	8	1573	9
1604	10	1804	11	1816	12	1829	13	1841	14
1855	15								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
462	.2	1000	.04	1448	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1000	1448		2673	2673	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	8.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.03	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	9.02	2713.05	84.59
E.G. Slope (ft/ft)	0.000196	Area (sq ft)	9.02	2713.05	84.59
Q Total (cfs)	4690.00	Flow (cfs)	1.08	4679.51	9.41
Top Width (ft)	531.37	Top Width (ft)	6.86	448.00	76.51
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.12	1.72	0.11
Max Chl Dpth (ft)	13.13	Hydr. Depth (ft)	1.32	6.06	1.11
Conv. Total (cfs)	334780.1	Conv. (cfs)	76.9	334031.5	671.8
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	7.35	449.64	76.55
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.02	0.07	0.01
Alpha	1.06	Stream Power (lb/ft s)	0.00	0.13	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)	2515.99	3712.99	2332.33
C & E Loss (ft)	0.00	Cum SA (acres)	1290.85	355.46	1437.00

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.75	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	24.63	3481.34	284.06
E.G. Slope (ft/ft)	0.000159	Area (sq ft)	24.63	3481.34	284.06
Q Total (cfs)	6420.00	Flow (cfs)	3.69	6375.28	41.02
Top Width (ft)	607.44	Top Width (ft)	11.34	448.00	148.10
Vel Total (ft/s)	1.69	Avg. Vel. (ft/s)	0.15	1.83	0.14
Max Chl Dpth (ft)	14.85	Hydr. Depth (ft)	2.17	7.77	1.92
Conv. Total (cfs)	509689.0	Conv. (cfs)	293.2	506138.8	3257.0
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	12.14	449.64	148.16
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	1.16	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	3917.48	4142.30	3623.44
C & E Loss (ft)	0.00	Cum SA (acres)	1408.46	355.57	1686.07

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.78	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	82.91	3946.04	506.09
E.G. Slope (ft/ft)	0.000145	Area (sq ft)	82.91	3946.04	506.09
Q Total (cfs)	7571.00	Flow (cfs)	5.48	7503.14	62.37
Top Width (ft)	889.86	Top Width (ft)	129.37	448.00	312.49
Vel Total (ft/s)	1.67	Avg. Vel. (ft/s)	0.07	1.90	0.12
Max Chl Dpth (ft)	15.88	Hydr. Depth (ft)	0.64	8.81	1.62
Conv. Total (cfs)	629318.8	Conv. (cfs)	455.9	623678.3	5184.7
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	130.22	449.64	312.56
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.01	0.08	0.01
Alpha	1.29	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4869.69	4417.13	4634.93
C & E Loss (ft)	0.00	Cum SA (acres)	1443.67	355.66	1813.25

CROSS SECTION OUTPUT Profile #PF 4

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E.G. Elev (ft)	12.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	12.32	Reach Len. (ft)	2673.00	2673.00	2673.00
Crit W.S. (ft)		Flow Area (sq ft)	370.76	4634.02	1058.53
E.G. Slope (ft/ft)	0.000129	Area (sq ft)	370.76	4634.02	1058.53
Q Total (cfs)	9462.00	Flow (cfs)	40.77	9242.28	178.95
Top Width (ft)	1067.81	Top Width (ft)	247.67	448.00	372.14
Vel Total (ft/s)	1.56	Avg. Vel. (ft/s)	0.11	1.99	0.17
Max Chl Dpth (ft)	17.42	Hydr. Depth (ft)	1.50	10.34	2.84
Conv. Total (cfs)	834625.5	Conv. (cfs)	3596.3	815244.3	15784.9
Length Wtd. (ft)	2673.00	Wetted Per. (ft)	248.54	449.64	372.25
Min Ch El (ft)	-5.10	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	1.60	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	6323.54	4830.88	6335.74
C & E Loss (ft)	0.00	Cum SA (acres)	1490.37	355.80	1920.32

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 13.4

INPUT

Description:

Station Elevation Data		num=		23					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16.6	1120	13.7	1164	11.9	1268	7.6	1285	5.2
1348	2.3	1412	1.8	1453	1.2	1498	1.1	1540	1.2
1562	.7	1574	-2.1	1597	-7.1	1625	-7.9	1652	-9.1
1686	-3.2	1722	.1	1759	1.9	1809	2.7	1931	7.9
2059	17.8	2109	19	2160	27.3				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1562	.04	1722	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1562	1722		225	225	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.67	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	1595.40	2045.29	804.40
E.G. Slope (ft/ft)	0.000095	Area (sq ft)	1595.40	2045.29	804.40
Q Total (cfs)	4521.00	Flow (cfs)	355.07	4020.47	145.46
Top Width (ft)	659.15	Top Width (ft)	295.62	160.00	203.53
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.22	1.97	0.18
Max Chl Dpth (ft)	16.77	Hydr. Depth (ft)	5.40	12.78	3.95
Conv. Total (cfs)	464090.0	Conv. (cfs)	36449.0	412709.1	14931.9
Length Wtd. (ft)	225.00	Wetted Per. (ft)	295.87	161.56	203.69
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.03	0.08	0.02
Alpha	3.33	Stream Power (lb/ft s)	0.01	0.15	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2466.76	3567.00	2305.06
C & E Loss (ft)	0.01	Cum SA (acres)	1281.57	336.81	1428.41

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.37	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	2133.88	2317.76	1173.64
E.G. Slope (ft/ft)	0.000111	Area (sq ft)	2133.88	2317.76	1173.64
Q Total (cfs)	6206.00	Flow (cfs)	572.03	5360.05	273.92
Top Width (ft)	724.81	Top Width (ft)	336.80	160.00	228.00
Vel Total (ft/s)	1.10	Avg. Vel. (ft/s)	0.27	2.31	0.23
Max Chl Dpth (ft)	18.47	Hydr. Depth (ft)	6.34	14.49	5.15
Conv. Total (cfs)	588584.4	Conv. (cfs)	54252.5	508353.0	25978.9
Length Wtd. (ft)	225.00	Wetted Per. (ft)	337.09	161.56	228.22
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.04	0.10	0.04
Alpha	3.80	Stream Power (lb/ft s)	0.01	0.23	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3851.25	3964.38	3578.72
C & E Loss (ft)	0.02	Cum SA (acres)	1397.78	336.91	1674.53

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.40	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	2494.19	2482.81	1415.72
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	2494.19	2482.81	1415.72
Q Total (cfs)	7332.00	Flow (cfs)	732.67	6225.98	373.35
Top Width (ft)	763.09	Top Width (ft)	361.75	160.00	241.34
Vel Total (ft/s)	1.15	Avg. Vel. (ft/s)	0.29	2.51	0.26
Max Chl Dpth (ft)	19.50	Hydr. Depth (ft)	6.89	15.52	5.87
Conv. Total (cfs)	671387.7	Conv. (cfs)	67090.6	570109.6	34187.5
Length Wtd. (ft)	225.00	Wetted Per. (ft)	362.06	161.56	241.60
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.05	0.11	0.04
Alpha	4.07	Stream Power (lb/ft s)	0.02	0.29	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4790.63	4219.88	4575.97
C & E Loss (ft)	0.02	Cum SA (acres)	1428.60	337.00	1796.26

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	12.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.93	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)		Flow Area (sq ft)	3074.51	2727.02	1799.15
E.G. Slope (ft/ft)	0.000130	Area (sq ft)	3074.51	2727.02	1799.15
Q Total (cfs)	9185.00	Flow (cfs)	1017.92	7614.58	552.50
Top Width (ft)	819.75	Top Width (ft)	398.68	160.00	261.07
Vel Total (ft/s)	1.21	Avg. Vel. (ft/s)	0.33	2.79	0.31
Max Chl Dpth (ft)	21.03	Hydr. Depth (ft)	7.71	17.04	6.89
Conv. Total (cfs)	804081.0	Conv. (cfs)	89111.7	666602.3	48367.0

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Length Wtd. (ft)	225.00	Wetted Per. (ft)	399.01	161.56	261.39
Min Ch El (ft)	-9.10	Shear (lb/sq ft)	0.06	0.14	0.06
Alpha	4.44	Stream Power (lb/ft s)	0.02	0.38	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	6217.83	4605.03	6248.06
C & E Loss (ft)	0.02	Cum SA (acres)	1470.54	337.14	1900.89

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 13.3

INPUT

Description:

Station Elevation Data		num=	11						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16	1024	3	1077	-2	1099	-6.5	1137	-5.8
1171	-9.1	1215	-6.1	1258	-2.7	1296	-2.4	1335	-1.1
1360	16								

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1024	.04	1335	.2

Bank Sta: Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
1024	1335		43.1	43.1	.3	.5
Ineffective Flow		num=	2			
Sta L	Sta R	Elev	Permanent			
1000	1024	19.9	F			
1335	1360	19.9	F			

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.67	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.57	Flow Area (sq ft)		3627.40	
E.G. Slope (ft/ft)	0.000043	Area (sq ft)	20.11	3627.40	56.19
Q Total (cfs)	4521.00	Flow (cfs)		4521.00	
Top Width (ft)	332.44	Top Width (ft)	8.62	311.00	12.82
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)		1.25	
Max Chl Dpth (ft)	16.77	Hydr. Depth (ft)		11.66	
Conv. Total (cfs)	691381.3	Conv. (cfs)		691381.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	2462.59	3552.35	2302.84
C & E Loss (ft)	0.00	Cum SA (acres)	1280.78	335.59	1427.85

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.41	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.03	Wt. n-Val.	0.040		
W.S. Elev (ft)	9.37	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.83	Flow Area (sq ft)		4157.45	
E.G. Slope (ft/ft)	0.000051	Area (sq ft)	37.48	4157.45	80.16
Q Total (cfs)	6206.00	Flow (cfs)		6206.00	
Top Width (ft)	338.07	Top Width (ft)	11.76	311.00	15.31
Vel Total (ft/s)	1.49	Avg. Vel. (ft/s)		1.49	
Max Chl Dpth (ft)	18.47	Hydr. Depth (ft)		13.37	
Conv. Total (cfs)	867831.8	Conv. (cfs)		867831.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	3845.64	3947.65	3575.48
C & E Loss (ft)	0.00	Cum SA (acres)	1396.88	335.70	1673.90

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.45	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	10.40	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.19	Flow Area (sq ft)		4478.51	
E.G. Slope (ft/ft)	0.000056	Area (sq ft)	50.61	4478.51	96.75
Q Total (cfs)	7332.00	Flow (cfs)		7332.00	
Top Width (ft)	341.49	Top Width (ft)	13.67	311.00	16.82
Vel Total (ft/s)	1.64	Avg. Vel. (ft/s)		1.64	
Max Chl Dpth (ft)	19.50	Hydr. Depth (ft)		14.40	
Conv. Total (cfs)	982380.5	Conv. (cfs)		982380.5	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.08	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	4784.05	4201.91	4572.06
C & E Loss (ft)	0.00	Cum SA (acres)	1427.64	335.79	1795.59

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.93	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-1.58	Flow Area (sq ft)		4953.48	
E.G. Slope (ft/ft)	0.000062	Area (sq ft)	73.64	4953.48	124.14
Q Total (cfs)	9185.00	Flow (cfs)		9185.00	
Top Width (ft)	346.54	Top Width (ft)	16.49	311.00	19.05
Vel Total (ft/s)	1.85	Avg. Vel. (ft/s)		1.85	
Max Chl Dpth (ft)	21.03	Hydr. Depth (ft)		15.93	
Conv. Total (cfs)	1162096.0	Conv. (cfs)		1162096.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		312.12	
Min Ch El (ft)	-9.10	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.11	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	6209.70	4585.19	6243.10
C & E Loss (ft)	0.00	Cum SA (acres)	1469.46	335.92	1900.17

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 13.25

INPUT
 Description: Bridge #5

Distance from Upstream XS = 1
 Deck/Roadway Width = 42
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	16.1	1360	19.9	16				

Upstream Bridge Cross Section Data

Station Elevation Data				num=	11				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16	1024	3	1077	-2	1099	-6.5	1137	-5.8
1171	-9.1	1215	-6.1	1258	-2.7	1296	-2.4	1335	-1.1
1360	16								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1024	.04	1335	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1024 1335 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1024	19.9	F
1335	1360	19.9	F

Downstream Deck/Roadway Coordinates
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	19.9	16.1	1360	19.9	16				

Downstream Bridge Cross Section Data

Station Elevation Data				num=	11				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	16.1	1026	2.6	1059	1.7	1096	-3.2	1131	-8
1174	-8.6	1214	-2.8	1257	-.3	1284	-.3	1337	2.7
1360	15.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1026	.04	1337	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1026 1337 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1000	1026	18	F
1337	1360	18	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 19.9
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 1179.5 Downstream= 1181.5

Upstream	num=	2		
Width	Elev	Width	Elev	
12	-9.1	12	16.1	

Downstream	num=	2		
Width	Elev	Width	Elev	
12	-8.6	12	16.1	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 16.1

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	7.69	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.67	E.G. Elev (ft)	7.69	7.69
Q Total (cfs)	4521.00	W.S. Elev (ft)	7.66	7.65
Q Bridge (cfs)	4521.00	Crit W.S. (ft)	-3.22	-2.60
Q Weir (cfs)		Max Chl Dpth (ft)	16.76	16.25
Weir Sta Lft (ft)		Vel Total (ft/s)	1.32	1.53
Weir Sta Rgt (ft)		Flow Area (sq ft)	3432.03	2945.60
Weir Submerg		Froude # Chl	0.07	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	21138.87	16676.20
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	11.48	9.85
Min El Prs (ft)	16.10	W.P. Total (ft)	332.46	330.44
Delta EG (ft)	0.01	Conv. Total (cfs)	604455.0	470431.9
Delta WS (ft)	0.02	Top Width (ft)	320.42	317.41
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.53	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.04	0.05
BR Sel Method	Energy only	Power Total (lb/ft s)	0.05	0.08

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Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	9.41	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	9.37	E.G. Elev (ft)	9.41	9.40
Q Total (cfs)	6206.00	W.S. Elev (ft)	9.37	9.35
Q Bridge (cfs)	6206.00	Crit W.S. (ft)	-2.26	-1.54
Q Weir (cfs)		Max Chl Dpth (ft)	18.47	17.95
Weir Sta Lft (ft)		Vel Total (ft/s)	1.57	1.80
Weir Sta Rgt (ft)		Flow Area (sq ft)	3941.20	3453.84
Weir Submerg		Froude # Chl	0.08	0.09
Weir Max Depth (ft)		Specif Force (cu ft)	27535.47	22246.07
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	13.18	11.55
Min El Prs (ft)	16.10	W.P. Total (ft)	335.86	333.84
Delta EG (ft)	0.01	Conv. Total (cfs)	756034.9	609184.3
Delta WS (ft)	0.02	Top Width (ft)	326.06	323.67
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.80	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.05	0.07
BR Sel Method	Energy only	Power Total (lb/ft s)	0.08	0.12

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	10.45	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	10.40	E.G. Elev (ft)	10.44	10.44
Q Total (cfs)	7332.00	W.S. Elev (ft)	10.40	10.38
Q Bridge (cfs)	7332.00	Crit W.S. (ft)	-1.84	-0.96
Q Weir (cfs)		Max Chl Dpth (ft)	19.50	18.98
Weir Sta Lft (ft)		Vel Total (ft/s)	1.73	1.95
Weir Sta Rgt (ft)		Flow Area (sq ft)	4249.60	3761.72
Weir Submerg		Froude # Chl	0.08	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	31849.02	26058.54
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	14.21	12.58
Min El Prs (ft)	16.10	W.P. Total (ft)	337.93	335.90
Delta EG (ft)	0.01	Conv. Total (cfs)	853691.6	699478.6
Delta WS (ft)	0.02	Top Width (ft)	329.47	327.46
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	1.95	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.06	0.08
BR Sel Method	Energy only	Power Total (lb/ft s)	0.10	0.15

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The

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program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	11.99	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	11.93	E.G. Elev (ft)	11.98	11.97
Q Total (cfs)	9185.00	W.S. Elev (ft)	11.92	11.90
Q Bridge (cfs)	9185.00	Crit W.S. (ft)	-1.22	0.05
Q Weir (cfs)		Max Chl Dpth (ft)	21.02	20.50
Weir Sta Lft (ft)		Vel Total (ft/s)	1.95	2.18
Weir Sta Rgt (ft)		Flow Area (sq ft)	4705.79	4217.12
Weir Submerg		Froude # Chl	0.09	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	38844.82	32312.33
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	15.74	14.10
Min El Prs (ft)	16.10	W.P. Total (ft)	340.98	338.94
Delta EG (ft)	0.01	Conv. Total (cfs)	1005788.0	841155.6
Delta WS (ft)	0.03	Top Width (ft)	334.52	333.07
BR Open Area (sq ft)	5457.53	Frctn Loss (ft)	0.00	0.00
BR Open Vel (ft/s)	2.18	C & E Loss (ft)	0.00	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.07	0.09
BR Sel Method	Energy only	Power Total (lb/ft s)	0.14	0.20

Warning: The Yarnell method gave an invalid answer. The upstream energy was less than the downstream energy. The program defaulted to the next valid (user selected) method. If the Yarnell method was the only one selected, the program will default to an energy based solution.

Note: Yarnell answer is not valid if the water surface is above the low chord or if there is weir flow. The Yarnell answer has been disregarded.

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

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CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 13.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
constriction * 001

Station	Elevation	Data	num=	11
Sta	Elev	Sta	Elev	Sta Elev Sta Elev
1000	16.1	1026	2.6	1059 1.7 1096 -3.2 1131 -8
1174	-8.6	1214	-2.8	1257 -.3 1284 -.3 1337 2.7
1360	15.8			

Manning's n	Values	num=	3
Sta	n Val	Sta	n Val
1000	.2	1026	.04
		1337	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1026	1337		225 225	225	.3	.5
Ineffective Flow			num=	2			

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Sta L	Sta R	Elev	Permanent
1000	1026	18	F
1337	1360	18	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.65	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-3.06	Flow Area (sq ft)		3128.17	
E.G. Slope (ft/ft)	0.000070	Area (sq ft)	24.56	3128.17	21.51
Q Total (cfs)	4521.00	Flow (cfs)		4521.00	
Top Width (ft)	329.42	Top Width (ft)	9.73	311.00	8.69
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)		1.45	
Max Chl Dpth (ft)	16.25	Hydr. Depth (ft)		10.06	
Conv. Total (cfs)	540038.1	Conv. (cfs)		540038.1	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2462.57	3549.19	2302.80
C & E Loss (ft)	0.01	Cum SA (acres)	1280.77	335.30	1427.84

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.35	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-2.03	Flow Area (sq ft)		3657.01	
E.G. Slope (ft/ft)	0.000078	Area (sq ft)	43.89	3657.01	38.83
Q Total (cfs)	6206.00	Flow (cfs)		6206.00	
Top Width (ft)	335.68	Top Width (ft)	13.00	311.00	11.68
Vel Total (ft/s)	1.70	Avg. Vel. (ft/s)		1.70	
Max Chl Dpth (ft)	17.95	Hydr. Depth (ft)		11.76	
Conv. Total (cfs)	700622.5	Conv. (cfs)		700622.5	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3845.60	3943.99	3575.42
C & E Loss (ft)	0.01	Cum SA (acres)	1396.86	335.40	1673.89

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	10.38	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-1.45	Flow Area (sq ft)		3977.37	
E.G. Slope (ft/ft)	0.000083	Area (sq ft)	58.30	3977.37	51.79
Q Total (cfs)	7332.00	Flow (cfs)		7332.00	
Top Width (ft)	339.47	Top Width (ft)	14.99	311.00	13.49
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)		1.84	
Max Chl Dpth (ft)	18.98	Hydr. Depth (ft)		12.79	
Conv. Total (cfs)	805873.1	Conv. (cfs)		805873.1	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	

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Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.07		
Alpha	1.00	Stream Power (lb/ft s)	0.12		
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4784.00	4197.93	4571.99
C & E Loss (ft)	0.02	Cum SA (acres)	1427.62	335.49	1795.57

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.90	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	-0.64	Flow Area (sq ft)		4451.25	
E.G. Slope (ft/ft)	0.000089	Area (sq ft)	83.37	4451.25	74.38
Q Total (cfs)	9185.00	Flow (cfs)		9185.00	
Top Width (ft)	345.08	Top Width (ft)	17.92	311.00	16.16
Vel Total (ft/s)	2.06	Avg. Vel. (ft/s)		2.06	
Max Chl Dpth (ft)	20.50	Hydr. Depth (ft)		14.31	
Conv. Total (cfs)	972172.6	Conv. (cfs)		972172.6	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		312.24	
Min Ch El (ft)	-8.60	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.16	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	6209.62	4580.77	6243.00
C & E Loss (ft)	0.02	Cum SA (acres)	1469.45	335.63	1900.15

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 13.1

INPUT

Description: SR40

* 001

Station Elevation Data		num= 19							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	17.9	1122	10.4	1202	6.1	1286	3.8	1361	2.7
1439	2	1466	2.6	1473	1.9	1496	-2.2	1532	-8.6
1562	-5.9	1586	-3.2	1615	1.4	1637	2.5	1772	2.9
1911	4.5	2046	8.9	2151	13.6	2232	18.1		

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1202	.04	1911	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1202	1911	935	935	935	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.64	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	22.07	4125.31	151.30

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E.G. Slope (ft/ft)	0.000083	Area (sq ft)	22.07	4125.31	151.30
Q Total (cfs)	4521.00	Flow (cfs)	1.25	4505.93	13.82
Top Width (ft)	834.01	Top Width (ft)	28.66	709.00	96.35
Vel Total (ft/s)	1.05	Avg. Vel. (ft/s)	0.06	1.09	0.09
Max Chl Dpth (ft)	16.24	Hydr. Depth (ft)	0.77	5.82	1.57
Conv. Total (cfs)	496625.0	Conv. (cfs)	137.7	494969.3	1518.0
Length Wtd. (ft)	935.00	Wetted Per. (ft)	28.70	710.68	96.40
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.00	0.03	0.01
Alpha	1.08	Stream Power (lb/ft s)	0.00	0.03	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	2462.45	3530.45	2302.35
C & E Loss (ft)	0.01	Cum SA (acres)	1280.67	332.66	1427.57

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.35	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	98.07	5335.26	359.57
E.G. Slope (ft/ft)	0.000066	Area (sq ft)	98.07	5335.26	359.57
Q Total (cfs)	6206.00	Flow (cfs)	8.15	6158.20	39.65
Top Width (ft)	914.39	Top Width (ft)	60.41	709.00	144.99
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)	0.08	1.15	0.11
Max Chl Dpth (ft)	17.95	Hydr. Depth (ft)	1.62	7.53	2.48
Conv. Total (cfs)	765775.1	Conv. (cfs)	1005.5	759876.7	4892.9
Length Wtd. (ft)	935.00	Wetted Per. (ft)	60.50	710.68	145.07
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.15	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	3845.24	3920.76	3574.39
C & E Loss (ft)	0.01	Cum SA (acres)	1396.67	332.77	1673.48

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.38	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	170.47	6068.27	521.41
E.G. Slope (ft/ft)	0.000059	Area (sq ft)	170.47	6068.27	521.41
Q Total (cfs)	7332.00	Flow (cfs)	16.18	7252.39	63.43
Top Width (ft)	956.73	Top Width (ft)	79.64	709.00	168.08
Vel Total (ft/s)	1.08	Avg. Vel. (ft/s)	0.09	1.20	0.12
Max Chl Dpth (ft)	18.98	Hydr. Depth (ft)	2.14	8.56	3.10
Conv. Total (cfs)	952065.8	Conv. (cfs)	2101.5	941727.9	8236.3
Length Wtd. (ft)	935.00	Wetted Per. (ft)	79.76	710.68	168.19
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.20	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	4783.41	4171.99	4570.51
C & E Loss (ft)	0.01	Cum SA (acres)	1427.38	332.86	1795.10

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.91	Reach Len. (ft)	935.00	935.00	935.00
Crit W.S. (ft)		Flow Area (sq ft)	311.39	7152.72	804.63
E.G. Slope (ft/ft)	0.000053	Area (sq ft)	311.39	7152.72	804.63
Q Total (cfs)	9185.00	Flow (cfs)	34.91	9040.58	109.50

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Top Width (ft)	1015.82	Top Width (ft)	104.57	709.00	202.25
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)	0.11	1.26	0.14
Max Chl Dpth (ft)	20.51	Hydr. Depth (ft)	2.98	10.09	3.98
Conv. Total (cfs)	1258402.0	Conv. (cfs)	4783.5	1238616.0	15002.6
Length Wtd. (ft)	935.00	Wetted Per. (ft)	104.73	710.68	202.39
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.03	0.01
Alpha	1.27	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	6208.60	4550.80	6240.73
C & E Loss (ft)	0.01	Cum SA (acres)	1469.13	332.99	1899.59

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 12.1

INPUT

Description: INTERPOLATED SECTION

* 001

Station Elevation Data		num=		30					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
861	20	1000	15	1096	10	1131	5	1187	4.3
1240	2.9	1299	2.6	1355	3.2	1373	4.8	1377	3.8
1379	1.3	1396	-6	1427	-7.6	1449	-10.6	1470	-10.9
1504	-10.4	1521	-5	1550	-3	1561	2.2	1623	2
1634	2.1	1652	1.7	1719	1.8	1766	2.3	1848	2.1
1912	2.7	2564	5	2709	10	2792	15	2895	20

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
861	.2	1377	.04	1561	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1377	1561		500	500	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.48	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	996.55	2477.72	4346.86
E.G. Slope (ft/ft)	0.000130	Area (sq ft)	996.55	2477.72	4346.86
Q Total (cfs)	6997.00	Flow (cfs)	204.73	5857.94	934.33
Top Width (ft)	1522.28	Top Width (ft)	263.36	184.00	1074.92
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)	0.21	2.36	0.21
Max Chl Dpth (ft)	18.38	Hydr. Depth (ft)	3.78	13.47	4.04
Conv. Total (cfs)	613859.4	Conv. (cfs)	17961.0	513927.7	81970.8
Length Wtd. (ft)	500.00	Wetted Per. (ft)	263.76	187.79	1074.98
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.03	0.11	0.03
Alpha	5.86	Stream Power (lb/ft s)	0.01	0.25	0.01
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)	2451.52	3459.59	2254.08
C & E Loss (ft)	0.00	Cum SA (acres)	1277.54	323.08	1415.00

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.26	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.18	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1453.17	2789.71	6211.16
E.G. Slope (ft/ft)	0.000145	Area (sq ft)	1453.17	2789.71	6211.16
Q Total (cfs)	9688.00	Flow (cfs)	394.38	7553.98	1739.64
Top Width (ft)	1583.32	Top Width (ft)	275.23	184.00	1124.09
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)	0.27	2.71	0.28
Max Chl Dpth (ft)	20.08	Hydr. Depth (ft)	5.28	15.16	5.53
Conv. Total (cfs)	803164.3	Conv. (cfs)	32695.2	626247.5	144221.5
Length Wtd. (ft)	500.00	Wetted Per. (ft)	275.75	187.79	1124.18
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.05	0.13	0.05
Alpha	6.68	Stream Power (lb/ft s)	0.01	0.37	0.01
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)	3828.59	3833.56	3503.87
C & E Loss (ft)	0.01	Cum SA (acres)	1393.07	323.18	1659.86

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.30	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.20	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	1739.97	2978.80	7381.45
E.G. Slope (ft/ft)	0.000153	Area (sq ft)	1739.97	2978.80	7381.45
Q Total (cfs)	11504.00	Flow (cfs)	533.00	8632.45	2338.55
Top Width (ft)	1620.28	Top Width (ft)	284.90	184.00	1151.37
Vel Total (ft/s)	0.95	Avg. Vel. (ft/s)	0.31	2.90	0.32
Max Chl Dpth (ft)	21.10	Hydr. Depth (ft)	6.11	16.19	6.41
Conv. Total (cfs)	930963.5	Conv. (cfs)	43133.2	698582.9	189247.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	285.48	187.79	1151.48
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.06	0.15	0.06
Alpha	7.00	Stream Power (lb/ft s)	0.02	0.44	0.02
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	4762.91	4074.89	4485.69
C & E Loss (ft)	0.01	Cum SA (acres)	1423.46	323.27	1780.94

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.72	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)		Flow Area (sq ft)	2195.03	3258.38	9150.07
E.G. Slope (ft/ft)	0.000162	Area (sq ft)	2195.03	3258.38	9150.07
Q Total (cfs)	14490.00	Flow (cfs)	758.31	10333.12	3398.57
Top Width (ft)	1674.67	Top Width (ft)	314.08	184.00	1176.60
Vel Total (ft/s)	0.99	Avg. Vel. (ft/s)	0.35	3.17	0.37
Max Chl Dpth (ft)	22.62	Hydr. Depth (ft)	6.99	17.71	7.78
Conv. Total (cfs)	1137598.0	Conv. (cfs)	59534.6	811244.8	266818.9
Length Wtd. (ft)	500.00	Wetted Per. (ft)	314.70	187.79	1176.75
Min Ch El (ft)	-10.90	Shear (lb/sq ft)	0.07	0.18	0.08
Alpha	7.32	Stream Power (lb/ft s)	0.02	0.56	0.03
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)	6181.70	4439.06	6133.89
C & E Loss (ft)	0.01	Cum SA (acres)	1464.64	323.41	1884.79

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 12

INPUT

Description: 1ST SECTION NORTH OF SR40

* 001

Station Elevation Data		num=		28					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.7	1050	11.8	1116	7.1	1187	3.3	1240	1.9
1299	1.6	1355	2.2	1373	4	1377	3	1379	.3
1396	-1.6	1427	-8.3	1449	-11.4	1470	-11.9	1504	-11.4
1521	-6	1550	-1.3	1561	1.2	1623	1	1634	1.1
1652	1.1	1719	.8	1766	1.3	1848	1.1	1912	1.7
1977	5.7	2407	10	2469	15				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1377	.04	1561	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1377	1561		1698 1698	1698	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.36	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1134.90	2627.13	2558.31
E.G. Slope (ft/ft)	0.000176	Area (sq ft)	1134.90	2627.13	2558.31
Q Total (cfs)	8490.00	Flow (cfs)	295.16	7517.92	676.92
Top Width (ft)	1030.62	Top Width (ft)	264.65	184.00	581.97
Vel Total (ft/s)	1.34	Avg. Vel. (ft/s)	0.26	2.86	0.26
Max Chl Dpth (ft)	19.26	Hydr. Depth (ft)	4.29	14.28	4.40
Conv. Total (cfs)	639622.7	Conv. (cfs)	22236.9	566387.9	50997.9
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	264.99	187.90	582.11
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.05	0.15	0.05
Alpha	4.02	Stream Power (lb/ft s)	0.01	0.44	0.01
Frctn Loss (ft)	0.26	Cum Volume (acre-ft)	2439.28	3430.29	2214.45
C & E Loss (ft)	0.01	Cum SA (acres)	1274.51	320.97	1405.49

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	9.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.01	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1591.12	2931.01	3655.82
E.G. Slope (ft/ft)	0.000219	Area (sq ft)	1591.12	2931.01	3655.82
Q Total (cfs)	11760.00	Flow (cfs)	546.23	10055.79	1157.98
Top Width (ft)	1218.96	Top Width (ft)	287.84	184.00	747.12
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)	0.34	3.43	0.32
Max Chl Dpth (ft)	20.91	Hydr. Depth (ft)	5.53	15.93	4.89
Conv. Total (cfs)	794934.1	Conv. (cfs)	36923.2	679735.9	78275.0
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	288.24	187.90	747.27
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.08	0.21	0.07
Alpha	4.87	Stream Power (lb/ft s)	0.03	0.73	0.02
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	3811.12	3800.73	3447.25
C & E Loss (ft)	0.01	Cum SA (acres)	1389.84	321.07	1649.12

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	10.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.01	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	1886.84	3115.54	4455.34
E.G. Slope (ft/ft)	0.000240	Area (sq ft)	1886.84	3115.54	4455.34
Q Total (cfs)	13955.00	Flow (cfs)	736.57	11665.62	1552.81
Top Width (ft)	1332.10	Top Width (ft)	301.92	184.00	846.17
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	0.39	3.74	0.35
Max Chl Dpth (ft)	21.91	Hydr. Depth (ft)	6.25	16.93	5.27
Conv. Total (cfs)	900230.6	Conv. (cfs)	47516.0	752543.8	100170.9
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	302.36	187.90	846.33
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.09	0.25	0.08
Alpha	5.39	Stream Power (lb/ft s)	0.04	0.93	0.03
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	4742.09	4039.92	4417.76
C & E Loss (ft)	0.01	Cum SA (acres)	1420.10	321.16	1769.48

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.51	Reach Len. (ft)	1698.00	1698.00	1698.00
Crit W.S. (ft)		Flow Area (sq ft)	2352.64	3389.89	5730.84
E.G. Slope (ft/ft)	0.000264	Area (sq ft)	2352.64	3389.89	5730.84
Q Total (cfs)	17579.00	Flow (cfs)	1066.24	14072.46	2440.30
Top Width (ft)	1371.52	Top Width (ft)	322.86	184.00	864.66
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)	0.45	4.15	0.43
Max Chl Dpth (ft)	23.41	Hydr. Depth (ft)	7.29	18.42	6.63
Conv. Total (cfs)	1082044.0	Conv. (cfs)	65630.6	866205.0	150207.9
Length Wtd. (ft)	1698.00	Wetted Per. (ft)	323.35	187.90	864.88
Min Ch El (ft)	-11.90	Shear (lb/sq ft)	0.12	0.30	0.11
Alpha	5.89	Stream Power (lb/ft s)	0.05	1.23	0.05
Frctn Loss (ft)	0.39	Cum Volume (acre-ft)	6155.60	4400.91	6048.49
C & E Loss (ft)	0.02	Cum SA (acres)	1460.98	321.30	1873.08

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.4

INPUT
 Description: * 001

Station Elevation Data		num=		20					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18.4	1117	13.2	1228	7.3	1404	3.3	1510	2
1534	-.2	1582	-5.5	1627	-13.2	1687	-9	1744	-1.5
1753	1.6	1762	2	1792	2	1865	1	1959	2.2
2047	2.8	2153	3.5	2215	4.8	2347	7	2498	17.5

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1510	.04	1753	.2

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

1510 1753 360 360 360

.3 .5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.12	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	795.10	3231.13	2303.83
E.G. Slope (ft/ft)	0.000134	Area (sq ft)	795.10	3231.13	2303.83
Q Total (cfs)	8376.00	Flow (cfs)	139.01	7749.02	487.96
Top Width (ft)	1112.86	Top Width (ft)	274.12	243.00	595.74
Vel Total (ft/s)	1.32	Avg. Vel. (ft/s)	0.17	2.40	0.21
Max Chl Dpth (ft)	20.32	Hydr. Depth (ft)	2.90	13.30	3.87
Conv. Total (cfs)	723822.1	Conv. (cfs)	12013.1	669641.3	42167.7
Length Wtd. (ft)	360.00	Wetted Per. (ft)	274.17	245.20	595.80
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.02	0.11	0.03
Alpha	3.04	Stream Power (lb/ft s)	0.00	0.26	0.01
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2401.67	3316.11	2119.68
C & E Loss (ft)	0.02	Cum SA (acres)	1264.01	312.64	1382.53

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.72	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	1264.71	3620.03	3275.65
E.G. Slope (ft/ft)	0.000164	Area (sq ft)	1264.71	3620.03	3275.65
Q Total (cfs)	11610.00	Flow (cfs)	307.78	10356.35	945.87
Top Width (ft)	1170.49	Top Width (ft)	308.74	243.00	618.75
Vel Total (ft/s)	1.42	Avg. Vel. (ft/s)	0.24	2.86	0.29
Max Chl Dpth (ft)	21.92	Hydr. Depth (ft)	4.10	14.90	5.29
Conv. Total (cfs)	907254.2	Conv. (cfs)	24051.1	809288.9	73914.2
Length Wtd. (ft)	360.00	Wetted Per. (ft)	308.83	245.20	618.87
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.04	0.15	0.05
Alpha	3.61	Stream Power (lb/ft s)	0.01	0.43	0.02
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3755.45	3673.05	3312.15
C & E Loss (ft)	0.02	Cum SA (acres)	1378.21	312.75	1622.50

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.70	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	1575.32	3857.44	3887.04
E.G. Slope (ft/ft)	0.000179	Area (sq ft)	1575.32	3857.44	3887.04
Q Total (cfs)	13785.00	Flow (cfs)	446.64	12042.08	1296.28
Top Width (ft)	1202.92	Top Width (ft)	327.12	243.00	632.80
Vel Total (ft/s)	1.48	Avg. Vel. (ft/s)	0.28	3.12	0.33
Max Chl Dpth (ft)	22.90	Hydr. Depth (ft)	4.82	15.87	6.14
Conv. Total (cfs)	1029882.0	Conv. (cfs)	33368.7	899667.6	96845.7
Length Wtd. (ft)	360.00	Wetted Per. (ft)	327.24	245.20	632.96
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.05	0.18	0.07
Alpha	3.90	Stream Power (lb/ft s)	0.02	0.55	0.02
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	4674.61	3904.01	4255.16
C & E Loss (ft)	0.02	Cum SA (acres)	1407.84	312.84	1740.65

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	11.15	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)		Flow Area (sq ft)	2070.94	4210.83	4822.52
E.G. Slope (ft/ft)	0.000201	Area (sq ft)	2070.94	4210.83	4822.52
Q Total (cfs)	17387.00	Flow (cfs)	707.12	14756.00	1923.88
Top Width (ft)	1251.20	Top Width (ft)	354.48	243.00	653.72
Vel Total (ft/s)	1.57	Avg. Vel. (ft/s)	0.34	3.50	0.40
Max Chl Dpth (ft)	24.35	Hydr. Depth (ft)	5.84	17.33	7.38
Conv. Total (cfs)	1226834.0	Conv. (cfs)	49895.0	1041190.0	135749.5
Length Wtd. (ft)	360.00	Wetted Per. (ft)	354.64	245.20	653.92
Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.07	0.22	0.09
Alpha	4.26	Stream Power (lb/ft s)	0.03	0.75	0.04
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	6069.39	4252.77	5842.80
C & E Loss (ft)	0.03	Cum SA (acres)	1447.78	312.98	1843.48

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.3

INPUT

Description:

Station Elevation Data		num=	15						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	15.5	1021	4	1053	1.6	1101	1.3	1146	-9.3
1190	-11.4	1240	-9	1276	-4.7	1317	-2.5	1362	.5
1407	.4	1451	1.5	1476	1.9	1498	2.6	1523	13.9

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1498	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1021	1498	174.1	174.1	174.1	.3	.5

Ineffective Flow		num=	2		
Sta L	Sta R	Elev	Permanent		
1000	1021	19.9	F		
1498	1523	19.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.09	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.34	Flow Area (sq ft)		4654.65	
E.G. Slope (ft/ft)	0.000113	Area (sq ft)	8.73	4654.65	22.33
Q Total (cfs)	8376.00	Flow (cfs)		8376.00	
Top Width (ft)	492.59	Top Width (ft)	5.65	477.00	9.94
Vel Total (ft/s)	1.80	Avg. Vel. (ft/s)		1.80	
Max Chl Dpth (ft)	18.49	Hydr. Depth (ft)		9.76	
Conv. Total (cfs)	787530.5	Conv. (cfs)		787530.5	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.12	

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Frctn Loss (ft)	Cum Volume (acre-ft)	2398.35	3283.52	2110.07
C & E Loss (ft)	Cum SA (acres)	1262.85	309.67	1380.03

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.69	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.06	Flow Area (sq ft)		5416.37	
E.G. Slope (ft/ft)	0.000131	Area (sq ft)	20.08	5416.37	41.02
Q Total (cfs)	11610.00	Flow (cfs)		11610.00	
Top Width (ft)	499.04	Top Width (ft)	8.56	477.00	13.47
Vel Total (ft/s)	2.14	Avg. Vel. (ft/s)		2.14	
Max Chl Dpth (ft)	20.09	Hydr. Depth (ft)		11.36	
Conv. Total (cfs)	1013839.0	Conv. (cfs)		1013839.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.20	
Frctn Loss (ft)		Cum Volume (acre-ft)	3750.15	3635.71	3298.44
C & E Loss (ft)		Cum SA (acres)	1376.90	309.77	1619.89

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.66	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-2.34	Flow Area (sq ft)		5881.52	
E.G. Slope (ft/ft)	0.000140	Area (sq ft)	29.30	5881.52	55.21
Q Total (cfs)	13785.00	Flow (cfs)		13785.00	
Top Width (ft)	502.98	Top Width (ft)	10.34	477.00	15.63
Vel Total (ft/s)	2.34	Avg. Vel. (ft/s)		2.34	
Max Chl Dpth (ft)	21.06	Hydr. Depth (ft)		12.33	
Conv. Total (cfs)	1163065.0	Conv. (cfs)		1163065.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		478.87	
Min Ch El (ft)	-11.40	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.25	
Frctn Loss (ft)		Cum Volume (acre-ft)	4667.98	3863.77	4238.87
C & E Loss (ft)		Cum SA (acres)	1406.44	309.86	1737.97

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.12	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-1.32	Flow Area (sq ft)		6573.79	
E.G. Slope (ft/ft)	0.000154	Area (sq ft)	46.24	6573.79	80.23
Q Total (cfs)	17387.00	Flow (cfs)		17387.00	
Top Width (ft)	508.84	Top Width (ft)	12.99	477.00	18.84
Vel Total (ft/s)	2.64	Avg. Vel. (ft/s)		2.64	
Max Chl Dpth (ft)	22.52	Hydr. Depth (ft)		13.78	

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Conv. Total (cfs)	1400066.0	Conv. (cfs)	1400066.0
Length Wtd. (ft)	1.00	Wetted Per. (ft)	478.87
Min Ch El (ft)	-11.40	Shear (lb/sq ft)	0.13
Alpha	1.00	Stream Power (lb/ft s)	0.35
Frctn Loss (ft)		Cum Volume (acre-ft)	6060.64 4208.20 5822.54
C & E Loss (ft)		Cum SA (acres)	1446.26 310.00 1840.70

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

BRIDGE

RIVER: RIVER-1
REACH: Reach-1 RS: 11.25

INPUT

Description: Bridge #4

Distance from Upstream XS = 1
Deck/Roadway Width = 173
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1000 19.9 15.85	1523 19.9 15.85

Upstream Bridge Cross Section Data

Station Elevation Data	num=	15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1000 15.5 1021 4 1053 1.6 1101 1.3 1146 -9.3		
1190 -11.4 1240 -9 1276 -4.7 1317 -2.5 1362 .5		
1407 .4 1451 1.5 1476 1.9 1498 2.6 1523 13.9		

Manning's n Values

num=	3
Sta n Val Sta n Val Sta n Val	
1000 .2 1021 .04 1498 .2	

Bank Sta: Left Right	Coeff Contr.	Expan.
1021 1498	.3	.5

Ineffective Flow num= 2
Sta L Sta R Elev Permanent
1000 1021 19.9 F
1498 1523 19.9 F

Downstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1000 19.9 15.85	1523 19.9 15.85

Downstream Bridge Cross Section Data

Station Elevation Data	num=	16
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1000 13.3 1021 3.1 1037 2.4 1076 .8 1120 .6		
1163 -.2 1202 -5 1252 -10.8 1301 -10.4 1332 -7.3		
1383 -3.8 1424 -2.2 1468 -.8 1483 1.5 1504 3.1		
1524 14.4		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1504	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1021	1504		.3	.5

Ineffective Flow	num=	2
Sta L	Sta R	Elev Permanent
1000	1021	17.9 F
1504	1524	17.9 F

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	19.9
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1259.5	Downstream=	1262.5
Upstream	num=	2		
Width	Elev	Width	Elev	
15	-11.4	15	15.85	
Downstream	num=	2		
Width	Elev	Width	Elev	
15	-10.8	15	15.85	

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell	KVal =	1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow		
Submerged Inlet Cd	=	
Submerged Inlet + Outlet Cd	=	.7905694
Max Low Cord	=	15.85

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	

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	7.14	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.09	E.G. Elev (ft)	7.15	7.14
Q Total (cfs)	8376.00	W.S. Elev (ft)	7.09	7.09
Q Bridge (cfs)	8376.00	Crit W.S. (ft)	-4.24	-3.50
Q Weir (cfs)		Max Chl Dpth (ft)	18.49	17.89
Weir Sta Lft (ft)		Vel Total (ft/s)	1.88	1.77
Weir Sta Rgt (ft)		Flow Area (sq ft)	4447.27	4720.66
Weir Submerg		Froude # Chl	0.11	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	27111.72	28331.28

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Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	9.63	10.09
Min El Prs (ft)	15.85	W.P. Total (ft)	491.29	504.86
Delta EG (ft)	0.01	Conv. Total (cfs)	717572.3	778320.9
Delta WS (ft)	0.00	Top Width (ft)	477.58	483.28
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	1.88	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.08	0.07
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.15	0.12

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	8.76	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	8.69	E.G. Elev (ft)	8.76	8.76
Q Total (cfs)	11610.00	W.S. Elev (ft)	8.69	8.69
Q Bridge (cfs)	11610.00	Crit W.S. (ft)	-2.85	-2.33
Q Weir (cfs)		Max Chl Dpth (ft)	20.09	19.49
Weir Sta Lft (ft)		Vel Total (ft/s)	2.24	2.12
Weir Sta Rgt (ft)		Flow Area (sq ft)	5184.65	5467.62
Weir Submerg		Froude # Chl	0.12	0.11
Weir Max Depth (ft)		Specif Force (cu ft)	35116.01	36766.13
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	11.22	11.68
Min El Prs (ft)	15.85	W.P. Total (ft)	494.48	508.05
Delta EG (ft)	0.01	Conv. Total (cfs)	922643.1	990054.8
Delta WS (ft)	0.00	Top Width (ft)	484.03	489.39
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.24	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.10	0.09
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.23	0.20

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	9.75	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	9.66	E.G. Elev (ft)	9.75	9.75
Q Total (cfs)	13785.00	W.S. Elev (ft)	9.66	9.66
Q Bridge (cfs)	13785.00	Crit W.S. (ft)	-2.10	-1.66
Q Weir (cfs)		Max Chl Dpth (ft)	21.06	20.46
Weir Sta Lft (ft)		Vel Total (ft/s)	2.45	2.33
Weir Sta Rgt (ft)		Flow Area (sq ft)	5634.91	5923.73
Weir Submerg		Froude # Chl	0.12	0.12
Weir Max Depth (ft)		Specif Force (cu ft)	40628.48	42547.96
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	12.20	12.66
Min El Prs (ft)	15.85	W.P. Total (ft)	496.43	510.00
Delta EG (ft)	0.01	Conv. Total (cfs)	1057243.0	1128615.0
Delta WS (ft)	0.00	Top Width (ft)	487.96	493.12
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.45	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.12	0.11
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.29	0.25

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	11.22	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	11.12	E.G. Elev (ft)	11.23	11.22
Q Total (cfs)	17387.00	W.S. Elev (ft)	11.11	11.11
Q Bridge (cfs)	17387.00	Crit W.S. (ft)	-1.03	-0.74
Q Weir (cfs)		Max Chl Dpth (ft)	22.51	21.91
Weir Sta Lft (ft)		Vel Total (ft/s)	2.76	2.63
Weir Sta Rgt (ft)		Flow Area (sq ft)	6304.99	6602.51
Weir Submerg		Froude # Chl	0.13	0.12
Weir Max Depth (ft)		Specif Force (cu ft)	49729.30	52057.93
Min El Weir Flow (ft)	19.91	Hydr Depth (ft)	13.65	14.11
Min El Prs (ft)	15.85	W.P. Total (ft)	499.33	512.90
Delta EG (ft)	0.02	Conv. Total (cfs)	1270037.0	1347183.0
Delta WS (ft)	0.00	Top Width (ft)	493.82	498.68
BR Open Area (sq ft)	8493.99	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.76	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.15	0.13
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.41	0.35

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

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 11.2

INPUT

Description: wide flood plain, sec 1 located 1 times the av width of the side
 constriction * 001

Station Elevation Data		num=		16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.3	1021	3.1	1037	2.4	1076	.8	1120	.6
1163	-.2	1202	-5	1252	-10.8	1301	-10.4	1332	-7.3
1383	-3.8	1424	-2.2	1468	-.8	1483	1.5	1504	3.1
1524	14.4								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1021	.04	1504	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1021	1504		360	360	.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1000	1021	17.9	F		
1504	1524	17.9	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.09	Reach Len. (ft)	360.00	360.00	360.00

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Crit W.S. (ft)	-4.07	Flow Area (sq ft)	4987.74		
E.G. Slope (ft/ft)	0.000091	Area (sq ft)	16.40	4987.74	14.09
Q Total (cfs)	8376.00	Flow (cfs)		8376.00	
Top Width (ft)	498.28	Top Width (ft)	8.22	483.00	7.06
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)		1.68	
Max Chl Dpth (ft)	17.89	Hydr. Depth (ft)		10.33	
Conv. Total (cfs)	877123.8	Conv. (cfs)		877123.8	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2398.30	3265.20	2110.00
C & E Loss (ft)	0.01	Cum SA (acres)	1262.82	307.81	1380.00

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.69	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-2.91	Flow Area (sq ft)		5758.63	
E.G. Slope (ft/ft)	0.000109	Area (sq ft)	32.13	5758.63	27.62
Q Total (cfs)	11610.00	Flow (cfs)		11610.00	
Top Width (ft)	504.39	Top Width (ft)	11.50	483.00	9.89
Vel Total (ft/s)	2.02	Avg. Vel. (ft/s)		2.02	
Max Chl Dpth (ft)	19.49	Hydr. Depth (ft)		11.92	
Conv. Total (cfs)	1114519.0	Conv. (cfs)		1114519.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.16	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3750.04	3614.42	3298.31
C & E Loss (ft)	0.01	Cum SA (acres)	1376.86	307.91	1619.84

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	9.66	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-2.24	Flow Area (sq ft)		6229.37	
E.G. Slope (ft/ft)	0.000118	Area (sq ft)	44.32	6229.37	38.10
Q Total (cfs)	13785.00	Flow (cfs)		13785.00	
Top Width (ft)	508.12	Top Width (ft)	13.51	483.00	11.61
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.21	
Max Chl Dpth (ft)	20.46	Hydr. Depth (ft)		12.90	
Conv. Total (cfs)	1270461.0	Conv. (cfs)		1270461.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.21	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	4667.83	3840.67	4238.69
C & E Loss (ft)	0.01	Cum SA (acres)	1406.39	308.00	1737.92

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

CROSS SECTION OUTPUT Profile #PF 4

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E.G. Elev (ft)	11.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	
W.S. Elev (ft)	11.11	Reach Len. (ft)	360.00	360.00	360.00
Crit W.S. (ft)	-1.27	Flow Area (sq ft)		6929.90	
E.G. Slope (ft/ft)	0.000131	Area (sq ft)	66.08	6929.90	56.81
Q Total (cfs)	17387.00	Flow (cfs)		17387.00	
Top Width (ft)	513.68	Top Width (ft)	16.50	483.00	14.18
Vel Total (ft/s)	2.51	Avg. Vel. (ft/s)		2.51	
Max Chl Dpth (ft)	21.91	Hydr. Depth (ft)		14.35	
Conv. Total (cfs)	1517400.0	Conv. (cfs)		1517400.0	
Length Wtd. (ft)	360.00	Wetted Per. (ft)		484.25	
Min Ch El (ft)	-10.80	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.29	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	6060.41	4182.41	5822.26
C & E Loss (ft)	0.01	Cum SA (acres)	1446.20	308.14	1840.64

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 11.1

INPUT
Description: I-95

* 001

Station Elevation Data		num=		17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	21.9	1100	16.8	1240	5.5	1568	2	1643	2.4
1672	-2.9	1720	-12.5	1780	-10.1	1843	-4.6	1899	.2
1911	1.4	1922	2	1931	2	1972	3.1	2237	6.8
2350	8.3	2496	21.1						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1643	.04	1931	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1643	1931		4378 4378	4378	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	7.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.02	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	1446.43	3615.24	732.16
E.G. Slope (ft/ft)	0.000123	Area (sq ft)	1446.43	3615.24	732.16
Q Total (cfs)	8376.00	Flow (cfs)	270.77	8001.06	104.17
Top Width (ft)	1032.00	Top Width (ft)	421.77	288.00	322.23
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)	0.19	2.21	0.14
Max Chl Dpth (ft)	19.52	Hydr. Depth (ft)	3.43	12.55	2.27
Conv. Total (cfs)	755881.4	Conv. (cfs)	24435.4	722045.2	9400.8
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	421.86	290.00	322.27
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.03	0.10	0.02
Alpha	2.24	Stream Power (lb/ft s)	0.00	0.21	0.00

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Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	2392.25	3229.65	2106.91
C & E Loss (ft)	0.00	Cum SA (acres)	1261.05	304.62	1378.64

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.59	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	2126.35	4069.00	1330.65
E.G. Slope (ft/ft)	0.000151	Area (sq ft)	2126.35	4069.00	1330.65
Q Total (cfs)	11610.00	Flow (cfs)	553.21	10795.95	260.84
Top Width (ft)	1151.61	Top Width (ft)	441.30	288.00	422.32
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.26	2.65	0.20
Max Chl Dpth (ft)	21.09	Hydr. Depth (ft)	4.82	14.13	3.15
Conv. Total (cfs)	945629.5	Conv. (cfs)	45058.3	879325.6	21245.6
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	441.44	290.00	422.38
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	2.75	Stream Power (lb/ft s)	0.01	0.35	0.01
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	3741.12	3573.81	3292.69
C & E Loss (ft)	0.01	Cum SA (acres)	1374.99	304.73	1618.06

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.56	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	2557.84	4346.84	1743.38
E.G. Slope (ft/ft)	0.000165	Area (sq ft)	2557.84	4346.84	1743.38
Q Total (cfs)	13785.00	Flow (cfs)	772.49	12592.29	420.23
Top Width (ft)	1174.57	Top Width (ft)	453.25	288.00	433.32
Vel Total (ft/s)	1.59	Avg. Vel. (ft/s)	0.30	2.90	0.24
Max Chl Dpth (ft)	22.06	Hydr. Depth (ft)	5.64	15.09	4.02
Conv. Total (cfs)	1074636.0	Conv. (cfs)	60220.7	981655.3	32759.6
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	453.43	290.00	433.43
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.06	0.15	0.04
Alpha	3.02	Stream Power (lb/ft s)	0.02	0.45	0.01
Frctn Loss (ft)	0.66	Cum Volume (acre-ft)	4657.08	3796.97	4231.33
C & E Loss (ft)	0.01	Cum SA (acres)	1404.46	304.82	1736.08

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	11.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.99	Reach Len. (ft)	4378.00	4378.00	4378.00
Crit W.S. (ft)		Flow Area (sq ft)	3221.95	4760.70	2377.84
E.G. Slope (ft/ft)	0.000184	Area (sq ft)	3221.95	4760.70	2377.84
Q Total (cfs)	17387.00	Flow (cfs)	1169.29	15490.79	726.93
Top Width (ft)	1208.77	Top Width (ft)	471.05	288.00	449.71
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)	0.36	3.25	0.31
Max Chl Dpth (ft)	23.49	Hydr. Depth (ft)	6.84	16.53	5.29
Conv. Total (cfs)	1282150.0	Conv. (cfs)	86225.7	1142320.0	53604.9
Length Wtd. (ft)	4378.00	Wetted Per. (ft)	471.29	290.00	449.88
Min Ch El (ft)	-12.50	Shear (lb/sq ft)	0.08	0.19	0.06
Alpha	3.35	Stream Power (lb/ft s)	0.03	0.61	0.02
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	6046.83	4134.10	5812.20
C & E Loss (ft)	0.01	Cum SA (acres)	1444.19	304.96	1838.72

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 10

INPUT

Description: SANDALWOOD LANE

* 001

Station Elevation Data		num= 26	
Sta	Elev	Sta	Elev
1300	20.6	1340	18.9
1485	6.8	1539	4.9
1696	-7.7	1744	-9.3
1907	.2	1977	1.9
2378	4	2541	5
2684	12		

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
1300	.2	1598	.04
		1907	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1598	1907		3146	3146	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.54	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	220.80	3867.59	2526.00
E.G. Slope (ft/ft)	0.000100	Area (sq ft)	220.80	3867.59	2526.00
Q Total (cfs)	8175.00	Flow (cfs)	26.73	7694.85	453.43
Top Width (ft)	1084.75	Top Width (ft)	105.68	309.00	670.07
Vel Total (ft/s)	1.24	Avg. Vel. (ft/s)	0.12	1.99	0.18
Max Chl Dpth (ft)	15.84	Hydr. Depth (ft)	2.09	12.52	3.77
Conv. Total (cfs)	819477.3	Conv. (cfs)	2679.2	771345.7	45452.4
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	105.78	310.91	670.19
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	2.44	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	2308.47	2853.62	1943.18
C & E Loss (ft)	0.01	Cum SA (acres)	1234.54	274.62	1328.77

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	8.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.00	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	420.67	4318.69	3527.92
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	420.67	4318.69	3527.92
Q Total (cfs)	11317.00	Flow (cfs)	64.01	10391.55	861.44
Top Width (ft)	1181.78	Top Width (ft)	170.23	309.00	702.55
Vel Total (ft/s)	1.37	Avg. Vel. (ft/s)	0.15	2.41	0.24
Max Chl Dpth (ft)	17.30	Hydr. Depth (ft)	2.47	13.98	5.02
Conv. Total (cfs)	1009607.0	Conv. (cfs)	5710.1	927045.9	76850.8

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Length Wtd. (ft)	3146.00	Wetted Per. (ft)	170.35	310.91	702.70
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.11	0.04
Alpha	2.84	Stream Power (lb/ft s)	0.00	0.26	0.01
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	3613.13	3152.31	3048.54
C & E Loss (ft)	0.02	Cum SA (acres)	1344.26	274.73	1561.53

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	9.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.91	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	587.04	4598.43	4173.08
E.G. Slope (ft/ft)	0.000139	Area (sq ft)	587.04	4598.43	4173.08
Q Total (cfs)	13440.00	Flow (cfs)	108.84	12153.08	1178.08
Top Width (ft)	1222.61	Top Width (ft)	190.91	309.00	722.70
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)	0.19	2.64	0.28
Max Chl Dpth (ft)	18.21	Hydr. Depth (ft)	3.07	14.88	5.77
Conv. Total (cfs)	1138268.0	Conv. (cfs)	9217.8	1029276.0	99774.9
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	191.07	310.91	722.87
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.03	0.13	0.05
Alpha	3.07	Stream Power (lb/ft s)	0.00	0.34	0.01
Frctn Loss (ft)	0.32	Cum Volume (acre-ft)	4499.04	3347.44	3934.01
C & E Loss (ft)	0.02	Cum SA (acres)	1372.09	274.82	1677.99

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	10.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	10.26	Reach Len. (ft)	3146.00	3146.00	3146.00
Crit W.S. (ft)		Flow Area (sq ft)	851.98	5016.66	5171.31
E.G. Slope (ft/ft)	0.000159	Area (sq ft)	851.98	5016.66	5171.31
Q Total (cfs)	16964.00	Flow (cfs)	209.12	15001.22	1753.66
Top Width (ft)	1259.98	Top Width (ft)	200.58	309.00	750.40
Vel Total (ft/s)	1.54	Avg. Vel. (ft/s)	0.25	2.99	0.34
Max Chl Dpth (ft)	19.56	Hydr. Depth (ft)	4.25	16.24	6.89
Conv. Total (cfs)	1345679.0	Conv. (cfs)	16588.3	1189980.0	139110.4
Length Wtd. (ft)	3146.00	Wetted Per. (ft)	200.83	310.91	750.60
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.04	0.16	0.07
Alpha	3.35	Stream Power (lb/ft s)	0.01	0.48	0.02
Frctn Loss (ft)	0.35	Cum Volume (acre-ft)	5842.10	3642.76	5432.84
C & E Loss (ft)	0.02	Cum SA (acres)	1410.44	274.96	1778.41

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 9

INPUT

Description: TWELVE OAKS TRAIL

* 001

Station	Elevation	Data	num=	40						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
1000	20.4	1037	16.5	1077	7.6	1107	7.4	1160	1.3	
1192	1	1198	.1	1214	-1.1	1230	-1.9	1250	-3.4	

1280	-7.1	1315	-8.5	1343	-7.9	1389	-5.5	1412	-2.1
1430	-.6	1435	1.9	1472	1.8	1503	1	1563	1.1
1619	1	1695	.8	1737	1.4	1746	.9	1748	0
1763	-.8	1796	-2.6	1819	-4.1	1848	-6.1	1904	-5.3
1928	-2.4	1946	-.8	1948	1.1	1986	1.6	2018	1.8
2042	6.8	2053	10	2077	13.4	2094	15.4	2108	16.8

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1192	.04	1948	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1192	1948		4432	4432	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	6.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.31	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	274.45	6299.32	385.16
E.G. Slope (ft/ft)	0.000066	Area (sq ft)	274.45	6299.32	385.16
Q Total (cfs)	7885.00	Flow (cfs)	39.00	7785.74	60.26
Top Width (ft)	923.23	Top Width (ft)	75.56	756.00	91.67
Vel Total (ft/s)	1.13	Avg. Vel. (ft/s)	0.14	1.24	0.16
Max Chl Dpth (ft)	14.81	Hydr. Depth (ft)	3.63	8.33	4.20
Conv. Total (cfs)	971618.3	Conv. (cfs)	4805.7	959386.6	7426.0
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	75.85	758.84	92.14
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.01	0.03	0.02
Alpha	1.18	Stream Power (lb/ft s)	0.00	0.04	0.00
Frctn Loss (ft)	0.33	Cum Volume (acre-ft)	2290.59	2486.48	1838.06
C & E Loss (ft)	0.00	Cum SA (acres)	1228.00	236.17	1301.26

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	7.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.74	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	397.77	7377.36	520.16
E.G. Slope (ft/ft)	0.000073	Area (sq ft)	397.77	7377.36	520.16
Q Total (cfs)	10844.00	Flow (cfs)	57.52	10685.74	100.73
Top Width (ft)	968.86	Top Width (ft)	115.63	756.00	97.23
Vel Total (ft/s)	1.31	Avg. Vel. (ft/s)	0.14	1.45	0.19
Max Chl Dpth (ft)	16.24	Hydr. Depth (ft)	3.44	9.76	5.35
Conv. Total (cfs)	1266845.0	Conv. (cfs)	6720.2	1248356.0	11768.3
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	116.00	758.84	97.88
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.04	0.02
Alpha	1.21	Stream Power (lb/ft s)	0.00	0.06	0.00
Frctn Loss (ft)	0.40	Cum Volume (acre-ft)	3583.57	2729.95	2902.36
C & E Loss (ft)	0.01	Cum SA (acres)	1333.94	236.27	1532.65

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	8.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.63	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	502.50	8050.46	608.09
E.G. Slope (ft/ft)	0.000077	Area (sq ft)	502.50	8050.46	608.09

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Q Total (cfs)	12859.00	Flow (cfs)	84.88	12643.25	130.86
Top Width (ft)	975.92	Top Width (ft)	119.63	756.00	100.29
Vel Total (ft/s)	1.40	Avg. Vel. (ft/s)	0.17	1.57	0.22
Max Chl Dpth (ft)	17.13	Hydr. Depth (ft)	4.20	10.65	6.06
Conv. Total (cfs)	1468544.0	Conv. (cfs)	9694.1	1443905.0	14944.8
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	120.09	758.84	101.07
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.02	0.05	0.03
Alpha	1.23	Stream Power (lb/ft s)	0.00	0.08	0.01
Frctn Loss (ft)	0.43	Cum Volume (acre-ft)	4459.70	2890.68	3761.35
C & E Loss (ft)	0.01	Cum SA (acres)	1360.88	236.36	1648.27

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	10.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.96	Reach Len. (ft)	4432.00	4432.00	4432.00
Crit W.S. (ft)		Flow Area (sq ft)	665.99	9058.40	744.86
E.G. Slope (ft/ft)	0.000082	Area (sq ft)	665.99	9058.40	744.86
Q Total (cfs)	16198.00	Flow (cfs)	135.47	15878.92	183.60
Top Width (ft)	986.50	Top Width (ft)	125.62	756.00	104.87
Vel Total (ft/s)	1.55	Avg. Vel. (ft/s)	0.20	1.75	0.25
Max Chl Dpth (ft)	18.46	Hydr. Depth (ft)	5.30	11.98	7.10
Conv. Total (cfs)	1792930.0	Conv. (cfs)	14995.5	1757612.0	20322.4
Length Wtd. (ft)	4432.00	Wetted Per. (ft)	126.23	758.84	105.84
Min Ch El (ft)	-8.50	Shear (lb/sq ft)	0.03	0.06	0.04
Alpha	1.26	Stream Power (lb/ft s)	0.01	0.11	0.01
Frctn Loss (ft)	0.48	Cum Volume (acre-ft)	5787.28	3134.50	5219.20
C & E Loss (ft)	0.01	Cum SA (acres)	1398.66	236.50	1747.53

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 8

INPUT

Description: PINE BLUFF DRIVE & FOREST OAK DRIVE

* 001

Station Elevation Data		num=	35						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	17.14	1045	20.8	1097	19.4	1140	16.8	1175	2.7
1271	2.2	1328	2.1	1398	2.3	1480	1.8	1523	1.4
1568	1.1	1607	.4	1614	-.7	1642	-3.7	1669	-6.2
1706	-10	1741	-13.3	1786	-11.9	1849	-7.3	1874	-3.5
1886	-1.5	1888	1.2	1903	1.1	1909	1.3	1973	2
2029	3	2073	4	2098	5	2148	6	2198	7
2261	8	2336	9	2361	10	2386	11	2429	12

Manning's n Values		num=	3			
Sta	n Val	Sta	n Val	Sta	n Val	
1000	.2	1607	.04	1888	.2	

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1607	1888	4924	4924	4924	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

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E.G. Elev (ft)	6.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.95	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	1750.54	3913.55	736.20
E.G. Slope (ft/ft)	0.000082	Area (sq ft)	1750.54	3913.55	736.20
Q Total (cfs)	7988.00	Flow (cfs)	296.16	7591.85	99.99
Top Width (ft)	978.71	Top Width (ft)	440.07	281.00	257.63
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)	0.17	1.94	0.14
Max Chl Dpth (ft)	19.25	Hydr. Depth (ft)	3.98	13.93	2.86
Conv. Total (cfs)	879813.6	Conv. (cfs)	32619.6	836181.3	11012.7
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	440.72	283.71	257.69
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.02	0.07	0.01
Alpha	2.30	Stream Power (lb/ft s)	0.00	0.14	0.00
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)	2187.57	1966.93	1781.01
C & E Loss (ft)	0.00	Cum SA (acres)	1201.76	183.41	1283.49

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	7.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.29	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	2340.19	4288.65	1125.19
E.G. Slope (ft/ft)	0.000111	Area (sq ft)	2340.19	4288.65	1125.19
Q Total (cfs)	11022.00	Flow (cfs)	554.83	10266.81	200.36
Top Width (ft)	1052.50	Top Width (ft)	443.39	281.00	328.12
Vel Total (ft/s)	1.42	Avg. Vel. (ft/s)	0.24	2.39	0.18
Max Chl Dpth (ft)	20.59	Hydr. Depth (ft)	5.28	15.26	3.43
Conv. Total (cfs)	1045622.0	Conv. (cfs)	52634.9	973979.1	19007.8
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	444.29	283.71	328.19
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.04	0.10	0.02
Alpha	2.64	Stream Power (lb/ft s)	0.01	0.25	0.00
Frctn Loss (ft)	0.56	Cum Volume (acre-ft)	3444.29	2136.47	2818.65
C & E Loss (ft)	0.00	Cum SA (acres)	1305.50	183.51	1511.01

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	8.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.13	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	2713.21	4524.50	1422.87
E.G. Slope (ft/ft)	0.000128	Area (sq ft)	2713.21	4524.50	1422.87
Q Total (cfs)	13098.00	Flow (cfs)	759.62	12051.20	287.18
Top Width (ft)	1108.99	Top Width (ft)	445.47	281.00	382.51
Vel Total (ft/s)	1.51	Avg. Vel. (ft/s)	0.28	2.66	0.20
Max Chl Dpth (ft)	21.43	Hydr. Depth (ft)	6.09	16.10	3.72
Conv. Total (cfs)	1157374.0	Conv. (cfs)	67122.1	1064876.0	25375.7
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	446.54	283.71	382.59
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.05	0.13	0.03
Alpha	2.86	Stream Power (lb/ft s)	0.01	0.34	0.01
Frctn Loss (ft)	0.65	Cum Volume (acre-ft)	4296.11	2250.96	3658.04
C & E Loss (ft)	0.00	Cum SA (acres)	1332.13	183.61	1623.71

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	9.52	Element	Left OB	Channel	Right OB

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Vel Head (ft)	0.13	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	9.39	Reach Len. (ft)	4924.00	4924.00	4924.00
Crit W.S. (ft)		Flow Area (sq ft)	3275.66	4878.05	1959.81
E.G. Slope (ft/ft)	0.000153	Area (sq ft)	3275.66	4878.05	1959.81
Q Total (cfs)	16542.00	Flow (cfs)	1131.15	14935.81	475.04
Top Width (ft)	1187.22	Top Width (ft)	448.59	281.00	457.63
Vel Total (ft/s)	1.64	Avg. Vel. (ft/s)	0.35	3.06	0.24
Max Chl Dpth (ft)	22.69	Hydr. Depth (ft)	7.30	17.36	4.28
Conv. Total (cfs)	1336960.0	Conv. (cfs)	91422.3	1207145.0	38393.5
Length Wtd. (ft)	4924.00	Wetted Per. (ft)	449.90	283.71	457.72
Min Ch El (ft)	-13.30	Shear (lb/sq ft)	0.07	0.16	0.04
Alpha	3.17	Stream Power (lb/ft s)	0.02	0.50	0.01
Frctn Loss (ft)	0.77	Cum Volume (acre-ft)	5586.76	2425.52	5081.61
C & E Loss (ft)	0.00	Cum SA (acres)	1369.44	183.74	1718.91

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 7

INPUT

Description: TOMOKA VIEW DRIVE

* 001

Station Elevation Data		num=		19					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18.37	1076	18.6	1163	15.3	1171	13.7	1191	1.1
1192	-.2	1205	-2.5	1250	-11	1302	-12.7	1355	-11.9
1371	-9.2	1411	-2.5	1422	-.5	1427	.6	2509	2
2622	3	2684	4	2728	5	2828	10		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1191	.04	1427	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1191	1427		2187	2187	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.54	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	15.63	3315.00	5103.88
E.G. Slope (ft/ft)	0.000086	Area (sq ft)	15.63	3315.00	5103.88
Q Total (cfs)	7489.00	Flow (cfs)	1.64	6615.09	872.27
Top Width (ft)	1554.81	Top Width (ft)	7.04	236.00	1311.76
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)	0.11	2.00	0.17
Max Chl Dpth (ft)	18.24	Hydr. Depth (ft)	2.22	14.05	3.89
Conv. Total (cfs)	805367.0	Conv. (cfs)	176.8	711386.2	93804.1
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	8.33	238.75	1311.80
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.01	0.07	0.02
Alpha	4.47	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.19	Cum Volume (acre-ft)	2087.75	1558.37	1450.93
C & E Loss (ft)	0.00	Cum SA (acres)	1176.49	154.19	1194.79

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.73	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	25.15	3596.23	6681.28
E.G. Slope (ft/ft)	0.000117	Area (sq ft)	25.15	3596.23	6681.28
Q Total (cfs)	10380.00	Flow (cfs)	3.60	8807.06	1569.34
Top Width (ft)	1580.53	Top Width (ft)	8.94	236.00	1335.60
Vel Total (ft/s)	1.01	Avg. Vel. (ft/s)	0.14	2.45	0.23
Max Chl Dpth (ft)	19.43	Hydr. Depth (ft)	2.81	15.24	5.00
Conv. Total (cfs)	960313.3	Conv. (cfs)	333.3	814791.1	145188.8
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	10.56	238.75	1335.66
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.02	0.11	0.04
Alpha	5.02	Stream Power (lb/ft s)	0.00	0.27	0.01
Frctn Loss (ft)	0.25	Cum Volume (acre-ft)	3310.60	1690.82	2377.43
C & E Loss (ft)	0.00	Cum SA (acres)	1279.93	154.29	1416.98

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.49	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	32.36	3774.59	7696.36
E.G. Slope (ft/ft)	0.000135	Area (sq ft)	32.36	3774.59	7696.36
Q Total (cfs)	12366.00	Flow (cfs)	5.41	10244.82	2115.77
Top Width (ft)	1596.85	Top Width (ft)	10.14	236.00	1350.71
Vel Total (ft/s)	1.07	Avg. Vel. (ft/s)	0.17	2.71	0.27
Max Chl Dpth (ft)	20.19	Hydr. Depth (ft)	3.19	15.99	5.70
Conv. Total (cfs)	1066124.0	Conv. (cfs)	466.4	883248.1	182409.4
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	11.98	238.75	1350.80
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.02	0.13	0.05
Alpha	5.29	Stream Power (lb/ft s)	0.00	0.36	0.01
Frctn Loss (ft)	0.28	Cum Volume (acre-ft)	4140.93	1781.90	3142.62
C & E Loss (ft)	0.00	Cum SA (acres)	1306.38	154.38	1525.75

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.62	Reach Len. (ft)	2187.00	2187.00	2187.00
Crit W.S. (ft)		Flow Area (sq ft)	44.89	4042.43	9242.21
E.G. Slope (ft/ft)	0.000161	Area (sq ft)	44.89	4042.43	9242.21
Q Total (cfs)	15670.00	Flow (cfs)	9.15	12557.11	3103.74
Top Width (ft)	1621.35	Top Width (ft)	11.94	236.00	1373.41
Vel Total (ft/s)	1.18	Avg. Vel. (ft/s)	0.20	3.11	0.34
Max Chl Dpth (ft)	21.32	Hydr. Depth (ft)	3.76	17.13	6.73
Conv. Total (cfs)	1235618.0	Conv. (cfs)	721.4	990158.6	244737.5
Length Wtd. (ft)	2187.00	Wetted Per. (ft)	14.11	238.75	1373.53
Min Ch El (ft)	-12.70	Shear (lb/sq ft)	0.03	0.17	0.07
Alpha	5.61	Stream Power (lb/ft s)	0.01	0.53	0.02
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)	5399.09	1921.33	4448.47
C & E Loss (ft)	0.01	Cum SA (acres)	1343.42	154.52	1615.42

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 6.4

INPUT

Description:

Station Elevation Data		num= 16	
Sta	Elev	Sta	Elev
1000	15.3	1064	9.2
1265	-3.5	1347	-10.2
1547	1.1	2602	2
3421	10		

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
1000	.2	1224	.04
		1517	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1224	1517		68	68	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.36	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	454.67	3676.45	4904.75
E.G. Slope (ft/ft)	0.000083	Area (sq ft)	454.67	3676.45	4904.75
Q Total (cfs)	7489.00	Flow (cfs)	70.83	6692.95	725.22
Top Width (ft)	1944.74	Top Width (ft)	130.18	293.00	1521.56
Vel Total (ft/s)	0.83	Avg. Vel. (ft/s)	0.16	1.82	0.15
Max Chl Dpth (ft)	15.66	Hydr. Depth (ft)	3.49	12.55	3.22
Conv. Total (cfs)	821148.7	Conv. (cfs)	7766.5	733864.2	79518.0
Length Wtd. (ft)	68.00	Wetted Per. (ft)	130.42	295.16	1521.57
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.02	0.06	0.02
Alpha	4.32	Stream Power (lb/ft s)	0.00	0.12	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2075.94	1382.87	1199.68
C & E Loss (ft)	0.01	Cum SA (acres)	1173.05	140.91	1123.67

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.49	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	606.99	4008.09	6679.74
E.G. Slope (ft/ft)	0.000111	Area (sq ft)	606.99	4008.09	6679.74
Q Total (cfs)	10380.00	Flow (cfs)	126.49	8909.15	1344.36
Top Width (ft)	2046.79	Top Width (ft)	138.97	293.00	1614.82
Vel Total (ft/s)	0.92	Avg. Vel. (ft/s)	0.21	2.22	0.20
Max Chl Dpth (ft)	16.79	Hydr. Depth (ft)	4.37	13.68	4.14
Conv. Total (cfs)	987395.1	Conv. (cfs)	12032.0	847480.8	127882.3
Length Wtd. (ft)	68.00	Wetted Per. (ft)	139.28	295.16	1614.85
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.03	0.09	0.03
Alpha	5.03	Stream Power (lb/ft s)	0.01	0.21	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3294.73	1499.93	2042.03
C & E Loss (ft)	0.02	Cum SA (acres)	1276.22	141.01	1342.91

CROSS SECTION OUTPUT Profile #PF 3

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E.G. Elev (ft)	7.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.21	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	709.35	4219.65	7867.22
E.G. Slope (ft/ft)	0.000126	Area (sq ft)	709.35	4219.65	7867.22
Q Total (cfs)	12366.00	Flow (cfs)	170.40	10356.44	1839.16
Top Width (ft)	2111.89	Top Width (ft)	144.57	293.00	1674.32
Vel Total (ft/s)	0.97	Avg. Vel. (ft/s)	0.24	2.45	0.23
Max Chl Dpth (ft)	17.51	Hydr. Depth (ft)	4.91	14.40	4.70
Conv. Total (cfs)	1102506.0	Conv. (cfs)	15192.4	923341.1	163972.3
Length Wtd. (ft)	68.00	Wetted Per. (ft)	144.93	295.16	1674.35
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.04	0.11	0.04
Alpha	5.41	Stream Power (lb/ft s)	0.01	0.28	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4122.31	1581.22	2751.92
C & E Loss (ft)	0.03	Cum SA (acres)	1302.50	141.10	1449.81

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.30	Reach Len. (ft)	68.00	68.00	68.00
Crit W.S. (ft)		Flow Area (sq ft)	870.99	4537.95	9734.69
E.G. Slope (ft/ft)	0.000148	Area (sq ft)	870.99	4537.95	9734.69
Q Total (cfs)	15670.00	Flow (cfs)	250.37	12673.32	2746.31
Top Width (ft)	2209.84	Top Width (ft)	153.01	293.00	1763.83
Vel Total (ft/s)	1.03	Avg. Vel. (ft/s)	0.29	2.79	0.28
Max Chl Dpth (ft)	18.60	Hydr. Depth (ft)	5.69	15.49	5.52
Conv. Total (cfs)	1288778.0	Conv. (cfs)	20592.1	1042316.0	225869.9
Length Wtd. (ft)	68.00	Wetted Per. (ft)	153.44	295.16	1763.87
Min Ch El (ft)	-10.30	Shear (lb/sq ft)	0.05	0.14	0.05
Alpha	5.91	Stream Power (lb/ft s)	0.02	0.40	0.01
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	5376.10	1705.94	3972.09
C & E Loss (ft)	0.04	Cum SA (acres)	1339.28	141.24	1536.67

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 6.3

INPUT

Description:

Station Elevation Data		num=	15						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	10.1	1030	1.6	1034	.6	1054	-2.7	1079	-5.4
1103	-8.1	1128	-9.3	1152	-10.3	1178	-11.1	1204	-13.4
1228	-11.4	1252	-7.1	1275	.7	1279	1.9	1298	9.7

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1030	.04	1279	.2

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

1030	1279	22.1	22.1	22.1
Ineffective Flow	num=	2		
Sta L	Sta R	Elev	Permanent	
1003	1030	14.6	F	
1279	1298	14.5	F	

.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.30	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-6.18	Flow Area (sq ft)		3237.82	
E.G. Slope (ft/ft)	0.000129	Area (sq ft)	21.78	3237.82	14.11
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	269.05	Top Width (ft)	11.76	249.00	8.29
Vel Total (ft/s)	2.31	Avg. Vel. (ft/s)		2.31	
Max Chl Dpth (ft)	18.70	Hydr. Depth (ft)		13.00	
Conv. Total (cfs)	660197.7	Conv. (cfs)		660197.7	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.24	
Frctn Loss (ft)		Cum Volume (acre-ft)	2075.57	1377.47	1195.84
C & E Loss (ft)		Cum SA (acres)	1172.94	140.49	1122.47

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.39	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.14	Flow Area (sq ft)		3508.30	
E.G. Slope (ft/ft)	0.000189	Area (sq ft)	36.44	3508.30	24.55
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	275.15	Top Width (ft)	15.21	249.00	10.94
Vel Total (ft/s)	2.96	Avg. Vel. (ft/s)		2.96	
Max Chl Dpth (ft)	19.79	Hydr. Depth (ft)		14.09	
Conv. Total (cfs)	754651.8	Conv. (cfs)		754651.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.49	
Frctn Loss (ft)		Cum Volume (acre-ft)	3294.23	1494.06	2036.80
C & E Loss (ft)		Cum SA (acres)	1276.10	140.59	1341.64

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.08	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.51	Flow Area (sq ft)		3678.94	
E.G. Slope (ft/ft)	0.000229	Area (sq ft)	47.61	3678.94	32.62
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	279.00	Top Width (ft)	17.39	249.00	12.61
Vel Total (ft/s)	3.36	Avg. Vel. (ft/s)		3.36	
Max Chl Dpth (ft)	20.48	Hydr. Depth (ft)		14.77	

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Conv. Total (cfs)	816814.9	Conv. (cfs)	816814.9		
Length Wtd. (ft)	1.00	Wetted Per. (ft)	251.78		
Min Ch El (ft)	-13.40	Shear (lb/sq ft)	0.21		
Alpha	1.00	Stream Power (lb/ft s)	0.70		
Frctn Loss (ft)		Cum Volume (acre-ft)	4121.72	1575.05	2745.76
C & E Loss (ft)		Cum SA (acres)	1302.37	140.68	1448.49

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.09	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.54	Flow Area (sq ft)		3932.14	
E.G. Slope (ft/ft)	0.000295	Area (sq ft)	66.94	3932.14	46.70
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	284.70	Top Width (ft)	20.62	249.00	15.08
Vel Total (ft/s)	3.99	Avg. Vel. (ft/s)		3.99	
Max Chl Dpth (ft)	21.49	Hydr. Depth (ft)		15.79	
Conv. Total (cfs)	912642.7	Conv. (cfs)		912642.7	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		251.78	
Min Ch El (ft)	-13.40	Shear (lb/sq ft)		0.29	
Alpha	1.00	Stream Power (lb/ft s)		1.15	
Frctn Loss (ft)		Cum Volume (acre-ft)	5375.36	1699.33	3964.46
C & E Loss (ft)		Cum SA (acres)	1339.14	140.82	1535.28

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

BRIDGE

RIVER: RIVER-1
REACH: Reach-1 RS: 6.25

INPUT

Description: Bridge #3

Distance from Upstream XS = 1
Deck/Roadway Width = 21
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates

num=	2
Sta Hi Cord Lo Cord	Sta Hi Cord Lo Cord
1003 14.6 11.3	1298 14.5 11.1

Upstream Bridge Cross Section Data

Station Elevation Data	num=	15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
1003 10.1 1030 1.6 1034 .6 1054 -2.7 1079 -5.4		
1103 -8.1 1128 -9.3 1152 -10.3 1178 -11.1 1204 -13.4		
1228 -11.4 1252 -7.1 1275 .7 1279 1.9 1298 9.7		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
1003 .2 1030 .04 1279 .2		

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1030	1279		.3	.5
Ineffective Flow	num=		2		
Sta L	Sta R	Elev	Permanent		
1003	1030	14.6	F		
1279	1298	14.5	F		

Downstream	Deck/Roadway	Coordinates
num=	2	
Sta Hi	Cord Lo	Cord Sta Hi
1003	14.6	11.3
1298	14.5	11.1

Downstream Bridge Cross Section Data
Station Elevation Data num= 15
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
1003 11 1027 2.1 1032 1.1 1054 -3.8 1079 -7.4
1103 -9.6 1128 -9.3 1152 -11.6 1178 -13.2 1204 -13.3
1228 -11.8 1254 -7.9 1275 .7 1278 1.8 1298 11

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
1003 .2 1027 .04 1278 .2		

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1027	1278		.3	.5
Ineffective Flow	num=		2		
Sta L	Sta R	Elev	Permanent		
1003	1027	12.95	F		
1278	1298	12.95	F		

Upstream Embankment side slope = 0 horiz. to 1.0 vertical

Downstream Embankment side slope = 0 horiz. to 1.0 vertical

Maximum allowable submergence for weir flow = .98

Elevation at which weir flow begins = 14.6

Energy head used in spillway design =

Spillway height used in design =

Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data
Pier Station Upstream= 1154.5 Downstream= 1152.5
Upstream num= 2
Width Elev Width Elev
17.6 -13.4 17.6 11.2
Downstream num= 2
Width Elev Width Elev
17.6 -13.3 17.6 11.2

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 11.2

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	5.39	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5.30	E.G. Elev (ft)	5.40	5.38
Q Total (cfs)	7489.00	W.S. Elev (ft)	5.30	5.30
Q Bridge (cfs)	7489.00	Crit W.S. (ft)	-5.83	-6.70
Q Weir (cfs)		Max Chl Dpth (ft)	18.70	18.60
Weir Sta Lft (ft)		Vel Total (ft/s)	2.53	2.35
Weir Sta Rgt (ft)		Flow Area (sq ft)	2960.55	3181.59
Weir Submerg		Froude # Chl	0.12	0.11
Weir Max Depth (ft)		Specif Force (cu ft)	21488.94	24363.65
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	12.79	13.63
Min El Prs (ft)	11.20	W.P. Total (ft)	265.45	270.30
Delta EG (ft)	0.02	Conv. Total (cfs)	548994.0	611570.9
Delta WS (ft)	0.01	Top Width (ft)	251.42	249.62
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.53	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.13	0.11
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.33	0.26

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	6.53	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.39	E.G. Elev (ft)	6.54	6.52
Q Total (cfs)	10380.00	W.S. Elev (ft)	6.38	6.38
Q Bridge (cfs)	10380.00	Crit W.S. (ft)	-4.71	-5.66
Q Weir (cfs)		Max Chl Dpth (ft)	19.78	19.68
Weir Sta Lft (ft)		Vel Total (ft/s)	3.23	3.02
Weir Sta Rgt (ft)		Flow Area (sq ft)	3210.82	3434.02
Weir Submerg		Froude # Chl	0.15	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	25280.41	28368.48
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	13.88	14.71
Min El Prs (ft)	11.20	W.P. Total (ft)	267.61	272.46
Delta EG (ft)	0.03	Conv. Total (cfs)	625110.7	690882.1
Delta WS (ft)	0.01	Top Width (ft)	257.49	254.89
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.23	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.21	0.18
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.67	0.54

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

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

BRIDGE OUTPUT Profile #PF 3

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E.G. US. (ft)	7.25	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.08	E.G. Elev (ft)	7.27	7.24
Q Total (cfs)	12366.00	W.S. Elev (ft)	7.06	7.06
Q Bridge (cfs)	12366.00	Crit W.S. (ft)	-4.04	-5.02
Q Weir (cfs)		Max Chl Dpth (ft)	20.46	20.36
Weir Sta Lft (ft)		Vel Total (ft/s)	3.67	3.44
Weir Sta Rgt (ft)		Flow Area (sq ft)	3368.53	3593.10
Weir Submerg		Froude # Chl	0.17	0.15
Weir Max Depth (ft)		Specif Force (cu ft)	27890.46	31110.71
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	14.56	15.39
Min El Prs (ft)	11.20	W.P. Total (ft)	268.98	273.82
Delta EG (ft)	0.04	Conv. Total (cfs)	674828.3	742566.0
Delta WS (ft)	0.01	Top Width (ft)	261.31	258.21
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.67	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.26	0.23
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.96	0.78

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	8.34	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	8.09	E.G. Elev (ft)	8.36	8.33
Q Total (cfs)	15670.00	W.S. Elev (ft)	8.07	8.07
Q Bridge (cfs)	15670.00	Crit W.S. (ft)	-3.02	-4.05
Q Weir (cfs)		Max Chl Dpth (ft)	21.47	21.37
Weir Sta Lft (ft)		Vel Total (ft/s)	4.35	4.09
Weir Sta Rgt (ft)		Flow Area (sq ft)	3602.14	3828.73
Weir Submerg		Froude # Chl	0.19	0.18
Weir Max Depth (ft)		Specif Force (cu ft)	32116.92	35527.71
Min El Weir Flow (ft)	14.60	Hydr Depth (ft)	15.57	16.40
Min El Prs (ft)	11.20	W.P. Total (ft)	271.00	275.84
Delta EG (ft)	0.05	Conv. Total (cfs)	750866.4	821456.5
Delta WS (ft)	0.02	Top Width (ft)	266.98	263.13
BR Open Area (sq ft)	4325.88	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.35	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.36	0.32
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.57	1.29

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 6.2

INPUT

Description:

Station Elevation Data num= 15									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11	1027	2.1	1032	1.1	1054	-3.8	1079	-7.4
1103	-9.6	1128	-9.3	1152	-11.6	1178	-13.2	1204	-13.3
1228	-11.8	1254	-7.9	1275	.7	1278	1.8	1298	11

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1027	.04	1278	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1027	1278		74	74	.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
1003	1027	12.95	F		
1278	1298	12.95	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.30	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-7.07	Flow Area (sq ft)		3478.34	
E.G. Slope (ft/ft)	0.000103	Area (sq ft)	13.78	3478.34	13.29
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	267.22	Top Width (ft)	8.62	251.00	7.60
Vel Total (ft/s)	2.15	Avg. Vel. (ft/s)		2.15	
Max Chl Dpth (ft)	18.60	Hydr. Depth (ft)		13.86	
Conv. Total (cfs)	738861.2	Conv. (cfs)		738861.2	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.19	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2075.56	1375.91	1195.83
C & E Loss (ft)	0.01	Cum SA (acres)	1172.93	140.37	1122.47

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.38	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-6.10	Flow Area (sq ft)		3749.81	
E.G. Slope (ft/ft)	0.000154	Area (sq ft)	24.68	3749.81	22.79
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	272.49	Top Width (ft)	11.54	251.00	9.95
Vel Total (ft/s)	2.77	Avg. Vel. (ft/s)		2.77	
Max Chl Dpth (ft)	19.68	Hydr. Depth (ft)		14.94	
Conv. Total (cfs)	837447.9	Conv. (cfs)		837447.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.14	
Alpha	1.00	Stream Power (lb/ft s)		0.39	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	3294.21	1492.38	2036.78
C & E Loss (ft)	0.02	Cum SA (acres)	1276.09	140.47	1341.64

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.06	Reach Len. (ft)	74.00	74.00	74.00

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Crit W.S. (ft)	-5.49	Flow Area (sq ft)	3920.88		
E.G. Slope (ft/ft)	0.000188	Area (sq ft)	33.17	3920.88	30.07
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	275.81	Top Width (ft)	13.38	251.00	11.43
Vel Total (ft/s)	3.15	Avg. Vel. (ft/s)		3.15	
Max Chl Dpth (ft)	20.36	Hydr. Depth (ft)		15.62	
Conv. Total (cfs)	902085.9	Conv. (cfs)		902085.9	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.18	
Alpha	1.00	Stream Power (lb/ft s)		0.57	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	4121.70	1573.28	2745.74
C & E Loss (ft)	0.03	Cum SA (acres)	1302.36	140.56	1448.49

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	8.07	Reach Len. (ft)	74.00	74.00	74.00
Crit W.S. (ft)	-4.57	Flow Area (sq ft)		4174.28	
E.G. Slope (ft/ft)	0.000245	Area (sq ft)	48.05	4174.28	42.73
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	280.73	Top Width (ft)	16.10	251.00	13.63
Vel Total (ft/s)	3.75	Avg. Vel. (ft/s)		3.75	
Max Chl Dpth (ft)	21.37	Hydr. Depth (ft)		16.63	
Conv. Total (cfs)	1001333.0	Conv. (cfs)		1001333.0	
Length Wtd. (ft)	74.00	Wetted Per. (ft)		254.38	
Min Ch El (ft)	-13.30	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		0.94	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5375.33	1697.44	3964.43
C & E Loss (ft)	0.05	Cum SA (acres)	1339.13	140.70	1535.27

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 6.1

INPUT

Description: FEC RAILWAY BRIDGE

* 001

Station Elevation Data		num=	16						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	21.4	1134	11.5	1165	9	1184	3.5	1186	1.7
1267	-9.9	1316	-12.4	1361	-13.6	1464	-.2	1467	.8
1560	1	2326	2	2414	3	2439	4	2526	5
2801	10								

Manning's n Values		num=	3						
Sta	n Val	Sta	n Val	Sta	n Val				
1000	.2	1184	.04	1467	.2				

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

1184 1467 375 375 375

.1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.30	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	5.60	3668.11	3684.09
E.G. Slope (ft/ft)	0.000086	Area (sq ft)	5.60	3668.11	3684.09
Q Total (cfs)	7489.00	Flow (cfs)	0.35	6913.26	575.40
Top Width (ft)	1364.75	Top Width (ft)	6.22	283.00	1075.53
Vel Total (ft/s)	1.02	Avg. Vel. (ft/s)	0.06	1.88	0.16
Max Chl Dpth (ft)	18.90	Hydr. Depth (ft)	0.90	12.96	3.43
Conv. Total (cfs)	809496.0	Conv. (cfs)	37.8	747262.9	62195.3
Length Wtd. (ft)	375.00	Wetted Per. (ft)	6.48	285.63	1075.57
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.00	0.07	0.02
Alpha	3.17	Stream Power (lb/ft s)	0.00	0.13	0.00
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	2075.54	1369.84	1192.69
C & E Loss (ft)	0.00	Cum SA (acres)	1172.92	139.92	1121.55

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.39	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	14.42	3976.31	4887.99
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	14.42	3976.31	4887.99
Q Total (cfs)	10380.00	Flow (cfs)	1.46	9329.66	1048.89
Top Width (ft)	1428.41	Top Width (ft)	9.98	283.00	1135.43
Vel Total (ft/s)	1.17	Avg. Vel. (ft/s)	0.10	2.35	0.21
Max Chl Dpth (ft)	19.99	Hydr. Depth (ft)	1.44	14.05	4.30
Conv. Total (cfs)	951044.1	Conv. (cfs)	133.3	854808.9	96101.8
Length Wtd. (ft)	375.00	Wetted Per. (ft)	10.39	285.63	1135.47
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.01	0.10	0.03
Alpha	3.62	Stream Power (lb/ft s)	0.00	0.24	0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)	3294.18	1485.81	2032.61
C & E Loss (ft)	0.00	Cum SA (acres)	1276.07	140.02	1340.66

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.17	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.08	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	22.11	4171.17	5682.82
E.G. Slope (ft/ft)	0.000140	Area (sq ft)	22.11	4171.17	5682.82
Q Total (cfs)	12366.00	Flow (cfs)	2.78	10935.54	1427.68
Top Width (ft)	1468.66	Top Width (ft)	12.36	283.00	1173.30
Vel Total (ft/s)	1.25	Avg. Vel. (ft/s)	0.13	2.62	0.25
Max Chl Dpth (ft)	20.68	Hydr. Depth (ft)	1.79	14.74	4.84
Conv. Total (cfs)	1046857.0	Conv. (cfs)	235.7	925759.8	120861.4
Length Wtd. (ft)	375.00	Wetted Per. (ft)	12.87	285.63	1173.35
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.01	0.13	0.04
Alpha	3.88	Stream Power (lb/ft s)	0.00	0.33	0.01
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)	4121.65	1566.41	2740.89
C & E Loss (ft)	0.00	Cum SA (acres)	1302.34	140.11	1447.48

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.10	Reach Len. (ft)	375.00	375.00	375.00
Crit W.S. (ft)		Flow Area (sq ft)	36.58	4460.96	6913.12
E.G. Slope (ft/ft)	0.000171	Area (sq ft)	36.58	4460.96	6913.12
Q Total (cfs)	15670.00	Flow (cfs)	6.03	13540.36	2123.61
Top Width (ft)	1528.52	Top Width (ft)	15.90	283.00	1229.62
Vel Total (ft/s)	1.37	Avg. Vel. (ft/s)	0.16	3.04	0.31
Max Chl Dpth (ft)	21.70	Hydr. Depth (ft)	2.30	15.76	5.62
Conv. Total (cfs)	1198271.0	Conv. (cfs)	461.2	1035419.0	162390.8
Length Wtd. (ft)	375.00	Wetted Per. (ft)	16.55	285.63	1229.68
Min Ch El (ft)	-13.60	Shear (lb/sq ft)	0.02	0.17	0.06
Alpha	4.23	Stream Power (lb/ft s)	0.00	0.51	0.02
Frctn Loss (ft)	0.07	Cum Volume (acre-ft)	5375.26	1690.11	3958.52
C & E Loss (ft)	0.00	Cum SA (acres)	1339.10	140.25	1534.21

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 5.4

INPUT

Description:

Station Elevation Data				num=	18				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	18.4	1018	17.2	1040	5.5	1048	3.5	1051	.9
1104	-3.9	1164	-11	1205	-11.3	1275	-9.6	1335	-.4
1341	.9	1399	1.1	1418	.9	1883	2	1908	3
1945	4	2020	5	2282	10				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1048	.04	1341	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1048	1341	89	89	89	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.26	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	6.17	3547.09	2289.87
E.G. Slope (ft/ft)	0.000106	Area (sq ft)	6.17	3547.09	2289.87
Q Total (cfs)	7489.00	Flow (cfs)	0.42	7100.47	388.11
Top Width (ft)	992.44	Top Width (ft)	7.02	293.00	692.42
Vel Total (ft/s)	1.28	Avg. Vel. (ft/s)	0.07	2.00	0.17
Max Chl Dpth (ft)	16.56	Hydr. Depth (ft)	0.88	12.11	3.31
Conv. Total (cfs)	728650.9	Conv. (cfs)	41.2	690848.1	37761.6
Length Wtd. (ft)	89.00	Wetted Per. (ft)	7.24	295.47	692.47
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.01	0.08	0.02
Alpha	2.31	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)	2075.49	1338.78	1166.98
C & E Loss (ft)	0.01	Cum SA (acres)	1172.86	137.44	1113.94

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.32	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	15.24	3860.15	3059.60
E.G. Slope (ft/ft)	0.000148	Area (sq ft)	15.24	3860.15	3059.60
Q Total (cfs)	10380.00	Flow (cfs)	1.82	9671.56	706.62
Top Width (ft)	1050.96	Top Width (ft)	9.55	293.00	748.41
Vel Total (ft/s)	1.50	Avg. Vel. (ft/s)	0.12	2.51	0.23
Max Chl Dpth (ft)	17.62	Hydr. Depth (ft)	1.60	13.17	4.09
Conv. Total (cfs)	853696.3	Conv. (cfs)	149.9	795430.8	58115.7
Length Wtd. (ft)	89.00	Wetted Per. (ft)	10.00	295.47	748.46
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.01	0.12	0.04
Alpha	2.61	Stream Power (lb/ft s)	0.00	0.30	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3294.05	1452.08	1998.40
C & E Loss (ft)	0.02	Cum SA (acres)	1275.99	137.54	1332.56

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.00	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	22.11	4057.90	3576.65
E.G. Slope (ft/ft)	0.000174	Area (sq ft)	22.11	4057.90	3576.65
Q Total (cfs)	12366.00	Flow (cfs)	3.36	11398.73	963.91
Top Width (ft)	1087.59	Top Width (ft)	10.82	293.00	783.77
Vel Total (ft/s)	1.62	Avg. Vel. (ft/s)	0.15	2.81	0.27
Max Chl Dpth (ft)	18.30	Hydr. Depth (ft)	2.04	13.85	4.56
Conv. Total (cfs)	937858.0	Conv. (cfs)	254.9	864498.9	73104.3
Length Wtd. (ft)	89.00	Wetted Per. (ft)	11.44	295.47	783.84
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.02	0.15	0.05
Alpha	2.79	Stream Power (lb/ft s)	0.00	0.42	0.01
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	4121.46	1530.99	2701.03
C & E Loss (ft)	0.03	Cum SA (acres)	1302.24	137.63	1439.05

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	8.00	Reach Len. (ft)	89.00	89.00	89.00
Crit W.S. (ft)		Flow Area (sq ft)	33.89	4351.33	4387.86
E.G. Slope (ft/ft)	0.000214	Area (sq ft)	33.89	4351.33	4387.86
Q Total (cfs)	15670.00	Flow (cfs)	6.79	14221.79	1441.43
Top Width (ft)	1141.95	Top Width (ft)	12.70	293.00	836.25
Vel Total (ft/s)	1.79	Avg. Vel. (ft/s)	0.20	3.27	0.33
Max Chl Dpth (ft)	19.30	Hydr. Depth (ft)	2.67	14.85	5.25
Conv. Total (cfs)	1070075.0	Conv. (cfs)	463.4	971179.2	98432.2
Length Wtd. (ft)	89.00	Wetted Per. (ft)	13.57	295.47	836.32
Min Ch El (ft)	-11.30	Shear (lb/sq ft)	0.03	0.20	0.07
Alpha	3.04	Stream Power (lb/ft s)	0.01	0.64	0.02
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	5374.96	1652.17	3909.88
C & E Loss (ft)	0.04	Cum SA (acres)	1338.98	137.77	1525.32

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 5.3

INPUT

Description:

Station Elevation Data				num=	14				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1036	11.2	1050	10	1062	3.6	1066	.3	1095	-4.1
1136	-9.1	1168	-11.7	1201	-11.3	1234	-10	1267	-7.8
1294	-1.2	1303	2	1324	7.7	1720	10		

Manning's n Values				num=	3
Sta	n Val	Sta	n Val	Sta	n Val
1036	.2	1062	.04	1303	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1062	1303		102.1 102.1	102.1	.3	.5

Ineffective Flow				num=	2
Sta L	Sta R	Elev	Permanent		
1036	1062	15	F		
1303	1720	15	F		

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.20	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.73	Flow Area (sq ft)		3046.36	
E.G. Slope (ft/ft)	0.000152	Area (sq ft)	2.40	3046.36	18.86
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	255.79	Top Width (ft)	3.00	241.00	11.79
Vel Total (ft/s)	2.46	Avg. Vel. (ft/s)		2.46	
Max Chl Dpth (ft)	16.90	Hydr. Depth (ft)		12.64	
Conv. Total (cfs)	608415.2	Conv. (cfs)		608415.2	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.29	
Frctn Loss (ft)		Cum Volume (acre-ft)	2075.48	1332.05	1164.62
C & E Loss (ft)		Cum SA (acres)	1172.85	136.89	1113.22

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.38	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.23	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.68	Flow Area (sq ft)		3293.75	
E.G. Slope (ft/ft)	0.000224	Area (sq ft)	6.47	3293.75	32.90
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	261.49	Top Width (ft)	4.92	241.00	15.57
Vel Total (ft/s)	3.15	Avg. Vel. (ft/s)		3.15	
Max Chl Dpth (ft)	17.93	Hydr. Depth (ft)		13.67	
Conv. Total (cfs)	692970.8	Conv. (cfs)		692970.8	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.19	

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Alpha	1.00	Stream Power (lb/ft s)	0.59		
Frctn Loss (ft)		Cum Volume (acre-ft)	3294.03	1444.77	1995.24
C & E Loss (ft)		Cum SA (acres)	1275.98	136.99	1331.78

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.87	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.04	Flow Area (sq ft)		3448.34	
E.G. Slope (ft/ft)	0.000273	Area (sq ft)	10.01	3448.34	43.65
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	265.06	Top Width (ft)	6.13	241.00	17.93
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)		3.59	
Max Chl Dpth (ft)	18.57	Hydr. Depth (ft)		14.31	
Conv. Total (cfs)	748021.6	Conv. (cfs)		748021.6	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.86	
Frctn Loss (ft)		Cum Volume (acre-ft)	4121.43	1523.32	2697.33
C & E Loss (ft)		Cum SA (acres)	1302.22	137.09	1438.24

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.09	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.81	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-3.07	Flow Area (sq ft)		3674.36	
E.G. Slope (ft/ft)	0.000355	Area (sq ft)	16.58	3674.36	63.02
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	288.04	Top Width (ft)	7.89	241.00	39.15
Vel Total (ft/s)	4.26	Avg. Vel. (ft/s)		4.26	
Max Chl Dpth (ft)	19.51	Hydr. Depth (ft)		15.25	
Conv. Total (cfs)	831508.1	Conv. (cfs)		831508.1	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		244.37	
Min Ch El (ft)	-11.70	Shear (lb/sq ft)		0.33	
Alpha	1.00	Stream Power (lb/ft s)		1.42	
Frctn Loss (ft)		Cum Volume (acre-ft)	5374.91	1643.97	3905.33
C & E Loss (ft)		Cum SA (acres)	1338.96	137.22	1524.43

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 5.25

INPUT
 Description: Bridge #2

Distance from Upstream XS = 1

Deck/Roadway Width = 101
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1036		15		11.2	1324		15		11.2

Upstream Bridge Cross Section Data

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1036	11.2	1050	10	1062	3.6	1066	.3	1095	-4.1
1136	-9.1	1168	-11.7	1201	-11.3	1234	-10	1267	-7.8
1294	-1.2	1303	2	1324	7.7	1720	10		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1036	.2	1062	.04	1303	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1062 1303 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1036	1062	15	F
1303	1720	15	F

Downstream Deck/Roadway Coordinates
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1036		15		11.2	1324		15		11.2

Downstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11.2	1033	3.2	1045	2.1	1049	1.1	1070	-1.1
1103	-5.4	1136	-10.2	1169	-12.1	1203	-11.4	1235	-9.8
1267	-7	1298	-1.8	1335	1.3	1337	2.1	1345	3.1
1361	9.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1003	.2	1045	.04	1337	.2

Bank Sta: Left Right Coeff Contr. Expan.
 1045 1337 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
1003	1045	13.2	F
1337	1361	13.2	F

Upstream Embankment side slope = 0 horiz. to 1.0 vertical
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow = .98
 Elevation at which weir flow begins = 15
 Energy head used in spillway design =
 Spillway height used in design =
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 1182.5 Downstream= 1191
 Upstream num= 2
 Width Elev Width Elev
 15 -11.7 15 11.2
 Downstream num= 2
 Width Elev Width Elev
 15 -12.1 15 11.2

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05
 Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow
 Submerged Inlet Cd =
 Submerged Inlet + Outlet Cd = .7905694
 Max Low Cord = 11.2

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	5.29	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5.20	E.G. Elev (ft)	5.30	5.28
Q Total (cfs)	7489.00	W.S. Elev (ft)	5.19	5.19
Q Bridge (cfs)	7489.00	Crit W.S. (ft)	-5.25	-5.47
Q Weir (cfs)		Max Chl Dpth (ft)	16.89	17.29
Weir Sta Lft (ft)		Vel Total (ft/s)	2.68	2.39
Weir Sta Rgt (ft)		Flow Area (sq ft)	2793.97	3139.66
Weir Submerg		Froude # Chl	0.13	0.10
Weir Max Depth (ft)		Specif Force (cu ft)	19546.42	21050.03
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	12.36	11.33
Min El Prs (ft)	11.20	W.P. Total (ft)	262.81	322.11
Delta EG (ft)	0.02	Conv. Total (cfs)	501816.3	532192.8
Delta WS (ft)	0.01	Top Width (ft)	240.75	309.71
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.68	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.15	0.12
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.40	0.29

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	6.38	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.23	E.G. Elev (ft)	6.40	6.36
Q Total (cfs)	10380.00	W.S. Elev (ft)	6.21	6.21
Q Bridge (cfs)	10380.00	Crit W.S. (ft)	-4.15	-4.36
Q Weir (cfs)		Max Chl Dpth (ft)	17.91	18.31

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Weir Sta Lft (ft)		Vel Total (ft/s)	3.43	3.03
Weir Sta Rgt (ft)		Flow Area (sq ft)	3024.89	3422.69
Weir Submerg		Froude # Chl	0.17	0.12
Weir Max Depth (ft)		Specif Force (cu ft)	23002.43	24825.91
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	13.38	12.36
Min El Prs (ft)	11.20	W.P. Total (ft)	264.85	326.20
Delta EG (ft)	0.04	Conv. Total (cfs)	569879.7	609389.2
Delta WS (ft)	0.01	Top Width (ft)	246.43	316.09
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.43	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.24	0.19
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.81	0.58

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

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	7.07	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	6.87	E.G. Elev (ft)	7.09	7.04
Q Total (cfs)	12366.00	W.S. Elev (ft)	6.85	6.85
Q Bridge (cfs)	12366.00	Crit W.S. (ft)	-3.48	-3.69
Q Weir (cfs)		Max Chl Dpth (ft)	18.55	18.95
Weir Sta Lft (ft)		Vel Total (ft/s)	3.90	3.44
Weir Sta Rgt (ft)		Flow Area (sq ft)	3169.02	3599.34
Weir Submerg		Froude # Chl	0.18	0.14
Weir Max Depth (ft)		Specif Force (cu ft)	25370.14	27407.05
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	14.02	12.99
Min El Prs (ft)	11.20	W.P. Total (ft)	266.13	328.75
Delta EG (ft)	0.06	Conv. Total (cfs)	613880.5	659272.5
Delta WS (ft)	0.02	Top Width (ft)	249.98	320.08
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.90	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.30	0.24
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.18	0.83

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

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	8.09	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	7.81	E.G. Elev (ft)	8.12	8.04
Q Total (cfs)	15670.00	W.S. Elev (ft)	7.78	7.78
Q Bridge (cfs)	15670.00	Crit W.S. (ft)	-2.49	-2.67
Q Weir (cfs)		Max Chl Dpth (ft)	19.48	19.88
Weir Sta Lft (ft)		Vel Total (ft/s)	4.64	4.06
Weir Sta Rgt (ft)		Flow Area (sq ft)	3379.34	3857.13
Weir Submerg		Froude # Chl	0.21	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	29175.82	31534.84
Min El Weir Flow (ft)	15.01	Hydr Depth (ft)	14.95	13.92
Min El Prs (ft)	11.20	W.P. Total (ft)	267.99	332.47
Delta EG (ft)	0.08	Conv. Total (cfs)	680108.3	734299.1
Delta WS (ft)	0.02	Top Width (ft)	254.84	325.89
BR Open Area (sq ft)	4151.59	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.64	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.42	0.33

BR Sel Method	Yarnell	Power Total (lb/ft s)	1.94	1.34

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

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

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 5.2

INPUT

Description:

Station Elevation Data				num=	16				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1003	11.2	1033	3.2	1045	2.1	1049	1.1	1070	-1.1
1103	-5.4	1136	-10.2	1169	-12.1	1203	-11.4	1235	-9.8
1267	-7	1298	-1.8	1335	1.3	1337	2.1	1345	3.1
1361	9.5								

Manning's	n	Values	num=	3
Sta	n	Val	Sta	n
1003	.2	1045	.04	1337
				.2

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	1045	1337		187	187	187		.3	.5
Ineffective Flow		num=	2						
Sta L	Sta R	Elev	Permanent						
1003	1045	13.2	F						
1337	1361	13.2	F						

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	5.19	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-5.95	Flow Area (sq ft)		3392.26	
E.G. Slope (ft/ft)	0.000135	Area (sq ft)	37.96	3392.26	26.22
Q Total (cfs)	7489.00	Flow (cfs)		7489.00	
Top Width (ft)	324.71	Top Width (ft)	19.47	292.00	13.23
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.21	
Max Chl Dpth (ft)	17.29	Hydr. Depth (ft)		11.62	
Conv. Total (cfs)	643739.2	Conv. (cfs)		643739.2	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.22	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	2075.44	1325.09	1164.57
C & E Loss (ft)	0.02	Cum SA (acres)	1172.83	136.30	1113.19

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.21	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-4.89	Flow Area (sq ft)		3690.62	

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E.G. Slope (ft/ft)	0.000196	Area (sq ft)	59.82	3690.62	41.04
Q Total (cfs)	10380.00	Flow (cfs)		10380.00	
Top Width (ft)	331.09	Top Width (ft)	23.30	292.00	15.79
Vel Total (ft/s)	2.81	Avg. Vel. (ft/s)		2.81	
Max Chl Dpth (ft)	18.31	Hydr. Depth (ft)		12.64	
Conv. Total (cfs)	740845.9	Conv. (cfs)		740845.9	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.43	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)	3293.95	1437.22	1995.16
C & E Loss (ft)	0.04	Cum SA (acres)	1275.94	136.40	1331.74

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

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	7.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.040	
W.S. Elev (ft)	6.85	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-4.24	Flow Area (sq ft)		3876.84	
E.G. Slope (ft/ft)	0.000236	Area (sq ft)	75.44	3876.84	51.62
Q Total (cfs)	12366.00	Flow (cfs)		12366.00	
Top Width (ft)	335.08	Top Width (ft)	25.70	292.00	17.38
Vel Total (ft/s)	3.19	Avg. Vel. (ft/s)		3.19	
Max Chl Dpth (ft)	18.95	Hydr. Depth (ft)		13.28	
Conv. Total (cfs)	804188.9	Conv. (cfs)		804188.9	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.19	
Alpha	1.00	Stream Power (lb/ft s)		0.62	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	4121.33	1515.39	2697.22
C & E Loss (ft)	0.06	Cum SA (acres)	1302.19	136.50	1438.19

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

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	8.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	7.78	Reach Len. (ft)	187.00	187.00	187.00
Crit W.S. (ft)	-3.27	Flow Area (sq ft)		4148.58	
E.G. Slope (ft/ft)	0.000303	Area (sq ft)	100.98	4148.58	68.88
Q Total (cfs)	15670.00	Flow (cfs)		15670.00	
Top Width (ft)	340.89	Top Width (ft)	29.19	292.00	19.71
Vel Total (ft/s)	3.78	Avg. Vel. (ft/s)		3.78	
Max Chl Dpth (ft)	19.88	Hydr. Depth (ft)		14.21	
Conv. Total (cfs)	900315.9	Conv. (cfs)		900315.9	
Length Wtd. (ft)	187.00	Wetted Per. (ft)		293.81	
Min Ch El (ft)	-12.10	Shear (lb/sq ft)		0.27	
Alpha	1.00	Stream Power (lb/ft s)		1.01	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	5374.77	1635.50	3905.18
C & E Loss (ft)	0.09	Cum SA (acres)	1338.92	136.63	1524.38

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

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 5.1

INPUT

Description: US HIGHWAY 1

* 001

Station Elevation Data		num=		15					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8724	10	9349	5	16033	1.8	16073	1.8	16077	0
16108	-8.7	16152	-10.4	16218	-11.2	16271	-7.7	16303	-4.6
16322	-1.6	16374	2.7	16413	3.5	16484	6	16549	10

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
8724	.2	16073	.04	16374	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	16073	16374		2603 2603	2603	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	5.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.19	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	12107.80	3554.64	122.14
E.G. Slope (ft/ft)	0.000084	Area (sq ft)	12107.80	3554.64	122.14
Q Total (cfs)	7489.00	Flow (cfs)	1220.15	6258.40	10.45
Top Width (ft)	7135.87	Top Width (ft)	6747.85	301.00	87.02
Vel Total (ft/s)	0.47	Avg. Vel. (ft/s)	0.10	1.76	0.09
Max Chl Dpth (ft)	16.39	Hydr. Depth (ft)	1.79	11.81	1.40
Conv. Total (cfs)	815280.1	Conv. (cfs)	132830.2	681312.7	1137.2
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6747.86	303.30	87.06
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	11.52	Stream Power (lb/ft s)	0.00	0.11	0.00
Frctn Loss (ft)	0.27	Cum Volume (acre-ft)	2049.37	1310.18	1164.25
C & E Loss (ft)	0.00	Cum SA (acres)	1158.30	135.03	1112.97

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	6.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.23	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	19183.10	3867.24	227.51
E.G. Slope (ft/ft)	0.000094	Area (sq ft)	19183.10	3867.24	227.51
Q Total (cfs)	10380.00	Flow (cfs)	2741.73	7612.23	26.04
Top Width (ft)	7292.40	Top Width (ft)	6877.67	301.00	113.73
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.14	1.97	0.11
Max Chl Dpth (ft)	17.43	Hydr. Depth (ft)	2.79	12.85	2.00
Conv. Total (cfs)	1069157.0	Conv. (cfs)	282402.7	784071.4	2682.7
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6877.68	303.30	113.79

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Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.02	0.08	0.01
Alpha	14.32	Stream Power (lb/ft s)	0.00	0.15	0.00
Frctn Loss (ft)	0.29	Cum Volume (acre-ft)	3252.65	1420.99	1994.58
C & E Loss (ft)	0.00	Cum SA (acres)	1261.13	135.13	1331.46

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.88	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	23697.05	4063.63	305.17
E.G. Slope (ft/ft)	0.000097	Area (sq ft)	23697.05	4063.63	305.17
Q Total (cfs)	12366.00	Flow (cfs)	3929.08	8396.26	40.66
Top Width (ft)	7384.56	Top Width (ft)	6959.23	301.00	124.33
Vel Total (ft/s)	0.44	Avg. Vel. (ft/s)	0.17	2.07	0.13
Max Chl Dpth (ft)	18.08	Hydr. Depth (ft)	3.41	13.50	2.45
Conv. Total (cfs)	1254162.0	Conv. (cfs)	398487.7	851550.3	4123.8
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	6959.24	303.30	124.41
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.02	0.08	0.01
Alpha	14.98	Stream Power (lb/ft s)	0.00	0.17	0.00
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	4070.30	1498.35	2696.46
C & E Loss (ft)	0.00	Cum SA (acres)	1287.19	135.22	1437.89

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.84	Reach Len. (ft)	2603.00	2603.00	2603.00
Crit W.S. (ft)		Flow Area (sq ft)	30424.24	4352.11	431.79
E.G. Slope (ft/ft)	0.000101	Area (sq ft)	30424.24	4352.11	431.79
Q Total (cfs)	15670.00	Flow (cfs)	6005.88	9595.80	68.32
Top Width (ft)	7519.93	Top Width (ft)	7079.03	301.00	139.90
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.20	2.20	0.16
Max Chl Dpth (ft)	19.04	Hydr. Depth (ft)	4.30	14.46	3.09
Conv. Total (cfs)	1558982.0	Conv. (cfs)	597514.8	954670.2	6796.8
Length Wtd. (ft)	2603.00	Wetted Per. (ft)	7079.04	303.30	140.01
Min Ch El (ft)	-11.20	Shear (lb/sq ft)	0.03	0.09	0.02
Alpha	15.10	Stream Power (lb/ft s)	0.01	0.20	0.00
Frctn Loss (ft)	0.30	Cum Volume (acre-ft)	5309.25	1617.25	3904.11
C & E Loss (ft)	0.00	Cum SA (acres)	1323.66	135.36	1524.04

CROSS SECTION

RIVER: RIVER-1
REACH: Reach-1 RS: 4

INPUT
Description: 3RD SECTION SOUTH OF OLD DIXIE BEFORE US1
* 001

Station Elevation Data		num=		18					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
2744	10	3494	5	10000	1.2	10002	-.7	10027	-3.3
10065	-9.2	10087	-9.1	10114	-9.3	10195	-6.2	10210	-3.9
10234	-.5	10237	1.3	10244	2.4	10264	3.8	10304	8.9

10370 9.4 10433 9.5 10453 9.6

Manning's n Values num= 3
 Sta n Val Sta n Val Sta n Val
 2744 .2 10000 .04 10237 .2

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
 10000 10237 5815 5815 5815 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.90	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	11750.63	2654.27	62.27
E.G. Slope (ft/ft)	0.000132	Area (sq ft)	11750.63	2654.27	62.27
Q Total (cfs)	7151.00	Flow (cfs)	1512.18	5631.15	7.67
Top Width (ft)	6615.90	Top Width (ft)	6343.24	237.00	35.67
Vel Total (ft/s)	0.49	Avg. Vel. (ft/s)	0.13	2.12	0.12
Max Chl Dpth (ft)	14.20	Hydr. Depth (ft)	1.85	11.20	1.75
Conv. Total (cfs)	622717.5	Conv. (cfs)	131682.2	490367.1	668.3
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6343.24	239.32	35.87
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.09	0.01
Alpha	14.52	Stream Power (lb/ft s)	0.00	0.19	0.00
Frctn Loss (ft)	0.67	Cum Volume (acre-ft)	1336.52	1124.67	1158.74
C & E Loss (ft)	0.01	Cum SA (acres)	767.16	118.95	1109.31

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	5.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.92	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	18434.91	2895.71	102.68
E.G. Slope (ft/ft)	0.000138	Area (sq ft)	18434.91	2895.71	102.68
Q Total (cfs)	9870.00	Flow (cfs)	3182.42	6671.77	15.81
Top Width (ft)	6925.21	Top Width (ft)	6644.55	237.00	43.66
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.17	2.30	0.15
Max Chl Dpth (ft)	15.22	Hydr. Depth (ft)	2.77	12.22	2.35
Conv. Total (cfs)	838717.2	Conv. (cfs)	270431.0	566942.7	1343.6
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6644.56	239.32	43.93
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.02	0.10	0.02
Alpha	16.97	Stream Power (lb/ft s)	0.00	0.24	0.00
Frctn Loss (ft)	0.74	Cum Volume (acre-ft)	2128.68	1218.93	1984.72
C & E Loss (ft)	0.00	Cum SA (acres)	857.11	119.06	1326.76

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	6.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	6.57	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	22785.65	3049.77	132.71
E.G. Slope (ft/ft)	0.000138	Area (sq ft)	22785.65	3049.77	132.71
Q Total (cfs)	11770.00	Flow (cfs)	4481.63	7265.87	22.50
Top Width (ft)	7027.81	Top Width (ft)	6742.06	237.00	48.75
Vel Total (ft/s)	0.45	Avg. Vel. (ft/s)	0.20	2.38	0.17
Max Chl Dpth (ft)	15.87	Hydr. Depth (ft)	3.38	12.87	2.72
Conv. Total (cfs)	1001259.0	Conv. (cfs)	381246.6	618098.4	1914.1

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Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6742.06	239.32	49.07
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.03	0.11	0.02
Alpha	17.13	Stream Power (lb/ft s)	0.01	0.26	0.00
Frctn Loss (ft)	0.75	Cum Volume (acre-ft)	2681.48	1285.81	2683.37
C & E Loss (ft)	0.00	Cum SA (acres)	877.82	119.15	1432.72

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	7.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	7.53	Reach Len. (ft)	5815.00	5815.00	5815.00
Crit W.S. (ft)		Flow Area (sq ft)	29286.23	3275.88	182.79
E.G. Slope (ft/ft)	0.000139	Area (sq ft)	29286.23	3275.88	182.79
Q Total (cfs)	14956.00	Flow (cfs)	6724.00	8197.08	34.93
Top Width (ft)	7178.40	Top Width (ft)	6885.16	237.00	56.24
Vel Total (ft/s)	0.46	Avg. Vel. (ft/s)	0.23	2.50	0.19
Max Chl Dpth (ft)	16.83	Hydr. Depth (ft)	4.25	13.82	3.25
Conv. Total (cfs)	1270523.0	Conv. (cfs)	571208.3	696347.8	2967.0
Length Wtd. (ft)	5815.00	Wetted Per. (ft)	6885.17	239.32	56.61
Min Ch El (ft)	-9.30	Shear (lb/sq ft)	0.04	0.12	0.03
Alpha	16.56	Stream Power (lb/ft s)	0.01	0.30	0.01
Frctn Loss (ft)	0.76	Cum Volume (acre-ft)	3525.20	1389.34	3885.74
C & E Loss (ft)	0.00	Cum SA (acres)	906.43	119.29	1518.18

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 3

INPUT

Description: 2ND SECTION SOUTH OF OLD DIXIE HIGHWAY

* 001

Station Elevation Data		num=		21					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
3455	10	3955	5	6000	1.3	6002	.2	6010	-1
6050	-3	6073	-4.1	6100	-5.2	6125	-6.2	6150	-7.7
6170	-8.6	6200	-8.1	6220	-6.6	6245	-5.5	6270	-4.2
6290	-2.2	6300	-1.6	6308	-.7	6310	1	9355	5
10468	10								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
3455	.2	6000	.04	6310	.2

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
6000	6310	6791	6791	6791	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	4.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.25	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	2397.45	2846.12	4008.97
E.G. Slope (ft/ft)	0.000098	Area (sq ft)	2397.45	2846.12	4008.97
Q Total (cfs)	5214.00	Flow (cfs)	228.42	4578.12	407.47

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Top Width (ft)	4408.49	Top Width (ft)	1627.93	310.00	2470.56
Vel Total (ft/s)	0.56	Avg. Vel. (ft/s)	0.10	1.61	0.10
Max Chl Dpth (ft)	12.85	Hydr. Depth (ft)	1.47	9.18	1.62
Conv. Total (cfs)	526300.9	Conv. (cfs)	23056.3	462114.8	41129.8
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	1627.93	311.47	2470.56
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.06	0.01
Alpha	7.16	Stream Power (lb/ft s)	0.00	0.09	0.00
Frctn Loss (ft)	0.91	Cum Volume (acre-ft)	392.17	757.53	886.99
C & E Loss (ft)	0.00	Cum SA (acres)	235.11	82.44	942.02

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	5.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.19	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	4176.18	3139.34	6676.42
E.G. Slope (ft/ft)	0.000115	Area (sq ft)	4176.18	3139.34	6676.42
Q Total (cfs)	7242.00	Flow (cfs)	531.14	5823.22	887.63
Top Width (ft)	5461.70	Top Width (ft)	2064.13	310.00	3087.57
Vel Total (ft/s)	0.52	Avg. Vel. (ft/s)	0.13	1.85	0.13
Max Chl Dpth (ft)	13.79	Hydr. Depth (ft)	2.02	10.13	2.16
Conv. Total (cfs)	676735.4	Conv. (cfs)	49633.3	544156.4	82945.6
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2064.13	311.47	3087.58
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.01	0.07	0.02
Alpha	10.34	Stream Power (lb/ft s)	0.00	0.13	0.00
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	619.46	816.11	1532.23
C & E Loss (ft)	0.00	Cum SA (acres)	275.83	82.55	1117.76

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	5.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.83	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	5509.91	3336.60	8686.23
E.G. Slope (ft/ft)	0.000119	Area (sq ft)	5509.91	3336.60	8686.23
Q Total (cfs)	8773.00	Flow (cfs)	841.97	6569.62	1361.42
Top Width (ft)	5666.98	Top Width (ft)	2127.76	310.00	3229.22
Vel Total (ft/s)	0.50	Avg. Vel. (ft/s)	0.15	1.97	0.16
Max Chl Dpth (ft)	14.43	Hydr. Depth (ft)	2.59	10.76	2.69
Conv. Total (cfs)	804345.8	Conv. (cfs)	77195.3	602330.1	124820.4
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2127.77	311.47	3229.23
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.02	0.08	0.02
Alpha	11.62	Stream Power (lb/ft s)	0.00	0.16	0.00
Frctn Loss (ft)	1.09	Cum Volume (acre-ft)	792.83	859.54	2094.73
C & E Loss (ft)	0.00	Cum SA (acres)	285.79	82.64	1213.92

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	6.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.200	0.040	0.200

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W.S. Elev (ft)	6.77	Reach Len. (ft)	6791.00	6791.00	6791.00
Crit W.S. (ft)		Flow Area (sq ft)	7553.23	3627.87	11818.57
E.G. Slope (ft/ft)	0.000123	Area (sq ft)	7553.23	3627.87	11818.57
Q Total (cfs)	11307.00	Flow (cfs)	1407.39	7681.29	2218.33
Top Width (ft)	5970.09	Top Width (ft)	2221.72	310.00	3438.37
Vel Total (ft/s)	0.49	Avg. Vel. (ft/s)	0.19	2.12	0.19
Max Chl Dpth (ft)	15.37	Hydr. Depth (ft)	3.40	11.70	3.44
Conv. Total (cfs)	1019358.0	Conv. (cfs)	126880.0	692489.6	199988.5
Length Wtd. (ft)	6791.00	Wetted Per. (ft)	2221.73	311.47	3438.38
Min Ch El (ft)	-8.60	Shear (lb/sq ft)	0.03	0.09	0.03
Alpha	12.65	Stream Power (lb/ft s)	0.00	0.19	0.00
Frctn Loss (ft)	1.11	Cum Volume (acre-ft)	1066.28	928.53	3084.69
C & E Loss (ft)	0.00	Cum SA (acres)	298.57	82.78	1284.92

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 2

INPUT

Description: 1ST SECTION SOUTH OF OLD DIXIE HIGHWAY
* 001

Station Elevation Data		num= 21							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
324	10	511	5	750	1.5	1500	1	1501	-.3
1513	-1	1526	-1.8	1542	-2.2	1573	-4.1	1592	-5.7
1612	-6.4	1630	-8.5	1675	-9.7	1705	-6.9	1730	-4.6
1750	-2.6	1760	-1.5	1770	-.3	1772	1	6386	5
7074	10								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
324	.2	1500	.04	1772	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1500	1772		4000 4000	4000	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	3.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	3.31	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	1657.41	2307.04	3079.29
E.G. Slope (ft/ft)	0.000188	Area (sq ft)	1657.41	2307.04	3079.29
Q Total (cfs)	5471.00	Flow (cfs)	258.81	4866.73	345.46
Top Width (ft)	3810.96	Top Width (ft)	873.64	272.00	2665.32
Vel Total (ft/s)	0.78	Avg. Vel. (ft/s)	0.16	2.11	0.11
Max Chl Dpth (ft)	13.01	Hydr. Depth (ft)	1.90	8.48	1.16
Conv. Total (cfs)	398916.4	Conv. (cfs)	18870.8	354856.3	25189.3
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	873.65	273.82	2665.32
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.02	0.10	0.01
Alpha	6.56	Stream Power (lb/ft s)	0.00	0.21	0.00
Frctn Loss (ft)	0.84	Cum Volume (acre-ft)	76.10	355.85	334.47

C & E Loss (ft)	0.00	Cum SA (acres)	40.11	37.08	541.68

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	4.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.11	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	2372.99	2523.12	5560.64
E.G. Slope (ft/ft)	0.000219	Area (sq ft)	2372.99	2523.12	5560.64
Q Total (cfs)	7399.00	Flow (cfs)	487.58	6092.26	819.16
Top Width (ft)	4781.56	Top Width (ft)	927.89	272.00	3581.68
Vel Total (ft/s)	0.71	Avg. Vel. (ft/s)	0.21	2.41	0.15
Max Chl Dpth (ft)	13.81	Hydr. Depth (ft)	2.56	9.28	1.55
Conv. Total (cfs)	500324.6	Conv. (cfs)	32970.3	411962.1	55392.3
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	927.91	273.82	3581.68
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.03	0.13	0.02
Alpha	9.60	Stream Power (lb/ft s)	0.01	0.30	0.00
Frctn Loss (ft)	1.07	Cum Volume (acre-ft)	108.95	374.72	578.35
C & E Loss (ft)	0.01	Cum SA (acres)	42.60	37.18	597.89

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

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	4.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	4.70	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	2933.34	2683.89	7879.06
E.G. Slope (ft/ft)	0.000228	Area (sq ft)	2933.34	2683.89	7879.06
Q Total (cfs)	8920.00	Flow (cfs)	689.36	6898.79	1331.85
Top Width (ft)	5503.70	Top Width (ft)	968.25	272.00	4263.45
Vel Total (ft/s)	0.66	Avg. Vel. (ft/s)	0.24	2.57	0.17
Max Chl Dpth (ft)	14.40	Hydr. Depth (ft)	3.03	9.87	1.85
Conv. Total (cfs)	590416.8	Conv. (cfs)	45628.8	456632.7	88155.3
Length Wtd. (ft)	4000.00	Wetted Per. (ft)	968.27	273.82	4263.45
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.04	0.14	0.03
Alpha	11.72	Stream Power (lb/ft s)	0.01	0.36	0.00
Frctn Loss (ft)	1.16	Cum Volume (acre-ft)	134.68	390.24	803.47
C & E Loss (ft)	0.01	Cum SA (acres)	44.46	37.27	629.87

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	5.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.	0.200	0.040	0.200
W.S. Elev (ft)	5.62	Reach Len. (ft)	4000.00	4000.00	4000.00
Crit W.S. (ft)		Flow Area (sq ft)	3855.06	2936.25	12133.44
E.G. Slope (ft/ft)	0.000225	Area (sq ft)	3855.06	2936.25	12133.44
Q Total (cfs)	11547.00	Flow (cfs)	1047.51	7955.12	2544.38
Top Width (ft)	5984.18	Top Width (ft)	1012.33	272.00	4699.85
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)	0.27	2.71	0.21
Max Chl Dpth (ft)	15.32	Hydr. Depth (ft)	3.81	10.80	2.58
Conv. Total (cfs)	769905.4	Conv. (cfs)	69843.5	530413.8	169648.2

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Length Wtd. (ft)	4000.00	Wetted Per. (ft)	1012.37	273.82	4699.85
Min Ch El (ft)	-9.70	Shear (lb/sq ft)	0.05	0.15	0.04
Alpha	13.63	Stream Power (lb/ft s)	0.01	0.41	0.01
Frctn Loss (ft)	1.18	Cum Volume (acre-ft)	177.00	416.86	1217.63
C & E Loss (ft)	0.01	Cum SA (acres)	46.48	37.41	650.55

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.4

INPUT

Description: very wide flood plain, distance criteria very large
 * 001

Station Elevation Data				num=	17				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	9	1051	7.3	1092	5.3	1123	4.5	1126	1.3
1131	1.2	1183	-10.3	1222	-13.7	1263	-10.6	1294	-7.1
1327	.1	1340	2.4	1364	2.3	1394	2.1	1436	1.6
4900	2.5	4982	10						

Manning's n Values				num=	3		
Sta	n Val	Sta	n Val	Sta	n Val		
1000	.2	1123	.04	1340	.2		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1123	1340		83	83	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.43	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2089.77	1344.52
E.G. Slope (ft/ft)	0.000237	Area (sq ft)		2089.77	1344.52
Q Total (cfs)	5470.00	Flow (cfs)		5385.10	84.91
Top Width (ft)	3488.73	Top Width (ft)		215.06	3273.68
Vel Total (ft/s)	1.59	Avg. Vel. (ft/s)		2.58	0.06
Max Chl Dpth (ft)	16.13	Hydr. Depth (ft)		9.72	0.41
Conv. Total (cfs)	355580.6	Conv. (cfs)	3500	61.3	5519.3
Length Wtd. (ft)	83.00	Wetted Per. (ft)		218.24	3273.68
Min Ch El (ft)	-13.70	Shear (lb/sq ft)		0.14	0.01
Alpha	2.58	Stream Power (lb/ft s)		0.36	0.00
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		153.97	131.35
C & E Loss (ft)	0.00	Cum SA (acres)		14.71	269.00

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.95	Reach Len. (ft)	83.00	83.00	83.00
Crit W.S. (ft)		Flow Area (sq ft)		2203.52	3215.83

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E.G. Slope (ft/ft)	0.000335	Area (sq ft)	2203.52	3215.83
Q Total (cfs)	7396.00	Flow (cfs)	6987.50	408.50
Top Width (ft)	3780.51	Top Width (ft)	215.55	3564.96
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)	3.17	0.13
Max Chl Dpth (ft)	16.65	Hydr. Depth (ft)	10.22	0.90
Conv. Total (cfs)	403853.7	Conv. (cfs)	381548.0	22305.7
Length Wtd. (ft)	83.00	Wetted Per. (ft)	218.96	3564.99
Min Ch El (ft)	-13.70	Shear (lb/sq ft)	0.21	0.02
Alpha	5.10	Stream Power (lb/ft s)	0.67	0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)	157.70	175.39
C & E Loss (ft)	0.01	Cum SA (acres)	14.79	269.76

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	3.61	Wt. n-Val.		0.040	0.200
Vel Head (ft)	0.17	Reach Len. (ft)	83.00	83.00	83.00
W.S. Elev (ft)	3.44	Flow Area (sq ft)		2307.93	4942.02
Crit W.S. (ft)		Area (sq ft)		2307.93	4942.02
E.G. Slope (ft/ft)	0.000381	Flow (cfs)		8024.33	889.67
Q Total (cfs)	8914.00	Top Width (ft)		216.00	3570.25
Top Width (ft)	3786.26	Avg. Vel. (ft/s)		3.48	0.18
Vel Total (ft/s)	1.23	Hydr. Depth (ft)		10.68	1.38
Max Chl Dpth (ft)	17.14	Conv. (cfs)		411321.0	45604.0
Conv. Total (cfs)	456925.0	Wetted Per. (ft)		219.63	3570.30
Length Wtd. (ft)	83.00	Shear (lb/sq ft)		0.25	0.03
Min Ch El (ft)	-13.70	Stream Power (lb/ft s)		0.87	0.01
Alpha	7.20	Cum Volume (acre-ft)		161.05	214.81
Frctn Loss (ft)	0.04	Cum SA (acres)		14.87	270.20
C & E Loss (ft)	0.02				

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	4.51	Wt. n-Val.		0.040	0.200
Vel Head (ft)	0.18	Reach Len. (ft)	83.00	83.00	83.00
W.S. Elev (ft)	4.33	Flow Area (sq ft)		2501.57	8140.79
Crit W.S. (ft)		Area (sq ft)		2501.57	8140.79
E.G. Slope (ft/ft)	0.000404	Flow (cfs)		9419.96	2102.04
Q Total (cfs)	11522.00	Top Width (ft)		216.84	3580.04
Top Width (ft)	3796.88	Avg. Vel. (ft/s)		3.77	0.26
Vel Total (ft/s)	1.08	Hydr. Depth (ft)		11.54	2.27
Max Chl Dpth (ft)	18.03	Conv. (cfs)		468689.5	104587.0
Conv. Total (cfs)	573276.4	Wetted Per. (ft)		220.85	3580.12
Length Wtd. (ft)	83.00	Shear (lb/sq ft)		0.29	0.06
Min Ch El (ft)	-13.70	Stream Power (lb/ft s)		1.08	0.01
Alpha	9.90	Cum Volume (acre-ft)		167.19	286.76
Frctn Loss (ft)	0.04	Cum SA (acres)		14.96	270.39
C & E Loss (ft)	0.05				

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1

RS: 1.3

INPUT

Description:

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Station Elevation Data				num=	11				
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1012	-.3	1026	-4.3	1052	-10.9	1079	-12.8
1142	-10.5	1167	-5.7	1194	-1.1	1202	-.2	1209	.4
1225	11.6								

Manning's n Values				num=	3				
Sta	n Val	Sta	n Val	Sta	n Val				
1000	.2	1000	.04	1225	.2				

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.	
	1000	1225		34.1	34.1	34.1	.3	.5
Ineffective Flow	num=		2					
Sta L	Sta R	Elev	Permanent					
1000	1000	16.8	F					
1225	1225	15.3	F					

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.40	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-7.00	Flow Area (sq ft)		2060.43	
E.G. Slope (ft/ft)	0.000238	Area (sq ft)		2060.43	
Q Total (cfs)	5470.00	Flow (cfs)		5470.00	
Top Width (ft)	202.15	Top Width (ft)		202.15	
Vel Total (ft/s)	2.65	Avg. Vel. (ft/s)		2.65	
Max Chl Dpth (ft)	15.20	Hydr. Depth (ft)		10.19	
Conv. Total (cfs)	354819.3	Conv. (cfs)		354819.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		206.44	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.39	
Frctn Loss (ft)		Cum Volume (acre-ft)		150.02	130.07
C & E Loss (ft)		Cum SA (acres)		14.32	265.88

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.88	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-6.04	Flow Area (sq ft)		2158.40	
E.G. Slope (ft/ft)	0.000376	Area (sq ft)		2158.40	
Q Total (cfs)	7396.00	Flow (cfs)		7396.00	
Top Width (ft)	203.25	Top Width (ft)		203.25	
Vel Total (ft/s)	3.43	Avg. Vel. (ft/s)		3.43	
Max Chl Dpth (ft)	15.68	Hydr. Depth (ft)		10.62	
Conv. Total (cfs)	381563.6	Conv. (cfs)		381563.6	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		207.91	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.83	
Frctn Loss (ft)		Cum Volume (acre-ft)		153.54	172.33
C & E Loss (ft)		Cum SA (acres)		14.40	266.37

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

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	3.55				
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	3.30	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-5.37	Flow Area (sq ft)		2244.88	
E.G. Slope (ft/ft)	0.000483	Area (sq ft)		2244.88	
Q Total (cfs)	8914.00	Flow (cfs)		8914.00	
Top Width (ft)	204.22	Top Width (ft)		204.22	
Vel Total (ft/s)	3.97	Avg. Vel. (ft/s)		3.97	
Max Chl Dpth (ft)	16.10	Hydr. Depth (ft)		10.99	
Conv. Total (cfs)	405695.3	Conv. (cfs)		405695.3	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		209.21	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.32	
Alpha	1.00	Stream Power (lb/ft s)		1.28	
Frctn Loss (ft)		Cum Volume (acre-ft)		156.71	210.10
C & E Loss (ft)		Cum SA (acres)		14.46	266.79

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

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	4.42				
Vel Head (ft)	0.36	Wt. n-Val.		0.040	
W.S. Elev (ft)	4.06	Reach Len. (ft)	1.00	1.00	1.00
Crit W.S. (ft)	-4.32	Flow Area (sq ft)		2399.80	
E.G. Slope (ft/ft)	0.000655	Area (sq ft)		2399.80	
Q Total (cfs)	11522.00	Flow (cfs)		11522.00	
Top Width (ft)	205.94	Top Width (ft)		205.94	
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)		4.80	
Max Chl Dpth (ft)	16.86	Hydr. Depth (ft)		11.65	
Conv. Total (cfs)	450116.0	Conv. (cfs)		450116.0	
Length Wtd. (ft)	1.00	Wetted Per. (ft)		211.52	
Min Ch El (ft)	-12.80	Shear (lb/sq ft)		0.46	
Alpha	1.00	Stream Power (lb/ft s)		2.23	
Frctn Loss (ft)		Cum Volume (acre-ft)		162.52	279.01
C & E Loss (ft)		Cum SA (acres)		14.56	266.98

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

BRIDGE

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.25

INPUT

Description: Bridge #1

Distance from Upstream XS = 1
 Deck/Roadway Width = 33
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	3								
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	16.8	13.8	1114	16.6	13.6	1225	15.3	12.3	

Upstream Bridge Cross Section Data

Station Elevation Data		num=		11	
Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1012	-.3	1026	-4.3
1142	-10.5	1167	-5.7	1194	-1.1
1225	11.6			1202	-.2
				1209	.4

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
1000	.2	1000	.04
		1225	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1000	1225		.3	.5

Ineffective Flow

num=		2	
Sta L	Sta R	Elev	Permanent
1000	1000	16.8	F
1225	1225	15.3	F

Downstream Deck/Roadway Coordinates

num=		3							
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
1000	16.8	13.8			1114	16.6	13.6		
					1225	15.3	12.3		

Downstream Bridge Cross Section Data

Station Elevation Data		num=		13	
Sta	Elev	Sta	Elev	Sta	Elev
1000	13.8	1009	3.1	1011	.1
1084	-13.2	1120	-10.8	1148	-11
1209	.1	1209.5	6	1225	11.6

Manning's n Values

num=		3	
Sta	n Val	Sta	n Val
1000	.2	1000	.04
		1225	.2

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	1000	1225		.3	.5

Ineffective Flow

num=		2	
Sta L	Sta R	Elev	Permanent
1000	1000	14.45	F
1225	1225	13.9	F

Upstream Embankment side slope	=	0 horiz. to 1.0 vertical
Downstream Embankment side slope	=	0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow	=	.98
Elevation at which weir flow begins	=	16.6
Energy head used in spillway design	=	
Spillway height used in design	=	
Weir crest shape	=	Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	1112.5	Downstream=	1112.5

Upstream		num=		2	
Width	Elev	Width	Elev		
10.5	-12.8	10.5	13.6		

Downstream		num=		2	
Width	Elev	Width	Elev		
10.5	-13.2	10.5	13.6		

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.05

Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .7905694

Max Low Cord = 13.6

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

BRIDGE OUTPUT Profile #PF 1

E.G. US. (ft)	2.51	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2.40	E.G. Elev (ft)	2.51	2.51
Q Total (cfs)	5470.00	W.S. Elev (ft)	2.39	2.39
Q Bridge (cfs)	5470.00	Crit W.S. (ft)	-6.66	-6.55
Q Weir (cfs)		Max Chl Dpth (ft)	15.19	15.59
Weir Sta Lft (ft)		Vel Total (ft/s)	2.86	2.86
Weir Sta Rgt (ft)		Flow Area (sq ft)	1911.95	1912.16
Weir Submerg		Froude # Chl	0.16	0.16
Weir Max Depth (ft)		Specif Force (cu ft)	11864.68	11786.95
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	9.98	10.11
Min El Prs (ft)	13.60	W.P. Total (ft)	223.83	222.32
Delta EG (ft)	0.01	Conv. Total (cfs)	296791.5	298189.7
Delta WS (ft)	0.01	Top Width (ft)	191.62	189.22
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.86	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.18	0.18
BR Sel Method	Yarnell	Power Total (lb/ft s)	0.52	0.52

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

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

BRIDGE OUTPUT Profile #PF 2

E.G. US. (ft)	3.06	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	2.88	E.G. Elev (ft)	3.07	3.07
Q Total (cfs)	7396.00	W.S. Elev (ft)	2.86	2.86
Q Bridge (cfs)	7396.00	Crit W.S. (ft)	-5.66	-5.56
Q Weir (cfs)		Max Chl Dpth (ft)	15.66	16.06
Weir Sta Lft (ft)		Vel Total (ft/s)	3.69	3.69
Weir Sta Rgt (ft)		Flow Area (sq ft)	2003.34	2002.25
Weir Submerg		Froude # Chl	0.20	0.20
Weir Max Depth (ft)		Specif Force (cu ft)	13158.01	13080.61
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	10.40	10.56
Min El Prs (ft)	13.60	W.P. Total (ft)	226.23	224.32
Delta EG (ft)	0.02	Conv. Total (cfs)	318534.8	320050.2
Delta WS (ft)	0.02	Top Width (ft)	192.71	189.58

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BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	3.69	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.30	0.30
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.10	1.10

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

BRIDGE OUTPUT Profile #PF 3

E.G. US. (ft)	3.55	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	3.30	E.G. Elev (ft)	3.56	3.56
Q Total (cfs)	8914.00	W.S. Elev (ft)	3.28	3.28
Q Bridge (cfs)	8914.00	Crit W.S. (ft)	-4.95	-4.86
Q Weir (cfs)		Max Chl Dpth (ft)	16.08	16.48
Weir Sta Lft (ft)		Vel Total (ft/s)	4.28	4.28
Weir Sta Rgt (ft)		Flow Area (sq ft)	2083.90	2081.36
Weir Submerg		Froude # Chl	0.23	0.23
Weir Max Depth (ft)		Specif Force (cu ft)	14346.62	14269.44
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	10.76	10.96
Min El Prs (ft)	13.60	W.P. Total (ft)	228.34	226.09
Delta EG (ft)	0.02	Conv. Total (cfs)	338069.3	339618.5
Delta WS (ft)	0.02	Top Width (ft)	193.66	189.92
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	4.28	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.40	0.40
BR Sel Method	Yarnell	Power Total (lb/ft s)	1.69	1.70

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

BRIDGE OUTPUT Profile #PF 4

E.G. US. (ft)	4.42	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	4.06	E.G. Elev (ft)	4.44	4.44
Q Total (cfs)	11522.00	W.S. Elev (ft)	4.02	4.02
Q Bridge (cfs)	11522.00	Crit W.S. (ft)	-3.86	-3.79
Q Weir (cfs)		Max Chl Dpth (ft)	16.82	17.22
Weir Sta Lft (ft)		Vel Total (ft/s)	5.17	5.18
Weir Sta Rgt (ft)		Flow Area (sq ft)	2227.86	2222.18
Weir Submerg		Froude # Chl	0.27	0.27
Weir Max Depth (ft)		Specif Force (cu ft)	16609.15	16532.26
Min El Weir Flow (ft)	16.60	Hydr Depth (ft)	11.40	11.66
Min El Prs (ft)	13.60	W.P. Total (ft)	232.08	229.28
Delta EG (ft)	0.03	Conv. Total (cfs)	373808.9	375250.0
Delta WS (ft)	0.04	Top Width (ft)	195.35	190.61
BR Open Area (sq ft)	4102.06	Frctn Loss (ft)		
BR Open Vel (ft/s)	5.18	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.57	0.57
BR Sel Method	Yarnell	Power Total (lb/ft s)	2.94	2.96

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.2

INPUT

Description: very wide flood plain, distance criteria very large
 * 001

Station Elevation Data		num= 13	
Sta	Elev	Sta	Elev
1000	13.8	1009	3.1
1084	-13.2	1120	-10.8
1209	.1	1209.5	6
		1225	11.6

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
1000	.2	1000	.04
		1225	.2

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1000	1225		112	112	.3	.5

Ineffective Flow		num= 2	
Sta L	Sta R	Elev	Permanent
1000	1000	14.45	F
1225	1225	13.9	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.39	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-6.87	Flow Area (sq ft)		2055.87	
E.G. Slope (ft/ft)	0.000238	Area (sq ft)		2055.87	
Q Total (cfs)	5470.00	Flow (cfs)		5470.00	
Top Width (ft)	199.72	Top Width (ft)		199.72	
Vel Total (ft/s)	2.66	Avg. Vel. (ft/s)		2.66	
Max Chl Dpth (ft)	15.59	Hydr. Depth (ft)		10.29	
Conv. Total (cfs)	354621.6	Conv. (cfs)		354621.6	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		205.47	
Min Ch El (ft)	-13.20	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.40	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		148.52	130.07
C & E Loss (ft)	0.00	Cum SA (acres)		14.17	265.88

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

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.040	
W.S. Elev (ft)	2.86	Reach Len. (ft)	112.00	112.00	112.00
Crit W.S. (ft)	-5.92	Flow Area (sq ft)		2150.95	
E.G. Slope (ft/ft)	0.000377	Area (sq ft)		2150.95	
Q Total (cfs)	7396.00	Flow (cfs)		7396.00	
Top Width (ft)	200.08	Top Width (ft)		200.08	
Vel Total (ft/s)	3.44	Avg. Vel. (ft/s)		3.44	
Max Chl Dpth (ft)	16.06	Hydr. Depth (ft)		10.75	
Conv. Total (cfs)	381076.2	Conv. (cfs)		381076.2	
Length Wtd. (ft)	112.00	Wetted Per. (ft)		206.52	

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Min Ch El (ft)	-13.20	Shear (lb/sq ft)	0.24	
Alpha	1.00	Stream Power (lb/ft s)	0.84	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	151.98	172.33
C & E Loss (ft)	0.00	Cum SA (acres)	14.25	266.37

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

CROSS SECTION OUTPUT Profile #PF 3

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	3.53	Wt. n-Val.		0.040	
Vel Head (ft)	0.25	Reach Len. (ft)	112.00	112.00	112.00
W.S. Elev (ft)	3.28	Flow Area (sq ft)		2234.45	
Crit W.S. (ft)	-5.25	Area (sq ft)		2234.45	
E.G. Slope (ft/ft)	0.000485	Flow (cfs)		8914.00	
Q Total (cfs)	8914.00	Top Width (ft)		200.42	
Top Width (ft)	200.42	Avg. Vel. (ft/s)		3.99	
Vel Total (ft/s)	3.99	Hydr. Depth (ft)		11.15	
Max Chl Dpth (ft)	16.48	Conv. (cfs)		404823.9	
Conv. Total (cfs)	404823.9	Wetted Per. (ft)		207.46	
Length Wtd. (ft)	112.00	Shear (lb/sq ft)		0.33	
Min Ch El (ft)	-13.20	Stream Power (lb/ft s)		1.30	
Alpha	1.00	Cum Volume (acre-ft)		155.08	210.10
Frctn Loss (ft)	0.05	Cum SA (acres)		14.31	266.79
C & E Loss (ft)	0.01				

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

CROSS SECTION OUTPUT Profile #PF 4

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	4.38	Wt. n-Val.		0.040	
Vel Head (ft)	0.36	Reach Len. (ft)	112.00	112.00	112.00
W.S. Elev (ft)	4.02	Flow Area (sq ft)		2383.04	
Crit W.S. (ft)	-4.23	Area (sq ft)		2383.04	
E.G. Slope (ft/ft)	0.000661	Flow (cfs)		11522.00	
Q Total (cfs)	11522.00	Top Width (ft)		201.11	
Top Width (ft)	201.11	Avg. Vel. (ft/s)		4.84	
Vel Total (ft/s)	4.84	Hydr. Depth (ft)		11.85	
Max Chl Dpth (ft)	17.22	Conv. (cfs)		448219.6	
Conv. Total (cfs)	448219.6	Wetted Per. (ft)		209.17	
Length Wtd. (ft)	112.00	Shear (lb/sq ft)		0.47	
Min Ch El (ft)	-13.20	Stream Power (lb/ft s)		2.27	
Alpha	1.00	Cum Volume (acre-ft)		160.78	279.01
Frctn Loss (ft)	0.07	Cum SA (acres)		14.41	266.98
C & E Loss (ft)	0.04				

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

CROSS SECTION

RIVER: RIVER-1
 REACH: Reach-1 RS: 1.1

INPUT

Description: old dixie highway

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Station Elevation Data				num=	13						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	14.2	1119	10	1144	8.8	1178	5.1	1226	-10.9		
1266	-15.8	1313	-9.8	1370	.4	1374	3.4	1403	2.3		
1422	2.1	3770	2.1	3776	10						

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1178	.04	1374	.2		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1178	1374		3200	3200	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.36	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2008.86	603.62
E.G. Slope (ft/ft)	0.000230	Area (sq ft)		2008.86	603.62
Q Total (cfs)	5470.00	Flow (cfs)		5442.64	27.36
Top Width (ft)	2555.04	Top Width (ft)		186.38	2368.67
Vel Total (ft/s)	2.09	Avg. Vel. (ft/s)		2.71	0.05
Max Chl Dpth (ft)	18.16	Hydr. Depth (ft)		10.78	0.25
Conv. Total (cfs)	360327.8	Conv. (cfs)		358525.3	1802.5
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		190.76	2368.79
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.15	0.00
Alpha	1.67	Stream Power (lb/ft s)		0.41	0.00
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)		143.29	129.30
C & E Loss (ft)	0.00	Cum SA (acres)		13.67	262.84

Warning: Divided flow computed for this cross-section.

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	3.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.18	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	2.82	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2096.56	1715.17
E.G. Slope (ft/ft)	0.000356	Area (sq ft)		2096.56	1715.17
Q Total (cfs)	7396.00	Flow (cfs)		7202.94	193.06
Top Width (ft)	2569.76	Top Width (ft)		188.40	2381.36
Vel Total (ft/s)	1.94	Avg. Vel. (ft/s)		3.44	0.11
Max Chl Dpth (ft)	18.62	Hydr. Depth (ft)		11.13	0.72
Conv. Total (cfs)	392217.2	Conv. (cfs)		381979.2	10238.0
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		193.02	2381.73
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.24	0.02
Alpha	3.05	Stream Power (lb/ft s)		0.83	0.00
Frctn Loss (ft)	1.08	Cum Volume (acre-ft)		146.51	170.12
C & E Loss (ft)	0.00	Cum SA (acres)		13.75	263.30

Warning: Divided flow computed for this cross-section.

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

CROSS SECTION OUTPUT Profile #PF 3

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E.G. Elev (ft)	3.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	3.24	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2175.35	2708.69
E.G. Slope (ft/ft)	0.000439	Area (sq ft)		2175.35	2708.69
Q Total (cfs)	8914.00	Flow (cfs)		8455.87	458.13
Top Width (ft)	2582.86	Top Width (ft)		190.21	2392.65
Vel Total (ft/s)	1.83	Avg. Vel. (ft/s)		3.89	0.17
Max Chl Dpth (ft)	19.04	Hydr. Depth (ft)		11.44	1.13
Conv. Total (cfs)	425264.2	Conv. (cfs)		403408.0	21856.2
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		195.03	2393.23
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.31	0.03
Alpha	4.30	Stream Power (lb/ft s)		1.19	0.01
Frctn Loss (ft)	1.44	Cum Volume (acre-ft)		149.41	206.62
C & E Loss (ft)	0.01	Cum SA (acres)		13.81	263.72

Warning: Divided flow computed for this cross-section.

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

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	4.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.040	0.200
W.S. Elev (ft)	4.00	Reach Len. (ft)	3200.00	3200.00	3200.00
Crit W.S. (ft)		Flow Area (sq ft)		2320.21	4521.32
E.G. Slope (ft/ft)	0.000539	Area (sq ft)		2320.21	4521.32
Q Total (cfs)	11522.00	Flow (cfs)		10332.14	1189.86
Top Width (ft)	2590.13	Top Width (ft)		192.69	2397.44
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)		4.45	0.26
Max Chl Dpth (ft)	19.80	Hydr. Depth (ft)		12.04	1.89
Conv. Total (cfs)	496392.0	Conv. (cfs)		445130.3	51261.7
Length Wtd. (ft)	3200.00	Wetted Per. (ft)		197.69	2398.40
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.39	0.06
Alpha	6.27	Stream Power (lb/ft s)		1.76	0.02
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)		154.73	273.20
C & E Loss (ft)	0.02	Cum SA (acres)		13.90	263.89

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

CROSS SECTION

RIVER: RIVER-1

REACH: Reach-1 RS: 1

INPUT

Description: very wide flood plains most of the length of the river, distance

criteria * 001

not met in most cases,

* 001

*

001

mouth AT TOMOKA BASIN

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001

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Station Elevation Data						num=	13
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	14.2	1119	10	1144	8.8	1178	5.1
1266	-15.8	1313	-9.8	1370	.4	1374	1
1422	1.1	6160	1.1	6176	10	1403	1.3

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
1000	.2	1178	.033	1374	.2		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff Contr.	Expan.
	1178	1374		0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.033	0.200
W.S. Elev (ft)	1.71	Reach Len. (ft)			
Crit W.S. (ft)	-8.00	Flow Area (sq ft)		1892.30	2916.45
E.G. Slope (ft/ft)	0.000177	Area (sq ft)		1892.30	2916.45
Q Total (cfs)	5465.00	Flow (cfs)		5257.79	207.21
Top Width (ft)	4972.93	Top Width (ft)		185.83	4787.10
Vel Total (ft/s)	1.14	Avg. Vel. (ft/s)		2.78	0.07
Max Chl Dpth (ft)	17.51	Hydr. Depth (ft)		10.18	0.61
Conv. Total (cfs)	410677.9	Conv. (cfs)		395106.4	15571.5
Length Wtd. (ft)		Wetted Per. (ft)		189.51	4787.26
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.11	0.01
Alpha	5.75	Stream Power (lb/ft s)		0.31	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #PF 2

E.G. Elev (ft)	1.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.033	0.200
W.S. Elev (ft)	1.71	Reach Len. (ft)			
Crit W.S. (ft)	-6.96	Flow Area (sq ft)		1892.30	2916.45
E.G. Slope (ft/ft)	0.000321	Area (sq ft)		1892.30	2916.45
Q Total (cfs)	7356.00	Flow (cfs)		7077.09	278.91
Top Width (ft)	4972.93	Top Width (ft)		185.83	4787.10
Vel Total (ft/s)	1.53	Avg. Vel. (ft/s)		3.74	0.10
Max Chl Dpth (ft)	17.51	Hydr. Depth (ft)		10.18	0.61
Conv. Total (cfs)	410677.9	Conv. (cfs)		395106.4	15571.5
Length Wtd. (ft)		Wetted Per. (ft)		189.51	4787.26
Min Ch El (ft)	-15.80	Shear (lb/sq ft)		0.20	0.01
Alpha	5.75	Stream Power (lb/ft s)		0.75	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #PF 3

E.G. Elev (ft)	2.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.033	0.200
W.S. Elev (ft)	1.71	Reach Len. (ft)			
Crit W.S. (ft)	-6.22	Flow Area (sq ft)		1892.30	2916.45
E.G. Slope (ft/ft)	0.000463	Area (sq ft)		1892.30	2916.45

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Q Total (cfs)	8839.00	Flow (cfs)	8503.86	335.14
Top Width (ft)	4972.93	Top Width (ft)	185.83	4787.10
Vel Total (ft/s)	1.84	Avg. Vel. (ft/s)	4.49	0.11
Max Chl Dpth (ft)	17.51	Hydr. Depth (ft)	10.18	0.61
Conv. Total (cfs)	410677.9	Conv. (cfs)	395106.4	15571.5
Length Wtd. (ft)		Wetted Per. (ft)	189.51	4787.26
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.29	0.02
Alpha	5.75	Stream Power (lb/ft s)	1.30	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		
C & E Loss (ft)		Cum SA (acres)		

CROSS SECTION OUTPUT Profile #PF 4

E.G. Elev (ft)	2.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.50	Wt. n-Val.		0.033	0.200
W.S. Elev (ft)	1.71	Reach Len. (ft)			
Crit W.S. (ft)	-5.11	Flow Area (sq ft)	1892.30		2916.45
E.G. Slope (ft/ft)	0.000768	Area (sq ft)	1892.30		2916.45
Q Total (cfs)	11383.00	Flow (cfs)	10951.40		431.60
Top Width (ft)	4972.93	Top Width (ft)	185.83		4787.10
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)	5.79		0.15
Max Chl Dpth (ft)	17.51	Hydr. Depth (ft)	10.18		0.61
Conv. Total (cfs)	410677.9	Conv. (cfs)	395106.4		15571.5
Length Wtd. (ft)		Wetted Per. (ft)	189.51		4787.26
Min Ch El (ft)	-15.80	Shear (lb/sq ft)	0.48		0.03
Alpha	5.75	Stream Power (lb/ft s)	2.77		0.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:RIVER-1

Reach	River Sta.	n1	n2	n3
Reach-1	29	.15	.04	.15
Reach-1	28	.15	.04	.15
Reach-1	27	.15	.04	.15
Reach-1	26.4	.15	.04	.15
Reach-1	26.3	.15	.04	.15
Reach-1	26.25	Bridge		
Reach-1	26.2	.15	.04	.15
Reach-1	26.1	.15	.04	.15
Reach-1	25.3	.2	.04	.2
Reach-1	25.2	.18	.04	.18
Reach-1	25.1	.17	.04	.17
Reach-1	25	.15	.04	.15
Reach-1	24	.15	.04	.15
Reach-1	23	.15	.04	.15
Reach-1	22	.15	.04	.15
Reach-1	21	.16	.04	.16
Reach-1	20	.2	.04	.2
Reach-1	19.4	.17	.04	.17
Reach-1	19.35	.17	.04	.17
Reach-1	19.25	Bridge		

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Reach-1	19.15	.17	.04	.17
Reach-1	19.1	.17	.04	.17
Reach-1	18.2	.2	.04	.2
Reach-1	18.1	.2	.04	.2
Reach-1	18	.2	.04	.2
Reach-1	17	.2	.04	.2
Reach-1	16	.2	.04	.2
Reach-1	15	.2	.04	.2
Reach-1	14.4	.2	.04	.2
Reach-1	14.1	.2	.04	.2
Reach-1	13.4	.2	.04	.2
Reach-1	13.3	.2	.04	.2
Reach-1	13.25	Bridge		
Reach-1	13.2	.2	.04	.2
Reach-1	13.1	.2	.04	.2
Reach-1	12.1	.2	.04	.2
Reach-1	12	.2	.04	.2
Reach-1	11.4	.2	.04	.2
Reach-1	11.3	.2	.04	.2
Reach-1	11.25	Bridge		
Reach-1	11.2	.2	.04	.2
Reach-1	11.1	.2	.04	.2
Reach-1	10	.2	.04	.2
Reach-1	9	.2	.04	.2
Reach-1	8	.2	.04	.2
Reach-1	7	.2	.04	.2
Reach-1	6.4	.2	.04	.2
Reach-1	6.3	.2	.04	.2
Reach-1	6.25	Bridge		
Reach-1	6.2	.2	.04	.2
Reach-1	6.1	.2	.04	.2
Reach-1	5.4	.2	.04	.2
Reach-1	5.3	.2	.04	.2
Reach-1	5.25	Bridge		
Reach-1	5.2	.2	.04	.2
Reach-1	5.1	.2	.04	.2
Reach-1	4	.2	.04	.2
Reach-1	3	.2	.04	.2
Reach-1	2	.2	.04	.2
Reach-1	1.4	.2	.04	.2
Reach-1	1.3	.2	.04	.2
Reach-1	1.25	Bridge		
Reach-1	1.2	.2	.04	.2
Reach-1	1.1	.2	.04	.2
Reach-1	1	.2	.033	.2

SUMMARY OF REACH LENGTHS

River: RIVER-1

Reach	River Sta.	Left	Channel	Right
Reach-1	29	1398	1398	1398
Reach-1	28	1424	1424	1424
Reach-1	27	1912	1912	1912
Reach-1	26.4	350	350	350

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Reach-1	26.3	96.1	96.1	96.1
Reach-1	26.25	Bridge		
Reach-1	26.2	181	181	181
Reach-1	26.1	500	500	500
Reach-1	25.3	830	830	830
Reach-1	25.2	1000	1000	1000
Reach-1	25.1	1744	1744	1744
Reach-1	25	3391	3391	3391
Reach-1	24	1839	1839	1839
Reach-1	23	3151	3151	3151
Reach-1	22	2497	2497	2497
Reach-1	21	2919	2919	2919
Reach-1	20	2903	2903	2903
Reach-1	19.4	240	240	240
Reach-1	19.35	146	146	146
Reach-1	19.25	Bridge		
Reach-1	19.15	238	238	238
Reach-1	19.1	708	708	708
Reach-1	18.2	500	500	500
Reach-1	18.1	1378	1378	1378
Reach-1	18	2064	2064	2064
Reach-1	17	3218	3218	3218
Reach-1	16	2257	2257	2257
Reach-1	15	2800	2800	2800
Reach-1	14.4	67	67	67
Reach-1	14.1	2673	2673	2673
Reach-1	13.4	225	225	225
Reach-1	13.3	43.1	43.1	43.1
Reach-1	13.25	Bridge		
Reach-1	13.2	225	225	225
Reach-1	13.1	935	935	935
Reach-1	12.1	500	500	500
Reach-1	12	1698	1698	1698
Reach-1	11.4	360	360	360
Reach-1	11.3	174.1	174.1	174.1
Reach-1	11.25	Bridge		
Reach-1	11.2	360	360	360
Reach-1	11.1	4378	4378	4378
Reach-1	10	3146	3146	3146
Reach-1	9	4432	4432	4432
Reach-1	8	4924	4924	4924
Reach-1	7	2187	2187	2187
Reach-1	6.4	68	68	68
Reach-1	6.3	22.1	22.1	22.1
Reach-1	6.25	Bridge		
Reach-1	6.2	74	74	74
Reach-1	6.1	375	375	375
Reach-1	5.4	89	89	89
Reach-1	5.3	102.1	102.1	102.1
Reach-1	5.25	Bridge		
Reach-1	5.2	187	187	187
Reach-1	5.1	2603	2603	2603
Reach-1	4	5815	5815	5815
Reach-1	3	6791	6791	6791
Reach-1	2	4000	4000	4000
Reach-1	1.4	83	83	83
Reach-1	1.3	34.1	34.1	34.1
Reach-1	1.25	Bridge		
Reach-1	1.2	112	112	112

Reach-1	1.1	3200	3200	3200
Reach-1	1	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: RIVER-1

Reach	River Sta.	Contr.	Expan.
Reach-1	29	.1	.3
Reach-1	28	.1	.3
Reach-1	27	.1	.3
Reach-1	26.4	.3	.5
Reach-1	26.3	.3	.5
Reach-1	26.25	Bridge	
Reach-1	26.2	.3	.5
Reach-1	26.1	.1	.3
Reach-1	25.3	.1	.3
Reach-1	25.2	.1	.3
Reach-1	25.1	.1	.3
Reach-1	25	.1	.3
Reach-1	24	.1	.3
Reach-1	23	.1	.3
Reach-1	22	.1	.3
Reach-1	21	.1	.3
Reach-1	20	.1	.3
Reach-1	19.4	.3	.5
Reach-1	19.35	.3	.5
Reach-1	19.25	Bridge	
Reach-1	19.15	.3	.5
Reach-1	19.1	.1	.3
Reach-1	18.2	.1	.3
Reach-1	18.1	.1	.3
Reach-1	18	.1	.3
Reach-1	17	.1	.3
Reach-1	16	.1	.3
Reach-1	15	.1	.3
Reach-1	14.4	.1	.3
Reach-1	14.1	.1	.3
Reach-1	13.4	.3	.5
Reach-1	13.3	.3	.5
Reach-1	13.25	Bridge	
Reach-1	13.2	.3	.5
Reach-1	13.1	.1	.3
Reach-1	12.1	.1	.3
Reach-1	12	.1	.3
Reach-1	11.4	.3	.5
Reach-1	11.3	.3	.5
Reach-1	11.25	Bridge	
Reach-1	11.2	.3	.5
Reach-1	11.1	.1	.3
Reach-1	10	.1	.3
Reach-1	9	.1	.3
Reach-1	8	.1	.3
Reach-1	7	.1	.3
Reach-1	6.4	.3	.5

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Reach-1	6.3		.3	.5
Reach-1	6.25	Bridge		
Reach-1	6.2		.3	.5
Reach-1	6.1		.1	.3
Reach-1	5.4		.3	.5
Reach-1	5.3		.3	.5
Reach-1	5.25	Bridge		
Reach-1	5.2		.3	.5
Reach-1	5.1		.1	.3
Reach-1	4		.1	.3
Reach-1	3		.1	.3
Reach-1	2		.1	.3
Reach-1	1.4		.3	.5
Reach-1	1.3		.3	.5
Reach-1	1.25	Bridge		
Reach-1	1.2		.3	.5
Reach-1	1.1		.1	.3
Reach-1	1		.1	.3

Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Ch1
Reach-1	29	PF 1	CDEM	477.00	21.00	24.23		24.24	0.000010	0.25	2710.32	1285.94	0.02
Reach-1	29	PF 1	prop TR	477.00	21.00	24.23		24.24	0.000010	0.25	2710.31	1285.93	0.02
Reach-1	29	PF 2	CDEM	643.00	21.00	25.06		25.06	0.000008	0.26	4089.41	2022.87	0.02
Reach-1	29	PF 2	prop TR	643.00	21.00	25.06		25.06	0.000008	0.26	4089.35	2022.86	0.02
Reach-1	29	PF 3	CDEM	753.00	21.00	25.57		25.57	0.000007	0.26	5173.88	2200.56	0.02
Reach-1	29	PF 3	prop TR	753.00	21.00	25.57		25.57	0.000007	0.26	5173.72	2200.54	0.02
Reach-1	29	PF 4	CDEM	931.00	21.00	26.25		26.25	0.000006	0.26	6718.28	2348.00	0.02
Reach-1	29	PF 4	prop TR	931.00	21.00	26.24		26.24	0.000006	0.26	6713.29	2348.00	0.02
Reach-1	28	PF 1	CDEM	1203.00	20.00	24.18		24.19	0.000068	0.73	2400.17	1451.30	0.07
Reach-1	28	PF 1	prop TR	1203.00	20.00	24.18		24.19	0.000068	0.73	2400.16	1451.29	0.07
Reach-1	28	PF 2	CDEM	1616.00	20.00	25.02		25.02	0.000055	0.75	3903.12	2149.98	0.06
Reach-1	28	PF 2	prop TR	1616.00	20.00	25.02		25.02	0.000055	0.75	3903.05	2149.96	0.06
Reach-1	28	PF 3	CDEM	1885.00	20.00	25.54		25.54	0.000048	0.76	5121.23	2544.40	0.06
Reach-1	28	PF 3	prop TR	1885.00	20.00	25.54		25.54	0.000048	0.76	5121.04	2544.34	0.06

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Reach-1	28	PF 4	CDEM	2324.00	20.00	26.21	26.22	0.000042	0.77	6995.42	2897.00	0.06	
Reach-1	28	PF 4	prop TR	2324.00	20.00	26.21	26.22	0.000042	0.77	6989.09	2897.00	0.06	
Reach-1	27	PF 1	CDEM	928.00	19.70	24.13	24.14	0.000020	0.45	3897.76	1519.58	0.04	
Reach-1	27	PF 1	prop TR	928.00	19.70	24.13	24.14	0.000020	0.45	3897.75	1519.57	0.04	
Reach-1	27	PF 2	CDEM	1268.00	19.70	24.97	24.98	0.000020	0.50	5489.83	2276.93	0.04	
Reach-1	27	PF 2	prop TR	1268.00	19.70	24.97	24.98	0.000020	0.50	5489.76	2276.90	0.04	
Reach-1	27	PF 3	CDEM	1494.00	19.70	25.50	25.50	0.000019	0.52	6768.10	2602.37	0.04	
Reach-1	27	PF 3	prop TR	1494.00	19.70	25.50	25.50	0.000019	0.52	6767.90	2602.32	0.04	
Reach-1	27	PF 4	CDEM	1866.00	19.70	26.17	26.18	0.000018	0.54	8663.79	2908.00	0.04	
Reach-1	27	PF 4	prop TR	1866.00	19.70	26.17	26.18	0.000018	0.54	8657.25	2908.00	0.04	
Reach-1	26.4	PF 1	CDEM	928.00	17.60	24.10	24.10	0.000017	0.49	4293.64	1649.24	0.04	
Reach-1	26.4	PF 1	prop TR	928.00	17.60	24.10	24.10	0.000017	0.49	4293.63	1649.23	0.04	
Reach-1	26.4	PF 2	CDEM	1268.00	17.60	24.94	24.94	0.000017	0.54	5779.90	1896.54	0.04	
Reach-1	26.4	PF 2	prop TR	1268.00	17.60	24.94	24.94	0.000017	0.54	5779.84	1896.53	0.04	
Reach-1	26.4	PF 3	CDEM	1494.00	17.60	25.46	25.47	0.000017	0.57	6805.16	2008.65	0.04	
Reach-1	26.4	PF 3	prop TR	1494.00	17.60	25.46	25.47	0.000017	0.57	6805.00	2008.63	0.04	
Reach-1	26.4	PF 4	CDEM	1866.00	17.60	26.14	26.14	0.000018	0.61	8208.81	2100.00	0.04	
Reach-1	26.4	PF 4	prop TR	1866.00	17.60	26.14	26.14	0.000018	0.61	8203.99	2100.00	0.04	
Reach-1	26.3	PF 1	CDEM	928.00	17.60	24.07	19.60	24.09	0.000088	1.01	921.10	186.49	0.08
Reach-1	26.3	PF 1	prop TR	928.00	17.60	24.07	19.60	24.09	0.000088	1.01	921.10	186.49	0.08
Reach-1	26.3	PF 2	CDEM	1268.00	17.60	24.90	19.86	24.92	0.000101	1.18	1078.17	402.30	0.09
Reach-1	26.3	PF 2	prop TR	1268.00	17.60	24.90	19.86	24.92	0.000101	1.18	1078.16	402.25	0.09
Reach-1	26.3	PF 3	CDEM	1494.00	17.60	25.42	20.01	25.45	0.000105	1.27	1177.55	1182.57	0.09
Reach-1	26.3	PF 3	prop TR	1494.00	17.60	25.42	20.01	25.45	0.000105	1.27	1177.53	1182.45	0.09
Reach-1	26.3	PF 4	CDEM	1866.00	17.60	26.10	20.24	26.13	0.000102	1.34	2647.89	2050.00	0.09
Reach-1	26.3	PF 4	prop TR	1866.00	17.60	26.10	20.24	26.12	0.000102	1.35	2643.06	2050.00	0.09

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Reach-1	26.25			Bridge									
Reach-1	26.2	PF 1	CDEM	928.00	16.60	24.05	19.46	24.07	0.000101	1.07	869.28	177.32	0.09
Reach-1	26.2	PF 1	prop TR	928.00	16.60	24.05	19.46	24.07	0.000101	1.07	869.27	177.32	0.09
Reach-1	26.2	PF 2	CDEM	1268.00	16.60	24.85	19.84	24.88	0.000116	1.25	1012.88	180.16	0.09
Reach-1	26.2	PF 2	prop TR	1268.00	16.60	24.85	19.84	24.88	0.000116	1.25	1012.88	180.16	0.09
Reach-1	26.2	PF 3	CDEM	1494.00	16.60	25.35	20.14	25.38	0.000123	1.35	1102.67	181.92	0.10
Reach-1	26.2	PF 3	prop TR	1494.00	16.60	25.35	20.14	25.38	0.000123	1.35	1102.66	181.92	0.10
Reach-1	26.2	PF 4	CDEM	1866.00	16.60	26.08	20.40	26.12	0.000126	1.48	1912.32	2119.64	0.10
Reach-1	26.2	PF 4	prop TR	1866.00	16.60	26.08	20.40	26.12	0.000126	1.48	1907.41	2116.67	0.10
Reach-1	26.1	PF 1	CDEM	928.00	16.00	24.00		24.03	0.000315	2.06	2270.75	1560.21	0.15
Reach-1	26.1	PF 1	prop TR	928.00	16.00	24.00		24.03	0.000315	2.06	2270.73	1560.21	0.15
Reach-1	26.1	PF 2	CDEM	1268.00	16.00	24.82		24.85	0.000236	1.96	4045.48	2742.07	0.14
Reach-1	26.1	PF 2	prop TR	1268.00	16.00	24.82		24.85	0.000236	1.96	4045.38	2742.02	0.14
Reach-1	26.1	PF 3	CDEM	1494.00	16.00	25.33		25.34	0.000190	1.85	5649.70	3717.54	0.12
Reach-1	26.1	PF 3	prop TR	1494.00	16.00	25.33		25.34	0.000190	1.85	5649.39	3717.35	0.12
Reach-1	26.1	PF 4	CDEM	1866.00	16.00	26.07		26.08	0.000119	1.56	8992.97	5040.96	0.10
Reach-1	26.1	PF 4	prop TR	1866.00	16.00	26.07		26.08	0.000120	1.57	8980.99	5040.38	0.10
Reach-1	25.3	PF 1	CDEM	2554.00	18.00	23.56		23.70	0.000918	3.42	3001.74	2327.40	0.26
Reach-1	25.3	PF 1	prop TR	2554.00	18.00	23.56		23.70	0.000918	3.42	3001.68	2327.40	0.26
Reach-1	25.3	PF 2	CDEM	3468.00	18.00	24.49		24.60	0.000680	3.28	5444.95	2944.63	0.23
Reach-1	25.3	PF 2	prop TR	3468.00	18.00	24.49		24.60	0.000680	3.28	5444.79	2944.61	0.23
Reach-1	25.3	PF 3	CDEM	4074.00	18.00	25.06		25.14	0.000551	3.13	7187.23	3277.99	0.21
Reach-1	25.3	PF 3	prop TR	4074.00	18.00	25.06		25.14	0.000551	3.13	7186.89	3277.82	0.21
Reach-1	25.3	PF 4	CDEM	5071.00	18.00	25.87		25.94	0.000443	3.02	10373.66	4608.14	0.19
Reach-1	25.3	PF 4	prop TR	5071.00	18.00	25.86		25.93	0.000444	3.03	10360.22	4603.34	0.19

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Reach-1	25.2	PF 1	CDEM	2554.00	16.00	23.09	23.17	0.000442	2.77	3847.83	1866.16	0.19
Reach-1	25.2	PF 1	prop TR	2554.00	16.00	23.09	23.17	0.000442	2.77	3847.75	1866.15	0.19
Reach-1	25.2	PF 2	CDEM	3468.00	16.00	24.12	24.18	0.000364	2.77	5882.16	2110.18	0.18
Reach-1	25.2	PF 2	prop TR	3468.00	16.00	24.12	24.18	0.000364	2.77	5882.01	2110.15	0.18
Reach-1	25.2	PF 3	CDEM	4074.00	16.00	24.72	24.79	0.000335	2.79	7234.37	2350.83	0.17
Reach-1	25.2	PF 3	prop TR	4074.00	16.00	24.72	24.79	0.000335	2.79	7234.05	2350.77	0.17
Reach-1	25.2	PF 4	CDEM	5071.00	16.00	25.57	25.63	0.000311	2.87	9430.77	2930.97	0.17
Reach-1	25.2	PF 4	prop TR	5071.00	16.00	25.56	25.62	0.000311	2.87	9420.29	2928.00	0.17
Reach-1	25.1	PF 1	CDEM	2554.00	15.00	22.85	22.89	0.000181	1.90	4247.95	1528.53	0.12
Reach-1	25.1	PF 1	prop TR	2554.00	15.00	22.85	22.89	0.000181	1.90	4247.88	1528.52	0.12
Reach-1	25.1	PF 2	CDEM	3468.00	15.00	23.89	23.93	0.000179	2.06	6150.16	1931.81	0.13
Reach-1	25.1	PF 2	prop TR	3468.00	15.00	23.89	23.93	0.000179	2.06	6150.00	1931.80	0.13
Reach-1	25.1	PF 3	CDEM	4074.00	15.00	24.50	24.55	0.000174	2.13	7384.15	2090.40	0.12
Reach-1	25.1	PF 3	prop TR	4074.00	15.00	24.50	24.55	0.000174	2.13	7383.84	2090.36	0.12
Reach-1	25.1	PF 4	CDEM	5071.00	15.00	25.36	25.40	0.000167	2.22	9259.35	2235.00	0.12
Reach-1	25.1	PF 4	prop TR	5071.00	15.00	25.35	25.40	0.000168	2.22	9250.28	2235.00	0.12
Reach-1	25	PF 1	CDEM	2633.00	12.60	22.31	22.38	0.000518	3.47	3962.86	1414.60	0.21
Reach-1	25	PF 1	prop TR	2633.00	12.60	22.31	22.38	0.000518	3.47	3962.77	1414.59	0.21
Reach-1	25	PF 2	CDEM	3556.00	12.60	23.39	23.45	0.000463	3.56	5650.32	1766.47	0.20
Reach-1	25	PF 2	prop TR	3556.00	12.60	23.39	23.45	0.000463	3.56	5650.11	1766.42	0.20
Reach-1	25	PF 3	CDEM	4167.00	12.60	24.03	24.09	0.000431	3.58	6875.33	2040.66	0.20
Reach-1	25	PF 3	prop TR	4167.00	12.60	24.03	24.09	0.000431	3.58	6874.91	2040.60	0.20
Reach-1	25	PF 4	CDEM	5170.00	12.60	24.93	24.98	0.000371	3.52	8839.81	2316.58	0.19
Reach-1	25	PF 4	prop TR	5170.00	12.60	24.92	24.98	0.000373	3.52	8827.62	2314.97	0.19
Reach-1	24	PF 1	CDEM	2728.00	13.00	20.71	20.78	0.000434	2.80	2834.30	578.07	0.19
Reach-1	24	PF 1	prop TR	2728.00	13.00	20.71	20.78	0.000434	2.80	2834.20	578.06	0.19
Reach-1	24	PF 2	CDEM	3675.00	13.00	21.79	21.88	0.000465	3.19	3495.73	648.04	0.20

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Reach-1	24	PF 2	prop TR	3675.00	13.00	21.79	21.88	0.000465	3.19	3495.55	648.02	0.20
Reach-1	24	PF 3	CDEM	4302.00	13.00	22.45	22.54	0.000476	3.41	3937.62	695.15	0.20
Reach-1	24	PF 3	prop TR	4302.00	13.00	22.45	22.54	0.000476	3.41	3937.27	695.12	0.20
Reach-1	24	PF 4	CDEM	5332.00	13.00	23.43	23.54	0.000483	3.69	4651.99	756.12	0.21
Reach-1	24	PF 4	prop TR	5332.00	13.00	23.42	23.53	0.000486	3.69	4643.39	755.62	0.21
Reach-1	23	PF 1	CDEM	2710.00	6.60	19.46	19.66	0.000894	4.65	2439.35	917.89	0.26
Reach-1	23	PF 1	prop TR	2710.00	6.60	19.46	19.66	0.000894	4.65	2438.99	917.77	0.26
Reach-1	23	PF 2	CDEM	3649.00	6.60	20.65	20.81	0.000738	4.57	3699.00	1126.12	0.24
Reach-1	23	PF 2	prop TR	3649.00	6.60	20.65	20.81	0.000738	4.57	3698.32	1126.07	0.24
Reach-1	23	PF 3	CDEM	4271.00	6.60	21.41	21.54	0.000625	4.40	4578.87	1178.46	0.23
Reach-1	23	PF 3	prop TR	4271.00	6.60	21.41	21.54	0.000626	4.40	4577.77	1178.39	0.23
Reach-1	23	PF 4	CDEM	5289.00	6.60	22.51	22.61	0.000524	4.28	5911.43	1260.05	0.21
Reach-1	23	PF 4	prop TR	5289.00	6.60	22.49	22.60	0.000529	4.29	5887.81	1258.53	0.21
Reach-1	22	PF 1	CDEM	2903.00	7.50	17.53	17.58	0.000497	3.32	3604.44	704.17	0.20
Reach-1	22	PF 1	prop TR	2903.00	7.50	17.53	17.57	0.000497	3.32	3603.34	704.08	0.20
Reach-1	22	PF 2	CDEM	3893.00	7.50	18.92	18.97	0.000463	3.55	4642.50	793.27	0.20
Reach-1	22	PF 2	prop TR	3893.00	7.50	18.92	18.97	0.000463	3.56	4641.38	793.15	0.20
Reach-1	22	PF 3	CDEM	4553.00	7.50	19.76	19.82	0.000475	3.81	5348.00	924.37	0.21
Reach-1	22	PF 3	prop TR	4553.00	7.50	19.76	19.81	0.000476	3.81	5346.37	923.99	0.21
Reach-1	22	PF 4	CDEM	5634.00	7.50	21.04	21.10	0.000437	3.94	6635.55	1059.00	0.20
Reach-1	22	PF 4	prop TR	5634.00	7.50	21.00	21.06	0.000446	3.97	6591.41	1058.78	0.20
Reach-1	21	PF 1	CDEM	2903.00	6.80	16.71	16.73	0.000240	2.58	5186.70	826.28	0.15
Reach-1	21	PF 1	prop TR	2903.00	6.80	16.71	16.73	0.000240	2.58	5184.76	826.19	0.15
Reach-1	21	PF 2	CDEM	3893.00	6.80	18.12	18.15	0.000245	2.86	6404.39	905.23	0.15
Reach-1	21	PF 2	prop TR	3893.00	6.80	18.12	18.14	0.000245	2.86	6402.62	905.10	0.15
Reach-1	21	PF 3	CDEM	4553.00	6.80	18.94	18.97	0.000249	3.02	7167.99	956.75	0.16

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Reach-1	21	PF 3	prop TR	4553.00	6.80	18.94	18.97	0.000249	3.02	7165.73	956.61	0.16	
Reach-1	21	PF 4	CDEM	5634.00	6.80	20.26	20.28	0.000247	3.23	8486.72	1044.15	0.16	
Reach-1	21	PF 4	prop TR	5634.00	6.80	20.20	20.23	0.000252	3.25	8426.84	1042.46	0.16	
Reach-1	20	PF 1	CDEM	3219.00	4.00	15.79	15.88	0.000354	3.37	4666.45	862.39	0.18	
Reach-1	20	PF 1	prop TR	3219.00	4.00	15.79	15.87	0.000355	3.37	4663.34	862.25	0.18	
Reach-1	20	PF 2	CDEM	4361.00	4.00	17.13	17.23	0.000396	3.85	5961.37	1093.21	0.19	
Reach-1	20	PF 2	prop TR	4361.00	4.00	17.13	17.23	0.000396	3.85	5958.19	1092.93	0.20	
Reach-1	20	PF 3	CDEM	5122.00	4.00	17.94	18.04	0.000397	4.02	6874.88	1169.12	0.20	
Reach-1	20	PF 3	prop TR	5122.00	4.00	17.93	18.04	0.000397	4.02	6870.82	1168.79	0.20	
Reach-1	20	PF 4	CDEM	6374.00	4.00	19.28	19.39	0.000375	4.17	8546.78	1312.56	0.19	
Reach-1	20	PF 4	prop TR	6374.00	4.00	19.20	19.31	0.000386	4.22	8438.98	1305.40	0.20	
Reach-1	19.4	PF 1	CDEM	3520.00	3.70	13.84	14.09	0.001183	4.98	2426.65	730.39	0.31	
Reach-1	19.4	PF 1	prop TR	3520.00	3.70	13.83	14.08	0.001190	4.99	2418.85	728.94	0.31	
Reach-1	19.4	PF 2	CDEM	4786.00	3.70	15.26	15.48	0.000955	5.00	3521.43	802.37	0.29	
Reach-1	19.4	PF 2	prop TR	4786.00	3.70	15.25	15.48	0.000959	5.01	3515.12	801.98	0.29	
Reach-1	19.4	PF 3	CDEM	5628.00	3.70	16.17	16.38	0.000845	5.01	4273.68	859.07	0.28	
Reach-1	19.4	PF 3	prop TR	5628.00	3.70	16.16	16.37	0.000848	5.02	4267.30	858.23	0.28	
Reach-1	19.4	PF 4	CDEM	7015.00	3.70	17.72	17.91	0.000694	4.99	5732.87	1014.98	0.26	
Reach-1	19.4	PF 4	prop TR	7015.00	3.70	17.56	17.76	0.000739	5.10	5573.17	1001.60	0.26	
Reach-1	19.35	PF 1	CDEM	3520.00	3.44	13.81	8.97	13.88	0.000267	2.16	1914.12	539.60	0.15
Reach-1	19.35	PF 1	prop TR	3520.00	3.44	13.81	8.97	13.87	0.000254	2.08	2057.83	563.09	0.14
Reach-1	19.35	PF 2	CDEM	4786.00	3.44	15.22	9.42	15.31	0.000257	2.40	2417.43	587.58	0.15
Reach-1	19.35	PF 2	prop TR	4786.00	3.44	15.22	9.43	15.30	0.000241	2.31	2591.50	587.59	0.14
Reach-1	19.35	PF 3	CDEM	5628.00	3.44	16.13	9.69	16.22	0.000247	2.52	2742.66	623.99	0.15
Reach-1	19.35	PF 3	prop TR	5628.00	3.44	16.13	9.70	16.21	0.000232	2.43	2947.38	624.01	0.14
Reach-1	19.35	PF 4	CDEM	7015.00	3.44	17.67	10.11	17.78	0.000222	2.66	3297.85	742.33	0.14
Reach-1	19.35	PF 4	prop TR	7015.00	3.44	17.52	10.13	17.62	0.000218	2.59	3509.41	737.84	0.14

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Reach-1	19.25			Bridge									
Reach-1	19.15	PF 1	CDEM	3520.00	4.82	13.69	9.61	13.79	0.000482	2.58	1623.66	497.93	0.19
Reach-1	19.15	PF 1	prop TR	3520.00	4.82	13.69	9.63	13.79	0.000471	2.67	1716.52	497.61	0.19
Reach-1	19.15	PF 2	CDEM	4786.00	4.82	15.10	10.15	15.21	0.000414	2.77	2120.65	562.51	0.18
Reach-1	19.15	PF 2	prop TR	4786.00	4.82	15.09	10.18	15.22	0.000419	2.90	2249.03	562.29	0.19
Reach-1	19.15	PF 3	CDEM	5628.00	4.82	16.01	10.53	16.13	0.000377	2.87	2441.32	607.24	0.18
Reach-1	19.15	PF 3	prop TR	5628.00	4.82	16.00	10.50	16.13	0.000389	3.02	2605.44	606.95	0.18
Reach-1	19.15	PF 4	CDEM	7015.00	4.82	17.46	11.08	17.59	0.000330	3.00	2953.31	755.41	0.17
Reach-1	19.15	PF 4	prop TR	7015.00	4.82	17.45	10.97	17.59	0.000345	3.16	3191.21	755.21	0.18
Reach-1	19.1	PF 1	CDEM	3520.00	5.30	13.21		13.53	0.001628	5.15	1654.43	508.16	0.35
Reach-1	19.1	PF 1	prop TR	3520.00	5.30	13.21		13.54	0.001622	5.15	1656.92	508.22	0.35
Reach-1	19.1	PF 2	CDEM	4786.00	5.30	14.68		14.99	0.001307	5.28	2432.26	573.29	0.33
Reach-1	19.1	PF 2	prop TR	4786.00	5.30	14.68		15.00	0.001305	5.27	2434.59	573.61	0.33
Reach-1	19.1	PF 3	CDEM	5628.00	5.30	15.62		15.93	0.001155	5.33	3003.54	639.83	0.31
Reach-1	19.1	PF 3	prop TR	5628.00	5.30	15.62		15.93	0.001152	5.33	3006.12	640.10	0.31
Reach-1	19.1	PF 4	CDEM	7015.00	5.30	17.08		17.40	0.001026	5.55	4067.65	915.87	0.30
Reach-1	19.1	PF 4	prop TR	7015.00	5.30	17.08		17.41	0.001025	5.55	4070.64	917.00	0.30
Reach-1	18.2	PF 1	CDEM	3464.00	5.00	12.49		12.70	0.000826	3.92	1767.75	454.37	0.26
Reach-1	18.2	PF 1	prop TR	3464.00	5.00	12.50		12.71	0.000823	3.91	1771.25	454.83	0.26
Reach-1	18.2	PF 2	CDEM	4703.00	5.00	14.07		14.30	0.000713	4.17	2568.96	563.47	0.25
Reach-1	18.2	PF 2	prop TR	4703.00	5.00	14.07		14.30	0.000711	4.16	2572.09	563.75	0.25
Reach-1	18.2	PF 3	CDEM	5527.00	5.00	15.07		15.30	0.000643	4.26	3160.65	618.92	0.24
Reach-1	18.2	PF 3	prop TR	5527.00	5.00	15.08		15.31	0.000642	4.26	3163.76	619.52	0.24
Reach-1	18.2	PF 4	CDEM	6875.00	5.00	16.59		16.84	0.000588	4.49	4265.29	906.13	0.24
Reach-1	18.2	PF 4	prop TR	6875.00	5.00	16.59		16.84	0.000588	4.49	4268.81	907.30	0.24

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Reach-1	18.1	PF 1	CDEM	3464.00	4.00	12.43	12.48	0.000188	2.04	3475.19	688.38	0.13
Reach-1	18.1	PF 1	prop TR	3464.00	4.00	12.43	12.49	0.000187	2.04	3480.71	688.82	0.13
Reach-1	18.1	PF 2	CDEM	4703.00	4.00	14.03	14.09	0.000177	2.23	4642.37	766.17	0.13
Reach-1	18.1	PF 2	prop TR	4703.00	4.00	14.03	14.10	0.000177	2.23	4646.73	766.42	0.13
Reach-1	18.1	PF 3	CDEM	5527.00	4.00	15.04	15.11	0.000168	2.33	5443.08	811.63	0.13
Reach-1	18.1	PF 3	prop TR	5527.00	4.00	15.05	15.11	0.000168	2.33	5447.26	811.84	0.13
Reach-1	18.1	PF 4	CDEM	6875.00	4.00	16.57	16.65	0.000157	2.46	6733.65	867.25	0.12
Reach-1	18.1	PF 4	prop TR	6875.00	4.00	16.58	16.65	0.000157	2.46	6737.08	867.37	0.12
Reach-1	18	PF 1	CDEM	3655.00	1.90	12.04	12.10	0.000420	3.36	5162.42	862.56	0.19
Reach-1	18	PF 1	prop TR	3655.00	1.90	12.05	12.11	0.000418	3.35	5170.74	862.83	0.19
Reach-1	18	PF 2	CDEM	4971.00	1.90	13.67	13.74	0.000391	3.60	6605.91	911.02	0.19
Reach-1	18	PF 2	prop TR	4971.00	1.90	13.67	13.74	0.000390	3.60	6611.88	911.24	0.19
Reach-1	18	PF 3	CDEM	5846.00	1.90	14.70	14.77	0.000371	3.73	7566.32	945.64	0.19
Reach-1	18	PF 3	prop TR	5846.00	1.90	14.71	14.78	0.000370	3.72	7571.82	945.83	0.19
Reach-1	18	PF 4	CDEM	7280.00	1.90	16.26	16.34	0.000348	3.91	9081.10	999.79	0.19
Reach-1	18	PF 4	prop TR	7280.00	1.90	16.26	16.34	0.000348	3.91	9085.46	999.94	0.19
Reach-1	17	PF 1	CDEM	3613.00	0.30	11.22	11.27	0.000381	3.00	4790.01	721.82	0.18
Reach-1	17	PF 1	prop TR	3613.00	0.30	11.23	11.29	0.000378	2.99	4800.18	722.06	0.18
Reach-1	17	PF 2	CDEM	4924.00	0.30	12.89	12.96	0.000360	3.28	6025.09	750.66	0.18
Reach-1	17	PF 2	prop TR	4924.00	0.30	12.90	12.97	0.000359	3.28	6031.67	750.81	0.18
Reach-1	17	PF 3	CDEM	5800.00	0.30	13.94	14.02	0.000362	3.51	6852.24	833.45	0.18
Reach-1	17	PF 3	prop TR	5800.00	0.30	13.95	14.02	0.000361	3.51	6858.44	834.03	0.18
Reach-1	17	PF 4	CDEM	7230.00	0.30	15.49	15.59	0.000375	3.90	8211.40	963.18	0.19
Reach-1	17	PF 4	prop TR	7230.00	0.30	15.50	15.59	0.000375	3.90	8216.36	964.04	0.19
Reach-1	16	PF 1	CDEM	3959.00	-0.70	9.87	9.94	0.000452	3.62	5153.83	724.54	0.20
Reach-1	16	PF 1	prop TR	3959.00	-0.70	9.90	9.96	0.000448	3.61	5172.15	725.13	0.20

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Reach-1	16	PF 2	CDEM	5404.00	-0.70	11.59	11.67	0.000448	4.00	6434.48	766.26	0.20
Reach-1	16	PF 2	prop TR	5404.00	-0.70	11.60	11.68	0.000446	4.00	6445.22	766.61	0.20
Reach-1	16	PF 3	CDEM	6368.00	-0.70	12.64	12.72	0.000444	4.22	7254.60	793.08	0.21
Reach-1	16	PF 3	prop TR	6368.00	-0.70	12.65	12.73	0.000442	4.21	7263.50	793.39	0.21
Reach-1	16	PF 4	CDEM	7947.00	-0.70	14.18	14.27	0.000444	4.55	8505.18	834.78	0.21
Reach-1	16	PF 4	prop TR	7947.00	-0.70	14.19	14.28	0.000443	4.54	8511.12	834.98	0.21
Reach-1	15	PF 1	CDEM	4859.00	-4.00	8.85	8.91	0.000454	3.61	6546.06	935.89	0.20
Reach-1	15	PF 1	prop TR	4859.00	-4.00	8.89	8.95	0.000446	3.59	6583.13	936.29	0.19
Reach-1	15	PF 2	CDEM	6631.00	-4.00	10.61	10.68	0.000428	3.89	8209.12	953.74	0.20
Reach-1	15	PF 2	prop TR	6631.00	-4.00	10.63	10.70	0.000425	3.88	8228.17	953.94	0.19
Reach-1	15	PF 3	CDEM	7809.00	-4.00	11.69	11.75	0.000416	4.05	9240.64	968.66	0.20
Reach-1	15	PF 3	prop TR	7809.00	-4.00	11.70	11.77	0.000414	4.05	9255.45	968.88	0.19
Reach-1	15	PF 4	CDEM	9741.00	-4.00	13.23	13.30	0.000411	4.33	10753.75	990.65	0.20
Reach-1	15	PF 4	prop TR	9741.00	-4.00	13.24	13.31	0.000410	4.33	10762.99	990.78	0.20
Reach-1	14.4	PF 1	CDEM	4690.00	-8.40	7.95	8.05	0.000217	2.66	3047.88	595.25	0.14
Reach-1	14.4	PF 1	prop TR	4690.00	-8.40	8.01	8.11	0.000213	2.65	3081.13	598.39	0.14
Reach-1	14.4	PF 2	CDEM	6420.00	-8.40	9.68	9.81	0.000231	3.03	4156.46	679.93	0.15
Reach-1	14.4	PF 2	prop TR	6420.00	-8.40	9.70	9.83	0.000229	3.02	4174.92	680.95	0.15
Reach-1	14.4	PF 3	CDEM	7571.00	-8.40	10.71	10.86	0.000247	3.30	4955.45	939.93	0.16
Reach-1	14.4	PF 3	prop TR	7571.00	-8.40	10.73	10.88	0.000245	3.30	4974.21	946.89	0.16
Reach-1	14.4	PF 4	CDEM	9462.00	-8.40	12.24	12.41	0.000249	3.56	6584.92	1133.58	0.16
Reach-1	14.4	PF 4	prop TR	9462.00	-8.40	12.25	12.42	0.000248	3.55	6598.87	1135.34	0.16
Reach-1	14.1	PF 1	CDEM	4690.00	-5.10	7.97	8.02	0.000202	1.74	2777.14	528.75	0.13
Reach-1	14.1	PF 1	prop TR	4690.00	-5.10	8.03	8.08	0.000196	1.72	2806.66	531.37	0.12
Reach-1	14.1	PF 2	CDEM	6420.00	-5.10	9.72	9.77	0.000161	1.84	3773.65	606.53	0.12
Reach-1	14.1	PF 2	prop TR	6420.00	-5.10	9.75	9.80	0.000159	1.83	3790.03	607.44	0.12

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Reach-1	14.1	PF 3	CDEM	7571.00	-5.10	10.76		10.82	0.000146	1.91	4517.47	882.92	0.11
Reach-1	14.1	PF 3	prop TR	7571.00	-5.10	10.78		10.84	0.000145	1.90	4535.04	889.86	0.11
Reach-1	14.1	PF 4	CDEM	9462.00	-5.10	12.31		12.37	0.000129	2.00	6050.34	1066.06	0.11
Reach-1	14.1	PF 4	prop TR	9462.00	-5.10	12.32		12.38	0.000129	1.99	6063.31	1067.81	0.11
Reach-1	13.4	PF 1	CDEM	4521.00	-9.10	7.60		7.66	0.000097	1.98	4402.91	656.09	0.10
Reach-1	13.4	PF 1	prop TR	4521.00	-9.10	7.67		7.72	0.000095	1.97	4445.09	659.15	0.10
Reach-1	13.4	PF 2	CDEM	6206.00	-9.10	9.34		9.41	0.000112	2.32	5603.18	723.67	0.11
Reach-1	13.4	PF 2	prop TR	6206.00	-9.10	9.37		9.44	0.000111	2.31	5625.27	724.81	0.11
Reach-1	13.4	PF 3	CDEM	7332.00	-9.10	10.38		10.46	0.000120	2.51	6375.80	762.27	0.11
Reach-1	13.4	PF 3	prop TR	7332.00	-9.10	10.40		10.48	0.000119	2.51	6392.72	763.09	0.11
Reach-1	13.4	PF 4	CDEM	9185.00	-9.10	11.91		12.02	0.000131	2.80	7589.64	819.25	0.12
Reach-1	13.4	PF 4	prop TR	9185.00	-9.10	11.93		12.03	0.000130	2.79	7600.68	819.75	0.12
Reach-1	13.3	PF 1	CDEM	4521.00	-9.10	7.60	-3.57	7.63	0.000044	1.25	3607.44	332.22	0.06
Reach-1	13.3	PF 1	prop TR	4521.00	-9.10	7.67	-3.57	7.69	0.000043	1.25	3627.40	332.44	0.06
Reach-1	13.3	PF 2	CDEM	6206.00	-9.10	9.34	-2.83	9.38	0.000052	1.50	4147.96	337.97	0.07
Reach-1	13.3	PF 2	prop TR	6206.00	-9.10	9.37	-2.83	9.41	0.000051	1.49	4157.45	338.07	0.07
Reach-1	13.3	PF 3	CDEM	7332.00	-9.10	10.38	-2.19	10.42	0.000056	1.64	4471.61	341.42	0.08
Reach-1	13.3	PF 3	prop TR	7332.00	-9.10	10.40	-2.19	10.45	0.000056	1.64	4478.51	341.49	0.08
Reach-1	13.3	PF 4	CDEM	9185.00	-9.10	11.92	-1.58	11.97	0.000063	1.86	4949.29	346.50	0.08
Reach-1	13.3	PF 4	prop TR	9185.00	-9.10	11.93	-1.58	11.99	0.000062	1.85	4953.48	346.54	0.08
Reach-1	13.25	Bridge											
Reach-1	13.2	PF 1	CDEM	4521.00	-8.60	7.59	-3.06	7.62	0.000072	1.45	3108.11	329.18	0.08
Reach-1	13.2	PF 1	prop TR	4521.00	-8.60	7.65	-3.06	7.68	0.000070	1.45	3128.17	329.42	0.08
Reach-1	13.2	PF 2	CDEM	6206.00	-8.60	9.32	-2.03	9.37	0.000079	1.70	3647.48	335.57	0.09
Reach-1	13.2	PF 2	prop TR	6206.00	-8.60	9.35	-2.03	9.40	0.000078	1.70	3657.01	335.68	0.09
Reach-1	13.2	PF 3	CDEM	7332.00	-8.60	10.36	-1.45	10.41	0.000083	1.85	3970.43	339.39	0.09

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Reach-1	13.2	PF 3	prop TR	7332.00	-8.60	10.38	-1.45	10.43	0.000083	1.84	3977.37	339.47	0.09
Reach-1	13.2	PF 4	CDEM	9185.00	-8.60	11.89	-0.64	11.96	0.000090	2.07	4447.04	345.03	0.10
Reach-1	13.2	PF 4	prop TR	9185.00	-8.60	11.90	-0.64	11.97	0.000089	2.06	4451.25	345.08	0.10
Reach-1	13.1	PF 1	CDEM	4521.00	-8.60	7.58		7.59	0.000086	1.10	4244.57	830.81	0.08
Reach-1	13.1	PF 1	prop TR	4521.00	-8.60	7.64		7.66	0.000083	1.09	4298.68	834.01	0.08
Reach-1	13.1	PF 2	CDEM	6206.00	-8.60	9.32		9.34	0.000067	1.16	5764.75	913.13	0.07
Reach-1	13.1	PF 2	prop TR	6206.00	-8.60	9.35		9.37	0.000066	1.15	5792.90	914.39	0.07
Reach-1	13.1	PF 3	CDEM	7332.00	-8.60	10.36		10.38	0.000060	1.20	6738.74	955.81	0.07
Reach-1	13.1	PF 3	prop TR	7332.00	-8.60	10.38		10.40	0.000059	1.20	6760.15	956.73	0.07
Reach-1	13.1	PF 4	CDEM	9185.00	-8.60	11.90		11.92	0.000054	1.27	8254.96	1015.30	0.07
Reach-1	13.1	PF 4	prop TR	9185.00	-8.60	11.91		11.93	0.000053	1.26	8268.74	1015.82	0.07
Reach-1	12.1	PF 1	CDEM	6997.00	-10.90	7.41		7.49	0.000133	2.38	7715.94	1519.79	0.11
Reach-1	12.1	PF 1	prop TR	6997.00	-10.90	7.48		7.55	0.000130	2.36	7821.14	1522.28	0.11
Reach-1	12.1	PF 2	CDEM	9688.00	-10.90	9.14		9.23	0.000147	2.72	10402.52	1582.15	0.12
Reach-1	12.1	PF 2	prop TR	9688.00	-10.90	9.18		9.26	0.000145	2.71	10454.03	1583.32	0.12
Reach-1	12.1	PF 3	CDEM	11504.00	-10.90	10.18		10.28	0.000154	2.90	12062.04	1619.43	0.13
Reach-1	12.1	PF 3	prop TR	11504.00	-10.90	10.20		10.30	0.000153	2.90	12100.21	1620.28	0.13
Reach-1	12.1	PF 4	CDEM	14490.00	-10.90	11.71		11.82	0.000163	3.18	14579.65	1674.16	0.13
Reach-1	12.1	PF 4	prop TR	14490.00	-10.90	11.72		11.83	0.000162	3.17	14603.48	1674.67	0.13
Reach-1	12	PF 1	CDEM	8490.00	-11.90	7.29		7.40	0.000180	2.88	6247.46	1022.52	0.13
Reach-1	12	PF 1	prop TR	8490.00	-11.90	7.36		7.47	0.000176	2.86	6320.35	1030.62	0.13
Reach-1	12	PF 2	CDEM	11760.00	-11.90	8.98		9.14	0.000221	3.44	8136.95	1215.12	0.15
Reach-1	12	PF 2	prop TR	11760.00	-11.90	9.01		9.17	0.000219	3.43	8177.96	1218.96	0.15
Reach-1	12	PF 3	CDEM	13955.00	-11.90	9.99		10.17	0.000242	3.75	9424.99	1330.52	0.16
Reach-1	12	PF 3	prop TR	13955.00	-11.90	10.01		10.20	0.000240	3.74	9457.72	1332.10	0.16
Reach-1	12	PF 4	CDEM	17579.00	-11.90	11.49		11.71	0.000265	4.16	11452.92	1371.13	0.17

Reach-1	12	PF 4	prop TR	17579.00	LPGA Tomoka River EC-RAS Report _ PM -11.90 11.51 11.72	0.000264	4.15	11473.37	1371.52	0.17
Reach-1	11.4	PF 1	CDEM	8376.00	-13.20 7.04 7.13	0.000137	2.42	6245.21	1108.40	0.12
Reach-1	11.4	PF 1	prop TR	8376.00	-13.20 7.12 7.20	0.000134	2.40	6330.06	1112.86	0.12
Reach-1	11.4	PF 2	CDEM	11610.00	-13.20 8.68 8.80	0.000165	2.87	8117.65	1169.28	0.13
Reach-1	11.4	PF 2	prop TR	11610.00	-13.20 8.72 8.83	0.000164	2.86	8160.39	1170.49	0.13
Reach-1	11.4	PF 3	CDEM	13785.00	-13.20 9.67 9.80	0.000180	3.13	9287.70	1202.04	0.14
Reach-1	11.4	PF 3	prop TR	13785.00	-13.20 9.70 9.83	0.000179	3.12	9319.80	1202.92	0.14
Reach-1	11.4	PF 4	CDEM	17387.00	-13.20 11.14 11.30	0.000202	3.51	11084.00	1250.66	0.15
Reach-1	11.4	PF 4	prop TR	17387.00	-13.20 11.15 11.31	0.000201	3.50	11104.29	1251.20	0.15
Reach-1	11.3	PF 1	CDEM	8376.00	-11.40 7.02 -4.34 7.07	0.000116	1.81	4617.82	492.28	0.10
Reach-1	11.3	PF 1	prop TR	8376.00	-11.40 7.09 -4.34 7.14	0.000113	1.80	4654.65	492.59	0.10
Reach-1	11.3	PF 2	CDEM	11610.00	-11.40 8.65 -3.06 8.72	0.000133	2.15	5398.77	498.89	0.11
Reach-1	11.3	PF 2	prop TR	11610.00	-11.40 8.69 -3.06 8.76	0.000131	2.14	5416.37	499.04	0.11
Reach-1	11.3	PF 3	CDEM	13785.00	-11.40 9.64 -2.34 9.72	0.000142	2.35	5868.66	502.87	0.12
Reach-1	11.3	PF 3	prop TR	13785.00	-11.40 9.66 -2.34 9.75	0.000140	2.34	5881.52	502.98	0.12
Reach-1	11.3	PF 4	CDEM	17387.00	-11.40 11.10 -1.32 11.21	0.000155	2.65	6565.99	508.77	0.13
Reach-1	11.3	PF 4	prop TR	17387.00	-11.40 11.12 -1.32 11.22	0.000154	2.64	6573.79	508.84	0.13
Reach-1	11.25		Bridge							
Reach-1	11.2	PF 1	CDEM	8376.00	-10.80 7.01 -4.07 7.06	0.000094	1.69	4950.43	497.98	0.09
Reach-1	11.2	PF 1	prop TR	8376.00	-10.80 7.09 -4.07 7.13	0.000091	1.68	4987.74	498.28	0.09
Reach-1	11.2	PF 2	CDEM	11610.00	-10.80 8.65 -2.91 8.71	0.000110	2.02	5740.80	504.25	0.10
Reach-1	11.2	PF 2	prop TR	11610.00	-10.80 8.69 -2.91 8.75	0.000109	2.02	5758.63	504.39	0.10
Reach-1	11.2	PF 3	CDEM	13785.00	-10.80 9.63 -2.24 9.71	0.000119	2.22	6216.34	508.02	0.11
Reach-1	11.2	PF 3	prop TR	13785.00	-10.80 9.66 -2.24 9.74	0.000118	2.21	6229.37	508.12	0.11
Reach-1	11.2	PF 4	CDEM	17387.00	-10.80 11.10 -1.27 11.19	0.000132	2.51	6921.99	513.61	0.12
Reach-1	11.2	PF 4	prop TR	17387.00	-10.80 11.11 -1.27 11.21	0.000131	2.51	6929.90	513.68	0.12

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Reach-1	11.1	PF 1	CDEM	8376.00	-12.50	6.94	7.01	0.000126	2.23	5712.68	1025.08	0.11
Reach-1	11.1	PF 1	prop TR	8376.00	-12.50	7.02	7.09	0.000123	2.21	5793.83	1032.00	0.11
Reach-1	11.1	PF 2	CDEM	11610.00	-12.50	8.55	8.66	0.000152	2.66	7482.40	1150.71	0.13
Reach-1	11.1	PF 2	prop TR	11610.00	-12.50	8.59	8.69	0.000151	2.65	7526.00	1151.61	0.12
Reach-1	11.1	PF 3	CDEM	13785.00	-12.50	9.53	9.65	0.000166	2.90	8615.52	1173.91	0.13
Reach-1	11.1	PF 3	prop TR	13785.00	-12.50	9.56	9.67	0.000165	2.90	8648.05	1174.57	0.13
Reach-1	11.1	PF 4	CDEM	17387.00	-12.50	10.98	11.12	0.000185	3.26	10340.12	1208.36	0.14
Reach-1	11.1	PF 4	prop TR	17387.00	-12.50	10.99	11.14	0.000184	3.25	10360.49	1208.77	0.14
Reach-1	10	PF 1	CDEM	8175.00	-9.30	6.45	6.51	0.000102	2.01	6515.43	1080.12	0.10
Reach-1	10	PF 1	prop TR	8175.00	-9.30	6.54	6.60	0.000100	1.99	6614.39	1084.75	0.10
Reach-1	10	PF 2	CDEM	11317.00	-9.30	7.96	8.04	0.000127	2.42	8214.52	1179.19	0.11
Reach-1	10	PF 2	prop TR	11317.00	-9.30	8.00	8.09	0.000126	2.41	8267.28	1181.78	0.11
Reach-1	10	PF 3	CDEM	13440.00	-9.30	8.87	8.97	0.000141	2.65	9318.35	1221.64	0.12
Reach-1	10	PF 3	prop TR	13440.00	-9.30	8.91	9.01	0.000139	2.64	9358.56	1222.61	0.12
Reach-1	10	PF 4	CDEM	16964.00	-9.30	10.24	10.36	0.000160	2.99	11014.56	1259.57	0.13
Reach-1	10	PF 4	prop TR	16964.00	-9.30	10.26	10.38	0.000159	2.99	11039.95	1259.98	0.13
Reach-1	9	PF 1	CDEM	7885.00	-8.50	6.21	6.24	0.000069	1.25	6866.71	921.88	0.08
Reach-1	9	PF 1	prop TR	7885.00	-8.50	6.31	6.34	0.000066	1.24	6958.94	923.23	0.08
Reach-1	9	PF 2	CDEM	10844.00	-8.50	7.69	7.72	0.000075	1.46	8247.93	968.47	0.08
Reach-1	9	PF 2	prop TR	10844.00	-8.50	7.74	7.77	0.000073	1.45	8295.28	968.86	0.08
Reach-1	9	PF 3	CDEM	12859.00	-8.50	8.59	8.63	0.000078	1.58	9125.99	975.64	0.09
Reach-1	9	PF 3	prop TR	12859.00	-8.50	8.63	8.67	0.000077	1.57	9161.05	975.92	0.08
Reach-1	9	PF 4	CDEM	16198.00	-8.50	9.94	9.99	0.000082	1.76	10447.59	986.32	0.09
Reach-1	9	PF 4	prop TR	16198.00	-8.50	9.96	10.01	0.000082	1.75	10469.25	986.50	0.09
Reach-1	8	PF 1	CDEM	7988.00	-13.30	5.84	5.90	0.000085	1.96	6290.52	972.80	0.09

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Reach-1	8	PF 1	prop TR	7988.00	-13.30	5.95	6.01	0.000082	1.94	6400.29	978.71	0.09
Reach-1	8	PF 2	CDEM	11022.00	-13.30	7.23	7.32	0.000113	2.40	7695.60	1048.86	0.11
Reach-1	8	PF 2	prop TR	11022.00	-13.30	7.29	7.37	0.000111	2.39	7754.04	1052.50	0.11
Reach-1	8	PF 3	CDEM	13098.00	-13.30	8.09	8.19	0.000129	2.67	8615.12	1105.81	0.12
Reach-1	8	PF 3	prop TR	13098.00	-13.30	8.13	8.23	0.000128	2.66	8660.57	1108.99	0.12
Reach-1	8	PF 4	CDEM	16542.00	-13.30	9.36	9.49	0.000154	3.07	10083.55	1186.53	0.13
Reach-1	8	PF 4	prop TR	16542.00	-13.30	9.39	9.52	0.000153	3.06	10113.53	1187.22	0.13
Reach-1	7	PF 1	CDEM	7489.00	-12.70	5.41	5.47	0.000090	2.02	8236.67	1552.06	0.10
Reach-1	7	PF 1	prop TR	7489.00	-12.70	5.54	5.59	0.000086	2.00	8434.51	1554.81	0.09
Reach-1	7	PF 2	CDEM	10380.00	-12.70	6.67	6.75	0.000119	2.46	10200.33	1579.13	0.11
Reach-1	7	PF 2	prop TR	10380.00	-12.70	6.73	6.81	0.000117	2.45	10302.66	1580.53	0.11
Reach-1	7	PF 3	CDEM	12366.00	-12.70	7.44	7.53	0.000136	2.73	11425.90	1595.80	0.12
Reach-1	7	PF 3	prop TR	12366.00	-12.70	7.49	7.58	0.000135	2.71	11503.30	1596.85	0.12
Reach-1	7	PF 4	CDEM	15670.00	-12.70	8.59	8.71	0.000162	3.11	13280.22	1620.69	0.13
Reach-1	7	PF 4	prop TR	15670.00	-12.70	8.62	8.74	0.000161	3.11	13329.52	1621.35	0.13
Reach-1	6.4	PF 1	CDEM	7489.00	-10.30	5.22	5.27	0.000087	1.85	8773.33	1932.53	0.09
Reach-1	6.4	PF 1	prop TR	7489.00	-10.30	5.36	5.40	0.000083	1.82	9035.87	1944.74	0.09
Reach-1	6.4	PF 2	CDEM	10380.00	-10.30	6.42	6.49	0.000113	2.24	11152.11	2040.49	0.11
Reach-1	6.4	PF 2	prop TR	10380.00	-10.30	6.49	6.56	0.000111	2.22	11294.81	2046.79	0.11
Reach-1	6.4	PF 3	CDEM	12366.00	-10.30	7.16	7.24	0.000128	2.47	12685.25	2107.15	0.11
Reach-1	6.4	PF 3	prop TR	12366.00	-10.30	7.21	7.29	0.000126	2.45	12796.23	2111.89	0.11
Reach-1	6.4	PF 4	CDEM	15670.00	-10.30	8.27	8.36	0.000149	2.80	15070.14	2206.84	0.13
Reach-1	6.4	PF 4	prop TR	15670.00	-10.30	8.30	8.40	0.000148	2.79	15143.62	2209.84	0.13
Reach-1	6.3	PF 1	CDEM	7489.00	-13.40	5.17	-6.18	0.000133	2.34	3204.01	268.29	0.11
Reach-1	6.3	PF 1	prop TR	7489.00	-13.40	5.30	-6.18	0.000129	2.31	3237.82	269.05	0.11
Reach-1	6.3	PF 2	CDEM	10380.00	-13.40	6.32	-5.14	0.000192	2.97	3490.80	274.76	0.14
Reach-1	6.3	PF 2	prop TR	10380.00	-13.40	6.39	-5.14	0.000189	2.96	3508.30	275.15	0.14

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Reach-1	6.3	PF 3	CDEM	12366.00	-13.40	7.02	-4.51	7.20	0.000232	3.37	3665.71	278.70	0.16
Reach-1	6.3	PF 3	prop TR	12366.00	-13.40	7.08	-4.51	7.25	0.000229	3.36	3678.94	279.00	0.15
Reach-1	6.3	PF 4	CDEM	15670.00	-13.40	8.06	-3.54	8.31	0.000297	3.99	3923.72	284.51	0.18
Reach-1	6.3	PF 4	prop TR	15670.00	-13.40	8.09	-3.54	8.34	0.000295	3.99	3932.14	284.70	0.18
Reach-1	6.25		Bridge										
Reach-1	6.2	PF 1	CDEM	7489.00	-13.30	5.16	-7.07	5.23	0.000106	2.17	3444.22	266.56	0.10
Reach-1	6.2	PF 1	prop TR	7489.00	-13.30	5.30	-7.07	5.37	0.000103	2.15	3478.34	267.22	0.10
Reach-1	6.2	PF 2	CDEM	10380.00	-13.30	6.31	-6.10	6.43	0.000156	2.78	3732.13	272.15	0.13
Reach-1	6.2	PF 2	prop TR	10380.00	-13.30	6.38	-6.10	6.50	0.000154	2.77	3749.81	272.49	0.13
Reach-1	6.2	PF 3	CDEM	12366.00	-13.30	7.01	-5.49	7.16	0.000190	3.16	3907.50	275.55	0.14
Reach-1	6.2	PF 3	prop TR	12366.00	-13.30	7.06	-5.49	7.21	0.000188	3.15	3920.88	275.81	0.14
Reach-1	6.2	PF 4	CDEM	15670.00	-13.30	8.04	-4.57	8.26	0.000247	3.76	4165.76	280.56	0.16
Reach-1	6.2	PF 4	prop TR	15670.00	-13.30	8.07	-4.57	8.29	0.000245	3.75	4174.28	280.73	0.16
Reach-1	6.1	PF 1	CDEM	7489.00	-13.60	5.16		5.22	0.000089	1.91	7172.31	1356.78	0.09
Reach-1	6.1	PF 1	prop TR	7489.00	-13.60	5.30		5.35	0.000086	1.88	7357.80	1364.75	0.09
Reach-1	6.1	PF 2	CDEM	10380.00	-13.60	6.32		6.40	0.000122	2.36	8777.97	1424.28	0.11
Reach-1	6.1	PF 2	prop TR	10380.00	-13.60	6.39		6.47	0.000119	2.35	8878.72	1428.41	0.11
Reach-1	6.1	PF 3	CDEM	12366.00	-13.60	7.02		7.12	0.000142	2.63	9797.72	1465.54	0.12
Reach-1	6.1	PF 3	prop TR	12366.00	-13.60	7.08		7.17	0.000140	2.62	9876.10	1468.66	0.12
Reach-1	6.1	PF 4	CDEM	15670.00	-13.60	8.07		8.19	0.000173	3.04	11358.68	1526.53	0.14
Reach-1	6.1	PF 4	prop TR	15670.00	-13.60	8.10		8.23	0.000171	3.04	11410.67	1528.52	0.13
Reach-1	5.4	PF 1	CDEM	7489.00	-11.30	5.12		5.18	0.000110	2.03	5706.68	984.66	0.10
Reach-1	5.4	PF 1	prop TR	7489.00	-11.30	5.26		5.32	0.000106	2.00	5843.13	992.44	0.10
Reach-1	5.4	PF 2	CDEM	10380.00	-11.30	6.25		6.35	0.000151	2.52	6859.65	1047.06	0.12
Reach-1	5.4	PF 2	prop TR	10380.00	-11.30	6.32		6.42	0.000148	2.51	6934.99	1050.96	0.12

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Reach-1	5.4	PF 3	CDEM	12366.00	-11.30	6.95		7.06	0.000176	2.82	7597.52	1084.64	0.13
Reach-1	5.4	PF 3	prop TR	12366.00	-11.30	7.00		7.11	0.000174	2.81	7656.66	1087.59	0.13
Reach-1	5.4	PF 4	CDEM	15670.00	-11.30	7.97		8.12	0.000216	3.28	8733.36	1140.06	0.15
Reach-1	5.4	PF 4	prop TR	15670.00	-11.30	8.00		8.15	0.000214	3.27	8773.08	1141.95	0.15
Reach-1	5.3	PF 1	CDEM	7489.00	-11.70	5.06	-5.73	5.16	0.000157	2.49	3012.89	255.02	0.12
Reach-1	5.3	PF 1	prop TR	7489.00	-11.70	5.20	-5.73	5.29	0.000152	2.46	3046.36	255.79	0.12
Reach-1	5.3	PF 2	CDEM	10380.00	-11.70	6.15	-4.68	6.31	0.000228	3.17	3276.26	261.09	0.15
Reach-1	5.3	PF 2	prop TR	10380.00	-11.70	6.23	-4.68	6.38	0.000224	3.15	3293.75	261.49	0.15
Reach-1	5.3	PF 3	CDEM	12366.00	-11.70	6.81	-4.04	7.01	0.000277	3.60	3435.04	264.75	0.17
Reach-1	5.3	PF 3	prop TR	12366.00	-11.70	6.87	-4.04	7.07	0.000273	3.59	3448.34	265.06	0.17
Reach-1	5.3	PF 4	CDEM	15670.00	-11.70	7.77	-3.07	8.05	0.000358	4.27	3665.80	281.86	0.19
Reach-1	5.3	PF 4	prop TR	15670.00	-11.70	7.81	-3.07	8.09	0.000355	4.26	3674.36	288.04	0.19
Reach-1	5.25	Bridge											
Reach-1	5.2	PF 1	CDEM	7489.00	-12.10	5.05	-5.95	5.13	0.000141	2.23	3351.63	323.84	0.12
Reach-1	5.2	PF 1	prop TR	7489.00	-12.10	5.19	-5.95	5.27	0.000135	2.21	3392.26	324.71	0.11
Reach-1	5.2	PF 2	CDEM	10380.00	-12.10	6.14	-4.89	6.27	0.000200	2.83	3669.38	330.64	0.14
Reach-1	5.2	PF 2	prop TR	10380.00	-12.10	6.21	-4.89	6.34	0.000196	2.81	3690.62	331.09	0.14
Reach-1	5.2	PF 3	CDEM	12366.00	-12.10	6.80	-4.24	6.96	0.000240	3.20	3860.67	334.73	0.16
Reach-1	5.2	PF 3	prop TR	12366.00	-12.10	6.85	-4.24	7.01	0.000236	3.19	3876.84	335.08	0.15
Reach-1	5.2	PF 4	CDEM	15670.00	-12.10	7.75	-3.27	7.97	0.000305	3.79	4138.17	340.67	0.18
Reach-1	5.2	PF 4	prop TR	15670.00	-12.10	7.78	-3.27	8.00	0.000303	3.78	4148.58	340.89	0.18
Reach-1	5.1	PF 1	CDEM	7489.00	-11.20	5.05		5.09	0.000091	1.81	14779.64	7114.24	0.09
Reach-1	5.1	PF 1	prop TR	7489.00	-11.20	5.19		5.23	0.000084	1.76	15784.57	7135.87	0.09
Reach-1	5.1	PF 2	CDEM	10380.00	-11.20	6.16		6.20	0.000098	2.00	22741.19	7282.00	0.10
Reach-1	5.1	PF 2	prop TR	10380.00	-11.20	6.23		6.27	0.000094	1.97	23277.84	7292.40	0.10
Reach-1	5.1	PF 3	CDEM	12366.00	-11.20	6.83		6.87	0.000100	2.09	27653.05	7376.66	0.10

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Reach-1	5.1	PF 3	prop TR	12366.00	-11.20	6.88	6.93	0.000097	2.07	28065.85	7384.56	0.10
Reach-1	5.1	PF 4	CDEM	15670.00	-11.20	7.80	7.85	0.000103	2.22	34938.42	7514.86	0.10
Reach-1	5.1	PF 4	prop TR	15670.00	-11.20	7.84	7.89	0.000101	2.20	35208.13	7519.93	0.10
Reach-1	4	PF 1	CDEM	7151.00	-9.30	4.74	4.80	0.000144	2.20	13392.77	6330.43	0.12
Reach-1	4	PF 1	prop TR	7151.00	-9.30	4.90	4.96	0.000132	2.12	14467.17	6615.90	0.11
Reach-1	4	PF 2	CDEM	9870.00	-9.30	5.84	5.89	0.000146	2.35	20826.43	6911.36	0.12
Reach-1	4	PF 2	prop TR	9870.00	-9.30	5.92	5.98	0.000138	2.30	21433.30	6925.21	0.12
Reach-1	4	PF 3	CDEM	11770.00	-9.30	6.51	6.56	0.000143	2.42	25505.64	7017.42	0.12
Reach-1	4	PF 3	prop TR	11770.00	-9.30	6.57	6.63	0.000138	2.38	25968.13	7027.81	0.12
Reach-1	4	PF 4	CDEM	14956.00	-9.30	7.49	7.54	0.000141	2.52	32446.38	7171.83	0.12
Reach-1	4	PF 4	prop TR	14956.00	-9.30	7.53	7.58	0.000139	2.50	32744.90	7178.40	0.12
Reach-1	3	PF 1	CDEM	5214.00	-8.60	4.00	4.04	0.000111	1.68	8227.85	4091.70	0.10
Reach-1	3	PF 1	prop TR	5214.00	-8.60	4.25	4.28	0.000098	1.61	9252.54	4408.49	0.09
Reach-1	3	PF 2	CDEM	7242.00	-8.60	5.06	5.10	0.000124	1.91	13259.21	5418.24	0.11
Reach-1	3	PF 2	prop TR	7242.00	-8.60	5.19	5.23	0.000115	1.85	13991.94	5461.70	0.10
Reach-1	3	PF 3	CDEM	8773.00	-8.60	5.73	5.78	0.000125	2.01	16974.13	5635.09	0.11
Reach-1	3	PF 3	prop TR	8773.00	-8.60	5.83	5.87	0.000119	1.97	17532.75	5666.98	0.11
Reach-1	3	PF 4	CDEM	11307.00	-8.60	6.71	6.76	0.000127	2.14	22640.35	5950.64	0.11
Reach-1	3	PF 4	prop TR	11307.00	-8.60	6.77	6.81	0.000123	2.12	22999.68	5970.09	0.11
Reach-1	2	PF 1	CDEM	5471.00	-9.70	2.88	2.96	0.000241	2.30	5521.73	3286.98	0.14
Reach-1	2	PF 1	prop TR	5471.00	-9.70	3.31	3.37	0.000188	2.11	7043.74	3810.96	0.13
Reach-1	2	PF 2	CDEM	7399.00	-9.70	3.84	3.93	0.000254	2.55	9247.90	4462.00	0.15
Reach-1	2	PF 2	prop TR	7399.00	-9.70	4.11	4.18	0.000219	2.41	10456.75	4781.56	0.14
Reach-1	2	PF 3	CDEM	8920.00	-9.70	4.50	4.59	0.000254	2.68	12464.24	5269.61	0.15
Reach-1	2	PF 3	prop TR	8920.00	-9.70	4.70	4.78	0.000228	2.57	13496.29	5503.70	0.14
Reach-1	2	PF 4	CDEM	11547.00	-9.70	5.51	5.59	0.000240	2.78	18232.90	5963.92	0.15

Reach-1	2	PF 4	prop TR	11547.00	LPGA Tomoka River EC-RAS Report _ PM -9.70	5.62	5.70	0.000225	2.71	18924.75	5984.18	0.15
Reach-1	1.4	PF 1	CDEM	5470.00	-13.70	1.76	1.88	0.000300	2.81	1998.31	839.96	0.16
Reach-1	1.4	PF 1	prop TR	5470.00	-13.70	2.43	2.53	0.000237	2.58	3434.29	3488.73	0.15
Reach-1	1.4	PF 2	CDEM	7396.00	-13.70	2.43	2.62	0.000431	3.48	3465.55	3523.06	0.20
Reach-1	1.4	PF 2	prop TR	7396.00	-13.70	2.95	3.10	0.000335	3.17	5419.36	3780.51	0.17
Reach-1	1.4	PF 3	CDEM	8914.00	-13.70	3.02	3.23	0.000470	3.77	5680.54	3781.33	0.21
Reach-1	1.4	PF 3	prop TR	8914.00	-13.70	3.44	3.61	0.000381	3.48	7249.95	3786.26	0.19
Reach-1	1.4	PF 4	CDEM	11522.00	-13.70	4.09	4.29	0.000457	3.95	9703.58	3793.94	0.21
Reach-1	1.4	PF 4	prop TR	11522.00	-13.70	4.33	4.51	0.000404	3.77	10642.36	3796.88	0.20
Reach-1	1.3	PF 1	CDEM	5470.00	-12.80	1.73	-7.00	0.000293	2.84	1926.67	200.63	0.16
Reach-1	1.3	PF 1	prop TR	5470.00	-12.80	2.40	-7.00	0.000238	2.65	2060.43	202.15	0.15
Reach-1	1.3	PF 2	CDEM	7396.00	-12.80	2.38	-6.04	0.000437	3.60	2056.88	202.11	0.20
Reach-1	1.3	PF 2	prop TR	7396.00	-12.80	2.88	-6.04	0.000376	3.43	2158.40	203.25	0.19
Reach-1	1.3	PF 3	CDEM	8914.00	-12.80	2.91	-5.37	0.000541	4.12	2164.30	203.31	0.22
Reach-1	1.3	PF 3	prop TR	8914.00	-12.80	3.30	-5.37	0.000483	3.97	2244.88	204.22	0.21
Reach-1	1.3	PF 4	CDEM	11522.00	-12.80	3.82	-4.32	0.000699	4.90	2350.29	205.39	0.26
Reach-1	1.3	PF 4	prop TR	11522.00	-12.80	4.06	-4.32	0.000655	4.80	2399.80	205.94	0.25
Reach-1	1.25			Bridge								
Reach-1	1.2	PF 1	CDEM	5470.00	-13.20	1.72	-6.87	0.000294	2.84	1923.00	199.22	0.16
Reach-1	1.2	PF 1	prop TR	5470.00	-13.20	2.39	-6.87	0.000238	2.66	2055.87	199.72	0.15
Reach-1	1.2	PF 2	CDEM	7396.00	-13.20	2.36	-5.92	0.000439	3.61	2050.28	199.70	0.20
Reach-1	1.2	PF 2	prop TR	7396.00	-13.20	2.86	-5.92	0.000377	3.44	2150.95	200.08	0.18
Reach-1	1.2	PF 3	CDEM	8914.00	-13.20	2.88	-5.25	0.000544	4.14	2154.64	200.09	0.22
Reach-1	1.2	PF 3	prop TR	8914.00	-13.20	3.28	-5.25	0.000485	3.99	2234.45	200.42	0.21
Reach-1	1.2	PF 4	CDEM	11522.00	-13.20	3.78	-4.23	0.000706	4.94	2334.05	200.88	0.26
Reach-1	1.2	PF 4	prop TR	11522.00	-13.20	4.02	-4.23	0.000661	4.84	2383.04	201.11	0.25

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Reach-1	1.1	PF 1	CDEM	5470.00	-15.80	1.68		1.81	0.000282	2.90	1884.13	183.45	0.16
Reach-1	1.1	PF 1	prop TR	5470.00	-15.80	2.36		2.47	0.000230	2.71	2612.47	2555.04	0.15
Reach-1	1.1	PF 2	CDEM	7396.00	-15.80	2.30		2.51	0.000429	3.69	2466.13	2553.13	0.20
Reach-1	1.1	PF 2	prop TR	7396.00	-15.80	2.82		3.00	0.000356	3.44	3811.72	2569.76	0.18
Reach-1	1.1	PF 3	CDEM	8914.00	-15.80	2.82		3.08	0.000516	4.14	3813.61	2569.79	0.22
Reach-1	1.1	PF 3	prop TR	8914.00	-15.80	3.24		3.46	0.000439	3.89	4884.04	2582.86	0.20
Reach-1	1.1	PF 4	CDEM	11522.00	-15.80	3.74		4.05	0.000599	4.64	6175.67	2589.16	0.24
Reach-1	1.1	PF 4	prop TR	11522.00	-15.80	4.00		4.27	0.000539	4.45	6841.53	2590.13	0.23
Reach-1	1	PF 1	CDEM	5465.00	-15.80	0.80	-8.00	0.96	0.000253	3.17	1724.57	181.77	0.18
Reach-1	1	PF 1	prop TR	5465.00	-15.80	1.71	-8.00	1.83	0.000177	2.78	4808.74	4972.93	0.15
Reach-1	1	PF 2	CDEM	7356.00	-15.80	0.80	-6.96	1.08	0.000458	4.27	1724.57	181.77	0.24
Reach-1	1	PF 2	prop TR	7356.00	-15.80	1.71	-6.96	1.92	0.000321	3.74	4808.74	4972.93	0.21
Reach-1	1	PF 3	CDEM	8839.00	-15.80	0.80	-6.22	1.21	0.000662	5.13	1724.57	181.77	0.29
Reach-1	1	PF 3	prop TR	8839.00	-15.80	1.71	-6.22	2.01	0.000463	4.49	4808.74	4972.93	0.25
Reach-1	1	PF 4	CDEM	11383.00	-15.80	0.80	-5.11	1.48	0.001097	6.60	1724.57	181.77	0.38
Reach-1	1	PF 4	prop TR	11383.00	-15.80	1.71	-5.11	2.21	0.000768	5.79	4808.74	4972.93	0.32

Profile Output Table - Standard Table 2

Reach	River Sta	Profile	Plan	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
Reach-1	29	PF 1	CDEM	24.24	24.23	0.00	0.04	0.00	31.51	441.83	3.66	1285.94
Reach-1	29	PF 1	prop TR	24.24	24.23	0.00	0.04	0.00	31.51	441.83	3.66	1285.93
Reach-1	29	PF 2	CDEM	25.06	25.06	0.00	0.04	0.00	49.67	583.74	9.59	2022.87
Reach-1	29	PF 2	prop TR	25.06	25.06	0.00	0.04	0.00	49.67	583.75	9.59	2022.86
Reach-1	29	PF 3	CDEM	25.57	25.57	0.00	0.03	0.00	78.91	659.85	14.24	2200.56
Reach-1	29	PF 3	prop TR	25.57	25.57	0.00	0.03	0.00	78.90	659.85	14.24	2200.54
Reach-1	29	PF 4	CDEM	26.25	26.25	0.00	0.03	0.00	124.86	779.16	26.98	2348.00
Reach-1	29	PF 4	prop TR	26.24	26.24	0.00	0.03	0.00	124.78	779.28	26.94	2348.00
Reach-1	28	PF 1	CDEM	24.19	24.18	0.01	0.05	0.00	6.74	1141.89	54.37	1451.30
Reach-1	28	PF 1	prop TR	24.19	24.18	0.01	0.05	0.00	6.74	1141.89	54.37	1451.29
Reach-1	28	PF 2	CDEM	25.02	25.02	0.01	0.05	0.00	30.98	1441.22	143.80	2149.98
Reach-1	28	PF 2	prop TR	25.02	25.02	0.01	0.05	0.00	30.98	1441.22	143.80	2149.96
Reach-1	28	PF 3	CDEM	25.54	25.54	0.01	0.04	0.00	68.66	1609.40	206.94	2544.40

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Reach-1	28	PF 3	prop TR	25.54	25.54	0.01	0.04	0.00	68.66	1609.41	206.93	2544.34
Reach-1	28	PF 4	CDEM	26.22	26.21	0.01	0.04	0.00	153.06	1860.11	310.82	2897.00
Reach-1	28	PF 4	prop TR	26.22	26.21	0.01	0.04	0.00	152.80	1860.57	310.64	2897.00
Reach-1	27	PF 1	CDEM	24.14	24.13	0.00	0.04	0.00	57.82	781.69	88.49	1519.58
Reach-1	27	PF 1	prop TR	24.14	24.13	0.00	0.04	0.00	57.82	781.69	88.49	1519.57
Reach-1	27	PF 2	CDEM	24.98	24.97	0.00	0.04	0.00	86.88	1044.24	136.88	2276.93
Reach-1	27	PF 2	prop TR	24.98	24.97	0.00	0.04	0.00	86.88	1044.25	136.88	2276.90
Reach-1	27	PF 3	CDEM	25.50	25.50	0.00	0.03	0.00	105.83	1185.87	202.30	2602.37
Reach-1	27	PF 3	prop TR	25.50	25.50	0.00	0.03	0.00	105.82	1185.88	202.30	2602.32
Reach-1	27	PF 4	CDEM	26.18	26.17	0.00	0.03	0.00	160.55	1397.82	307.63	2908.00
Reach-1	27	PF 4	prop TR	26.18	26.17	0.00	0.03	0.00	160.39	1398.15	307.47	2908.00
Reach-1	26.4	PF 1	CDEM	24.10	24.10	0.00	0.01	0.00	32.14	748.84	147.02	1649.24
Reach-1	26.4	PF 1	prop TR	24.10	24.10	0.00	0.01	0.00	32.14	748.84	147.02	1649.23
Reach-1	26.4	PF 2	CDEM	24.94	24.94	0.00	0.01	0.01	53.42	954.64	259.94	1896.54
Reach-1	26.4	PF 2	prop TR	24.94	24.94	0.00	0.01	0.01	53.42	954.64	259.94	1896.53
Reach-1	26.4	PF 3	CDEM	25.47	25.46	0.00	0.01	0.01	77.70	1077.30	339.00	2008.65
Reach-1	26.4	PF 3	prop TR	25.47	25.46	0.00	0.01	0.01	77.70	1077.31	339.00	2008.63
Reach-1	26.4	PF 4	CDEM	26.14	26.14	0.00	0.01	0.01	126.06	1274.84	465.10	2100.00
Reach-1	26.4	PF 4	prop TR	26.14	26.14	0.00	0.01	0.01	125.95	1275.08	464.97	2100.00
Reach-1	26.3	PF 1	CDEM	24.09	24.07	0.02				928.00		186.49
Reach-1	26.3	PF 1	prop TR	24.09	24.07	0.02				928.00		186.49
Reach-1	26.3	PF 2	CDEM	24.92	24.90	0.02				1268.00		402.30
Reach-1	26.3	PF 2	prop TR	24.92	24.90	0.02				1268.00		402.25
Reach-1	26.3	PF 3	CDEM	25.45	25.42	0.03				1494.00		1182.57
Reach-1	26.3	PF 3	prop TR	25.45	25.42	0.03				1494.00		1182.45
Reach-1	26.3	PF 4	CDEM	26.13	26.10	0.03			24.53	1757.72	83.75	2050.00
Reach-1	26.3	PF 4	prop TR	26.12	26.10	0.03			24.40	1758.21	83.39	2050.00
Reach-1	26.25		Bridge									
Reach-1	26.2	PF 1	CDEM	24.07	24.05	0.02	0.03	0.01		928.00		177.32
Reach-1	26.2	PF 1	prop TR	24.07	24.05	0.02	0.03	0.01		928.00		177.32
Reach-1	26.2	PF 2	CDEM	24.88	24.85	0.02	0.03	0.00		1268.00		180.16
Reach-1	26.2	PF 2	prop TR	24.88	24.85	0.02	0.03	0.00		1268.00		180.16
Reach-1	26.2	PF 3	CDEM	25.38	25.35	0.03	0.03	0.00		1494.00		181.92
Reach-1	26.2	PF 3	prop TR	25.38	25.35	0.03	0.03	0.00		1494.00		181.92
Reach-1	26.2	PF 4	CDEM	26.12	26.08	0.03	0.02	0.01	26.84	1828.47	10.70	2119.64
Reach-1	26.2	PF 4	prop TR	26.12	26.08	0.03	0.02	0.01	26.59	1828.82	10.59	2116.67
Reach-1	26.1	PF 1	CDEM	24.03	24.00	0.04	0.32	0.01	93.82	494.39	339.79	1560.21
Reach-1	26.1	PF 1	prop TR	24.03	24.00	0.04	0.32	0.01	93.82	494.39	339.79	1560.21
Reach-1	26.1	PF 2	CDEM	24.85	24.82	0.03	0.24	0.01	157.87	536.95	573.18	2742.07
Reach-1	26.1	PF 2	prop TR	24.85	24.82	0.03	0.24	0.01	157.87	536.96	573.18	2742.02
Reach-1	26.1	PF 3	CDEM	25.34	25.33	0.02	0.20	0.01	242.14	545.02	706.83	3717.54
Reach-1	26.1	PF 3	prop TR	25.34	25.33	0.02	0.20	0.01	242.13	545.04	706.83	3717.35
Reach-1	26.1	PF 4	CDEM	26.08	26.07	0.01	0.14	0.01	409.86	511.29	944.85	5040.96
Reach-1	26.1	PF 4	prop TR	26.08	26.07	0.01	0.14	0.01	409.70	511.92	944.38	5040.38
Reach-1	25.3	PF 1	CDEM	23.70	23.56	0.14	0.51	0.02	504.91	1902.96	146.13	2327.40
Reach-1	25.3	PF 1	prop TR	23.70	23.56	0.14	0.51	0.02	504.90	1902.97	146.12	2327.40
Reach-1	25.3	PF 2	CDEM	24.60	24.49	0.10	0.40	0.01	921.68	2146.30	400.02	2944.63
Reach-1	25.3	PF 2	prop TR	24.60	24.49	0.10	0.40	0.01	921.67	2146.32	400.01	2944.61
Reach-1	25.3	PF 3	CDEM	25.14	25.06	0.08	0.35	0.01	1289.81	2232.58	551.61	3277.99
Reach-1	25.3	PF 3	prop TR	25.14	25.06	0.08	0.35	0.01	1289.76	2232.61	551.62	3277.82
Reach-1	25.3	PF 4	CDEM	25.94	25.87	0.07	0.31	0.00	1876.93	2413.73	780.34	4608.14
Reach-1	25.3	PF 4	prop TR	25.93	25.86	0.07	0.31	0.00	1876.32	2415.08	779.60	4603.34

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Reach-1	25.2	PF 1	CDEM	23.17	23.09	0.08	0.27	0.01	564.22	1672.81	316.97	1866.16
Reach-1	25.2	PF 1	prop TR	23.17	23.09	0.08	0.27	0.01	564.21	1672.82	316.97	1866.15
Reach-1	25.2	PF 2	CDEM	24.18	24.12	0.07	0.25	0.01	1141.47	1926.87	399.66	2110.18
Reach-1	25.2	PF 2	prop TR	24.18	24.12	0.07	0.25	0.01	1141.45	1926.89	399.66	2110.15
Reach-1	25.2	PF 3	CDEM	24.79	24.72	0.06	0.23	0.01	1546.33	2095.64	432.03	2350.83
Reach-1	25.2	PF 3	prop TR	24.79	24.72	0.06	0.23	0.01	1546.29	2095.67	432.04	2350.77
Reach-1	25.2	PF 4	CDEM	25.63	25.57	0.06	0.22	0.01	2207.30	2370.45	493.25	2930.97
Reach-1	25.2	PF 4	prop TR	25.62	25.56	0.06	0.22	0.01	2206.36	2371.46	493.18	2928.00
Reach-1	25.1	PF 1	CDEM	22.89	22.85	0.04	0.50	0.00	462.36	1833.57	258.07	1528.53
Reach-1	25.1	PF 1	prop TR	22.89	22.85	0.04	0.50	0.00	462.35	1833.58	258.07	1528.52
Reach-1	25.1	PF 2	CDEM	23.93	23.89	0.04	0.48	0.00	827.02	2270.75	370.23	1931.81
Reach-1	25.1	PF 2	prop TR	23.93	23.89	0.04	0.48	0.00	827.00	2270.77	370.23	1931.80
Reach-1	25.1	PF 3	CDEM	24.55	24.50	0.04	0.46	0.00	1118.34	2514.14	441.52	2090.40
Reach-1	25.1	PF 3	prop TR	24.55	24.50	0.04	0.46	0.00	1118.31	2514.18	441.52	2090.36
Reach-1	25.1	PF 4	CDEM	25.40	25.36	0.04	0.42	0.00	1633.11	2866.73	571.17	2235.00
Reach-1	25.1	PF 4	prop TR	25.40	25.35	0.04	0.42	0.00	1631.90	2868.08	571.02	2235.00
Reach-1	25	PF 1	CDEM	22.38	22.31	0.07	1.60	0.00	623.04	966.32	1043.65	1414.60
Reach-1	25	PF 1	prop TR	22.38	22.31	0.07	1.60	0.00	623.02	966.33	1043.65	1414.59
Reach-1	25	PF 2	CDEM	23.45	23.39	0.06	1.57	0.00	1105.22	1115.47	1335.32	1766.47
Reach-1	25	PF 2	prop TR	23.45	23.39	0.06	1.57	0.00	1105.19	1115.48	1335.33	1766.42
Reach-1	25	PF 3	CDEM	24.09	24.03	0.06	1.54	0.00	1452.77	1200.22	1514.01	2040.66
Reach-1	25	PF 3	prop TR	24.09	24.03	0.06	1.54	0.00	1452.73	1200.26	1514.00	2040.60
Reach-1	25	PF 4	CDEM	24.98	24.93	0.05	1.43	0.01	1964.55	1283.83	1921.62	2316.58
Reach-1	25	PF 4	prop TR	24.98	24.92	0.05	1.44	0.01	1963.73	1284.88	1921.39	2314.97
Reach-1	24	PF 1	CDEM	20.78	20.71	0.06	1.11	0.01	983.67	1388.86	355.47	578.07
Reach-1	24	PF 1	prop TR	20.78	20.71	0.06	1.11	0.01	983.67	1388.86	355.47	578.06
Reach-1	24	PF 2	CDEM	21.88	21.79	0.08	1.06	0.01	1351.62	1832.46	490.91	648.04
Reach-1	24	PF 2	prop TR	21.88	21.79	0.08	1.06	0.01	1351.61	1832.47	490.91	648.02
Reach-1	24	PF 3	CDEM	22.54	22.45	0.09	1.00	0.00	1606.17	2116.15	579.68	695.15
Reach-1	24	PF 3	prop TR	22.54	22.45	0.09	1.00	0.00	1606.15	2116.18	579.67	695.12
Reach-1	24	PF 4	CDEM	23.54	23.43	0.11	0.93	0.00	2026.89	2551.66	753.45	756.12
Reach-1	24	PF 4	prop TR	23.53	23.42	0.11	0.93	0.00	2026.63	2552.70	752.67	755.62
Reach-1	23	PF 1	CDEM	19.66	19.46	0.20	2.04	0.05	404.51	1585.59	719.90	917.89
Reach-1	23	PF 1	prop TR	19.66	19.46	0.20	2.04	0.05	404.48	1585.67	719.85	917.77
Reach-1	23	PF 2	CDEM	20.81	20.65	0.16	1.80	0.03	764.15	1746.61	1138.25	1126.12
Reach-1	23	PF 2	prop TR	20.81	20.65	0.16	1.80	0.03	764.02	1746.80	1138.18	1126.07
Reach-1	23	PF 3	CDEM	21.54	21.41	0.13	1.70	0.02	1063.62	1799.62	1407.75	1178.46
Reach-1	23	PF 3	prop TR	21.54	21.41	0.13	1.70	0.02	1063.43	1799.88	1407.68	1178.39
Reach-1	23	PF 4	CDEM	22.61	22.51	0.11	1.50	0.01	1545.68	1913.16	1830.16	1260.05
Reach-1	23	PF 4	prop TR	22.60	22.49	0.11	1.52	0.01	1542.44	1917.68	1828.88	1258.53
Reach-1	22	PF 1	CDEM	17.58	17.53	0.05	0.83	0.01	993.99	716.50	1192.51	704.17
Reach-1	22	PF 1	prop TR	17.57	17.53	0.05	0.83	0.01	993.96	716.57	1192.48	704.08
Reach-1	22	PF 2	CDEM	18.97	18.92	0.05	0.82	0.01	1350.97	896.01	1646.03	793.27
Reach-1	22	PF 2	prop TR	18.97	18.92	0.05	0.82	0.01	1350.97	896.05	1645.98	793.15
Reach-1	22	PF 3	CDEM	19.82	19.76	0.06	0.84	0.01	1510.99	1041.78	2000.22	924.37
Reach-1	22	PF 3	prop TR	19.81	19.76	0.06	0.84	0.01	1511.18	1041.78	2000.04	923.99
Reach-1	22	PF 4	CDEM	21.10	21.04	0.06	0.80	0.01	1999.35	1210.07	2424.59	1059.00
Reach-1	22	PF 4	prop TR	21.06	21.00	0.06	0.82	0.01	1993.91	1214.98	2425.10	1058.78
Reach-1	21	PF 1	CDEM	16.73	16.71	0.02	0.85	0.01	1129.88	466.30	1306.81	826.28
Reach-1	21	PF 1	prop TR	16.73	16.71	0.02	0.85	0.01	1129.76	466.36	1306.88	826.19
Reach-1	21	PF 2	CDEM	18.15	18.12	0.02	0.91	0.01	1563.98	593.03	1736.00	905.23
Reach-1	21	PF 2	prop TR	18.14	18.12	0.02	0.91	0.01	1563.95	593.06	1735.99	905.10

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Reach-1	21	PF 3	CDEM	18.97	18.94	0.03	0.92	0.01	1845.21	674.68	2033.11	956.75
Reach-1	21	PF 3	prop TR	18.97	18.94	0.03	0.92	0.01	1845.16	674.74	2033.10	956.61
Reach-1	21	PF 4	CDEM	20.28	20.26	0.03	0.89	0.01	2345.48	801.25	2487.28	1044.15
Reach-1	21	PF 4	prop TR	20.23	20.20	0.03	0.91	0.01	2339.17	803.48	2491.35	1042.46
Reach-1	20	PF 1	CDEM	15.88	15.79	0.08	1.76	0.02	1342.30	1450.15	426.55	862.39
Reach-1	20	PF 1	prop TR	15.87	15.79	0.08	1.77	0.02	1342.00	1450.56	426.45	862.25
Reach-1	20	PF 2	CDEM	17.23	17.13	0.10	1.74	0.01	1951.12	1862.21	547.67	1093.21
Reach-1	20	PF 2	prop TR	17.23	17.13	0.10	1.74	0.01	1951.04	1862.56	547.40	1092.93
Reach-1	20	PF 3	CDEM	18.04	17.94	0.10	1.65	0.01	2316.25	2076.29	729.47	1169.12
Reach-1	20	PF 3	prop TR	18.04	17.93	0.10	1.65	0.01	2316.15	2076.74	729.11	1168.79
Reach-1	20	PF 4	CDEM	19.39	19.28	0.10	1.47	0.01	2955.01	2380.47	1038.52	1312.56
Reach-1	20	PF 4	prop TR	19.31	19.20	0.11	1.53	0.01	2952.22	2392.84	1028.94	1305.40
Reach-1	19.4	PF 1	CDEM	14.09	13.84	0.25	0.12	0.09	1164.34	2304.79	50.87	730.39
Reach-1	19.4	PF 1	prop TR	14.08	13.83	0.26	0.11	0.10	1162.59	2306.70	50.71	728.94
Reach-1	19.4	PF 2	CDEM	15.48	15.26	0.23	0.11	0.07	1950.98	2732.22	102.80	802.37
Reach-1	19.4	PF 2	prop TR	15.48	15.25	0.23	0.10	0.07	1949.39	2734.03	102.59	801.98
Reach-1	19.4	PF 3	CDEM	16.38	16.17	0.21	0.10	0.06	2470.25	3005.68	152.07	859.07
Reach-1	19.4	PF 3	prop TR	16.37	16.16	0.21	0.10	0.06	2469.47	3006.75	151.78	858.23
Reach-1	19.4	PF 4	CDEM	17.91	17.72	0.19	0.09	0.04	3297.14	3448.74	269.11	1014.98
Reach-1	19.4	PF 4	prop TR	17.76	17.56	0.21	0.09	0.05	3274.07	3480.41	260.52	1001.60
Reach-1	19.35	PF 1	CDEM	13.88	13.81	0.07	0.02	0.00	25.66	3421.87	72.47	539.60
Reach-1	19.35	PF 1	prop TR	13.87	13.81	0.06	0.00	0.00	62.65	3386.80	70.56	563.09
Reach-1	19.35	PF 2	CDEM	15.31	15.22	0.09	0.02	0.01	62.49	4602.90	120.61	587.58
Reach-1	19.35	PF 2	prop TR	15.30	15.22	0.08	0.00	0.00	111.70	4557.30	117.00	587.59
Reach-1	19.35	PF 3	CDEM	16.22	16.13	0.09	0.02	0.01	93.79	5379.47	154.74	623.99
Reach-1	19.35	PF 3	prop TR	16.21	16.13	0.09	0.00	0.00	138.63	5339.22	150.15	624.01
Reach-1	19.35	PF 4	CDEM	17.78	17.67	0.10			153.31	6647.19	214.50	742.33
Reach-1	19.35	PF 4	prop TR	17.62	17.52	0.10			219.28	6590.32	205.40	737.84
Reach-1	19.25		Bridge									
Reach-1	19.15	PF 1	CDEM	13.79	13.69	0.10	0.19	0.07	73.60	3409.79	36.61	497.93
Reach-1	19.15	PF 1	prop TR	13.79	13.69	0.11	0.19	0.07	65.82	3344.27	109.91	497.61
Reach-1	19.15	PF 2	CDEM	15.21	15.10	0.11	0.16	0.06	128.69	4575.29	82.02	562.51
Reach-1	19.15	PF 2	prop TR	15.22	15.09	0.12	0.16	0.06	115.42	4467.62	202.96	562.29
Reach-1	19.15	PF 3	CDEM	16.13	16.01	0.12	0.15	0.06	167.55	5344.52	115.94	607.24
Reach-1	19.15	PF 3	prop TR	16.13	16.00	0.13	0.15	0.05	147.20	5210.70	270.10	606.95
Reach-1	19.15	PF 4	CDEM	17.59	17.46	0.13	0.13	0.06	233.77	6605.71	175.53	755.41
Reach-1	19.15	PF 4	prop TR	17.59	17.45	0.14	0.13	0.06	236.58	6394.33	384.09	755.21
Reach-1	19.1	PF 1	CDEM	13.53	13.21	0.33	0.80	0.04	598.17	2774.83	147.01	508.16
Reach-1	19.1	PF 1	prop TR	13.54	13.21	0.33	0.80	0.04	599.07	2773.77	147.16	508.22
Reach-1	19.1	PF 2	CDEM	14.99	14.68	0.32	0.67	0.03	1064.12	3468.89	252.99	573.29
Reach-1	19.1	PF 2	prop TR	15.00	14.68	0.32	0.67	0.03	1064.57	3468.30	253.14	573.61
Reach-1	19.1	PF 3	CDEM	15.93	15.62	0.31	0.60	0.02	1378.89	3913.47	335.64	639.83
Reach-1	19.1	PF 3	prop TR	15.93	15.62	0.31	0.60	0.02	1379.44	3912.77	335.80	640.10
Reach-1	19.1	PF 4	CDEM	17.40	17.08	0.33	0.54	0.02	1923.92	4731.61	359.47	915.87
Reach-1	19.1	PF 4	prop TR	17.41	17.08	0.33	0.54	0.02	1924.62	4731.16	359.23	917.00
Reach-1	18.2	PF 1	CDEM	12.70	12.49	0.21	0.17	0.05	250.74	3033.27	179.98	454.37
Reach-1	18.2	PF 1	prop TR	12.71	12.50	0.21	0.17	0.05	251.15	3032.61	180.24	454.83
Reach-1	18.2	PF 2	CDEM	14.30	14.07	0.23	0.16	0.05	429.14	3949.34	324.52	563.47
Reach-1	18.2	PF 2	prop TR	14.30	14.07	0.23	0.16	0.05	429.44	3948.65	324.91	563.75
Reach-1	18.2	PF 3	CDEM	15.30	15.07	0.23	0.15	0.05	559.87	4507.37	459.76	618.92
Reach-1	18.2	PF 3	prop TR	15.31	15.08	0.23	0.15	0.05	559.75	4507.08	460.16	619.52
Reach-1	18.2	PF 4	CDEM	16.84	16.59	0.25	0.14	0.05	660.85	5500.90	713.25	906.13

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Reach-1	18.2	PF 4	prop TR	16.84	16.59	0.25	0.14	0.05	660.84	5500.57	713.59	907.30
Reach-1	18.1	PF 1	CDEM	12.48	12.43	0.06	0.38	0.00	195.92	2940.10	327.97	688.38
Reach-1	18.1	PF 1	prop TR	12.49	12.43	0.05	0.37	0.00	196.14	2939.62	328.24	688.82
Reach-1	18.1	PF 2	CDEM	14.09	14.03	0.06	0.35	0.00	328.77	3863.07	511.16	766.17
Reach-1	18.1	PF 2	prop TR	14.10	14.03	0.06	0.35	0.00	328.94	3862.63	511.43	766.42
Reach-1	18.1	PF 3	CDEM	15.11	15.04	0.07	0.33	0.00	422.99	4452.07	651.94	811.63
Reach-1	18.1	PF 3	prop TR	15.11	15.05	0.07	0.33	0.00	423.27	4451.64	652.09	811.84
Reach-1	18.1	PF 4	CDEM	16.65	16.57	0.07	0.31	0.00	617.97	5384.20	872.83	867.25
Reach-1	18.1	PF 4	prop TR	16.65	16.58	0.07	0.31	0.00	618.18	5383.81	873.01	867.37
Reach-1	18	PF 1	CDEM	12.10	12.04	0.07	0.82	0.00	533.97	1307.58	1813.45	862.56
Reach-1	18	PF 1	prop TR	12.11	12.05	0.06	0.82	0.00	534.03	1306.86	1814.12	862.83
Reach-1	18	PF 2	CDEM	13.74	13.67	0.07	0.77	0.00	744.03	1642.60	2584.37	911.02
Reach-1	18	PF 2	prop TR	13.74	13.67	0.07	0.77	0.00	744.12	1642.17	2584.71	911.24
Reach-1	18	PF 3	CDEM	14.77	14.70	0.07	0.76	0.00	892.53	1857.16	3096.31	945.64
Reach-1	18	PF 3	prop TR	14.78	14.71	0.07	0.75	0.00	892.63	1856.77	3096.60	945.83
Reach-1	18	PF 4	CDEM	16.34	16.26	0.08	0.75	0.00	1142.19	2199.75	3938.07	999.79
Reach-1	18	PF 4	prop TR	16.34	16.26	0.08	0.75	0.00	1142.27	2199.47	3938.27	999.94
Reach-1	17	PF 1	CDEM	11.27	11.22	0.06	1.34	0.00	512.48	1430.62	1669.90	721.82
Reach-1	17	PF 1	prop TR	11.29	11.23	0.06	1.33	0.00	512.87	1430.09	1670.04	722.06
Reach-1	17	PF 2	CDEM	12.96	12.89	0.07	1.30	0.00	753.49	1876.57	2293.94	750.66
Reach-1	17	PF 2	prop TR	12.97	12.90	0.07	1.29	0.00	753.74	1876.24	2294.02	750.81
Reach-1	17	PF 3	CDEM	14.02	13.94	0.08	1.29	0.00	818.97	2213.09	2767.94	833.45
Reach-1	17	PF 3	prop TR	14.02	13.95	0.08	1.29	0.00	818.76	2213.00	2768.24	834.03
Reach-1	17	PF 4	CDEM	15.59	15.49	0.09	1.32	0.00	1169.86	2795.32	3264.82	963.18
Reach-1	17	PF 4	prop TR	15.59	15.50	0.09	1.31	0.00	1170.49	2795.87	3263.64	964.04
Reach-1	16	PF 1	CDEM	9.94	9.87	0.06	1.02	0.00	1463.83	1176.74	1318.43	724.54
Reach-1	16	PF 1	prop TR	9.96	9.90	0.06	1.01	0.00	1464.57	1175.65	1318.78	725.13
Reach-1	16	PF 2	CDEM	11.67	11.59	0.07	0.99	0.00	2055.17	1520.61	1828.22	766.26
Reach-1	16	PF 2	prop TR	11.68	11.60	0.07	0.98	0.00	2055.55	1520.02	1828.43	766.61
Reach-1	16	PF 3	CDEM	12.72	12.64	0.08	0.97	0.00	2454.86	1743.37	2169.77	793.08
Reach-1	16	PF 3	prop TR	12.73	12.65	0.08	0.96	0.00	2455.22	1742.91	2169.87	793.39
Reach-1	16	PF 4	CDEM	14.27	14.18	0.09	0.96	0.01	3119.66	2102.70	2724.64	834.78
Reach-1	16	PF 4	prop TR	14.28	14.19	0.09	0.96	0.01	3119.90	2102.38	2724.72	834.98
Reach-1	15	PF 1	CDEM	8.91	8.85	0.06	0.85	0.00	480.56	1333.96	3044.48	935.89
Reach-1	15	PF 1	prop TR	8.95	8.89	0.06	0.84	0.00	481.10	1331.01	3046.89	936.29
Reach-1	15	PF 2	CDEM	10.68	10.61	0.06	0.86	0.01	683.07	1674.31	4273.63	953.74
Reach-1	15	PF 2	prop TR	10.70	10.63	0.06	0.86	0.01	683.32	1672.96	4274.72	953.94
Reach-1	15	PF 3	CDEM	11.75	11.69	0.07	0.88	0.01	807.78	1898.19	5103.03	968.66
Reach-1	15	PF 3	prop TR	11.77	11.70	0.07	0.88	0.01	807.83	1897.25	5103.92	968.88
Reach-1	15	PF 4	CDEM	13.30	13.23	0.07	0.88	0.01	1015.49	2263.19	6462.32	990.65
Reach-1	15	PF 4	prop TR	13.31	13.24	0.07	0.88	0.01	1015.55	2262.63	6462.81	990.78
Reach-1	14.4	PF 1	CDEM	8.05	7.95	0.10	0.01	0.02	141.39	4356.55	192.06	595.25
Reach-1	14.4	PF 1	prop TR	8.11	8.01	0.10	0.01	0.02	143.93	4351.56	194.50	598.39
Reach-1	14.4	PF 2	CDEM	9.81	9.68	0.13	0.01	0.02	293.02	5746.15	380.83	679.93
Reach-1	14.4	PF 2	prop TR	9.83	9.70	0.13	0.01	0.02	294.44	5742.68	382.89	680.95
Reach-1	14.4	PF 3	CDEM	10.86	10.71	0.15	0.01	0.03	333.06	6763.11	474.84	939.93
Reach-1	14.4	PF 3	prop TR	10.88	10.73	0.15	0.01	0.03	332.96	6762.58	475.46	946.89
Reach-1	14.4	PF 4	CDEM	12.41	12.24	0.17	0.01	0.03	518.30	8110.17	833.53	1133.58
Reach-1	14.4	PF 4	prop TR	12.42	12.25	0.17	0.01	0.03	518.74	8107.57	835.70	1135.34
Reach-1	14.1	PF 1	CDEM	8.02	7.97	0.05	0.36	0.00	1.03	4679.99	8.98	528.75
Reach-1	14.1	PF 1	prop TR	8.08	8.03	0.05	0.36	0.00	1.08	4679.51	9.41	531.37
Reach-1	14.1	PF 2	CDEM	9.77	9.72	0.05	0.36	0.00	3.65	6375.89	40.46	606.53

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Reach-1	14.1	PF 2	prop TR	9.80	9.75	0.05	0.35	0.00	3.69	6375.28	41.02	607.44
Reach-1	14.1	PF 3	CDEM	10.82	10.76	0.06	0.35	0.00	5.31	7503.82	61.87	882.92
Reach-1	14.1	PF 3	prop TR	10.84	10.78	0.06	0.35	0.00	5.48	7503.14	62.37	889.86
Reach-1	14.1	PF 4	CDEM	12.37	12.31	0.06	0.35	0.00	40.48	9243.42	178.10	1066.06
Reach-1	14.1	PF 4	prop TR	12.38	12.32	0.06	0.35	0.00	40.77	9242.28	178.95	1067.81
Reach-1	13.4	PF 1	CDEM	7.66	7.60	0.05	0.01	0.01	352.63	4024.76	143.62	656.09
Reach-1	13.4	PF 1	prop TR	7.72	7.67	0.05	0.01	0.01	355.07	4020.47	145.46	659.15
Reach-1	13.4	PF 2	CDEM	9.41	9.34	0.07	0.02	0.02	570.58	5362.79	272.63	723.67
Reach-1	13.4	PF 2	prop TR	9.44	9.37	0.07	0.02	0.02	572.03	5360.05	273.92	724.81
Reach-1	13.4	PF 3	CDEM	10.46	10.38	0.08	0.02	0.02	731.48	6228.21	372.32	762.27
Reach-1	13.4	PF 3	prop TR	10.48	10.40	0.08	0.02	0.02	732.67	6225.98	373.35	763.09
Reach-1	13.4	PF 4	CDEM	12.02	11.91	0.10	0.02	0.02	1017.07	7616.15	551.78	819.25
Reach-1	13.4	PF 4	prop TR	12.03	11.93	0.10	0.02	0.02	1017.92	7614.58	552.50	819.75
Reach-1	13.3	PF 1	CDEM	7.63	7.60	0.02	0.00	0.00		4521.00		332.22
Reach-1	13.3	PF 1	prop TR	7.69	7.67	0.02	0.00	0.00		4521.00		332.44
Reach-1	13.3	PF 2	CDEM	9.38	9.34	0.03	0.00	0.00		6206.00		337.97
Reach-1	13.3	PF 2	prop TR	9.41	9.37	0.03	0.00	0.00		6206.00		338.07
Reach-1	13.3	PF 3	CDEM	10.42	10.38	0.04	0.00	0.00		7332.00		341.42
Reach-1	13.3	PF 3	prop TR	10.45	10.40	0.04	0.00	0.00		7332.00		341.49
Reach-1	13.3	PF 4	CDEM	11.97	11.92	0.05	0.00	0.00		9185.00		346.50
Reach-1	13.3	PF 4	prop TR	11.99	11.93	0.05	0.00	0.00		9185.00		346.54
Reach-1	13.25		Bridge									
Reach-1	13.2	PF 1	CDEM	7.62	7.59	0.03	0.02	0.01		4521.00		329.18
Reach-1	13.2	PF 1	prop TR	7.68	7.65	0.03	0.02	0.01		4521.00		329.42
Reach-1	13.2	PF 2	CDEM	9.37	9.32	0.04	0.02	0.01		6206.00		335.57
Reach-1	13.2	PF 2	prop TR	9.40	9.35	0.04	0.02	0.01		6206.00		335.68
Reach-1	13.2	PF 3	CDEM	10.41	10.36	0.05	0.02	0.02		7332.00		339.39
Reach-1	13.2	PF 3	prop TR	10.43	10.38	0.05	0.02	0.02		7332.00		339.47
Reach-1	13.2	PF 4	CDEM	11.96	11.89	0.07	0.02	0.02		9185.00		345.03
Reach-1	13.2	PF 4	prop TR	11.97	11.90	0.07	0.02	0.02		9185.00		345.08
Reach-1	13.1	PF 1	CDEM	7.59	7.58	0.02	0.10	0.01	1.14	4506.54	13.32	830.81
Reach-1	13.1	PF 1	prop TR	7.66	7.64	0.02	0.10	0.01	1.25	4505.93	13.82	834.01
Reach-1	13.1	PF 2	CDEM	9.34	9.32	0.02	0.10	0.01	8.00	6158.77	39.23	913.13
Reach-1	13.1	PF 2	prop TR	9.37	9.35	0.02	0.10	0.01	8.15	6158.20	39.65	914.39
Reach-1	13.1	PF 3	CDEM	10.38	10.36	0.02	0.09	0.01	16.03	7252.90	63.07	955.81
Reach-1	13.1	PF 3	prop TR	10.40	10.38	0.02	0.09	0.01	16.18	7252.39	63.43	956.73
Reach-1	13.1	PF 4	CDEM	11.92	11.90	0.02	0.09	0.01	34.78	9040.98	109.24	1015.30
Reach-1	13.1	PF 4	prop TR	11.93	11.91	0.02	0.09	0.01	34.91	9040.58	109.50	1015.82
Reach-1	12.1	PF 1	CDEM	7.49	7.41	0.07	0.08	0.00	201.12	5876.18	919.70	1519.79
Reach-1	12.1	PF 1	prop TR	7.55	7.48	0.07	0.08	0.00	204.73	5857.94	934.33	1522.28
Reach-1	12.1	PF 2	CDEM	9.23	9.14	0.09	0.09	0.01	392.45	7563.59	1731.96	1582.15
Reach-1	12.1	PF 2	prop TR	9.26	9.18	0.09	0.09	0.01	394.38	7553.98	1739.64	1583.32
Reach-1	12.1	PF 3	CDEM	10.28	10.18	0.10	0.10	0.01	531.88	8639.74	2332.39	1619.43
Reach-1	12.1	PF 3	prop TR	10.30	10.20	0.10	0.10	0.01	533.00	8632.45	2338.55	1620.28
Reach-1	12.1	PF 4	CDEM	11.82	11.71	0.11	0.10	0.01	757.53	10337.74	3394.73	1674.16
Reach-1	12.1	PF 4	prop TR	11.83	11.72	0.11	0.10	0.01	758.31	10333.12	3398.57	1674.67
Reach-1	12	PF 1	CDEM	7.40	7.29	0.11	0.27	0.01	290.61	7528.58	670.81	1022.52
Reach-1	12	PF 1	prop TR	7.47	7.36	0.11	0.26	0.01	295.16	7517.92	676.92	1030.62
Reach-1	12	PF 2	CDEM	9.14	8.98	0.16	0.32	0.01	543.61	10063.28	1153.12	1215.12
Reach-1	12	PF 2	prop TR	9.17	9.01	0.16	0.32	0.01	546.23	10055.79	1157.98	1218.96
Reach-1	12	PF 3	CDEM	10.17	9.99	0.18	0.35	0.02	734.58	11673.41	1547.01	1330.52
Reach-1	12	PF 3	prop TR	10.20	10.01	0.18	0.35	0.01	736.57	11665.62	1552.81	1332.10

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Reach-1	12	PF 4	CDEM	11.71	11.49	0.22	0.39	0.02	1064.94	14078.27	2435.79	1371.13
Reach-1	12	PF 4	prop TR	11.72	11.51	0.21	0.39	0.02	1066.24	14072.46	2440.30	1371.52
Reach-1	11.4	PF 1	CDEM	7.13	7.04	0.08	0.05	0.02	135.63	7762.39	477.98	1108.40
Reach-1	11.4	PF 1	prop TR	7.20	7.12	0.08	0.04	0.02	139.01	7749.02	487.96	1112.86
Reach-1	11.4	PF 2	CDEM	8.80	8.68	0.11	0.05	0.02	305.17	10364.69	940.14	1169.28
Reach-1	11.4	PF 2	prop TR	8.83	8.72	0.11	0.05	0.02	307.78	10356.35	945.87	1170.49
Reach-1	11.4	PF 3	CDEM	9.80	9.67	0.13	0.06	0.02	444.47	12048.76	1291.77	1202.04
Reach-1	11.4	PF 3	prop TR	9.83	9.70	0.13	0.06	0.02	446.64	12042.08	1296.28	1202.92
Reach-1	11.4	PF 4	CDEM	11.30	11.14	0.16	0.06	0.03	705.58	14760.54	1920.88	1250.66
Reach-1	11.4	PF 4	prop TR	11.31	11.15	0.16	0.06	0.03	707.12	14756.00	1923.88	1251.20
Reach-1	11.3	PF 1	CDEM	7.07	7.02	0.05				8376.00		492.28
Reach-1	11.3	PF 1	prop TR	7.14	7.09	0.05				8376.00		492.59
Reach-1	11.3	PF 2	CDEM	8.72	8.65	0.07				11610.00		498.89
Reach-1	11.3	PF 2	prop TR	8.76	8.69	0.07				11610.00		499.04
Reach-1	11.3	PF 3	CDEM	9.72	9.64	0.09				13785.00		502.87
Reach-1	11.3	PF 3	prop TR	9.75	9.66	0.09				13785.00		502.98
Reach-1	11.3	PF 4	CDEM	11.21	11.10	0.11				17387.00		508.77
Reach-1	11.3	PF 4	prop TR	11.22	11.12	0.11				17387.00		508.84
Reach-1	11.25		Bridge									
Reach-1	11.2	PF 1	CDEM	7.06	7.01	0.04	0.04	0.01		8376.00		497.98
Reach-1	11.2	PF 1	prop TR	7.13	7.09	0.04	0.04	0.01		8376.00		498.28
Reach-1	11.2	PF 2	CDEM	8.71	8.65	0.06	0.05	0.01		11610.00		504.25
Reach-1	11.2	PF 2	prop TR	8.75	8.69	0.06	0.05	0.01		11610.00		504.39
Reach-1	11.2	PF 3	CDEM	9.71	9.63	0.08	0.05	0.01		13785.00		508.02
Reach-1	11.2	PF 3	prop TR	9.74	9.66	0.08	0.05	0.01		13785.00		508.12
Reach-1	11.2	PF 4	CDEM	11.19	11.10	0.10	0.06	0.01		17387.00		513.61
Reach-1	11.2	PF 4	prop TR	11.21	11.11	0.10	0.06	0.01		17387.00		513.68
Reach-1	11.1	PF 1	CDEM	7.01	6.94	0.07	0.50	0.00	263.98	8011.35	100.67	1025.08
Reach-1	11.1	PF 1	prop TR	7.09	7.02	0.07	0.48	0.00	270.77	8001.06	104.17	1032.00
Reach-1	11.1	PF 2	CDEM	8.66	8.55	0.10	0.61	0.01	549.21	10803.64	257.15	1150.71
Reach-1	11.1	PF 2	prop TR	8.69	8.59	0.10	0.60	0.01	553.21	10795.95	260.84	1151.61
Reach-1	11.1	PF 3	CDEM	9.65	9.53	0.12	0.67	0.01	769.30	12598.59	417.10	1173.91
Reach-1	11.1	PF 3	prop TR	9.67	9.56	0.12	0.66	0.01	772.49	12592.29	420.23	1174.57
Reach-1	11.1	PF 4	CDEM	11.12	10.98	0.15	0.75	0.01	1167.15	15495.14	724.71	1208.36
Reach-1	11.1	PF 4	prop TR	11.14	10.99	0.15	0.75	0.01	1169.29	15490.79	726.93	1208.77
Reach-1	10	PF 1	CDEM	6.51	6.45	0.06	0.26	0.01	25.60	7707.17	442.23	1080.12
Reach-1	10	PF 1	prop TR	6.60	6.54	0.06	0.25	0.01	26.73	7694.85	453.43	1084.75
Reach-1	10	PF 2	CDEM	8.04	7.96	0.08	0.30	0.02	62.87	10399.42	854.71	1179.19
Reach-1	10	PF 2	prop TR	8.09	8.00	0.08	0.30	0.02	64.01	10391.55	861.44	1181.78
Reach-1	10	PF 3	CDEM	8.97	8.87	0.10	0.32	0.02	107.45	12159.87	1172.68	1221.64
Reach-1	10	PF 3	prop TR	9.01	8.91	0.10	0.32	0.02	108.84	12153.08	1178.08	1222.61
Reach-1	10	PF 4	CDEM	10.36	10.24	0.12	0.35	0.02	208.07	15006.20	1749.73	1259.57
Reach-1	10	PF 4	prop TR	10.38	10.26	0.12	0.35	0.02	209.12	15001.22	1753.66	1259.98
Reach-1	9	PF 1	CDEM	6.24	6.21	0.02	0.34	0.00	38.30	7787.40	59.30	921.88
Reach-1	9	PF 1	prop TR	6.34	6.31	0.02	0.33	0.00	39.00	7785.74	60.26	923.23
Reach-1	9	PF 2	CDEM	7.72	7.69	0.03	0.40	0.01	56.72	10687.11	100.17	968.47
Reach-1	9	PF 2	prop TR	7.77	7.74	0.03	0.40	0.01	57.52	10685.74	100.73	968.86
Reach-1	9	PF 3	CDEM	8.63	8.59	0.04	0.44	0.01	84.24	12644.34	130.43	975.64
Reach-1	9	PF 3	prop TR	8.67	8.63	0.04	0.43	0.01	84.88	12643.25	130.86	975.92
Reach-1	9	PF 4	CDEM	9.99	9.94	0.05	0.49	0.01	135.03	15879.65	183.31	986.32
Reach-1	9	PF 4	prop TR	10.01	9.96	0.05	0.48	0.01	135.47	15878.92	183.60	986.50

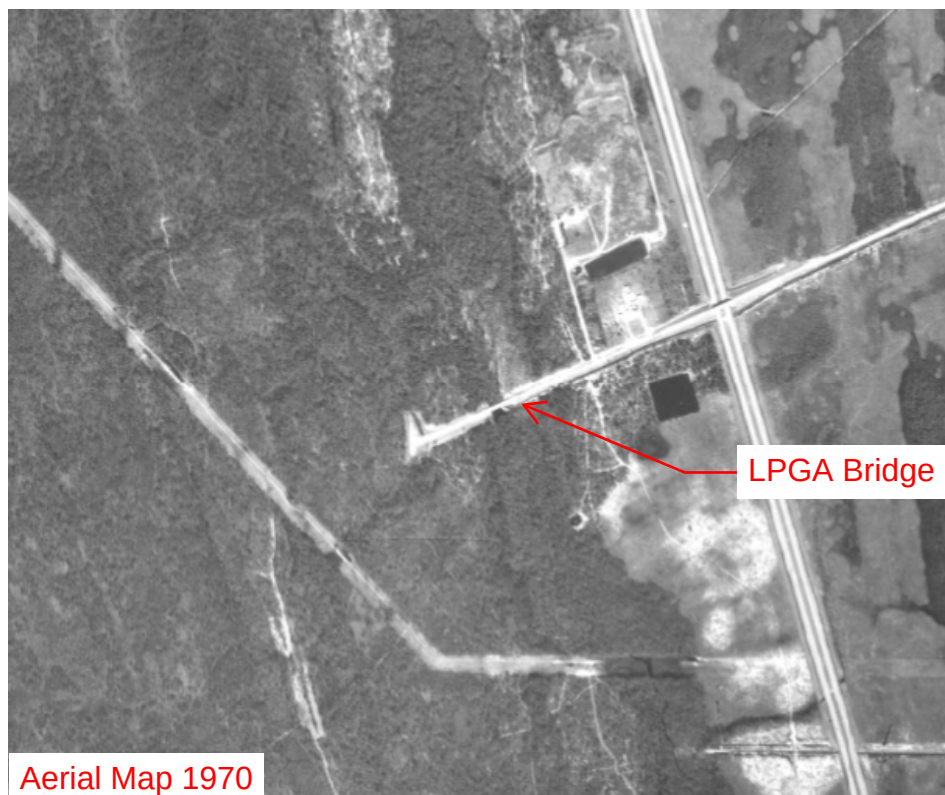
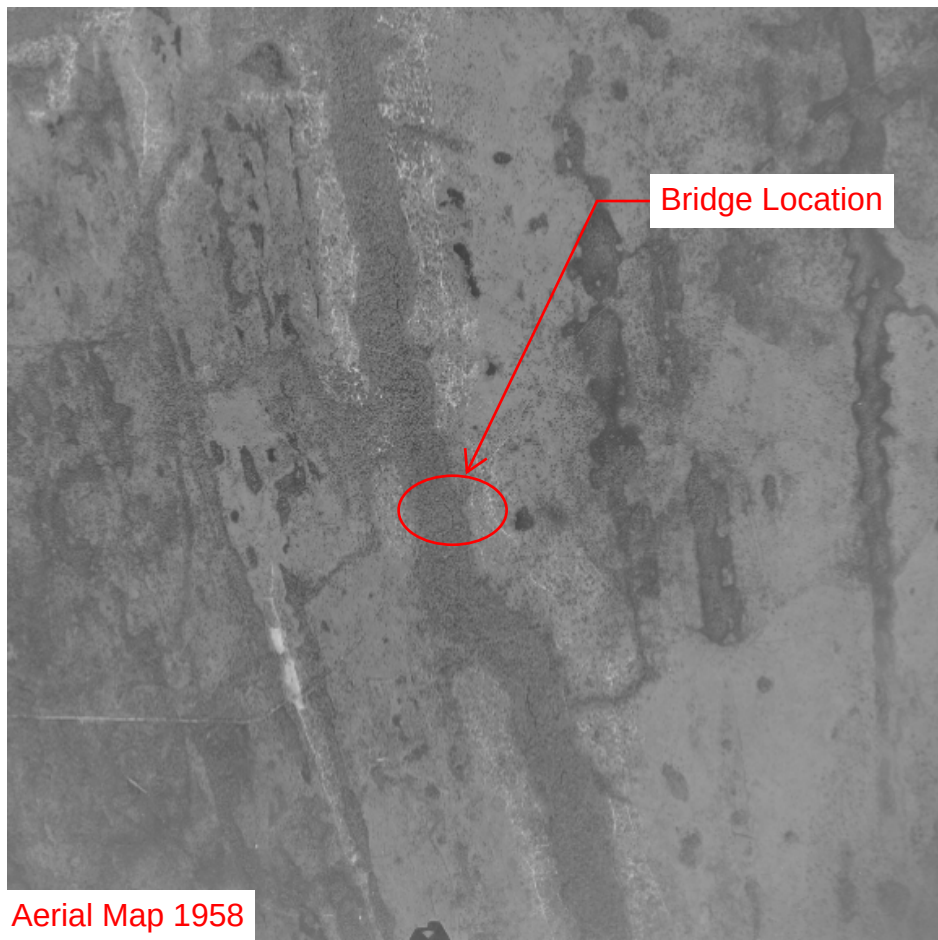
LPGA Tomoka River EC-RAS Report _ PM												
Reach-1	8	PF 1	CDEM	5.90	5.84	0.06	0.43	0.00	286.80	7604.78	96.43	972.80
Reach-1	8	PF 1	prop TR	6.01	5.95	0.06	0.42	0.00	296.16	7591.85	99.99	978.71
Reach-1	8	PF 2	CDEM	7.32	7.23	0.08	0.57	0.00	549.02	10275.21	197.77	1048.86
Reach-1	8	PF 2	prop TR	7.37	7.29	0.08	0.56	0.00	554.83	10266.81	200.36	1052.50
Reach-1	8	PF 3	CDEM	8.19	8.09	0.10	0.65	0.00	754.88	12058.29	284.83	1105.81
Reach-1	8	PF 3	prop TR	8.23	8.13	0.10	0.65	0.00	759.62	12051.20	287.18	1108.99
Reach-1	8	PF 4	CDEM	9.49	9.36	0.13	0.78	0.00	1127.95	14941.91	472.15	1186.53
Reach-1	8	PF 4	prop TR	9.52	9.39	0.13	0.77	0.00	1131.15	14935.81	475.04	1187.22
Reach-1	7	PF 1	CDEM	5.47	5.41	0.06	0.19	0.00	1.55	6644.73	842.72	1552.06
Reach-1	7	PF 1	prop TR	5.59	5.54	0.05	0.19	0.00	1.64	6615.09	872.27	1554.81
Reach-1	7	PF 2	CDEM	6.75	6.67	0.08	0.25	0.00	3.53	8825.63	1550.84	1579.13
Reach-1	7	PF 2	prop TR	6.81	6.73	0.08	0.25	0.00	3.60	8807.06	1569.34	1580.53
Reach-1	7	PF 3	CDEM	7.53	7.44	0.10	0.29	0.00	5.34	10260.09	2100.57	1595.80
Reach-1	7	PF 3	prop TR	7.58	7.49	0.10	0.28	0.00	5.41	10244.82	2115.77	1596.85
Reach-1	7	PF 4	CDEM	8.71	8.59	0.12	0.34	0.01	9.08	12567.83	3093.09	1620.69
Reach-1	7	PF 4	prop TR	8.74	8.62	0.12	0.34	0.01	9.15	12557.11	3103.74	1621.35
Reach-1	6.4	PF 1	CDEM	5.27	5.22	0.05	0.01	0.01	68.25	6726.27	694.48	1932.53
Reach-1	6.4	PF 1	prop TR	5.40	5.36	0.05	0.01	0.01	70.83	6692.95	725.22	1944.74
Reach-1	6.4	PF 2	CDEM	6.49	6.42	0.07	0.01	0.02	124.82	8930.81	1324.37	2040.49
Reach-1	6.4	PF 2	prop TR	6.56	6.49	0.07	0.01	0.02	126.49	8909.15	1344.36	2046.79
Reach-1	6.4	PF 3	CDEM	7.24	7.16	0.08	0.01	0.03	169.01	10374.60	1822.39	2107.15
Reach-1	6.4	PF 3	prop TR	7.29	7.21	0.08	0.01	0.03	170.40	10356.44	1839.16	2111.89
Reach-1	6.4	PF 4	CDEM	8.36	8.27	0.10	0.01	0.04	249.37	12686.42	2734.21	2206.84
Reach-1	6.4	PF 4	prop TR	8.40	8.30	0.10	0.01	0.04	250.37	12673.32	2746.31	2209.84
Reach-1	6.3	PF 1	CDEM	5.25	5.17	0.08				7489.00		268.29
Reach-1	6.3	PF 1	prop TR	5.39	5.30	0.08				7489.00		269.05
Reach-1	6.3	PF 2	CDEM	6.46	6.32	0.14				10380.00		274.76
Reach-1	6.3	PF 2	prop TR	6.53	6.39	0.14				10380.00		275.15
Reach-1	6.3	PF 3	CDEM	7.20	7.02	0.18				12366.00		278.70
Reach-1	6.3	PF 3	prop TR	7.25	7.08	0.18				12366.00		279.00
Reach-1	6.3	PF 4	CDEM	8.31	8.06	0.25				15670.00		284.51
Reach-1	6.3	PF 4	prop TR	8.34	8.09	0.25				15670.00		284.70
Reach-1	6.25		Bridge									
Reach-1	6.2	PF 1	CDEM	5.23	5.16	0.07	0.01	0.01		7489.00		266.56
Reach-1	6.2	PF 1	prop TR	5.37	5.30	0.07	0.01	0.01		7489.00		267.22
Reach-1	6.2	PF 2	CDEM	6.43	6.31	0.12	0.01	0.02		10380.00		272.15
Reach-1	6.2	PF 2	prop TR	6.50	6.38	0.12	0.01	0.02		10380.00		272.49
Reach-1	6.2	PF 3	CDEM	7.16	7.01	0.16	0.01	0.03		12366.00		275.55
Reach-1	6.2	PF 3	prop TR	7.21	7.06	0.15	0.01	0.03		12366.00		275.81
Reach-1	6.2	PF 4	CDEM	8.26	8.04	0.22	0.02	0.05		15670.00		280.56
Reach-1	6.2	PF 4	prop TR	8.29	8.07	0.22	0.02	0.05		15670.00		280.73
Reach-1	6.1	PF 1	CDEM	5.22	5.16	0.05	0.04	0.00	0.29	6936.84	551.87	1356.78
Reach-1	6.1	PF 1	prop TR	5.35	5.30	0.05	0.04	0.00	0.35	6913.26	575.40	1364.75
Reach-1	6.1	PF 2	CDEM	6.40	6.32	0.08	0.05	0.00	1.38	9345.50	1033.12	1424.28
Reach-1	6.1	PF 2	prop TR	6.47	6.39	0.08	0.05	0.00	1.46	9329.66	1048.89	1428.41
Reach-1	6.1	PF 3	CDEM	7.12	7.02	0.10	0.06	0.00	2.69	10949.13	1414.18	1465.54
Reach-1	6.1	PF 3	prop TR	7.17	7.08	0.09	0.06	0.00	2.78	10935.54	1427.68	1468.66
Reach-1	6.1	PF 4	CDEM	8.19	8.07	0.12	0.07	0.00	5.94	13550.50	2113.56	1526.53
Reach-1	6.1	PF 4	prop TR	8.23	8.10	0.12	0.07	0.00	6.03	13540.36	2123.61	1528.52
Reach-1	5.4	PF 1	CDEM	5.18	5.12	0.06	0.01	0.01	0.35	7116.62	372.04	984.66
Reach-1	5.4	PF 1	prop TR	5.32	5.26	0.06	0.01	0.01	0.42	7100.47	388.11	992.44
Reach-1	5.4	PF 2	CDEM	6.35	6.25	0.09	0.02	0.02	1.72	9682.76	695.52	1047.06

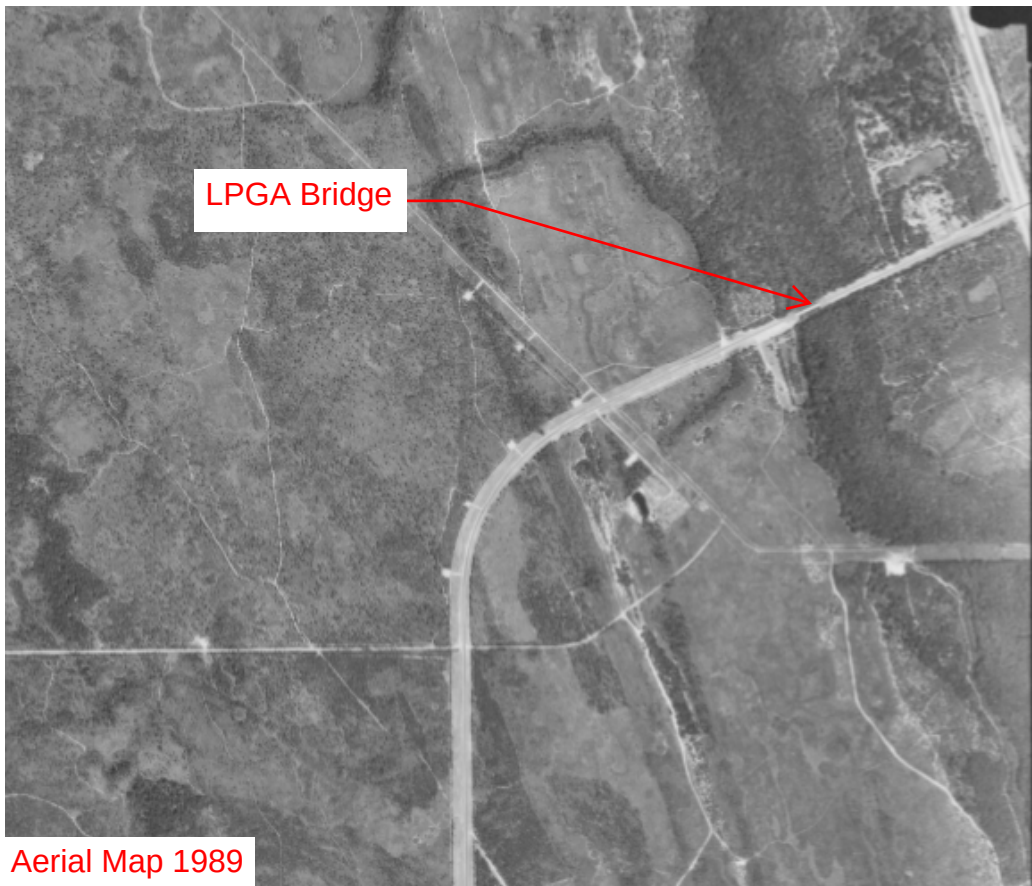
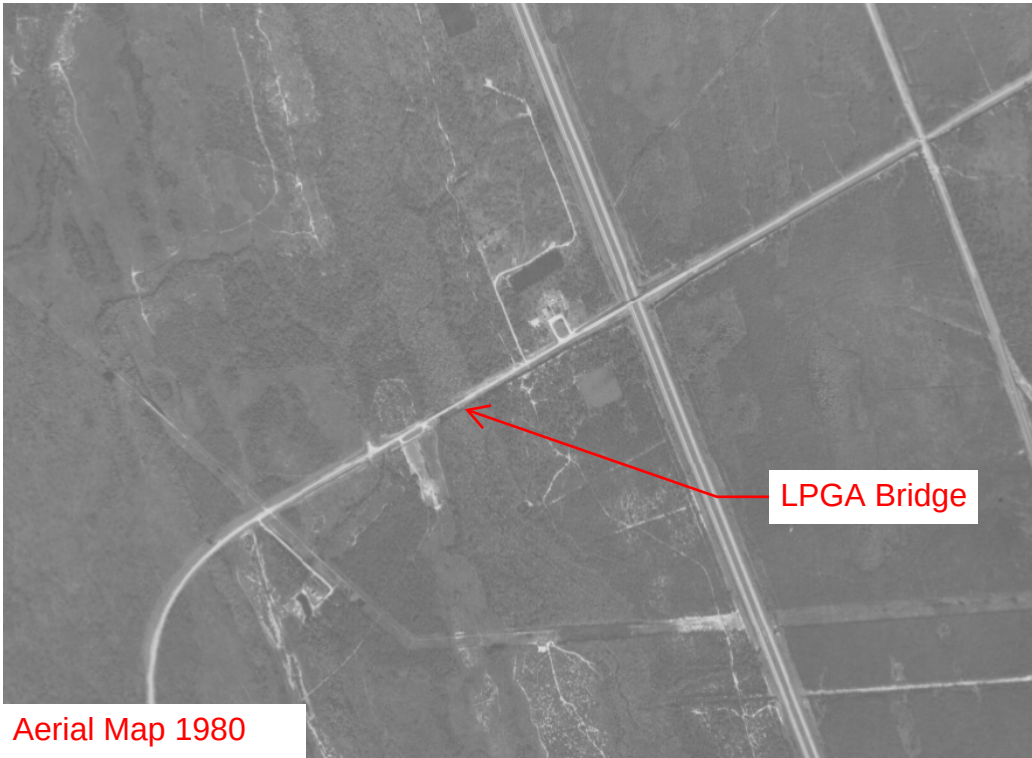
LPGA Tomoka River EC-RAS Report _ PM												
Reach-1	5.4	PF 2	prop TR	6.42	6.32	0.09	0.02	0.02	1.82	9671.56	706.62	1050.96
Reach-1	5.4	PF 3	CDEM	7.06	6.95	0.11	0.02	0.03	3.26	11408.53	954.21	1084.64
Reach-1	5.4	PF 3	prop TR	7.11	7.00	0.11	0.02	0.03	3.36	11398.73	963.91	1087.59
Reach-1	5.4	PF 4	CDEM	8.12	7.97	0.15	0.02	0.04	6.69	14229.34	1433.97	1140.06
Reach-1	5.4	PF 4	prop TR	8.15	8.00	0.15	0.02	0.04	6.79	14221.79	1441.43	1141.95
Reach-1	5.3	PF 1	CDEM	5.16	5.06	0.10				7489.00		255.02
Reach-1	5.3	PF 1	prop TR	5.29	5.20	0.09				7489.00		255.79
Reach-1	5.3	PF 2	CDEM	6.31	6.15	0.16				10380.00		261.09
Reach-1	5.3	PF 2	prop TR	6.38	6.23	0.15				10380.00		261.49
Reach-1	5.3	PF 3	CDEM	7.01	6.81	0.20				12366.00		264.75
Reach-1	5.3	PF 3	prop TR	7.07	6.87	0.20				12366.00		265.06
Reach-1	5.3	PF 4	CDEM	8.05	7.77	0.28				15670.00		281.86
Reach-1	5.3	PF 4	prop TR	8.09	7.81	0.28				15670.00		288.04
Reach-1	5.25		Bridge									
Reach-1	5.2	PF 1	CDEM	5.13	5.05	0.08	0.02	0.02		7489.00		323.84
Reach-1	5.2	PF 1	prop TR	5.27	5.19	0.08	0.02	0.02		7489.00		324.71
Reach-1	5.2	PF 2	CDEM	6.27	6.14	0.12	0.03	0.04		10380.00		330.64
Reach-1	5.2	PF 2	prop TR	6.34	6.21	0.12	0.02	0.04		10380.00		331.09
Reach-1	5.2	PF 3	CDEM	6.96	6.80	0.16	0.03	0.06		12366.00		334.73
Reach-1	5.2	PF 3	prop TR	7.01	6.85	0.16	0.03	0.06		12366.00		335.08
Reach-1	5.2	PF 4	CDEM	7.97	7.75	0.22	0.03	0.09		15670.00		340.67
Reach-1	5.2	PF 4	prop TR	8.00	7.78	0.22	0.03	0.09		15670.00		340.89
Reach-1	5.1	PF 1	CDEM	5.09	5.05	0.04	0.29	0.00	1107.86	6371.71	9.43	7114.24
Reach-1	5.1	PF 1	prop TR	5.23	5.19	0.04	0.27	0.00	1220.15	6258.40	10.45	7135.87
Reach-1	5.1	PF 2	CDEM	6.20	6.16	0.05	0.31	0.00	2673.80	7681.09	25.11	7282.00
Reach-1	5.1	PF 2	prop TR	6.27	6.23	0.04	0.29	0.00	2741.73	7612.23	26.04	7292.40
Reach-1	5.1	PF 3	CDEM	6.87	6.83	0.05	0.31	0.00	3876.00	8450.15	39.85	7376.66
Reach-1	5.1	PF 3	prop TR	6.93	6.88	0.05	0.30	0.00	3929.08	8396.26	40.66	7384.56
Reach-1	5.1	PF 4	CDEM	7.85	7.80	0.05	0.31	0.00	5971.41	9630.88	67.71	7514.86
Reach-1	5.1	PF 4	prop TR	7.89	7.84	0.05	0.30	0.00	6005.88	9595.80	68.32	7519.93
Reach-1	4	PF 1	CDEM	4.80	4.74	0.06	0.75	0.01	1399.53	5744.48	6.99	6330.43
Reach-1	4	PF 1	prop TR	4.96	4.90	0.06	0.67	0.01	1512.18	5631.15	7.67	6615.90
Reach-1	4	PF 2	CDEM	5.89	5.84	0.06	0.79	0.00	3096.65	6757.97	15.38	6911.36
Reach-1	4	PF 2	prop TR	5.98	5.92	0.06	0.74	0.00	3182.42	6671.77	15.81	6925.21
Reach-1	4	PF 3	CDEM	6.56	6.51	0.06	0.79	0.00	4417.51	7330.35	22.14	7017.42
Reach-1	4	PF 3	prop TR	6.63	6.57	0.05	0.75	0.00	4481.63	7265.87	22.50	7027.81
Reach-1	4	PF 4	CDEM	7.54	7.49	0.05	0.78	0.00	6684.44	8236.90	34.66	7171.83
Reach-1	4	PF 4	prop TR	7.58	7.53	0.05	0.76	0.00	6724.00	8197.08	34.93	7178.40
Reach-1	3	PF 1	CDEM	4.04	4.00	0.04	1.08	0.00	193.83	4666.76	353.41	4091.70
Reach-1	3	PF 1	prop TR	4.28	4.25	0.04	0.91	0.00	228.42	4578.12	407.47	4408.49
Reach-1	3	PF 2	CDEM	5.10	5.06	0.05	1.17	0.00	494.10	5913.94	833.96	5418.24
Reach-1	3	PF 2	prop TR	5.23	5.19	0.04	1.05	0.00	531.14	5823.22	887.63	5461.70
Reach-1	3	PF 3	CDEM	5.78	5.73	0.05	1.18	0.00	812.67	6641.05	1319.29	5635.09
Reach-1	3	PF 3	prop TR	5.87	5.83	0.05	1.09	0.00	841.97	6569.62	1361.42	5666.98
Reach-1	3	PF 4	CDEM	6.76	6.71	0.05	1.16	0.00	1388.64	7727.10	2191.27	5950.64
Reach-1	3	PF 4	prop TR	6.81	6.77	0.05	1.11	0.00	1407.39	7681.29	2218.33	5970.09
Reach-1	2	PF 1	CDEM	2.96	2.88	0.08	1.07	0.00	196.94	5048.07	225.98	3286.98
Reach-1	2	PF 1	prop TR	3.37	3.31	0.06	0.84	0.00	258.81	4866.73	345.46	3810.96
Reach-1	2	PF 2	CDEM	3.93	3.84	0.09	1.30	0.01	445.24	6256.04	697.72	4462.00
Reach-1	2	PF 2	prop TR	4.18	4.11	0.07	1.07	0.01	487.58	6092.26	819.16	4781.56
Reach-1	2	PF 3	CDEM	4.59	4.50	0.09	1.35	0.01	658.53	7042.59	1218.88	5269.61
Reach-1	2	PF 3	prop TR	4.78	4.70	0.08	1.16	0.01	689.36	6898.79	1331.85	5503.70

				LPGA Tomoka River EC-RAS Report _ PM								
Reach-1	2	PF 4	CDEM	5.59	5.51	0.08	1.29	0.01	1031.23	8074.23	2441.54	5963.92
Reach-1	2	PF 4	prop TR	5.70	5.62	0.08	1.18	0.01	1047.51	7955.12	2544.38	5984.18
Reach-1	1.4	PF 1	CDEM	1.88	1.76	0.12	0.02	0.00		5468.80	1.20	839.96
Reach-1	1.4	PF 1	prop TR	2.53	2.43	0.10	0.02	0.00		5385.10	84.91	3488.73
Reach-1	1.4	PF 2	CDEM	2.62	2.43	0.19	0.04	0.00		7278.04	117.95	3523.06
Reach-1	1.4	PF 2	prop TR	3.10	2.95	0.15	0.03	0.01		6987.50	408.50	3780.51
Reach-1	1.4	PF 3	CDEM	3.23	3.02	0.21	0.04	0.02		8366.94	547.06	3781.33
Reach-1	1.4	PF 3	prop TR	3.61	3.44	0.17	0.04	0.02		8024.33	889.67	3786.26
Reach-1	1.4	PF 4	CDEM	4.29	4.09	0.20	0.05	0.05		9675.32	1846.68	3793.94
Reach-1	1.4	PF 4	prop TR	4.51	4.33	0.18	0.04	0.05		9419.96	2102.04	3796.88
Reach-1	1.3	PF 1	CDEM	1.86	1.73	0.13				5470.00		200.63
Reach-1	1.3	PF 1	prop TR	2.51	2.40	0.11				5470.00		202.15
Reach-1	1.3	PF 2	CDEM	2.58	2.38	0.20				7396.00		202.11
Reach-1	1.3	PF 2	prop TR	3.06	2.88	0.18				7396.00		203.25
Reach-1	1.3	PF 3	CDEM	3.17	2.91	0.26				8914.00		203.31
Reach-1	1.3	PF 3	prop TR	3.55	3.30	0.25				8914.00		204.22
Reach-1	1.3	PF 4	CDEM	4.19	3.82	0.37				11522.00		205.39
Reach-1	1.3	PF 4	prop TR	4.42	4.06	0.36				11522.00		205.94
Reach-1	1.25		Bridge									
Reach-1	1.2	PF 1	CDEM	1.85	1.72	0.13	0.03	0.00		5470.00		199.22
Reach-1	1.2	PF 1	prop TR	2.50	2.39	0.11	0.03	0.00		5470.00		199.72
Reach-1	1.2	PF 2	CDEM	2.56	2.36	0.20	0.05	0.00		7396.00		199.70
Reach-1	1.2	PF 2	prop TR	3.05	2.86	0.18	0.04	0.00		7396.00		200.08
Reach-1	1.2	PF 3	CDEM	3.15	2.88	0.27	0.06	0.00		8914.00		200.09
Reach-1	1.2	PF 3	prop TR	3.53	3.28	0.25	0.05	0.01		8914.00		200.42
Reach-1	1.2	PF 4	CDEM	4.15	3.78	0.38	0.07	0.04		11522.00		200.88
Reach-1	1.2	PF 4	prop TR	4.38	4.02	0.36	0.07	0.04		11522.00		201.11
Reach-1	1.1	PF 1	CDEM	1.81	1.68	0.13	0.85	0.00		5470.00		183.45
Reach-1	1.1	PF 1	prop TR	2.47	2.36	0.11	0.64	0.00		5442.64	27.36	2555.04
Reach-1	1.1	PF 2	CDEM	2.51	2.30	0.21	1.42	0.01		7371.55	24.45	2553.13
Reach-1	1.1	PF 2	prop TR	3.00	2.82	0.18	1.08	0.00		7202.94	193.06	2569.76
Reach-1	1.1	PF 3	CDEM	3.08	2.82	0.26	1.86	0.01		8680.96	233.04	2569.79
Reach-1	1.1	PF 3	prop TR	3.46	3.24	0.22	1.44	0.01		8455.87	458.13	2582.86
Reach-1	1.1	PF 4	CDEM	4.05	3.74	0.31	2.53	0.04		10539.21	982.79	2589.16
Reach-1	1.1	PF 4	prop TR	4.27	4.00	0.28	2.04	0.02		10332.14	1189.86	2590.13
Reach-1	1	PF 1	CDEM	0.96	0.80	0.16				5465.00		181.77
Reach-1	1	PF 1	prop TR	1.83	1.71	0.12				5257.79	207.21	4972.93
Reach-1	1	PF 2	CDEM	1.08	0.80	0.28				7356.00		181.77
Reach-1	1	PF 2	prop TR	1.92	1.71	0.21				7077.09	278.91	4972.93
Reach-1	1	PF 3	CDEM	1.21	0.80	0.41				8839.00		181.77
Reach-1	1	PF 3	prop TR	2.01	1.71	0.30				8503.86	335.14	4972.93
Reach-1	1	PF 4	CDEM	1.48	0.80	0.68				11383.00		181.77
Reach-1	1	PF 4	prop TR	2.21	1.71	0.50				10951.40	431.60	4972.93

APPENDIX G

Historical Aerial Images







APPENDIX H

Scour Analysis

Plan: prop TR RIVER-1 Reach-1 RS: 19.25 Profile: PF 3

E.G. US. (ft)	16.21	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	16.13	E.G. Elev (ft)	16.21	16.14
Q Total (cfs)	5628.00	W.S. Elev (ft)	16.11	16.00
Q Bridge (cfs)	5628.00	Crit W.S. (ft)	9.72	10.52
Q Weir (cfs)		Max Chl Dpth (ft)	12.67	11.18
Weir Sta Lft (ft)		Vel Total (ft/s)	2.20	2.42
Weir Sta Rgt (ft)		Flow Area (sq ft)	2553.19	2328.98
Weir Submerg		Froude # Chl	0.15	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	11252.12	9622.77
Min El Weir Flow (ft)	22.01	Hydr Depth (ft)	7.72	7.06
Min El Prs (ft)	17.25	W.P. Total (ft)	386.47	377.06
Delta EG (ft)	0.08	Conv. Total (cfs)	307326.0	242323.9
Delta WS (ft)	0.13	Top Width (ft)	330.52	329.72
BR Open Area (sq ft)	2744.48	Frctn Loss (ft)	0.06	0.00
BR Open Vel (ft/s)	2.42	C & E Loss (ft)	0.01	0.00
BR Sluice Coef		Shear Total (lb/sq ft)	0.14	0.21
BR Sel Method	Energy only	Power Total (lb/ft s)	0.30	0.50

value used for pier
scour calculation

Plan: prop TR RIVER-1 Reach-1 RS: 19.25 Profile: PF 4

E.G. US. (ft)	17.61	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	17.51	E.G. Elev (ft)	17.61	17.59
Q Total (cfs)	7015.00	W.S. Elev (ft)	17.25	17.25
Q Bridge (cfs)	7015.00	Crit W.S. (ft)	10.21	11.00
Q Weir (cfs)		Max Chl Dpth (ft)	13.81	12.43
Weir Sta Lft (ft)		Vel Total (ft/s)	2.39	2.56
Weir Sta Rgt (ft)		Flow Area (sq ft)	2931.88	2744.48
Weir Submerg		Froude # Chl	0.16	0.19
Weir Max Depth (ft)		Specif Force (cu ft)	14531.04	12963.30
Min El Weir Flow (ft)	22.01	Hydr Depth (ft)	8.75	8.19
Min El Prs (ft)	17.25	W.P. Total (ft)	398.32	390.40
Delta EG (ft)	0.02	Conv. Total (cfs)	371940.8	302193.9
Delta WS (ft)	0.06	Top Width (ft)	335.00	335.00
BR Open Area (sq ft)	2744.48	Frctn Loss (ft)		
BR Open Vel (ft/s)	2.56	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	0.16	0.24
BR Sel Method	Press Only	Power Total (lb/ft s)	0.39	0.60

100 year HEC-RAS Scour Analysis

Contraction Scour

	Left	Channel	Right
Input Data			
Average Depth (ft):	4.91	10.16	2.68
Approach Velocity (ft/s):	0.74	5.02	0.49
Br Average Depth (ft):	4.65	8.89	4.63
BR Opening Flow (cfs):	129.92	5443.79	54.29
BR Top WD (ft):	63.44	239.81	27.27
Grain Size D50 (mm):	0.19	0.19	0.19
Approach Flow (cfs):	2469.57	3006.61	151.82
Approach Top WD (ft):	683.96	59.00	115.37
K1 Coefficient:	0.690	0.690	0.690
Results			
Scour Depth Ys (ft):	0.00	0.00	0.00
Critical Velocity (ft/s):	1.25	1.41	1.13
Equation:	Clear	Live	Clear

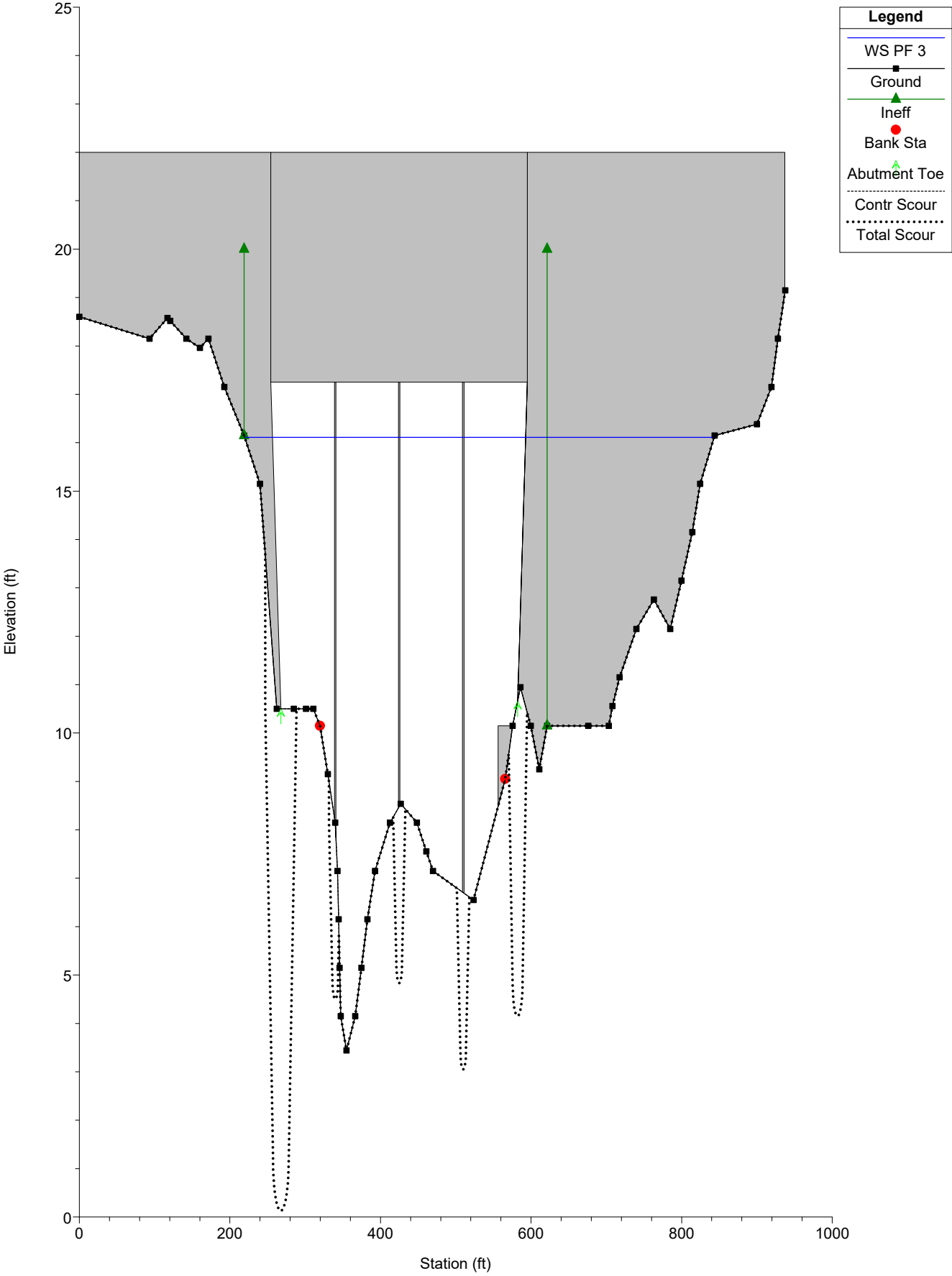
Pier Scour

	All piers have the same scour depth	
Input Data		
Pier Shape:	Square nose	
Pier Width (ft):	2.00	
Grain Size D50 (mm):	0.19000	
Depth Upstream (ft):	9.71	
Velocity Upstream (ft/s):	2.54	
K1 Nose Shape:	1.10	
Pier Angle:	0.00	
Pier Length (ft):	133.00	
K2 Angle Coef:	1.00	
K3 Bed Cond Coef:	1.10	
Grain Size D90 (mm):		
K4 Armouring Coef:	1.00	
Results		
Scour Depth Ys (ft):	3.65	
Froude #:	0.14	
Equation:	CSU equation	

Abutment Scour

	Left	Right
Input Data		
Station at Toe (ft):	267.63	582.12
Toe Sta at appr (ft):	1238.82	1366.50
Abutment Length (ft):	631.78	98.87
Depth at Toe (ft):	5.63	5.47
K1 Shape Coef:	1.00 - Vertical abutment	
Degree of Skew (degrees):	90.00	90.00
K2 Skew Coef:	1.00	1.00
Projected Length L' (ft):	631.78	98.87
Avg Depth Obstructed Ya (ft):	4.63	2.24
Flow Obstructed Qe (cfs):	2061.60	97.62
Area Obstructed Ae (sq ft):	2922.24	221.72
Results		
Scour Depth Ys (ft):	10.37	6.50
Qe/Ae = Ve:	0.00	0.44
Froude #:	0.02	0.05
Equation:	HIRE	Froehlich

Bridge Scour RS = 19.25



FDOT Complex Pier Local Scour Calculator Version 6.2



Bridge Number: Route:

Pier Number: Waterway:

Return Period:

Calculated by: Date:

Notes:

Input Data

Flow and Sediment Data

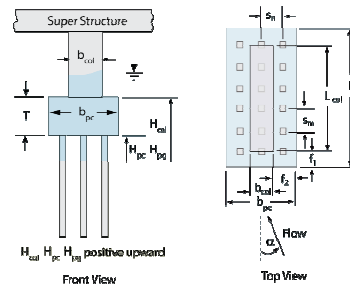
D50 (mm)	0.19
Angle of Attack, α (°)	0.00
Y_0 (ft)	7.72
V (ft/s)	2.20

Column Data

b_{col} (ft)	No Column
L_{col} (ft)	
H_{col} (ft)	
Shape	

Pile Cap Data

b_{pc} (ft)	No Pile Cap
L_{pc} (ft)	
T (ft)	
H_{pc} (ft)	
Shape	



Pile Group Data

n	1
m	8
b (ft)	2.0
s_n (ft)	0.0
s_m (ft)	10.0
Shape	Rectangular

Output Data

Column Data

K_{cols}	No Column
K_{colp} (ft)	
K_{colh}	
f_{ratio}	
K_{colf}	
K_{LOBcol}	
D^*_{col} (ft)	

Pile Cap Data

K_{pcs}	No Pile Cap
K_{pcp} (ft)	
K_{pch}	
K_{LOBpc}	
D^*_{pc} (ft)	

Pile Group Data

K_{pgs}	1.40
K_{pgp} (ft)	2.00
K_{pgpe} (ft)	2.00
K_{pgb}	1.00
D^*_{pg} (ft)	2.80

Effective Diameter of Complex Pier

$$D^*_{cs} = 2.8 \text{ ft}$$

Local Scour at Complex Pier

$$Y_{scs} = 3.9 \text{ ft}$$

500 year HEC-RAS Scour Analysis

Contraction Scour

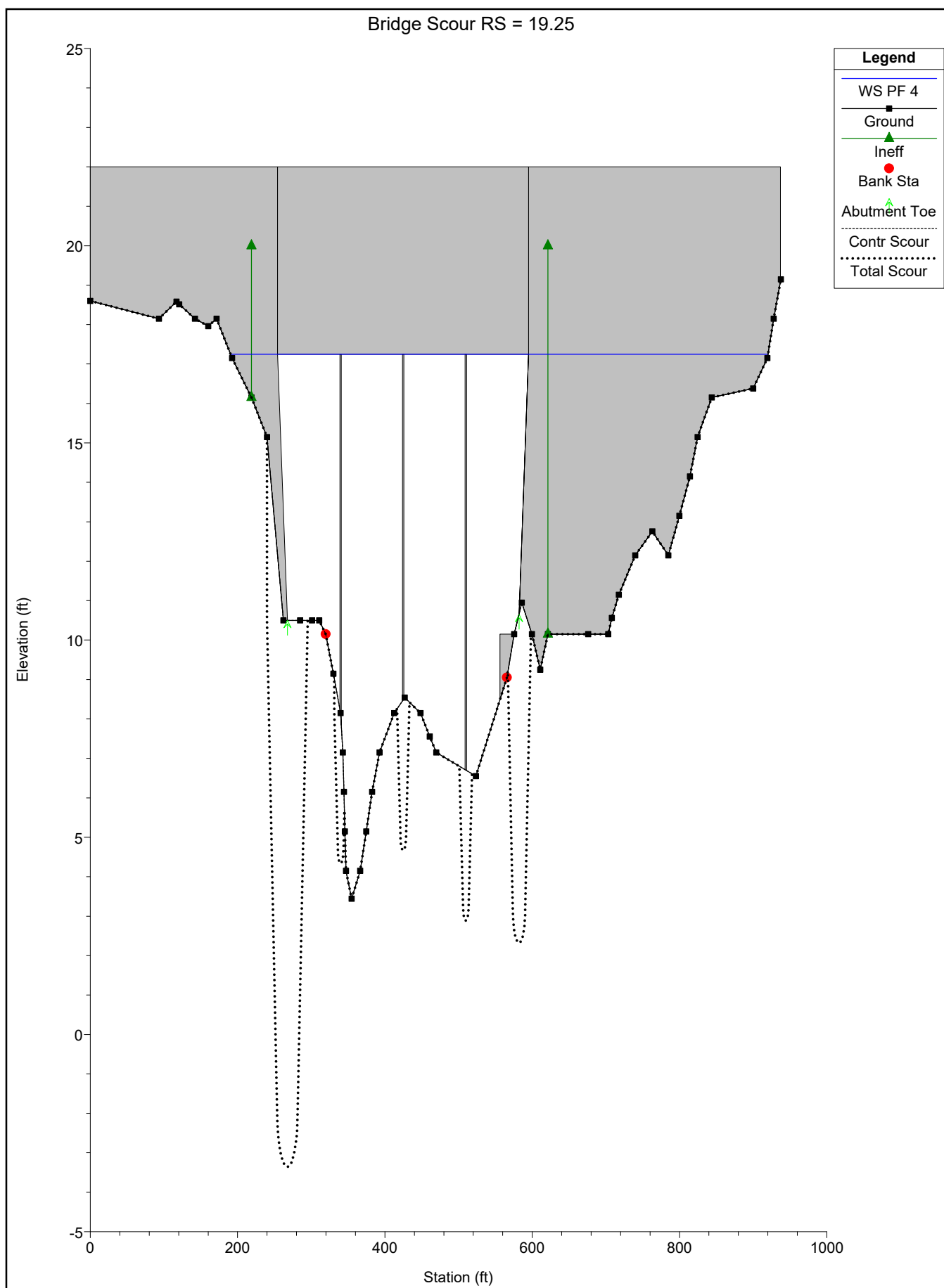
	Left	Channel	Right
Input Data			
Average Depth (ft):	5.54	11.55	3.29
Approach Velocity (ft/s):	0.75	5.11	0.53
Br Average Depth (ft):	5.61	10.03	5.37
BR Opening Flow (cfs):	188.96	6748.74	77.30
BR Top WD (ft):	65.68	239.81	29.51
Grain Size D50 (mm):	0.19	0.19	0.19
Approach Flow (cfs):	3272.59	3482.42	259.98
Approach Top WD (ft):	791.47	59.00	150.29
K1 Coefficient:	0.690	0.690	0.690
Results			
Scour Depth Ys (ft):	0.00	0.00	0.00
Critical Velocity (ft/s):	1.27	1.44	1.17
Equation:	Clear	Live	Clear

Pier Scour

All piers have the same scour depth	
Input Data	
Pier Shape:	Square nose
Pier Width (ft):	2.00
Grain Size D50 (mm):	0.19000
Depth Upstream (ft):	11.10
Velocity Upstream (ft/s):	2.69
K1 Nose Shape:	1.10
Pier Angle:	0.00
Pier Length (ft):	133.00
K2 Angle Coef:	1.00
K3 Bed Cond Coef:	1.10
Grain Size D90 (mm):	
K4 Armouring Coef:	1.00
Results	
Scour Depth Ys (ft):	3.81
Froude #:	0.14
Equation:	CSU equation

Abutment Scour

	Left	Right
Input Data		
Station at Toe (ft):	267.63	582.12
Toe Sta at appr (ft):	1238.82	1366.50
Abutment Length (ft):	739.29	133.79
Depth at Toe (ft):	7.01	6.86
K1 Shape Coef:	1.00 - Vertical abutment	
Degree of Skew (degrees):	90.00	90.00
K2 Skew Coef:	1.00	1.00
Projected Length L' (ft):	739.29	133.79
Avg Depth Obstructed Ya (ft):	5.25	2.87
Flow Obstructed Qe (cfs):	2792.52	184.19
Area Obstructed Ae (sq ft):	3878.32	383.67
Results		
Scour Depth Ys (ft):	13.86	8.33
Qe/Ae = Ve:	0.00	0.48
Froude #:	0.02	0.05
Equation:	HIRE	Froehlich



FDOT Complex Pier Local Scour Calculator Version 6.2



Bridge Number: Route:

Pier Number: Waterway:

Return Period:

Calculated by: Date:

Notes:

Input Data

Flow and Sediment Data

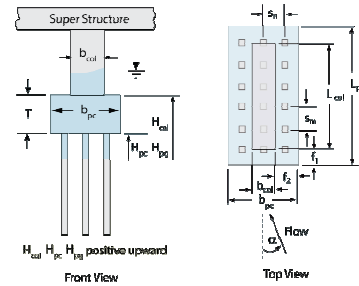
D50 (mm)	0.19
Angle of Attack, α (°)	0.00
Y_0 (ft)	8.75
V (ft/s)	2.39

Column Data

b_{col} (ft)	No Column
L_{col} (ft)	
H_{col} (ft)	
Shape	

Pile Cap Data

b_{pc} (ft)	No Pile Cap
L_{pc} (ft)	
T (ft)	
H_{pc} (ft)	
Shape	



Pile Group Data

n	1
m	8
b (ft)	2.0
s_n (ft)	0.0
s_m (ft)	10.0
Shape	Rectangular

Output Data

Column Data

K_{cols}	No Column
K_{colp} (ft)	
K_{colh}	
f_{ratio}	
K_{colf}	
K_{LOBcol}	
D^*_{col} (ft)	

Pile Cap Data

K_{pcs}	No Pile Cap
K_{pcp} (ft)	
K_{pch}	
K_{LOBpc}	
D^*_{pc} (ft)	

Pile Group Data

K_{pgs}	1.40
K_{pgp} (ft)	2.00
K_{pgpe} (ft)	2.00
K_{pgb}	1.00
D^*_{pg} (ft)	2.80

Effective Diameter of Complex Pier

$$D^*_{cs} = 2.8 \text{ ft}$$

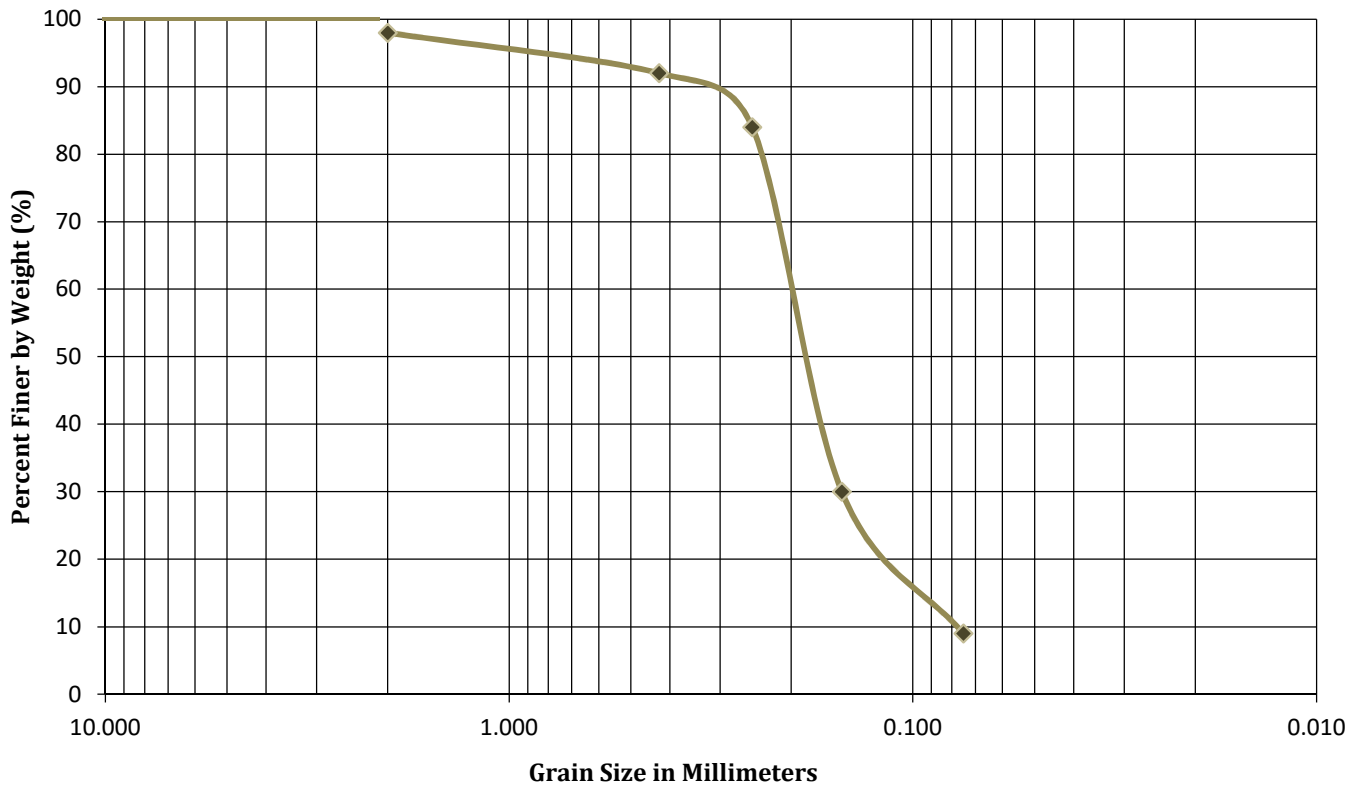
Local Scour at Complex Pier

$$Y_{scs} = 4.0 \text{ ft}$$

Grain Size Distribution Report
LPGA Boulevard PD&E Study from US 92 (SR 600) to Williamson Boulevard
Volusia County, Florida
FPID: 448456-1-22-01
Tierra Project No.: 5511-21-038

Station	Offset	Sample No.	Depth (ft)
2267+65	14' RT.	Sample 1	0.0-1.0

Grain Size Distribution Curve



Material Description	Classification	
	USCS	AASHTO
Brown Sand	SP-SM	A-3

Sieve Number	Diameter (mm)	Percent Finer by Weight (%)	Coefficients			
10	2.000	98	D ₁₀	0.078	D ₃₀	0.150
40	0.425	92	D ₅₀	0.185	D ₆₀	0.200
60	0.250	84	D ₈₅	0.260	D ₉₀	0.320
100	0.150	30				
200	0.075	9	C _u	2.56	C _c	1.44



Grain Size Distribution Report
LPGA Boulevard PD&E Study from US 92 (SR 600) to Williamson Boulevard
Volusia County, Florida
FPID: 448456-1-22-01
Tierra Project No.: 5511-21-038

Station	Offset	Sample No.	Depth (ft)
2267+65	14' RT.	Sample 2	1.0-2.0

Grain Size Distribution Curve



Material Description	Classification	
	USCS	AASHTO
Brown Sand	SP-SM	A-3

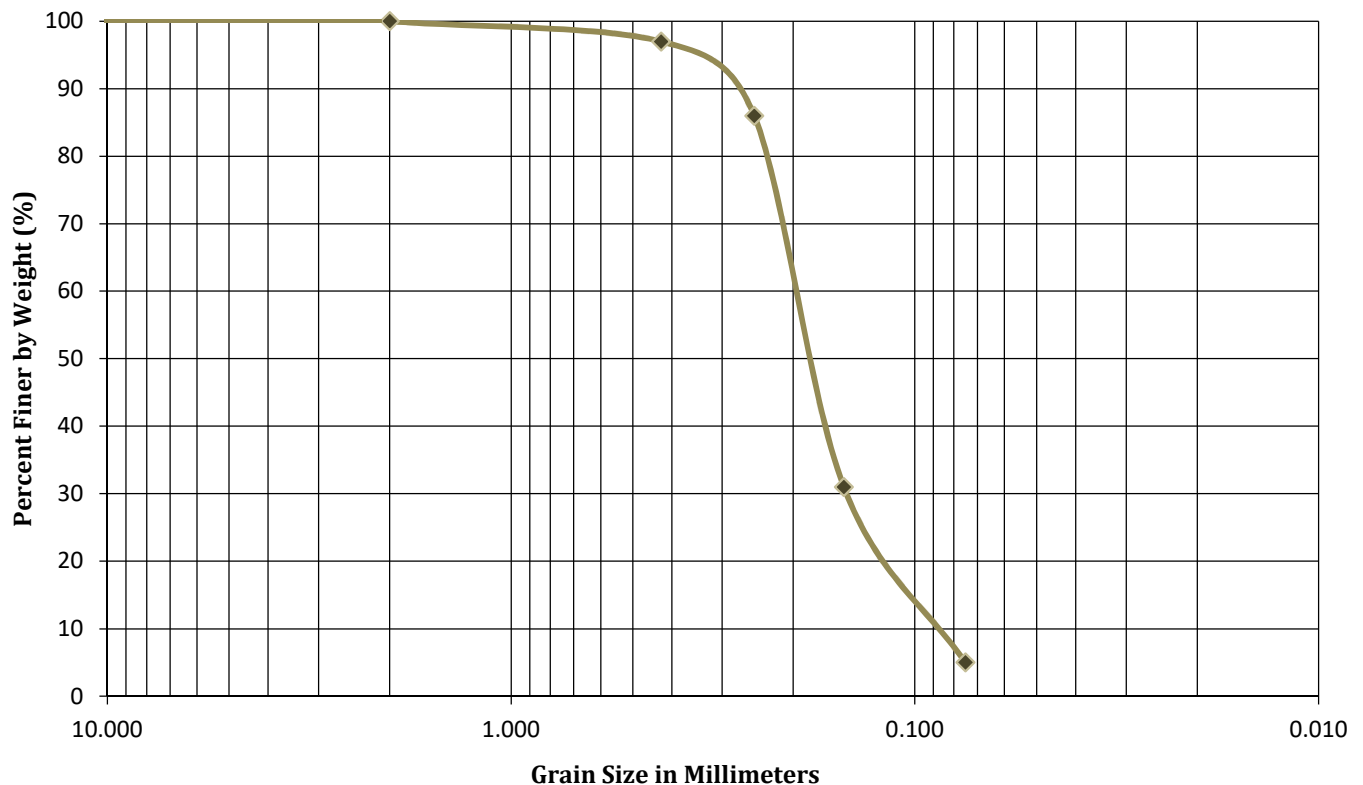
Sieve Number	Diameter (mm)	Percent Finer by Weight (%)	Coefficients			
10	2.000	99	D_{10}	0.083	D_{30}	0.140
40	0.425	96	D_{50}	0.185	D_{60}	0.199
60	0.250	85	D_{85}	0.250	D_{90}	0.285
100	0.150	32				
200	0.075	7	C_u	2.40	C_c	1.19



Grain Size Distribution Report
LPGA Boulevard PD&E Study from US 92 (SR 600) to Williamson Boulevard
Volusia County, Florida
FPID: 448456-1-22-01
Tierra Project No.: 5511-21-038

Station	Offset	Sample No.	Depth (ft)
2267+65	14' RT.	Sample 3	2.0-3.0

Grain Size Distribution Curve



Material Description	Classification	
	USCS	AASHTO
Brown Sand	SP-SM	A-3

Sieve Number	Diameter (mm)	Percent Finer by Weight (%)	Coefficients			
10	2.000	100	D ₁₀	0.089	D ₃₀	0.140
40	0.425	97	D ₅₀	0.185	D ₆₀	0.198
60	0.250	86	D ₈₅	0.240	D ₉₀	0.275
100	0.150	31				
200	0.075	5	C _u	2.22	C _c	1.11



APPENDIX I

Deck Spread Calculations

Hydraulic Analysis Report

(From FHWA Hydraulic Toolbox)

Project Data

Project Title: LPGA Bridge Spread

Designer: FF

Project Date: Tuesday, January 24, 2023

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: Curb and Gutter Analysis

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.00700 ft/ft

Cross-Slope of Pavement: 0.0200 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 2.5000 ft

Gutter Result Parameters

Design Flow: 0.9500 cfs  flow rate = $55' \times 200' / 43560 \times 0.95 \times 4 \text{ in/hr}$

Gutter Result Parameters

Width of Spread: 7.3792 ft  < allowable spread = $11'/2 + 2.5' = 8.0'$

Gutter Depression: 0.0000 in

Area of Flow: 0.5445 ft²

Eo (Gutter Flow to Total Flow): 0.6686

Gutter Depth at Curb: 1.7710 in

Inlet Input Parameters

Inlet Location: Inlet on Grade

Inlet Type: Grate

Grate Type: P - 1-7/8

Grate Width: 0.0000 ft

Grate Length: 0.0000 ft

Local Depression: 0.0000 in

Inlet Result Parameters

Intercepted Flow: 0.6352 cfs

Bypass Flow: 0.3148 cfs

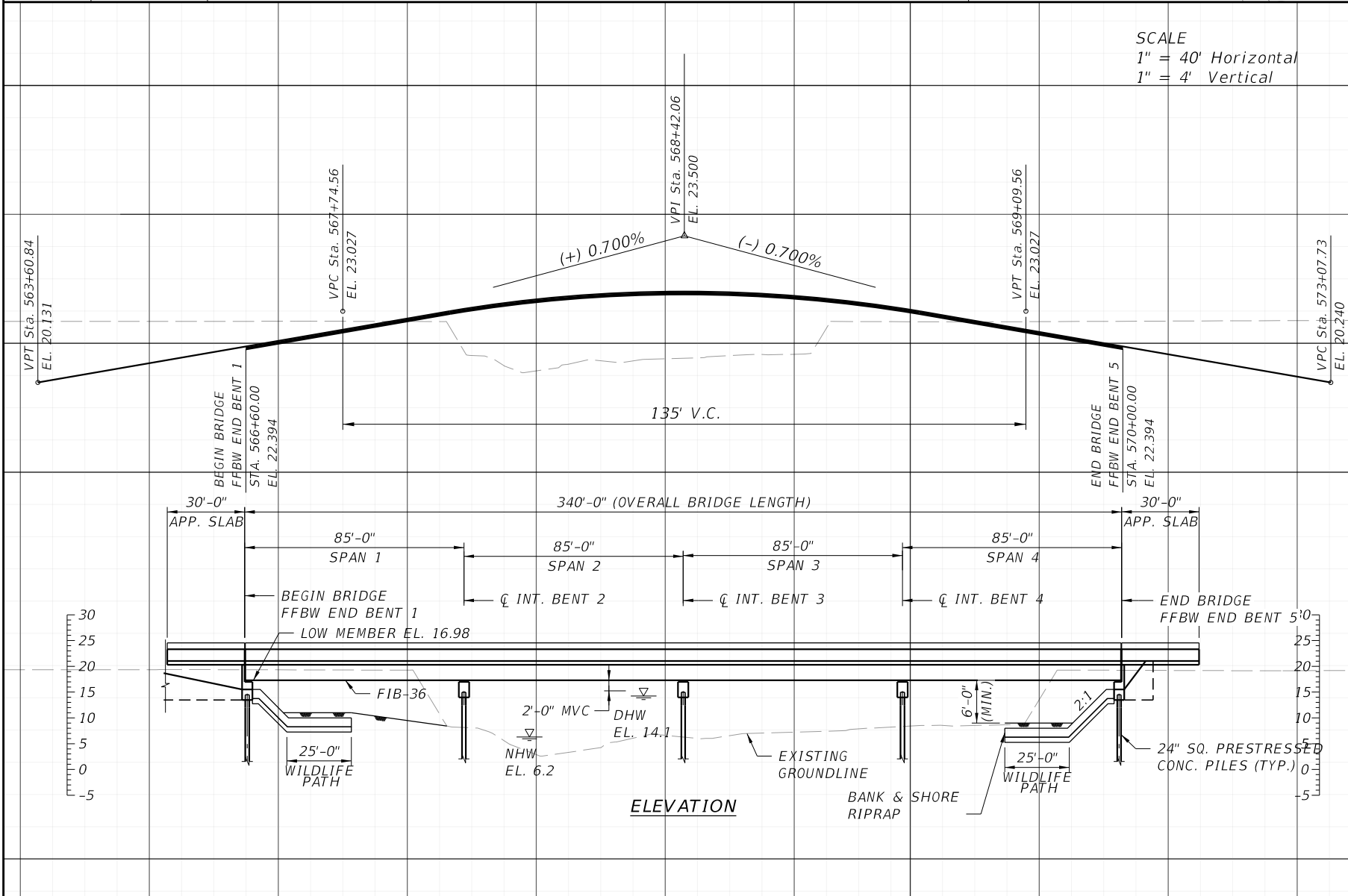
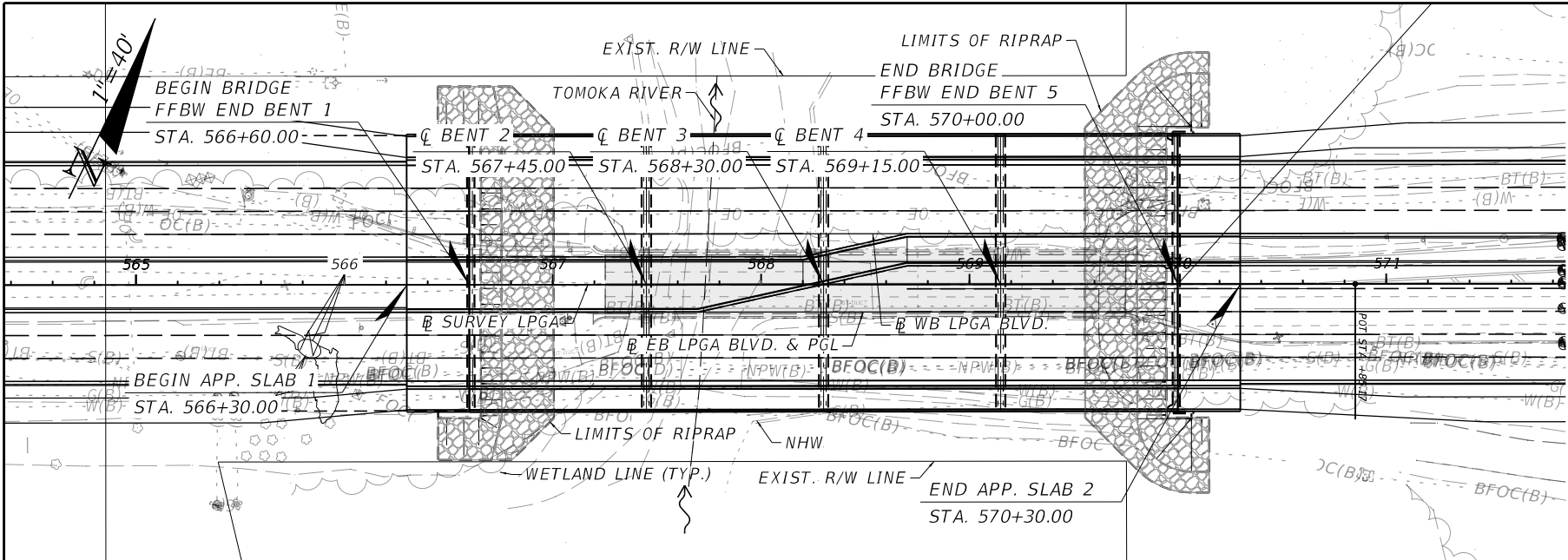
Approach Velocity: 1.7446 ft/s

Splash-over Velocity: 2.2186 ft/s

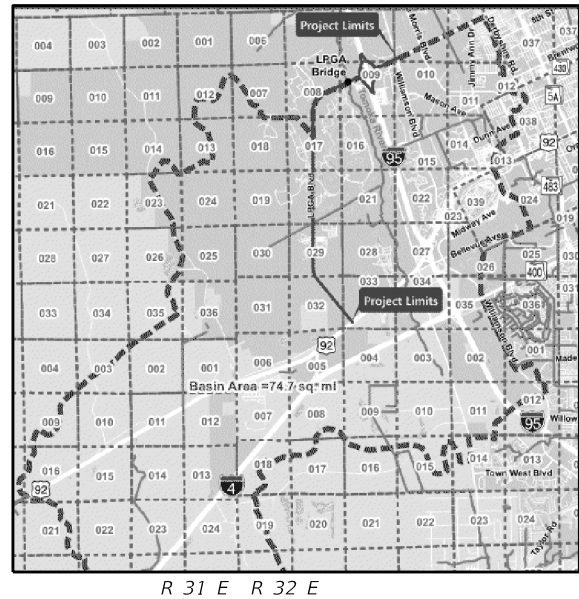
Efficiency: 0.6686

APPENDIX J

BHRS



REVISIONS				ENGINEER OF RECORD	STA DEPARTMENT	
DATE	DESCRIPTION	DATE	DESCRIPTION	Xiaoyu Fu LICENSE NUMBER: 49940 HDR ENGINEERING, INC. 315 E ROBINSON STREET, SUITE 400 ORLANDO, FL 32801	ROAD NO.	COUNTY
					LPGA	VOLUNTEER



T 15 S
T 16 S

N.T.S.

(REFERENCE) FOUNDATION OVERALL LENGTH SPAN LENGTH TYPE CONSTRUCTION AREA OF OPENING@D.F. BRIDGE WIDTH ELEV. LOW MEMBER	EXISTING STRUCTURES			PROPOSED STRUCTURE 24' PILE 340' (4)-85' 2255 SF 133' 16.98
	(1) 18" PILE 250' (5)- 50' 1862 SF 30' 15.29	(2)	(3)	

HYDRAULIC DESIGN DATA

NOTE:
This hydraulic data is a summary of design calculations and is provided for informational purposes only. The user is cautioned against the assumption of precision for the discharge rates, units are in cubic feet per second and the design stages, feet-NAVD 1988.

TERMS:
Design Flood: Utilized to assure a desired level of hydraulic performance.
Base Flood: Has a 1% chance of being exceeded in any given year (100 year frequency)
Overtopping Flood: Causes flow over the highway, over a watershed divide, or thru emergency relief structures.
Greatest Flood: The most severe that can be predicted where overtopping is not practicable.

WATER SURFACE ELEVATIONS:		N.H.W. (Non-Tidal)	6.2	M.H.W. (Tidal)	
		CONTROL (Non-Tidal)		M.L.W. (Tidal)	
FLOOD DATA:					
STAGE ELEV. NAVD (ft)	MAX. EVENT OF RECORD	DESIGN FLOOD	BASE FLOOD	☐ OVERTOPPING or ☒ GREATEST FLOOD	
DISCHARGE (cfs)	15.93	14.1	15.0		
AVERAGE VELOCITY (f/s)	4780	4786	5628		15.4
EXCEEDANCE PROB. (%)		2.12	2.20		7015
FREQUENCY (yr.)		2%	1%		2.39
		50	100		0.2%
					500

SCOUR PREDICTIONS FOR PROPOSED STRUCTURE DESCRIBED ABOVE: N/A (NO PILE)		TOTAL SCOUR ELEVATION	
PIER INFORMATION		LONG TERM	WORST CASE < 100 yr.
NUMBERS	SIZE AND TYPE	SCOUR ELEV.	FREQ. (yr.)
1	24" CONC. PILE	8.8	4.9
2	24" CONC. PILE	7.2	3.3
3	24" CONC. PILE	8.0	4.1

HYDRAULIC RECOMMENDATIONS			
1. BEGIN BRIDGE STATION	123+04.19	END BRIDGE STATION	123+84.19
2. CLEARANCE PROVIDED: NAV: HORIZ. N/A VERT. _____ ABOVE EL. _____		DRIFT: HORIZ. 40.0 VERT. 7.6 ABOVE EL. 42.1	
3. MINIMUM CLEARANCE: NAV: HORIZ. N/A VERT. _____ ABOVE EL. _____		DRIFT: HORIZ. 10.0 VERT. 2.0 ABOVE EL. 42.1	
4. ABUTMENTS:			
RUBBLE GRADE:		BEGIN BRIDGE	END BRIDGE
SLOPE:		BANK AND SHORE	BANK AND SHORE
BURIED OR NON-BURIED HORIZ. TOE:		2:1	2:1
TOE HORIZ. DISTANCE:		NON-BURIED	NON-BURIED
LIMIT OF PROTECTION:		25'	25'
		10'	10'

5. _____

REMARKS: WIDENING EXISTING BRIDGE