Beach Road Drainage Improvements Feasibility Study

Final Report

Prepared for:



Water Resources 1001 Sarasota Center Boulevard Sarasota, Florida 34240

Prepared by:



and



December 2005

WilsónMiller & PBS

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FOREWORD

This report was prepared for Sarasota County by WilsonMiller and Post, Buckley, Schuh & Jernigan (PBS&J) under contract number 2001-192.

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Several staff from Sarasota County provided significant support and guidance to this project including: Ms. Theresa Connor, Mr. Bruce Maloney, Ms. Kathy Meaux, and Mr. Peter Peduzzi.

EXECUTIVE SUMMARY

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On April 12, 2004, concentrations of the fecal indicator bacteria groups *Enterococcus* and fecal coliforms were above state-mandated limits in the gulf, causing recreational water quality to be rated "poor," and a "no swim" advisory to be issued for Siesta Key Beach. Sarasota County staff immediately began comprehensive water quality monitoring at several locations upstream of the beach area that received the advisory. However, since the coliform bacteria tests only serve as an indicator of fecal contamination, a definitive source for the high bacteria counts could not be determined.

A study was initiated to determine the cause of the elevated bacterial counts. A storm sewer survey of the area identified an underground system of inlets and pipes that delivers stormwater to an underground vault, from which the first flush of stormwater is pumped to a retention pond. Subsurface flow from the retention pond along with excess runoff from the road flow to a ditch that discharges at Siesta Key Beach and empties near the Florida Department of Health (DOH) recreational beach monitoring site. Although the stormwater pipe system should not contain sewage, the observation of high bacterial counts during storm events called this assumption into question. Smoke tests and inspections of the wastewater force main system by Siesta Key Utilities Authority (SKUA) did not reveal any leaks into the stormwater conveyance system.

High levels of indicator bacteria (fecal coliforms and enterococci) in the stormwater/vault/drainage ditch suggested that these might be environmental reservoirs of indicator bacteria. No human-specific signals were obtained from the polymerase chain reaction (PCR) tests during either sample event, suggesting that no relationship exists between fecal indicator bacteria in the stormwater system and existing wastewater conveyance systems. Analysis of the *Enterococcus* fingerprints showed that during the rain event, populations in beach water and sediments were similar to populations in the ditch sediments and ditch water, as well as to populations in vault water and water in the stormwater pipe system. Similar results were found for *E. coli* populations.

Based on the results of the source tracking study, a feasibility study to evaluate various options for disinfection and diversion of stormwater from Siesta Key Beach was conducted. Sarasota County retained WilsonMiller and PBS&J to prepare a feasibility study for drainage improvements to Beach Road in the vicinity of Siesta Beach. WilsonMiller staff evaluated alternatives for a different discharge location for the Beach Road drainage system other than the Gulf of Mexico. PBS&J staff evaluated treatment and disinfection alternatives to improve water quality prior to discharge. A "treatment train" approach was recommended to treat and disinfect both baseflow and stormwater runoff.

Prior to the selection of a preferred alternative, the project team developed a decision tree to assist in the logical selection of optimal treatment alternatives, water delivery methods, and discharge locations. The decision tree is presented in **Figure E-1** on the following page.

Considerations that influenced alternative selections in the decision tree included identification of an alternative discharge location. An alternative discharge location is necessary since the existing freshwater baseflow from the ditch to the beach attracts large flocks of wading and shorebirds. This creates a secondary source of fecal loading to the beach and could pose a health risk to recreational users in or near this outfall. Discharge options included:

- 1. Maintaining the existing discharge in the current configuration
- 2. Construction of an offshore outfall via a subsurface pipe
- 3. Directing the existing baseflow and stormwater runoff away from the beach and allowing only infrequent high flows caused by major storm events (e.g., hurricanes) to continue to pass through to the beach.

A cost benefit analysis was performed to determine the preferred alternative for treating and discharging stormwater at the Siesta Key Beach site. Since Alternatives 1 and 2 had fatal flaws; in that the water quality discharged from either alternative would not likely meet water quality standards consistently at the discharge, only Alternative 3 was evaluated with a discharge location to the Grand Canal compared for cost and feasibility based on gravity sewer and pumping/force main options.

The preliminary cost analysis was prepared for a gravity alternative to the Grand Canal at \$1.8 million and a pumping alternative to the Grand Canal at \$1.4 million.

The recommendation is to proceed with a Preliminary Design Report phase to further define project design components, costs of construction, and operation and maintenance costs.

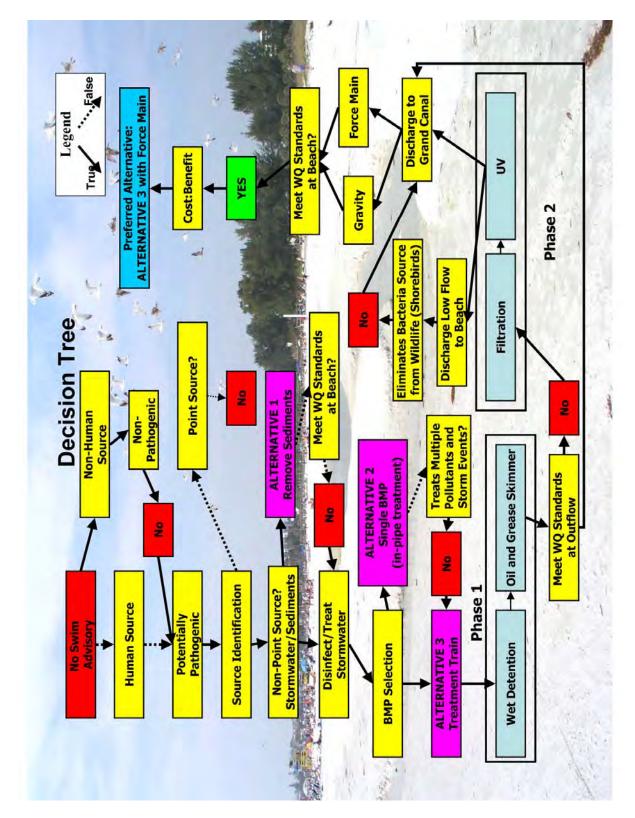


Figure E-1. Decision tree used to select the preferred stormwater treatment alternative for Siesta Key Beach.

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1.0 INTRODUCTION

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Siesta Key Beach is located on a barrier island on the west coast of Florida in Sarasota County. It has been consistently listed among the top beaches in the United States and the world. On April 12, 2004, immediately following a significant rainfall event (Figure 1), fecal indicator bacteria levels at Siesta Key Beach were found to be elevated, causing water quality to be rated "poor" for both *Enterococcus* and fecal coliform parameters. As a result, a "no swim" advisory was issued for the recreational beach area.

Sarasota County staff have sampled several locations upstream of the beach area that received the advisory. The existing stormwater drainage system on Beach Road drains to a low point at which a stormwater pump station can discharge accumulated water in the pipe into a small retention pond. The pond discharges through side bank filtration into a ditch/swale system draining to the Gulf of Mexico and Siesta Key Beach. Discharge from the pipe system can also enter the Grand Canal via pipes along Calle De Siesta and Plaza De Las Palmas streets. Local residents report street flooding from a relatively small amount of rainfall. See Vicinity Map **Exhibit 1 – Appendix A**.

Sample results from the County monitoring effort showed very high concentrations (above Class III Recreational Water Quality Standards) of both total and fecal coliform bacteria at numerous locations in the ditch and stormwater pipe drainage system that discharged to Siesta Key Beach. A follow-up study was conducted by the project team consisting of PBS&J, the University of South Florida, and Biological Consulting Services of North Florida Inc., to assess the source(s) of bacterial contamination at the beach (Harwood et al., 2005).

Although no evidence of a human source was found for the indicator bacteria within the stormwater system, there was evidence that the stormwater conveyance system is acting as a reservoir, or "breeding ground" for indicator bacteria. Rainfall flushes high bacterial loads through the system, and probably resuspends bacteria living in the sediments of the stormwater pipe, a vault structure, and drainage ditch, further elevating the load to receiving waters at the beach. The microbial pollution delivered to Siesta Key Beach via the stormwater system does not carry the same level of risk that it would if the pollution were from human sewage. However, members of the enterococci, including *Enterococcus faecium* and *Enterococcus faecalis*, are opportunistic pathogens, and elevated levels could conceivably pose a risk for the very young or immunocompromised. One of the final recommendations from this study was that the diversion of the drainage ditch from the beach should decrease or stop the intermittent observations of high bacterial levels at the beach. However, treatment of the diverted runoff should be considered if it will be discharged to other surface waters that would have human contact.

Sarasota County retained WilsonMiller and PBS&J to prepare a feasibility study for drainage improvements to Beach Road in the vicinity of Siesta Beach. WilsonMiller staff evaluated alternatives for a different discharge location for the Beach Road drainage system other than the Gulf of Mexico. PBS&J staff evaluated treatment and disinfection alternatives to improve water quality prior to discharge.

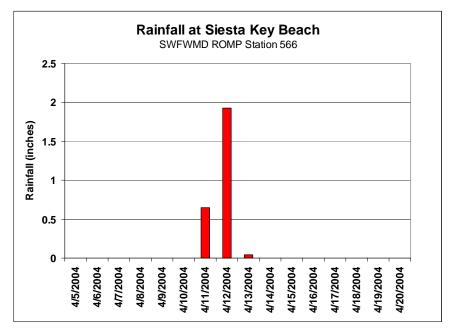


Figure 1. Rainfall, in inches, during the beach advisory at Siesta Key Beach.

The purpose of this feasibility study is to determine if a different discharge route for stormwater runoff is plausible after the discharge is treated or disinfected to enhance water quality. A treatment train approach was considered based on the existing site conditions, potential to treat other stormwater-related contaminants, and cost.

2.0 EXISTING SYSTEM DESCRIPTION

2.0 Existing System Description

Beach Road is a paved thoroughfare that runs parallel to Siesta Key Beach (**Figure 2**). A detailed study area map Exhibit 2 is presented in **Appendix B**. During roadway improvements in the 1980s, a series of underground pipes were installed under Beach Road which transport stormwater runoff from a 60±-acre basin to two outfalls to the Grand Canal and also a concrete vault located farther downstream on the west side of the road. A pump system empties the stormwater pipe during the onset of a storm event and pumps the first inch of runoff from the vault into a retention pond located immediately east of the pump station and vault. Subsurface flows from the retention pond drain laterally into an adjacent ditch that flows to the beach and into the Gulf of Mexico. This ditch system does not appear to be a natural feature based on a review of 1948 aerials of the site (**Figure 3**). The ditch is heavily shaded by both native (mangrove) and exotic (Brazilian pepper and Australian pine trees) vegetation which have recruited along the banks of the ditch. This vault-pond-ditch system has been considered a possible source of indicator bacteria at Siesta Key Beach.

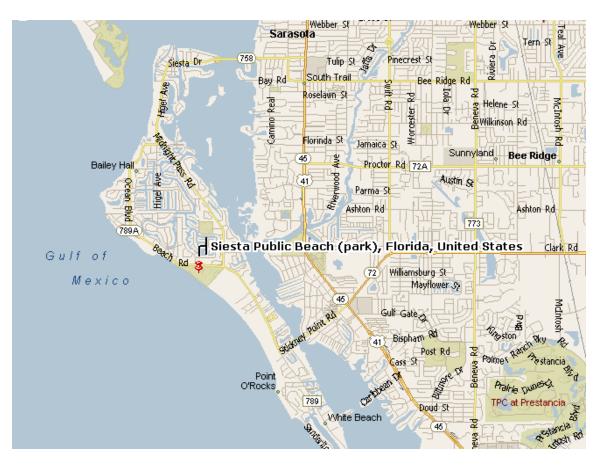


Figure 2. General project location map of Siesta Key Beach area.

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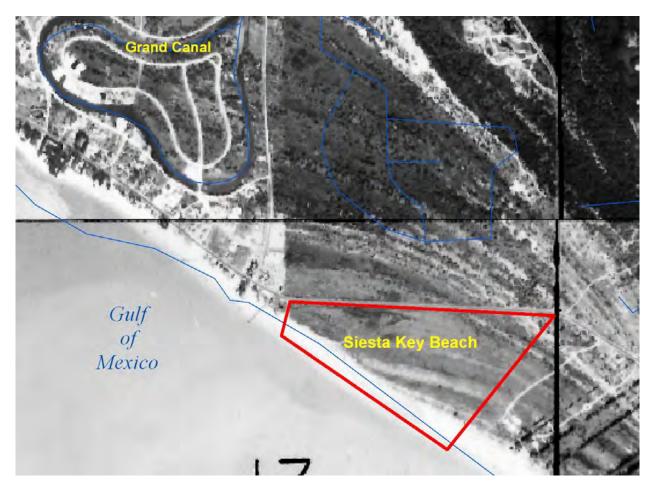


Figure 3. Historical aerial of the Siesta Key Beach area.

2.1 Development of Stormwater Model

Knowledge of runoff flow rates and volumes is critical to any stormwater design project, especially for those requiring specialized stormwater treatment systems including disinfection devices and pumping systems. To determine this information, drainage basins were developed from aerial photography, field observations and from record drawings of the Beach Road storm sewer system. This information is shown on the Drainage Basin Map, Exhibit 3 – **Appendix C**.

An existing stormwater system ICPR computer model was created from both surveyed pipe elevations and from County Record Drawings. Model nodal schematic drawings Exhibits 4 and 5 are presented in **Appendix D**. Drainage basin curve numbers (CN) and times of concentration were assigned based on a complete urban build-out average condition CN and a relatively short time of concentration of ten minutes. An expected flooding level of service provided by an older storm sewer system is typically a few inches of rain per day. This model was used to determine the existing level of service (LOS) from street flooding for a varying amount of rainfall. **Table 1** shows the total volume of stormwater runoff predicted for various rainfall amounts ranging from 1 to 5 inches over a 24-hour period.

Simulating the existing retention pond with the beach outfall and the two existing gravity outfall pipes to the Grand Canal, it was determined that no street flooding occurs from a 2-inch rainfall but street flooding occurs from a 3-inch rainfall. All computer modeling simulations accounted for a high tide of elevation 1.10. This defines the LOS that the existing stormwater system can provide. Runoff from more than two inches of rainfall cannot pass through the stormwater system without causing street flooding. This defines a target of an amount of rainfall that should be considered in the design of water quality improvements including both gravity and force main scenarios.

Table 1. Beach Road Design Flow Rates

				RAINFALL	RAINFALL	RAINFALL	RAINFALL		RAINFALL	RAINFALL		RAINFALL	RAINFALL
L				P"	P"	P"	P"	P"	P"	P"	P"	P"	P"
			S	1	1	2	2	3	3	4	4	5	5
BASIN	CN	AREA	1000/	RUNOFF	VOLUME	RUNOFF	VOLUME	RUNOFF	VOLUME	RUNOFF	VOLUME	RUNOFF	VOLUME
NO.		AC	CN-10	Q"	CF	Q"	CF	Q"	CF	Q"	CF	Q"	CF
1000			. = .		=				1001.05	1.00		1.00	10000 70
1000	68	1.90	4.71	0.00	5.01	0.19	1341.31	0.63	4321.65	1.20	8310.82	1.88	12963.53
1010	68	0.97	0.87	0.40	517.16	1.24	4355.69	2.16	7609.54	3.12	10977.21	4.09	14398.76
1020	68	5.61	4.71	0.00	14.79	0.19	3960.40		12760.24	1.20	24538.80	1.88	38276.52
1030	68	4.58	4.71	0.00	12.07	0.19	3233.27	0.63	10417.45	1.20	20033.46	1.88	31248.93
1040	68	0.56	4.71	0.00	1.48	0.19	395.33	0.63	1273.75	1.20	2449.51	1.88	3820.83
1050	68	1.47	4.71	0.00	3.88	0.19	1037.75	0.63	3343.59	1.20	6429.95	1.88	10029.68
1080	92	0.35	0.87	0.40	517.16	1.24	1589.60		2777.09	3.12	4006.12	4.09	5254.81
1100	70	0.44	4.29	0.00	7.36	0.24	384.29	0.71	1140.86	1.33	2123.75	2.04	3252.41
1114	92	0.43	0.87	0.40	620.88	1.24	1908.42	2.16	3334.08	3.12	4809.60		6308.74
1116	92	0.43	0.87	0.40	620.88	1.24	1908.42	2.16	3334.08	3.12	4809.60	4.09	6308.74
1118	80	4.08	2.50	0.08	1234.20	0.56	8330.85	1.25	18513.00	2.04	30237.90	2.89	42844.37
1120	92	0.35	0.87	0.40	517.16	1.24	1589.60	2.16	2777.09	3.12	4006.12	4.09	5254.81
1132	75	1.59	3.33	0.03	174.90	0.38	2198.74	0.96	5545.36	1.67	9619.50	2.45	14136.48
1134	80	7.04	2.50	0.08	2129.60	0.56	14374.80		31944.00	2.04	52175.20	2.89	73927.54
1142	92	0.74	0.87	0.40	1079.61	1.24	3318.41	2.16	5797.37	3.12	8363.05	4.09	10969.78
1144	92	0.54	0.87	0.40	788.89	1.24	2424.82	2.16	4236.24	3.12	6111.03	4.09	8015.81
1161	98	1.38	0.20	0.79	3961.96	1.77	8888.45	2.77	13867.36	3.77	18860.92	4.76	23860.62
1182	80	1.58	2.50	0.08	477.95	0.56	3226.16		7169.25	2.04	11709.78	2.89	16591.69
1184	92	0.97	0.87	0.40	1417.08	1.24	4355.69	2.16	7609.54	3.12	10977.21	4.09	14398.76
1186	98	2.33	0.20	0.79	6689.40	1.77	15007.32	2.77	23413.74	3.77	31844.89	4.76	40286.40
1188	98	0.62	0.20	0.79	1780.01	1.77	3993.36		6230.27	3.77	8473.75	4.76	10719.99
1151	98	1.51	0.20	0.79	4335.19	1.77	9725.77	2.77	15173.71	3.77	20637.68	4.76	26108.36
1146	98	1.57	0.20	0.79	4507.45	1.77	10112.23	2.77	15776.64	3.77	21457.72	4.76	27145.77
1329 1337	80 80	1.91 3.91	2.50	0.08	577.78	0.56	3899.98 7983.73		8666.63 17741.63	2.04 2.04	14155.49 28977.99	2.89	20057.05
			2.50		1182.78	0.56					17787.00	2.89	41059.19
1347A 1357	80 80	2.40 1.60	2.50 2.50	0.08	726.00 484.00	0.56 0.56	4900.50 3267.00		10890.00 7260.00	2.04 2.04	11858.00	2.89 2.89	25202.57 16801.71
1360	80 80	2.16	2.50	0.08	653.40	0.56	4410.45		9801.00	2.04	16008.30	2.89	22682.31
1368	80	1.20	2.50	0.08	363.00	0.56	2450.25	1.25	5445.00	2.04	8893.50	2.89	12601.29
1372	80	2.43	2.50	0.08	735.08	0.56	4961.76		11026.13	2.04	18009.34	2.89	25517.60
1372	80	2.43	2.50	0.08	877.25	0.56	5921.44	1.25	13158.75	2.04	21492.63	2.89	30453.11
1302	00	2.90	2.30	0.00	077.25	0.50	5921.44	1.20	13130.75	2.04	21492.03	2.09	30433.11
					1"		2"		3"		4"		5"
			TOTALS	CE	37013.35		145455.83		292355.01		460145.80		640498.15
			TOTALS	AF	0.85		3.34		6.71		10.56		14.70
				GALS	276896.86		1088155.0		2187107.8		3442350.7		4791566.64
				UNLU	210030.00		9		0		5442550.7		-10100.04
			*	GPM	192.29		755.66		1518.82		2390.52		3327.48
				6" gpm		500.00							
				8" gpm				1000.00					
			1	10" gpm				1500.00				1	
			1	12" gpm					1	2000.00		1	
			* volume	pumping rate	e in gpm ove	er 24 hours	1	1	1			1	

2.2 Evaluation of Disinfection Alternatives

Since disinfection technologies have been utilized extensively in the water and wastewater industry, a review of current data was performed to determine if any emerging techniques could be transferred to the Siesta Key Beach scenario. The majority of domestic water and wastewater treatment facilities in Florida use chlorination for disinfection. The significant concerns associated with chlorination include:

- Production of potentially hazardous byproducts (chlorinated organic compounds, total tahalomethanes (TTHM) and Haloacetic Acids (HAA5).
- Toxicity concerns from chlorine residual for the biota in the receiving surface waters. Chemical dechlorination would be required.
- Inefficiency of chlorine in inactivation of pathogens
- Potential hazards associated with handling of chlorine in a gas or liquid form

Several alternative disinfection techniques have been developed to address some of these concerns. These include the following:

Chlorine Dioxide

Chlorine dioxide has had extensive use as a water disinfectant in Europe and the U.S. but has yet to be used as a wastewater disinfectant. It is both a powerful bactericide and virucide even at high pH levels and has an important advantage over chlorine in that it does not appear to produce THMs.

Chlorine dioxide is a yellow explosive gas produced *in situ* from the reaction of sodium chlorite with either chlorine gas or hydrochloric acid. Although THMs are not formed, chlorine dioxide can react with organics to yield other potentially hazardous chlorinated or unchlorinated by-products, some of which are known carcinogens.

Toxicity concerns from residual concentrations discharged to receiving waters would likely preclude the use of this chemical. Removal of this disinfectant (dechlorination) would be required prior to discharge.

Chloramines

Chloramines are composed of three chemicals formed when chlorine and ammonia-nitrogen are combined in water: monochloramine (NH2CI), dichloramine (NHCI2), and trichloramine, or nitrogen trichloride (NCI3). Monochloramine is preferred because of its biocidal properties and minimal taste and odor. Monochloramine is created by controlling the chlorine-to-ammonia ratio to a value generally less than 5:1 by weight or 1:1 on a molar basis.

Chloramines play a major role in disinfecting pathogens, controlling tastes and odors, oxidizing inorganics and organics, and suppressing microbiological growth in water distribution systems. For utilities with extensive distribution systems and long detention times, chloramines aid in maintaining disinfectant residuals. Chloramines also have been found to produce fewer total trihalomethanes (TTHMs) than free chlorine.

Because they are more stable and less reactive than free chlorine, chloramines as secondary disinfectants help maintain a detectable residual throughout the water distribution system. Although chloramines are weaker disinfectants and require greater contact times than chlorine, utilities that experience bacterial regrowth in their distribution systems and switch to chloramines find that chloramines apparently penetrate deeper into the biofilm layer to inactivate microorganisms and inhibit their growth.

Because chloramines produce fewer TTHM disinfection by-products, the US Environmental Protection Agency has suggested the use of chloramines to replace free chlorine as a disinfectant. Case studies indicate common TTHM reductions of 40 to 80 percent when free chlorine is replaced by chloramines. Although Haloacetic Acids are present in lower concentrations with chloramination than with chlorination, research shows that, under certain circumstances, dihaloacetic acids and dissolved organic halogen are not well controlled by the use of chloramines. Research results imply that many unreported DBPs are created by chloramines. Generally, DBP formation decreases as pH increases and the chlorine-to-ammonia ratio decreases. Changing these two operating variables can significantly impact DBP formation.

Research has found that two-thirds of medium and large systems in the U.S. that chloraminate experience nitrification to some degree. With this two-step microbial process, ammonia is converted to nitrite and then to nitrate. The intermediate stage-nitrite--depletes the chloramine residual and increases heterotrophic bacteria. Two groups of factors influence nitrification and methods of control: water quality factors (pH, temperature, chloramine residual, ammonia concentration, chlorine-to-ammonia ratio, and concentrations of organic compounds) and distribution factors (detention time, reservoir design and operation, sediment, tuberculation in piping, biofilm, and absence of sunlight).

Increased chloramines also lead to accelerated corrosion and degradation of elastomers (i.e., gaskets) and some metals in distribution systems.

Toxicity concerns from residual concentrations discharged to receiving waters would likely preclude the use of this chemical. Removal of this disinfectant (dechlorination) would be required prior to discharge.

Peracetic Acid

Peracetic Acid (PAA) exists as an equilibrium mixture with hydrogen peroxide, acetic acid and water. It is suitable for disinfection and is an efficient bactericide at concentrations of 15 to 20 mg/L PAA and 2 minutes' contact time but is less effective as a virucide. PAA does not form THMs. The chemical has not reached production stage to allow trucking of bulk quantities, but its use will increase in the next 5 to 10 years as the market grows.

Again, toxicity concerns from residual concentrations discharged to receiving waters would likely preclude the use of this chemical. Removal of this disinfectant would be required prior to discharge.

Since a chemical additive is not likely to be permittable due to potential adverse affects to biological communities in the receiving waters of the discharge (Bay or Gulf of Mexico), several additional alternative disinfection methods were evaluated including ozone and ultraviolet light (UV) treatment.

Ozone

Ozone has been used as a disinfectant for almost as long as chlorine, although primarily for treating drinking water. Ozone disinfection is the least-used method in the U.S. although this technology has been widely accepted in Europe for decades. Ozone treatment has the ability to achieve higher levels of disinfection than either chlorine or UV; however, the capital costs as well as maintenance expenditures are not competitive with available alternatives. Also, because ozone is generally more expensive to produce and must be generated on-site and used immediately, it has been considered to be a less attractive alternative to chlorine than UV disinfection.

Ozone is an unstable gas, which is generated on-site by a high-voltage electrical discharge through air or oxygen. The resulting electrical discharge produces ozone (O3). This reaction results in substantial quantities of heat that must be quickly removed to keep the ozone from decomposing back to oxygen. To reduce the heat, most commercial ozone generators are water-cooled.

Ozone decomposes rapidly in aqueous solution and under alkaline conditions hydrolyses to form the OH radical, which is a powerful oxidant. Ozone is both an efficient bactericide and virucide. Though ozone appears not to produce THMs and may even destroy a number of THM precursors, it oxidizes a wide range of natural organics in wastewater and can lead to significant changes in the nature and concentrations of certain organic compounds. Ozone destroys most of the nonvolatile organic constituents in wastewater but produces others; concentrations of mutagenic micropollutants can be increased by ozonation.

Advantages:

- Ozone is more effective than chlorine in destroying viruses and bacteria.
- The ozonation process utilizes a short contact time (approximately 10 to 30 minutes).
- There are no harmful residuals that need to be removed after ozonation because ozone decomposes rapidly.
- Ozone is generated on-site, and thus, there are fewer safety problems associated with shipping and handling.
- Ozonation elevates the dissolved oxygen (DO) concentration of the effluent.
- THM formation is avoided.

Disadvantages:

- Operation and maintenance costs remain high because of the ozone generation process's more complex technology.
- Ozone must be produced on-site and used immediately.
- Ozone is very reactive and corrosive.
- Ozone is extremely irritating and possibly toxic, so off-gases from the contactor must be destroyed to prevent worker exposure.
- The cost of treatment can be relatively high in capital and in power intensiveness.

Ultraviolet (UV)

The State of Florida FDEP accepts ultraviolet (UV) disinfection as an alternative disinfection method that can effectively and safely be used to disinfect wastewater, reclaimed water, and drinking water. UV irradiation is the most popular alternative method, has long been recognized as an effective disinfectant and UV, unlike chlorine, does not produce disinfection byproducts, toxicity, or hazardous concerns. A list of Florida domestic wastewater treatment facilities presently using UV is listed in **Appendix E**.

UV disinfection uses special UV lamps to produce UV radiation at optimum germicidal wavelength of 250 to 265 nanometers which inactivates the organism through changes in the cells' deoxyribonucleic acid (DNA). This effectively inactivates the pathogens by interfering with their ability to replicate.

Advantages:

- UV disinfection is environmentally positive -- no chemicals are added to the effluent stream; therefore, there are no detrimental effects to aquatic life.
- This technology offers shorter treatment times. UV disinfection requires a six-to-10second contact time, compared to a five-to-10-minute contact time for ozone and a 15to-30-minute contact time for chlorine.
- There is no trihalomethane (THM) formation.
- Quartz surface cleaning is a key element of operation and maintenance. However, improvements are being made with self-cleaning wipers.
- The process leaves no residual to prevent regrowth.

Disadvantages:

• Operation and maintenance costs remain high because of substantial electrical usage.

Stormwater-Specific Treatment Methods

Disinfection of stormwater runoff for bacteria and other potential pathogens is an emerging technology. This is primarily due to the historical focus on removal of more conventional pollutants such as sediments, heavy metals, nutrients, and oil and grease or polycyclic aromatic hydrocarbons (PAHs). The lack of bacterial removal efficiency data is evidenced in the following table (**Table 2**), which is a summary of stormwater best management practices (BMPs) and pollutant removal efficiencies for structural and nonstructural systems developed by Guillory (2005). This information was gathered from several sources including the International BMP Database (<u>www.bmpdatabase.org</u>). One of the reasons for a lack of data regarding microorganism removal is due to the short sample holding times (6 hours) allowed for bacteria sampling. In many cases, automated sampling devices are used for sample collection and samples are sometimes collected up to 24 hours after a storm event.

However, a study by Kurz (1998) for the Southwest Florida Water Management District (SWFWMD) examined several BMPs (sand filtration, wet detention, alum coagulation) used in Florida and reported that removal of microbial indicators, specifically fecal coliform bacteria, can range from 65%± for sand filters to 98% for a shallow wet detention pond with a 5-day detention time. Use of alum treatment can provide up to 100% removal; however, the alum floc material can still harbor viable bacteria and viruses several days after treatment. A literature review performed for this report indicated that bacterial removal is extremely variable, depending upon inflow concentrations, type of BMP used, and amount of sedimentation or potential for sediment resuspension within the treatment device/system. Other wet detention pond studies in Florida suggest that removal rates can vary between -120% to 94% (mean of 25.1%) for a retrofitted stormwater pond in St. Petersburg (Jungle Lake) to 45%± (range of -150% to 99%) for the Sarasota County's Celery Fields Stormwater Facility. Neither of these systems had any additional treatment at the outfall that could have further reduced bacteria concentrations (e.g., sand filtration or UV treatment). Kurz (1998) recommended the use of a treatment train of BMPs to maximize microorganism removal since bacteria are often associated with suspended solids and additive removal rates can be achieved by multiple in-line systems. This study suggests the use of a sedimentation basin followed by sand filtration as one form of a treatment train.

A study and subsequent design of a UV treatment system by PBS&J for the City of Encinitas (California) also indicated significant bacteria removal could be achieved for a low flow creek system at Moonlight Beach. **Figure 4** below indicates that a 3-log reduction in fecal coliform and 4-log reduction in total coliform bacteria can be achieved with UV treatment. Another recent stormwater treatment project has been completed using ozone disinfection in California with similar results.

Table 2. Pollutant Removal Efficiencies (%) for various BMP techniques (Source: Guillory, 2005).

BMP	TSS	ТР	TN	NO3	Metals	Bacteria	Oil & Grease	ТРН	References
					Structural B				
Infiltration									
Trench1	75-99	50-75	45-70	NA	75-99	75-98	NA	75	Young et al. (1996)
Infiltration Basin1	75-99	50-70	45-70	NA	50-90	75-98	NA	75	Young et al. (1996)
Bioretention1	75	50	50) NA	75-80	NA	NA	75	Prince George's County (1993)
									City of Austin (1990);
									City of Austin (1995);
									Harper & Herr (1993);
									Gain (1996);
									Martin & Smoot (1986); Young et al (1996);
									Yu & Benelmouffok (1988);
Detention Ponds4	46-98	20-94	28-50	24-60	24-89	NA	NA	NA	Yu et al. (1993 & 1994)
Wetlands	65	20-94		24-00 NA	35-65	NA	NA	NA	USEPA (1993)
11 ottailab		20			55 65				001111(1))0)
Detention Tanks	NA	NA	NA	NA	NA	NA	NA	NA	
									Bell et al. (1995);
Underground									Horner & Horner(1995);
Sand Filters	70-90	43-70	30-50	NA	22-91	NA	NA	NA	Young et al. (1996)
Surface Sand									City of Austin (1990);
Filters	75-92	27-80	27-71	0-23	33-91	NA	NA	NA	Welborn & Veenhuis (1987)
									Claytor and Schueler (1996);
Organic Media									Stewart (1992);
Filters	90-95	49	55	NA	48-90	90	90	90	Stormwater Management (1994)
									City of Austin (1995);
									Claytor and Schueler (1996);
									Kahn et al. (1992);
									Yousef et al. (1985);
									Yu & Kaighn (1995);
Vegetated Swales	30-90	20-85	0-50	NA	0-90	NA	75	NA	Yu et al. (1993 & 1994)
Vegetated Filter									Yu and Kaighn (1992);
Strips	27-70	20-40	20-40	NA	Feb-80	NA	NA	NA	Young et al. (1996)
Oil-Grit									
Separators	20-40	< 10	< 10	NA	< 10	NA	50-80	NA	Young et al. (1996)
Catch Basin									
Inserts	NA	NA	NA	NA	NA	NA	up to 90	NA	King County (1995)
Manufactured									
Systems	NA	NA	NA	NA	NA	NA	up to 96	NA	Bryant et al. (1995)
									MWCOG (1983);
									Hogland et al. (1987);
Porous Pavements	82-95	60-71	80-85	NA	33-99	NA	NA	NA	Young et al. (1996)
			Nonst	ructural BM	Ps				
Streetsweeping2	55-93	40-74	42-77	NA	35-85	NA	NA	NA	NVPDC (1992)
	-	-		nnovative Pr					
Alum Injection	NA	89			4 NA	NA	NA	NA	Harper (1990)3
MCTT	83	NA	NA	14	4 95	NA	NA	NA	Pitt (1996)
Biofilters (e.g.,									
StormTreat					1				
System)	95	89	NA	NA	65-98	83	NA	NA	Allard et al. (1996)
Vegetated Rock									
Filters	95	82	2 75	5 NA	21-80	78	NA	NA	DRMP (1995)

NA = Not Applicable or Not Available. Removal efficiencies may be based on either mass balance or average concentration calculations. The values may originate from evaluation of multiple events or from long-term monitoring. Ranges are provided

wherever possible.

1.Based on capture of 12.7 mm (0.5 in) of runoff volume. Effectiveness directly related to volume of captured runoff.

2. Typical values; actual performance strongly related to the type of equipment, cleaning frequency, and number of passes.

3. Study examined improvement in water quality within the lake receiving alum-treated stormwater runoff.

4.Included are results for three different types of ponds: extended detention wet pond, wet pond, and extended detention dry pond.

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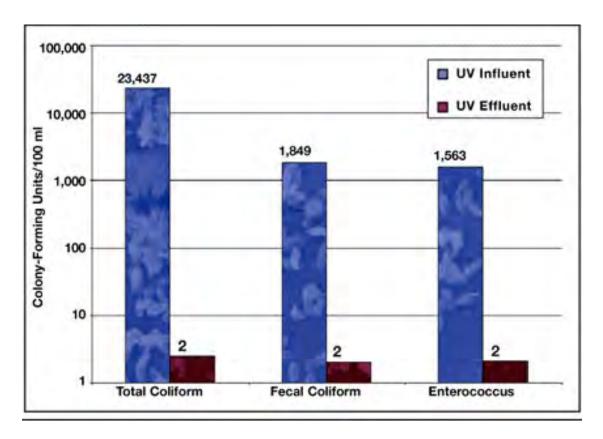


Figure 4. Bacteria removal during ambient conditions at the Moonlight Beach Urban Runoff UV Treatment Facility (September 3 through November 26, 2002). Values represent geometric means of daily data.

3.0 DEVELOPMENT OF STORMWATER TREATMENT ALTERNATIVES

3.0 DEVELOPMENT OF STORMWATER TREATMENT ALTERNATIVES

Based on the information developed in Section 2.0, several treatment alternatives were developed which considered the unique characteristics of the project location. These factors included: the spatial and temporal distribution of bacterial contamination, disinfection system advantages and disadvantages, site space constraints, topography, tidal influence on drainage flow rates and water stage, existing ditch systems and potential wetland impacts, the existing stormwater treatment pond, and future master plan needs for the park. Due to these constraints, options were evaluated that involved treating stormwater runoff from rainfall events that were similar in magnitude (or smaller) than the event that caused the "no swim" advisory.

The alternatives evaluated were based on utilizing the existing 36-in storm water pipe system which currently discharges into a control structure located near the maintenance buildings at the Siesta Key Beach Park. The control structure/junction box contains an overflow weir and a small duplex pump station which transfers a portion of the stormwater to an on-site pond. The pond discharges via side bank filtration and also an overflow pipe into the adjacent ditch, which then flows to Siesta Key Beach.

The following alternatives were evaluated through a decision matrix (discussed in the next Section) to determine if water quality standards could be met through treatment and disinfection at either the existing beach outfall or an alternative discharge point:

- Alternative 1 Storm sewer maintenance cleaning with beach discharge
- Alternative 2 Storm sewer disinfection with a pumped recirculation disinfection system and with beach discharge
- Alternative 3 Stormwater disinfection by pond treatment system plus additional treatment and disinfection with pumped discharge to alternative receiving water (e.g., Grand Canal)

Public Interest

A newspaper article was published regarding the outfall to the beach on December 9, 2004 (**Appendix F**). Due to the potential public interest in the project, an early coordination meeting was held with the public on December 16, 2004. The minutes of the meeting are presented in **Appendix G**. Several issues related to the lack of greenspace and native vegetation at the park, the location of the outfall to the beach, and poor water quality were raised at the meeting. Another coordination meeting was held with County staff and a representative of the local homeowner's association (Mr. Deet Jonker) on March 24, 2005. Mr. Jonker indicated that the local residents would likely view the discharge to the Grand Canal favorably if the water quality were not made worse by the discharge. In fact, the discharge into the canal could have a positive benefit of helping to flush the canal. The issues raised from the various public involvement forums were incorporated, as feasible, into the evaluation and development of alternative treatment solutions.

4.0 ALTERNATIVES ANALYSIS

4.0 ALTERNATIVES ANALYSIS

Prior to the selection of a preferred alternative, the project team developed a decision tree to assist in the logical selection of optimal treatment alternatives, water delivery methods, and discharge locations. The decision tree is presented in **Figure 5** on the following page.

Considerations that influenced alternative selections in the decision tree included identification of an alternative discharge location since the existing freshwater baseflow from the ditch to the beach attracts large flocks of wading and shorebirds which appears to be a secondary source of fecal loading to the beach (**Figure 6**) and could pose a health risk to recreational users in or near this outfall (**Figure 7**). Discharge options included:

- 1. Maintaining the existing discharge in the current configuration
- 2. Construction of an offshore outfall via a subsurface pipe
- 3. Directing the existing baseflow and stormwater runoff away from the beach and allowing only infrequent high flows caused by major storm events (e.g., hurricanes) to continue to pass through to the beach.

Option 1 would not be acceptable since the existing flows to the beach are creating a potential health risk by attracting large flocks of birds that could be a source of fecal contamination to the beach. Option 2 would be costly, require extensive permitting, and may still result in contamination of the recreational beach area depending upon inshore-offshore currents from the Gulf.

Option 3 appears to be an acceptable alternative; however, if an alternative discharge location were selected, an assessment of receiving waters would be necessary. Sarasota County staff implemented a special water quality monitoring program to assess background bacteria concentrations in both the stormwater management system and also in the Grand Canal, located north of the project site, which had been identified as a potential receiving waterbody for the rerouted discharge. The Grand Canal is an artificial waterway that was constructed for boat access to the interior portions of Siesta Key; it connects to Roberts Bay to the east. Bacteria concentrations from the canal exceeded the state standard at all stations, and were greatest at stations S and T (**Figures 8** and **9**), which receive discharges from the existing Beach Road stormwater system.

It was assumed that if these discharge points could be routed to the proposed treatment system, water quality should improve in this portion of the Grand Canal; however, there may be other stormwater inputs to this canal which may continue to cause high fecal coliform concentrations to occur in the future. The closest distance from the beach to the Grand Canal within County right-of-way would be at the bridge at Azure Way. Water quality at this location was also not within state standards (station Q) and should also be improved with the addition of disinfected flow from the Beach Road drainage system.

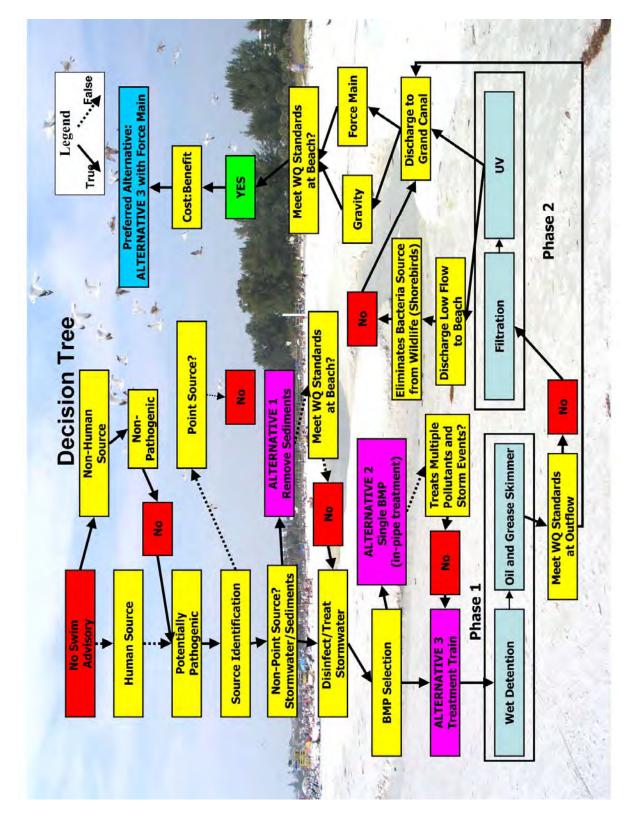


Figure 5. Decision tree used to select the preferred stormwater treatment alternative for Siesta Key Beach.

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Figure 6. Bird usage of the ditch outfall to Siesta Key Beach.



Figure 7. Human contact at the ditch outfall to the beach.

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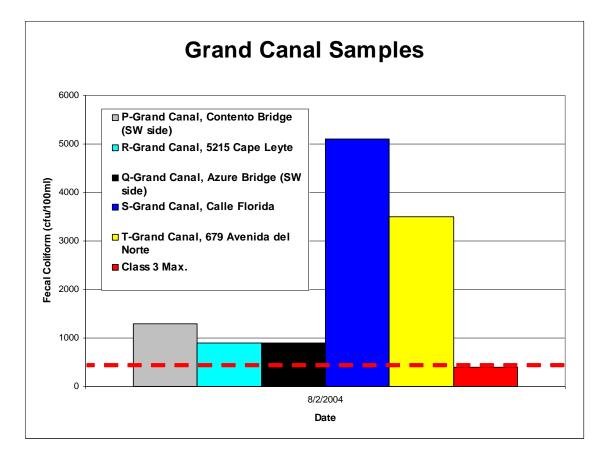


Figure 8. Fecal coliform bacteria concentrations from one of several sampling events for the Grand Canal. All samples exceeded the state standard of 400 cfu/100 ml.



Figure 9. County sampling station locations in the Grand Canal and stormwater system.

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Alternative 1 – Storm sewer maintenance and cleaning with beach discharge

Since the findings of the PBS&J/USF report (Harwood et al., 2005) indicated that the sediments within the stormwater pipe system were one of the likely sources of bacteria contamination, a maintenance event for this system was recommended. Pre- and post-maintenance monitoring was also recommended to determine the efficacy of this alternative. During late 2004/early 2005, Sarasota County Drainage Operations staff used a Sewervac to clean the 36-inch storm sewer pipe from the upper reaches of the basin down to Siesta Key Beach.

Sampling conducted before and after County maintenance cleaning show a significant initial reduction in bacteria counts just by removal of sand and organic material deposits (**Figure 10**). The removal of the "breeding ground" results in a form of pipeline disinfection and this cleaning can be scheduled based on monitoring accumulations in the pipe and monitoring storm water bacterial counts. In addition, removal of exotic vegetation creating a shading effect along the existing ditch network may also improve water quality by allowing greater penetration of UV light to the water column. Removal of excess organic material and decaying vegetation could also result in reducing a growth media for bacteria in the ditch.

This option would not require expenditure of capital improvement costs. However, the frequency of cleaning to achieve water quality standards has not been determined. The periodic cleaning of sediments in the storm sewer system along Beach Road is suggested to be once every five years or as necessary determined by bacteriological testing. In fact, bacteria concentrations did exceed the allowable threshold for DOH beach water quality standards within a few months of the initial pipe cleaning (**Figure 11**) and so this may not be a viable alternative since other sources (e.g., stormwater runoff) can still cause water quality issues at the beach discharge despite the removal of sediments. In addition, this alternative does not result in the removal of the freshwater discharge to the beach which would continue to allow bird usage and contamination of the ditch to the beach.



Figure 10. Sediment and organic debris within the Beach Road stormwater pipe system.

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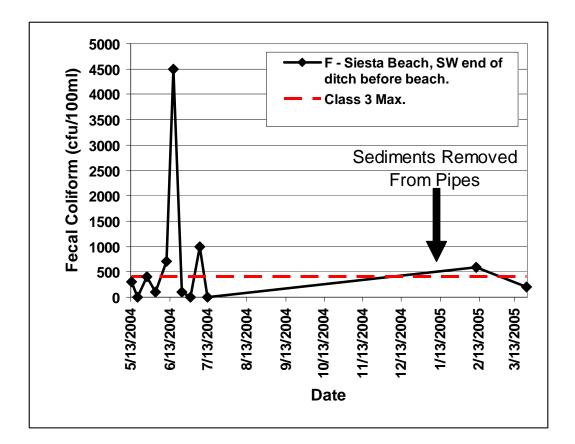


Figure 11. Fecal coliform bacteria concentrations in the drainage ditch discharging to Siesta Key Beach. Pipe cleaning to remove sediments occurred prior to 2/13/05.

Alternative 2 – Storm sewer disinfection with a pumped recirculation disinfection system with beach discharge

A second option was developed in the event that Alternative 1 would not reduce the beach discharge bacterial counts to within state standards. Alternative 2 would involve construction of a storm water pump station and disinfection system to treat the stormwater within the existing 36-inch pipe. This recirculating system would pump water at the downstream end of the drainage system through the disinfection unit (UV treatment) and then discharge the return water upstream. The pump station was based on a 6-in force main and could recirculate 500 to 1000 gpm, which is a volume equivalent of a 2 to 3 inch storm.

This recirculation will disinfect the pipe contents but since a residual disinfectant will not remain in the pipe, a first flush effect may result in a pulse of bacteria-contaminated stormwater through the system and out to the beach. In addition, this small volume of disinfected water would not be enough to dilute a 2-inch storm event significantly. The in-pipe volume at high tide is $16,700\pm$ CF while a 2-inch rain produces about 145,500 CF. The volume in the pipe that would be treated through the recirculation system would represent only about 11% of the incoming runoff. If the concentration of bacteria were 1,000 cfu/100ml in the stormwater runoff event, this 11% reduction may only reduce the concentration to 890 cfu/100 ml, still exceeding state standards, even if the stormwater was completely mixed. Other disadvantages to implementing this alternative are that only one potential pollutant would be removed in the pipe allowing other

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contaminants such as heavy metals, oil and grease (PAHs), and suspended solids to be discharged at the beach; and also the discharge at the beach would continue to allow bird usage and contamination of the ditch to the beach.

Alternative 3 – Stormwater disinfection using a phased treatment train with pumped discharge to Grand Canal

The third alternative is to construct a phased treatment train using wet detention, oil and grease skimmers, media (e.g., disc or sand) filtration, and UV disinfection. This alternative would be constructed within eight± acres of the County park property southeast of the existing storm water pond. The site is currently vegetated primarily by invasive exotic species including Brazilian pepper and Australian pine. Small pockets of native vegetation are present; however, the site currently provides minimal habitat value. Historically, the site was comprised of a sand dune system that has since been graded to form relatively flat topography and further necessitating the ditch network to drain surface water runoff to the Gulf. Recreational improvements are limited to a walking paths and a minimally utilized exercise trail. As a result of its current condition and proximity to the public beach, opportunities exist to better utilize the property to address storm water concerns and also improve its recreational value to the public.

By reconfiguring the existing storm water pond and expanding it to the southeast into a longer flow path comprised of deep and shallow pools and tidal marshes, the site will provide increased storage capacity and treatment for the majority of rainfall events that occur in this region. A meandering flow way would extend the attenuation time, allow greater UV penetration to cause bacterial die-off, and incorporates several phases of water quality treatment for other pollutants such as oil and grease (through the construction of skimmers), suspended solids, sediments, nutrients, and heavy metals. The planting of tidal marsh vegetation will effectively improve water quality through the trapping of fine particles and soluble pollutants. Deeper open water features would allow for sunlight penetration, previously shown to reduce bacteria concentrations.

See Appendix H for two site options of different land use for trails and parking.

In addition to excavating portions of the site, a ditch block constructed within the southerly outfall ditch to the beach would reduce the frequency of discharges into the gulf while increase the storm water volume and attenuation time on site. The resulting system would also result in secondary benefits including wildlife habitat and the reduction of invasive exotic vegetation. The outfall to the beach would also be eliminated except during major storm events, such as hurricanes, and so the persistent bird utilization and contamination of beach waters would be eliminated. Any bird usage in the created pond system would be treated by disinfection at the outfall.

Areas not utilized for stormwater treatment could be designed to improve the recreational value of the site. Hiking trails, gazebos, picnic tables, and boardwalks incorporated into the remaining uplands would maximize the utility of the property. Additional parking was also incorporated into the site to encourage utilization of the additional amenities, or to act as overflow parking for beachgoers. Two separate subalternatives were developed with one maximizing pond size area (Larger Pond) and one maximizing park recreational features (Smaller Pond); the dimensions of these alternatives are shown in **Table 3**. Schematics of the two designs are shown in **Appendix H**, along with Exhibit 6 indicating an alternative discharge route.

The conceptual layouts of the retention pond area are suggestions of how the County could utilize this area as part of a master parks and recreational area along the beach. The layouts can change to be consistent with a future developed master park plan by the County. The conceptual retention pond layouts can hopefully be used by the County's Parks and Recreation Department as a starting point of how the area could be developed. Any modifications to existing beach ditch systems previously permitted through the FDEP are believed to be able to be handled as permit revisions allowing for a more comprehensive creation of wetland systems in the treatment lagoon.

Smaller Pond	Area (sq. ft.)	Acres
Open Water	65,700.00	1.51
Wetland Marsh	115,000.00	2.64
Recreational Area	77,400.00	1.78
Trail Length (linear feet)	2,480.00	
Larger Pond	Area (sq. ft.)	Acres
Open Water	100,340.00	2.30
Wetland Marsh	171,340.00	3.93
Recreational Area	26,400.00	0.61
Trail Length (linear feet)	2,620.00	

This alternative could be constructed in two phases. Phase 1 would include the wet detention system, oil and grease skimmers, and the construction of a discharge to the Grand Canal (either gravity or pump station and force main). Monitoring of the outflow of this system would be conducted over a series of storm events to determine if water quality standards for fecal coliform bacteria are able to be met by the wet detention system alone. In addition, sampling for total suspended solids and turbidity would also be performed to determine the need for additional filtration prior to construction of an in-line UV disinfection system. Once these analyses were conducted, selection of the optimal configuration for Phase 2 could take place with the subsequent construction of the media filter and UV disinfection system. Further monitoring would be required to confirm that the discharge meets state water quality standards.

Alternative 3a - Gravity Solution

WilsonMiller used the created stormwater model to simulate various scenarios of a new gravity outfall pipe to the Grand Canal along with the two existing discharge pipes to the canal as being open or closed. The approximate flow capacity of the incoming existing 36-inch pipe to the retention pond would have to be provided by a gravity outfall pipe. Due to burial depth limitations underneath existing sanitary sewers on Cape Leyte Drive, two 19"x30" elliptical pipes were simulated as a new gravity outfall pipe. The route for this canal outfall pipe would be from the retention pond north on Beach Road, east on Beach Way Drive, north on Cape Leyte Drive and then east on Azure Way to the Grand Canal. A length of this gravity outfall is 1,800± feet.

An advantage in disconnecting the Beach Road drainage to the two pipe outfalls to the Grand Canal would be to capture all runoff from this magnitude of storm along Beach Road so that the entirety of the runoff could be treated prior to discharge. If the stormwater retention pond could be expanded to provide more storage volume, disconnection of these two existing outfall pipes may be possible. Installing a new gravity outfall pipe, disconnection of the two existing outfall pipes to the Grand Canal from Beach Road and blocking the Gulf discharge ditch with a concrete ditch-block structure would maintain the current 2-inch rainfall dry street condition. However, closing the storm sewer pipes to the canal worsens the already flooded street in the existing condition during a 3-inch rainfall. Consequently closing the side street outfalls from Beach Road may be desirable relative to water quality but not be desirable from a street flooding perspective.

Generally the suggested gravity outfall system would reduce street flooding from the 3-inch rainfall compared to existing conditions if the side street weirs were to remain conveying runoff to the canal. With an expanded retention pond the 2-inch rainfall produces no street flooding if the two existing canal outfall pipes remain open or are closed. For the 3-inch rainfall, minor street flooding would result if the two outfall pipes remain open but more significant street flooding results if these outfalls were to be closed.

Weirs that direct some street runoff down the two side streets could be raised to only allow high flow from excessive rainfall greater than two inches to enter the canal. Raising these weirs within existing drainage structures to just under the inlet grate elevation may be difficult to construct. Since side street weir closure causes increased street flooding from excessive rainfall, the two side street outfall systems should remain open to convey local runoff to the Grand Canal.

Simulating the existing Beach Road storm sewer system for a 2-inch rainfall with no outfall and discharging into the existing stormwater pond produces a maximum stage of 3.77 ft. and causes street flooding. This indicates that the volume of the retention pond will have to be expanded if all of a 2-inch rainfall runoff from Beach Road were to be collected and treated prior to discharge. The existing stormwater pond along Beach Road may be considered to be moved and expanded into a treatment lagoon system. This lagoon would collect all runoff from the storm sewer system and allow it to be circulated through a salt marsh thereby improving the water quality. Excess rainfall events greater than two inches would overflow the improved discharge control structures and continue to flow to the beach.

The tidal affect on the storm sewer system is significant. High tide negatively affects the performance of the gravity outfall pipe and also reduces the peak water level of the storm in the pond and allows water to bypass through the system reducing the treatment time.

Appendix I contains a table of computer stormwater modeling scenarios and results.

Alternative 3b - Pumped Solution

The pumping scenario involved the collection of stormwater in an expanded, shallow stormwater treatment pond followed by further treatment in a preconstructed filter treated with ultra-violet (UV) light prior to discharge. If UV or chemical treatment of the stormwater discharge would be necessary, it would be easier to disinfect the stormwater in a small condensed flow stream in a pressurized pipe system.

The runoff volumes in **Table 1** were also converted to a gallon per minute (gpm) pumping rate. These pumping rates allow estimating how much stormwater runoff could be reasonably handled by a pumping system. Different possible pumping rates and discharge line sizes are shown below:

Force main	<u>GPM</u>
6"	500
8"	1000
10"	1500
12"	2000

The runoff volume from either a 2- or 3-inch, 24-hour rainfall event is approximately the capacity of a 6- to 8-inch force main if this volume were to be pumped within one day. Once runoff is collected, a design decision has to be made as to how long this water should remain in the treatment pond. Our engineering judgment is that this water should be evacuated to the discharge point within twenty-four hours. The cost for such a stormwater pumping facility would be significantly less than if a 10- to 12-inch force main system is envisioned to handle a higher rainfall amount.

From Table 1, if a 2-inch and 3-inch storm requires a daily force main pumping rate of 755 and 1518 gpm respectively, we interpolate that an 8-inch force main system can pump the accumulated runoff volume from a 2.3-inch rainfall at an average daily flow rate of 1000 gpm. Under such a scenario all runoff would be collected in a retention pond treated and pumped through an 8-inch force main to the discharge point in the Grand Canal following the same route as a gravity outfall.

So since disconnecting the two side street weirs to the canal does not exacerbate the 2-inch storm street flooding and if the pond could be expanded, then a pumping system could handle the storm runoff. Excess rainfall could be discharged to the beach over the proposed ditchblock. Weirs that direct some street runoff down the two side streets could be raised to only allow high flow from excessive rainfall to enter the canal. Raising these weirs within existing drainage structures to just under the inlet grate elevation may be difficult to construct. Consequently, blocking the incoming pipe from the intersection may be more practicable. The two side street outfall systems could remain open to convey local runoff from only the side streets to the Grand Canal.

The most viable option would be to collect all of the street runoff into an expanded stormwater pond and pump the water with improved water quality to a desired discharge point.

Site Availability

The County's Parks and Recreation Department must approve the layout of the proposed treatment pond and disinfection system prior to implementation of the project. The project team has met with Parks staff and understand that the County's Beach Improvement Plan may require the land currently utilized for the existing stormwater pond for other park facility purposes. As a result, the treatment pond expansion may require relocation farther to the south. Developing a stormwater treatment pond on this site would be an improvement to the existing park environment and offer the County the opportunity to expand its recreational parks system, provide environmental education opportunities, enhanced trail and open space areas, and, possibly, additional parking.

Environmental Permitting

Florida Department of Environmental Protection

Contact with the Florida Department of Environmental Protection (FDEP) was made to discuss the permitting of any site improvements waterward of the Coastal Construction Control Line (CCCL). The possibility of blocking site runoff to the beach could be viewed favorably by the FDEP from a beach erosion perspective. Should a ditch block be installed in the channel downstream of the retention pond to block low flow to the beach this work could be landward of the CCCL and not requiring a permit. Some ditch bank improvements would be necessary at the selected location of the ditch block. These improvements would address erosion and stability of the ditch block and would be included in a subsequent final design.

Southwest Florida Water Management District

A preapplication meeting was held with the Southwest Florida Water Management District (SWFWMD) to discuss the proposed water quality improvements of the project and the permitting of different discharge options on April 12, 2005. Minutes of the meeting are presented in **Appendix J**.

SWFWMD staff indicated that a pumped stormwater solution to the Grand Canal would likely be permittable if water quality standards were not exceeded by the discharge. Similarly a gravity piped outfall from Beach Road to the canal would be permittable if water quality was not adversely impacted by the project. Staff recommended that a monitoring program be implemented to determine the effectiveness of the treatment system. The monitoring program could be discontinued once the project was determined to be successful.

Cost Benefit Analysis

A cost benefit analysis was performed to determine the preferred alternative for treating and discharging stormwater at the Siesta Key Beach site. Since Alternatives 1 and 2 had fatal flaws, in that the water quality discharged from either alternative would not likely meet water quality standards consistently at the discharge, only Alternative 3 was evaluated with the discharge location to the Grand Canal based on gravity storm sewer and pumping/force main options.

PUMP SUBTOTAL

Administrative and Contingency (20%)

PUMP TOTAL COST ESTIMATE

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Based on the development of probable costs for either of the two discharge location options, the pumped discharge alternative is also less costly and more hydraulically reliable than the construction of a gravity system and is therefore the preferred alternative.

GRAVITY ALTERNATIVE				
DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST
STORM MANHOLES	8	EA	\$4,500	\$36,000
CONFLICT MANHOLE	3	EA	\$5,500	\$16,500
19"X30" ERCP	3600	LF	\$65	\$234,000
PAVEMENT REPAIR	2000	SY	\$25	\$50,000
POND CLEARING/EROSION CONTROL	1	LS	\$65,800	\$65,800
POND EXCAVATION	20000	CY	\$6	\$120,000
POND PLANTINGS	1	LS	\$50,000	\$50,000

2

1

4

2

EA

EA

EA

ΕA

Table 4. Comparison of costs for Alternatives 3a and 3b for the Siesta Key Beach

GRAVITY TOTAL COST ESTIMATE

Administrative and Contingency (20%)

CONTRACTOR OVERHEAD & PROFIT 15%

PUMPING ALTERNATIVE

discharge.

PRECAST FILTERS

UV DISINFECTION

GRAVITY SUBTOTAL

DITCH BLOCK

OIL/GREASE SKIMMERS

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST
PAVEMENT REPAIR	200	SY	\$25	\$5,000
POND CLEARING/EROSION CONTROL	1	LS	\$65,800	\$65,800
POND EXCAVATION	20000	CY	\$6	\$120,000
POND PLANTINGS	1	LS	\$50,000	\$50,000
OIL/GREASE SKIMMERS	2	EA	\$2,000	\$4,000
DITCH BLOCK	1	EA	\$2,500	\$2,500
PUMP STATION	1	LS	\$150,000	\$150,000
8" FORCE MAIN (DIRECTIONAL DRILL)	1800	LF	\$100	\$180,000
DISC FILTERS	2	EA	\$75,000	\$150,000
UV DISINFECTION	2	EA	\$150,000	\$300,000
CONTRACTOR OVERHEAD & PROFIT 15%				\$154,000

\$1,822,560

\$1,518,800

\$303,760

\$4,000

\$2,500

\$240,000

\$500,000

\$200,000

\$1,181,300 \$236,260

\$1,417,560

\$2,000

\$2,500

\$60,000

\$250,000

5.0 RECOMMENDATIONS

5.0 RECOMMENDATIONS

Based on the results of this feasibility study, stormwater runoff from the Beach Road drainage area could be treated in an expanded retention pond along Beach Road to acceptable water quality standards prior to discharge to the Grand Canal.

Ambient water quality for fecal coliform bacteria in the Grand Canal have been found to occasionally exceed the State's Class 3 water quality standards and so treated discharges from Beach Road should not adversely impact surface water quality at the point of discharge. In fact, some dilution may be provided with this higher-quality freshwater input that may reduce fecal coliform concentrations. Two existing outfalls to the Grand Canal that may be contributing bacterial loads would also be diverted to the treatment system, further enhancing water quality in the Grand Canal.

Logistically, pumping accumulated stormwater runoff from an expanded retention pond to the Grand Canal is a more hydraulically reliable system as opposed to a gravity outfall system due to the possibility of a high tide causing backflow during a rainfall event. This alternative is also less costly than the construction of a gravity system.

The exact location and size of the proposed stormwater retention pond within the Siesta Key Beach Park will need to be further discussed with County Parks Department staff. The Park Master Plan is currently being updated and so the inclusion of this system within the updated plan should be conducted as soon as possible so that other park enhancements, such as additional parking, trails, boardwalks, etc., can be coordinated with the proposed water quality enhancement project.

The stormwater improvement project has been developed using a treatment train approach with each component of the train having a bacterial removal component. If the project is implemented, it is recommended that the construction be phased and reevaluated after each treatment component is constructed. For example, the first two components (Phase 1) that should be constructed are the stormwater detention pond/wetland system, oil and grease skimmers, the weir to reduce discharges to the beach, and the pump station force main to the Grand Canal. Once this system has been constructed, monitoring of the inflow and outflow should be conducted to determine if water quality standards (fecal coliform bacteria concentrations <400 cfu/100 ml, enterococcus concentrations <103 cfu/100 ml) are being met.

If the thresholds for the "no swim" advisory are not met at the discharge point of the treatment system, then the prefabricated media filter and the UV treatment system should be constructed to further enhance bacteria disinfection processes and meet state standards. Continuous maintenance should also be conducted regularly to remove excess sediments within the pipe system; this has shown to be effective on reducing bacteria concentrations in the discharge based on monitoring before and after sediment removal.

In order to further define the above recommendations, the project should proceed to a more detailed Preliminary Design phase to further select equipment, construction costs, operation and maintenance costs, filtration and pump station design parameters.

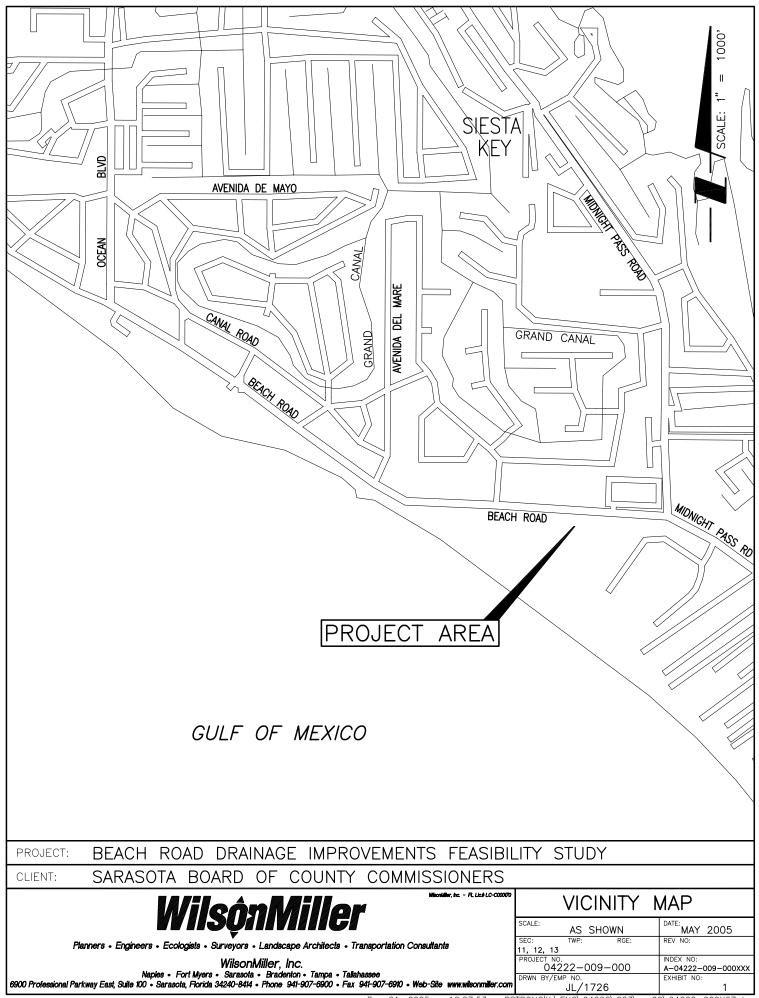
6.0 REFERENCES

6.0 REFERENCES

- Harwood, V., S. Shehane, M. Brownwell, M. Dontchev, and R. Kurz. 2005. Siesta Key Beach water quality sampling to determine sources of fecal indicator bacteria. Final Report to Sarasota County Water Resources.
- Kurz, R. C. 1998. A comparison of rapid sand filtration, alum treatment, and wet detention for the removal of bacteria, viruses, and a protozoan surrogate from stormwater. Technical Report. Southwest Florida Water Management District.

APPENDIX A

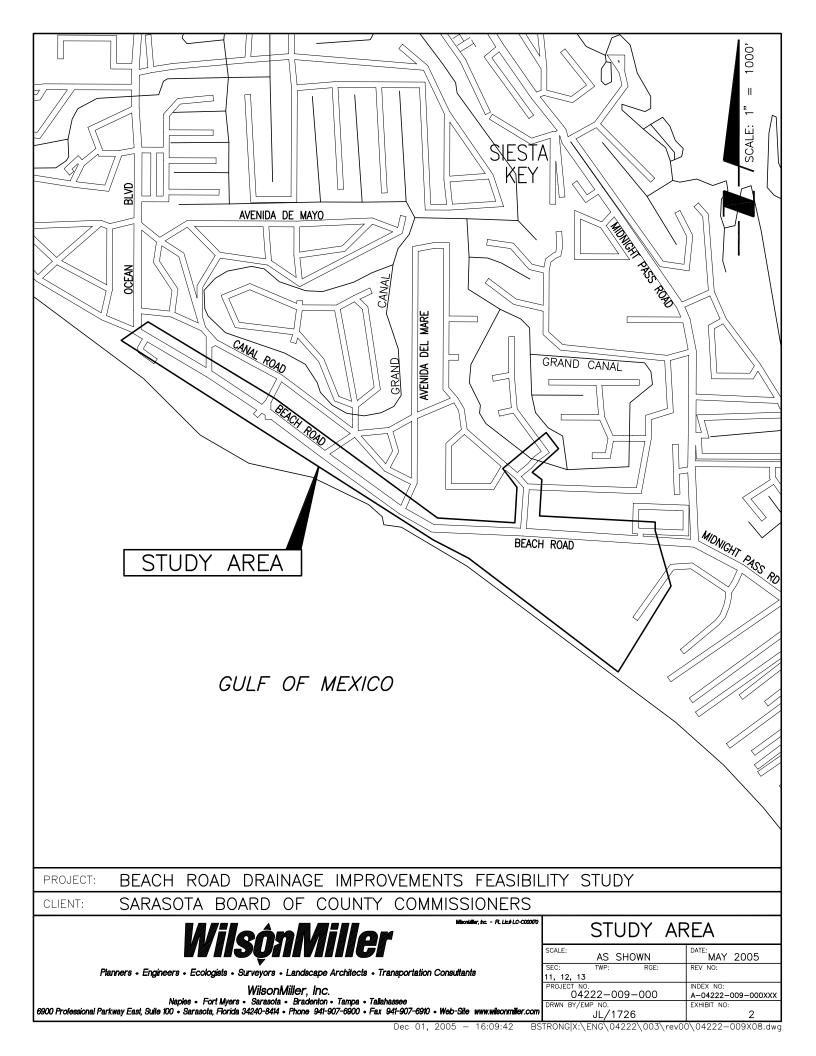
BEACH ROAD DRAINAGE PROJECT VICINITY MAP



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APPENDIX B

STUDY AREA MAP

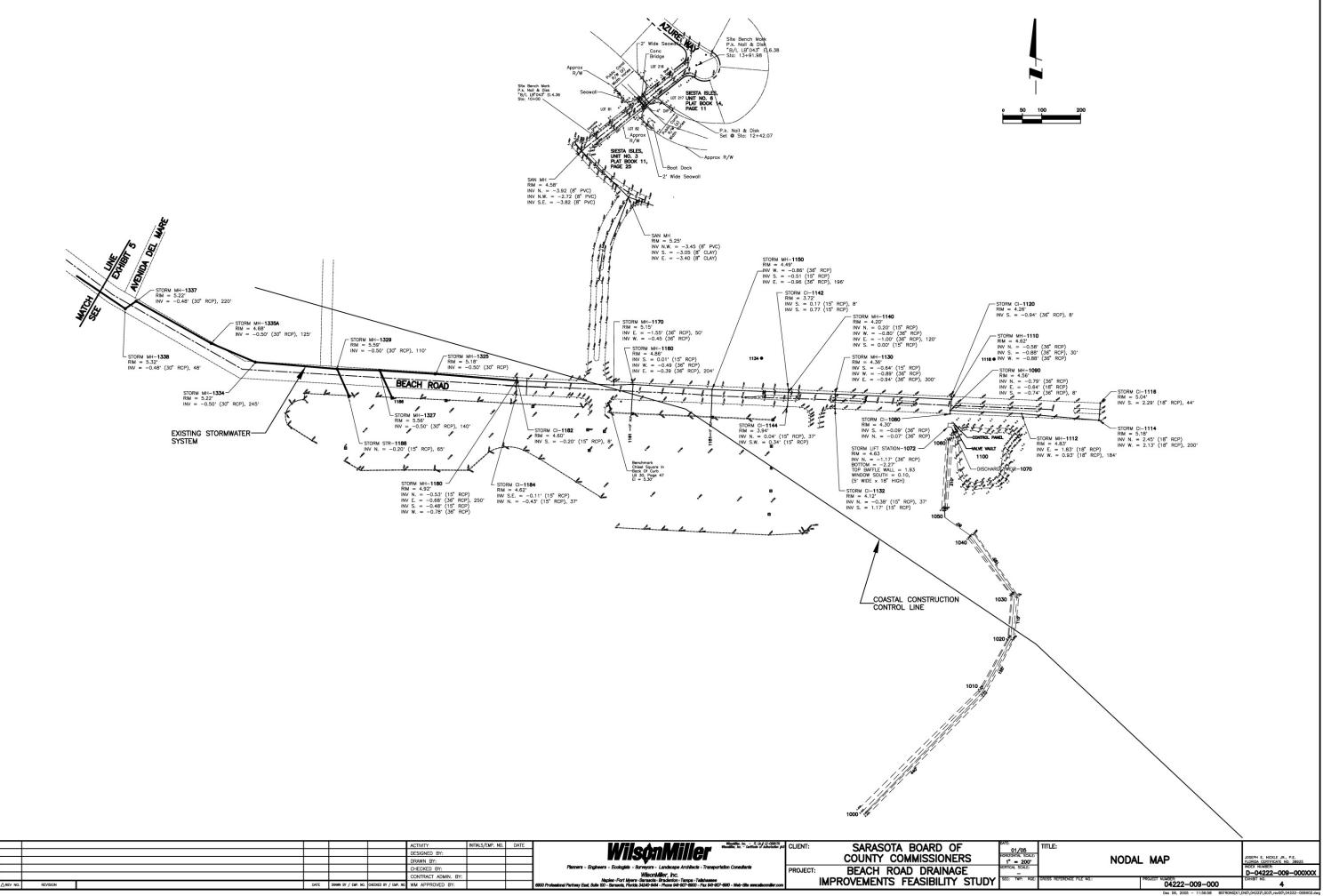


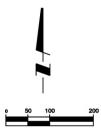
APPENDIX C

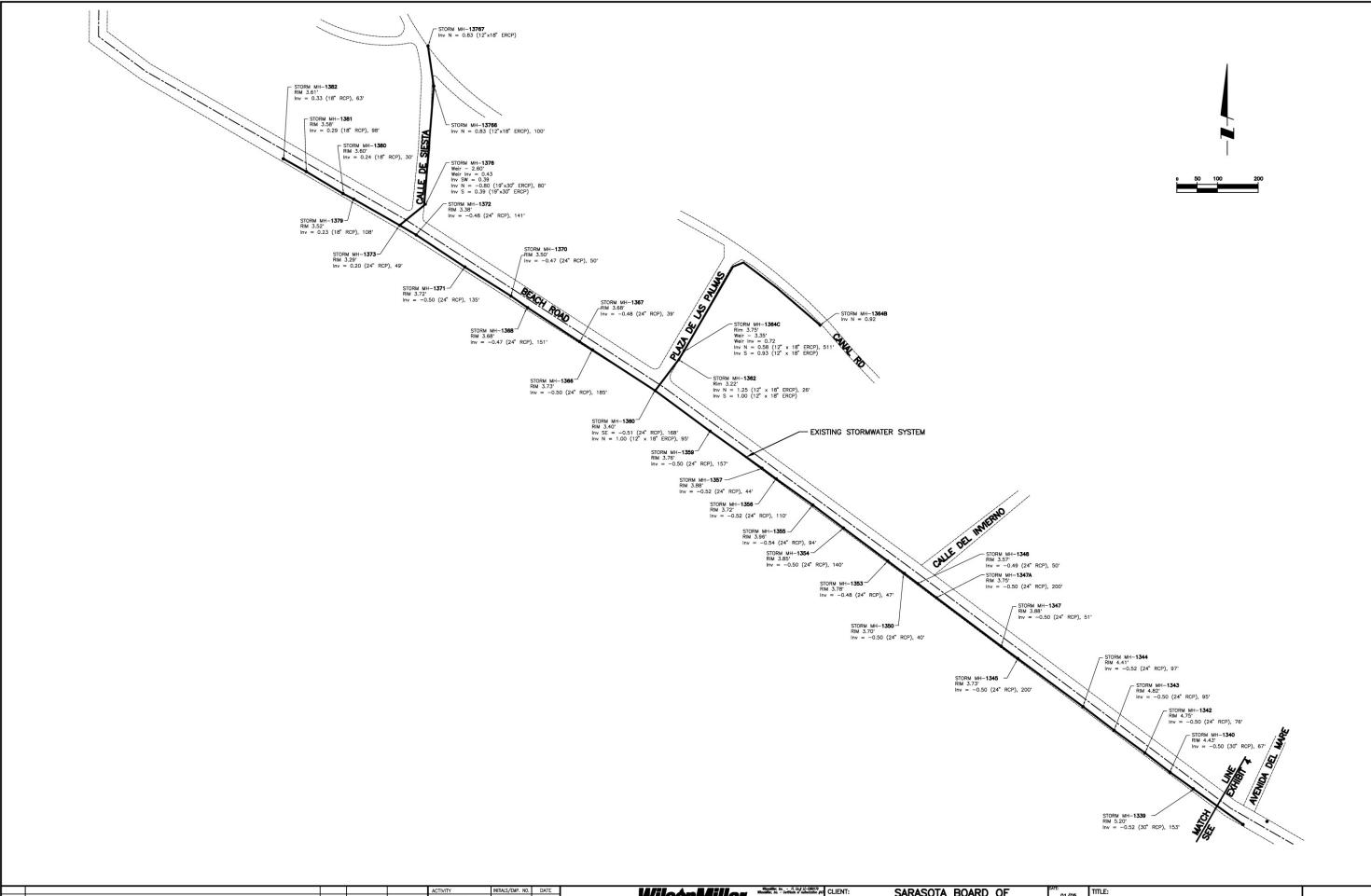
DRAINAGE BASIN MAP

APPENDIX D

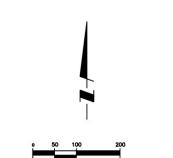
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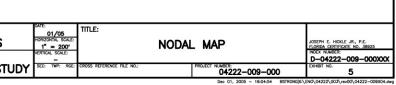






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					DRAWN BY:				COUNTY COMMISSIONERS
					CHECKED BY:			Planners - Engineers - Ecologists - Surveyors - Landscape Architects - Transportation Consultants	PROJECT: BEACH ROAD DRAINAGE
					CONTRACT ADMIN. BY:			WilsonMiller, Inc.	
∆RE	V ND. REVISION	DATE	DRAWN BY / EMP. NO.	Checked by / EMP. NO.	WM APPROVED BY:			Napiee «Fort Myere» Sarasota «Bradenton «Tampa «Tallahaseee 6900 Professional Parkwy East, Sulle 100 « Sarasota, Florida 34240-8414 « Phone 941-907-6900 » Fax 941-907-6910 « Web-Sile www.wilsonmiller.com	IMPROVEMENTS FEASIBILITY STU





APPENDIX E

WWTPS USING UV DISINFECTION IN FLORIDA

Summary of UV Disinfection in Florida

Treatment Facility	County	DEP Distr.	Disinf. Level	WWTP Capacity (mgd)	Backup System	Discharge to	Notes
Bay County Regional	Bay	NW	Inter. & High	7.0 0.4	No	Surface & Reuse	Part III Reuse uses Cl ₂ for disinfection Operation began in 1999
City of Lynn Haven	Bay	NW	Inter.	2.5	Yes	Surface water	Began operation in 1999 Backup is dual train UV with 2 separate modules per train
Panama City - Millville	Bay	NW	Inter.	5.0	No	Surface water	Began operation in 1999
Panama City Beach	Bay	NW	Inter. & High	10	Yes	Surface water	UV under construction, Part III reuse uses Cl ₂ for disinfection Backup is Cl ₂
Blountstown	Calhoun	NW	Basic	1.5	No	Surface water	Began operation in 1999
Homestead	Dade	SE	High	6.0	No	Rapid-rate	Began operation in 1999
Atlantic Dry Dock	Duval	NE	Basic	0.06	Yes	Surface water	
Baldwin	Duval	NE	Basic	0.4	Yes	Surface water	Wedeco system, vertical lamps, began operation in 1990
Buckman (JEA)	Duval	NE	Basic	52.0	No	Surface water	Began operation December 2000
Northeast (fka District II) (JEA)	Duval	NE	Basic	10	No	Surface water	Began operation in 2001
Southwest (JEA)	Duval	NE	Basic	10	No	Surface water	Began operation in 2001
Jacksonville - Mandarin	Duval	NE	Basic	7.5	No	Surface water	Began operation in 2000
Monterey (UWF)	Duval	NE	Basic	3.6	No	Surface water	
Bayou Marcous	Escambia	NW	Basic	8.2	Yes	Wetlands	Began operation in 1998 Backup is dual train UV with 3 separate modules per train
ECUA - Pensacola Beach	Escambia	NW	Inter.	2.4	No	Surface water	UV under construction
ECUA - Main Street	Escambia	NW	Basic	20	Yes	Surface water	Began operation June 2000 Backup is dual train UV with 2 separate modules per train
Pebble Creek	Hillsborough	SW	High	0.4	No	Surface water & reuse	Infilco Degremont, closed channel, horizontal lamps, 2 units installed in 1986, added 3^{rd} unit in 1993, use Cl ₂ for reuse
Waterway Estates	Lee	South	Basic	1.5	No	Surface water & reuse	Infilco Degremont, closed channel, horizontal lamps, began operation in 1991, use Cl_2 for reuse system

Treatment Facility	County	DEP Distr.	Disinf. Level	WWTP Capacity (mgd)	Backup System	Discharge to	Notes
Key Colony Beach	Monroe	South	Basic	0.34	Yes	Injection to Class V well	
East Central Regional	Palm Beach	SE	High	6.0	Yes	Surface Water	Will begin operation in 2004
Auburndale - Allred	Polk	SW	Basic	1.4	No	Surface water & citrus irrigation	Aquionics, closed channel, horizontal lamps, began operation in 1993
Auburndale - Westside	Polk	SW	Basic	1.6	Yes	Reuse	Aquionics, closed channel, horizontal lamps
Hastings	St. Johns	NE	Basic	0.12	Yes	Surface water	Infilco Degremont, open channel, vertical lamps, began operation in 1992. Due to problems w/ UV system, chlorine is primary disnfection method.
Ponte Vedra (UWF)	St. Johns	NE	High	0.5	No	Surface water & Reuse	Permit issued. Single channel, 9 banks in series. 140 mW-s/cm ² at peak flow.
Daytona Beach - Bethune Point	Volusia	Central	High	13.0	No	Surface water & reuse	Trojan, open channel, medium pressure system began operation in 1999

APPENDIX F

NEWSPAPER ARTICLE -SIESTA KEY BEACH WATER QUALITY



Dirty pipe fouled water

Health officials say a storm-water pipe is the culprit in Siesta Key's no-swim advisories.

By TOM BAYLES . tom.bsyles@heraldtribune.com

SIESTA KEY — Biologists say a drainage pipe beneath Beach Road that has been collecting sand, oil and bits of tires for 15 years is the culprit behind a spate of no-swim advisories earlier this year at Siesta Public Beach.

In places that pipe, which runs from the colorful Siesta Village to the sparkling beach, is half-filled with silt, goo and various unmentionables that have built up as a byproduct of storm water running through it. Health officials and seientists who met Wednesday said that within that pipe is a bacteria plant of sorts, one that takes in animal waste washed into the drainage system and spits out fecal coliform and enterococcus.

The pipe empties in a pond at the south end of Siesta Public Beach, the crown jewel of the region's beaches, with white, powdery sand that got it named one of the best in the nation this year by "Dr. Beach" of Florida International University. "We need to ask if there is a

"We need to ask if there is a better way to do storm-water management here," said Theresa Conner, a Sarasota

PLEASE SEE BEACHES ON 13A



HERALD-TRIBURE ARCHIVE / 2001 The bacteria found this spring and summer led to no-swimming signs being posted at Siesta Key, Turtle Beach, Venice Beach and Sarasota's Bird Key Park.

Drainage pipe blamed for water

BEACHES FROM 1A

County water resources manager.

Conner is on a task force that's been studying the reasons behind the high levels of bacteria found in the water this spring and summer. The bacteria led to no-swim signs being posted at Siesta Key, Turtle Beach, Venice Beach and Sarasota's Bird Key Park.

The bacterial outbreaks indicate the possible presence of viruses or other disease-causing organisms that can lead to gastrointestinal problems for humans and infections in cuts and scrapes.

scrapes. Children, pregnant women and people with poor immune systems are most at risk.

This is the first year of multiple no-swim advisories on Siesta Key. Biologists studying the problem say that's because of more frequent and more thorough water quality testing that began two years ago.

began two years ago. Water quality has been acceptable since this summer, but county and state health officials have hired a team of University of South Florida biologists to test the water and see where the bacteria comes from and what it contains.

A DNA test showed that the fecal coliform is the type that comes from animals, not humans, which means the bacteria in the water comes from waste produced by birds, dogs, and other creatures, not from a leaky sever pipe.

It's harder for humans to catch diseases from animals.

The researchers found that bacterial levels in the pipe multiply between rains. The pipe sits underground, at a level where it is usually saturated.

The county will attempt to solve the problem three ways: Clean out the pipe, then

keep it clear. ■ Disinfect the pipe after it is cleaned.

Where the pipe empties into the woods at the south end of Siesta Public Beach is a coastal hammock, which could be restored so the area could natural-

ly help filter pollutants from the

water.

"In my mind, that would really address the problem we saw out there," Conner said.

The county has spent about \$100,000 this year studying the problem and designing a fix.

What's less clear is how to fix the problems at Bird Key Park, where no-swimming signs were a regular fixture during the summer.

"There are problems with causeways all over the state," said Rob Bolesta, an engineer with the Florida Department of Health who works in Sarasota County.

Causeways are often places where dogs are allowed to play, Bolesta said, and not every pet owner picks up what the dogs deposit.

Bird feces from the walkway on the Ringling Bridge also washes down to the park.

Bolesta is set to start a public awareness campaign at the park, with signs asking that dog owners clean up after their pets.

He also plans to talk with the Florida Department of Transportation, owner of the bridge, about diverting the flow of rainwater coming off the walkway into the bridge's storm-water collection system.

The Venice no-swim advisories in May, Bolesta said, were posted as a result of construction crews working at a bird-feces-laden city pier, which may have stirred the waters where officials tested for the hacteria, leading to the high counts.

The task force's findings, and the county's plan to fix the problem, will be discussed in a meeting with Siesta Key homeowners next Thursday.

Last year, no-swim advisories were posted nine times in Sarasota County, 41 times in Manatee County and 42 times in Charlotte County.

The number of beach closings and advisories resulting from excessive pollution more than doubled in Florida last year, according to the National Resources Defenise Council.

The council said the 307 Horida beaches monitored by health officials for pollution were closed or had no-swimming advisories posted on 3,986 days in 2003, up from 1,745 in 2002.

Across the country in 2003, there were more than 18,000 days when beaches were closed or people were warned not to swim, an increase of more than 51 percent from 2002, the NRDC reported. The local no-swim advisories this spring and summer were posted after routine testing under the state's Healthy Beaches program, which tests the water off coastal counties every week.

Officials say the testing has become more thorough and more frequent in recent years.

HERALD-TRIBUNE 13A

ollution

Though pollutants are spotted more often, the testing also means safer shorelines because people know when it's not a good idea to go in the water.

vs

"It's not scary to go to the beach," Conner said. "Things are actually safer now that this is going on.", Interested? Health officials are planning a meeting Dec. 16 to explain the results of their investigation into the numerous no-awim advisories this year on Seleta Key. The meeting will start at 7 pm, at the St. Bonface Episcopal Church Parish Hail, 5016 Michight Pass Road, Siesta Key. For more information, call 861-6133.

APPENDIX G

PUBLIC MEETING MINUTES -HEALTHY BEACHES

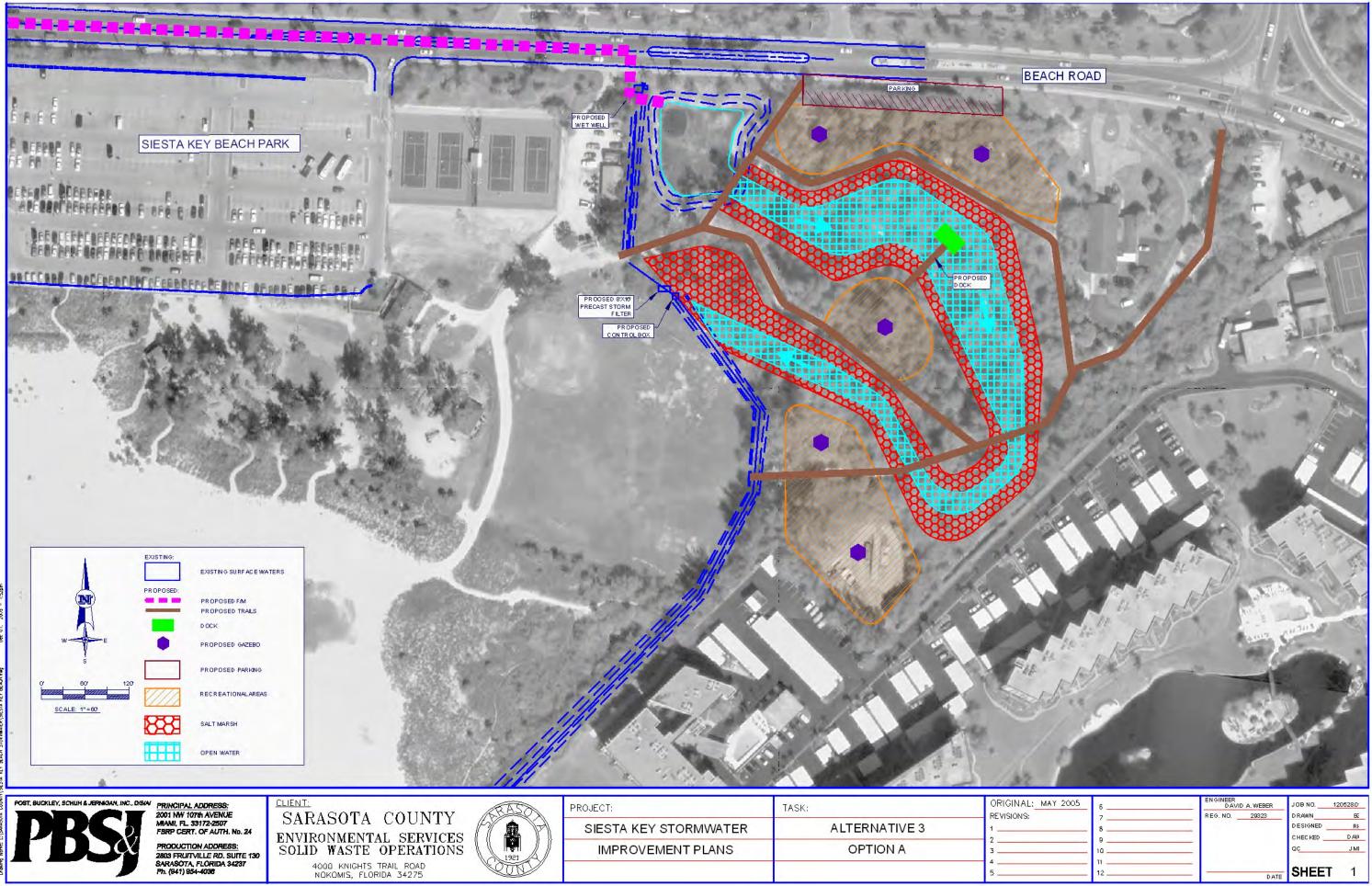
Healthy Beaches Public Workshop December 16, 2004 7:00 PM

Public Comments/Questions

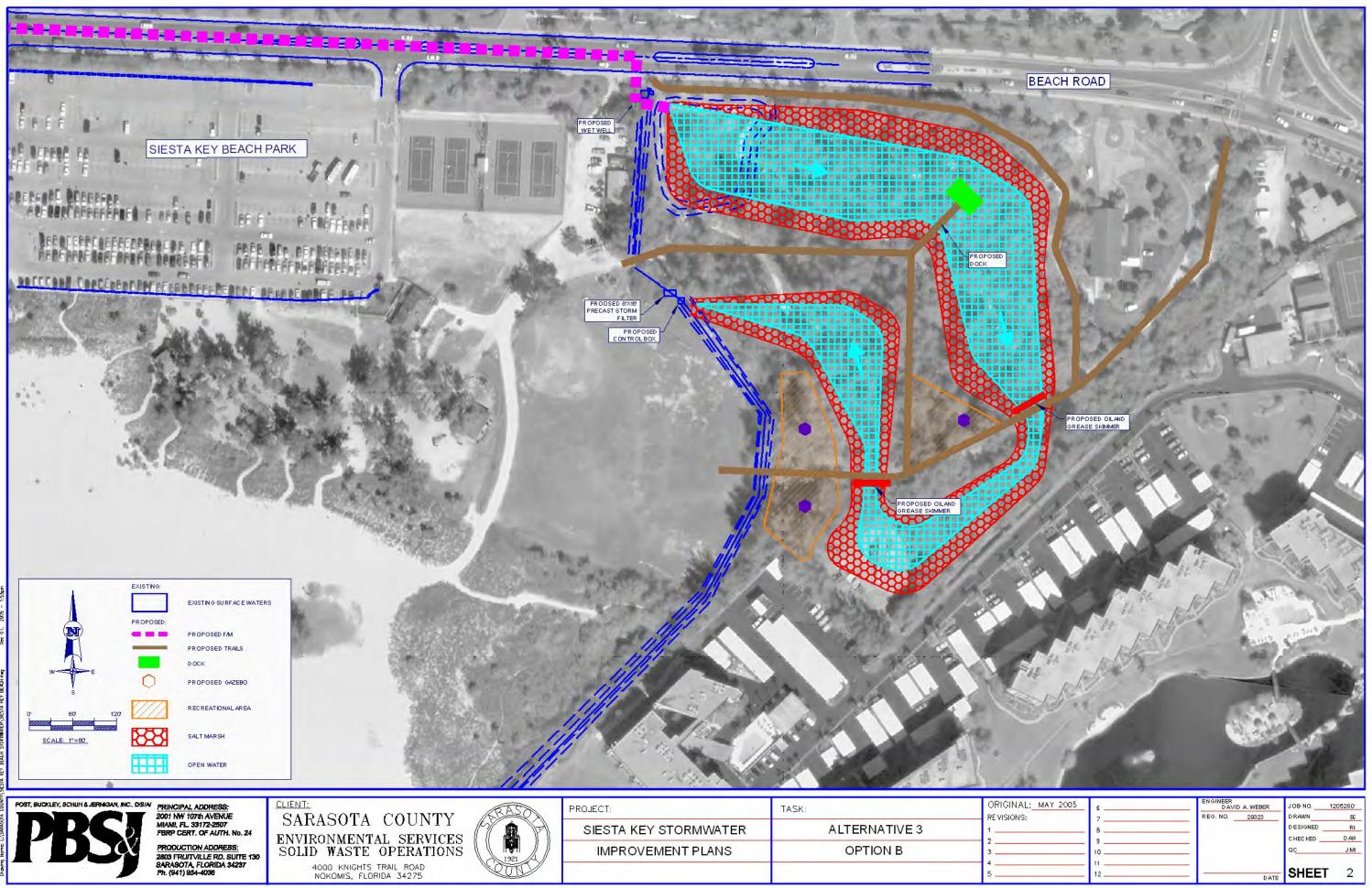
- 1) Resident has lived here for 25 years and for as long as she can remember brown water has been coming out of the pipe onto the beach.
- 2) Why were the Australian pines taken down? The place looks terrible now.
- 3) The recreational area around the beach should be moved. The tennis courts need to be moved. More green space is needed.
- 4) There is a need for natural filtration. Get rid of the parking lot.
- 5) Why are RVs allowed to park in the parking lot? They take up 2 to 3 spaces.
- 6) What is the source of the Turtle Beach problem?
- 7) The parking lot is an eyesore. The area needs a more pleasant appearance. There is a need for more shade.
- 8) The County should use more Florida native or Florida friendly plants.
- 9) Why are we dumping stormwater into the Gulf of Mexico?
- 10) The County needs to look at the zoning regulations. Is there a limit on impervious surfaces?
- 11) Has the Parks Department conducted any wildlife surveys? There is a need for more green space.
- 12) During rain events, is the effluent tested and reported?

APPENDIX H

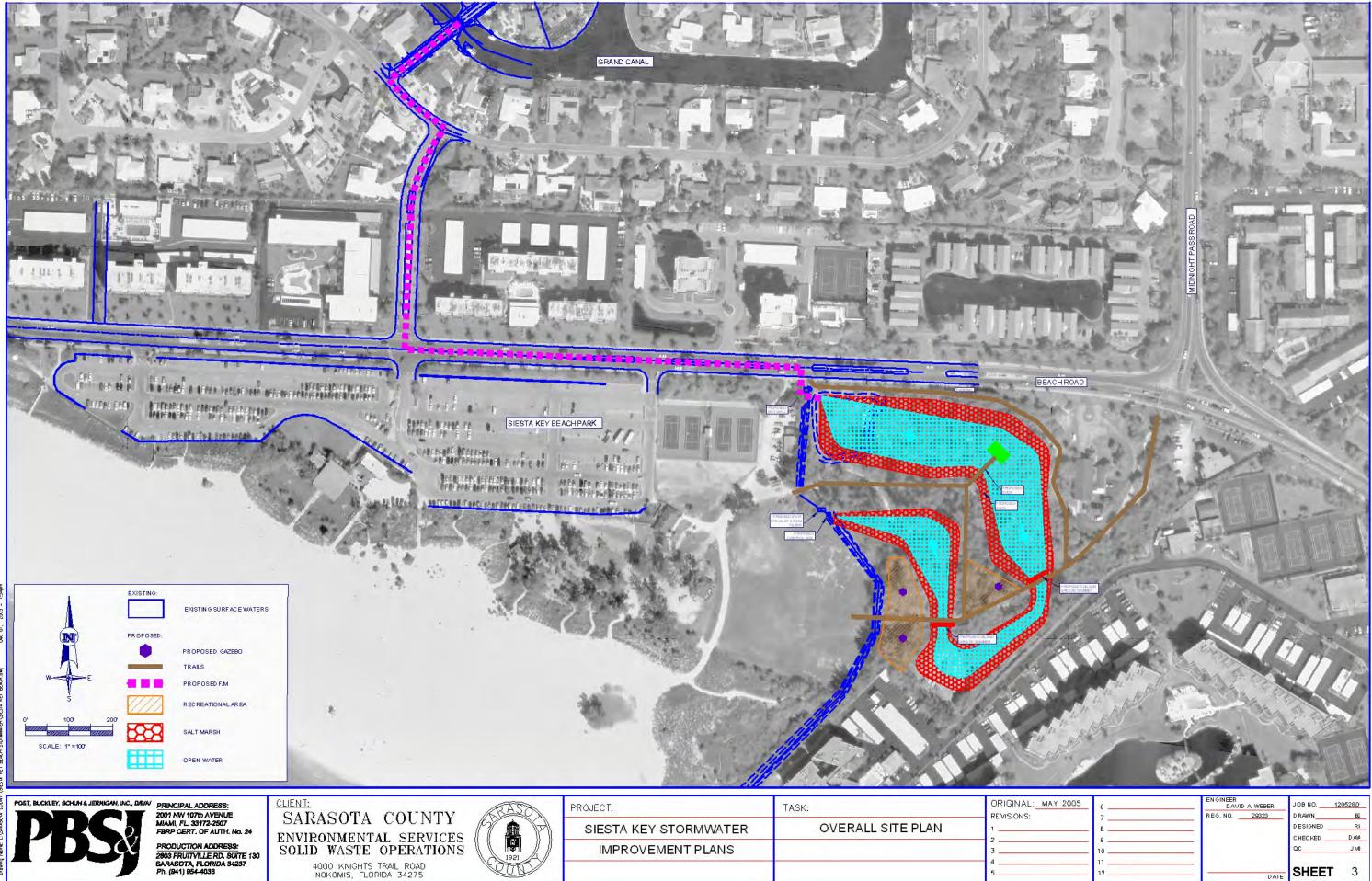
WET DETENTION POND CONCEPTUAL DESIGNS AND EQUIPMENT



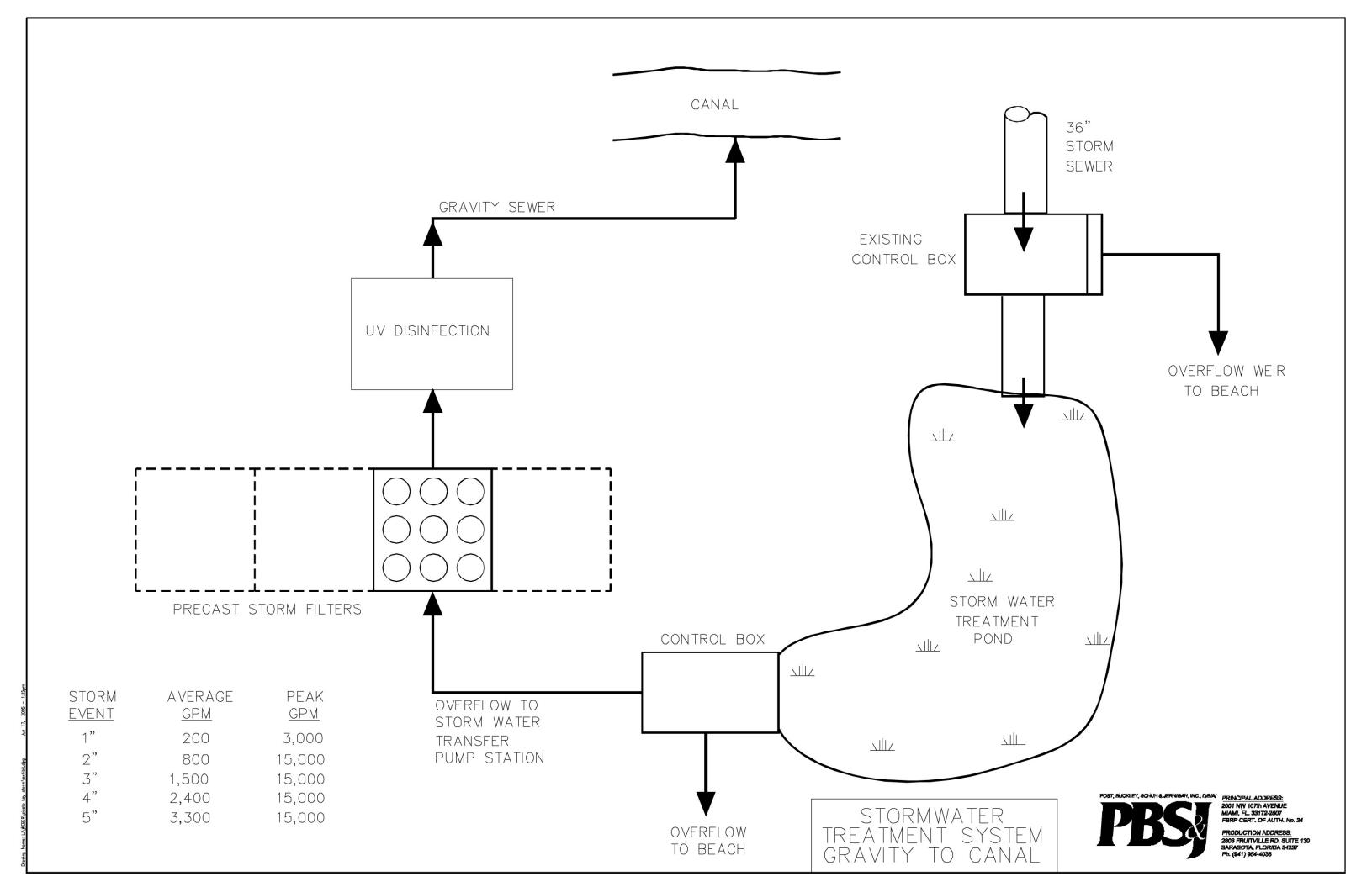
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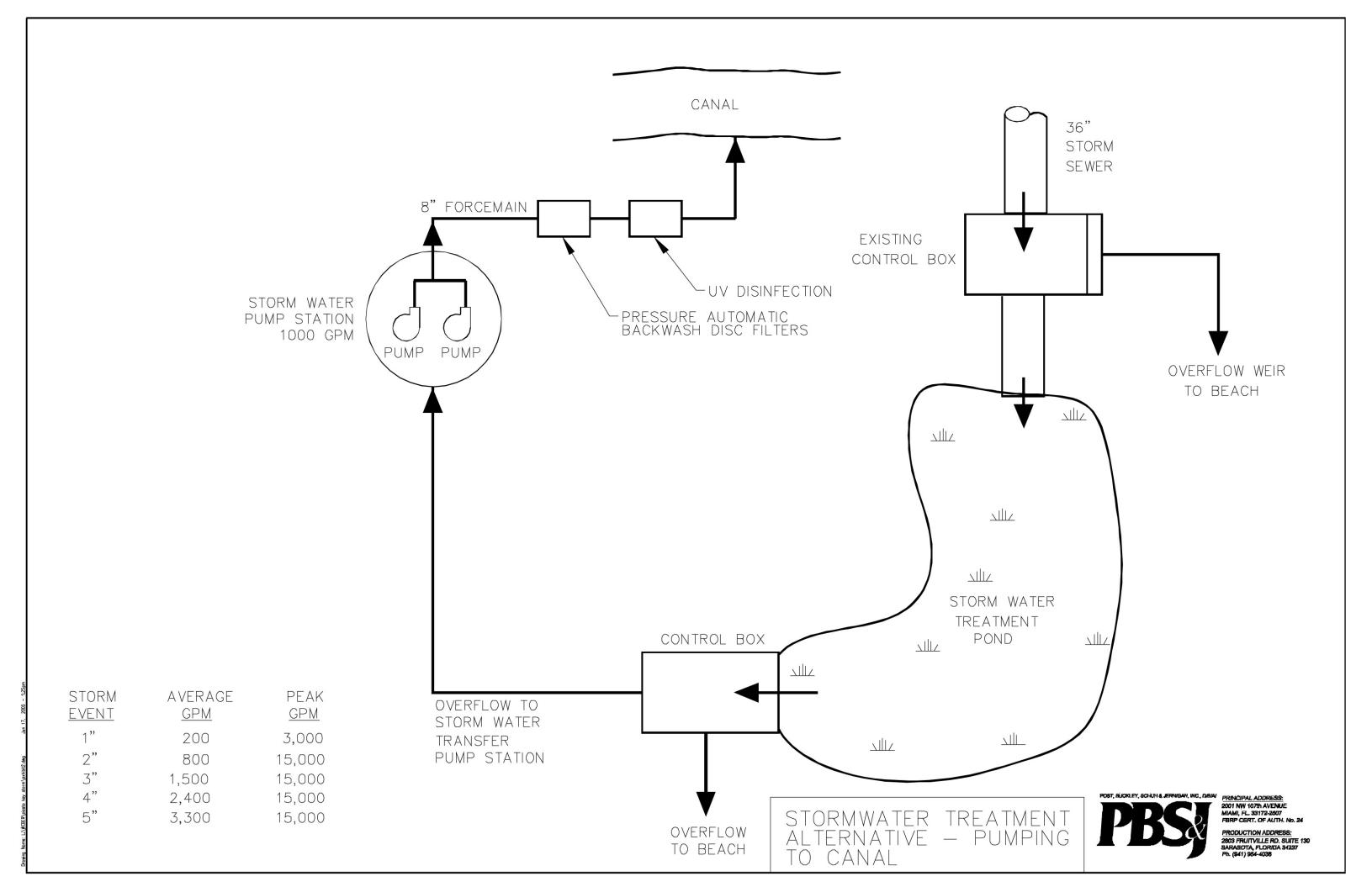


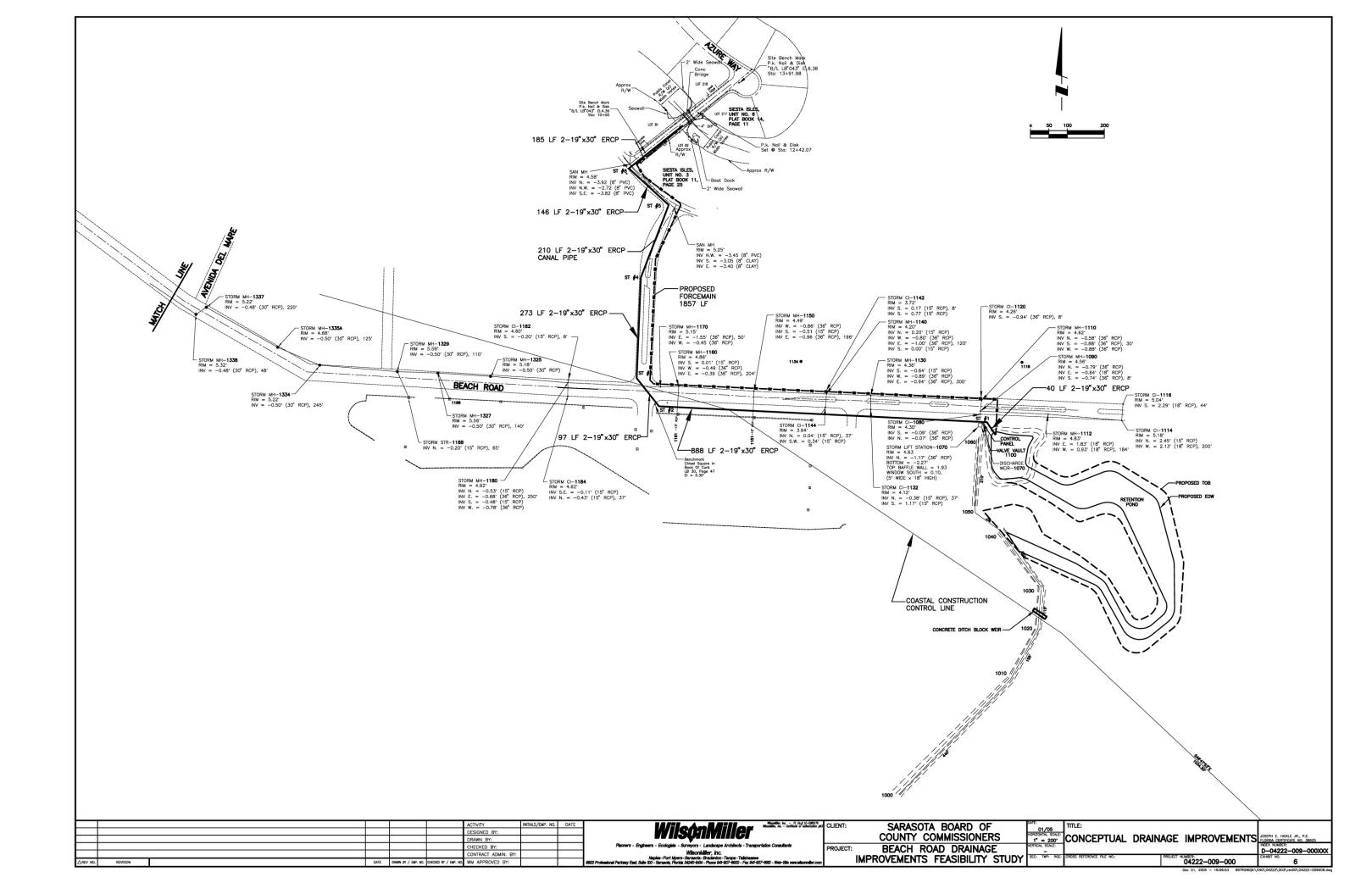
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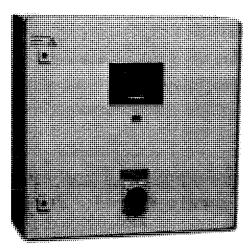
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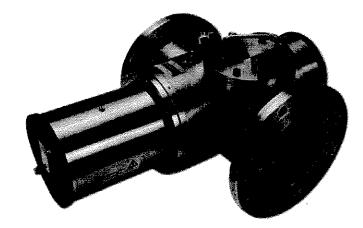


Compact Design, Premium Medium-Pressure Ultraviolet

The INLINE system uses high output medium pressure lamps oriented perpendicular to the fluid flow. This design has several unique advantages including the ability to effectively treat very poor transmission fluids, or extremely high flow rates without bypass. The compact design has the smallest footprint of any UV system and can treat gravity fed operations with



very little pressure drop. These systems are ideally suited for treating process, waste, or reuse water. INLINE is an excellent choice where space is critical or flows are high.



Aquionics' INLINE systems are cost effective and applicable to primary, secondary, and tertiary effluents as well as combined sewer overflows and stormwater.

SOME ADVANCED FEATURES:

- Compact design, smallest footprint.
- Low head loss.
- Designed for both gravity fed and pumped flow.
- Automatic quartz sleeve cleaning mechanisms insure consistent, reliable disinfection even when treating poor quality water.
- Heavy-duty, 316L stainless steel treatment chamber.

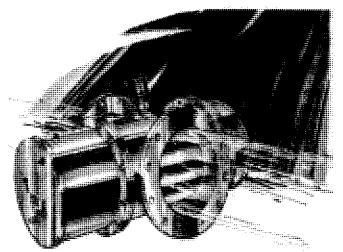
- High-intensity, medium-pressure UV lamps can be configured to treat any size flow requirements.
- Low capital and O&M costs.
- Easiest to install...Unit can be connected directly into existing piping system.
- Minimal maintenance requirements.
- Advanced, fail-safe, UV monitors.
- Eliminates chlorination and dechlorination processes.

21 KENTON LANDS ROAD & ERLANGER, KY 41018 & P: 859.341.0710 & T: 800.925.0440 & F: 859.341.0350 & WWW.AQUIONICS.COM

INLINE - SYSTEM FEATURES \bigcirc

CONTROL CABINET:

- Epoxy coated steel or stainless steel available. •
- Available with NEMA 12 rating.
- 20 year design life transformers and capacitors to drive high power medium pressure lamps.



SOME OTHER SYSTEM FEATURES:

- Safety features include: cabinet interlocks, overtemperature shutoff, ground-fault protection, and numerous alarms and outputs.
- Mechanical and chemical wiper systems for . automatic quartz sleeve cleaning.
- Sample ports and access hatches.

CONTROLS & MONITORING:

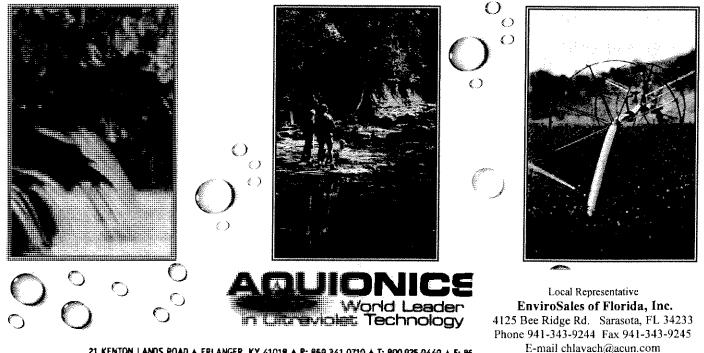
- Fail-safe UV monitor. •
- All functions are microprocessor controlled.
- Many standard Controls, Alarms, and Input/Outputs are available.

LAMPS & SLEEVES:

- Medium-Pressure lamps emit all UV disinfection wavelengths.
- Single or multiple lamp configurations.
- High-purity quartz for maximum transmission.
- One 4000-watt multi-wave lamp is equivalent to 18 conventional lowpressure technology lamps.
- Lower maintenance cost than LP systems due to fewer lamps.

CHAMBER:

- 316L stainless steel construction.
- Compact, perpendicular lamp configuration.
- Automatic quartz sleeve cleaning.
- Access hatches.

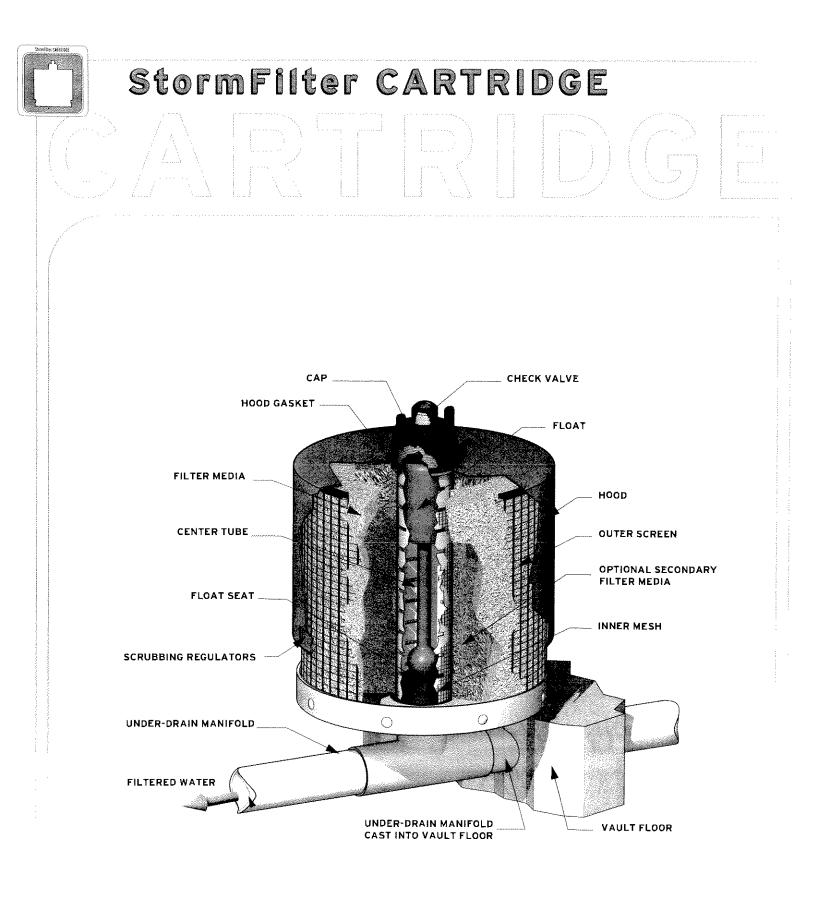


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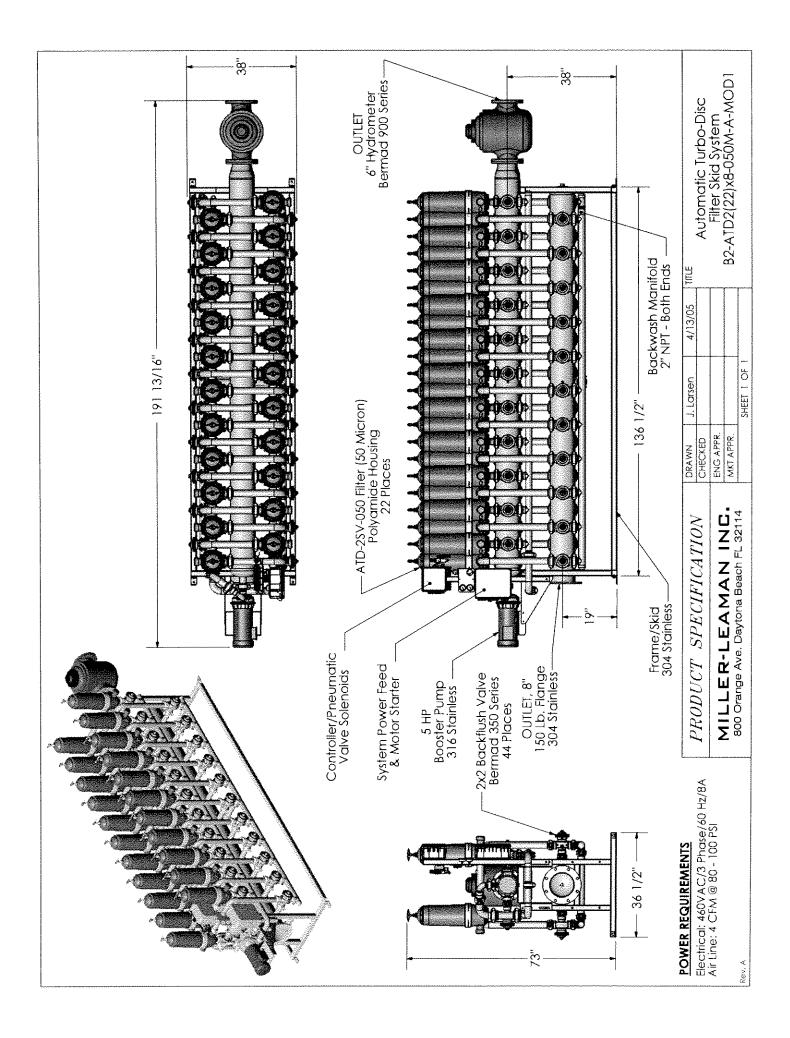


U.S. Patent No. 5,322,629, 5,624,576, 5,707,527, 6,027,639 and other U.S and Foreign patents pending.





U.S. Patent No. 5,322,629, 5,624,576, 5,707,527, 6,027,639 and other U.S and Foreign patents pending.



APPENDIX I

STORMWATER MODELING SCENARIOS AND RESULTS

EXISTING CONDITIONS INPUT

THE Basins PRARECEPTION CONTRACTOR FRANCESCONDER FRANCESCONDE Name: 1000 Node: 1000 Status: Onsite Group: BASE Type: SCS Unit Hydrograph Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount (in): 2.000 Area(ac): 1.900 Curve Number: 68.00 DCIA(%): 0.00 Max Allowable Q(cfs): 999999,000 Name: 1010 Status: Onsite Node: 1010 Group: BASE Type: SCS Unit Hydrograph Peaking Factor: 256.0 Unit Hydrograph: Uh256
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 Time Shift(hrs):
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 DCIA(%): 0.00 Name: 1020 Node: 1020 Group: BASE Type: SCS Unit Hydrograph Status: Onsite Group: BASE Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.56 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 kainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 5.610 Curve Number: 68.00 DCIA(%): 0.00 Name: 1030 Node: 1030 Type: SCS Unit Hydrograph Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 4.580 Curve Number: 68.00 DCTA(%): 0.00 PCTA(%): 0.00 Curve Number: 68.00 DCTA(%): 0.00 PCTA(%): 0.00 Curve Number: 68.00 DCTA(%): 0.00 PCTA(%): 0.00 PC Node: 1040 Type: SCS Unit Hydrograph Name: 1040 Status: Onsite Group: BASE Onic nyurograph: Uh256Peaking Factor: 256.0Rainfall File: FlmodStorm Duration(hrs): 24.00Rainfall Amount(in): 2.000Time of Conc(min): 10.00Area(ac): 0.560Time Shift(hrs): 0.00Curve Number: 68.00Max Allowable O(cfc): 000000 Curve Number: 68.00 DCIA(%): 0.00 Max Allowable Q(cfs): 999999,000 Name: 1050 Node: 1050 Status: Onsite Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Peaking Factor: 256.0 Rainfall File: FlmodPeaking Factor: 256.0Rainfall Amount(in): 2.000Time of Conc(min): 10.00Area(ac): 1.470Time Shift(hrs): 0.00Curve Number: 68.00Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Name: 1080 Node: 1080 Status: Onsite Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh256 Peaking Factor: 256.0 Storm Duration (hrs): 24.00 Rainfall File: Flmod Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Rainfall Amount(in): 2.000 Area(ac): 0.354 Curve Number: 92.00 DCIA(%): 0.00 Status: Onsite Name: 1100 Node: 1100 Group: BASE Type: SCS Unit Hydrograph Group: BASE Peaking Factor: 256.0 Unit Hydrograph: Uh256 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Kaintall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.440 Curve Number: 70.00 DCIA(%): 0.00 _____ _____ Name: 1114 Node: 1114 Status: Onsite Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Peaking Factor: 256.0 Chite Hydrograph: UN255Peaking Factor: 256.0Rainfall File: FlmodStorm Duration(hrs): 24.00Rainfall Amount(in): 2.000Time of Conc(min): 10.00Area(ac): 0.425Time Shift(hrs): 0.00Curve Number: 92.00Max Allowable Q(cfs): 999999.000DCIA(%): 0.00Curve Number: 92.00 Name: 1116 Node: 1116 Type: SCS Unit Hydrograph Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.425 Curve Number: 92.00 Particle Flmod Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 ------Name: 1118 Node: 1118 Status: Onsite Type: SCS Unit Hydrograph Group: BASE Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 20.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Lo: Flmod Area(ac): 4.080 Curve Number: 80.00 DCIA(%): 0.00 Rainfall File: Flmod Rainfall Amount(in): 2.000 Name: 1120 Node: 1120 Status: Onsite Type: SCS Unit Hydrograph Group: BASE Unit Hydrograph: Uh256 Rainfall File: Fimod Rainfall Amount(in): 2.000 Area(ac): 0.354 Curve Number: 92.00 DCIA(%): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Name: 1132 Node: 1132 Status; Onsite Group: BASE Type: SCS Unit Hydrograph Peaking Factor: 256.0 Unit Hydrograph: Uh256 Unit Hydrograph:Uh256Peaking Factor:256.0Rainfall File:FlmodStorm Duration(hrs):24.00Rainfall Amount(in):2.000Time of Conc(min):12.00Area(ac):1.590Time Shift(hrs):0.00Curve Number:75.00Max Allowable Q(cfs):999999.000DCTA(8):0.00DD DCIA(%); 0.00

-----________ Node: 1134 Type: SCS Unit Hydrograph Name: 1134 Status: Onsite Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 7.040 Curve Number: 00.00 DCIA(%): 0.00 Group: BASE Node: 1142 Type: SCS Unit Hydrograph Status: Onsite Name: 1142 Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.739 Curve Number: 92.00 Peaking Factor: 256.0 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 ___________ Type: SCS Unit Hydrograph Name: 1144 Node: 1144 Group: BASE Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.540 Curve Number: 92.00 DCIA(%): 0.00 Node: 1146 Name: 1146 Status: Onsite Type: SCS Unit Hydrograph Group: BASE
 Unit Hydrograph: Uh256
 Peaking Factor: 256.0

 Rainfall File: Flmod
 Storm Duration(hrs): 24.00

 Rainfall Amount(in): 2.000
 Time of Conc(min): 10.00

 Area(ac): 1.570
 Time Shift(hrs): 0.00

 Curve Number: 98.00
 Max Allowable Q(cfs): 999999

 DCIA(%): 0.00
 DCIA
 Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 ~~~~ Name: 1151 Node: 1151 Group: BASE Type: SCS Unit Hydrograph Status: Onsite Group: BASE Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.510 Curve Number: 98.00 Curve Number: 98.00 DCIA(%): 0.00 Name: 1161 Node: 1161 Type: SCS Unit Hydrograph Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Area (ac): 1.380 Curve Number: 98.00 DCLA(%): 0.00 Peaking Factor: 256.0 Fime of Conc(min): 10.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 _____ Name: 1182 Node: 1182 Status: Onsite Type: SCS Unit Hydrograph Group: BASE

Unit Hydrograph: Uh256 Peaking Factor: 256.0 Storm Duration(hrs): 24.00
Time of Conc(min): 10.00
Time Shift(hrs): 0.00 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.580 Curve Number: 80.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 ~~~~~ ____ Node: 1184 Status: Onsite Type: SCS Unit Hydrograph Name: 1184 Group: BASE Unit Hydrograph: Uh256 Peaking Factor: 256.0 Feaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.697 Curve Number: 92.00 DCIA(%): 0.00 ~~~ Name: 1186 Node: 1186 Type: SCS Unit Hydrograph Status: Onsite Group; BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 2.330 Peaking Factor: 256.0 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 15.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Curve Number: 98.00 DCIA(%): 0.00 ______ Node: 1188 Status: Onsite Name: 1188 Group: BASE Type: SCS Unit Hydrograph Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.620 Curve Number: 98.00 DCIA(%): 0.00 Name: 1329 Node: 1329 Status: Onsite Group: BASE Type: SCS Unit Hydrograph
 Unit Hydrograph:
 Uh256
 Peaking Factor:
 256.0

 Rainfall File:
 Flmod
 Storm Duration(hrs):
 24.00

 Rainfall Amount(in):
 2.000
 Time of Conc(min):
 10.00

 Area(ac):
 1.910
 Time Shift(hrs):
 0.00

 Curve Number:
 80.00
 Max Allowable Q(cfs):
 999999.000
 DCIA(%): 0.00 -----Name: 1337 Node: 1337 Group: BASE Type: SCS Unit Hydrograph Status: Onsite Group: BASE Peaking Factor: 256.0 Unit Hydrograph: Uh256 Rainfall File: Flmod .ntall File: Flmod Amount(in): 2.000 Area(ac): 3.910 rve Number: 80.00 DCIA(%): 0.00 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Rainfall Amount(in): 2.000 Max Allowable Q(cfs): 999999.000 Curve Number: 80.00 DCIA(%): 0.00 Name: 1347A Status: Onsite Node: 1347A Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256Peaking Factor: 256.0Rainfall File: FlmodStorm Duration(hrs): 24.00Rainfall Amount(in): 2.000Time of Conc(min): 10.00Area(ac): 2.400Time Shift(hrs): 0.00Curve Number: 80.00Max Allowable Q(cfs): 999999.000DCIA(%): 0.00DCIA(%): 0.00

~~~~~~~~~~ Node: 1357 Type: SCS Unit Hydrograph Name: 1357 Status: Onsite Group: BASE Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.600 Curve Number: 80.00 DCIA(%): 0.00 Unit Hydrograph: Uh256 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Time Shift(nrs): 0.00 Max Allowable Q(cfs): 999999.000 Type: SCS Unit Hydrograph Node: 1360 Name: 1360 Group: BASE Peaking Factor: 255.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount (in): 2.000 Linod Louit(in): 2.000 Area(ac): 2.160 Curve Number: 80.00 DCIA(%): 0.00 Name: 1368 Node: 1368 Status: Onsite Type: SCS Unit Hydrograph Group: BASE Peaking Factor: 256.0 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.200 Curve Number: 80.00 DCLA(8): 0.00 Unit Hydrograph: Uh256 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 \_\_\_\_\_ Name: 1372 Node: 1372 Type: SCS Unit Hydrograph Status: Onsite Group: BASE Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 2.430 Curve Number: 80.00 DCIA(%): 0.00 Node: 1382 Type: SCS Unit Hydrograph Status: Onsite Name: 1382 Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Area(ac): 2.900 Curve Number: 80.00 DCIA(%): 0.00 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Name: 1000 Base Flow(cfs): 0.000 Init Stage(ft); 1.100 Group: BASE Type: Time/Stage Warn Stage(ft): 4.600 Time(hrs) Stage(ft) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 0.00 1.100 12.00 1.100 24.00 1.100 12.00 24,00 -----Name: 1010 Base Flow(cfs): 0.000 Init Stage(ft): 1.100

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| Group:<br>Type:          | BASE<br>Stage/Area |                  |      |            |               | Warn | Stage(ft);               | 3,800 |
|--------------------------|--------------------|------------------|------|------------|---------------|------|--------------------------|-------|
| Stage                    | (ft)               | Area(ac)         |      |            |               |      |                          |       |
| Name :<br>Group :        |                    |                  | Base | Flow(cfs): | 0.000         |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)               |                  |      |            |               |      |                          |       |
| Name:<br>Group:<br>Type: |                    |                  | Base | Flow(cfs): | <b>Ö</b> .000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)<br>           |                  |      |            |               |      |                          |       |
| Name:<br>Group:<br>Type: |                    |                  | Base | Flow(cfs): | 0.000         |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | ft)                | Area(ac)         |      |            |               |      |                          |       |
| Name:<br>Group:          |                    |                  | Base | Flow(cfs); | 0.000         |      | Stage(ft):<br>Stage(ft): |       |
| Stage (                  | ft)                | Area (ac)        |      |            |               |      |                          |       |
| Name:<br>Group:          |                    |                  |      | Flow(cfs): | 0.000         | Init | Stage(ft):<br>Stage(ft); |       |
| Stage (                  | ft)                | Area(ac)         |      |            |               |      |                          |       |
| Name:<br>Group:<br>Type: |                    |                  | Base | Flow(cfs): | 0.000         |      | Stage(ft):<br>Stage(ft): |       |
| Stage (                  | ft)                | Area(ac)         |      |            |               |      |                          |       |
|                          | 100<br>630         |                  |      |            |               |      |                          |       |
| Name:<br>Group:          | 1072               |                  |      | Flow(cfs): |               | Init | Stage(ft):<br>Stage(ft): | 1.100 |
| Stage (                  | ft)                | Area(ac)         |      |            |               |      |                          |       |
| -1.                      | <br>770<br>630     | 0.0017<br>0.0017 |      |            |               |      |                          |       |
|                          |                    |                  |      |            |               |      |                          |       |

| Stage                    | (ft)              | Area(ac)                   |      |            |       |      |                          |  |
|--------------------------|-------------------|----------------------------|------|------------|-------|------|--------------------------|--|
| -0.                      |                   | 0.0003                     |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type: |                   |                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)              |                            |      |            |       |      |                          |  |
| -0.                      | .640<br>.560      | 0.0006<br>0.0006           |      |            |       |      |                          |  |
| Name:<br>Group:          |                   |                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)              |                            |      |            |       |      |                          |  |
| 4.                       | 000<br>000<br>500 | 0.1300<br>0.3200<br>0.4400 |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type: |                   |                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage                    | (ft)              | Area(ac)                   |      |            |       |      |                          |  |
| -0.                      | 880<br>620        | 0,0006<br>0,0006           |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type: |                   |                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)              |                            |      |            |       |      |                          |  |
|                          | 930<br>830        | 0.0006<br>0.0006           |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type: |                   | ~~~ ~                      | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)              |                            |      |            |       |      |                          |  |
| 2.<br>5.                 | 130<br>180        | 0.0003<br>0.0003           |      |            |       |      |                          |  |
| Name:<br>Group:          | 1116              |                            |      | Flow(cfs): |       | Init | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)              |                            |      |            |       |      |                          |  |
| 2.                       | 290<br>040        | 0.0003<br>0.0003           |      |            |       |      |                          |  |
|                          | 1118              |                            |      | Flow(cfs): |       |      | Stage(ft):               |  |

Type: Stage/Area

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| tage/Area |
|-----------|
|           |

| Otores (                       | 2 L \      | Dese ( )                             |      |            |       |      |                          |  |
|--------------------------------|------------|--------------------------------------|------|------------|-------|------|--------------------------|--|
|                                | ft)        |                                      |      |            |       |      |                          |  |
|                                | 000<br>000 | 0.6600<br>0.9000                     |      |            |       |      |                          |  |
| Name:<br>Group: 7<br>Type: 5   |            | an, non 1995 ann ann ann ann ann ann | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage (                        | ft)        | Area(ac)                             |      |            |       |      |                          |  |
|                                | 940<br>260 |                                      |      |            |       |      |                          |  |
| Name: :<br>Group: 1            |            |                                      | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage(:                        | ft)        | Area(ac)                             |      |            |       |      |                          |  |
|                                | 940<br>360 | 0.0006<br>0,0006                     |      |            |       |      |                          |  |
| Name: 1<br>Group: 1<br>Type: { |            |                                      | Base | Flow(cfs): | 0.000 |      | Stage(ft);<br>Stage(ft): |  |
| Stage (1                       | ft)        | Area(ac)                             |      |            |       |      |                          |  |
|                                | 380<br>120 | 0.0003<br>0.0003                     |      |            |       |      |                          |  |
| Name: 1<br>Group: F<br>Type: S |            |                                      | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                                | Et)        |                                      |      |            |       |      |                          |  |
| 3.0                            | )00<br>)00 | 0.2130<br>0.3670                     |      |            |       |      |                          |  |
| Name: 1<br>Group: F            |            |                                      | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                                | Et)        |                                      |      |            |       |      |                          |  |
| -1.0                           |            | 0.0006<br>0.0006                     |      |            |       |      |                          |  |
| Name: 1<br>Group: E<br>Type: S | 142        |                                      |      | Flow(cfs); | 0.000 | Init | Stage(ft):<br>Stage(ft): |  |
| Stage (f                       | (t)        |                                      |      |            |       |      |                          |  |
| 0.1                            | .70<br>20  | 0.0003                               |      |            |       |      |                          |  |
| Name: 1<br>Group: B<br>Type: S |            |                                      | Base | Flow(cfs): |       |      | Stage(ft):<br>Stage(ft): |  |

| Stage(ft)                                     |                                      |      |            |       |                                  |       |
|-----------------------------------------------|--------------------------------------|------|------------|-------|----------------------------------|-------|
|                                               | 0.0003<br>0.0003                     |      |            |       |                                  |       |
| Name: 1146<br>Group: BASE<br>Type: Stage/Area | 1                                    | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft):         |       |
| Stage(ft)                                     |                                      |      |            |       |                                  |       |
| 4.460<br>5.450<br>5.600<br>5.700              | 0.0000<br>0.4567<br>0.9133<br>1.3700 |      |            |       |                                  |       |
| Name: 1150<br>Group: BASE<br>Type: Stage/Area |                                      | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft):         |       |
| Stage(ft)                                     | Area(ac)                             |      |            |       |                                  |       |
| -0.960<br>4.490                               | 0.0006<br>0.0006                     |      |            |       |                                  |       |
| Name: 1151<br>Group: BASE<br>Type: Stage/Area |                                      | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft):         |       |
| Stage(ft)                                     | Area(ac)                             |      |            |       |                                  |       |
| 4.160<br>5.200<br>5.500<br>6.000              | 0.0000<br>0.4300<br>0.8600<br>1.2900 |      |            |       |                                  |       |
| Name: 1160<br>Group: BASE<br>Type: Stage/Area |                                      | Base | Flow(cfs): | 0.000 | <pre>Stage(ft): Stage(ft):</pre> |       |
| Stage(ft)                                     |                                      |      |            |       |                                  |       |
|                                               | 0.0006<br>0.0006                     |      |            |       |                                  |       |
| Name: 1161<br>Group: BASE<br>Type: Stage/Area |                                      | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft):         |       |
| Stage(ft)                                     |                                      |      |            |       |                                  |       |
| 4.490<br>5.200<br>5.500<br>6.000              | 0.0000<br>0.4600<br>0.9200<br>1.3800 |      |            |       |                                  |       |
| Name: 1170<br>Group: BASE<br>Type: Stage/Area |                                      |      | Flow(cfs): |       | Stage(ft):<br>Stage(ft):         | 1.100 |
| Stage(ft)                                     |                                      |      |            |       |                                  |       |
| -1.550<br>5.150                               | 0.0006<br>0.0006                     |      |            |       |                                  |       |

| Group:                   | 1180<br>BASE<br>Stage/Area |                                                | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|--------------------------|----------------------------|------------------------------------------------|------|------------|-------|--------------------------|--|
|                          | (ft)                       |                                                |      |            |       |                          |  |
| -0                       | .780<br>.920               | 0.0006<br>0.0006                               |      |            |       |                          |  |
| Name:<br>Group:<br>Type: |                            |                                                | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)                       | Area(ac)                                       |      |            |       |                          |  |
| -0                       | .200<br>.600               | 0.0003<br>0.0003                               |      |            |       |                          |  |
| Name:<br>Group:<br>Type: |                            |                                                | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)                       | Area(ac)                                       |      |            |       |                          |  |
|                          | .430<br>.620               | 0.0003<br>0.0003                               |      |            |       |                          |  |
| Group:                   | 1186<br>BASE<br>Stage/Area |                                                | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
| Stage                    | (ft)                       | Area(ac)                                       |      |            |       |                          |  |
| 5.<br>5.<br>5.           | .320<br>.490<br>.500       | 0.0000<br>0.5825<br>1.1650<br>1.7475<br>2.3300 |      |            |       |                          |  |
| Name:<br>Group:<br>Type: |                            |                                                | Base | Flow(cfs); | 0.000 | Stage(ft):<br>Stage(ft): |  |
| Stage                    | (ft)                       | Area(ac)                                       |      |            |       |                          |  |
|                          | .400<br>.600               | 0.0000<br>0.6200                               |      |            |       |                          |  |
| Name:<br>Group:<br>Type: |                            |                                                | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)                       |                                                |      |            |       |                          |  |
| -0.                      |                            | 0.0006                                         |      |            |       |                          |  |
| Name:<br>Group:          |                            |                                                | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          |                            |                                                |      |            |       |                          |  |

| ·                        | ~~~~                        |                  |      |                       |       | <br>                     |  |
|--------------------------|-----------------------------|------------------|------|-----------------------|-------|--------------------------|--|
|                          | .500<br>.560                | 0.0006<br>0.0006 |      |                       |       |                          |  |
| Name:<br>Group:<br>Type: |                             |                  | Base | Flow(cfs):            | 0.000 | Stage(ft);<br>Stage(ft); |  |
|                          | (ft)                        |                  |      |                       |       |                          |  |
| -0                       |                             | D.0006<br>0.0006 |      |                       |       |                          |  |
| Group;                   | 1334<br>BASE<br>Stage/Area  |                  | Base | Flow(cfs):            | 0.000 | Stage(ft):<br>Stage(ft): |  |
| Stage                    | (ft)                        | Area(ac)         |      |                       |       |                          |  |
| -0.<br>5.                | .500<br>.220                | 0.0006<br>0.0006 |      |                       |       |                          |  |
| Group:                   | 1335A<br>BASE<br>Stage/Area |                  | Base | Flow(cfs):            | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)                        |                  |      |                       |       |                          |  |
| 4.                       | 680                         | 0.0006<br>0.0006 |      |                       |       |                          |  |
| Name:<br>Group:          | 1337<br>BASE<br>Stage/Area  |                  | Base | <pre>Flow(cfs);</pre> | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | ft)                         |                  |      |                       |       |                          |  |
|                          | 470<br>220                  | 0.0006<br>0.0006 |      |                       |       |                          |  |
| Name:<br>Group:<br>Type: |                             |                  | Base | Flow(cfs):            | 0.000 | Stage(ft):<br>Stage(ft): |  |
| Stage (                  | ft)                         | Area(ac)         |      |                       |       |                          |  |
|                          | 480<br>320                  | 0.0006<br>0.0006 |      |                       |       |                          |  |
| Name:<br>Group:<br>Type: |                             |                  | Base | Flow(cfs):            | 0.000 | Stage(ft):<br>Stage(ft): |  |
| Stage (                  | ft)                         | Area(ac)         |      |                       |       |                          |  |
| -0.<br>5.                | 520<br>200                  | 0.0006<br>0.0006 |      |                       |       |                          |  |
| Name:<br>Group: 2        |                             |                  |      | Flow(cfs);            |       | Stage(ft):<br>Stage(ft): |  |
|                          | ft)                         |                  |      |                       |       |                          |  |
|                          |                             | 0.0006           |      |                       |       |                          |  |

| 4                                                                                                 | .430                                                                                | 0.0006                                                                 |      |                  |                      |                                                     |                         |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------|------|------------------|----------------------|-----------------------------------------------------|-------------------------|
| Name:<br>Group:                                                                                   |                                                                                     |                                                                        | Base | Flow(cfs): 0.000 |                      | Stage(ft):<br>Stage(ft):                            |                         |
| Stage                                                                                             | (ft)                                                                                | Area(ac)                                                               |      |                  |                      |                                                     |                         |
| -0<br>4                                                                                           | .500<br>.750                                                                        | 0.0006<br>0.0006                                                       |      |                  |                      |                                                     |                         |
| Name:<br>Group:                                                                                   |                                                                                     |                                                                        | Base | Flow(cfs): 0.000 |                      | Stage(ft):<br>Stage(ft):                            |                         |
|                                                                                                   | (ft)                                                                                | Area(ac)                                                               |      |                  |                      |                                                     |                         |
|                                                                                                   | .500<br>.820                                                                        | 0.0006<br>0.0006                                                       |      |                  |                      |                                                     |                         |
| Group:                                                                                            | 1344<br>BASE<br>Stage/Area                                                          |                                                                        | Base | Flow(cfs): 0.000 |                      | Stage(ft):<br>Stage(ft):                            |                         |
| Stage                                                                                             | (£t)                                                                                |                                                                        |      |                  |                      |                                                     |                         |
|                                                                                                   | .520                                                                                | 0.0006<br>0.0006                                                       |      |                  |                      |                                                     |                         |
| Name:<br>Group:<br>Type:                                                                          |                                                                                     |                                                                        | Base | Flow(cfs): 0.000 |                      | Stage(ft):<br>Stage(ft):                            |                         |
|                                                                                                   | (ft)                                                                                |                                                                        |      |                  |                      |                                                     |                         |
|                                                                                                   | .500<br>.730                                                                        | 0.0006<br>0.0006                                                       |      |                  |                      |                                                     |                         |
| Group:                                                                                            | 1347<br>BASE<br>Stage/Area                                                          |                                                                        | Base | Flow(cfs): 0.000 |                      | Stage(ft):<br>Stage(ft):                            |                         |
|                                                                                                   |                                                                                     |                                                                        |      |                  |                      | beage (ser .                                        | 3,880                   |
| Stage                                                                                             | (ft)                                                                                |                                                                        |      |                  |                      |                                                     | 3.680                   |
| -0<br>3                                                                                           | .500<br>.880                                                                        | Area(ac)<br>0.0006<br>0.0006                                           |      |                  |                      |                                                     |                         |
| -0<br>3<br>Name:<br>Group:                                                                        | .500<br>.880<br>1347A                                                               | Area(ac)<br>0.0006<br>0.0006                                           |      | Flow(cfs): 0.000 | Init                 |                                                     | 1.100                   |
| -0<br>3<br>Name:<br>Group:<br>Type:<br>Stage                                                      | .500<br>.880<br>1347A<br>BASE<br>Stage/Area<br>(ft)                                 | Area(ac)<br>0.0006<br>0.0006<br>Area(ac)                               |      |                  | Init                 | Stage(ft):                                          | 1.100                   |
| -0<br>3<br>Group:<br>Type:<br>Stage<br>-0                                                         | .500<br>.880<br>1347A<br>BASE<br>Stage/Area<br>(ft)<br>.500<br>.750                 | Area(ac)<br>0.0006<br>0.0006<br>Area(ac)<br>0.0006<br>0.0006           | Base |                  | Init                 | Stage(ft):                                          | 1.100                   |
| -0<br>3<br>Name:<br>Group:<br>Type:<br>Stage<br>-0<br>3<br>Name:<br>Group:                        | .500<br>.880<br>1347A<br>BASE<br>Stage/Area<br>(ft)<br>.500<br>.750                 | Area(ac)<br>0.0006<br>0.0006<br>Area(ac)<br>0.0006<br>0.0006           | Base |                  | Init<br>Warn<br>Init | Stage(ft):                                          | 1.100<br>3.750          |
| -0<br>3<br>Name:<br>Group:<br>Type:<br>Stage<br>0<br>-0<br>3<br>Name:<br>Group:<br>Type:<br>Stage | .500<br>.880<br>1347A<br>BASE<br>Stage/Area<br>(ft)<br>.500<br>.750<br>1348<br>BASE | Area(ac)<br>0.0006<br>0.0006<br>Area(ac)<br>0.0006<br>0.0006<br>0.0006 | Base | Flow(cfs): 0.000 | Init<br>Warn<br>Init | <pre>Stage(ft):<br/>Stage(ft):<br/>Stage(ft):</pre> | 1.100<br>3.750<br>1.100 |

| Name:<br>Group:<br>Type: |                            | ı                | Base | Flow(cfs): | 0.000 |      | <pre>Stage(ft): Stage(ft):</pre> |       |
|--------------------------|----------------------------|------------------|------|------------|-------|------|----------------------------------|-------|
|                          | (ft)                       |                  |      |            |       |      |                                  |       |
| -0                       | .500<br>.700               | 0.0006<br>0.0006 |      |            |       |      |                                  |       |
|                          | 1353<br>BASE<br>Stage/Area |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft):         |       |
| Stage                    | (ft)                       |                  |      |            |       |      |                                  |       |
|                          | .480<br>.780               | 0.0006<br>0.0006 |      |            |       |      |                                  |       |
| Name:<br>Group:<br>Type: |                            |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft):         |       |
|                          | (ft)                       | Area(ac)         |      |            |       |      |                                  |       |
| -0                       | .500<br>.850               | 0.0006<br>0.0006 |      |            |       |      |                                  |       |
| Group:                   | 1355<br>BASE<br>Stage/Area |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft):         |       |
|                          | (ft)                       | Area(ac)         |      |            |       |      |                                  |       |
| -0.<br>3.                | 540<br>960                 | 0.0006           |      |            |       |      |                                  |       |
| Name:<br>Group;<br>Type: |                            |                  | Base | Flow(cfs): | 0.000 |      | <pre>Stage(ft): Stage(ft):</pre> |       |
| Stage                    | (ft)                       | Area(ac)         |      |            |       |      |                                  |       |
|                          | 520<br>720                 | 0.0006<br>0.0006 |      |            |       |      |                                  |       |
| Name:<br>Group:<br>Type: |                            |                  |      | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft):         |       |
|                          | ft)                        |                  |      |            |       |      |                                  |       |
|                          | 520<br>880                 |                  |      |            |       |      |                                  |       |
| Name:                    |                            |                  |      | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft):         | 1.100 |
|                          |                            |                  |      |            |       |      |                                  |       |
| Type:<br>Stage(          | ft)                        |                  |      |            |       |      |                                  |       |

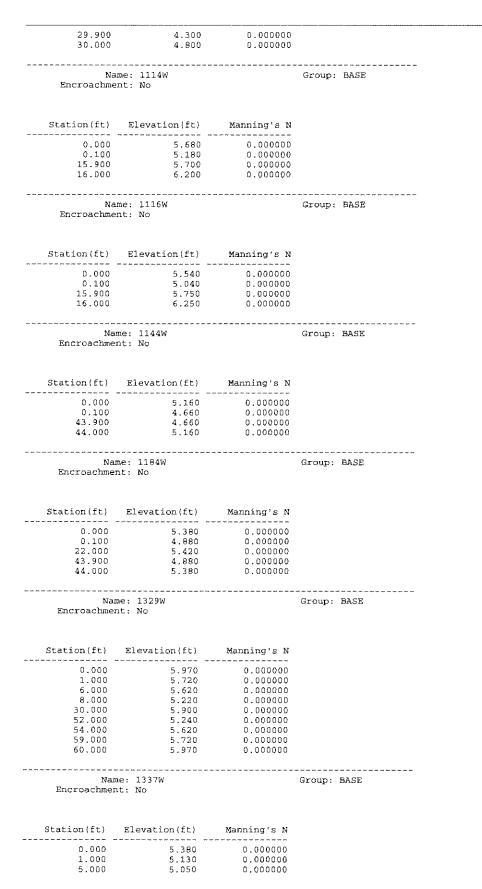
| Name:<br>Group:<br>Type: |                      |                         | Base | <pre>Flow(cfs);</pre> | 0.000 |      |                        | :): 1.100<br>:): 3.400 |
|--------------------------|----------------------|-------------------------|------|-----------------------|-------|------|------------------------|------------------------|
|                          | (ft)                 | Area(ac)                |      |                       |       |      |                        |                        |
|                          | .510<br>.400         | 0.0006<br>0.0006        |      |                       |       |      |                        |                        |
| Name:<br>Group:<br>Type: |                      |                         | Base | Flow(cfs):            | 0.000 |      |                        | ): 1.100<br>): 3.220   |
| Stage                    | (ft)                 | Area(ac)                |      |                       |       |      |                        |                        |
|                          | .000<br>.220         | 0.0005<br>0.0006        |      |                       |       |      |                        |                        |
| Name:<br>Group:<br>Type: |                      |                         | Base | Flow(cfs):            | 0.000 |      | Stage(ft<br>Stage(ft   |                        |
|                          | nrs)                 |                         |      |                       |       |      |                        |                        |
| 0<br>12                  | ).00<br>!.00<br>!.00 | 1,100<br>1,100<br>1,100 |      |                       |       |      |                        |                        |
| Name:<br>Group:<br>Type: |                      |                         | Base | Flow(cfs):            | 0.000 |      | Stage(ft<br>Stage(ft   |                        |
| Stage (                  | ft)                  | Area(ac)                |      |                       |       |      |                        |                        |
|                          | 640<br>750           | 0.0005<br>0.0006        |      |                       |       |      |                        |                        |
| Name:<br>Group:          |                      |                         | Base | Flow(cfs):            | 0.000 |      | Stage(ft<br>Stage(ft   |                        |
|                          | ft)                  |                         |      |                       |       |      |                        |                        |
|                          | 500                  | 0.0006<br>0.0006        |      |                       |       |      |                        |                        |
| Name:<br>Group:<br>Type: | 1367                 |                         |      | Flow(cfs):            | 0.000 | Init | Stage(ft<br>Stage(ft   |                        |
|                          | ft)                  |                         |      |                       |       |      |                        |                        |
| -0.                      |                      | 0.0006<br>0.0006        |      |                       |       |      |                        |                        |
| Name:<br>Group:          |                      |                         | Base | Flow(cfs):            | 0.000 |      | Stage(ft)<br>Stage(ft) |                        |
|                          | ft)                  |                         |      |                       |       |      |                        |                        |
| -0.4                     |                      | 0.0006                  |      |                       |       |      |                        |                        |

| Name:<br>Group:<br>Type: |              |                  | Base | Flow(cfs): 0.00 |   |        | Stage(ft)<br>Stage(ft)   |       |
|--------------------------|--------------|------------------|------|-----------------|---|--------|--------------------------|-------|
| Stage                    | (ft)         | Area(ac)         |      |                 |   |        |                          |       |
| -0<br>3                  | .470<br>.500 | 0.0006<br>0.0006 |      |                 |   |        |                          |       |
| Name:<br>Group:          |              |                  | Base | Flow(cfs): 0.00 |   |        | Stage(ft)<br>Stage(ft)   |       |
|                          | (ft)         |                  |      |                 |   |        |                          |       |
| -0                       |              | 0.0006           |      |                 |   |        |                          |       |
| Name:<br>Group:<br>Type: |              |                  | Base | Flow(cfs): 0.00 |   |        | Stage(ft)<br>Stage(ft)   |       |
|                          | (ft)         |                  |      |                 |   |        |                          |       |
|                          | .480<br>.380 |                  |      |                 |   |        |                          |       |
| Name:<br>Group:<br>Type: |              |                  | Base | Flow(cfs): 0.00 |   |        | Stage(ft)<br>Stage(ft)   |       |
|                          | (ft)         |                  |      |                 |   |        |                          |       |
|                          | 200<br>290   | 0.0006<br>0.0006 |      |                 |   |        |                          |       |
| Name:<br>Group:<br>Type: |              |                  | Base | Flow(cfs): 0.00 |   |        | Stage(ft)<br>Stage(ft)   |       |
| Stage                    | (ft)         |                  |      |                 |   |        |                          |       |
|                          | 850<br>780   | 0.0005<br>0.0005 |      |                 |   |        |                          |       |
| Name:<br>Group:          | 13766        |                  |      | Flow(cfs): 0.00 | 0 | Init S | Stage(ft):<br>Stage(ft): | 1.100 |
|                          | ft)          |                  |      |                 |   |        |                          |       |
|                          | 830<br>000   |                  |      |                 |   |        |                          |       |
| Name:<br>Group:          | 13767        |                  |      | Flow(cfs): 0.00 |   | Init S | Stage(ft):<br>Stage(ft): | 1.100 |
|                          | rs) S        |                  |      |                 |   |        |                          |       |
|                          | .00          | 1.100            |      |                 |   |        |                          |       |

| Group:<br>Type:                                                                                                                                     | 1379<br>BASE<br>Stage/A                                                                                                                          | rea                                                                                                                                                                       | Base         | Flow(cfs):                                                                                                                                                 | 0.000  |      |      | Stage(ft)<br>Stage(ft)   |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|------|--------------------------|-------|
|                                                                                                                                                     |                                                                                                                                                  | Area(ac)                                                                                                                                                                  |              |                                                                                                                                                            |        |      |      |                          |       |
| 0.                                                                                                                                                  | .230<br>.520                                                                                                                                     | 0.0006<br>0.0006                                                                                                                                                          |              |                                                                                                                                                            |        |      |      |                          |       |
| Name:                                                                                                                                               |                                                                                                                                                  |                                                                                                                                                                           | Base         | Flow(cfs):                                                                                                                                                 | 0.000  |      |      | Stage(ft):               |       |
| Group:<br>Type:                                                                                                                                     | BASE<br>Stage/A:                                                                                                                                 | rea                                                                                                                                                                       |              |                                                                                                                                                            |        |      | Warn | Stage(ft):               | 3.600 |
|                                                                                                                                                     |                                                                                                                                                  | Area(ac)                                                                                                                                                                  |              |                                                                                                                                                            |        |      |      |                          |       |
| -                                                                                                                                                   |                                                                                                                                                  | D.D006<br>D.0006                                                                                                                                                          |              |                                                                                                                                                            |        |      |      |                          |       |
| Name:<br>Group:                                                                                                                                     | 1381                                                                                                                                             |                                                                                                                                                                           | Base         | Flow(cfs);                                                                                                                                                 | 0.000  |      |      | Stage(ft):<br>Stage(ft): |       |
| Stage(                                                                                                                                              | (ft)                                                                                                                                             | Area(ac)                                                                                                                                                                  |              |                                                                                                                                                            |        |      |      |                          |       |
| 0.                                                                                                                                                  | 290<br>580                                                                                                                                       | 0.0006<br>0.0006                                                                                                                                                          |              |                                                                                                                                                            |        |      |      |                          |       |
| Name:<br>Group:<br>Type:                                                                                                                            |                                                                                                                                                  |                                                                                                                                                                           | Base         | Flow(cfs):                                                                                                                                                 | 0.000  |      |      | Stage(ft):<br>Stage(ft): |       |
| Stage (                                                                                                                                             |                                                                                                                                                  | Area(ac)                                                                                                                                                                  |              |                                                                                                                                                            |        |      |      |                          |       |
| 0.                                                                                                                                                  | 330<br>610                                                                                                                                       | 0.0006                                                                                                                                                                    |              |                                                                                                                                                            |        |      |      |                          |       |
|                                                                                                                                                     |                                                                                                                                                  |                                                                                                                                                                           |              | =======================================                                                                                                                    |        |      |      |                          |       |
| ≃≖ Cross S                                                                                                                                          |                                                                                                                                                  | ************                                                                                                                                                              |              |                                                                                                                                                            |        |      |      |                          |       |
| == Cross S                                                                                                                                          |                                                                                                                                                  | 1000                                                                                                                                                                      |              |                                                                                                                                                            | Group: |      |      |                          |       |
| == Cross S                                                                                                                                          | Name:<br>.chment:                                                                                                                                | 1000                                                                                                                                                                      | **===        |                                                                                                                                                            |        |      |      |                          |       |
| Encroa<br>Station (                                                                                                                                 | Name:<br>chment:<br>ft) El                                                                                                                       | 1000<br>No<br>evation(ft)<br>4.600                                                                                                                                        | *******<br>M | anning's N<br>0.045000                                                                                                                                     |        |      |      |                          |       |
| Encroa<br>Station(<br>100,<br>200.                                                                                                                  | Name:<br>chment:<br>ft) El<br>000<br>000                                                                                                         | 1000<br>No<br>evation(ft)                                                                                                                                                 | **===<br>M   | anning's N<br>0.045000<br>0.045000                                                                                                                         |        |      |      |                          |       |
| == Cross S<br>Encroa<br>Station(<br>100,<br>200.<br>211.<br>216.                                                                                    | Name:<br>chment:<br>ft) El<br>000<br>000<br>760<br>750                                                                                           | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250                                                                                                             | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                 |        |      |      |                          |       |
| Encroa<br>Station(<br>100.<br>200.<br>211.<br>216.<br>221.                                                                                          | Name:<br>chment:<br>ft} El<br>000<br>000<br>760<br>750<br>740                                                                                    | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250<br>2.200                                                                                                    | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                     |        |      |      |                          |       |
| Encroa<br>Station(<br>100.<br>201.<br>211.<br>221.<br>227.<br>327.                                                                                  | Name:<br>chment:<br>ft) El<br>000<br>000<br>760<br>750<br>750<br>740<br>610<br>610                                                               | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250<br>2.200<br>5.200<br>5.200                                                                                  |              | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                 | Group: | BASE |      |                          |       |
| Encroa<br>Station(<br>100,<br>200,<br>211,<br>216,<br>221,<br>227,<br>327,                                                                          | Name:<br>chment:<br>ft) El<br>000<br>000<br>760<br>750<br>750<br>740<br>610<br>610                                                               | 1000<br>No<br>evation(ft)<br>4.600<br>2.800<br>1.250<br>5.200<br>5.200<br>5.200                                                                                           |              | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                 | Group: | BASE |      |                          |       |
| Encroa<br>Station (<br>Station (<br>100.<br>200.<br>211.<br>221.<br>227.<br>327.<br>Encroa<br>Station (                                             | Name:<br>chment:<br>ft} El<br>000<br>760<br>750<br>740<br>610<br>610<br>Name:<br>chment:<br>ft) El                                               | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250<br>2.200<br>5.200<br>5.200<br>1010<br>No                                                                    | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             | Group: | BASE |      |                          |       |
| Encroa<br>Station (<br>Station (<br>100.<br>200.<br>211.<br>221.<br>227.<br>327.<br>Encroa<br>Station (                                             | Name:<br>chment:<br>ft) El<br>000<br>000<br>750<br>750<br>740<br>610<br>610<br>010<br>010<br>010<br>010<br>010<br>01                             | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250<br>2.200<br>5.200<br>5.200                                                                                  | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             | Group: | BASE |      |                          |       |
| == Cross S<br>Encroa<br>Station (<br>100,<br>200,<br>211,<br>211,<br>212,<br>227,<br>327,<br>Encroa<br>Station (<br>100,<br>200,                    | Name:<br>chment:<br>ft) El<br>000<br>760<br>750<br>740<br>610<br>610<br>610<br>Chment:<br>ft) El<br>000<br>000<br>000                            | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250<br>2.200<br>5.200<br>5.200<br>1010<br>No<br>evation(ft)<br>3.800<br>3.800                                   | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group: | BASE |      |                          |       |
| == Cross S<br>Encroa<br>Station (<br>100.<br>201.<br>211.<br>221.<br>227.<br>327.<br>Encroa<br>Station (<br>100.,<br>205.                           | Name:<br>chment:<br>ft} El<br>000<br>760<br>750<br>740<br>610<br>610<br>610<br>610<br>610<br>510<br>El<br>chment:<br>ft) El<br>000<br>000<br>250 | 1000<br>No<br>evation(ft)<br>4.600<br>4.600<br>2.800<br>1.250<br>2.200<br>5.200<br>5.200<br>1010<br>No<br>evation(ft)<br>3.800<br>3.800<br>2.700                          | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group: | BASE |      |                          |       |
| Encroa<br>Station (<br>100.<br>200.<br>211.<br>227.<br>327.<br>Encroa<br>Station (<br>100.,<br>201.<br>221.<br>227.<br>327.<br>210.<br>205.<br>215. | Name:<br>chment:<br>ft) El<br>000<br>000<br>760<br>750<br>740<br>610<br>610<br>610<br>610<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10  | 1000<br>No<br>evation(ft)<br>4.600<br>2.800<br>1.250<br>5.200<br>5.200<br>5.200<br>1010<br>No<br>evation(ft)<br>3.800<br>3.800<br>2.700<br>2.030<br>2.600                 | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000 | Group: | BASE |      |                          |       |
| Encroa<br>Station (<br>100.<br>200.<br>211.<br>227.<br>327.<br>Encroa<br>Station (<br>100.,<br>201.<br>221.<br>227.<br>327.<br>210.<br>205.<br>215. | Name:<br>chment:<br>ft) El<br>000<br>760<br>750<br>740<br>610<br>610<br>610<br>Chment:<br>ft) El<br>000<br>000<br>250<br>500<br>750<br>180       | 1000<br>No<br>evation(ft)<br>4.600<br>2.800<br>1.250<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>5.200<br>2.700<br>2.030 | M            | anning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000 | Group: | BASE |      |                          |       |

## Encroachment: No

| Station(ft)                                                                                                                                                                                                                 | Elevation(ft)                                                                                                                                                                                             | Manning's N                                                                                                                                                                                  |                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
| 100.000                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000<br>0.045000                                                                                                                                                                         |                            |
| 200.000<br>202.350                                                                                                                                                                                                          |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
| 207.940                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000<br>0.045000                                                                                                                                                                         |                            |
| 213,520                                                                                                                                                                                                                     | 3.000                                                                                                                                                                                                     | 0.045000                                                                                                                                                                                     |                            |
| 217.010                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 317.010                                                                                                                                                                                                                     | 4.300                                                                                                                                                                                                     | 0.045000                                                                                                                                                                                     |                            |
|                                                                                                                                                                                                                             | ume: 1030                                                                                                                                                                                                 | . Man alah anga anga anga anga anga anga anga an                                                                                                                                             | Group: BASE                |
| Encroachme                                                                                                                                                                                                                  |                                                                                                                                                                                                           |                                                                                                                                                                                              | GLOUP. DASH                |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
| Station (ft)                                                                                                                                                                                                                | Elevation(ft)                                                                                                                                                                                             | Nanajacic N                                                                                                                                                                                  |                            |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
| 100.000                                                                                                                                                                                                                     | 3.700                                                                                                                                                                                                     | 0.045000                                                                                                                                                                                     |                            |
| 200.000<br>202.670                                                                                                                                                                                                          |                                                                                                                                                                                                           | 0.045000<br>0.045000                                                                                                                                                                         |                            |
| 209.130                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 215.580                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 220.540                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 320.540                                                                                                                                                                                                                     | 4.700                                                                                                                                                                                                     | 0.045000                                                                                                                                                                                     |                            |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
| Na<br>Encroachme                                                                                                                                                                                                            | ume: 1040<br>nt: No                                                                                                                                                                                       |                                                                                                                                                                                              | Group: BASE                |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
| Station(ft)                                                                                                                                                                                                                 | Elevation(ft)                                                                                                                                                                                             | Manning's N                                                                                                                                                                                  |                            |
| 100.000                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 200.000                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0,045000                                                                                                                                                                                     |                            |
| 205.090                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 219.560                                                                                                                                                                                                                     |                                                                                                                                                                                                           | 0.045000                                                                                                                                                                                     |                            |
| 222.940<br>322.940                                                                                                                                                                                                          | 3,900<br>3,900                                                                                                                                                                                            | 0.045000<br>0.045000                                                                                                                                                                         |                            |
| 000.040                                                                                                                                                                                                                     | 5,500                                                                                                                                                                                                     | 0.010000                                                                                                                                                                                     |                            |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              |                            |
|                                                                                                                                                                                                                             | me: 1050                                                                                                                                                                                                  |                                                                                                                                                                                              | Group: BASE                |
| Na<br>Encroachme                                                                                                                                                                                                            |                                                                                                                                                                                                           |                                                                                                                                                                                              | Group: BASE                |
|                                                                                                                                                                                                                             |                                                                                                                                                                                                           |                                                                                                                                                                                              | Group: BASE                |
| Encroachme<br>Station(ft)                                                                                                                                                                                                   | nt: No<br>Elevation(ft)                                                                                                                                                                                   | Manning's N                                                                                                                                                                                  | Group: BASE                |
| Encroachme<br>Station(ft)                                                                                                                                                                                                   | nt: No Elevation(ft)                                                                                                                                                                                      |                                                                                                                                                                                              | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000                                                                                                                                                                                        | nt: No Elevation(ft) 5.000                                                                                                                                                                                | 0.045000                                                                                                                                                                                     | Group: BASE                |
| Encroachme<br>Station(ft)                                                                                                                                                                                                   | nt: No<br>Elevation(ft)<br>5.000<br>5.000                                                                                                                                                                 |                                                                                                                                                                                              | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370                                                                                                                                                       | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900                                                                                                                                               | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                     | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120                                                                                                                                            | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.700<br>2.900<br>4.900                                                                                                                             | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                         | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370                                                                                                                                                       | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900                                                                                                                                               | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                     | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120                                                                                                                                 | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900                                                                                                                             | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                         |                            |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120                                                                                                                                 | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900                                                                                                                    | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                         | Group: BASE<br>Group: BASE |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na                                                                                                                           | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900                                                                                                                    | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                         |                            |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na<br>Encroachme                                                                                                             | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>nt: No                                                                                                          | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                         |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na<br>Encroachme<br>Station(ft)                                                                                                         | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)                                                                                               | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                             |                            |
| Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na:<br>Encroachme<br>Station(ft)<br>100.000                                                                                  | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100                                                                    | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>Manning's N<br>0.045000                                                                                  |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na:<br>Encroachme<br>Station(ft)<br>100.000<br>200.000                                                                                  | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>5.100                                                                    | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                 |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na<br>Encroachme<br>Station(ft)<br>100.000<br>205.800                                                                                   | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>5.100<br>3.200                                                                    | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na:<br>Encroachme<br>Station(ft)<br>100.000<br>200.000                                                                                  | nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>5.100<br>3.200<br>3.600                                         | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nat<br>Encroachme<br>Station(ft)<br>100.000<br>205.800<br>220.310                                                                       | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>3.200<br>3.600<br>6.900                                                  | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                         |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>                                                                                                                                                   | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>3.200<br>3.600<br>6.900                                                           | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         |                            |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na<br>Encroachme<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060                                                  | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>3.200<br>3.600<br>6.900<br>me: 1080W                                     | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nat<br>Encroachme<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060                                                 | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>3.200<br>3.600<br>6.900<br>me: 1080W                                     | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Na<br>Encroachme<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060                                                  | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>3.200<br>3.600<br>6.900<br>me: 1080W                                     | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nar<br>Encroachme<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Mar<br>Encroachmen<br>Station(ft) | nt: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 me: 1060 nt: No Elevation(ft) 5.100 5.100 5.100 3.200 3.600 6.900 6.900 me: 1080W nt: No Elevation(ft)                                           | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>                                                                                                                                        | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>5.100<br>3.200<br>3.600<br>6.900<br>me: 1080W<br>nt: No<br>Elevation(ft)<br>4.800 | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000 | Group: BASE                |
| Encroachme<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nat<br>Encroachme<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Nat<br>Encroachmen<br>Nat                    | nt: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>me: 1060<br>nt: No<br>Elevation(ft)<br>5.100<br>5.100<br>3.200<br>3.600<br>6.900<br>me: 1080W<br>nt: No<br>Elevation(ft)<br>4.800 | 0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000             | Group: BASE                |



| 7.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4,670                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |      |
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| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Nai<br>Encroachme:<br>Station(ft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <pre>ent: No     Elevation(ft)</pre>                                                                                                                                                                             | 0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Nai<br>Encroachme:<br>Station(ft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <pre>mt: No     Elevation(ft)</pre>                                                                                                                                                                              | 0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Nar<br>Encroachmes<br>Station(ft)<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <pre>mt: No     Elevation(ft)</pre>                                                                                                                                                                              | 0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Nai<br>Encroachmes<br>Station(ft)<br>0.000<br>1.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <pre>ent: No     Elevation(ft)</pre>                                                                                                                                                                             | 0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>29.000<br>51.000<br>53.000<br>60.000<br>Nai<br>Encroachmes<br>Station(ft)<br>0.000<br>1.000<br>1.000<br>11.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ent: No<br>Elevation(ft)<br>3.800<br>3.550<br>3.470<br>3.090<br>3.750<br>3.090<br>3.470<br>3.570<br>4.070<br>me: 1368W<br>nt: No<br>Elevation(ft)<br>4.220<br>3.970<br>3.770                                     | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>60.000<br>Name<br>Encroachmen<br>Station(ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>13.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <pre>ent: No     Elevation(ft)</pre>                                                                                                                                                                             | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>60.000<br>Name<br>Encroachmes<br>Station(ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>29.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <pre>ent: No Elevation(ft)</pre>                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>53.000<br>60.000<br>Nai<br>Encroachmes<br>Station(ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.0000<br>1.000<br>1.000<br>1.000<br>1.0000<br>1.0000<br>1 | <pre>ent: No     Elevation(ft)</pre>                                                                                                                                                                             | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |      |
| Encroachme<br>Station (ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Nai<br>Encroachmes<br>Station (ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>29.000<br>45.000<br>47.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ent: No<br>Elevation(ft)<br>3.800<br>3.550<br>3.470<br>3.090<br>3.750<br>3.090<br>3.470<br>3.570<br>4.070<br>me: 1368W<br>nt: No<br>Elevation(ft)<br>4.220<br>3.970<br>3.770<br>3.400<br>3.900<br>3.400<br>3.770 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |      |
| Encroachme<br>Station(ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>53.000<br>60.000<br>Nai<br>Encroachmes<br>Station(ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>1.000<br>29.000<br>45.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <pre>ent: No Elevation(ft)</pre>                                                                                                                                                                                 | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.0000000<br>0.0000000<br>0.00000000 |        |      |
| Encroachme<br>Station (ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Nai<br>Encroachmes<br>Station (ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>29.000<br>45.000<br>47.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ent: No<br>Elevation(ft)<br>3.800<br>3.550<br>3.470<br>3.090<br>3.750<br>3.090<br>3.470<br>3.570<br>4.070<br>me: 1368W<br>nt: No<br>Elevation(ft)<br>4.220<br>3.970<br>3.770<br>3.400<br>3.900<br>3.400<br>3.770 | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |        |      |
| Encroachme<br>Station (ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>58.000<br>60.000<br>Name<br>Encroachmes<br>Station (ft)<br>0.000<br>1.000<br>1.000<br>13.000<br>29.000<br>45.000<br>47.000<br>59.000<br>60.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <pre>ent: No Elevation(ft)</pre>                                                                                                                                                                                 | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Group: | BASE |
| Encroachme<br>Station (ft)<br>0.000<br>1.000<br>5.000<br>7.000<br>29.000<br>51.000<br>53.000<br>60.000<br>Name<br>Encroachmen<br>Station (ft)<br>0.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1.000<br>1. | <pre>ent: No Elevation(ft)</pre>                                                                                                                                                                                 | Manning's N<br>0.000000<br>0.000000<br>0.000000<br>0.000000<br>0.000000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Group: | BASE |

| Station(ft)                                                                                                              | Elevation(ft)                                                            | Manning's N                                                              | v      |                                                                                                                                                                    |                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| 0.000<br>1.000                                                                                                           |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| 11.000                                                                                                                   |                                                                          | 0.000000                                                                 | )<br>) |                                                                                                                                                                    |                                                                                                |
| 13,000                                                                                                                   |                                                                          |                                                                          | 5      |                                                                                                                                                                    |                                                                                                |
| 29.000                                                                                                                   | 3.800                                                                    |                                                                          | )      |                                                                                                                                                                    |                                                                                                |
| 45.000                                                                                                                   |                                                                          | 0.00000                                                                  | )      |                                                                                                                                                                    |                                                                                                |
| 47.000                                                                                                                   |                                                                          |                                                                          | )      |                                                                                                                                                                    |                                                                                                |
| 59.000<br>60.000                                                                                                         | 3.940<br>4.190                                                           |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| 00.000                                                                                                                   | 4,150                                                                    | 0.000000                                                                 | ,      |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Nai<br>Encroachmei                                                                                                       | ne: 1382W<br>ut: No                                                      |                                                                          | Group: | BASE                                                                                                                                                               |                                                                                                |
| mer odormer                                                                                                              |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Station(ft)                                                                                                              | Elevation(ft)                                                            | Manning's N                                                              | 1      |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| 0.000                                                                                                                    |                                                                          | 0.000000                                                                 | }      |                                                                                                                                                                    |                                                                                                |
| 1.000<br>11.000                                                                                                          |                                                                          | 0.000000                                                                 | )      |                                                                                                                                                                    |                                                                                                |
| 13.000                                                                                                                   |                                                                          |                                                                          | )      |                                                                                                                                                                    |                                                                                                |
| 29.000                                                                                                                   |                                                                          | 0.000000                                                                 | )      |                                                                                                                                                                    |                                                                                                |
| 45.000                                                                                                                   |                                                                          | 0.00000                                                                  | )      |                                                                                                                                                                    |                                                                                                |
| 47.000                                                                                                                   |                                                                          | 0.00000                                                                  | )      |                                                                                                                                                                    |                                                                                                |
| 59.000                                                                                                                   | 3.940                                                                    | 0.00000                                                                  | )      |                                                                                                                                                                    |                                                                                                |
| 60.000                                                                                                                   | 4.190                                                                    | 0.00000                                                                  | )      |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          | *****                                                                    |        |                                                                                                                                                                    |                                                                                                |
| ==== Operating Ta                                                                                                        | bles =========                                                           |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| =======================================                                                                                  |                                                                          |                                                                          |        |                                                                                                                                                                    | *****                                                                                          |
| Name: 10721                                                                                                              | UMP                                                                      | Group: BASE                                                              |        |                                                                                                                                                                    |                                                                                                |
| Type: Ratir                                                                                                              |                                                                          | droup: mor                                                               |        |                                                                                                                                                                    |                                                                                                |
| Function: US St                                                                                                          |                                                                          | rge                                                                      |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| -10 0. (5.)                                                                                                              |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| US Stage(ft)                                                                                                             |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| 1.600                                                                                                                    |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| 4.630                                                                                                                    | 10.00                                                                    |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        | ********                                                                                                                                                           |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| ******                                                                                                                   |                                                                          | ******                                                                   |        |                                                                                                                                                                    |                                                                                                |
| Name: 10                                                                                                                 | 50                                                                       | From Node: 1                                                             | .050   | Length(ft):                                                                                                                                                        | 80.00                                                                                          |
| Group: BA                                                                                                                | SE                                                                       | To Node: 1                                                               |        | Count:                                                                                                                                                             |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        | Friction Equation:                                                                                                                                                 |                                                                                                |
|                                                                                                                          |                                                                          | OWNSTREAM                                                                |        | Solution Algorithm:                                                                                                                                                |                                                                                                |
| Geometry: Ci                                                                                                             |                                                                          | ircular                                                                  |        | Flow:                                                                                                                                                              |                                                                                                |
| Span(in): 30                                                                                                             |                                                                          | ).00                                                                     |        | Entrance Loss Coef:                                                                                                                                                |                                                                                                |
| Rise(in): 30<br>Invert(ft): 2.                                                                                           |                                                                          | ).00<br>.200                                                             |        | Exit Loss Coef:<br>Bend Loss Coef:                                                                                                                                 |                                                                                                |
| Manning's N: 0,                                                                                                          |                                                                          | .013000                                                                  |        | Outlet Ctrl Spec:                                                                                                                                                  |                                                                                                |
| Top Clip(in): 0.                                                                                                         |                                                                          | .000                                                                     |        | Inlet Ctrl Spec:                                                                                                                                                   |                                                                                                |
| Bot Clip(in): 0.                                                                                                         |                                                                          | .000                                                                     |        | Stabilizer Option:                                                                                                                                                 |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        | ± · · · · ·                                                                                                                                                        |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Jpstream FHWA Inl                                                                                                        | ot Edge Departs                                                          | tion.                                                                    |        |                                                                                                                                                                    |                                                                                                |
| Circular Concrete                                                                                                        |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Sand Souther Southered                                                                                                   | i bquare rage .                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Downstream FHWA I                                                                                                        |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Circular Concrete                                                                                                        | : Square edge w                                                          | / headwall                                                               |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
|                                                                                                                          |                                                                          |                                                                          |        |                                                                                                                                                                    |                                                                                                |
| Name: 10                                                                                                                 | 80                                                                       | From Node: 1                                                             | 080    | Length(ft):                                                                                                                                                        | 20.00                                                                                          |
| Name: 10<br>Group: BA                                                                                                    |                                                                          | From Node: 1<br>To Node: 1                                               |        | Length(ft):<br>Count:                                                                                                                                              |                                                                                                |
| Group: BA                                                                                                                | SE                                                                       | To Node: 1                                                               |        | Count:<br>Friction Equation:                                                                                                                                       | 1<br>Average Conveyance                                                                        |
| Group: BA<br>UP                                                                                                          | se<br>stream do                                                          | To Node: 1<br>WNSTREAM                                                   |        | Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                                                | 1<br>Average Conveyance<br>Automatic                                                           |
| Group: BA<br>UP<br>Geometry: Ci                                                                                          | SE<br>STREAM DO<br>rcular Ci                                             | To Node: 1<br>WNSTREAM<br>.rcular                                        |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                                       | 1<br>Average Conveyance<br>Automatic<br>Both                                                   |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36                                                                          | SE<br>STREAM DO<br>rcular Ci<br>.00 36                                   | To Node: 1<br>WNSTREAM<br>.rcular<br>5.00                                |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef;                                                                                | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                                           |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36<br>Rise(in): 36                                                          | SE<br>STREAM DO<br>rcular Ci<br>.00 36<br>.00 36                         | To Node: 1<br>WWNSTREAM<br>.rcular<br>.00                                |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                             | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00                                   |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36<br>Rise(in): 36<br>Invert(ft): -0                                        | SE<br>STREAM DC<br>rcular Ci<br>.00 36<br>.00 36<br>.090 -1              | To Node: 1<br>WNNSTREAM<br>.rcular<br>5.00<br>.00<br>170                 |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:                                          | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00                           |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36<br>Rise(in): 36<br>Invert(ft): -0<br>Manning's N: 0.                     | SE<br>STREAM DC<br>rcular Ci<br>.00 36<br>.00 36<br>.090 -1<br>013000 0. | To Node: 1<br>WWNSTREAM<br>.rcular<br>.00<br>.00<br>.170<br>013000       |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                     | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw           |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36<br>Rise(in): 36<br>Invert(ft): -0<br>Manning's N: 0.<br>Top Clip(in): 0. | SE<br>STREAM DC<br>rcular Ci<br>.00 36<br>.090 -1<br>013000 0.<br>000 0. | To Node: 1<br>WMSTREAM<br>.rcular<br>.00<br>.00<br>.170<br>013000<br>000 |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36<br>Rise(in): 36<br>Invert(ft): -0<br>Manning's N: 0.                     | SE<br>STREAM DC<br>rcular Ci<br>.00 36<br>.090 -1<br>013000 0.<br>000 0. | To Node: 1<br>WMSTREAM<br>.rcular<br>.00<br>.00<br>.170<br>013000<br>000 |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                     | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn |
| Group: BA<br>UP<br>Geometry: Ci<br>Span(in): 36<br>Rise(in): 36<br>Invert(ft): -0<br>Manning's N: 0.<br>Top Clip(in): 0. | SE<br>STREAM DC<br>rcular Ci<br>.00 36<br>.090 -1<br>013000 0.<br>000 0. | To Node: 1<br>WMSTREAM<br>.rcular<br>.00<br>.00<br>.170<br>013000<br>000 |        | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn |

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1090     | From Node: | 1090 | Length(ft):         | 8.00               |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node;   | 1080 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre>   | 36.00    | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):              | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.740   | -0.090     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0,013000   |      | Outlet Ctrl Spec;   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| ~~~~~~~~             |          |            |      |                     |                    |
|----------------------|----------|------------|------|---------------------|--------------------|
| Name:                | 1110     | From Node: | 1110 | Length(ft):         | 30.00              |
| Group:               | BASE     | To Node:   | 1090 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 36.00    | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):            | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.880   | -0.790     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                      |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

| Name:         | 1112     | From Node: 1112 | Length(ft):         | 184.00             |
|---------------|----------|-----------------|---------------------|--------------------|
| Group:        | BASE     | To Node: 1110   | Count:              | 1                  |
|               |          |                 | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular        | Flow:               | Both               |
| Span(in):     | 18.00    | 18.00           | Entrance Loss Coef: | 0.50               |
| Rise(in):     | 18.00    | 18.00           | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0.930    | -0.880          | Bend Loss Coef:     | 0.00               |
| Manning's N;  | 0.013000 | 0.013000        | Outlet Ctr1 Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000    | 0,000           | Inlet Ctrl Spec:    | Use din            |
| Bot Clip(in): | 0.000    | 0,000           | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:     | 1114     | From Node: | 1114 | Length(ft):         | 200.00             |
|-----------|----------|------------|------|---------------------|--------------------|
| Group:    | BASE     | To Node:   | 1112 | Count:              | 1                  |
|           |          |            |      | Friction Equation;  | Average Conveyance |
|           | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry: | Circular | Circular   |      | Flow:               | Both               |

| <pre>Span(in):</pre> | 18.00    | 18.00    |
|----------------------|----------|----------|
| Rise(in):            | 18.00    | 18.00    |
| Invert(ft);          | 2,130    | 1.830    |
| Manning's N:         | 0.013000 | 0.013000 |
| Top Clip(in):        | 0.000    | 0.000    |
| Bot Clip(in):        | 0.000    | 0.000    |

Entrance Loss Coef: 0.50 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|                      |          |            |      |                     | ~~~~~~~~~~         |
|----------------------|----------|------------|------|---------------------|--------------------|
| Name:                | 1116     | From Node: | 1116 | Length(ft):         | 44.00              |
| Group:               | BASE     | To Node:   | 1114 | Count:              | 1                  |
|                      |          |            |      |                     | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 18.00    | 18.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):            | 18.00    | 18.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          |          | 2.450      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0,000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                      |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1120     | From Node: | 1120 | Length(ft):         | 8.00               |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1110 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 36.00    | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):            | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.940   | -0.580     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| op Clip(in):         | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| ot Clip(in):         | 0.000    | 0.000      |      | Stabilizer Option;  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1130     | From Node: | : 1130 | Length(ft):         | 300.00             |
|------------------------|----------|------------|--------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | : 1110 | Count:              | 1                  |
|                        |          |            |        | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |        | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |        | Flow:               | Both               |
| <pre>Span(in):</pre>   | 36.00    | 36.00      |        | Entrance Loss Coef: | 0.50               |
| Rise(in):              | 36.00    | 36.00      |        | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.940   | -0.880     |        | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |        | Outlet Ctrl Spec;   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |        | Inlet Ctrl Spec;    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |        | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Geometry                                                                                                                                                                                                                                                                                                                       | Circular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Span(in):                                                                                                                                                                                                                                                                                                                      | 15.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Invert(ft):                                                                                                                                                                                                                                                                                                                    | 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Manning's N:                                                                                                                                                                                                                                                                                                                   | 0.013000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Bot Clip(in):                                                                                                                                                                                                                                                                                                                  | 0,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Group:                                                                                                                                                                                                                                                                                                                         | BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Span(in)                                                                                                                                                                                                                                                                                                                       | Circular<br>36.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| Rise(in):                                                                                                                                                                                                                                                                                                                      | 36.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| Invert(ft):                                                                                                                                                                                                                                                                                                                    | -1.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| Manning's N:                                                                                                                                                                                                                                                                                                                   | 0.013000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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DOWNSTREAM<br>Circular<br>36.00<br>-0.890<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| Pop Clip(in):                                                                                                                                                                                                                                                                                                                  | 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| sot Clip(in):                                                                                                                                                                                                                                                                                                                  | 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| rcular Concre<br>wnstream FHWA<br>rcular Concre                                                                                                                                                                                                                                                                                | ete: Square e<br>A Inlet Edge<br>ete: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                             | ete: Square (<br>Inlet Edge<br>tte: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                             | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                             | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                             | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| ircular Concre<br>pwnstream FHWA<br>ircular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                          | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| wnstream FHWA<br>Ircular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                                             | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                             | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                                                             | te: Square (<br>Inlet Edge)<br>te: Square (<br>1142<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Op Clip(in):<br>Sot Clip(in):<br>estream FHWA I<br>rcular Concre                                                                                                                                                                                | te: Square e<br>Inlet Edge<br>te: Square e<br>Il42<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.13000<br>0.013000<br>0.000<br>0.000<br>nlet Edge De<br>te: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| <pre>ircular Concre<br/>pwnstream FHWA<br/>rcular Concre<br/>Name:<br/>Group:<br/>Geometry:<br/>Span(in):<br/>Rise(in):<br/>Invert(ft):<br/>Manning's N:<br/>'op Clip(in):<br/>Bot Clip(in):<br/>stream FHWA I<br/>rcular Concre<br/>wnstream FHWA</pre>                                                                       | te: Square e<br>Inlet Edge<br>te: Square e<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA                                                                                                                 | te: Square e<br>Inlet Edge<br>te: Square e<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>dge w/ headwall<br>Description:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA I<br>rcular Concre                                                                                 | te: Square e<br>Inlet Edge<br>te: Square e<br>Il42<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.013000<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge te<br>te: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>Escription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA                                                                                                    | te: Square e<br>Inlet Edge<br>te: Square e<br>Il42<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.013000<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge te<br>te: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| ircular Concre<br>winstream FHWA<br>ircular Concre<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>winstream FHWA I<br>rcular Concre                                                                             | te: Square e<br>Inlet Edge<br>te: Square e<br>Inlet Edge<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge<br>te: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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Conveyance                           |
| <pre>ircular Concre<br/>pwnstream FHWA<br/>rcular Concre<br/>Group:<br/>Geometry:<br/>Span(in):<br/>Rise(in):<br/>Invert(ft):<br/>Manning's N:<br/>op Clip(in):<br/>sot Clip(in):<br/>sot Clip(in):<br/>sot Clip(in):<br/>mustream FHWA I<br/>rcular Concre<br/>wnstream FHWA I<br/>rcular Concre<br/>Name:<br/>Group: 1</pre> | te: Square e<br>Inlet Edge<br>te: Square e<br>Il42<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.013000<br>0.013000<br>0.000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge te<br>te: Square e<br>Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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                                   |
| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA I<br>rcular Concre                                                                                              | ete: Square e<br>Inlet Edge<br>te: Square e<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge<br>te: Square e<br>Inlet Edge<br>te: Square e<br>Inlet Edge<br>te: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.000000 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Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                              | <pre>8.00 1 Average Conveyance Automatic Both 0.50 0.00 Use dc or tw Use dn None 37.00 1 Average Conveyance Automatic Both</pre>                                     |
| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA I<br>rcular Concre                                                                                              | te: Square e<br>Inlet Edge<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge te:<br>Square e<br>Inlet Edge<br>te: Square e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.00000<br>0.0000<br>0.00000<br>0.0000<br>0.00000<br>0.0000000 | 1142<br>1140 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:                                       | <pre>8.00 1 Average Conveyance Automatic Both 0.50 0.00 Use dc or tw Use dn None 37.00 1 Average Conveyance Automatic Both 0.50</pre>                                |
| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA I<br>rcular Concre<br>Name:<br>Group: 1<br>Ceometry: (<br>Span(in): 1<br>Rise(in): 1            | ete: Square e<br>Inlet Edge<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge<br>te: Square e<br>UPSTREAM<br>Circular<br>1144<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00<br>15.00 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>15.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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tw Use dn None 37.00 1 Average Conveyance Automatic Both 0.50 0.00</pre>                           |
| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA I<br>rcular Concre<br>Manter Concre<br>Span(in):<br>Geometry:<br>Rise(in):<br>Rise(in):                         | te: Square e<br>Inlet Edge<br>te: Square e<br>UPSTREAM<br>Circular<br>15.00<br>0.013000<br>0.000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge te<br>te: Square e<br>UPSTREAM<br>Circular<br>1144<br>EASE<br>UPSTREAM<br>Circular<br>15.00<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                          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Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>Escription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>15.00<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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0.00</pre>                           |
| rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA I<br>rcular Concre<br>wnstream FHWA I<br>rcular Concre<br>Name:<br>Group: 1<br>Ceometry: (<br>Span(in):<br>Rise(in):                                | te: Square e<br>Inlet Edge<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>nlet Edge De<br>te: Square e<br>Inlet Edge<br>te: Square e<br>UPSTREAM<br>Circular<br>1144<br>EASE<br>UPSTREAM<br>Circular<br>15.00<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.013000<br>0.000<br>0.013000<br>0.000<br>0.013000<br>0.000<br>0.013000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>dge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>15.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1142<br>1140 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef: | <pre>8.00 1 Average Conveyance Automatic Both 0.50 0.00 Use dc or tw Use dn None 37.00 1 Average Conveyance Automatic Both 0.50 0.00 Use dc or tw Use dc or tw</pre> |

Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1146     | From Node: | 1146 | Length(ft):         | 56.00              |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1144 | Count:              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 15.00    | 15.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 15,00    | 15.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0.340    | 0.340      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): |          | 0,000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1150     | From Node: | 1150 | Length(ft):         | 196.00             |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1140 | Count:              | 1                  |
| -             |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     |          | 36,00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):     | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.960   | -0,800     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  |          | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): |          | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): |          | 0.000      |      | Stabilizer Option:  | None               |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1151     | From Node: | 1151 | Length(ft):         | 70.00              |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1150 | Count:              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in);     | 15,00    | 15.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 15.00    | 15.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.510   | -0,510     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): |          | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): |          | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:     | 1160     | From Node: | 1160 | Length(ft):         | 204.00             |
|-----------|----------|------------|------|---------------------|--------------------|
| Group:    | BASE     | To Node:   | 1150 | Count:              | 1                  |
|           |          |            |      | Friction Equation:  | Average Conveyance |
|           | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry: | Circular | Circular   |      | Flow:               | Both               |
| Span(in): |          | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in): |          | 36.00      |      | Exit Loss Coef:     | 0.00               |

| Invert(ft):   | -0.390   | -0.860   | Bend Loss Coef: 0.00           |
|---------------|----------|----------|--------------------------------|
| Manning's N:  | 0,013000 | 0.013000 | Outlet Ctrl Spec: Use dc or tw |
| Top Clip(in): | 0.000    | 0.000    | Inlet Ctrl Spec: Use dn        |
| Bot Clip(in): | 0.000    | 0.000    | Stabilizer Option: None        |

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1161     | From Node: | 1161 | Length(ft);         | 70.00              |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1160 | Count:              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 15.00    | 15.00      |      | Entrance Loss Coef: | 0,00               |
| Rise(in):     | 15.00    | 15.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0,010    | 0.010      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in); | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|               |          |            |      |                     |                    |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1170     | From Node: | 1170 | Length(ft):         | 50.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1160 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| Span(in):              | 36.00    | 36.00      |      | Entrance Loss Coef: | 0,50               |
| Rise(in):              | 36.00    | 35.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft);</pre> | -1.550   | -0.490     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1180     | From Node: | 1180 | Length(ft):         | 250.00             |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1170 | Count:              | 1                  |
| -             |          |            |      |                     | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 36.00    | 36.00      |      | Entrance Loss Coef: | 0,50               |
| Rise(in):     | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.680   | -0.450     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                            |                                                                     | From Node:               |      | Length(ft):                            |                    |
|----------------------------------|---------------------------------------------------------------------|--------------------------|------|----------------------------------------|--------------------|
| Group:                           | BASE                                                                | To Node:                 | 1180 | Count:                                 |                    |
|                                  | UPSTREAM                                                            | DOWNSTREAM               |      | Solution Algorithm:                    | Average Conveyance |
|                                  | Circular                                                            | Circular                 |      | Flow:                                  |                    |
| Span(in):                        |                                                                     | 15.00                    |      | Entrance Loss Coef:                    |                    |
| Rise(in):                        |                                                                     | 15.00                    |      | Exit Loss Coef:                        |                    |
| Invert(ft):                      |                                                                     | -0.530                   |      | Bend Loss Coef:                        |                    |
| Manning's N:                     | 0.013000                                                            | 0.013000                 |      | Outlet Ctrl Spec:                      | Use dc or tw       |
| Top Clip(in):                    |                                                                     | 0.000                    |      | Inlet Ctrl Spec:                       |                    |
| Bot Clip(in):                    | 0.000                                                               | 0.000                    |      | Stabilizer Option:                     | None               |
|                                  | nlet Edge Desc<br>te: Square edg                                    |                          |      |                                        |                    |
|                                  | Inlet Edge De<br>te: Square edg                                     |                          |      |                                        |                    |
|                                  |                                                                     |                          |      |                                        |                    |
| Name:                            | 1184                                                                | From Node:               | 1184 | Length(ft):                            |                    |
| Group:                           | BASE                                                                | To Node:                 |      | Count:                                 |                    |
|                                  |                                                                     |                          |      | Friction Equation:                     |                    |
|                                  | UPSTREAM                                                            | DOWNSTREAM               |      | Solution Algorithm:                    |                    |
| Geometry:                        |                                                                     | Circular                 |      | Flow;                                  |                    |
| Span(in):                        |                                                                     | 15.00                    |      | Entrance Loss Coef:<br>Exit Loss Coef: |                    |
| Rise(in):<br>Invert(ft):         |                                                                     | 15.00<br>-0.480          |      | Bend Loss Coef:                        |                    |
| Manning's N:                     | 0.013000                                                            |                          |      | Outlet Ctrl Spec:                      |                    |
| Fop Clip(in):                    | 0.000                                                               | 0.013000<br>0.000        |      | Inlet Ctrl Spec:                       |                    |
| ot Clip(in):                     | 0,000                                                               | 0.000                    |      | Stabilizer Option:                     |                    |
| ircular Concre<br>ownstream FHWA | nlet Edge Deso<br>te: Square edg<br>Inlet Edge De<br>te: Square edg | e w/ headwall scription: |      |                                        |                    |
| Name :                           |                                                                     | From Node:<br>To Node;   |      | Length(ft):<br>Count:                  |                    |
| Group:                           | DADE                                                                | TO MODE:                 |      | Friction Equation:                     |                    |
|                                  | UPSTREAM                                                            | DOWNSTREAM               |      | Solution Algorithm:                    |                    |
|                                  |                                                                     | Circular                 |      | Flow:                                  |                    |
| Span(in):                        |                                                                     | 15.00                    |      | Entrance Loss Coef:                    |                    |
| Rise(in):                        |                                                                     | 15.00                    |      | Exit Loss Coef:                        |                    |
| Invert(ft):                      | 0.250                                                               | 0.250                    |      | Bend Loss Coef:                        |                    |
| Manning's N:                     | 0,013000                                                            | 0.013000                 |      | Outlet Ctrl Spec;                      |                    |
| Top Clip(in):                    |                                                                     | 0.000                    |      | Inlet Ctrl Spec:                       |                    |
| Bot Clip(in):                    | 0.000                                                               | 0.000                    |      | Stabilizer Option:                     | None               |
|                                  |                                                                     |                          |      |                                        |                    |

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1188     | From Node: | 1188 | Length(ft);         | 65.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1329 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre>   | 15.00    | 15.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 15.00    | 15.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | 0.200    | 0.200      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

| Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| stream FHWA<br>ccular Concr<br>mstream FHW<br>ccular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Ianning's N:<br>g Clip(in):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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                                                                                                                 | 1329<br>1327         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                                                                                                                          | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| stream FHWA<br>rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Tnvert(ft):<br>Manning's N:<br>p Clip(in):<br>ot Clip(in):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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                                                                                                                 | 1329<br>1327         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                      | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| stream FHWA<br>rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>Stream FHWA<br>rcular Concr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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Node:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall                                                                                                   | 1329<br>1327         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                      | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                               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| stream FHWA<br>rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Nivert(ft):<br>Anning's N:<br>op Clip(in):<br>ot Clip(in):<br>st Clip(in):<br>stream FHWA<br>rcular Concr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Node:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000                                                                       | 1329<br>1327         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                                                                                                                                                                                                                                                                                               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| stream FHWA<br>rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Ceometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concr<br>wnstream FHW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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headwall<br>Description:<br>edge w/ headwall                                                                        | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                   | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| stream FHWA<br>rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Ceometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concr<br>mstream FHW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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headwall<br>Description:<br>dge w/ headwall                                                                         | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                                   | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00<br>1                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| stream FHWA<br>rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Ceometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concr<br>mstream FHW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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headwall<br>Description:<br>edge w/ headwall                                                                        | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                   | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| stream FHWA<br>coular Concr<br>wnstream FHW<br>coular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>fanning's N:<br>p Clip(in):<br>ot Clip(in):<br>Stream FHWA<br>coular Concr<br>mstream FHW<br>coular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                       | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                          | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00<br>1<br>Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                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| <pre>stream FHWA ccular Concr mstream FHW ccular Concr Name: Group: Geometry: Span(in): nivert(ft): anning's N: p Clip(in): t Clip(in): t clip(in): tream FHWA cular Concr Name: Group: Geometry: Span(in):</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Inlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>EASE<br>UPSTREAM<br>Circular<br>30.00          | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:                                               | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef;               | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| stream FHWA<br>ccular Concr<br>mstream FHW<br>ccular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Invert(ft):<br>Invert(ft):<br>Invert(ft):<br>Invert(ft):<br>Clip(in):<br>t Clip(in):<br>t Clip(in):<br>t Clip(in):<br>t cular Concr<br>nstream FHWA<br>cular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Inlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>EASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                              | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef: | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0. |
| stream FHWA<br>ccular Concr<br>wnstream FHW<br>ccular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Invert(ft):<br>Invert(ft):<br>Invert(ft):<br>Clip(in):<br>th Clip(in):<br>th Cl | Inlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>EASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>30.00<br>30.00<br>-0.500 | 1329<br>1327<br>1334 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef;               | 110.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>245.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0. |

| Top Clip(in): 0.000         0.000         Inlet Ctrl Spec: Use dn           Bot Clip(in): 0.000         0.000         Stabilizer Option: None |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--|

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1335A    | From Node: | 1335A | Length(ft):         | 125.00             |
|----------------------|----------|------------|-------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1334  | Count;              | 1                  |
|                      |          |            |       | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |       | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |       | Flow:               | Both               |
| <pre>Span(in):</pre> | 30.00    | 30.00      |       | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 30.00    | 30.00      |       | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.500   | -0.500     |       | Bend Loss Coef;     | 0,00               |
| Manning's N:         | 0.013000 | 0,013000   |       | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |       | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |       | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description; Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

\_\_\_\_\_ 
 Name:
 1337
 From Node:
 1337
 Length(ft):
 220.00
 Group: BASE To Node: 1335A Count: 1 Friction Equation: Average Conveyance UPSTREAM DOWNSTREAM Solution Algorithm: Automatic Circular Geometry: Circular Flow: Both Span(in): 30.00 Rise(in): 30.00 Invert(ft): -0.480 Manning's N: 0.013000 Top Clip(in): 0.000 30.00 Entrance Loss Coef: 0.00 Exit Loss Coef; 0.00 30.00 -0.500 0.013000 0.000 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Bot Clip(in): 0.000 0.000 Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                                                                  | 1338                                                                    | From Node: 1338                                 | Length(ft):         | 48.00              |
|------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------|---------------------|--------------------|
| Group:                                                                 | BASE                                                                    | To Node: 1337                                   | Count:              | 1                  |
|                                                                        |                                                                         |                                                 | Friction Equation:  | Average Conveyance |
|                                                                        | UPSTREAM                                                                | DOWNSTREAM                                      | Solution Algorithm: | Automatic          |
| Geometry:                                                              | Circular                                                                | Circular                                        | Flow:               | Both               |
| Span(in):                                                              | 30.00                                                                   | 30.00                                           | Entrance Loss Coef: | 0.00               |
| Rise(in):                                                              | 30.00                                                                   | 30.00                                           | Exit Loss Coef:     | 0.00               |
| Invert(ft):                                                            | -0.480                                                                  | -0.480                                          | Bend Loss Coef:     | 0.00               |
| Manning's N:                                                           | 0.013000                                                                | 0.013000                                        | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):                                                          | 0.000                                                                   | 0.000                                           | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):                                                          | 0.000                                                                   | 0.000                                           | Stabilizer Option:  | None               |
|                                                                        |                                                                         |                                                 |                     |                    |
| pstream FHWA                                                           | Inlet Edge Da                                                           |                                                 |                     |                    |
| pstream FHWA<br>Sircular Concr<br>Sownstream FHWA                      | Inlet Edge Da<br>ete: Square a<br>A Inlet Edge                          | escription;<br>dge w/ headwall                  |                     |                    |
| pstream FHWA<br>Sircular Concr<br>Sownstream FHWA                      | Inlet Edge Da<br>ete: Square a<br>A Inlet Edge                          | escription:<br>edge w/ headwall<br>Description: |                     |                    |
| Opstream FHWA<br>Sircular Concre<br>Sownstream FHW,<br>Sircular Concre | Inlet Edge De<br>ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1339 | escription:<br>edge w/ headwall<br>Description: |                     |                    |

| Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):                                                                                                                                                                                                                                   | 30.00<br>-0.520<br>0.013000                                                                                                                                                                                                                                                                             | DOWNSTREAM<br>Circular<br>30.00<br>30.00<br>-0.480<br>0.013000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                               | Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ownstream FHW                                                                                                                                                                                                                                                                                                         | Inlet Edge De<br>ete: Square e<br>A Inlet Edge                                                                                                                                                                                                                                                          | edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Stabilizer Option:                                                                                                                                                                                                                                                                     | NOUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Name:                                                                                                                                                                                                                                                                                                                 | -                                                                                                                                                                                                                                                                                                       | From Node: 1340<br>To Node: 1339                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Length(ft):<br>Count:                                                                                                                                                                                                                                                                  | 67.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                                                                       | UPSTREAM                                                                                                                                                                                                                                                                                                | DOWNSTREAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Friction Equation:<br>Solution Algorithm;                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Span(in):<br>Rise(in):                                                                                                                                                                                                                                                                                                | Circular<br>30.00<br>30.00                                                                                                                                                                                                                                                                              | Circular<br>30.00<br>30.00<br>-0.520                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                                                                                                                                                                                                        | Both<br>0.00<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):                                                                                                                                                                                                                                                         | -0.500<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                    | -0,520<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                                                                                                                         | Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ircular Concr<br>ownstream FHW                                                                                                                                                                                                                                                                                        | ete: Square e<br>A Inlet Edge                                                                                                                                                                                                                                                                           | edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:                                                                                                                                                                                                                                                              | ete: Square e<br>A Inlet Edge                                                                                                                                                                                                                                                                           | edge w/ headwall<br>Description:<br>edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Length(ft):<br>Count:                                                                                                                                                                                                                                                                  | 76.00<br>1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):                                                                                                                                                                                                                          | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00                                                                                                                                                                                                         | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Length(ft):                                                                                                                                                                                                                                                                            | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:                                                                                                                                                                                                                                       | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00                                                                                                                                                                                                | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                                                                                                                                            | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):                                                                                                                                                             | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000                                                                                                                                                                 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                                                                                                                                  | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA                                                                                                                                      | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.0013000<br>0.000<br>0.000                                                                                                                                           | edge w/ headwall<br>Description:<br>Edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                      | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Destream FHWA                                                                                                                           | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge De<br>ete: Square e<br>A Inlet Edge                                                                                                      | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                      | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Destream FHWA                                                                                                                           | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>Inlet Edge De<br>ete: Square e<br>A Inlet Edge                                                                                              | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                                   | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>95.00<br>1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Ceometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concre<br>ownstream FHWA<br>ircular Concre                                                                      | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>Inlet Edge De<br>ete: Square e<br>A Inlet Edge                                                                                              | <pre>edge w/ headwall<br/>Description:<br/>edge w/ headwall<br/>From Node: 1342<br/>To Node: 1340<br/>DOWNSTREAM<br/>Circular<br/>24.00<br/>24.00<br/>-0.500<br/>0.013000<br/>0.000<br/>0.000<br/>0.000<br/>escription:<br/>edge w/ headwall<br/>Description:<br/>edge w/ headwall<br/>Perom Node: 1343</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                   | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>95.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Ceometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concre<br>ownstream FHWA<br>ircular Concre<br>Name:<br>Group:                                  | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge De<br>ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1343<br>BASE<br>UPSTREAM<br>Circular                                             | edge w/ headwall<br>Description:<br>ddge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>From Node: 1343<br>To Node: 1342<br>DOWNSTREAM<br>Circular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                    | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>95.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concre<br>ownstream FHWA<br>ircular Concre<br>Span(in):<br>Geometry:<br>Span(in):<br>Rise(in): | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.013000<br>0.0013000<br>0.000<br>Unlet Edge De<br>ete: Square e<br>A Inlet Edge<br>ete: Square e<br>A Inlet Edge<br>ete: Square e<br>UPSTREAM<br>Circular<br>24.00<br>24.00                         | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1343<br>To Node: 1342<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>24.00<br>24.00<br>Circular<br>24.00<br>Circular<br>24.00<br>Circular<br>24.00<br>Circular<br>24.00<br>Circular<br>24.00<br>Circular<br>24.00<br>Circular<br>Circular<br>24.00<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular<br>Circular | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef: | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>95.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 |
| ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concre<br>ownstream FHWA<br>ircular Concre<br>Name:<br>Group:<br>Span(in):                                                   | ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1342<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge De<br>ete: Square e<br>A Inlet Edge<br>ete: Square e<br>1343<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>2.00<br>0.010<br>0.000<br>0.000 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1342<br>To Node: 1340<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>scription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 1343<br>To Node: 1342<br>DOWNSTREAM<br>Circular<br>24.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:               | 76.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>95.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 |

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

| menue :                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Group:                                                                                                                                                                                                                                                                                         | 1344<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Comptensi                                                                                                                                                                                                                                                                                      | UPSTREAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Geometry:<br>Span(in).                                                                                                                                                                                                                                                                         | Circular<br>24.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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Both<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| Rise(in):                                                                                                                                                                                                                                                                                      | 24,00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Name:<br>Group:                                                                                                                                                                                                                              | ete: Square o<br>A Inlet Edge<br>ete: Square o<br>1347<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef; 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| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>fanning's N:<br>pp Clip(in):                                                                                                                                                     | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>fanning's N:<br>pp Clip(in):                                                                                                                                                     | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| wnstream FHW<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA Trcular Concre<br>wnstream FHWA                                                                                                       | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| rcular Concre<br>wnstream FHW,<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre                                                                                                    | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA Treular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:                                                             | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| rcular Concre<br>wnstream FHW,<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA Trcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                                 | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Naming's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre<br>Mastream FHWA<br>rcular Concre<br>Name:<br>Group:                                 | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM                                                                                                                                                                                                                                                                                                                                                                                                                                                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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre<br>Mnstream FHWA<br>rcular Concre<br>Name:<br>Group:                                | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>Enlet Edge De<br>ete: Square of<br>A Inlet Edge<br>Dete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| rcular Concre<br>wnstream FHW,<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):        | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>24.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>Perom Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00 | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef: | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.0 |
| rcular Concre<br>wnstream FHW<br>rcular Concre<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Stream FHWA S<br>rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):<br>Rise(in):<br>Invert(ft): | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>I347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>I347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>2.00<br>0.200<br>0.00<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.0000<br>0.0000<br>0.0000<br>0.000000 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>24.00<br>24.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.00000<br>0.0000<br>0.0000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.000000<br>0.00000000                                                                                                                                                                                                                           | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Ent Loss Coef:                    | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.0 |
| rcular Concre<br>wnstream FHW,<br>rcular Concre<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre<br>wnstream FHWA<br>rcular Concre<br>Mame:<br>Group:<br>Span(in):<br>Rise(in):     | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.013000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>0.013000<br>0.013000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>Perom Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00<br>24.00 | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef: | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

From Node: 1348 Length(ft): 50.00 Name: 1348 Group: BASE To Node: 1347A Count: 1 Friction Equation: Average Conveyance Count: 1 DOWNSTREAM Circular 24.00 24.00 UPSTREAM Solution Algorithm: Automatic Geometry: Circular Flow: Both Span(in): 24.00 Entrance Loss Coef: 0.00 
 Rise(in):
 24.00
 24.00

 Invert(ft):
 -0.490
 -0.500

 Manning's N:
 0.013000
 0.0130

 Top Clip(in):
 0.000
 0.000

 Top Clip(in):
 0.000
 0.000
 Exit Loss Coef: 0.00 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn -0.500 0.013000 Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Name: 1350 Length(ft): 40.00 From Node: 1350 Group: BASE To Node: 1348 Count: 1 Friction Equation: Average Conveyance UPSTREAMDOWNSTREAMGeometry: CircularCircularSpan(in): 24.0024.00Rise(in): 24.0024.00avert(ft)0 Solution Algorithm: Automatic Flow: Both Entrance Loss Coef; 0.00 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Invert(ft): -0.500 -0.490 0.013000 Outlet Ctrl Spec: Use dc or tw Manning's N: 0.013000 Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn Stabilizer Option: None Bot Clip(in): 0.000 0.000

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                                                                    | 1353                               | From Node:                  | 1353 | Length(ft):                               | 47.00              |
|--------------------------------------------------------------------------|------------------------------------|-----------------------------|------|-------------------------------------------|--------------------|
| Group:                                                                   | BASE                               | To Node:                    | 1350 | Count:                                    | 1                  |
|                                                                          |                                    |                             |      | Friction Equation:                        | Average Conveyance |
|                                                                          | UPSTREAM                           | DOWNSTREAM                  |      | Solution Algorithm:                       |                    |
| Geometry:                                                                | Circular                           | Circular                    |      | Flow:                                     | Both               |
| <pre>Span(in):</pre>                                                     | 24.00                              | 24.00                       |      | Entrance Loss Coef:                       | 0.00               |
| Rise(in):                                                                | 24.00                              | 24.00                       |      | Exit Loss Coef:                           | 0.00               |
| <pre>Invert(ft):</pre>                                                   | -0.480                             | -0.500                      |      | Bend Loss Coef:                           | 0.00               |
| Manning's N:                                                             | 0.013000                           | 0.013000                    |      | Outlet Ctrl Spec:                         | Use dc or tw       |
| Top Clip(in):                                                            |                                    | 0.000                       |      | Inlet Ctrl Spec:                          | Use dn             |
| Bot Clip(in);                                                            | 0.000                              | 0.000                       |      | Stabilizer Option:                        | None               |
| Upstream FHWA :<br>Circular Concre<br>Downstream FHWA<br>Circular Concre | ete: Square edg<br>A Inlet Edge De | e w/ headwall<br>scription: |      |                                           |                    |
|                                                                          | 1354                               | From Node:                  |      | Length(ft):                               |                    |
| Group:                                                                   | BASE                               | To Node:                    | 1353 | Count:                                    | -                  |
|                                                                          | UPSTREAM                           | DOWNSTREAM                  |      | Friction Equation:<br>Solution Algorithm: |                    |

Existing Conditions with 2-inches of Rainfall

| Geometry:              | Circular | Circular |
|------------------------|----------|----------|
| <pre>Span(in):</pre>   | 24.00    | 24.00    |
| Rise(in):              | 24.00    | 24.00    |
| <pre>Invert(ft);</pre> | -0.500   | -0,480   |
| Manning's N:           | 0.013000 | 0.013000 |
| Top Clip(in):          | 0.000    | 0.000    |
| Bot Clip(in):          | 0.000    | 0.000    |
|                        |          |          |

Flow: Both Entrance Loss Coef: 0.00 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name :        | 1355     | From Node: | 1355 | Length(ft):         | 94.00              |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1354 | Count:              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 24.00    | 24.00      |      | Exit Loss Coef:     | 0,00               |
| Invert(ft):   | -0.540   | -0.500     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use do or tw       |
| Top Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         |          | From Node:<br>To Node: |      | Length(ft):<br>Count: |                    |
|---------------|----------|------------------------|------|-----------------------|--------------------|
| Group:        | BASE     | TO NOUE:               | 1322 |                       |                    |
|               |          |                        |      | Friction Equation:    | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM             |      | Solution Algorithm:   | Automatic          |
| Geometry:     | Circular | Circular               |      | Flow:                 | Both               |
| Span(in):     | 24.00    | 24.00                  |      | Entrance Loss Coef:   | 0.00               |
| Rise(in):     | 24.00    | 24.00                  |      | Exit Loss Coef:       | 0.00               |
| Invert(ft):   | -0,520   | ~0.540                 |      | Bend Loss Coef:       | 0.00               |
| Manning's N:  | 0.013000 | 0.013000               |      | Outlet Ctrl Spec:     | Use dc or tw       |
| Top Clip(in): | 0.000    | 0.000                  |      | Inlet Ctrl Spec:      | üse dn             |
| Bot Clip(in): | 0.000    | 0.000                  |      | Stabilizer Option:    | None               |
|               |          |                        |      |                       |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream PHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1357     | From Node: | 1357 | Length(ft):         | 44.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1356 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| Span(in):              | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.520   | -0.520     |      | Bend Loss Coef:     | 0.00               |
| Manning's N;           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use do or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                        |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|                                                                                                                                                                                                                                                                                                                                        | 1359<br>BASE                                                                                                                                                                                                                                                                                                                          | From Node:<br>To Node:                                                                                                                                                                                                                                                                                                           |                                              | Length(ft):<br>Count:                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Group.                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                  | T331                                         | Friction Equation:                                                                                                                                                                                                                                                                                                      | Average Conveyance                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                        | UPSTREAM                                                                                                                                                                                                                                                                                                                              | DOWNSTREAM                                                                                                                                                                                                                                                                                                                       |                                              | Solution Algorithm:                                                                                                                                                                                                                                                                                                     | Automatic                                                                                                                                                                               |
| Geometry:<br>Snan(in):                                                                                                                                                                                                                                                                                                                 | Circular<br>24 00                                                                                                                                                                                                                                                                                                                     | Circuiar<br>24 AO                                                                                                                                                                                                                                                                                                                |                                              | Flow:<br>Entrance Loss Coef:                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                         |
| Rise(in):                                                                                                                                                                                                                                                                                                                              | 24.00                                                                                                                                                                                                                                                                                                                                 | 24.00                                                                                                                                                                                                                                                                                                                            |                                              | Exit Loss Coef:                                                                                                                                                                                                                                                                                                         | 0.00                                                                                                                                                                                    |
| Invert(ft):                                                                                                                                                                                                                                                                                                                            | -0.500                                                                                                                                                                                                                                                                                                                                | -0.520                                                                                                                                                                                                                                                                                                                           |                                              | Bend Loss Coef:                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |
| Manning's N:                                                                                                                                                                                                                                                                                                                           | 0.013000                                                                                                                                                                                                                                                                                                                              | 0.013000                                                                                                                                                                                                                                                                                                                         |                                              | Outlet Ctrl Spec:                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                         |
| Bot Clip(in):                                                                                                                                                                                                                                                                                                                          | 0.000                                                                                                                                                                                                                                                                                                                                 | Circular<br>24.00<br>-0.520<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                        |                                              | Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                  |                                              |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                        | Inlet Edge Des<br>ete: Square ed                                                                                                                                                                                                                                                                                                      | críption:<br>ge w/ headwall                                                                                                                                                                                                                                                                                                      |                                              |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                        | A Inlet Edge D<br>ete: Square ed                                                                                                                                                                                                                                                                                                      | escription:<br>ge w/ headwall                                                                                                                                                                                                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                  |                                              |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                        | 1360<br>BASE                                                                                                                                                                                                                                                                                                                          | From Node;<br>To Node:                                                                                                                                                                                                                                                                                                           | 1360<br>1350                                 | Length(ft):                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                        | BASE                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                  |                                              | Count:<br>Friction Equation:                                                                                                                                                                                                                                                                                            | Average Conveyance                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                        | UPSTREAM                                                                                                                                                                                                                                                                                                                              | DOWNSTREAM                                                                                                                                                                                                                                                                                                                       |                                              | Solution Algorithm:                                                                                                                                                                                                                                                                                                     | Automatic                                                                                                                                                                               |
| Geometry:                                                                                                                                                                                                                                                                                                                              | Circular                                                                                                                                                                                                                                                                                                                              | Circular                                                                                                                                                                                                                                                                                                                         |                                              | Flow:<br>Entrance Loss Coef:                                                                                                                                                                                                                                                                                            | Both                                                                                                                                                                                    |
| Rise(in):                                                                                                                                                                                                                                                                                                                              | 24.00                                                                                                                                                                                                                                                                                                                                 | 24.00                                                                                                                                                                                                                                                                                                                            |                                              | Entrance Loss Coef:<br>Exit Loss Coef:                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                         |
| Invert(ft):                                                                                                                                                                                                                                                                                                                            | -0.510                                                                                                                                                                                                                                                                                                                                | -0.500                                                                                                                                                                                                                                                                                                                           |                                              | Bend Loss Coef:                                                                                                                                                                                                                                                                                                         | 0.00                                                                                                                                                                                    |
| Manning's N:                                                                                                                                                                                                                                                                                                                           | 0.013000                                                                                                                                                                                                                                                                                                                              | DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                          |                                              | Outlet Ctrl Spec:                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                         |
| op Clip(in):<br>ot Clip(in):                                                                                                                                                                                                                                                                                                           | 0.000                                                                                                                                                                                                                                                                                                                                 | 0.000                                                                                                                                                                                                                                                                                                                            |                                              | Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                         |
| rcular Concr<br>wnstream FHW                                                                                                                                                                                                                                                                                                           | A Inlet Edge D                                                                                                                                                                                                                                                                                                                        | ge w/ headwall                                                                                                                                                                                                                                                                                                                   |                                              |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                         |
| rcular Concr<br>wnstream FHW<br>rcular Concr                                                                                                                                                                                                                                                                                           | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed                                                                                                                                                                                                                                                                                    | ge w/ headwall<br>escription:<br>ge w/ headwall                                                                                                                                                                                                                                                                                  |                                              |                                                                                                                                                                                                                                                                                                                         | 95.00                                                                                                                                                                                   |
| rcular Concr<br>wnstream FHW<br>rcular Concr                                                                                                                                                                                                                                                                                           | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed                                                                                                                                                                                                                                                                                    | ge w/ headwall<br>escription:<br>ge w/ headwall                                                                                                                                                                                                                                                                                  | 1360<br>1362                                 | Length(ft):<br>Count:                                                                                                                                                                                                                                                                                                   | 1                                                                                                                                                                                       |
| rcular Concr<br>wnstream FHW<br>rcular Concr                                                                                                                                                                                                                                                                                           | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE                                                                                                                                                                                                                                                                 | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                        | 1360<br>1362                                 | Length(ft):<br>Count:                                                                                                                                                                                                                                                                                                   | 1                                                                                                                                                                                       |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:                                                                                                                                                                                                                                                           | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse                                                                                                                                                                                                                                     | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse                                                                                                                                                                                                                          | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                                                                                                                                                                             | 1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                            |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:                                                                                                                                                                                                                                                           | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse                                                                                                                                                                                                                                     | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse                                                                                                                                                                                                                          | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:                                                                                                                                                                                                                      | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                                                                                                                                    |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):                                                                                                                                                                                                                  | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>-0.510                                                                                                                                                                                                         | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse                                                                                                                                                                                                                          | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                                                                                                                                                                   | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00                                                                                                                            |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):                                                                                                                                                                                                                  | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>-0.510                                                                                                                                                                                                         | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>1.000<br>0.013000                                                                                                                                                                                   | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:                                                                                                                                                                                                                      | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00                                                                                                                    |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>on Clip(in):                                                                                                                                                                                               | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>HOTZ Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000                                                                                                                                                                                    | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>1.000<br>0.013000<br>0.000                                                                                                                                                                          | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                                       | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):                                                                                                                                                                                               | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>-0.510                                                                                                                                                                                                         | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>1.000<br>0.013000<br>0.000                                                                                                                                                                          | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                                                                                                                                                           | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA                                                                                                                                                             | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc                                                                                                                                                        | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>c.000<br>c.000                                                                                                                                                        | 1360<br>1362                                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                                       | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rizontal Ell:                                                                                                                                             | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>I3600UT<br>BASE<br>UPSTREAM<br>HOTZ Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge D                                                                                                                    | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>cription;<br>Square edge with<br>escription;                                                                                                                 | 1360<br>1362<br>headwall                     | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                                       | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rizontal Ell:                                                                                                                                             | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>I3600UT<br>BASE<br>UPSTREAM<br>HOTZ Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc                                                                                                                 | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000                                                                                                                                               | 1360<br>1362<br>headwall                     | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                                       | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rizontal Ell:<br>wnstream FHW                                                                                                                             | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc                                                                                                                 | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>scription:<br>Square edge with                                                                                     | 1360<br>1362<br>headwall<br>headwall         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                                 | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rizontal Ell:<br>wnstream FHWA<br>rizontal Ell:<br>Name:                                                                                        | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc                                                                                                                 | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>Square edge with                                                                                                            | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                                                 | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1                                                                            |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rizontal Ell:<br>wnstream FHWA<br>rizontal Ell:<br>Name:                                                                                        | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>Is600UT<br>BASE<br>UPSTREAM<br>HORZ Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc<br>ipse Concrete:                                                        | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>escription:<br>Square edge with<br>From Node:<br>To Node:                                                                            | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:                                                                                              | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1<br>Average Conveyance                                                      |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>ot Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rizontal Ell:<br>Name:<br>Group:                                                                                                | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>13600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>0.013000<br>0.013000<br>0.000<br>Unlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc<br>ipse Concrete:<br>1362<br>BASE<br>UPSTREAM                                                                          | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>escription:<br>Square edge with<br>From Node:<br>To Node:                                                                            | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                                                 | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1<br>Average Conveyance<br>Automatic                                         |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Manning's N:<br>dot Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rizontal Ell:<br>wnstream FHWA<br>rizontal Ell:<br>Name:<br>Group:<br>Geometry:<br>Span(in):                             | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>I3600UT<br>BASE<br>UPSTREAM<br>HOTZ Ellipse<br>18.00<br>12.00<br>-0.510<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc<br>ipse Concrete:<br>1362<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00   | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>escription:<br>Square edge with<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00                            | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:                                       | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                         |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rizontal Ell:<br>wnstream FHWA :<br>rizontal Ell:<br>Mame:<br>Geometry:<br>Span(in):<br>Rise(in):                                                      | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>                                                                                                                                                                                                                                                                                | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>escription:<br>Square edge with<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>12.00                            | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:                    | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00                 |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>it Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rizontal Ell:<br>wnstream FHWA<br>rizontal Ell:<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft): | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>Discourt<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Desc<br>ipse Concrete:<br>1362<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>1.000                                          | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>Fription:<br>Square edge with<br>Escription:<br>Square edge with<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.250 | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef: | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00         |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rizontal Ell:<br>wnstream FHWA :<br>rizontal Ell:<br>Mame:<br>Geometry:<br>Span(in):<br>Rise(in):                                                      | ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>I3600UT<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>0.013000<br>0.000<br>Unlet Edge Dess<br>ipse Concrete:<br>A Inlet Edge Dess<br>ipse Concrete:<br>A Inlet Edge Dess<br>ipse Concrete:<br>1362<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>18.00<br>12.00<br>1.000<br>0.013000 | ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>1.000<br>0.013000<br>0.000<br>0.000<br>cription:<br>Square edge with<br>escription:<br>Square edge with<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>18.00<br>12.00                            | 1360<br>1362<br>headwall<br>headwall<br>1362 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:                    | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>26.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw |

Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

| ****                   |          |            |      |                     |                    |
|------------------------|----------|------------|------|---------------------|--------------------|
| Name:                  | 1366     | From Node: | 1366 | Length(ft):         | 185.00             |
| Group:                 | BASE     | To Node:   | 1360 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in);</pre>   | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.500   | -0.510     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Name: 1367 From Node: 1367 Length(ft): 39.00 Group: BASE To Node: 1366 Count: 1 Friction Equation: Average Conveyance UPSTREAM DOWNSTREAM Solution Algorithm: Automatic Geometry: Circular Span(in): 24.00 Rise(in): 24.00 Invert(ft): -0.480 Circular 24.00 Flow: Both Entrance Loss Coef: 0.00 Exit Loss Coef: 0.00 24.00 -0.500 Bend Loss Coef: 0,00 Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dc or tw Top Clip(in): 0.000 Bot Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn 0.000 Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1368     | From Node: | 1368 | I        | length(ft): | 151.00             |
|---------------|----------|------------|------|----------|-------------|--------------------|
| Group:        | BASE     | To Node:   | 1367 |          | Count:      | 1                  |
|               |          |            |      | Friction | Equation:   | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution | Algorithm:  | Automatic          |
| Geometry:     | Circular | Circular   |      |          | Flow:       | Both               |
| Span(in):     |          | 24.00      |      | Entrance | Loss Coef:  | 0.00               |
| Rise(in):     |          | 24.00      |      | Exit     | Loss Coef:  | 0.00               |
| Invert(ft):   |          | -0.480     |      | Bend     | Loss Coef:  | 0.00               |
| Manning's N:  |          | 0,013000   |      | Outlet   | Ctrl Spec:  | Use dc or tw       |
| Top Clip(in): |          | 0.000      |      | Inlet    | Ctrl Spec:  | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabiliz | er Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1370     | From Node: | 1370 | Length(ft):         | 50.00              |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node;   | 1368 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm; | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
|                      |          |            |      |                     |                    |

| Rise(in):              | 24.00    | 24.00    | Exit Loss Coef: 0.00           |
|------------------------|----------|----------|--------------------------------|
| <pre>Invert(ft):</pre> | -0.470   | -0.470   | Bend Loss Coef: 0.00           |
| Manning's N:           | 0.013000 | 0.013000 | Outlet Ctrl Spec: Use dc or tw |
| Top Clip(in):          | 0.000    | 0.000    | Inlet Ctrl Spec: Use dn        |
| Bot Clip(in):          | 0.000    | 0.000    | Stabilizer Option: None        |
|                        |          |          |                                |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|                      |          | *****      |      |                     |                    |
|----------------------|----------|------------|------|---------------------|--------------------|
| Name:                | 1371     | From Node: | 1371 | Length(ft):         | 135.00             |
| Group:               | BASE     | To Node:   | 1370 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in);</pre> | 24.00    | 24.00      |      | Entrance Loss Coef; | 0.00               |
| Rise(in):            | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.500   | -0.470     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec;    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                      |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1372     | From Node: | 1372 | Length(ft):         | 141.00             |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1371 | Count:              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 24.00    | 24.00      |      | Entrance Loss Coef; | 0.00               |
| Rise(in):     | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.480   | -0.500     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in); | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use din            |
| Bot Clip(in); | 0.000    | 0.000      |      | Stabilizer Option;  | None               |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1373     | From Node: 1 | 1373 | Length(ft):         | 49.00              |
|---------------|----------|--------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node: 1   | 1372 | Count:              | 1                  |
|               |          |              |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM   |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular     |      | Flow:               | Both               |
| Span(in):     | 24.00    | 24.00        |      | Entrance Loss Coef; | 0.00               |
| Rise(in):     | 24.00    | 24.00        |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0.200    | -0.480       |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000     |      | Outlet Ctrl Spec;   | Use dc or tw       |
| Pop Clip(in): | 0.000    | 0.000        |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000        |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 13730UT      | From Node:   | 1373 | Length(ft):         | 80.00              |
|----------------------|--------------|--------------|------|---------------------|--------------------|
| Group:               | BASE         | To Node:     | 1376 | Count:              | 1                  |
|                      |              |              |      | Friction Equation;  | Average Conveyance |
|                      | UPSTREAM     | DOWNSTREAM   |      | Solution Algorithm: | Automatic          |
| Geometry:            | Horz Ellipse | Horz Ellipse |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 30.00        | 30.00        |      | Entrance Loss Coef: | 0.20               |
| Rise(in):            |              | 19.00        |      | Exit Loss Coef:     | 0.20               |
| Invert(ft):          |              | 0.390        |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         |              | 0.013000     |      | Outlet Ctrl Spec:   |                    |
| Top Clip(in):        |              | 0.000        |      | Inlet Ctrl Spec;    |                    |
| Bot Clip(in):        | 0.000        | 0.000        |      | Stabilizer Option;  | None               |

Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

|               |              | ~~~~~        |       |                     |                    |
|---------------|--------------|--------------|-------|---------------------|--------------------|
| Name :        | 13766        | From Node:   | 13766 | Length(ft);         | 100.00             |
| Group:        | BASE         | To Node:     | 13767 | Count:              | 1                  |
|               |              |              |       |                     | Average Conveyance |
|               | UPSTREAM     | DOWNSTREAM   |       | Solution Algorithm: | Automatic          |
| Geometry:     | Horz Ellipse | Horz Ellipse |       | Flow:               | Both               |
| Span(in):     | 18.00        | 18.00        |       | Entrance Loss Coef: | 0,20               |
| Rise(in):     | 12.00        | 12.00        |       | Exit Loss Coef:     | 0.20               |
| Invert(ft);   | 0.830        | 0.830        |       | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000     | 0.013000     |       | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000        | 0.000        |       | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000        | 0.000        |       | Stabilizer Option:  | None               |
|               |              |              |       |                     |                    |

Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

| Name:         | 1379     | From Node: | 1379 | Length(ft):         | 108.00             |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1373 | Count:              | 1                  |
|               |          |            |      | Friction Equation;  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 18.00    | 18.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 18.00    | 18,00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0,230    | 0.200      |      | Bend Loss Coef:     | 0,00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|                      | ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ |            |      |                     | ~~~~~~~~~~         |
|----------------------|---------------------------------|------------|------|---------------------|--------------------|
| Name :               | 1380                            | From Node: | 1380 | Length(ft):         | 30.00              |
| Group:               | BASE                            | To Node:   | 1379 | Count:              | 1                  |
|                      |                                 |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM                        | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular                        | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 18.00                           | 18.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 18.00                           | 18.00      |      | Exit Loss Coef;     | 0.00               |
| Invert(ft):          | 0.240                           | 0.230      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000                        | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000                           | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000                           | 0.000      |      | Stabilizer Option;  | None               |
|                      |                                 |            |      |                     |                    |

Upstream FHWA Inlet Edge Description:

## Circular Concrete: Square edge w/ headwall

Downstream PHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:        | 1381     | From Node: | 1381 | Length(ft):         | 98.00              |
|--------------|----------|------------|------|---------------------|--------------------|
| Group:       | BASE     | To Node:   | 1380 | Count:              | 1                  |
| _            |          |            |      | Friction Equation:  | Average Conveyance |
|              | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:    | Circular | Circular   |      | Flow:               | Both               |
| Span(in):    | 18.00    | 18.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):    | 18.00    | 18.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):  | 0.290    | 0.240      |      | Bend Loss Coef:     | 0.00               |
| Manning's N: | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use ăc or tw       |
| op Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| ot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|               | ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ |            |      |                     |                    |
|---------------|-----------------------------------------|------------|------|---------------------|--------------------|
| Name:         | 1382                                    | From Node: | 1382 | Length(ft);         | 63,00              |
| Group:        | BASE                                    | To Node:   | 1381 | Count:              | 1                  |
|               |                                         |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM                                | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular                                | Circular   |      | Flow:               | Both               |
| Span(in):     | 18.00                                   | 18.00      |      | Entrance Loss Coef: | 0,00               |
| Rise(in):     | 18.00                                   | 18.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0.330                                   | 0.290      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000                                | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000                                   | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000                                   | 0.000      |      | Stabilízer Option:  | None               |

Upstream FHWA Inlet Edge Description; Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Name: 1010 From Node: 1010 Length(ft): 440.00 Group: BASE To Node: 1000 Count: 1

DOWNSTREAM Friction Equation: Average Conveyance UPSTREAM Solution Algorithm: Automatic Geometry: Irregular Invert(ft): 2.030 TClpInitZ(ft): 9999.000 Irregular 1.250 Flow: Both 9999.000 Contraction Coef: 0.100 Manning's N: Expansion Coef: 0.300 Top Clip(ft): 0.000 0.000 Entrance Loss Coef: 0.000 Exit Loss Coef: 0.000 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn 0.000 Bot Clip(ft): 0.000 Main XSec: 1010 AuxElev1(ft): 0.000 1000 0.000 Aux XSec1: Stabilizer Option: None AuxElev2(ft): 0.000 0.000 Aux XSec2: Top Width(ft): Depth(ft): Bot Width(ft): LtSdSlp(h/v):RtSdSlp(h/v): \_\_\_\_\_\_ From Node: 1020 Length(ft): 155.00 To Node: 1010 Count: 1 Name: 1020 Group: BASE UPSTREAM DOWNSTREAM Friction Equation: Average Conveyance

| Geometry:<br>Invert(ft):<br>TClpInitZ(ft):<br>Manning's N:<br>Top Clip(ft):<br>Bot Clip(ft):<br>Main XSec2:<br>AuxElev1(ft):<br>Aux XSec2:<br>AuxElev2(ft):<br>Aux XSec2:<br>Top Width(ft):<br>Depth(ft):<br>Bot Width(ft):<br>LtSdSlp(h/v):<br>RtSdSlp(h/v): | 9999.000<br>0.000<br>1020<br>0.000<br>0.000                                   | Irregular<br>2.030<br>9999.000<br>0.000<br>1010<br>0.000<br>0.000                        |      | Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                       | Both<br>0.100<br>0.300<br>0.000<br>Use dc or tw<br>Use dn                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Name:                                                                                                                                                                                                                                                         | 1030<br>BASE                                                                  | From Node:<br>To Node:                                                                   | 1030 | Length(ft):<br>Count:                                                                                                                                                                               |                                                                            |
| Geometry:<br>Invert(ft):<br>TClpInitZ(ft):<br>Manning's N:<br>Top Clip(ft):<br>Bot Clip(ft):<br>AuxElev1(ft):<br>AuxElev2(ft):<br>AuxElev2(ft):<br>Depth(ft):<br>Bot Width(ft):<br>Depth(ft):<br>LtSdSlp(h/v):<br>RtSdSlp(h/v):                               | 1.780<br>9999.000<br>0.000<br>1030<br>0.000<br>0.000                          | DOWNSTREAM<br>Irregular<br>2.320<br>9999.000<br>0.000<br>0.000<br>0.000<br>0.000         |      | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                        | Both<br>0.100<br>0.300<br>0.000<br>0.000<br>Use dc or tw<br>Use dn         |
| Name:<br>Group:                                                                                                                                                                                                                                               | 1040                                                                          | From Node:<br>To Node:                                                                   | 1040 | Length(ft);<br>Count:                                                                                                                                                                               |                                                                            |
| Geometry:<br>Invert(ft):<br>TClpInitZ(ft):<br>Manning's N:<br>Top Clip(ft):<br>Bot Clip(ft):<br>Main XSec:<br>AuxElev1(ft):<br>Aux XSec1:<br>AuxElev2(ft):<br>Aux XSec2:<br>Top Width(ft):<br>Bot Width(ft):<br>Bot Width(ft):<br>LtSdSlp(h/v):               | UPSTREAM<br>Irregular<br>2.900<br>9999.000<br>0.000<br>1040<br>0.000<br>0.000 | DOWNSTREAM<br>Irregular<br>1.780<br>9999.000<br>0.000<br>1030<br>0.000<br>0.000          |      | Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                       | Both<br>0.100<br>0.300<br>0.000<br>0.000<br>Use dc or tw<br>Use dn<br>None |
| Name:<br>Group:                                                                                                                                                                                                                                               | 1060                                                                          | From Node:<br>To Node:                                                                   | 1060 | Length(ft):<br>Count:                                                                                                                                                                               |                                                                            |
| Geometry:<br>Invert(ft):<br>TClpInit2(ft):<br>Mannig's N:<br>Top Clip(ft):<br>Bot Clip(ft):<br>Main XSec:<br>AuxElev1(ft):<br>Aux XSec1:<br>AuxElev2(ft):<br>Aux XSec2:<br>Top Width(ft):<br>Depth(ft):                                                       | Irregular<br>0.000<br>9999.000<br>0.000<br>0.000<br>1060<br>0.000             | DOWNSTREAM<br>Irregular<br>2.140<br>9999.000<br>0.000<br>0.000<br>1050<br>0.000<br>0.000 |      | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option: | Both<br>0.100<br>0.300<br>0.000<br>0.000<br>Use dc or tw<br>Use dn         |

Bot Width(ft); LtSdSlp(h/v); RtSdSlp(h/v);

|                          |                              | ======================================= |           |                                                       |                      |
|--------------------------|------------------------------|-----------------------------------------|-----------|-------------------------------------------------------|----------------------|
|                          |                              |                                         |           |                                                       |                      |
|                          | 1118                         | From Node                               |           | Length(ft)                                            |                      |
| eroup                    | BASE                         | To Node:                                | 1112      | Count                                                 | : 1                  |
|                          | UPSTREAM                     | DOWNSTREAM                              |           | Friction Equation                                     | : Average Conveyance |
| Geometry:                | Circular                     |                                         |           | Solution Algorithm                                    |                      |
| Span(in):                |                              | 24.00                                   |           | Flow                                                  |                      |
| Rise(in):                |                              | 24.00                                   |           | Entrance Loss Coef                                    |                      |
| Invert(ft):              | 0.000                        | 0.000                                   |           | Exit Loss Coef                                        |                      |
| Manning's N:             | 0.013000                     | 0.013000                                |           | Outlet Ctrl Spec                                      |                      |
| op Clip(in):             |                              |                                         |           | Inlet Ctrl Spec                                       |                      |
| Bot Clip(in):            |                              |                                         |           | Solution Incs                                         |                      |
|                          |                              |                                         |           | bolderon mep                                          | . 10                 |
|                          |                              | Description:<br>e edge w/ headwall      |           |                                                       |                      |
|                          |                              | ge Description:<br>e edge w/ headwall   |           |                                                       |                      |
| ** Weir 1 of             | 1 for Drop                   | Structure 1118 ***                      |           |                                                       |                      |
|                          |                              |                                         |           |                                                       | TABLE                |
|                          | Count:                       | 1                                       |           | Clip(in): 0.000                                       |                      |
|                          | Type:                        | Vertical: Mavis                         |           | Clip(in): 0.000                                       |                      |
|                          | Flow                         | Both                                    | Weir      | Disc Coef: 3.200                                      |                      |
|                          | Geometry:                    | Rectangular                             | Orifice   | Disc Coef: 0.600                                      |                      |
|                          | Span(in);                    | 24.00                                   | τ.        | nvert(ft): 0.000                                      |                      |
|                          | Rise(in):                    |                                         |           | Elev(ft): 0.000                                       |                      |
|                          |                              |                                         |           | . ,                                                   |                      |
| ****                     | *** 14. as as as as 14. as a |                                         |           |                                                       |                      |
| Name:                    | 1134                         | From Node:<br>To Node:                  | 1134      | Length(ft):                                           |                      |
| Group:                   | 1134<br>BASE                 | To Node:                                | ULLE      | Count:                                                | 1 I                  |
|                          | UPSTREAM                     | DOWNSTREAM                              |           | Priction Equation:                                    | Average Conveyance   |
| Geometry:                | Circular                     | Circular                                |           | Solution Algorithm:                                   |                      |
| Span(in):                |                              | 24 00                                   |           | Flow:                                                 |                      |
| Rise(in):                |                              | Circular<br>24.00<br>24.00              |           | Entrance Loss Coef:                                   |                      |
| Invert(ft):              |                              | 0.000                                   |           | Exit Loss Coef:                                       |                      |
| Manning's N:             |                              |                                         |           | Outlet Ctrl Spec:                                     |                      |
| op Clip(in):             |                              | 0.000                                   |           | Inlet Ctrl Spec:                                      |                      |
| ot Clip(in):             |                              | 0.000                                   |           | Solution Incs:                                        |                      |
| oe orap(an).             | 0.000                        | 0.000                                   |           | Solution thes:                                        | TO                   |
|                          |                              | Description:<br>e edge w/ headwall      |           |                                                       |                      |
|                          |                              | ge Description:<br>e edge w/ headwall   |           |                                                       |                      |
| * Weir 1 of 1            | l for Drop                   | Structure 1134 ***                      |           |                                                       |                      |
|                          | Count:                       | 1                                       | Battom    | Clip(in): 0.000                                       | TABLE                |
|                          |                              |                                         |           |                                                       |                      |
|                          |                              | Both                                    | woir -    | tsc Coef, 3 200                                       |                      |
|                          |                              | Rectangular                             | Orifice T | Clip(in): 0.000<br>isc Coef: 3.200<br>isc Coef: 0.600 |                      |
|                          |                              | our gut at                              | ATTTCC 1  | 100 COEL: 0.000                                       |                      |
|                          | <pre>Span(in):</pre>         |                                         |           | vert(ft): 0.000                                       |                      |
|                          | Rise(in):                    | 18.00                                   | Control   | Elev(ft): 0.000                                       |                      |
|                          |                              |                                         |           | 188 ANN ANN ANN ANN ANN ANN ANN ANN ANN A             |                      |
|                          | 1364C                        | From Node:                              |           | Length(ft):                                           |                      |
| Group:                   | BASE                         | To Node:                                | 1364B     | Count:                                                | 1                    |
|                          | UPSTREAM                     | DOWNSTREAM                              |           | Friction Equation:                                    | Average Conveyance   |
| Geometry                 |                              | se Horz Ellipse                         |           | Solution Algorithm:                                   |                      |
| Span(in):                | 18.00                        | 18.00                                   |           | Flow:                                                 |                      |
|                          |                              | 12.00                                   |           | Entrance Loss Coef:                                   |                      |
| Rise(in):<br>Invert(ft): | 0.580                        | 0.920                                   |           | Exit Loss Coef;                                       |                      |
| fanning's N:             | 0 013000                     | 0.013000                                |           | Outlet Ctrl Spec:                                     |                      |
| op Clip(in):             | 0 000                        | 0.000                                   |           | Inlet Ctrl Spec:                                      |                      |
|                          |                              |                                         |           |                                                       |                      |
| t Clip(in):              |                              | 0.000                                   |           | Solution Incs:                                        |                      |

Upstream PHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall \*\*\* Weir 1 of 1 for Drop Structure 1364C \*\*\* TABLE Count: 1 Bottom Clip(in): 0.000 Type: Vertical: Mavis Top Clip(in): 0.000 Weir Disc Coef: 3.200 Orifice Disc Coef: 0.600 Flow: Both Geometry: Rectangular Span(in): 40.20 Rise(in): 18.00 Invert(ft): 0.720 Control Elev(ft): 0.720 From Node: 1376 Length(ft): 291.00 Name: 1376 To Node: 13766 Group: BASE Count: 1 UPSTREAM DOWNSTREAM Friction Equation: Average Conveyance Geometry: Horz Ellipse Horz Ellipse Solution Algorithm: Automatic Span(in): 30.00 Flow: Both 30,00 Rise(in): 19.00 19.00 Entrance Loss Coef: 0.200 Invert(ft): -0.800 Manning's N: 0.013000 Top Clip(in): 0.000 0.830 Exit Loss Coef; 0,200 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Solution Incs: 10 0,013000 0.000 Bot Clip(in): 0.000 0.000 Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall \*\*\* Weir 1 of 1 for Drop Structure 1376 \*\*\* TABLE Count: 1 Bottom Clip(in): 0.000 Type: Vertical: Mavis Top Clip(in); 0,000 Weir Disc Coef: 3.200 Flow: Both Flow: Both Geometry: Rectangular Orifice Disc Coef: 0.600 Span(in): 31,20 Invert(ft): 0.390 Rise(in): 22.20 Control Elev(ft): 0.390 Name: 1070 From Node: 1070 Group: BASE To Node: 1060 Flow: Both Count: 1 Type: Vertical: Mavis Geometry: Rectangular Span(in): 60.00 Rise(in): 18.00 Invert(ft): 0.100 Control Elevation(ft): 0.100 TABLE Bottom Clip(in): 0.000 Top Clip(in): 0.000 Weir Discharge Coef: 3.200 Orifice Discharge Coef: 0.600 From Node: 1072 To Node: 1070 Name: 1072 Group: BASE Flow: Both Count: 1 Type: Vertical: Mavis Geometry: Rectangular Span(in): 96.00 Rise(in): 24.00 Invert(ft): 1.930 Control Elevation(ft): 1.930 TABLE Bottom Clip(in): 0.000

```
Top Clip(in): 0.000
        Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600

        Name:
        1080W
        From Node:
        1080

        Group:
        BASE
        To Node:
        1100

        Flow:
        None
        Count:
        1

        Type: Vertical: Mavis
                                  Geometry: Irregular
                       XSec: 1080W
      Invert(ft): 4.300
Control Elevation(ft): 4.300
      Struct Opening Dim(ft): 9999.00
                                              TABLE
        Bottom Clip(ft): 0.000
Top Clip(ft): 0.000
Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600
 ******
        Name: 1114W From Node: 1114
Froup: BASE To Node: 1090
                                 To Node: 1114
       Group: BASE
        Flow: Both
                                      Count: 1
        Type: Vertical: Mavis Geometry: Irregular
                       XSec: 1114W
      Invert(ft): 5.180
Control Elevation(ft): 5.180
     Struct Opening Dim(ft): 9999.00
                                              TABLE
            Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
        Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600
Name:1116WFrom Node:1116Group:BASETo Node:1120Flow:BothCount:1
        Type: Vertical: Mavis Geometry: Irregular
      XSec: 1116W
Invert(ft): 5.040
Control Elevation(ft): 5.040
     Struct Opening Dim(ft): 9999.00
                                             TABLE
        Bottom Clip(ft): 0.000
Top Clip(ft): 0.000
Weir Discharge Coef: 3.200
     Orifice Discharge Coef: 0.600
          -----
_____
                   Name:1144WFrom Node:1144Group:BASETo Node:1080Flow:BothCount:1
        Type: Vertical: Mavis Geometry: Irregular
                      XSec: 1144W
                Invert(ft): 4.630
      Control Elevation(ft): 4.630
     Struct Opening Dim(ft): 9999.00
                                             TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3,200
     Orifice Discharge Coef: 0.600
       Name:1184WFrom Node:1184Group:BASETo Node:1144Flow:BothCount:1Type:Vertical:MavisGeometry:Irregular
       Group: BASE
                       XSec: 1184W
```

| Invert(ft): 4.880<br>Control Elevation(ft): 4.880<br>Struct Opening Dim(ft): 9999.00<br>Bottom Clip(ft): 0.000<br>Top Clip(ft): 0.000<br>Weir Discharge Coef: 3.200<br>Orifice Discharge Coef: 0.600                 | TABLE         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Name: 1329W From Node<br>Group: BASE To Node<br>Flow: Both Count<br>Type: Vertical: Mavis Geometry:                                                                                                                  | : 1184<br>: 1 |
| XSec: 1329W<br>Invert(ft): 5.220<br>Control Elevation(ft): 5.220<br>Struct Opening Dim(ft): 9999.00<br>Bottom Clip(ft): 0.000<br>Top Clip(ft): 0.000<br>Weir Discharge Coef: 3.200<br>Orifice Discharge Coef: 0.600  | TABLE         |
| Name: 1337W From Node:<br>Group: BASE To Node:<br>Flow: Both Count;<br>Type: Vertical: Mavis Geometry;                                                                                                               | 1329<br>1     |
| XSec: 1337W<br>Invert(ft): 4.670<br>Control Elevation(ft): 4.670<br>Struct Opening Dim(ft): 9999.00<br>Bottom Clip(ft): 0.000<br>Top Clip(ft): 0.000<br>Weir Discharge Coef: 3.200<br>Orifice Discharge Coef: 0.600  | TABLE         |
| Name: 1347AW From Node:<br>Group: BASE To Node:<br>Flow: Both Count:<br>Type: Vertical: Mavis Geometry:                                                                                                              | 1337<br>1     |
| XSec: 1347AW<br>Invert(ft): 3,240<br>Control Elevation(ft): 3,240<br>Struct Opening Dim(ft): 9999.00<br>Bottom Clip(ft): 0.000<br>Top Clip(ft): 0.000<br>Weir Discharge Coef: 3,200<br>Orifice Discharge Coef: 0,600 | TABLE         |
| Name: 1357W From Node:<br>Group: BASE To Node:<br>Flow: Both Count:<br>Type: Vertical: Mavis Geometry:                                                                                                               | 1347A<br>1    |
| XSec: 1357W<br>Invert(ft): 3.520<br>Control Elevation(ft): 3.520<br>Struct Opening Dim(ft): 9999.00<br>Bottom Clip(ft): 0.000<br>Top Clip(ft): 0.000<br>Weir Discharge Coef: 3.200<br>Orifice Discharge Coef: 0.600  | TABLE         |
| Name: 1360W From Node:                                                                                                                                                                                               | 1360          |

| Group: BASE                                              | To Node:               |                        |   |
|----------------------------------------------------------|------------------------|------------------------|---|
| Flow: Both<br>Type: Vertical: Mavis                      | Count:<br>Geometry:    | i<br>Irregular         |   |
| XSec: 13                                                 | 50W                    |                        |   |
| Invert(ft): 3.                                           | 090                    |                        |   |
| Control Elevation(ft): 3.0<br>Struct Opening Dim(ft): 99 |                        |                        |   |
| -                                                        |                        | TABLE                  |   |
| Bottom Clip(ft): 0.1<br>Top Clip(ft): 0.1                |                        |                        |   |
| Weir Discharge Coef: 3.3                                 |                        |                        |   |
| Orifice Discharge Coef: 0.1                              | 500                    |                        |   |
|                                                          |                        |                        |   |
|                                                          |                        | 1260                   |   |
| Name: 1368W<br>Group: BASE                               | From Node:<br>To Node: |                        |   |
| Flow: Both<br>Type: Vertical: Mavis                      | Count:                 | 1<br>Irregular         |   |
|                                                          |                        | TTTCG GTGT             |   |
| XSec: 130<br>Invert(ft): 3.4                             |                        |                        |   |
| Control Elevation(ft): 3.4                               | 400                    |                        |   |
| Struct Opening Dim(ft): 999                              | 99.00                  | TABLE                  |   |
| Bottom Clip(ft): 0.(                                     |                        |                        |   |
| Top Clip(ft): 0.0<br>Weir Discharge Coef: 3.3            |                        |                        |   |
| Orifice Discharge Coef: 0.0                              | 500                    |                        |   |
|                                                          |                        |                        |   |
|                                                          |                        |                        |   |
| Name: 1372W<br>Group: BASE                               | From Node:<br>To Node: | 1372<br>1368           |   |
| Flow: Both                                               | count:                 | L .                    |   |
| Type: Vertical: Mavis                                    | Geometry:              | Irregular              |   |
| XSec: 13                                                 |                        |                        |   |
| Invert(ft): 3.3<br>Control Elevation(ft): 3.3            |                        |                        |   |
| Struct Opening Dim(ft): 999                              | 99.00                  | TABLE                  |   |
| Bottom Clip(ft): 0.(                                     | 000                    |                        |   |
| Top Clip(ft): 0.0<br>Weir Discharge Coef: 3.3            |                        |                        |   |
| Orifice Discharge Coef: 0.6                              |                        |                        |   |
|                                                          |                        |                        |   |
|                                                          |                        | ***                    |   |
| Name: 1382W                                              | From Node:             | 1382                   |   |
| Group: BASE<br>Flow: Both                                | To Node:<br>Count:     |                        |   |
| Type: Vertical: Mavis                                    | Geometry:              | Irregular              |   |
| XSec: 138                                                |                        |                        |   |
| Invert(ft): 3.3<br>Control Elevation(ft): 3.3            |                        |                        |   |
| Struct Opening Dim(ft): 999                              |                        |                        |   |
| Bottom Clip(ft): 0.0                                     | 000                    | TABLE                  |   |
| Top Clip(ft): 0.0<br>Weir Discharge Coef: 3.2            |                        |                        |   |
| Orifice Discharge Coef: 3.2                              |                        |                        |   |
|                                                          |                        |                        |   |
|                                                          |                        |                        | - |
| ==== Rating Curves ====================================  |                        | *********              | = |
|                                                          |                        |                        |   |
| Name: 1072 FUMP<br>Group: BASE                           | From Node:<br>To Node: |                        |   |
| _                                                        |                        |                        |   |
|                                                          | EV ON(ft)<br>000       | ELEV OFF(ft)<br>50.000 |   |
| #2: 0.                                                   | 000                    | 0.000                  |   |
|                                                          | 000                    | 0.000<br>0.000         |   |
|                                                          |                        |                        |   |

| ==== Hydrology                       | Simulations ====                                                                            | ***************                   |                                                                           |                                                                                |
|--------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Name:<br>Filename:                   |                                                                                             | Beach Road\ICPR\                  | EXISTING\SIM1.R32                                                         | 1                                                                              |
| Storm Dura<br>Rain:                  | Defaults: Yes<br>tion(hrs): 24.00<br>fall File: FLMOD<br>mount(in): 2.00                    |                                   |                                                                           |                                                                                |
| Time(hrs)                            | Print Inc(min)                                                                              |                                   |                                                                           |                                                                                |
| 36.000                               | 15.00                                                                                       |                                   |                                                                           |                                                                                |
| ==== Routing 5:                      | imulations ======                                                                           |                                   |                                                                           | ***************************************                                        |
| Name:<br>Filename:                   |                                                                                             | Hydrology Sim<br>Beach Road\ICPR\ |                                                                           |                                                                                |
| Execute:<br>Alternative:             |                                                                                             | art: No                           | Patch: No                                                                 |                                                                                |
| Time Step (<br>Start 1<br>Min Calc 1 | lta Z(ft): 1.00<br>Dptimizer: 10.000<br>Fime(hrs): 0.000<br>Fime(sec): 0.2500<br>ry Stages: |                                   | Delta Z Factor:<br>End Time(hrs):<br>x Calc Time(sec):<br>Boundary Flows: | 36.00<br>15.0000                                                               |
|                                      | Print Inc(min)                                                                              |                                   |                                                                           |                                                                                |
| 36.000                               |                                                                                             |                                   |                                                                           |                                                                                |
| Group                                | Run                                                                                         |                                   |                                                                           |                                                                                |
| BASE                                 | Yes                                                                                         |                                   |                                                                           |                                                                                |
| ==== Boundary (                      | Conditions ======                                                                           |                                   |                                                                           | \$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$<br>\$\$\$\$\$\$\$\$\$\$\$\$\$\$ |

**EXISTING CONDITIONS OUTPUT** 

## Existing Conditions with 2-inches of Rainfall

|              |              | LAISCIN      | g condición      |                |                |                    |               |                  |                 |          |
|--------------|--------------|--------------|------------------|----------------|----------------|--------------------|---------------|------------------|-----------------|----------|
|              |              |              | Max Time         | Max            |                | Max Delta          |               |                  | Max             | Max T    |
| Name         | Group        | Simulation   | Stage            | Stage          | Stage          | Stage              | Area<br>fro   | Inflow           | Inflow<br>cfs   | Outf     |
|              |              |              | hrs              | ft             | ft             | ft                 | ft2           | hrs              | C15             |          |
| 1000         | BASE         | SIM1         | 0.00             | 1.100          | 4.600          | 0.0000             | 0             | 13.04            | 1.756           | 0        |
| 1010         | BASE         | SIM1         | 13.04            | 2.692          | 3.800          | -0.9300            | 2866          | 12,85            | 1.801           | 13       |
| 1020         | BASE         | SIM1         | 12.79            | 2.868          | 3.600          | -1.2200            | 1517          | 12.76            | 1.847           | 12       |
| 1030         | BASE         | SIM1         | 12.90            | 2.900          | 3.700          | -0.6800            | 2019          | 12.83            | 2.152           | 12       |
| 1040         | BASE         | SIM1         | 12.84            | 2,977          | 3.600          | -1.1000            | 1374          | 12.76            | 1,533           | 12       |
| 1050         | BASE         | SIM1         | 12,78            | 3.021          | 4.900          | -1.0400            | 4027<br>10073 | 12.32<br>12.16   | 4.089<br>10.133 | 12<br>12 |
| 1060<br>1070 | BASE<br>BASE | SIM1<br>SIM1 | $12.77 \\ 12.75$ | 3.023<br>3.025 | 4.600<br>4.630 | 0.0028<br>-0.0091  | 113           | 12.16            | 10.658          | 12       |
| 1070         | BASE         | SIM1         | 12.72            | 3.032          | 4,630          | 0.0452             | 115           | 12.33            | 35.282          | 12       |
| 1080         | BASE         | SIM1         | 12.72            | 3.046          | 4,300          | -0.0412            | 115           | 12.16            | 17.479          | 12       |
| 1090         | BASE         | SIM1         | 12.71            | 3.041          | 4.560          | 0.0170             | 116           | 12.16            | 11.083          | 12       |
| 1100         | BASE         | SIMI         | 25.00            | 3.078          | 6.500          | 0.0002             | 6309          | 12.59            | 10,031          | 0        |
| 1110         | BASE         | SIM1         | 12.71            | 3.056          | 4,620          | -0.0060            | 145           | 15.86            | 11.318          | 12       |
| 1112         | BASE         | SIM1         | 12.71            | 3.056          | 4.830          | -0.0007            | 243           | 12.17            | 0.731           | 12       |
| 1114         | BASE         | SIM1         | 12.71            | 3.057          | 5.180          | 0.0002             | 284           | 12.01            | 0,699<br>0,356  | 12<br>12 |
| 1116         | BASE         | SIM1         | 12.71            | 3.058          | 5.040          | 0.0001<br>0.0000   | 146<br>29741  | $12.00 \\ 12.25$ | 1.033           | 0        |
| 1118<br>1120 | BASE<br>BASE | SIM1<br>SIM1 | 26.00<br>12.71   | 3.285<br>3.051 | 6.000<br>4.260 | -0.0088            | 114           | 12.00            | 0,296           | 15       |
| 1120         | BASE         | SIM1         | 12.71            | 3.057          | 4.360          | -0.0034            | 146           | 12.17            | 8,130           | 12       |
| 1132         | BASE         | SIM1         | 12.71            | 3.059          | 4,120          | 0.0027             | 114           | 12,25            | 0.288           | 1        |
| 1134         | BASE         | SIM1         | 27.00            | 4.334          | 6.000          | 0.0001             | 12262         | 12.50            | 1.397           | 0        |
| 1140         | BASE         | SIM1         | 12,71            | 3.062          | 4.200          | -0.0058            | 138           | 12.17            | 7,834           | 12       |
| 1142         | BASE         | SIM1         | 12.72            | 3.062          | 3.720          | 0.0027             | 113           | 12.00            | 0.618           | 12       |
| 1144         | BASE         | SIM1         | 12.70            | 3.071          | 3.940          | 0.0032             | 116           | 12.00            | 2.101           | 12       |
| 1146         | BASE         | SIMI         | 12.67            | 3.078          | 5.700          | 0.0017             | 115           | 12.00            | 1,777           | 12       |
| 1150         | BASE         | SIM1         | 12.71            | 3.060          | 4.490<br>6.000 | -0.0075<br>0.0098  | 145<br>115    | 12,02<br>12.00   | 6.864<br>1.709  | 12<br>12 |
| 1151         | BASE<br>BASE | SIM1<br>SIM1 | 12.70<br>12.70   | 3.068<br>3.064 | 4,860          | ~0.0075            | 134           | 4.87             | 4.115           | 12       |
| 1160<br>1161 | BASE         | SIMI         | 12,70            | 3.068          | 6,000          | -0.0018            | 115           | 12.00            | 1.562           | 12       |
| 1170         | BASE         | SIMI         | 12.70            | 3.059          | 5.150          | 0.0069             | 136           | 12.08            | 4,625           | 4        |
| 1180         | BASE         | SIM1         | 12.67            | 3.061          | 4,920          | -0.0056            | 144           | 12.19            | 2.746           | 12       |
| 1182         | BASE         | SIM1         | 12.67            | 3.061          | 4.600          | 0.0011             | 113           | 12.00            | 0.511           | 12       |
| 1184         | BASE         | SIM1         | 12,67            | 3.061          | 4.620          | 0.0008             | 114           | 12.00            | 0.583           | 12       |
| 1186         | BASE         | SIM1         | 12.67            | 3.087          | 5,840          | 0.0005             | 115           | 12.00            | 2.141           | 12       |
| 1188         | BASE         | SIM1         | 12.67            | 3.054          | 5.600          | 0.0004             | 115           | 12.00            | 0.702           | 12<br>12 |
| 1325         | BASE         | SIM1         | 12,70            | 3.057          | 5.180<br>5.560 | 0.0046<br>-0.0055  | 133<br>131    | $12.08 \\ 12.17$ | 2.889<br>1.667  | 12       |
| 1327<br>1329 | BASE<br>BASE | SIM1<br>SIM1 | 12.67<br>12.67   | 3.057<br>3,053 | 5.690          | 0.0032             | 131           | 17.86            | 0.915           | 1        |
| 1329         | BASE         | SIM1         | 12.67            | 3.042          | 5.220          | 0.0005             | 136           | 1.56             | 0.842           | 17       |
| 1335A        | BASE         | SIM1         | 12.67            | 3.034          | 4.680          | 0.0006             | 135           | 17.86            | 1.112           | 1        |
| 1337         | BASE         | SIM1         | 12,67            | 3.024          | 5.220          | -0,0015            | 130           | 11.38            | 2.465           | 17       |
| 1338         | BASE         | SIM1         | 12.67            | 3.017          | 5.320          | 0.0021             | 126           | 17.86            | 1.976           | 11       |
| 1339         | BASE         | SIM1         | 12.67            | 3.004          | 5.200          | -0.0021            | 127           | 11.44            | 2.867           | 17       |
| 1340         | BASE         | SIM1         | 12.63            | 2.995          | 4.430          | 0.0033             | 121           | 18.54            | 2.067           | 11       |
| 1342         | BASE         | SIM1         | 12.61            | 2.972          | 4.750          | -0,0039<br>-0.0033 | 122<br>123    | 1.57<br>18.65    | 1.355<br>1.448  | 18<br>1  |
| 1343<br>1344 | BASE<br>BASE | SIM1<br>SIM1 | 12.60<br>12.59   | 2.945<br>2.919 | 4.820<br>4.410 | -0.0023            | 128           | 1.57             | 0.713           | 18       |
| 1345         | BASE         | SIM1         | 12.43            | 2.880          | 3.730          | 0.0022             | 126           | 18.65            | 2.079           | 1        |
| 1347         | BASE         | SIMI         | 12.42            | 2.865          | 3.880          | -0.0025            | 126           | 1.56             | 0,880           | 18       |
| 1347A        | BASE         | SIM1         | 12.41            | 2.833          | 3.750          | 0.0031             | 126           | 19.39            | 2.815           | 1        |
| 1348         | BASE         | SIM1         | 12.40            | 2.810          | 3.570          | -0.0065            | 118           | 11.53            | 3.882           | 19       |
| 1350         | BASE         | SIM1         | 12.40            | 2,789          | 3.700          | 0.0068             | 117           | 18.77            | 3.115           | 11       |
| 1353         | BASE         | SIM1         | 12.39            | 2.767          | 3,780          | 0.0038             | 122           | 1.56             | 1.154           | 18       |
| 1354         | BASE         | SIM1         | 12.38            | 2.729          | 3.850          | -0.0025<br>-0.0029 | 125<br>123    | 18.77<br>1,56    | 1.428<br>1.384  | 1<br>18  |
| 1355<br>1356 | BASE<br>BASE | SIM1<br>SIM1 | 12.37<br>12.37   | 2.699<br>2.667 | 3.960<br>3.720 | 0.0031             | 123           | 18.76            | 2.565           | 1        |
| 1358         | BASE         | SIM1         | 12.36            | 2.646          | 3.880          | -0.0025            | 123           | 1.56             | 0,902           | 1.0      |
| 1359         | BASE         | SIM1         | 12.36            | 2.594          | 3.760          | -0.0015            | 129           | 1.55             | 0.598           | 1        |
| 1360         | BASE         | SIM1         | 12.35            | 2.540          | 3.400          | 0.0010             | 134           | 17.86            | 0.778           | 19       |
| 1362         | BASE         | SIM1         | 12.35            | 2.433          | 3.220          | 0.0003             | 118           | 12.29            | 1.769           | 12       |
| 1364B        | BASE         | SIM1         | 0.00             | 1.100          | 4.000          | 0.0000             | 0             | 12.36            | 1.761           | 0        |
| 1364C        | BASE         | SIM1         | 12.36            | 2.380          | 3.750          | 0.0003             | 114           | 12.32            | 1.763           | 12       |
| 1366         | BASE         | SIM1         | 12.34            | 2.516          | 3.730          | -0.0031            | 124           | 19.40<br>17.86   | 2.322<br>1.273  | 1<br>19  |
| 1367         | BASE         | SIM1         | $12.34 \\ 12.34$ | 2.505<br>2.484 | 3.680<br>3.680 | 0.0035<br>-0.0027  | 123<br>123    | 18,81            | 1.930           | 17       |
| 1368<br>1370 | BASE<br>BASE | SIM1<br>SIM1 | 12.34            | 2.469          | 3.700          | 0.0022             | 122           | 17.86            | 0.949           | 18       |
| 1371         | BASE         | SIM1         | 12.33            | 2,443          | 3.720          | -0.0013            | 127           | 1.55             | 0.629           | 17       |
| 1372         | BASE         | SIM1         | 12.33            | 2.417          | 3,380          | -0.0009            | 123           | 1.73             | 0.042           | 1        |
| 1373         | BASE         | SIM1         | 12.33            | 2.393          | 3,290          | -0.0004            | 125           | 12.23            | 0.920           | 12       |
| 1376         | BASE         | SIM1         | 12.33            | 2.341          | 3.780          | 0.0021             | 118           | 12.23            | 4,112           | 12       |
| 13766        | BASE         | SIM1         | 12.33            | 2,219          | 4.000          | -0.0021            | 134           | 12.23            | 4.664           | 12       |
| 13767        | BASE         | SIM1         | 0.00             | 1.100          | 4,000          | 0.0000             | 69            | 12.33            | 3.921           | 12       |
| 1379         | BASE         | SIM1         | 12.32            | 2,402          | 3,520          | 0.0004<br>-0.0006  | 118<br>118    | $12.23 \\ 12.24$ | 0.903<br>0.896  | 12<br>12 |
| 1380         | BASE<br>BASE | SIM1<br>SIM1 | $12.32 \\ 12.32$ | 2,407<br>2.416 | 3.600<br>3.580 | 0.0004             | 110           | 12.24<br>12.24   | 0.890           | 12       |
| 1381<br>1382 | BASE         | SIM1         | 12.32            | 2.423          | 3,610          | 0.0003             | 115           | 12.00            | 0.938           | 12       |
| 1202         |              |              |                  |                |                | _                  |               |                  |                 |          |

## Existing Conditions with 3-inches of Rainfall

|               |              | EXISCIN      |                          | 5 WILLIN J J       | inches of              | ROTHEOLE                 |                         |                           |                      |               |
|---------------|--------------|--------------|--------------------------|--------------------|------------------------|--------------------------|-------------------------|---------------------------|----------------------|---------------|
| Name          | Group        | Simulation   | Max Time<br>Stage<br>hrs | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max Time<br>Inflow<br>hrs | Max<br>Inflow<br>cfs | Max T<br>Outf |
| 1000          | BASE         | SIM1         | 0.00                     | 1.100              | 4.600                  | 0.0000                   | 0                       | 12.74                     | 8.305                | 0             |
| 1000<br>1010  | BASE         | SIMI         | 12.76                    | 3.182              | 3,800                  | -0.9300                  | 3849                    | 12.69                     | 8.124                | 12            |
| 1020          | BASE         | SIM1         | 12.73                    | 3.328              | 3.600                  | -1.2200                  | 1984                    | 12.67                     | 8.032                | 12            |
| 1030          | BASE         | SIM1         | 12.72                    | 3.392              | 3.700                  | -0.6800                  | 2606                    | 12.67                     | 7.156                | 12            |
| 1040          | BASE         | SIM1         | 12.72                    | 3.468              | 3.600                  | -1,1000                  | 2090                    | 12.66                     | 6.455                | 12            |
| 1050          | BASE         | SIM1         | 12.68                    | 3.690              | 4.900                  | -1.0400                  | 4288                    | 12.54                     | 6.756                | 12            |
| 1060          | BASE         | SIM1         | 12,68                    | 3.696              | 4.600                  | -0.0028                  | 10225                   | 12.02                     | 13,528               | 12            |
| 1070          | BASE         | SIM1         | 12.64                    | 3.730              | 4.630                  | -0.0094                  | 113                     | 12.02                     | 13.638               | 12            |
| 1072          | BASE         | SIM1         | 12.62                    | 3.765              | 4.630                  | 0.0415                   | 115                     | 11.89                     | 33.240               | 12            |
| 1080          | BASE         | SIM1         | 12.61                    | 3.785              | 4.300                  | -0.0364                  | 115                     | 11.89                     | 19.126               | 11            |
| 1090          | BASE         | SIM1         | 12.54                    | 3.818              | 4.560                  | 0.0171                   | 116                     | 12.17                     | 14.687               | 11<br>0       |
| 1100          | BASE         | SIM1         | 25.00                    | 3,824              | 6.500                  | 0.0003                   | 12480<br>145            | 12.02<br>12.02            | 10.166<br>18.146     | 12            |
| 1110          | BASE         | SIM1         | 12.46                    | 3.874<br>3.885     | 4.620<br>4.830         | -0.0064<br>0.0010        | 127                     | 12.02                     | 0,938                | 11            |
| 1112          | BASE         | SIM1         | 12.45<br>12.46           | 3.895              | 5,180                  | 0.0007                   | 130                     | 12.05                     | 1.077                | 12            |
| 1114<br>1116  | BASE<br>BASE | SIM1<br>SIM1 | 12.46                    | 3.896              | 5.040                  | 0,0007                   | 117                     | 12.00                     | 0.617                | 12            |
| 1116          | BASE         | SIM1         | 26.00                    | 3.620              | 6.000                  | 0.0000                   | 30910                   | 12.25                     | 2.482                | D             |
| 1120          | BASE         | SIM1         | 12.46                    | 3.876              | 4.260                  | -0.0088                  | 114                     | 12.00                     | 0,514                | 11            |
| 1130          | BASE         | SIM1         | 12.41                    | 4.010              | 4.360                  | ~0,0034                  | 146                     | 12.17                     | 13.721               | 12            |
| 1132          | BASE         | SIM1         | 12.40                    | 4.021              | 4.120                  | 0.0008                   | 114                     | 12.00                     | 0.817                | 12            |
| 1134          | BASE         | SIM1         | 27.00                    | 5.617              | 6.000                  | 0.0001                   | 15130                   | 12.25                     | 3.480                | 0             |
| 1140          | BASE         | SIM1         | 12.37                    | 4.100              | 4.200                  | 0,0098                   | 136                     | 12.16                     | 13.047               | 12            |
| 1142          | BASE         | SIM1         | 12,37                    | 4.108              | 3.720                  |                          | 113                     | 12.00                     | 1.073                | 1             |
| 1144          | BASE         | SIM1         | 12.32                    | 4.224              | 3.940                  |                          | 116                     | 12.01                     | 3.286                | 12<br>12      |
| 1146          | BASE         | SIM1         | 12.29                    | 4.306              | 5.700                  | 0.0010                   | 115<br>145              | $12.00 \\ 12.20$          | 2.715<br>9.493       | 12            |
| 1150          | BASE         | SIM1         | 12,35                    | 4.167<br>4.239     | 4.490<br>6.000         |                          | 1425                    | 12.00                     | 2.611                | 12            |
| 1151          | BASE<br>BASE | SIM1<br>SIM1 | $12.35 \\ 12.34$         | 4,213              | 4.860                  |                          | 134                     | 11.83                     | 7.753                | 12            |
| 1160<br>1161  | BASE         | SIM1         | 12.34                    | 4,279              | 6.000                  | -0.0030                  | 115                     | 12.00                     | 2,386                | 12            |
| 1170          | BASE         | SIM1         | 12.34                    | 4 231              | 5.150                  | 0.0080                   | 136                     | 12.26                     | 5.880                | 11            |
| 1180          | BASE         | SIM1         | 12.33                    | 4.264              | 4.920                  | 0.0048                   | 144                     | 12.26                     | 5.920                | 12            |
| 1182          | BASE         | SIM1         | 12.33                    | 4.280              | 4.600                  |                          | 113                     | 12.00                     | 1.278                | 12            |
| 1184          | BASE         | SIM1         | 12.33                    | 4.275              | 4.620                  | 0,0009                   | 114                     | 12.00                     | 1.012                | 12            |
| 1186          | BASE         | SIM1         | 12.29                    | 4.521              | 5,840                  | 0.0009                   | 115                     | 12.00                     | 3.279                | 12            |
| 1188          | BASE         | SIM1         | 12.32                    | 4.331              | 5.600                  | 0.0008                   | 115                     | 12.00                     | 1.072                | 12            |
| 1325          | BASE         | SIM1         | 12.33                    | 4.292              | 5.180                  | 0.0033                   | 133                     | 12.26                     | 4.164                | 12            |
| 1327          | BASE         | SIM1         | 12,32                    | 4.316              | 5,560                  | 0.0031                   | 131                     | 12.02<br>12.22            | 4.855<br>1.035       | 12<br>11      |
| 1329          | BASE         | SIM1         | 12.32                    | 4,318<br>4,316     | 5.690<br>5.220         | 0.0022<br>0.0025         | 137<br>136              | 1.03                      | 0.846                | 20            |
| 1334          | BASE         | SIM1         | 12.32<br>12.32           | 4.310              | 4,680                  | 0.0048                   | 135                     | 20.74                     | 1,152                | 1             |
| 1335A<br>1337 | BASE<br>BASE | SIM1<br>SIM1 | 12.32                    | 4.273              | 5.220                  | 0.0057                   | 130                     | 12.32                     | 59.197               | 20            |
| 1338          | BASE         | SIM1         | 12.32                    | 4.307              | 5.320                  | -0.0049                  | 126                     | 20.74                     | 1.990                | 12            |
| 1339          | BASE         | SIMI         | 12.32                    | 4.300              | 5.200                  | 0.0052                   | 127                     | 12.01                     | 2.660                | 20            |
| 1340          | BASE         | SIM1         | 12.32                    | 4.303              | 4.430                  |                          | 121                     | 23.46                     | 1.993                | 12            |
| 1342          | BASE         | SIM1         | 12.32                    | 4.301              | 4.750                  | -0.0034                  | 122                     | 1.03                      | 1.353                | 23            |
| 1343          | BASE         | SIM1         | 12.32                    | 4.302              | 4.820                  | 0.0031                   | 123                     | 23.57                     | 1.447                | 1             |
| 1344          | BASE         | SIM1         | 12.32                    | 4.300              | 4.410                  |                          | 128                     | 12.02                     | 0.820                | 23            |
| 1345          | BASE         | SIM1         | 12.32                    | 4.301              | 3.730                  | 0.0023                   | 126                     | 22.01                     | 2,108                | 12<br>22      |
| 1347          | BASE         | SIM1         | 12.32                    | 4.297              | 3.880                  |                          | 126                     | $12.30 \\ 24.22$          | 3.013<br>2.795       | 12            |
| 1347A         | BASE         | SIM1         | 12.32                    | 4.347<br>4.285     | 3.750<br>3.570         | -0.0060<br>0.0068        | 126<br>118              | 1.03                      | 3.698                | 24            |
| 1348          | BASE         | SIM1<br>SIM1 | $12.32 \\ 12.32$         | 4.285              | 3.700                  | -0.0072                  | 117                     | 10.43                     | 3.190                | 1             |
| 1350<br>1353  | BASE<br>BASE | SIM1         | 12,32                    | 4.284              | 3.780                  |                          | 122                     | 1,03                      | 1,155                | 10            |
| 1354          | BASE         | SIM1         | 12.32                    | 4,284              | 3.850                  | -0.0025                  | 125                     | 23.64                     | 1.426                | 1             |
| 1355          | BASE         | SIM1         | 12.32                    | 4.282              | 3.960                  | -0,0033                  | 123                     | 1.03                      | 1.382                | 23            |
| 1356          | BASE         | SIM1         | 12.32                    | 4.283              | 3.720                  | 0.0034                   | 121                     | 23,22                     | 2.585                | 1             |
| 1357          | BASE         | SIM1         | 12.32                    | 4,203              | 3.880                  | ~0,0032                  | 123                     | 12.32                     | 82.923               | 23            |
| 1359          | BASE         | SIM1         | 12.32                    | 4.264              | 3.760                  | -0.0017                  | 129                     | 12.32                     | 3.482                | 12            |
| 1360          | BASE         | SIM1         | 12.32                    | 4.322              | 3.400                  |                          | 134                     | 1,09                      | 0.673                | 12            |
| 1362          | BASE         | SIM1         | 12.33                    | 3,886              | 3.220                  | 0.0010                   | 118                     | 12.30                     | 3.573<br>3.265       | 12<br>0       |
| 1364B         | BASE         | SIM1         | 0.00                     | 1,100              | 4.000                  | 0.0000                   | 0<br>114                | 12.33<br>12.31            | 3,269                | 12            |
| 13640         | BASE         | SIM1         | 12.33                    | 3.704<br>4.247     | 3.750<br>3.730         | D.0009<br>0.0028         | 124                     | 20.74                     | 3.191                | 1             |
| 1366          | BASE         | SIM1         | 12.32<br>12.32           | 4.251              | 3.680                  | -0,0025                  | 123                     | 1.11                      | 1.067                | 20            |
| 1367<br>1368  | BASE<br>BASE | SIM1<br>SIM1 | 12.32                    | 4.187              | 3,680                  | 0,0022                   | 123                     | 12.32                     | 53.838               | 1             |
| 1370          | BASE         | SIM1         | 12,32                    | 4,241              | 3.700                  | -0.0020                  | 122                     | 1.17                      | 0.931                | 12            |
| 1371          | BASE         | SIM1         | 12.32                    | 4.234              | 3.720                  | -0.0020                  | 127                     | 12.31                     | 3.280                | 1             |
| 1372          | BASE         | SIM1         | 12.32                    | 4.281              | 3,380                  | D.0011                   | 123                     | 1,20                      | 0.042                | 12            |
| 1373          | BASE         | SIM1         | 12,32                    | 4.125              | 3.290                  | 0.0009                   | 125                     | 12,01                     | 1.562                | 12            |
| 1376          | BASE         | SIM1         | 12.33                    | 3,928              | 3.780                  | -0.0029                  | 118                     | 12.29                     | 7.652                | 12            |
| 13766         | BASE         | SIM1         | 12.33                    | 3,379              | 4.000                  | 0.0036                   | 127                     | 12.31                     | 7.659                | 12            |
| 13767         | BASE         | SIM1         | 0,00                     | 1.100              | 4.000                  | 0.0000                   | 69                      | 12.33                     | 7.657                | 0             |
| 1379          | BASE         | SIM1         | 12.32                    | 4.158              | 3.520                  | 0.0009                   | 118                     | 12.01                     | 1.755                | 12            |
| 1380          | BASE         | SIM1         | 12.32                    | 4.174              | 3.600                  | 0,0010                   | 118                     | $12.01 \\ 12.00$          | $1.948 \\ 2.145$     | 12<br>12      |
| 1381          | BASE         | SIM1         | 12.32                    | 4.205<br>4.210     | 3.580<br>3.610         | 0.0010<br>0.0010         | 119<br>115              | 12.00                     | 2.145                | 12            |
| 1382          | BASE         | SIMI         | 12.32                    |                    | J. U A V               | 0.0010                   | <b>1</b> 10             | 20,00                     |                      |               |
|               |              |              |                          |                    |                        |                          |                         |                           |                      |               |

**PROPOSED CONDITIONS INPUT** 

Name: 1000 Node: 1000 Status: Onsite Type: SCS Unit Hydrograph Group: BASE Peaking Factor: 256.0 Unit Hydrograph: Uh256 Time Shift(hrs): 0.00 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.900 Curve Number: 68.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Name: 1010 Node: 1010 Status: Onsite Group; BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Rainfall File: FImod Rainfall Amount(in): 2.000 Area(ac): 0.970 Curve Number: 68.00 DCIA(%): 0.00 Prove State Node: 1020 Name: 1020 Status: Onsite Type: SCS Unit Hydrograph Group: BASE Peaking Factor: 256.0 Unit Hydrograph: Uh256 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2,000 Area(ac): 5.610 Curve Number: 68,00 Cu DCIA(%): 0.00 \_\_\_\_\_ Node: 1030 Type: SCS Unit Hydrograph Name: 1030 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Area(ac): 4.580 Curve Number: 68.00 DCIA(%): 0.00 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Node: 1040 Type: SCS Unit Hydrograph Name: 1040 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.560 Curve Number: 68.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Node: 1050 Type: SCS Unit Hydrograph Status; Onsite Name: 1050 Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.470 Curve Number: 68.00 DCIA(%): 0.00 DCIA(%): 0.00 Name: 1080 Node: 1080 Status: Onsite Group: BASE Type: SCS Unit Hydrograph

Unit Hydrograph: Uh256 Peaking Factor: 256.0 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.354 Curve Number: 92.00 DCIA(%): 0.00 \_\_\_\_\_ Node: 1100 Type: SCS Unit Hydrograph Name: 1100 Status: Onsite Group: BASE Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.440 Curve Number: 70.00 DCIA(%): 0.00 -----\_\_\_\_\_ Node: 1114 Type: SCS Unit Hydrograph Name: 1114 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.425 Curve Number: 92.00 DCIA(%): 0.00 Peaking Factor: 256.0 Time of Conc(min): 124.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Name: 1116 Node: 1116 Group: BASE Type: SCS Unit Hydrograph Status: Onsite Group: BASE Unit Hydrograph:Uh256Peaking Factor:256.0Rainfall File:FlmodStorm Duration(hrs):24.00Rainfall Amount(in):2.000Time of Conc(min):10.00Area(ac):0.425Time Shift(hrs):0.00Curve Number:92.00Max Allowable O(cfe):900000 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Node: 1118 Type: SCS Unit Hydrograph Status: Onsite Name: 1118 Group: BASE 
 Peaking Factor: 256.0

 Rainfall File: Fimod
 Storm Duration(hrs): 24.00

 11 Amount(in): 2.000
 Time of Conc(min): 20.00

 Area(ac): 4.080
 Time Shift(hrs): 0.00

 Curve Number: 80.00
 Max Allowable Q(cfs): 999999.000

 DCIA(%): 0.00
 Time Shift(hrs): 0.00
 Unit Hydrograph: Uh256 Rainfall File; Flmod Rainfall Amount(in): 2.000 Node: 1120 Type: SCS Unit Hydrograph Name: 1120 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Peaking Factor: 256.0 Rainfall File: Flmod Storm Duration(hrs): 24.00 Rainfall Amount(in): 2.000 Time of Conc(min): 10.00 Area(ac): 0.354 Time Shift(hrs): 0.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Group: BASE Node: 1132 Status: Onsite Name: 1132 Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.590 Curve Number: 75.00 DCIA(%): 0.00 Peaking Factor: 256.0 Peaking Factor: 250.0 Storm Duration(hrs): 24.00 Time of Conc(min): 12.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000

Node: 1134 Type: SCS Unit Hydrograph Name: 1134 Status: Onsite Group: BASE 
 Unit Hydrograph: Uh256
 Peaking Factor: 256.0

 Rainfall File: Flmod
 Storm Duration(hrs): 24.00

 Rainfall Amount(in): 2.000
 Time of Conc(min): 30.00

 Area(ac): 7.040
 Time Shift(hrs): 0.00

 Curve Number: 80.00
 Max Allowable Q(cfs): 999999.000

 DCIA(%): 0.00
 Time Shift(hrs): 0.00
 Name:1142Node:1142Group:BASEType:SCS Unit Hydrograph Status: Onsite Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.739 Curve Number: 92.00 Part 400 Curve Number: 92.00 Curve Number: 92.00 Part 400 Pa DCIA(%): 0,00 Status: Onsite Name: 1144 Node: 1144 Type: SCS Unit Hydrograph Group: BASE it Hydrograph: Uh256 Peaking Factor: 256.0 Rainfall File: Flmod Storm Duration(hrs): 24.00 11 Amount(in): 2.000 Time of Conc(min): 10.00 Area(ac): 0.540 Time Shift(hrs): 0.00 Curve Number: 92.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 \*\*\*\*\* Node: 1146 Type: SCS Unit Hydrograph Name: 1146 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.570 Curve Number: 98.00 Provide Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Node: 1151 Status: Onsite Name: 1151 Type: SCS Unit Hydrograph Arype: SUS Unit HydrographUnit Hydrograph: Uh256Peaking Factor: 256.0Rainfall File: FimodStorm Duration(hrs): 24.00Rainfall Amount(in): 2.000Time of Conc(min): 10.00Area(ac): 1.510Time Shift(hrs): 0.00Curve Number: 98.00Max Allowable Q(cfs): 999999.000DCIA(%): 0.00Time Suff (hrs): 0.00 Group: BASE Node: 1161 Name: 1161 Status: Onsite Type: SCS Unit Hydrograph Group: BASE Unit Hydrograph: Uh256 Peaking Factor: 256.0 Rainfall File: Flmod Storm Duration(hrs): 24.00 Rainfall Amount(in): 2.000 Time of Conc(min): 10.00 Area(ac): 1.380 Time Shift(hrs): 0.00 Curve Number: 98.00 Max Allowable Q(cfs): 999999.000 DCLA(k): 0.00 DCIA(%): 0,00 -----Name: 1182 Node: 1182 Status: Onsite Group: BASE Type: SCS Unit Hydrograph

Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.580 Curve Number: 80.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 \_\_\_\_\_\_ Status: Onsite Name: 1184 Node: 1184 Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Peaking Factor: 256.0 L rimod Autount(in): 2.000 Area(ac): 0.697 Curve Number: 92.00 DCIA(%): 0.00 Time of Conc(min): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Rainfall File: Flmod Rainfall Amount(in): 2.000 Node: 1186 Type: SCS Unit Hydrograph Name: 1186 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Peaking Factor: 256.0 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 2.330 Curve Number: 98.00 DCIA(%): 0.00 Storm Duration(hrs): 24.00 Time of Conc(min): 15.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Status: Onsite Name: 1188 Node: 1188 Group: BASE Type: SCS Unit Hydrograph Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Rainfall File: Flmod Kainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 0.620 Curve Number: 98.00 DCIA(%): 0.00 \*\*\*\*\* Name: 1329 Node: 1329 Status: Onsite Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Rainfall File: Flmod S Rainfall Amount(in): 2.000 Area(ac): 1.910 Curve Number: 80.00 Ma DCIA(%): 0.00 Peaking Factor: 256.0 Feaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Name: 1337 Node: 1337 Status: Onsite Group: BASE Type: SCS Unit Hydrograph Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Unit Hydrograph: Uh256 Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 3.910 Curve Number: 80.00 Curve Number: 80.00 DCIA(%): 0.00 Name: 1347A Node: 1347A Type: SCS Unit Hydrograph Status: Onsite Group: BASE 
 Unit Hydrograph:
 Uh256
 Peaking Factor:
 256.0

 Rainfall File:
 Flmod
 Storm Duration(hrs):
 24.00

 Rainfall Amount(in):
 2.000
 Time of Conc(min):
 10.00

 Area(ac):
 2.400
 Time Shift(hrs):
 0.00

 Curve Number:
 80.00
 Max Allowable Q(cfs):
 999999.000

Node: 1357 Type: SCS Unit Hydrograph Name: 1357 Status: Onsite Group: BASE Unit Hydrograph: Uh256 Peaking Factor: 256.0 Guit sydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.600 Curve Number: 80.00 DCIA(%): 0.00 Peaking Factor: 256.0 Storm Duration(hrs): 24.00 Time of Conc(min): 10.00 Time Shift(hrs): 0.00 Max Allowable Q(cfs): 999999.000 Node: 1360 Type: SCS Unit Hydrograph Name: 1360 Status: Onsite Group: BASE Peaking Factor: 256.0 Unit Hydrograph: Uh256 Rainfall File: FlmodFleating rattor: 25.0Rainfall Amount(in): 2.000Time of Conc(min): 10.00Area(ac): 2.160Time Shift(hrs): 0.00Curve Number: 80.00Max Allowable Q(cfs): 999999.000DCTA(8): 0.00DC DCIA(%): 0.00 Name: 1368 Node: 1368 Status: Onsite Group: BASE Type: SCS Unit Hydrograph Unit Hydrograph: Uh256 Rainfall File: Flmod Rainfall Amount(in): 2.000 Area(ac): 1.200 Curve Number: 80.00 DCIA(%): 0.00 Name: 1372 Node: 1372 Group: BASE Type: SCS Unit Hydrograph Status: Onsite Group: BASE Unit Hydrograph: Uh256 Peaking Factor: 256.0 Rainfall File: Flmod Storm Duration(hrs): 24.00 Rainfall Amount(in): 2.000 Time of Conc(min): 10.00 Area(ac): 2.430 Time Shift(hrs): 0.00 Curve Number: 80.00 Max Allowable Q(cfs): 999999.000 DCIA(%): 0.00 Status: Onsite Name: 1382 Node: 1382 Type: SCS Unit Hydrograph Group: BASE Unit Hydrograph: Uh256 Rainfall File: Flmod Area(ac): 2.900 Curve Number: 80.00 DCIA(%): 0.00 sees Nodes sectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectoresectorese Name: 1000 Base Flow(cfs): 0.000 Init Stage(ft): 1.100 Group: BASE Warn Stage(ft): 4.600 Type: Stage/Area Stage(ft) Area(ac) 
 Name:
 1010
 Base Flow(cfs):
 0.000
 Init Stage(ft):
 1.100

 Name:
 DIG
 < Group: BASE Warn Stage(ft): 3,800 Type: Stage/Area

| Stage (                     | ft)                        | Area(ac)                |      |            |       |      |                          |  |
|-----------------------------|----------------------------|-------------------------|------|------------|-------|------|--------------------------|--|
|                             |                            |                         |      |            |       |      |                          |  |
| Name :<br>Group :<br>Type : |                            | e let an ai an an an an | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                             | ft)                        |                         |      |            |       |      |                          |  |
|                             |                            |                         |      |            |       |      |                          |  |
| Group:                      | 1030<br>BASE<br>Stage/Area |                         | Base | Flow(cfs); | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage (                     | ft)                        | Area(ac)                |      |            |       |      |                          |  |
| Name:<br>Group:             |                            |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                             | ft)                        |                         |      |            |       |      |                          |  |
| Name:<br>Group:             |                            |                         | Base | Flow(cfs); | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage (                     | ft)                        | Area(ac)                |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type:    |                            |                         |      | Flow(cfs): |       |      | Stage(ft):<br>Stage(ft): |  |
| Stage (                     | ft)                        | Area(ac)                |      |            |       |      |                          |  |
| Name:<br>Group:             |                            |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage (                     | ft)                        | Area(ac)                |      |            |       |      |                          |  |
| 0.                          |                            |                         |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type:    |                            |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                             | ft)                        |                         |      |            |       |      |                          |  |
| -1.<br>4.                   | 770<br>630                 | 0.0017<br>0.0017        |      |            |       |      |                          |  |
| Name:<br>Group:             |                            |                         | Base | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft): |  |

|                          | (ft)                       |                  |      |            |       |                          |  |
|--------------------------|----------------------------|------------------|------|------------|-------|--------------------------|--|
| - 0                      | .090<br>.300               | 0.0003           |      |            |       |                          |  |
| Group:                   | 1090<br>BASE<br>Stage/Area |                  | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)                       | Area(ac)         |      |            |       |                          |  |
|                          | .640<br>.560               | 0.0006<br>0.0006 |      |            |       |                          |  |
| Name:<br>Group:<br>Type: |                            |                  | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
| Stage                    | (ft)                       | Area(ac)         |      |            |       |                          |  |
|                          |                            |                  |      |            |       |                          |  |
| 3.                       | .100<br>.000<br>.000       | 1,2700<br>2,1800 |      |            |       |                          |  |
| 4                        | .500                       | 2.6300           |      |            |       |                          |  |
| Group:                   | 1110<br>BASE<br>Stage/Area |                  | Base | Flow(cfs); | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | (ft)                       |                  |      |            |       |                          |  |
| -0.                      |                            | 0.0006           |      |            |       |                          |  |
| Name:<br>Group:          |                            |                  | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | ft)                        |                  |      |            |       |                          |  |
| Ο.                       | 930<br>830                 | 0.0006<br>0.0006 |      |            |       |                          |  |
| Name:<br>Group;<br>Type: |                            |                  | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |
|                          | ft)                        |                  |      |            |       |                          |  |
| 2.                       | 130<br>180                 | 0.0003<br>0.0003 |      |            |       |                          |  |
| Name:<br>Group:<br>Type: |                            |                  |      | Flow(cfs): |       | Stage(ft):<br>Stage(ft): |  |
| Stage (                  | ft)                        | Area(ac)         |      |            |       |                          |  |
| 2.                       | 290<br>040                 | 0.0003           |      |            |       |                          |  |
| Name:                    | 1118<br>BASE               |                  | Base | Flow(cfs): | 0.000 | Stage(ft):<br>Stage(ft): |  |

|                             | (ft)                       | Area(ac)                                   |      |            |       |      |                          |  |
|-----------------------------|----------------------------|--------------------------------------------|------|------------|-------|------|--------------------------|--|
|                             | . 0 0 0                    | 0.6600                                     |      |            |       |      |                          |  |
| б.                          | .000                       | 0.9000                                     |      |            |       |      |                          |  |
|                             | 1120<br>BASE<br>Stage/Area |                                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage                       | (ft)                       | Area(ac)                                   |      |            |       |      |                          |  |
|                             | .940<br>.260               | 0.0003<br>0.0003                           |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type:    |                            |                                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage                       | (ft)                       | Area(ac)                                   |      |            |       |      |                          |  |
| -0.                         | .940<br>.360               | 0.0006<br>0.0006                           |      |            |       |      |                          |  |
| Group:                      | 1132<br>BASE<br>Stage/Area |                                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage                       | (ft)                       | Area(ac)                                   |      |            |       |      |                          |  |
|                             | 380<br>120                 | 0.0003<br>0.0003                           |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type:    |                            |                                            | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
| Stage (                     | ft)                        | Area(ac)                                   |      |            |       |      |                          |  |
|                             | 000                        | 0.2130<br>0.3670                           |      |            |       |      |                          |  |
| Name:<br>Group:<br>Type:    |                            |                                            | Base | Flow(cfs); | 0.000 |      | Stage(ft):<br>Stage(ft): |  |
|                             | ft)                        |                                            |      |            |       |      |                          |  |
| -1.<br>4.                   | 000<br>200                 | 0.0006<br>0.0006                           |      |            |       |      |                          |  |
| Name:<br>Group:             |                            |                                            | Base | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft): |  |
| Stage (                     | ft)                        | Area(ac)                                   |      |            |       |      |                          |  |
| 0.                          | 170<br>720                 | 0.0003<br>0.0003                           |      |            |       |      |                          |  |
| Name :<br>Group :<br>Type : |                            | n 1657 ann 1669 1669 1669 1669 1669 1669 1 | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |  |

| Stage                              | (ft)                       | Area(ac)                             |      |                       |       |              |                          |                |
|------------------------------------|----------------------------|--------------------------------------|------|-----------------------|-------|--------------|--------------------------|----------------|
|                                    | .040<br>.940               | 0.0003<br>0.0003                     |      |                       |       |              |                          |                |
| Group:                             | 1146<br>BASE<br>Stage/Area |                                      |      | Flow(cfs):            |       | Init         | Stage(ft):<br>Stage(ft): |                |
| .34                                |                            |                                      |      |                       |       |              |                          |                |
| Stage                              | (ft)                       |                                      |      |                       |       |              |                          |                |
| 5<br>5<br>5                        |                            | 0.0000<br>0.4567<br>0.9133<br>1.3700 |      |                       |       |              |                          |                |
| Name:<br>Group;                    | 1150<br>BASE<br>Stage/Area |                                      |      | Flow(cfs):            |       |              | Stage(ft):<br>Stage(ft): |                |
|                                    | (ft)                       |                                      |      |                       |       |              |                          |                |
|                                    | .960<br>.490               |                                      |      |                       |       |              |                          |                |
| Group:                             | 1151<br>BASE<br>Stage/Area |                                      | Base | Flow(cfs):            | 0.000 | Init<br>Warn | Stage(ft):<br>Stage(ft): | 1.600<br>6.000 |
| .51                                |                            |                                      |      |                       |       |              |                          |                |
| Stage                              | (ft)                       |                                      |      |                       |       |              |                          |                |
| 4<br>5<br>5                        | 160<br>200<br>500<br>000   | 0.0000<br>0.4300<br>0.8600<br>1.2900 |      |                       |       |              |                          |                |
| Name:<br>Group:                    | 1160<br>BASE<br>Stage/Area |                                      |      | <pre>Flow(cfs);</pre> | 0.000 | Init         | Stage(ft):<br>Stage(ft): | 1.100          |
| Stage                              | (ft)                       | Area(ac)                             |      |                       |       |              |                          |                |
|                                    | 490<br>860                 |                                      |      |                       |       |              |                          |                |
| Name:<br>Group:<br>Type:           |                            |                                      |      | Flow(cfs):            | 0.000 | Init         | Stage(ft):<br>Stage(ft): |                |
| 01                                 |                            |                                      |      |                       |       |              |                          |                |
|                                    | ft)                        |                                      |      |                       |       |              |                          |                |
| 4.<br>5.<br>5.                     |                            | 0.0000<br>0.4600<br>0.9200<br>1.3800 |      |                       |       |              |                          |                |
|                                    |                            |                                      | Base | Flow(cfs):            | 0.000 |              | Stage(ft):<br>Stage(ft): |                |
| Name:<br>Group:                    | Stage/Area                 |                                      |      |                       |       |              |                          |                |
| Name:<br>Group:<br>Type:<br>Stage( |                            |                                      |      |                       |       |              |                          |                |

| Name:<br>Group:<br>Type: |                                 |                                                | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|--------------------------|---------------------------------|------------------------------------------------|------|------------|-------|------|--------------------------|-------|
|                          | (ft)                            |                                                |      |            |       |      |                          |       |
| ~ 0                      | .780<br>.920                    | 0.0006<br>0.0006                               |      |            |       |      |                          |       |
| Name:<br>Group:          |                                 |                                                | Варе | Flow(cfs); | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                            |                                                |      |            |       |      |                          |       |
| -0                       | .200<br>.600                    | 0.0003<br>0.0003                               |      |            |       |      |                          |       |
| Name:<br>Group:<br>Type: |                                 |                                                | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                            | Area(ac)                                       |      |            |       |      |                          |       |
| 4.                       | .430<br>.620                    | 0.0003<br>0.0003                               |      |            |       |      |                          |       |
| Name:<br>Group:          |                                 |                                                | Base | Flow(cfs); | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                            | Area(ac)                                       |      |            |       |      |                          |       |
| 4 -<br>5 -<br>5 -<br>5 - | 810<br>320<br>490<br>500<br>840 | 0.0000<br>0.5825<br>1.1650<br>1.7475<br>2.3300 |      |            |       |      |                          |       |
| Name:<br>Group:<br>Type: |                                 |                                                | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage (                  |                                 | Area(ac)                                       |      |            |       |      |                          |       |
| 5.                       | 400<br>600                      | 0.0000<br>0.6200                               |      |            |       |      |                          |       |
| Name:<br>Group:          | 1325                            |                                                |      | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft): | 1.100 |
|                          | ft)                             |                                                |      |            |       |      |                          |       |
| -0.<br>5.                | 500<br>180                      | 0.0006<br>0.0006                               |      |            |       |      |                          |       |
| Name:<br>Group:          |                                 |                                                |      | Flow(cfs): |       |      | Stage(ft):<br>Stage(ft): |       |
| Stage (                  | ft)                             | Area(ac)                                       |      |            |       |      |                          |       |
| -0.                      | 500<br>560                      | 0.0006                                         |      |            |       |      |                          |       |
|                          |                                 |                                                |      |            |       |      |                          |       |

| Name: 1329<br>Group: BASI<br>Type: Stag | 3                | Base   | Flow(cfs): | 0.000 |      | <pre>Stage(ft): Stage(ft):</pre> |       |
|-----------------------------------------|------------------|--------|------------|-------|------|----------------------------------|-------|
|                                         | Area(ac)         |        |            |       |      |                                  |       |
| -0.500<br>5.690                         | 0.0006<br>0.0006 |        |            |       |      |                                  |       |
| Name: 1334<br>Group: BASH<br>Type: Stag | 3                | Base   | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft):         |       |
|                                         | Area(ac)         |        |            |       |      |                                  |       |
| -0.500<br>5.220                         |                  |        |            |       |      |                                  |       |
| Name: 1335<br>Group: BASE<br>Type: Stag | 1                | Base   | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft):         |       |
|                                         | Area(ac)         |        |            |       |      |                                  |       |
| -0.500<br>4.680                         | 0.0006           |        |            |       |      |                                  |       |
| Name: 1337<br>Group: BASE<br>Type: Stag |                  |        | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft):         |       |
|                                         | Area (ac)        |        |            |       |      |                                  |       |
| -0.470<br>5.220                         | 0.0006<br>0.0006 |        |            |       |      |                                  |       |
| Name: 1338<br>Group: BASE<br>Type: Stag | E                | Base : | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft):         | 1,100 |
|                                         | Area(ac)         |        |            |       |      |                                  |       |
| -0.480<br>5.320                         | 0.0006<br>0.0006 |        |            |       |      |                                  |       |
| Name: 1339<br>Group: BASE<br>Type: Stag |                  |        | Flow(cfs): |       | Init | Stage(ft):<br>Stage(ft):         | 1.100 |
|                                         | Area(ac)         |        |            |       |      |                                  |       |
| -0.520<br>5.200                         | 0.0006<br>0.0006 |        |            |       |      |                                  |       |
| Name: 1340<br>Group: BASE<br>Type: Stag |                  |        | Flow(cfs): |       | Init | Stage(ft):<br>Stage(ft):         |       |
|                                         | Area(ac)         |        |            |       |      |                                  |       |
| -0.500<br>4.430                         |                  |        |            |       |      |                                  |       |

| Name:<br>Group:<br>Type: |                             |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|--------------------------|-----------------------------|------------------|------|------------|-------|------|--------------------------|-------|
|                          | (ft)                        |                  |      |            |       |      |                          |       |
| -0<br>4                  | .500<br>.750                | 0.0006<br>0.0006 |      |            |       |      |                          |       |
| Group:                   | 1343<br>BASE<br>Stage/Area  |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                        |                  |      |            |       |      |                          |       |
| -0.                      |                             | 0.0006<br>0.0006 |      |            |       |      |                          |       |
| Name:<br>Group:<br>Type: | 1344                        |                  |      | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                        |                  |      |            |       |      |                          |       |
|                          | .520<br>.410                | 0.0006<br>0.0006 |      |            |       |      |                          |       |
| Name:<br>Group:<br>Type: | 1345                        |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                        |                  |      |            |       |      |                          |       |
|                          | .500<br>.730                |                  |      |            |       |      |                          |       |
| Name:<br>Group:          |                             |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                        | Area(ac)         |      |            |       |      |                          |       |
|                          | .500<br>.880                | 0.0006           |      |            |       |      |                          |       |
| Name:<br>Group:          | 1347A<br>BASE<br>Stage/Area |                  | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                        | Area(ac)         |      |            |       |      |                          |       |
| -0.                      | .500<br>.750                | 0.0006<br>0.0006 |      |            |       |      |                          |       |
| Name:<br>Group:          | 1348                        |                  |      | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft): | 1.100 |
|                          | (ft)                        |                  |      |            |       |      |                          |       |
| ~0.                      | .490<br>.570                | 0.0006<br>0.0006 |      |            |       |      |                          |       |

| Name:<br>Group:<br>Type: |                            |                  | Base | <pre>Flow(cfs);</pre> | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|--------------------------|----------------------------|------------------|------|-----------------------|-------|------|--------------------------|-------|
|                          | (ft)                       |                  |      |                       |       |      |                          |       |
|                          | .500<br>.700               |                  |      |                       |       |      |                          |       |
| Name:<br>Group:<br>Type: |                            |                  | Base | Flow(cfs):            | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                       |                  |      |                       |       |      |                          |       |
| - 0                      | .480<br>.780               | 0.0006<br>0.0006 |      |                       |       |      |                          |       |
| Name:<br>Group:<br>Type; |                            |                  | Base | Flow(cfs):            | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                       |                  |      |                       |       |      |                          |       |
|                          | .500<br>.850               | 0.0006<br>0.0006 |      |                       |       |      |                          |       |
| Name:<br>Group:<br>Type: |                            |                  | Base | Flow(cfs);            | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                       | Area(ac)         |      |                       |       |      |                          |       |
|                          | .540<br>960                | 0.0006<br>0.0006 |      |                       |       |      |                          |       |
| Name;<br>Group:<br>Type; |                            |                  | Base | Flow(cfs):            | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                       | Area(ac)         |      |                       |       |      |                          |       |
| -0.                      | 520<br>720                 | 0.0006           |      |                       |       |      |                          |       |
| Name:<br>Group:          | 1357                       |                  |      | Flow(cfs):            | 0.000 | Init | Stage(ft):<br>Stage(ft): | 1.100 |
|                          | ft)                        |                  |      |                       |       |      |                          |       |
| -0.                      | 520<br>880                 | 0.0006           |      |                       |       |      |                          |       |
| Name:<br>Group:          | 1359<br>BASE<br>Stage/Area |                  | Base | Flow(cfs):            |       |      | Stage(ft):<br>Stage(ft): |       |
| Stage (                  | ft)                        | Area(ac)         |      |                       |       |      |                          |       |
|                          |                            |                  |      |                       |       |      |                          |       |
|                          | 500<br>760                 | 0.0006           |      |                       |       |      |                          |       |

| Group:<br>Type:          | BASE<br>Stage/Area          | a                       |      |            |       | Warn | Stage(ft):               | 3.400 |
|--------------------------|-----------------------------|-------------------------|------|------------|-------|------|--------------------------|-------|
|                          | (ft)                        |                         |      |            |       |      |                          |       |
| -0                       | .510<br>.400                | 0.0006                  |      |            |       |      |                          |       |
| Name:<br>Group:          | 1362<br>BASE<br>Stage/Area  |                         |      | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                          | (ft)                        |                         |      |            |       |      |                          |       |
|                          | .000<br>.220                | 0.0005<br>0.0006        |      |            |       |      |                          |       |
| Group:                   | 1364B<br>BASE<br>Time/Stage |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft); |       |
|                          | hrs)                        |                         |      |            |       |      |                          |       |
| 1                        | 0.00<br>2.00<br>4.00        | 1.100<br>1.100<br>1.100 |      |            |       |      |                          |       |
| Group:                   | 1364C<br>BASE<br>Stage/Area |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| .64                      |                             |                         |      |            |       |      |                          |       |
|                          | (ft)                        |                         |      |            |       |      |                          |       |
| 1                        | .640<br>.750                | 0 0005                  |      |            |       |      |                          |       |
| Name:<br>Group:          |                             |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                        | Area(ac)                |      |            |       |      |                          |       |
|                          | .500<br>.730                | 0.0006<br>0,0006        |      |            |       |      |                          |       |
| Name:<br>Group:<br>Type: |                             |                         | Base | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| Stage                    | (ft)                        | Area(ac)                |      |            |       |      |                          |       |
|                          | .480<br>.680                |                         |      |            |       |      |                          |       |
| Name:<br>Group:          | 1368                        |                         |      | Flow(cfs): | 0.000 | Init | Stage(ft):<br>Stage(ft): | 1.100 |
| Stago                    | (ft)                        |                         |      |            |       |      |                          |       |
|                          |                             |                         |      |            |       |      |                          |       |
| -0.                      | 470<br>680                  | 0.0006<br>0.0006        |      |            |       |      |                          |       |

| Group:<br>Type:                               | BASE<br>Stage/Area                                                            |                                                          |          |            |       | Warn | Stage(ft):               | 3.700 |
|-----------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------|----------|------------|-------|------|--------------------------|-------|
| Sharp                                         | (ft)                                                                          | Ires (20)                                                |          |            |       |      |                          |       |
|                                               | (IC)                                                                          |                                                          |          |            |       |      |                          |       |
| -0                                            | .470<br>.500                                                                  | 0.0006                                                   |          |            |       |      |                          |       |
|                                               | .500                                                                          |                                                          |          |            |       |      |                          |       |
| Name:                                         | 1371                                                                          |                                                          |          | Flow(cfs): |       | Init | Stage(ft):               | 1.100 |
| Group:                                        | BASE<br>Stage/Area                                                            |                                                          |          |            |       | Warn | Stage(ft):               | 3.720 |
| TTPC.                                         | otage/mea                                                                     |                                                          |          |            |       |      |                          |       |
| Stage                                         | (ft)                                                                          | Area(ac)                                                 |          |            |       |      |                          |       |
|                                               | .500                                                                          |                                                          |          |            |       |      |                          |       |
|                                               | .720                                                                          | 0.0006<br>0.0006                                         |          |            |       |      |                          |       |
| Name;                                         | 1372                                                                          |                                                          | <br>Base | Flow(cfs): | 0.000 | Init | Stage(ft):               | 1.100 |
| Group;                                        | BASE                                                                          |                                                          |          |            |       | Warn | Stage(ft):               | 3.380 |
| Туре:                                         | Stage/Area                                                                    |                                                          |          |            |       |      |                          |       |
| Stade                                         | (ft)                                                                          | brog (ar)                                                |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
| -0<br>-3                                      | .480<br>.380                                                                  | 0.0006                                                   |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
| Name:<br>Group:                               |                                                                               |                                                          | Base     | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
|                                               | Stage/Area                                                                    |                                                          |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
| Stage                                         | (ft)                                                                          | Area(ac)                                                 |          |            |       |      |                          |       |
|                                               |                                                                               | 0.0006                                                   |          |            |       |      |                          |       |
| 3                                             | .290                                                                          | 0.0006                                                   |          |            |       |      |                          |       |
| Name:                                         |                                                                               |                                                          |          | Flow(cfs): | 0.000 |      | Stage(ft):               |       |
| Group:                                        |                                                                               |                                                          |          |            |       | Warn | Stage(ft):               | 3.780 |
|                                               | Stage/Area                                                                    |                                                          |          |            |       |      |                          |       |
| 35                                            |                                                                               | _ / .                                                    |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
|                                               | .850<br>.780                                                                  | 0.0005                                                   |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
| Name:                                         | 13766                                                                         |                                                          | Base     | Flow(cfs): | 0,000 |      | Stage(ft):               |       |
| Group:<br>Type:                               | BASE<br>Stage/Area                                                            |                                                          |          |            |       | Warn | Stage(ft):               | 4.000 |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
|                                               | (ft)                                                                          |                                                          |          |            |       |      |                          |       |
|                                               |                                                                               |                                                          |          |            |       |      |                          |       |
| 0.                                            |                                                                               |                                                          |          |            |       |      |                          |       |
| 0.<br>4.                                      | .830                                                                          | 0.0005                                                   |          | Flow(cfs): | 0.000 | Init | Stage(ft):               | 1.100 |
| 0.<br>4.<br>Name:<br>Group:                   | 830<br>000<br>13767<br>BASE                                                   | 0.0005                                                   |          | Flow(cfs): | 0.000 |      | Stage(ft):<br>Stage(ft): |       |
| 0.<br>4.<br>Name:<br>Group:                   | .830<br>.000<br>13767                                                         | 0.0005                                                   |          | Flow(cfs): | 0.000 |      |                          |       |
| 0<br>4<br>Name:<br>Group:<br>Type:            | 030<br>000<br>13767<br>BASE<br>Time/Stage                                     | 0.0005                                                   |          | Flow(cfs): | 0.000 |      |                          |       |
| 0.<br>4<br>Name:<br>Group:<br>Type:<br>Time(h | .030<br>.000<br>13767<br>BASE<br>Time/Stage<br>hrs) S                         | 0.0005<br>0.0005                                         |          | Flow(cfs): | 0.000 |      |                          |       |
| 0.<br>4<br>Name:<br>Group:<br>Type:<br>Time() | .030<br>.000<br>13767<br>BASE<br>Time/Stage<br>nrs) 5<br>.00<br>.00           | 0.0005<br>0.0005<br>stage(ft)<br>1.100<br>1.100          |          | Flow(cfs): | 0.000 |      |                          |       |
| 0.<br>4<br>Name:<br>Group:<br>Type:<br>Time() | .030<br>.000<br>13767<br>BASE<br>Time/Stage<br>hrs) 5<br>0.00                 | 0.0005<br>0.0005<br>:tage(ft)<br>1.100                   |          | Flow(cfs); | 0.000 |      |                          |       |
| 0.<br>4<br>Name:<br>Group:<br>Type:<br>Time() | .030<br>.000<br>13767<br>BASE<br>Time/Stage<br>hrs) S<br>0.00<br>2.00<br>1.00 | 0.0005<br>0.0005<br>:tage(ft)<br>1.100<br>1.100<br>1.100 | Base     |            |       | Warn | Stage(ft):               | 4.000 |

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| Group:<br>Type:     | BASE<br>Stage/Area      | ·                |        |                      |        |         | Warn     | Stage(ft) | : 3.520 |
|---------------------|-------------------------|------------------|--------|----------------------|--------|---------|----------|-----------|---------|
| 11100               | bougo, ne ou            |                  |        |                      |        |         |          |           |         |
| Stage (             | ft)                     | Area(ac)         |        |                      |        |         |          |           |         |
|                     | 230                     | 0.0006           |        |                      |        |         |          |           |         |
|                     | 520                     |                  |        |                      |        |         |          |           |         |
| Name:               |                         |                  | Base   | Flow(cfs):           | 0.000  |         | <br>Tnit | Stage(ft) | • 1 100 |
| Group:              | BASE                    |                  |        |                      |        |         |          | Stage(ft) |         |
| туре:               | Stage/Area              |                  |        |                      |        |         |          |           |         |
| Stage (             | ft)                     | Area(ac)         |        |                      |        |         |          |           |         |
|                     | 240                     |                  |        |                      |        |         |          |           |         |
|                     | 600                     | 0.0006<br>0.0006 |        |                      |        |         |          |           |         |
| Name:               | 1381                    |                  |        | Flow(cfs):           |        |         | Init     | Stage(ft) | : 1.100 |
| Group: C            | BASE<br>Stage/Area      |                  |        |                      |        |         |          | Stage(ft) |         |
| 11201               | Jugo/Incu               |                  |        |                      |        |         |          |           |         |
|                     | £t)                     |                  |        |                      |        |         |          |           |         |
| 0.3                 | 290                     | 0.0006           |        |                      |        |         |          |           |         |
| 3.1                 | 580                     | 0.0005           |        |                      |        |         |          |           |         |
| Name:               | 1382                    | *******          | Base 1 | Flow(cfs):           | 0.000  |         | Init     | Stage(ft) | : 1.100 |
| Group: H<br>Type: S | BASE<br>Stage/Area      |                  |        |                      |        |         | Warn     | Stage(ft) | : 3.610 |
| ··· 2 A · · · ·     |                         |                  |        |                      |        |         |          |           |         |
| Stage (1            | Ét)                     | Area(ac)         |        |                      |        |         |          |           |         |
|                     | <br>330                 |                  |        |                      |        |         |          |           |         |
|                     | 510                     | 0.0006           |        |                      |        |         |          |           |         |
|                     |                         |                  |        |                      |        |         |          |           |         |
| ************        |                         |                  | ****** |                      |        | ======= |          |           |         |
| Encroad             | Name: 100<br>chment: No | 0                |        |                      | Group: | BASE    |          |           |         |
|                     |                         |                  |        |                      |        |         |          |           |         |
|                     | t) Eleva                |                  |        |                      |        |         |          |           |         |
| 100.0               |                         | 4.600            |        | 0.045000             |        |         |          |           |         |
| 200.0<br>211.7      |                         | 4.600<br>2.80D   |        | 0.045000             |        |         |          |           |         |
| 216.7<br>221.7      | 50                      | 1.250<br>2.200   |        | 0.045000             |        |         |          |           |         |
| 227.6               | 10                      | 5.200            |        | 0.045000<br>0.045000 |        |         |          |           |         |
| 327.6               |                         |                  |        | 0.045000             |        |         |          |           |         |
|                     | Name; 1010              |                  |        |                      | Group: | BASE    |          | -         |         |
| Encroac             | hment: No               |                  |        |                      |        |         |          |           |         |
| Station(f           | t) Elevat               | tion(ft)         | Ma     | ππίπα'ς Ν            |        |         |          |           |         |
| 100.0               |                         |                  |        |                      |        |         |          |           |         |
| 200.0               | 00                      | 3.800            |        | 0.045000             |        |         |          |           |         |
| 205.2<br>210.5      |                         | 2.700<br>2.030   |        | 0.045000<br>0.045000 |        |         |          |           |         |
| 215.7               | 50                      | 2.600            |        | 0.045000             |        |         |          |           |         |
| 221.1<br>321.1      |                         | 5.200<br>5.200   |        | 0.045000<br>0.045000 |        |         |          |           |         |
|                     |                         |                  |        |                      |        |         |          | -         |         |
| Encroac             | Name: 1020<br>hment: No | )                |        |                      | Group: | BASE    |          |           |         |
|                     |                         |                  |        |                      |        |         |          |           |         |

|                                                                                                                                                                                                                                          | Elevation(ft)                                                                                                                                                                           |                                                                                                                                                                                                                                                 |                  |                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------|
| 100.000                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0,045000                                                                                                                                                                                                                                        |                  |                                         |
| 200.000                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 202.350                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 207.940                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 213.520                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 217.010                                                                                                                                                                                                                                  | F                                                                                                                                                                                       | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 317.010                                                                                                                                                                                                                                  | 4.300                                                                                                                                                                                   | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| Nar                                                                                                                                                                                                                                      | ne: 1030                                                                                                                                                                                |                                                                                                                                                                                                                                                 | Group:           | BASE                                    |
| Encroachmen                                                                                                                                                                                                                              | nt: No                                                                                                                                                                                  |                                                                                                                                                                                                                                                 | -                |                                         |
|                                                                                                                                                                                                                                          |                                                                                                                                                                                         |                                                                                                                                                                                                                                                 |                  |                                         |
| Station(ft)                                                                                                                                                                                                                              | Elevation(ft)                                                                                                                                                                           | Manning's N                                                                                                                                                                                                                                     |                  |                                         |
| 100.000                                                                                                                                                                                                                                  | 3.700                                                                                                                                                                                   | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 200.000                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 202,670                                                                                                                                                                                                                                  | 2,900                                                                                                                                                                                   | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 209,130                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 215.580<br>220.540                                                                                                                                                                                                                       |                                                                                                                                                                                         | $0.045000 \\ 0.045000$                                                                                                                                                                                                                          |                  |                                         |
| 320.540                                                                                                                                                                                                                                  | 4.700                                                                                                                                                                                   | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| ****                                                                                                                                                                                                                                     |                                                                                                                                                                                         |                                                                                                                                                                                                                                                 |                  |                                         |
|                                                                                                                                                                                                                                          | ne: 1040                                                                                                                                                                                |                                                                                                                                                                                                                                                 | Group:           |                                         |
| Encroachmer                                                                                                                                                                                                                              | nt: No                                                                                                                                                                                  |                                                                                                                                                                                                                                                 |                  |                                         |
|                                                                                                                                                                                                                                          |                                                                                                                                                                                         |                                                                                                                                                                                                                                                 |                  |                                         |
| Station(ft)                                                                                                                                                                                                                              | Elevation(ft)                                                                                                                                                                           |                                                                                                                                                                                                                                                 |                  |                                         |
| 100.000                                                                                                                                                                                                                                  | 3.600                                                                                                                                                                                   | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 200.000                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 205.090                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0,045000                                                                                                                                                                                                                                        |                  |                                         |
| 219.560                                                                                                                                                                                                                                  |                                                                                                                                                                                         | 0.045000                                                                                                                                                                                                                                        |                  |                                         |
| 222.940<br>322.940                                                                                                                                                                                                                       |                                                                                                                                                                                         | 0.045000<br>0.045000                                                                                                                                                                                                                            |                  |                                         |
|                                                                                                                                                                                                                                          |                                                                                                                                                                                         |                                                                                                                                                                                                                                                 |                  |                                         |
|                                                                                                                                                                                                                                          |                                                                                                                                                                                         |                                                                                                                                                                                                                                                 |                  | ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ |
| Nan                                                                                                                                                                                                                                      | ne: 1050                                                                                                                                                                                | *****                                                                                                                                                                                                                                           |                  | BASE                                    |
| Nan<br>Encroachmen                                                                                                                                                                                                                       | ne: 1050                                                                                                                                                                                |                                                                                                                                                                                                                                                 | Group:           | BASE                                    |
|                                                                                                                                                                                                                                          | ne: 1050                                                                                                                                                                                |                                                                                                                                                                                                                                                 |                  | BASE                                    |
| Encroachmer<br>Station(ft)                                                                                                                                                                                                               | ne: 1050<br>ht: No<br>Elevation(ft)                                                                                                                                                     | Manning's N                                                                                                                                                                                                                                     |                  | BASE                                    |
| Encroachmer<br>Station(ft)                                                                                                                                                                                                               | ne: 1050<br>ht: No<br>Elevation(ft)                                                                                                                                                     | Manning's N                                                                                                                                                                                                                                     |                  | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000                                                                                                                                                                                                    | ne: 1050<br>nt: No<br>Elevation(ft)<br>                                                                                                                                                 | Manning's N<br>0.045000                                                                                                                                                                                                                         |                  | BASE                                    |
| Encroachmer<br>Station(ft)                                                                                                                                                                                                               | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000                                                                                                                                   | Manning's N                                                                                                                                                                                                                                     |                  | BASE                                    |
| Encroachmer<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370                                                                                                                                                                   | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900                                                                                                                 | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                                                     |                  | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120                                                                                                                                                        | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900                                                                                                        | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                                         |                  | BASE                                    |
| Encroachmer<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370                                                                                                                                                                   | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900                                                                                                                 | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                                                     |                  | BASE                                    |
| Encroachmer<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120                                                                                                                                             | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900                                                                                                        | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                                         |                  |                                         |
| Encroachmer<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120                                                                                                                                             | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>a.900                                                                                      | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                                         | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam                                                                                                                                      | ne: 1050<br>nt: No<br>Elevation(ft)<br>5.000<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>a.900                                                                                      | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                                         | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)                                                                                                        | ne: 1050<br>it: No<br>Elevation(ft)<br>5.000<br>2.700<br>2.900<br>4.900<br>4.900<br>it: No<br>Elevation(ft)                                                                             | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                                                                             | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)                                                                                                        | <pre>he: 1050 ht: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 4.900 ht: No Elevation(ft)</pre>                                                                                 | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>Manning's N                                                                                                                                              | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000                                                                                             | <pre>he: 1050 ht: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 he: 1060 ht: No Elevation(ft) 5.100</pre>                                                                        | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>Manning's N<br>0.045000                                                                                                                                  | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)                                                                                                        | <pre>he: 1050 ht: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 4.900 ht: No Elevation(ft)</pre>                                                                                 | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>Manning's N                                                                                                                                              | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310                                                                       | <pre>he: 1050 ht: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 4.900 he: 1060 ht: No Elevation(ft) 5.100 5.100 3.200 3.600</pre>                                                | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>Manning's N<br>0.045000<br>0.045000                                                                                                                      | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060                                                            | <pre>he: 1050 ht: No Elevation(ft)</pre>                                                                                                                                                | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                         | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310                                                                       | <pre>he: 1050 ht: No Elevation(ft) 5.000 2.700 2.900 4.900 4.900 ht: No Elevation(ft) 5.100 5.100 5.100 3.200 3.600 6.900</pre>                                                         | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                                                                 | Group:           |                                         |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060<br>325.060                                                 | <pre>he: 1050 ht: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 4.900 he: 1060 ht: No Elevation(ft) 5.100 5.100 3.200 3.600 6.900 6.900</pre>                                    | Manning'S N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060<br>325.060                                                 | <pre>he: 1050 ht: No Elevation(ft) 5.000 2.700 2.900 4.900 4.900 4.900 ht: No Elevation(ft) 5.100 5.100 5.100 3.200 3.600 6.900 he: 1080W</pre>                                         | Manning'S N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060<br>325.060                                                                | <pre>he: 1050 ht: No Elevation(ft) 5.000 2.700 2.900 4.900 4.900 4.900 ht: No Elevation(ft) 5.100 5.100 5.100 3.200 3.600 6.900 he: 1080W</pre>                                         | Manning'S N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Nam<br>Encroachmen                           | <pre>he: 1050 ht: No Elevation(ft)</pre>                                                                                                                                                | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                                             | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>200.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Nam<br>Encroachmen<br>Station(ft) | <pre>he: 1050 ht: No Elevation(ft) 5.000 2.700 2.900 4.900 4.900 4.900 ht: No Elevation(ft) 5.100 5.100 5.100 3.200 3.600 6.900 he: 1080W</pre>                                         | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                                     | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Nam<br>Encroachmen<br>Station(ft)                       | <pre>he: 1050 ht: No Elevation(ft)</pre>                                                                                                                                                | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Nam<br>Encroachmen<br>Station(ft)<br>0.000<br>0.100     | <pre>he: 1050 ht: No Elevation(ft) 5.000 5.000 2.700 2.900 4.900 4.900 4.900 4.900 ht: No Elevation(ft) ft) ft: No Elevation(ft) ft: No Elevation(ft) ft: No Elevation(ft) ft: No</pre> | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000 | Group:<br>Group: | BASE                                    |
| Encroachmen<br>Station(ft)<br>100.000<br>205.620<br>209.370<br>213.120<br>313.120<br>Nam<br>Encroachmen<br>Station(ft)<br>100.000<br>205.800<br>220.310<br>225.060<br>325.060<br>Nam<br>Encroachmen<br>Station(ft)                       | <pre>he: 1050 ht: No Elevation(ft)</pre>                                                                                                                                                | Manning's N<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000<br>0.045000                         | Group:<br>Group: | BASE                                    |

|                    | me: 1114W           |                                                     | Group: |      |
|--------------------|---------------------|-----------------------------------------------------|--------|------|
| Ener oderine       |                     |                                                     |        |      |
|                    | Elevation(ft)       |                                                     |        |      |
| 0.000<br>0.100     |                     | 0.000000<br>0.000000                                |        |      |
| 15,900             | 5.700               | 0.00000                                             |        |      |
| 16.000             |                     | 0.000000                                            |        |      |
|                    | me: 1116W           |                                                     | Group: |      |
| Encruacimie.       | ne: No              |                                                     |        |      |
| Station(ft)        | Elevation(ft)       | Manning's N                                         |        |      |
| 0.000              | 5.540               | 0.000000                                            |        |      |
| 0.100<br>15.900    |                     | D.000000<br>D.000000                                |        |      |
| 16.000             | 6.250               | 0.00000                                             |        |      |
| Na                 | me: 1144W           |                                                     | Group: |      |
| Encroachme         | nt: No              |                                                     |        |      |
|                    | Elevation(ft)       |                                                     |        |      |
| 0.000              |                     | 0.000000                                            |        |      |
| 0.100<br>43.900    |                     | 0.000000                                            |        |      |
| 44.000             |                     | 0.000000                                            |        |      |
| Nai                | ne: 1184W           | NT 88 TH TO THE AN | Group: |      |
| Encroachme         | nt; No              |                                                     |        |      |
|                    | Elevation(ft)       |                                                     |        |      |
| 0.000              | 5 380               | 0 000000                                            |        |      |
| 0.100<br>22.000    |                     | 0.000000                                            |        |      |
| 43.900             | 4.880               | 0.00000                                             |        |      |
| 44.000             | 5.380               | 0.00000                                             |        |      |
| Nar<br>Encroachmer | ne: 1329W<br>nt: No |                                                     | Group: | BASE |
|                    |                     |                                                     |        |      |
|                    | Elevation(ft)       |                                                     |        |      |
| 0.000<br>1.000     | 5.970<br>5.720      | 0,000000<br>0,000000                                |        |      |
| 6.000              | 5.620               | 0.00000                                             |        |      |
| 8,000<br>30,000    | 5.220<br>5.900      | 0,000000<br>0,000000                                |        |      |
| 52.000             | 5.240               | 0.00000                                             |        |      |
| 54.000<br>59.000   | 5.620<br>5.720      | 0.000000<br>0.000000                                |        |      |
| 60.000             | 5.970               | 0.000000                                            |        |      |
| Nan                | ne: 1337W           |                                                     | Group: |      |
| Encroachmen        | it: No              |                                                     |        |      |
|                    | Elevation(ft)       | Manning's N                                         |        |      |
| 0.000              | 5.380               | 0.00000                                             |        |      |
| 1.000<br>5.000     | 5.130<br>5.050      | 0.000000<br>0.000000                                |        |      |
| 7,000              | 4,670               | 0.000000                                            |        |      |
| 29.000             | 4.330               | 0,000000                                            |        |      |

| 51.000<br>53.000<br>58.000 | 4.670<br>5.050<br>5.150 | 0.000000<br>0.000000<br>0.000000 |        |      |
|----------------------------|-------------------------|----------------------------------|--------|------|
|                            | 5.010                   | 0.00000.0                        |        |      |
| Na<br>Encroachme           | me: 1347AW<br>nt: No    |                                  | Group: | BASE |
| Station(ft)                | Elevation(ft)           |                                  |        |      |
| 0.000                      | 3.850                   | 0.00000                          |        |      |
| 1.000<br>5.000             | 3.700<br>3.620          | 0.000000                         |        |      |
| 7.000                      | 3.240                   | 0.000000                         |        |      |
| 29.000<br>51.000           | 3.900<br>3.240          | 0.000000                         |        |      |
| 53.000                     | 3,620                   | 0.000000                         |        |      |
| 58.000<br>60.000           | 3.720<br>4.220          | 0,000000<br>0.000000             |        |      |
|                            | me: 1357W<br>nt: No     |                                  | Group: | BASE |
| Station(ft)                | Elevation(ft)           | Manning's N                      |        |      |
| 0.000                      | 4.230                   |                                  |        |      |
| 1.000                      | 3.980                   | 0.000000                         |        |      |
| 5.000                      | 3.900                   | 0.000000                         |        |      |
| 11.000<br>13.000           | 3.900<br>3.520          | 0,000000<br>0.000000             |        |      |
| 29.000                     | 4.000                   | 0.000000                         |        |      |
| 45.000<br>47.000           | 3.520<br>3.900          | 0.000000<br>0.000000             |        |      |
| 52.000                     | 4.000                   | 0.00000                          |        |      |
| 60.000                     | 6.000                   | 0.000000                         |        |      |
| Na<br>Encroachme           | ne: 1360W<br>nt: No     |                                  | Group: | BASE |
|                            | Elevation(ft)           |                                  |        |      |
| 0.000                      | 3,800                   | 0,00000                          |        |      |
| 1.000                      | 3.550                   | 0.00000                          |        |      |
| 5.000<br>7.000             | 3.470<br>3.090          | 0.000000<br>0.000000             |        |      |
| 29.000                     | 3.750                   | 0.000000                         |        |      |
| 51.000<br>53.000           | 3,090<br>3,470          | 0.000000<br>0.000000             |        |      |
| 58,000                     | 3.570                   | 0.00000                          |        |      |
| 60.000                     | 4.070                   | 0.000000                         |        |      |
| Nar<br>Encroachmer         | ne: 1368W               |                                  | Group: | BASE |
|                            | Elevation(ft)           |                                  |        |      |
| 0.000                      | 4.220                   | 0,000000                         |        |      |
| 1.000<br>11.000            | 3.970<br>3.770          | 0.000000<br>0.000000             |        |      |
| 13.000                     | 3.400                   | 0,00000                          |        |      |
| 29.000<br>45.000           | 3,900                   | 0.000000                         |        |      |
| 47,000                     | 3.400<br>3.770          | 0.000000                         |        |      |
| 59.000<br>60.000           | 4.010<br>4.260          | 0.000000                         |        |      |
|                            | ne: 1372W               |                                  | Group: |      |
| Encroachmen                |                         |                                  | -      |      |
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| 1.60<br>4.63<br>Here Pipes ===<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):                                                                                                                           | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10.00<br>10.00<br>DOM<br>Cir<br>30.<br>30.<br>2.2<br>0.0<br>0.0                                                                                   | From Node: 1<br>To Node: 2<br>NSTREAM<br>Cular<br>00<br>00<br>270<br>113000                                                                  | 1040<br>1050<br>S                                                                                           | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Colution Algorithm:<br>Flow:<br>Courter Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                          | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>Pipes ===<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Op Clip(in):<br>Bot Clip(in):                                                                                                               | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30,00<br>2.200<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 10.00<br>10.00<br>DOW<br>Cir<br>30.<br>30.<br>2.2<br>0.0<br>0.0<br>0.0                                                                            | From Node: 1<br>To Node: 2<br>NSTREAM<br>Cular<br>00<br>00<br>270<br>113000<br>00<br>00                                                      | 1040<br>1050<br>S                                                                                           | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Colution Algorithm:<br>Flow:<br>Courter Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                          | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>Pipes ===<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>'op Clip(in):<br>iot Clip(in):                                                                                                              | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10.00<br>10.00<br>DOW<br>Cir<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>Descript                                                                       | From Node: 1<br>To Node: 2<br>INSTREAM<br>Cular<br>00<br>00<br>13000<br>00<br>00<br>00                                                       | 1040<br>1050<br>S                                                                                           | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Colution Algorithm:<br>Flow:<br>Courter Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                          | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>**** Pipes ***<br>Rise Fipes ***<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>Op Clip(in):<br>Not Clip(in):                                                                                               | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>1.11et Edge for the second seco | 10.00<br>10.00<br>DOW<br>Cir<br>30.<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0                                    | From Node:<br>To Node:<br>NSTREAM<br>Cular<br>00<br>00<br>270<br>13000<br>00<br>00<br>00                                                     | 1040<br>1050<br>S                                                                                           | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Colution Algorithm:<br>Flow:<br>Courter Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                          | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1.60<br>4.63<br>**** Pipes ===<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>tot Clip(in):<br>stream FHWA<br>rcular Concr<br>wnstream FHW                                                           | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>1nlet Edge 1<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>************************************                                                                                                                                                                                                 | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>1nlet Edge 1<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>1nlet Edge 1<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>1nlet Edge 1<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| 1.60<br>4.63<br>************************************                                                                                                                                                                                                 | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>1nlet Edge 1<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| 1.60<br>4.63<br>Server Pipes ===<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>Op Clip(in):<br>Not Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Not concr                                         | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>1nlet Edge<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| 1.60<br>4.63<br>*** Pipes ===<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):<br>Bot Clip(in):<br>Sot Clip(in):<br>ostream FHWA<br>rcular Concr                                                      | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>1nlet Edge<br>ete: Square<br>A Inlet Edge<br>tet: Square<br>1080                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| 1.60<br>4.63<br>*** Pipes ***<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):<br>Bot Clip(in):<br>Sot Clip(in):<br>Ostream FHWA<br>Incular Concr                                                              | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>1nlet Edge<br>ete: Square<br>A Inlet Edge<br>tet: Square<br>1080                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| 1.60<br>4.63<br>**** Pipes ===<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>Op Clip(in):<br>Op Clip(in):<br>Ot Clip(in):<br>Ot Clip(in):<br>Stream FHW<br>rcular Concr<br>wnstream FHW<br>rcular Concr | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>1nlet Edge<br>ete: Square<br>A Inlet Edge<br>te: Square<br>1080<br>BASE<br>UPSTREAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10.00<br>10.00<br>DOW<br>Cir<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>Descript<br>edge w/<br>e Descri                                                | From Node: 1<br>To Node: 2<br>NNSTREAM<br>Cular<br>00<br>00<br>13000<br>00<br>00<br>00<br>100<br>100<br>100<br>100<br>10                     | 1040<br>1050<br>S<br>E<br>L080<br>L100                                                                      | Length(ft):<br>Count:<br>Friction Equation:<br>solution Algorithm:<br>Flow:<br>Intrance Loss Coef:<br>Eend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm;                                                          | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>Unlet Edge<br>ete: Square<br>A Inlet Edge<br>tet: Square<br>1080<br>BASE<br>UPSTREAM<br>Circular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10.00<br>10.00<br>DOW<br>Cir<br>30.<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0                                    | From Node: 1<br>To Node: 1<br>NSTREAM<br>Cular<br>00<br>00<br>13000<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00  | 1040<br>1050<br>S<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Intrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Flow:                                                     | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge<br>ete: Square<br>A Inlet Edge<br>tet: Square<br>1080<br>BASE<br>UPSTREAM<br>Circular<br>36.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10.00<br>10.00<br>DOW<br>Cir<br>edge w/<br>e Descript<br>edge w/<br>DOW<br>Cir<br>36.                                                             | From Node: 1<br>To Node: 2<br>NSTREAM<br>Cular<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00                 | 1040<br>1050<br>S<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E | Length(ft):<br>Count:<br>Friction Equation:<br>folution Algorithm:<br>Exit Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Flow:<br>ntrance Loss Coef:                                        | 0.00<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| 1.60<br>4.63<br>4.63<br>For Pipes ===<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Invert(ft):<br>Op Clip(in):<br>Op Clip(in):<br>Ot Clip(in):<br>Ot Clip(in):<br>Stream FHW<br>rcular Concr<br>Wnstream FHW<br>rcular Concr             | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge<br>ete: Square<br>A Inlet Edge<br>tete: Square<br>1080<br>BASE<br>UPSTREAM<br>Circular<br>36.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10.00<br>10.00<br>10.00<br>Dow<br>Cir<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>Descript<br>edge w/<br>edge w/<br>edge w/<br>Dow<br>Cir<br>36.<br>36. | From Node: 1<br>To Node: 2<br>NSTREAM<br>cular<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00                 | 1040<br>1050<br>S<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E | Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Flow:<br>htrance Loss Coef:<br>Eend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Flow:<br>ntrance Loss Coef:<br>Exit Loss Coef:          | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 |
| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>Inlet Edge<br>ete: Square<br>A Inlet Edge<br>tet: Square<br>1080<br>BASE<br>UPSTREAM<br>Circular<br>36.00<br>36.00<br>-0.090                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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                         | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge<br>ete: Square<br>A Inlet Edge<br>ete: Square<br>1080<br>BASE<br>UPSTREAM<br>Circular<br>36.00<br>36.00<br>-0.090<br>0.013000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 10.00<br>10.00<br>10.00<br>DOW<br>Cir<br>30.<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0                           | From Node: 1<br>To Node: 2<br>NSTREAM<br>cular<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00                 | 1040<br>1050<br>S<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E | Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Flow:<br>ntrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec: | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| 1.60<br>4.63<br>                                                                                                                                                                                                                                     | 0<br>0<br>1050<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>2.200<br>0.013000<br>0.000<br>0.000<br>Inlet Edge<br>ete: Square<br>A Inlet Edge<br>tet: Square<br>1080<br>BASE<br>UPSTREAM<br>Circular<br>36.00<br>36.00<br>-0.090<br>0.013000<br>0.013000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10.00<br>10.00<br>10.00<br>Cir<br>30.<br>30.<br>2.2<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0.0<br>0                                  | From Node: 1<br>To Node: 2<br>NSTREAM<br>Cular<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00<br>00                 | 1040<br>1050<br>S<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E<br>E                               | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Intrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>olution Algorithm:<br>Thow:<br>Intrance Loss Coef:<br>Exit Loss Coef:                              | 80.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>1.00<br>Use dc or tw<br>Use dn<br>None<br>20.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 |

## Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1090     | From Node: | 1090 | Length(ft):         | 8.00               |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1080 | Count;              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 36,00    | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):            | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.740   | -0.090     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1110     | From Node: | 1110 | Length(ft):         | 30.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1090 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| Span(in):              | 36.00    | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):              | 36.00    | 36.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft);</pre> | -0.880   | -0.790     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in);          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1112     | From Node: 1112 | Length(ft):         | 184.00             |
|----------------------|----------|-----------------|---------------------|--------------------|
| Group:               | BASE     | To Node: 1110   | Count:              | 1                  |
|                      |          |                 | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM      | Solution Algorithm: | Automatic          |
| Geometry;            | Circular | Circular        | Flow:               | Both               |
| Span(in):            | 18.00    | 18.00           | Entrance Loss Coef: | 0.50               |
| Rise(in):            | 18.00    | 18.00           | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | 0.930    | -0.880          | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000        | Outlet Ctrl Spec:   | Use dc or tw       |
| <pre>Clip(in);</pre> | 0.000    | 0.000           | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in);        | 0.000    | 0.000           | Stabilizer Option;  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:     | 1114     | From Node: | 1114 | Length(ft):         | 200.00             |
|-----------|----------|------------|------|---------------------|--------------------|
| Group:    | BASE     | To Node:   | 1112 | Count:              | 1                  |
|           |          |            |      | Friction Equation:  | Average Conveyance |
|           | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry: | Circular | Circular   |      | Flow:               | Both               |
| Span(in): | 18.00    | 18.00      |      | Entrance Loss Coef; | 0.50               |
| Rise(in): | 18.00    | 18.00      |      | Exit Loss Coef:     | 0.00               |
|           |          |            |      |                     |                    |

| Invert(ft):   | 2.130    | 1.830    |
|---------------|----------|----------|
| Manning's N:  | 0.013000 | 0.013000 |
| Top Clip(in): | 0.000    | 0.000    |
| Bot Clip(in): | 0.000    | 0.000    |
|               |          |          |

Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1116     | From Node  | : 1116 | Length(ft):         | 44.00              |
|------------------------|----------|------------|--------|---------------------|--------------------|
| Group:                 | BASE     | To Node    | : 1114 | Count:              | 1                  |
|                        |          |            |        | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |        | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |        | Flow;               | Both               |
| <pre>Span(in):</pre>   | 18.00    | 18.00      |        | Entrance Loss Coef: | 0.50               |
| Rise(in):              | 18.00    | 18.00      |        | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | 2.290    | 2,450      |        | Bend Loss Coef:     | 0,00               |
| Manning's N:           | 0.013000 | 0.013000   |        | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |        | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0,000    | 0.000      |        | Stabilizer Option:  | None               |
|                        |          |            |        |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1120     | From Node: | 1120 | Length(ft):         | 8.00               |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1110 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 36.00    | 36.00      |      | Entrance Loss Coef: | 0.50               |
| Rise(in):            | 36,00    | 36,00      |      | Exit Loss Coef:     | 0,00               |
| Invert(ft):          | -0.940   | -0.580     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0,000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:        | 1130     | From Node: | 1130               | Length(ft):         | 300,00       |
|--------------|----------|------------|--------------------|---------------------|--------------|
| Group:       | BASE     | To Node:   | 1110               | Count:              | 1            |
|              |          |            | Friction Equation: | Average Conveyance  |              |
|              | UPSTREAM | DOWNSTREAM |                    | Solution Algorithm: | Automatic    |
| Geometry:    | Circular | Circular   |                    | Flow:               | Both         |
| Span(in):    | 36.00    | 36.00      |                    | Entrance Loss Coef: | 0.50         |
| Rise(in):    | 36.00    | 36,00      |                    | Exit Loss Coef:     | 0.00         |
| Invert(ft):  | -0.940   | -0.880     |                    | Bend Loss Coef:     | 0.00         |
| Manning's N; | 0.013000 | 0.013000   |                    | Outlet Ctrl Spec:   | Use dc or tw |
| op Clip(in): | 0.000    | 0.000      |                    | Inlet Ctrl Spec:    | Use dn       |
| ot Clip(in): | 0.000    | 0.000      |                    | Stabilizer Option:  | None         |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:<br>Group:                                                                                                                                                                                                                                                                                                                                                                               | 1132<br>BASE                                                                                                                                                                                                                                                                                                       | From Node:<br>To Node:                                                                                                                                                                                                                                                                                            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| Span(in):<br>Rise(in):                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                    | 15.00<br>15.00                                                                                                                                                                                                                                                                                                    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| Invert(ft);                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                    | 0.000                                                                                                                                                                                                                                                                                                             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| Manning's N:                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    | 0.013000                                                                                                                                                                                                                                                                                                          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| Top Clip(in):                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                    | 0.000                                                                                                                                                                                                                                                                                                             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| Bot Clip(in);                                                                                                                                                                                                                                                                                                                                                                                 | 0,000                                                                                                                                                                                                                                                                                                              | 0.000                                                                                                                                                                                                                                                                                                             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| Span(in):<br>Rise(in):                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                    | 36.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      | Entrance Loss Coef; 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| Rise(in):<br>Invert(ft):                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                    | 36.00<br>-0.890                                                                                                                                                                                                                                                                                                   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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Pop Clip(in):                                                                                                                                                                                                                                                  | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000                                                                                                                                                                                    | edge w/ headwall<br>Description:<br>edge w/ headwall                                                                                                                                                                                                                                                              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Spec:<br>Stabilizer Option:                                                                                                                             | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Nase(in):<br>Nise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concr<br>ownstream FHW                                                                                                                                                                      | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square of<br>A Inlet Edge                                                                                                                        | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000                                                                                                                                        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Spec:                                                                                                                                                   | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concr<br>ownstream PHW                                                                                                                                                                  | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>15.00<br>0.170<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge da<br>ete: Square of<br>A Inlet Edge da                                                                       | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall                                                                          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Option:                                                                                                                                                | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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Option:<br>Length(ft):<br>Count:                                                                                                                       | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concr<br>ownstream PHW                                                                                                                                                                  | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge                                                                                      | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                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Option:<br>Length(ft):<br>Count:                                                                                                                       | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concr<br>ownstream PHW                                                                                                                                                                  | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.013000<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1144<br>EASE<br>UPSTREAM                                                              | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall                                                                          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Option:<br>Length(ft):<br>Count:                                                                                                                       | 8.00<br>1<br>Average Conveyance<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>Destream FHWA<br>ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Geometry:<br>Span(in):                                                                                            | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1144<br>EASE<br>UPSTREAM<br>Circular<br>15.00                                                              | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>From Node:<br>To Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:                                                                          | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concr<br>ownstream FHWA<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):                                                                                  | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1144<br>EASE<br>UPSTREAM<br>Circular<br>15.00                                                              | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>From Node:<br>To Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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Spec:<br>Stabilizer Option:<br>Length(ft):<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                                 | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>pstream FHWA<br>ircular Concr<br>ownstream PHW<br>ircular Concr<br>Name:<br>Group:<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):<br>Invert(ft):                                    | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>I142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>I144<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>15.00<br>0.000        | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>15.00<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef:                                | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 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| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>Spatream FHWA<br>ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Name:<br>Invert(ft):<br>Name:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N: | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1144<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>15.00<br>0.000<br>0.000 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>Pescription:<br>edge w/ headwall<br>DownSTREAM<br>Circular<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.0000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.00000<br>0.000000<br>0.00000<br>0.00000000 | 1142<br>1140<br>1144 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec: | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Dostream FHWA<br>ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):<br>Invert(ft):                                                    | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1144<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>15.00<br>0.000<br>0.013000<br>0.013000<br>0.000           | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>15.00<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1142<br>1140<br>1144 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef:                                | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 |
| ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Dostream FHWA<br>ircular Concr<br>ownstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):<br>Invert(ft):                                                    | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>I142<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.170<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>I144<br>BASE<br>UPSTREAM<br>Circular<br>15.00<br>0.000          | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>0.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>15.00<br>15.00<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1142<br>1140<br>1144 | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                                 | 8.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>37.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00 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Interconnected Channel and Pond Routing Model (ICPR) ©2002 Streamline Technologies, Inc.

| Neme: 1146 From Node: 1146 Count: 1<br>Group: EASE To Node: 1146 Count: 1<br>Demotry: Corrule: Circular Count: 1<br>Spanial: 15.00 15.00 Exit case Cost: 0.00<br>Three:1151 0.43000 0.43000 From Node: 1<br>Solution: 10.000 0.4000 From Node: 1<br>Solution: 1<br>Demotry: 1<br>Spanial: 15.00 From Node: 1<br>Solution: 1<br>So |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Group: BASE To Node: 1144<br>USYREAM DOWNSTREAM<br>Geometry: Circular Circular<br>Spanini 15:00 15:00 Ext Loss Cost: 0.00<br>Minergin: 15:00 15:00 Ext Loss Cost: 0.00<br>Distribution Algorithm: Alg                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Name                                                             | : 1146                                                                | From Node:                                                                   | 1146 | Length(ft):                                                                                                                                                                       | 56.00                                                                                                    |
| UPSTREAM DOWETREAM Solution Algorithm: Automatic<br>Demonstry: Circular Flow Both<br>Nietini; 15:00 15:00 Protocols<br>Invest(15):0.340 Double Cert Spec: Use do or tw<br>Type Cipcin: 0.000 0.000 Field Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FRWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Devertion Flow 10:000 0.000 Berd Loss Cert: 0.00<br>Invest(15):0.000 Double Circular Stabilizer Option: None<br>Devertion Flow 10:000 Double Circular Stabilizer Option: None<br>Upstream Flow Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Devertion Flow 10:000 Double Circular Stabilizer Option: None<br>Upstream Flow Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Devertion None<br>Devertion None<br>Devertion Flow 10:000 Double Circular Stabilizer Option: None<br>Devertion Stabilizer Option: Non                                                                                                                                                                                                                                                                                                                                                                           | Group                                                            | : BASE                                                                | To Node:                                                                     | 1144 | Count:                                                                                                                                                                            | 1                                                                                                        |
| UPSTREAM DOWETREAM Solution Algorithm: Automatic<br>Demonstry: Circular Flow Both<br>Nietini; 15:00 15:00 Protocols<br>Invest(15):0.340 Double Cert Spec: Use do or tw<br>Type Cipcin: 0.000 0.000 Field Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FRWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Devertion Flow 10:000 0.000 Berd Loss Cert: 0.00<br>Invest(15):0.000 Double Circular Stabilizer Option: None<br>Devertion Flow 10:000 Double Circular Stabilizer Option: None<br>Upstream Flow Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Devertion Flow 10:000 Double Circular Stabilizer Option: None<br>Upstream Flow Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Devertion None<br>Devertion None<br>Devertion Flow 10:000 Double Circular Stabilizer Option: None<br>Devertion Stabilizer Option: Non                                                                                                                                                                                                                                                                                                                                                                           |                                                                  |                                                                       |                                                                              |      | Friction Equation:                                                                                                                                                                | Average Conveyance                                                                                       |
| Data Lin; 1: 0: 0         1: 0: 0         Discrete Loss Cost: 0: 0           Invert(1): 0.300         0.01300         0.01300         Culter Ctrl Spec: Use do rt w           Top Clipin: 0.000         0.000         Stabilizer Option: None           Upptream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall           Deventream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall           Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall           Manning is 10.00         0.01300         Culter Ctrl Spec: Use do nt tw<br>Tabi Clipin: 0.000         Name: 1150           Manning is 10.00         0.01300         Culter Ctrl Spec: Use do nt tw<br>Tabi Clipin: 0.000         Stabilizer Option: None           Upptream FNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Priotion Square Conveyance<br>Solution Algorithm: None           Upptream FNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Priotion Square Conveyance<br>Solution Algorithm: None           Upptream FNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Priotion Squatin Algorithm: None           Upptream F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Data Lin; 1: 0: 0         1: 0: 0         Discrete Loss Cost: 0: 0           Invert(1): 0.300         0.01300         0.01300         Culter Ctrl Spec: Use do rt w           Top Clipin: 0.000         0.000         Stabilizer Option: None           Upptream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall           Deventream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall           Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Developmentream PNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall           Manning is 10.00         0.01300         Culter Ctrl Spec: Use do nt tw<br>Tabi Clipin: 0.000         Name: 1150           Manning is 10.00         0.01300         Culter Ctrl Spec: Use do nt tw<br>Tabi Clipin: 0.000         Stabilizer Option: None           Upptream FNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Priotion Square Conveyance<br>Solution Algorithm: None           Upptream FNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Priotion Square Conveyance<br>Solution Algorithm: None           Upptream FNWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall         Priotion Squatin Algorithm: None           Upptream F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Geometry                                                         | : Circular                                                            | Circular                                                                     |      |                                                                                                                                                                                   |                                                                                                          |
| Uptream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Descrete: Square edge w/ headwall<br>Descreter                                                                                                                                                                                                                                                                                                                                                 | Span(in)                                                         | ; 15.00                                                               | 15.00                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Uptream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Descrete: Square edge w/ headwall<br>Descreter                                                                                                                                                                                                                                                                                                                                                 | Rise(in)                                                         | : 15.00                                                               | 15.00                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Uptream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Descrete: Square edge w/ headwall<br>Descreter                                                                                                                                                                                                                                                                                                                                                 | Invert(ft)                                                       | : 0.340                                                               | 0.340                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Uptream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Descrete: Square edge w/ headwall<br>Descreter                                                                                                                                                                                                                                                                                                                                                 | Manning's N                                                      | : 0.013000                                                            | 0.013000                                                                     |      |                                                                                                                                                                                   |                                                                                                          |
| Uptream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Descrete: Square edge w/ headwall<br>Descreter                                                                                                                                                                                                                                                                                                                                                 | Top Clip(in)                                                     | : 0.000                                                               | 0.000                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Mame: 1150 From Node: 1150 Length(ft): 196.00<br>Count: 1<br>Name: 1150 From Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>Solution Algorithm: Automatic<br>Solution Algorithm: Automatic<br>Subliver Option: None<br>Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: S                                                                                                                                                                                                                                                                                                                                                     | Bot Clip(in)                                                     | : 0.000                                                               | 0,000                                                                        |      | Stabilizer Option:                                                                                                                                                                | None                                                                                                     |
| Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Circular Conc<br>Downstream FH<br>Circular Conc<br>Name<br>Group | rete: Square e<br>VA Inlet Edge<br>rete: Square e<br>: 1150<br>: BASE | dge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node: | 1150 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 196.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.50<br>0.00<br>0.00<br>Use dc or tw<br>Use dn |
| Group: BASETo Node: 1150Count: 1UPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularCircularFlow: BothSpan(in): 15.0015.00Entrance Loss Coef: 0.00Manning's N: 0.0130000.013000Outlet Ctrl Spec: Use do or twTop Clip(in): 0.0000.000Inlet Ctrl Spec: Use do or twBot Clip(in): 0.0000.000Stabilizer Option: NoneUpstream FHWA Inlet Edge Description:Circular Concrete: Square edge w/ headwallDownstream FHWA Inlet Edge Description:From Node: 1160Circular Concrete: Square edge w/ headwallFriction Equation: Average ConveyanceName: 1160From Node: 1160Length(ft): 204.00Geometry: CircularCircularFiction Equation: Average ConveyanceVPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularTo Node: 1160Length(ft): 204.00Upstream FHWA Inlet Edge Description:Friction Equation: Average ConveyanceSolution Concrete: Square edge w/ headwallFriction Equation: Average ConveyanceVPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularCircularFilow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.0036.00Entrance Loss Coef: 0.00Invert(ft): -0.390-0.860Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Filow: Both<br>Span(in): 15.00 15.00 Entrance Loss Coef: 0.00<br>Rise(in): 15.00 15.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.510 -0.510 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dn<br>Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn<br>Bot Clip(in): 0.000 0.000 Stabilizer Option: None<br>Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Mame: 1160 From Node: 1160 Length(ft): 204.00<br>Group: BASE To Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>Geometry: Circular Circular Filow Solution Algorithm: Automatic<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.390 -0.860 Entrance Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |                                                                       |                                                                              |      | Count:                                                                                                                                                                            | 1                                                                                                        |
| Geometry: CircularCircularFlow: BothSpan(in): 15.0015.00Entrance Loss Coef: 0.00Rise(in): 15.0015.00Exit Loss Coef: 0.00Invert(ft): -0.510-0.510Bend Loss Coef: 0.00Manning's N: 0.0130000.013000Outlet Ctrl Spec: Use do ntwTop Clip(in): 0.0000.000Inlet Ctrl Spec: Use dinBot Clip(in): 0.0000.000Stabilizer Option: NoneUpstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwallImage: Specific Concrete: Square edge w/ headwallDownstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwallFriction Equation: Average ConveyanceName: 1160From Node: 1160Length(ft): 204.00<br>Count: 1PSTREAMDOWNSTREAMSolution Algorithm: Automatic<br>Flow: BothGeometry: CircularCircular<br>CircularFilow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50<br>Entrance Loss Coef: 0.00Rise(in): 36.0036.00Exti Loss Coef: 0.00Invert(ft): -0.390-0.860Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Invert(ft): -0.510 -0.510 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dn<br>Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn<br>Bot Clip(in): 0.000 0.000 Stabilizer Option: None<br>Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Mame: 1160 From Node: 1160 Length(ft): 204.00<br>Group: BASE To Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Flow: Both<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.390 -0.860 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>A</b>                                                         | UPSTREAM                                                              | DOWNSTREAM                                                                   |      |                                                                                                                                                                                   |                                                                                                          |
| Invert(ft): -0.510 -0.510 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dn<br>Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn<br>Bot Clip(in): 0.000 0.000 Stabilizer Option: None<br>Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Mame: 1160 From Node: 1160 Length(ft): 204.00<br>Group: BASE To Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Flow: Both<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.390 -0.860 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Geometry:                                                        | Circular                                                              | Circular                                                                     |      |                                                                                                                                                                                   |                                                                                                          |
| Invert(ft): -0.510 -0.510 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dn<br>Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn<br>Bot Clip(in): 0.000 0.000 Stabilizer Option: None<br>Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Mame: 1160 From Node: 1160 Length(ft): 204.00<br>Group: BASE To Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Flow: Both<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.390 -0.860 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Span(in):                                                        | 15.00                                                                 | 15,00                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Maining S.K. 0.01000       0.000       Inlet Ctrl Spec: Use do         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use do         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         Upstream FHWA Inlet Edge Description:       Circular Concrete: Square edge w/ headwall         Downstream FHWA Inlet Edge Description:       Circular Concrete: Square edge w/ headwall         Name: 1160       From Node: 1160       Length(ft): 204.00         Group: BASE       To Node: 1150       Count: 1         Friction Equation: Average Conveyance       UPSTREAM       DOWNSTREAM         Ourstrip: Circular       Flow: Both       Solution Algorithm: Automatic         Geometry: Circular       Circular       Flow: Both         Span(in): 36.00       36.00       Entrance Loss Coef: 0.50         Rise(in): 36.00       36.00       Exit Loss Coef: 0.00         Invert(ft): -0.390       -0.860       Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | RISE(IN):                                                        | 10.00                                                                 | 15.00                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Maining S.K. 0.01000       0.000       Inlet Ctrl Spec: Use do         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use do         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         Upstream FHWA Inlet Edge Description:       Circular Concrete: Square edge w/ headwall         Downstream FHWA Inlet Edge Description:       Circular Concrete: Square edge w/ headwall         Name: 1160       From Node: 1160       Length(ft): 204.00         Group: BASE       To Node: 1150       Count: 1         Friction Equation: Average Conveyance       UPSTREAM       DOWNSTREAM         Ourstrip: Circular       Flow: Both       Solution Algorithm: Automatic         Geometry: Circular       Circular       Flow: Both         Span(in): 36.00       36.00       Entrance Loss Coef: 0.50         Rise(in): 36.00       36.00       Exit Loss Coef: 0.00         Invert(ft): -0.390       -0.860       Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Invert(It):                                                      | -U.SIU                                                                | -0.510                                                                       |      |                                                                                                                                                                                   |                                                                                                          |
| Bot Clip(in): 0.000 0.000 Stabilizer Option: None Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall  Name: 1160 From Node: 1160 Length(ft): 204.00 Group: BASE To Node: 1150 Count: 1 Friction Equation: Average Conveyance UPSTREAM DOWNSTREAM Solution Algorithm: Automatic Geometry: Circular Circular Flow: Both Span(in): 36.00 36.00 Entrance Loss Coef: 0.50 Rise(in): 36.00 36.00 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Top Clip/in):                                                    | 0.013000                                                              | 0,013000                                                                     |      |                                                                                                                                                                                   |                                                                                                          |
| Upstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Name: 1160 From Node: 1160 Length(ft): 204.00<br>Group: BASE To Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Flow: Both<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.390 -0.860 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Bot Clip(in):                                                    | 0.000<br>n nnn                                                        | 0.000                                                                        |      |                                                                                                                                                                                   |                                                                                                          |
| Circular Concrete: Square edge w/ headwall<br>Downstream FHWA Inlet Edge Description:<br>Circular Concrete: Square edge w/ headwall<br>Name: 1160 From Node: 1160 Length(ft): 204.00<br>Group: BASE To Node: 1150 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Flow: Both<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00<br>Invert(ft): -0.390 -0.860 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ους crib(iu):                                                    | 0.000                                                                 | 0.000                                                                        |      | stabilizer Option:                                                                                                                                                                | NOTE                                                                                                     |
| Name: 1160         From Node: 1160         Length(ft): 204.00           Group: BASE         To Node: 1150         Count: 1           To Node: 1150         Count: 1           UPSTREAM         DOWNSTREAM         Solution Algorithm: Automatic           Geometry: Circular         Circular         Flow: Both           Span(in): 36.00         36.00         Entrance Loss Coef: 0.50           Rise(in): 36.00         -0.860         Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Circular Concr<br>Downstream FHW                                 | ete: Square eo<br>A Inlet Edge I                                      | ige w/ headwall<br>Description:                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Name: 1160         From Node: 1160         Length(ft): 204.00           Group: BASE         To Node: 1150         Count: 1           To Node: 1150         Count: 1           UPSTREAM         DOWNSTREAM         Solution Algorithm: Automatic           Geometry: Circular         Circular         Flow: Both           Span(in): 36.00         36.00         Entrance Loss Coef: 0.50           Rise(in): 36.00         -0.860         Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Group: BASETo Node: 1150Count: 1UPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularCircularFlow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.0036.00Exit Loss Coef: 0.00Invert(ft): -0.390-0.860Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Friction Equation: Average ConveyanceUPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularCircularFlow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.0036.00Exit Loss Coef: 0.00Invert(ft): -0.390-0.860Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                  |                                                                       |                                                                              |      | Length(ft):                                                                                                                                                                       | 204.00                                                                                                   |
| UPSTREAM         DOWNSTREAM         Solution Algorithm: Automatic           Geometry: Circular         Circular         Flow: Both           Span(in): 36.00         36.00         Entrace Loss Coef: 0.50           Rise(in): 36.00         36.00         Exit Loss Coef: 0.00           Invert(ft): -0.390         -0.860         Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Group:                                                           | BASE                                                                  | To Node:                                                                     | 1150 |                                                                                                                                                                                   |                                                                                                          |
| UPSTREAM         DOWNSTREAM         Solution Algorithm: Automatic           Geometry: Circular         Circular         Flow: Both           Span(in): 36.00         36.00         Entrace Loss Coef: 0.50           Rise(in): 36.00         36.00         Exit Loss Coef: 0.00           Invert(ft): -0.390         -0.860         Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | •                                                                |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Geometry:         Circular         Flow:         Both           Span(in):         36.00         36.00         Entrance Loss Coef:         0.50           Rise(in):         36.00         36.00         Exit Loss Coef:         0.00           Invert(ft):         -0.390         -0.860         Bend Loss Coef:         0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                  | UPSTREAM                                                              | DOWNSTREAM                                                                   |      |                                                                                                                                                                                   |                                                                                                          |
| Span(in): 36.00         36.00         Entrance Loss Coef: 0.50           Rise(in): 36.00         36.00         Exit Loss Coef: 0.00           Invert(ft): -0.390         -0.860         Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Geometry:                                                        | Circular                                                              | Circular                                                                     |      |                                                                                                                                                                                   |                                                                                                          |
| Rise(in): 36.00         36.00         Exit Loss Coef: 0.00           Invert(ft): -0.390         -0.860         Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
| Invert(ft): -0.390 -0.860 Bend Loss Coef: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                  |                                                                       |                                                                              |      |                                                                                                                                                                                   |                                                                                                          |

| petram FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Mame: 1161 From Node: 1161<br>Group: EASE To Node: 1161<br>Group: EASE To Node: 1161<br>Geometry: Circular Circular From Node: 1161<br>Investic): 0.010 Distribution Algorithm: Automatic<br>papersam PMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Maning N D. 0.1300 Distribution:<br>ircular Concrete: Square edge w/ headwall<br>Mane: 1170 From Node: 1170<br>Geometry: MAX filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Duratters FMA filet Edge Description:<br>ircul                                                                                     | Top Clip(in):<br>Bot Clip(in): |                             | 0.000<br>0.000                   |      | Inlet Ctrl Spec:<br>Stabilizer Option: |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------------------|----------------------------------|------|----------------------------------------|--------------------|
| ircular Concrete: Square edge w/ headwall           Name: 1161         From Node: 1161         Conti 100           WHEFTREAM         DOWNESTREAM         Solution: Ansage Conveyance           Spanini: 15.00         15.00         Files Solution: Ansage Conveyance           Spanini: 15.00         15.00         Base Solution: Ansage Conveyance           Torp Cliptin: 0.000         0.013000         Base Solution: Ansage Conveyance           Spanini: 15.00         0.000         Base Solution: Ansage Conveyance           Statistics: Square edge w/ headwall         Base Solution: Ansage Conveyance           performer: Square edge w/ headwall         Count: 1           recurs: Square edge w/ headwall         Count: 1           mass: 1170         Prom Node: 1170           Mass: 1170         Prom Node: 1170           Mass: 1170         Prom Node: 1170           Spanini: 56.00         36.00           Mass: 1170         Prom Node: 1170           Spanini: 56.00         Statilizer Option: Ansage Conveyance           Spanini: 56.00         0.000           Invert(ft): -1.550         -6.490           Spanini: 56.00         0.000           Invert(ft): -0.000         0.000           Spanini: 56.00         0.000           Spanini: 56.00         0.0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                             |                                  |      |                                        |                    |
| Group: BASE     To Node: 1160     Count: 1       UPSTREAM     DOWNSTREAM     Solution Algorithm: Average Conveyance       Direct(E): 0.013     0.013     Bend Loss Coef: 0.00       Manning's N: 0.013000     0.013000     Outlet Cri Spec: Use do the       Trop Clip(in): 0.000     0.000     Stabilizer Option:       Nome: 1170     From Node: 1170     Count: 1       Werner FHWA Inlet Edge Description:     From Node: 1160     Count: 1       Nome: 1170     From Node: 1170     Count: 1       Werner HHWA Inlet Edge Description:     To Node: 1160     Count: 1       Nome: 1170     From Node: 1160     Count: 1       Werner HHWA Inlet Edge Description:     To Node: 1160     Count: 1       Name: 1170     From Node: 1160     Count: 1       Werner HHWA Inlet Edge Description:     From Node: 1160     Count: 1       Naming's N 0.013000     0.013000     Count: 1       Naming's N 0.013000     0.0100     Stabilizer Option: None       Portion Edge Description:     From Node: 1160     From Node: 1160       Naming's N 0.013000     0.0100     Stabilizer Option: None       Portion Edge Description:     From Node: 1180     Length(ft): 20.000       Invart: 130     Onode     Stabilizer Option: None       Percenter Square edge w/ headwall     Stabilizer Option: None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                |                             |                                  |      |                                        |                    |
| UPSTREAM         DOWNSTREAM         Friction Equation: Average Conveyance           Solution Algorithm: Automatic         Solution Equation: Average Conveyance           Solution Equation: Average Conveyance         Solution Equation: Average Conveyance           Maning's N. 0.01300         0.010         Solution Equation: Average Conveyance           Maning's N. 0.01300         0.010         Stabilizer Option:           Solution Equation: Average Conveyance         Solution Equation: Average Conveyance           Solution Equation: Average Conveyance         Solution Equation: Average Conveyance           Maning's N. 0.01300         0.010         Solution Equation: Average Conveyance           Solution Equation: Average Conveyance         Solution Equation: Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                |                             |                                  |      |                                        |                    |
| Geometry: Circular       Flow: Both         Spanin: 15.00       15.00         Invert(11: 15.00       0.010         Description:       0.010         Top Cliptin: 0.000       0.000         Spanin:       Spanin:         Description:       Stabilizer Option:         Dirtular Concrete:       Square edge w/ headwall         Downstream FRMA Inlet Edge Description:       Fitcular Concrete: Square edge w/ headwall         Downstream FRMA Inlet Edge Description:       Fitcular Concrete: Square edge w/ headwall         Downstream FRMA Inlet Edge Description:       Fitcular Concrete: Square edge w/ headwall         Description:       Discretam Downstream Free Regular Edge w/ headwall         Description:       Fitcular Concrete: Square edge w/ headwall         Description:       Fitcular Concrete: Square edge w/ headwall         Description:       Fitcular Concrete: Square edge w/ headwall         Description:       Stabilizer Option: Automatic         Spanin: 35:00       0.013000       Duest Cliptin: Automatic         Maning's N: 0.013000       0.000       Stabilizer Option: None         Description:       Fitcular Concrete: Square edge w/ headwall         Description:       Fitcular Concrete: Square edge w/ headwall         Descriptin:       Fitcular Concrete: Square edge w/ he                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Group:                         | BASE                        | To Node:                         | 1160 | Friction Equation:                     | Average Conveyance |
| Spartini, 15.00     is.00     Entrance Loss Coef: 0.00       Rise(in): 15.00     Use Loss Coef: 0.00       Invert(ft): 0.010     0.010       Baning's N: 0.013000     Oullet Cttl Spee: Use do or tw       Top Clip(in): 0.000     0.000       Bot Clip(in): 0.000     0.000       Bot Clip(in): 0.000     0.000       Stabilizer Option:       Sircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream       Downstream       Baaling: 36.00       Base Inf: 36.00       Top Clip(in): 0.000       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description:       Tircular Concrete: Square edge w/ headwall       Downstream FHWA Inlet Edge Description: </td <td>Comptrate</td> <td></td> <td></td> <td></td> <td></td> <td></td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Comptrate                      |                             |                                  |      |                                        |                    |
| Invertifi; 0.010 0.010 Dend Loss Coff 0.00 The maining 'N 0.010 0.010 Dend Loss Coff 0.00 Dend Loss Coff 0                                                                                                                                                                                           |                                |                             |                                  |      |                                        |                    |
| Manning's N: 0.013000 0.0300<br>Top Clip(in): 0.000 0.000<br>Bot Clip(in): 0.000 0.000<br>Stabilizer Option: None<br>Marning's N: 0.01300 0.000<br>Manning's N: 0.01300 0.000<br>Marning's N: 0.01300 0.01300<br>Marning's N: 0.01300 0.000<br>Marning's N: 0.01300<br>Marning's N: 0.                 |                                |                             |                                  |      |                                        |                    |
| Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>Bat Clip(in): 0.000 0.000 Stabilizer Option: None<br>petream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Mame: 1170 Prom Node: 1170 Lengthift): 50.00<br>Group: BASE To Node: 1160 Count: 1<br>Priction Equation: Average Conveyance<br>Spanin: 36.00 36.00 Entrance Loss Coef: 0.50<br>Inlet Ctrl Spec: Use dn<br>Soution Algorithm: Average Conveyance<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>Mame: 1180 From Node: 1180 Count: 1<br>Priction Equation: Average Conveyance<br>Soution Algorithm: Average Conveyance<br>Spanin: 36.00 36.00 Entrance Loss Coef: 0.50<br>Inlet Ctrl Spec: Use dn<br>Stabilizer Option: None<br>Maming's FWA Inlet Edge Description:<br>Invest(Edge Description:<br>Invest                                                 | Invert(ft):<br>Manning's N:    | 0,010<br>0 013000           |                                  |      |                                        |                    |
| <pre>pstream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>womstream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>maning's N: 0.013000 0.013000 0.01170 Count: 1<br/>Priction Equation: Average Conveyance<br/>Solution Algorithm: Automatic<br/>Post Circular Circular<br/>Spaning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dt or tw<br/>Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dt or tw<br/>tircular Concrete: Square edge w/ headwall<br/>maning's N: 0.013000 0.000 Inlet Ctrl Spec: Use dt or tw<br/>tircular Concrete: Square edge w/ headwall<br/>maning's N: 0.01300 0.000 Erron Node: 1180 Count: 1<br/>Priction Equation: Average Conveyance<br/>Stabilizer Option: None<br/>maning's N: 0.013000 0.000 Erron Node: 1170 Count: 1<br/>Priction Equation: Average Conveyance<br/>Stabilizer Option: None<br/>maning's N: 0.013000 0.000 Erron Node: 1170 Count: 1<br/>Priction Equation: Average Conveyance<br/>Stabilizer Option: None<br/>maning's N: 0.013000 0.013000 Erron Node: 1170 Count: 1<br/>Priction Equation: Average Conveyance<br/>Stabilizer Option: None<br/>maning's N: 0.013000 0.013000 Erron Node: 1170 Count: 1<br/>Priction Equation: Average Conveyance<br/>Stabilizer Option: None<br/>maning's N: 0.013000 0.013000 Erron Node: 1170 Count: 1<br/>Priction Equation: Average Conveyance<br/>Stabilizer Option: None<br/>maning's N: 0.013000 0.013000 Erron None<br/>maning's N: 0.013000 0.013000 Erron None<br/>patream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>patream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>patream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>patream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>patream FHWA Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>maning's M: Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>maning's M: Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>maning's M: Inlet Edge Description:<br/>ircular Concrete: Square edge w/ headwall<br/>maning's M: Inlet Edge Description:<br/>ircular Concrete:</pre> | Top Clip(in):                  | 0.000                       |                                  |      |                                        |                    |
| <pre>ircular Concrete: Square edge w/ hadwall  bomstream FHWA Inlet Edge Description: ircular Concrete: Square edge w/ hadwall  Mamme: 1180 Prom Node: 1180 From Node: 1180 Name: 1180 Prom Node: 1180 Frition Equipment Name: 1180 Prom Node: 1180 Frition Equipment Name: 1180 Prom Node: 1180 Length(ft): 50.00 Could Could</pre>                                                                                                                                                                                     | Bot Clip(in):                  | 0.000                       | 0.000                            |      | Stabilizer Option:                     | None               |
| Name: 1170       From Node: 1170       Length(ft): 50.00         Group: BASE       To Node: 1160       Friction Equation: Average Conveyance         Geometry: Circular       Circular       Friction Equation: Average Conveyance         Span(h): 35.00       36.00       Entrance Loss Coef: 0.50         Rise(h): 36.00       0.013000       Outlet Ctrl Spec: Use dc or tw         Manning's N: 0.013000       0.000       Inter Ctrl Spec: Use dc or tw         Top Clip(h): 0.000       0.000       Inter Ctrl Spec: Use dc or tw         Stabilizer Option:       Ircular Concrete: Square edge w/ headwall         ownstream FHWA Inlet Edge Description:       Friction Equation: Average Conveyance         Name: 1180       From Node: 1180       Length(ft): 250.00         Geometry: Circular       To Node: 1180       Length(ft): 250.00         Group: BASE       To Node: 1180       Length(ft): 250.00         Group: BASE       To Node: 1180       Length(ft): 250.00         Group: BASE       To Node                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ircular Concr                  | ete: Square<br>A Inlet Edge | edge w/ headwall<br>Description: |      |                                        |                    |
| Group: BASE To Node: 1160 Count: 1<br>Friction Equation: Average Conveyance<br>Spanin): 36.00 36.00 Fait Loss Coef: 0.50<br>Fine (1): 36.00 0.000 Entrance Loss Coef: 0.00<br>Invert(ft): -1.550 -0.430 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.000 Tabet Ctrl Spec: Use do or tw<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>Top Clip(in): 0.000 From Node: 1180 Length(ft): 250.00<br>Group: BASE To Node: 1170 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM<br>Name: 1180 From Node: 1180 Length(ft): 250.00<br>Group: BASE To Node: 1170 Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM<br>Solution Algorithm: Automatic<br>Friction: Square edge w/ headwall<br>Friction: Solution Algorithm: Automatic<br>UPSTREAM DOWNSTREAM<br>Solution Algorithm: Automatic<br>Flow Both<br>Spanin: 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Next Loss Coef: 0.50<br>Rise(in): 36.00 0.000 Outlet Ctrl Spec: Use do or tw<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>pstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Manning's 0.013000 0.000 Thete Ctrl Spec: Use do or tw<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>Stabilizer Option: None<br>Stabilizer Option: None<br>Manning's 1.013000 0.000 Stabilizer Option: None<br>Stabilizer Option: None<br>Stabilizer Option: None<br>Manning's 10.01300 0.000 Stabilizer Option: None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                |                             |                                  | 1170 | Length(ft):                            | 50.00              |
| UPSTREAMDOWNSTREAMSolution Algorithm: Automatic<br>Flow: BothGeometry: CircularFlow: BothSpan(in): 35.0036.00Rise(in): 35.0036.00Durert(ft): -1.550-0.430Manning: N. 0.0130000.013000Outlet Ctrl Spec: Use dc or twTop Clip(in): 0.0000.000Bot Clip(in): 0.0000.000Stabilizer Option:Clip(in): 0.0000.000Stabilizer Option:Clip(in): 0.0000.000Stabilizer Option:Clip(in): 0.0000.000Stabilizer Option:Comp: SASETo Node: 1180Length(ft): 250.00Croup: SASETo Node: 1170Comp: SASETo Node: 1170Comp: SASETo Node: 1170Comp: SASETo Node: 1170Competry: CircularFlow: BothSpan(in): 36.0036.00Rise(in): 36.0036.00Rise(in): 36.0036.00Rise(in): 36.0036.00Sapan(in): 36.00-0.450Bend Loss Coef: 0.50Rise(in): 36.000.013000Outlet Ctrl Spec: Use do rtwTop Clip(in): 0.0000.000Intert Ctrl Spec: Use do rtwTop Clip(in): 0.0000.000Stabilizer Option: NoneStabilizer Option: NoneDestream FHWA Inlet Edge Description:Chrower Concrete: Square edge w/ headwallDownstream FHWA Inlet Edge Description:Chrower Concrete: Square edge w/ headwallDownstream FHWA Inlet Edge Description:Chrower Conc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Group:                         | BASE                        |                                  |      |                                        |                    |
| Geometry: Circular       Circular       Flow: Both         Span(in): 36.00       36.00       Exit Loss Coef: 0.50         Hise(in): 36.00       0.013000       0.013000         Manning's N: 0.01300       0.03000       Outlet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use dc or tw         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         Pystream FHWA Inlet Edge Description:       Stabilizer Option: None         Pystream FHWA Inlet Edge Description:       Count: 1         Wame: 1180       From Node: 1180       Length(ft): 250.00         Mame: 1180       From Node: 1180       Length(ft): 250.00         OpsTREAM       DOWNSTREAM       Solution Algorithm: Automatic         Span(in): 36.00       36.00       Entrance Loss Coef: 0.50         Rike(in): 36.00       36.00       Entrance Loss Coef: 0.50         Rike(in): 36.00       36.00       Entrance Loss Coef: 0.00         Tovett(ft): -0.680       -0.450       Bend Loss Coef: 0.00         Toy Clip(in): 0.000       0.000       Stabilizer Option: None         Pystream FHWA Inlet Edge Description:       Inter Ctrl Spec: Use dn         Toy Clip(in): 0.000       0.000       Stabilizer Option: None         Pystream FHWA Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                | UPSTREAM                    | DOWNSTREAM                       |      |                                        |                    |
| Rise(In): 36.00       36.00       Exit Loss Coef: 0.00         Manning's N: 0.013000       0.013000       Outlet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Thlet Ctrl Spec: Use dn         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         Destream FHWA Inlet Edge Description:       Stabilizer Option: None         Destream FHWA Inlet Edge Description:       Stabilizer Option: None         Mame: 1180       From Node: 1180       Length(ft): 250.00         Mame: 1180       From Node: 1180       Length(ft): 250.00         Mame: 1180       From Node: 1180       Length(ft): 250.00         Group: BASE       To Node: 1170       Count: 1         VESTREAM       Friction Algorithm: Automatic         Geometry: Circular       Circular       Flow: Both         Span(in): 36.00       36.00       Entrance Loss Coef: 0.00         Invert(ft): -0.600       -0.450       Bend Loss Coef: 0.00         Invert(ft): -0.000       0.000       Utilet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Stabilizer Option: None         Destream FHWA Inlet Edge Description:       Stabilizer Option: None         Stabilizer Option: None </td <td></td> <td>Circular</td> <td>Circular</td> <td></td> <td>Flow:</td> <td>Both</td>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                | Circular                    | Circular                         |      | Flow:                                  | Both               |
| Invert(ft): -1.550 -0.490 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.0100 Utlet Ctrl Spec: Use dc or tw<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>pstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Mame: 1180 From Node: 1180 Length(ft): 250.00<br>Group: BASE To Node: 1170 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Average Conveyance<br>Stabilizer Option: None<br>UPSTREAM DOWNSTREAM Solution Algorithm: Average Conveyance<br>Solution Algorithm: Automatic<br>Geometry: Circular Circular Flow: Both<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Extrance Loss Coef: 0.50<br>Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dc or tw<br>Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dc or tw<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                |                             |                                  |      |                                        |                    |
| Manning's N: 0.013000       0.013000       Outlet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Thet Ctrl Spec: Use dn         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         Ppstream FHWA Inlet Edge Description:       Stabilizer Option: None         Purce Concrete: Square edge w/ headwall       Name: Square edge w/ headwall         Name: 1180       From Node: 1180       Length(ft): 250.00         Group: BASE       To Node: 1170       Count: 1         Priction Equation: Average Conveyance       Solution Algorithm: Automatic         Geometry: Circular       Circular       Flow: Both         Span(in): 36.00       36.00       Entrance Loss Coef: 0.50         Rise(in): 36.00       36.00       Entrance Loss Coef: 0.00         Manning's N: 0.013000       0.013000       Outlet Ctrl Spec: Use dn         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use dn         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         Patream FHWA Inlet Edge Description:       Stabilizer Option: None         Name: 1182       From Node: 1182       Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                |                             |                                  |      |                                        |                    |
| Bot Clip(in): 0.000 0.000 Stabilizer Option: None  pstream FHWA Inlet Edge Description: ircular Concrete: Square edge w/ headwall  Mame: 1180 From Node: 1180 Length(ft): 250.00 Group: EASE To Node: 1170 Friction Equation: Average Conveyance Solution Algorithm: Average Conveyance Solution Algorithm: Average Conveyance Solution Stabilizer Option: They Both Span(in): 36.00 36.00 Entrance Loss Coef: 0.50 Rise(in): 36.00 36.00 Entrance Loss Coef: 0.50 Rise(in): 36.00 36.00 Entrance Loss Coef: 0.00 Invert(ft): -0.680 -0.450 Bend Loss Coef: 0.00 Mamning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dn Bot Clip(in): 0.000 0.000 Stabilizer Option: None  pstream FHWA Inlet Edge Description: ircular Concrete: Square edge w/ headwall  mame: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Manning's N:                   | 0.013000                    | 0.013000                         |      | Outlet Ctrl Spec:                      | Use dc or tw       |
| Pystream FHWA Inlet Edge Description:<br>itrcular Concrete: Square edge w/ headwall         Name: 1180       From Node: 1180         Name: 1180       From Node: 1180         Length(ft): 250.00         Group: BASE       To Node: 1170         UPSTREAM       DOWNSTREAM         Solution Algorithm: Automatic         Geometry: Circular       Circular         Rise(in): 36.00       36.00         Rise(in): 36.00       36.00         Banning's N: 0.013000       0.013000         Outlet Ctrl Spec: Use do or tw         Top Clip(in): 0.000       0.000         Intrular Concrete: Square edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                             |                                  |      |                                        |                    |
| ircular Concrete: Square edge w/ headwall<br>ownstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Name: 1180 From Node: 1180 Length(ft): 250.00<br>Group: BASE To Node: 1170 Count: 1<br>Friction Equation: Average Conveyance<br>UPSTREAM DOWNSTREAM Solution Algorithm: Automatic<br>Geometry: Circular Circular Solution Algorithm: Automatic<br>Span(in): 36.00 36.00 Entrance Loss Coef: 0.50<br>Rise(in): 36.00 36.00 Exit Loss Coef: 0.00<br>Invert(ft): -0.680 -0.450 Bend Loss Coef: 0.00<br>Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use do or tw<br>Top Clip(in): 0.000 0.000 Stabilizer Option: None<br>pstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>ownstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Bot Clip(in/:                  | 0.000                       | 0.000                            |      | stabilizer option:                     | WOILE              |
| <pre>Name: 1180 From Node: 1180 Length(ft): 250.00 Group: BASE To Node: 1170 Count: 1 Friction Equation: Average Conveyance UPSTREAM DOWNSTREAM Solution Algorithm: Automatic Geometry: Circular Circular Flow: Both Span(in): 36.00 36.00 Entrance Loss Coef: 0.50 Rise(in): 36.00 -0.450 Bend Loss Coef: 0.00 Invert(ft): -0.680 -0.450 Bend Loss Coef: 0.00 Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dc or tw Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn Bot Clip(in): 0.000 0.000 Stabilizer Option: None pstream FHWA Inlet Edge Description: ircular Concrete: Square edge w/ headwall ownstream FHWA Inlet Edge Description: ircular Concrete: Square edge w/ headwall Name: 1182 From Node: 1182 Length(ft): 8.00</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                |                             |                                  |      |                                        |                    |
| Name: 1180From Node: 1180<br>To Node: 1170Length(ft): 250.00<br>Count: 1Group: BASETo Node: 1170Count: 1UPSTREAMDOWNSTREAMSolution Algorithm: Automatic<br>Flow: BothGeometry: CircularCircularFlow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.000.013000Outlet Ctrl Spec: Use dc or twTop Clip(in): 0.0000.000Inlet Ctrl Spec: Use dnBott Clip(in): 0.0000.000Stabilizer Option: Nonepstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwallName: 1182From Node: 1182Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                |                             |                                  |      |                                        |                    |
| Name: 1180From Node: 1180<br>To Node: 1170Length(ft): 250.00<br>Count: 1Group: BASETo Node: 1170Count: 1UPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularCircularFlow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.000.013000Outlet Ctrl Spec: Use dc or twTop Clip(in): 0.0000.000Inlet Ctrl Spec: Use dnBott Clip(in): 0.0000.000Stabilizer Option: Nonepstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwallName: 1182Name: 1182From Node: 1182Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |                             |                                  |      |                                        |                    |
| UPSTREAMDOWNSTREAMSolution Algorithm: AutomaticGeometry: CircularCircularFlow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.0036.00Exit Loss Coef: 0.00Invert(ft): -0.680-0.450Bend Loss Coef: 0.00Manning's N: 0.0130000.013000Outlet Ctrl Spec: Use dc or twTop Clip(in): 0.0000.000Inlet Ctrl Spec: Use dnBott Clip(in): 0.0000.000Stabilizer Option: Nonepstream FHWA Inlet Edge Description:ircular Concrete: Square edge w/ headwallownstream FHWA Inlet Edge Description:Name: 1182From Node: 1182Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Name:                          | 1180                        | From Node:                       | 1180 | Length(ft):                            | 250.00             |
| Geometry: CircularCircularFlow: BothSpan(in): 36.0036.00Entrance Loss Coef: 0.50Rise(in): 36.0036.00Exit Loss Coef: 0.00Invert(ft): -0.680-0.450Bend Loss Coef: 0.00Manning's N: 0.0130000.013000Outlet Ctrl Spec: Use dc or twTop Clip(in): 0.0000.000Inlet Ctrl Spec: Use dnBot Clip(in): 0.0000.000Stabilizer Option: Nonepstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwallownstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwallName: 1182From Node: 1182Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _                              | TIDE TROP N                 |                                  |      |                                        |                    |
| Span(in): 36.00       36.00       Entrance Loss Coef: 0.50         Rise(in): 36.00       36.00       Exit Loss Coef: 0.00         Invert(ft): -0.680       -0.450       Bend Loss Coef: 0.00         Manning's N: 0.013000       0.013000       Outlet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use dn         Bott Clip(in): 0.000       0.000       Stabilizer Option: None         pstream FHWA Inlet Edge Description:       ircular Concrete: Square edge w/ headwall         ownstream FHWA Inlet Edge Description:       ircular Concrete: Square edge w/ headwall         Name: 1182       From Node: 1182       Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Geometry                       |                             | Circular                         |      |                                        |                    |
| Invert(ft): -0.680       -0.450       Bend Loss Coef: 0.00         Manning's N: 0.013000       0.013000       Outlet Ctrl Spec: Use dn         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use dn         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         pstream FHWA Inlet Edge Description:       ircular Concrete: Square edge w/ headwall         ownstream FHWA Inlet Edge Description:       ircular Concrete: Square edge w/ headwall         Name: 1182       From Node: 1182       Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Span(in):                      | 36.00                       | 36.00                            |      | Entrance Loss Coef:                    | 0,50               |
| Manning's N: 0.013000       0.013000       Outlet Ctrl Spec: Use dc or tw         Top Clip(in): 0.000       0.000       Inlet Ctrl Spec: Use dn         Bot Clip(in): 0.000       0.000       Stabilizer Option: None         pstream FHWA Inlet Edge Description:       ircular Concrete: Square edge w/ headwall         ownstream FHWA Inlet Edge Description:       ircular Concrete: Square edge w/ headwall         Name: 1182       From Node: 1182       Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                |                             | 36.00                            |      |                                        |                    |
| Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn<br>Bot Clip(in): 0.000 0.000 Stabilizer Option: None<br>pstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>ownstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Invert(ft):<br>Manning's N·    | -0.680<br>0.013000          |                                  |      |                                        |                    |
| pstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>ownstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Top Clip(in):                  | 0 000                       | 0.000                            |      | Inlet Ctrl Spec:                       | Use dn             |
| ircular Concrete: Square edge w/ headwall<br>ownstream FHWA Inlet Edge Description:<br>ircular Concrete: Square edge w/ headwall<br>Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bot Clip(in):                  | 0.000                       | 0.000                            |      | Stabilizer Option:                     | None               |
| Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                |                             |                                  |      |                                        |                    |
| ircular Concrete: Square edge w/ headwall<br>Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                | -                           | -                                |      |                                        |                    |
| Name: 1182 From Node: 1182 Length(ft): 8.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ircular Concre                 | ete: Square e               | edge w/ headwall                 |      |                                        |                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                |                             | ii ii                            |      |                                        |                    |
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Friction Equation: Average Conveyance Solution Algorithm: Automatic Flow: Both Entrance Loss Coef: 0.50 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1184     | From Node  | : 1184 | Length(ft):         | 37.00              |
|------------------------|----------|------------|--------|---------------------|--------------------|
| Group;                 | BASE     | To Node    | : 1180 | Count:              | 1                  |
|                        |          |            |        | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |        | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |        | Flow:               | Both               |
| Span(in):              | 15.00    | 15.00      |        | Entrance Loss Coef: | 0.50               |
| Rise(in):              | 15.00    | 15.00      |        | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.430   | ~0.480     |        | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |        | Outlet Ctrl Spec:   | Use do or tw       |
| Top Clip(in):          | 0,000    | 0.000      |        | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |        | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1186     | From Node; | 1186 | Length(ft):         | 65.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1327 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| Span(in):              | 15,00    | 15.00      |      | Entrance Loss Coef: | 0,00               |
| Rise(in):              | 15.00    | 15.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | 0.250    | 0.250      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0,000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1188     | From Node: | 1188 | Length(ft):         | 65.00              |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1329 | Count:              | 1                  |
| -             |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     |          | 15.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 15.00    | 15.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | 0,200    | 0.200      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Ŭse do or tw       |
| Top Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use din            |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

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| _                                                                                                                                                                                                                                                                                                                                           | BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                                                                                                                                                                                                                                                                                                             | :: 1<br>1: Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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|                                                                                                                                                                                                                                                                                                                                             | UPSTREAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DOWNSTREAM<br>Circular<br>30.00<br>-0.680<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                       | Solution Algorithm                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Geometry:                                                                                                                                                                                                                                                                                                                                   | Circular                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Circular                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                           | r; 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| Span(in):                                                                                                                                                                                                                                                                                                                                   | 30.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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Loss Coei<br>Exit Loss Coei                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| Invert(ft):                                                                                                                                                                                                                                                                                                                                 | -0.500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| Manning's N:                                                                                                                                                                                                                                                                                                                                | 0.013000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Fop Clip(in):<br>Bot Clip(in):<br>postream FHWA<br>Ircular Concr                                                                                                                                | ete: Square<br>A Inlet Edge<br>ete: Square<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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Count<br>Friction Equation<br>Solution Algorithm<br>Flow<br>Entrance Loss Coef<br>Exit Loss Coef<br>Bend Loss Coef<br>Outlet Ctrl Spec<br>Inlet Ctrl Spec                                                                                                                                                                                              | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Fop Clip(in):<br>Bot Clip(in):<br>Destream FHWA<br>ircular Concr<br>Swnstream FHW<br>Ircular Concr<br>Name:                                                                                     | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Do<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge                                                                                                                                                                                                                                                                                                                                                                                                                                                           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Count<br>Friction Equation<br>Solution Algorithm<br>Flow<br>Entrance Loss Coef<br>Bend Loss Coef<br>Outlet Ctrl Spec<br>Inlet Ctrl Spec<br>Stabilizer Option                                                                                                                                                                                           | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: 245.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Fop Clip(in):<br>Bot Clip(in):<br>Destream FHWA<br>ircular Concr<br>Swnstream FHW<br>Ircular Concr<br>Name:                                                                                     | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                  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Control         Friction Equation         Solution Algorithm         Flow         Entrance Loss Coef         Exit Loss Coef         Bend Loss Coef         Outlet Ctrl Spec         Inlet Ctrl Spec         Stabilizer Option         34         Length(ft)         29         Count         Friction Equation                                   | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: 245.00<br>: 1<br>: Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Fop Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>Destream FHWA<br>ircular Concr<br>Swnstream FHW<br>Ircular Concr<br>Name:<br>Group:                                                                       | ete: Square<br>A Inlet Edge<br>ete: Square<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>0.013000<br>0.013000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>BASE<br>UPSTREAM                                                                                                                                                                                                                                                                                                                                                                                                                                                            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Count         Friction Equation         Solution Algorithm         Flow         Entrance Loss Coef         Exit Loss Coef         Outlet Ctrl Spec         Inlet Ctrl Spec         Stabilizer Option         34         Length(ft)         29         Count         Friction Equation         Solution Algorithm                                 | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: 245.00<br>: 1<br>: Average Conveyance<br>: Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):<br>Bot Clip(in):<br>Ostream FHWA<br>Ircular Concr<br>wnstream FHW.<br>rcular Concr<br>Name:<br>Group:<br>Seconetry:                                                                            | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Da<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>BASE<br>UPSTREAM<br>Circular                                                                                                                                                                                                                                                                                                                                                                                                                           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Count         Friction Equation         Solution Algorithm         Flow         Entrance Loss Coef         Exit Loss Coef         Outlet Ctrl Spec         Inlet Ctrl Spec         Stabilizer Option         34         Length(ft)         29         Count         Friction Equation         Solution Algorithm                                 | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: 245.00<br>: 1<br>: Average Conveyance<br>: Automatic<br>: Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| ircular Concr<br>winstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Mame:<br>Group:<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):                                                   | ete: Square ete: S                                                                                                                                                                                                                                              | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 13:<br>TO Node: 13:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 13:<br>TO Node: 13:<br>DOWNSTREAM<br>Circular                                                                          | 27 Count<br>Friction Equation<br>Solution Algorithm<br>Flow<br>Entrance Loss Coef<br>Exit Loss Coef<br>Outlet Ctrl Spec<br>Inlet Ctrl Spec<br>Stabilizer Option<br>Stabilizer Option<br>4 Length(ft)<br>29 Count<br>Friction Equation<br>Solution Algorithm<br>Flow                                                                                       | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: None<br>: 245.00<br>: 1<br>: Average Conveyance<br>: Automatic<br>: Both<br>: 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| ircular Concr<br>pwnstream FHW<br>ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Manting's MA<br>Ircular Concr<br>wnstream FHWA<br>Ircular Concr<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):<br>Invert(ft): | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1329<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>0.000<br>0.000<br>0.000<br>0.000<br>Unlet Edge Do<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1334<br>BASE<br>UPSTREAM<br>Circular<br>30.00<br>30.00<br>-0.500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 13:<br>To Node: 13:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>Escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 13:<br>To Node: 13:<br>DOWNSTREAM<br>Circular<br>30.00<br>30.00<br>-0.500 | 27 Count<br>Friction Equation<br>Solution Algorithm<br>Flow<br>Entrance Loss Coef<br>Exit Loss Coef<br>Outlet Ctrl Spec<br>Inlet Ctrl Spec<br>Stabilizer Option<br>34 Length(ft)<br>29 Count<br>Friction Equation<br>Solution Algorithm<br>Flow<br>Entrance Loss Coef<br>Exit Loss Coef<br>Bend Loss Coef                                                 | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: 245.00<br>: 1<br>: Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00 |
| ircular Concr<br>wwnstream FHW<br>ircular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Fop Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Sot Clip(in):<br>Mame:<br>Group:<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):                                                             | ete: Square of A Inlet Edge<br>ete: Square of A Inlet Edge<br>ete: Square of A Inlet Edge<br>DESTREAM<br>Circular 30.00<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Do<br>ete: Square of A Inlet Edge<br>ete: Squa | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node: 13:<br>To Node: 13:<br>DOWNSTREAM<br>Circular<br>30.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>Prom Node: 13:<br>To Node: 13:<br>DOWNSTREAM<br>Circular<br>30.00<br>30.00<br>30.00<br>Circular                          | 27       Count         Friction Equation         Solution Algorithm         Flow         Exit Loss Coef         Exit Loss Coef         Dutlet Ctrl Spec         Inlet Ctrl Spec         Stabilizer Option         34         Length(ft)         29         Count         Friction Equation         Solution Algorithm         Flow         Exit Loss Coef | : Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: Use dc or tw<br>: Use dn<br>: None<br>: None<br>: 245.00<br>: 1<br>: Average Conveyance<br>: Automatic<br>: Both<br>: 0.00<br>: 0.00<br>: 0.00<br>: Use dc or tw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

\_\_\_\_\_ From Node: 1335A Length(ft): 125.00 To Node: 1334 Count: 1 Name: 1335A Group: BASE To Node: 1334 Friction Equation: Average Conveyance DOWNSTREAM UPSTREAM DOWNSTREAM Geometry: Circular Circular Span(in): 30.00 30.00 Bise(in): 30.00 30.00 UPSTREAM Solution Algorithm: Automatic Circular Flow: Both Entrance Loss Coef: 0.00 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Rise(in): 30.00 Invert(ft): -0.500 30.00 -0.500 0.013000 Outlet Ctrl Spec: Use dc or tw Manning's N: 0.013000 Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn Stabilizer Option: None Bot Clip(in): 0.000 0.000

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description; Circular Concrete: Square edge w/ headwall

Name:1337From Node:1337Length(ft):220.00Group:BASETo Node:1335ACount:1UPSTREAMDOWNSTREAMSolution Algorithm:Average ConveyanceGeometry:CircularCircularFlow:BothSpan(in):30.0030.00Entrance Loss Coef:0.00Rise(in):30.00Exit Loss Coef:0.00Invert(ft):-0.480-0.500Bend Loss Coef:0.00Manning's N:0.0130000.013000Outlet Ctrl Spec:Use dnTop Clip(in):0.0000.000Stabilizer Option:None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Namer                              |                |                              |      |                    |                       |
|------------------------------------|----------------|------------------------------|------|--------------------|-----------------------|
|                                    | 1338           | From Node;                   | 1338 | Length(ft          | ): 48.00              |
| Group:                             | BASE           | To Node:                     | 1337 | Coun               | t: 1                  |
|                                    |                |                              |      | Friction Equation  | n: Average Conveyance |
|                                    | UPSTREAM       | DOWNSTREAM                   |      | Solution Algorith  | m: Automatic          |
| Geometry:                          | Circular       | Circular                     |      | Flo                | w: Both               |
| Span(in):                          | 30.00          | 30.00                        |      | Entrance Loss Coe  | £: 0,00               |
| Rise(in):                          | 30.00          | 30.00                        |      | Exit Loss Coe      | £: 0.00               |
| <pre>Invert(ft):</pre>             | -0,480         | ~0,480                       |      | Bend Loss Coe      | £: 0,00               |
| Manning's N:                       | 0.013000       | 0.013000                     |      | Outlet Ctrl Spe    | c: Use do or tw       |
| Top Clip(in):                      | 0.000          | 0.000                        |      | Inlet Ctrl Spe     | c: Use dn             |
| Bot Clip(in):                      | 0.000          | 0.000                        |      | Stabilizer Optio   | a: None               |
| Upstream FHWA I<br>Circular Concre | te: Square ed  | ge w∕ headwall               |      |                    |                       |
| Downstream FHWA                    | . INTEE Dage D |                              |      |                    |                       |
| Downstream FHWA<br>Circular Concre |                |                              |      |                    |                       |
|                                    |                |                              |      |                    |                       |
| Circular Concre                    |                |                              | 1339 | Length(ft          | ): 153.00             |
| Circular Concre                    | te: Square ed  | ge w/ headwall               |      | Length (ft<br>Coun |                       |
| Circular Concre                    | te: Square ed  | ge w/ headwall<br>From Node: |      | Coun               |                       |

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| Geometry:              | Circular | Circular |
|------------------------|----------|----------|
| <pre>Span(in);</pre>   | 30.00    | 30.00    |
| Rise(in):              | 30.00    | 30.00    |
| <pre>Invert(ft):</pre> | -0.520   | -0,480   |
| Manning's N:           | 0.013000 | 0.013000 |
| Top Clip(in):          | 0.000    | 0.000    |
| Bot Clip(in):          | 0.000    | 0.000    |

Flow: Both Entrance Loss Coef: 0.00 Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn Stabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1340     | From Node: | 1340 | Length(ft):         | 67.00              |
|---------------|----------|------------|------|---------------------|--------------------|
| Group:        | BASE     | To Node:   | 1339 | Count;              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 30,00    | 30.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 30.00    | 30.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.500   | -0.520     |      | Bend Loss Coef;     | 0,00               |
| Manning's N:  | 0,013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000    | 0.000      |      | Inlet Ctrl Spec;    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name :                 | 1342     | From Node: | 1342 | Length(ft):         | 76.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1340 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in);</pre>   | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef;     | 0,00               |
| <pre>Invert(ft):</pre> | -0.500   | -0.500     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0,000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                        |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description; Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1343     | From Node: | 1343 | Length(ft):         | 95.00              |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1342 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.500   | -0,500     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0,000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                                                                                                                                                                                                                                                                                                                      | 1344                                                                                                                                                                                                                                                                               | From Node:                                                                                                                                                                                                                                                                                                                                                                                                       |                      | Length(ft):                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Group:                                                                                                                                                                                                                                                                                                                     | BASE                                                                                                                                                                                                                                                                               | To Node:                                                                                                                                                                                                                                                                                                                                                                                                         | 1343                 | Count:                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                    | DOWNSTREAM                                                                                                                                                                                                                                                                                                                                                                                                       |                      | Friction Equation:<br>Solution Algorithm:                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Geometry                                                                                                                                                                                                                                                                                                                   | Circular                                                                                                                                                                                                                                                                           | Circular                                                                                                                                                                                                                                                                                                                                                                                                         |                      | Flow:                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Span(in):                                                                                                                                                                                                                                                                                                                  | 24.00                                                                                                                                                                                                                                                                              | DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500                                                                                                                                                                                                                                                                                                                                                               |                      | Entrance Loss Coef:                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Rise(in):                                                                                                                                                                                                                                                                                                                  | 24.00                                                                                                                                                                                                                                                                              | 24.00                                                                                                                                                                                                                                                                                                                                                                                                            |                      | Exit Loss Coef:                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Invert(ft);                                                                                                                                                                                                                                                                                                                | -0.520                                                                                                                                                                                                                                                                             | -0.500                                                                                                                                                                                                                                                                                                                                                                                                           |                      | Bend Loss Coef:                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Manning's N:                                                                                                                                                                                                                                                                                                               | 0.013000                                                                                                                                                                                                                                                                           | 0.013000                                                                                                                                                                                                                                                                                                                                                                                                         |                      | Outlet Ctrl Spec:                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 'op Clip(in):                                                                                                                                                                                                                                                                                                              | 0.000                                                                                                                                                                                                                                                                              | 0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                                                                                                                                                                       |                      | Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| oc crip(in);                                                                                                                                                                                                                                                                                                               | 0.000                                                                                                                                                                                                                                                                              | 0.000                                                                                                                                                                                                                                                                                                                                                                                                            |                      | beddiiner operen.                                                                                                                                                                                                                                                                                    | none                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| wnstream FHW                                                                                                                                                                                                                                                                                                               | ete: Square -<br>A Inlet Edge                                                                                                                                                                                                                                                      | edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                                                                                            | 1345                                                                                                                                                                                                                                                                               | From Node:                                                                                                                                                                                                                                                                                                                                                                                                       |                      | Length(ft):                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -                                                                                                                                                                                                                                                                                                                          | BASE                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                  | 1344                 | Count:                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                                                                                            | TIDSTERNM                                                                                                                                                                                                                                                                          | DOWNSTREAM                                                                                                                                                                                                                                                                                                                                                                                                       |                      | Friction Equation:<br>Solution Algorithm:                                                                                                                                                                                                                                                            | Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Geometry                                                                                                                                                                                                                                                                                                                   | Circular                                                                                                                                                                                                                                                                           | Circular                                                                                                                                                                                                                                                                                                                                                                                                         |                      | Flow:                                                                                                                                                                                                                                                                                                | Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Span(in):                                                                                                                                                                                                                                                                                                                  | 24.00                                                                                                                                                                                                                                                                              | 24.00                                                                                                                                                                                                                                                                                                                                                                                                            |                      | Entrance Loss Coef:                                                                                                                                                                                                                                                                                  | 0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Rise(in):                                                                                                                                                                                                                                                                                                                  | 24.00                                                                                                                                                                                                                                                                              | 24.00                                                                                                                                                                                                                                                                                                                                                                                                            |                      | Exit Loss Coef:                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Invert(ft):                                                                                                                                                                                                                                                                                                                | -0.500                                                                                                                                                                                                                                                                             | DOWNSTREAM<br>Circular<br>24.00<br>-0.520<br>0.013000<br>0.000                                                                                                                                                                                                                                                                                                                                                   |                      | Bend Loss Coef:<br>Outlet Ctrl Spec:                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| op Clip(in).                                                                                                                                                                                                                                                                                                               | 0.000                                                                                                                                                                                                                                                                              | 0.000                                                                                                                                                                                                                                                                                                                                                                                                            |                      | Inlet Ctrl Spec:                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| ot Clip(in):                                                                                                                                                                                                                                                                                                               | 0.000                                                                                                                                                                                                                                                                              | 0.000                                                                                                                                                                                                                                                                                                                                                                                                            |                      | Stabilizer Option:                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                    | escription:<br>edge w/ headwall                                                                                                                                                                                                                                                                                                                                                                                  |                      |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| rcular Conerwanstream FHW                                                                                                                                                                                                                                                                                                  | ete: Square (<br>A Inlet Edge                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                  |                      |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:                                                                                                                                                                                                                                                                      | ete: Square (<br>A Inlet Edge<br>ete: Square (                                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall                                                                                                                                                                                                                                                                                                                                                             | 1347                 | Length(ft):                                                                                                                                                                                                                                                                                          | 51.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                            | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347                 | Length(ft);<br>Count:<br>Friction Equation;                                                                                                                                                                                                                                                          | 51.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                            | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347                 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                                                                                                                                                                   | 51.00<br>1<br>Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                            | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                                                                                                                                                          | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                            | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                                                                                                                                                                   | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                            | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:                                                                                                                                                             | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Group:                                                                                                                                                                                                                                                            | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE                                                                                                                                                                                                                     | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                                                                                                                                        | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>Use dc or tw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| rcular Concr-<br>wnstream FHW.<br>rcular Concr-<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):                                                                                                                                                                   | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000                                                                                                                                            | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000                                                                                                                                                                                                                                                        | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                    | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| rcular Concr-<br>wnstream FHW.<br>rcular Concr-<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):                                                                                                                                                                   | ete: Square (<br>A Inlet Edge<br>ete: Square (<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000                                                                                                                                            | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                                                                                                                                                                                                   | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                                                                                                                                        | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| rcular Concr<br>wnstream FHW<br>rcular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA                                                                                                                                                 | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Inlet Edge De                                                                                                                         | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                                                                               | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                    | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| rcular Concr<br>wnstream FHW,<br>rcular Concr<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA                                                                                                                                                | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Do<br>ete: Square of<br>A Inlet Edge                                                                                       | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000                                                                                                                                                                                                                                      | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                    | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw<br>Use dn                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| rcular Concr-<br>wnstream FHW<br>rcular Concr-<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre                                                                                                                              | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge                                                                                       | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall                                                                                                                                                                        | 1347<br>1345         | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                              | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| rcular Concr-<br>wnstream FHW.<br>rcular Concr-<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rcular Concr-<br>wnstream FHWA                                                                                                             | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>A Inlet Edge                                            | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:                                                                                                                                                                                            | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:                                                                                                                    | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| wnstream FHW<br>rcular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concr<br>wnstream FHWA<br>rcular Concr<br>Name:                                                                                             | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge                                                                                       | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                                       | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:                                                                  | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| rcular Concr-<br>wnstream FHW.<br>rcular Concr-<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Nanning's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concr-<br>wnstream PHWA<br>rcular Concr-<br>Name:<br>Group:                                                        | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Do<br>ete: Square of<br>A Inlet Edge de<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM                                               | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:                                                                                                                                              | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:                                           | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| rcular Concr-<br>wnstream FHW.<br>rcular Concr-<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rcular Concr-<br>wnstream PHW<br>rcular Concr-<br>Name:<br>Group:<br>Ceometry:                                          | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>24.00<br>0.013000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular                             | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>dge w/ headwall<br>From Node:<br>To Node:                                                                                                                                      | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                  | 1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| rcular Concr-<br>wnstream FHW,<br>rcular Concr-<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rcular Concr-<br>wnstream PHW<br>rcular Concr-<br>Name:<br>Group:<br>Span(in):                                                          | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>Unlet Edge Do<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00                            | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00                                                                                                           | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef;                             | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| rcular Concr-<br>wnstream FHW,<br>rcular Concr-<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>op Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concr-<br>wnstream FHWA<br>rcular Concr-<br>Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Rise(in):                                 | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>Unlet Edge Do<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00          | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>24.00<br>24.00                                                                                         | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:                         | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.0 |
| rcular Concr-<br>wnstream FHW.<br>rcular Concr-<br>Name:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Nameing's N:<br>op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA :<br>rcular Concr-<br>wnstream FHW<br>rcular Concr-<br>Mame:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft): | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>0.013000<br>0.000<br>Unlet Edge Do<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>2.00<br>0.200<br>0.000   | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>escription:<br>edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00                                                                                                           | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Bend Loss Coef: | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.0 |
| rcular Concre<br>wnstream FHW,<br>rcular Concre<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>'op Clip(in):<br>ot Clip(in):<br>ot Clip(in):<br>stream FHWA<br>rcular Concre<br>wnstream PHW<br>rcular Concre<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):       | ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.000<br>0.000<br>0.000<br>0.000<br>Unlet Edge De<br>ete: Square of<br>A Inlet Edge<br>ete: Square of<br>1347A<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>-0.500<br>0.013000 | edge w/ headwall<br>Description:<br>edge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>-0.500<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>From Node:<br>To Node:<br>To Node:<br>Strular<br>24.00<br>24.00<br>24.00<br>0.000<br>0.000<br>0.000 | 1347<br>1345<br>1347 | Length(ft):<br>Count:<br>Friction Equation:<br>Flow:<br>Entrance Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:                         | 51.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>Use dc or tw<br>Use dn<br>None<br>200.00<br>1<br>Average Conveyance<br>Automatic<br>Both<br>0.00<br>0.00<br>0.00<br>Use dc or tw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

#### Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name;                | 1348     | From Nod   | le : | 1348  | Length(ft):         | 50.00              |
|----------------------|----------|------------|------|-------|---------------------|--------------------|
| Group:               | BASE     | To Nod     | le : | 1347A | Count:              | 1                  |
|                      |          |            |      |       | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      |       | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      |       | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24.00      |      |       | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 24.00    | 24.00      |      |       | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.490   | -0.500     |      |       | Bend Loss Coef:     | 0,00               |
| Manning's N:         | 0.013000 | 0.013000   |      |       | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      |       | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      |       | Stabilizer Option:  | None               |
|                      |          |            |      |       |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:         | 1350     | From Node  | e: 1 | 350 | Length(ft):         | 40.00              |
|---------------|----------|------------|------|-----|---------------------|--------------------|
| Group:        | BASE     | To Node    | :: 1 | 348 | Count;              | 1                  |
|               |          |            |      |     | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      |     | Solution Algorithm: | Automatic          |
| Geometry:     | Circular | Circular   |      |     | Flow:               | Both               |
| Span(in):     | 24.00    | 24.00      |      |     | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 24.00    | 24.00      |      |     | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0,500   | -0.490     |      |     | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      |     | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in); | 0.000    | 0.000      |      |     | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000    | 0.000      |      |     | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                    | 1353     | From Node: 1353 | Length(ft): 4         | 47.00              |
|--------------------------|----------|-----------------|-----------------------|--------------------|
| Group:                   | BASE     | To Node: 1350   | Count: 1              | 1                  |
|                          |          |                 | Friction Equation: A  | Average Conveyance |
|                          | UPSTREAM | DOWNSTREAM      | Solution Algorithm: A | Automatic          |
| Geometry:                | Circular | Circular        | Flow: E               | Both               |
| Span(in):                | 24.00    | 24.00           | Entrance Loss Coef: 0 | 0.00               |
| Rise(in);                | 24.00    | 24.00           | Exit Loss Coef: 0     | 0.00               |
| Invert(ft):              | -0.480   | -0.500          | Bend Loss Coef: 0     | 0.00               |
| Manning's N:             | 0.013000 | 0.013000        | Outlet Ctrl Spec; U   | Jse dc or tw       |
| <pre>Fop Clip(in):</pre> | 0.000    | 0.000           | Inlet Ctrl Spec; U    |                    |
| Bot Clip(in):            | 0.000    | 0.000           | Stabilizer Option: N  |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|                      |          |            | *** *** *** *** *** *** *** *** |                     |                    |
|----------------------|----------|------------|---------------------------------|---------------------|--------------------|
| Name:                | 1354     | From Node: | 1354                            | Length(ft);         | 140.00             |
| Group:               | BASE     | To Node:   | 1353                            | Count;              | 1                  |
|                      |          |            |                                 | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |                                 | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |                                 | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24.00      |                                 | Entrance Loss Coef: | 0.00               |
|                      |          |            |                                 |                     |                    |

|               | <b></b>  | <b>A</b> 4 A A | _    |
|---------------|----------|----------------|------|
| Rise(in):     | 24.00    | 24.00          | E    |
| Invert(ft):   | -0.500   | -0.480         | E    |
| Manning's N:  | 0.013000 | 0,013000       | Out  |
| Top Clip(in): | 0.000    | 0.000          | In   |
| Bot Clip(in): | 0.000    | 0.000          | Stab |

Exit Loss Coef: 0.00 Bend Loss Coef: 0.00 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn tabilizer Option: None

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|               |          |            |      |                     | *****              |
|---------------|----------|------------|------|---------------------|--------------------|
| Name:         | 1355     | From Node: | 1355 | Length(ft):         | 94.00              |
| Group:        | BASE     | To Node:   | 1354 | Count:              | 1                  |
|               |          |            |      | Friction Equation:  | Average Conveyance |
|               | UPSTREAM | DOWNSTREAM |      | Solution Algorithm; | Automatic          |
| Geometry:     | Circular | Circular   |      | Flow:               | Both               |
| Span(in):     | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 24.00    | 24,00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.540   | -0.500     |      | Bend Loss Coef;     | 0.00               |
| Manning's N:  | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000    | 0,000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in); | 0.000    | 0.000      |      | Stabilizer Option;  | None               |
|               |          |            |      |                     |                    |
|               |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description; Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|                        |          |            |      |                     | ********           |
|------------------------|----------|------------|------|---------------------|--------------------|
| Name :                 | 1356     | From Node: | 1356 | Length(ft):         | 110.00             |
| Group:                 | BASE     | To Node:   | 1355 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre>   | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef:     | 0,00               |
| <pre>Invert(ft):</pre> | -0.520   | -0.540     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec;   | Use dc or tw       |
| Top Clip(in):          | 0,000    | 0.000      |      | Inlet Ctrl Spec;    | Use dn             |
| Bot Clip(in):          | 0.000    | 0,000      |      | Stabilizer Option:  | None               |
|                        |          |            |      | -                   |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                  | 1357     | From Node: | 1357 | Length(ft):         | 44.00              |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1356 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| Span(in):              | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.520   | ~0.520     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0,013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in);          | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name :                 | 1359     | From Node: | 1359 | Length(ft):         | 157.00             |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1357 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| Span(in):              | 24,00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.500   | -0.520     |      | Bend Loss Coef;     | 0.00               |
| Manning's N:           | 0.013000 | 0,013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          | 0,000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1360     | From Node: |      | Length(ft):         |                    |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1359 | Count:              | 1                  |
| -                    |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0.510   | -0,500     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                      |          |            |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

|               | 13600UT      | From Node:   |      | Length(ft);         |                    |
|---------------|--------------|--------------|------|---------------------|--------------------|
| Group:        | BASE         | To Node:     | 1362 | Count:              | 1                  |
|               |              |              |      | Friction Equation;  | Average Conveyance |
|               | UPSTREAM     | DOWNSTREAM   |      | Solution Algorithm: | Automatic          |
| Geometry:     | Horz Ellipse | Horz Ellipse |      | Flow:               | Both               |
| Span(in):     | 18.00        | 18.00        |      | Entrance Loss Coef: | 0.00               |
| Rise(in):     | 12.00        | 12.00        |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):   | -0.510       | 1.000        |      | Bend Loss Coef:     | 0.00               |
| Manning's N:  | 0.013000     | 0,013000     |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in): | 0.000        | 0.000        |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in): | 0.000        | 0.000        |      | Stabilizer Option:  | None               |
|               |              |              |      |                     |                    |

Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

Name: 1362 From Node: 1362 Length(ft): 26.00 To Node: 1364C Group: BASE Count: 1 Friction Equation: Average Conveyance UPSTREAM DOWNSTREAM Solution Algorithm: Automatic Geometry: Horz Ellipse Horz Ellipse Flow: Both Entrance Loss Coef: 0.00 Exit Loss Coef: 0.00 Span(in): 18.00 Rise(in): 12.00 18.00 12.00 Invert(ft): 1.000 1.250 Bend Loss Coef: 0.00 Manning's N: 0.013000 0.013000 Outlet Ctrl Spec: Use dc or tw Top Clip(in): 0.000 0.000 Inlet Ctrl Spec: Use dn Stabilizer Option: None Bot Clip(in): 0.000 0.000

Upstream FHWA Inlet Edge Description:

#### Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

| Name:                | 1366     | From Node: 1366 | Length(ft): 185.00                    |
|----------------------|----------|-----------------|---------------------------------------|
| Group:               | BASE     | To Node: 1360   | Count: 1                              |
|                      |          |                 | Friction Equation: Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM      | Solution Algorithm: Automatic         |
| Geometry:            | Circular | Circular        | Flow: Both                            |
| Span(in):            | 24.00    | 24.00           | Entrance Loss Coef: 0.00              |
| Rise(in);            | 24.00    | 24.00           | Exit Loss Coef: 0.00                  |
| Invert(ft):          | -0.500   | -0.510          | Bend Loss Coef: 0.00                  |
| Manning's N:         | 0.013000 | 0.013000        | Outlet Ctrl Spec: Use dc or tw        |
| <pre>Clip(in):</pre> | 0.000    | 0.000           | Inlet Ctrl Spec; Use dn               |
| Bot Clip(in):        | 0.000    | 0.000           | Stabilizer Option: None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1367     | From Node: | 1367 | Length(ft):         | 39.00              |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1366 | Count;              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24,00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):            |          | 24.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | -0,480   | -0.500     |      | Bend Loss Coef:     | 0,00               |
| Manning's N:         | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                | 1360     | From Node  | 2: | 1368 | Length(ft):         | 151.00             |
|----------------------|----------|------------|----|------|---------------------|--------------------|
| Group:               | BASE     | To Node    | е: | 1367 | Count:              | 1                  |
|                      |          |            |    |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |    |      | Solution Algorithm: | Automatic          |
| Geometry:            |          | Circular   |    |      | Flow:               | Both               |
| <pre>Span(in);</pre> |          | 24.00      |    |      | Entrance Loss Coef; | 0.00               |
| Rise(in):            |          | 24.00      |    |      | Exit Loss Coef:     | 0,00               |
| Invert(ft):          |          | -0.480     |    |      | Bend Loss Coef:     | 0.00               |
| Manning's N:         |          | 0.013000   |    |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        |          | 0.000      |    |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |    |      | Stabilizer Option:  | None               |
|                      |          |            |    |      |                     |                    |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:     | 1370     | From Node: 1370 | Length(ft):         | 50.00              |
|-----------|----------|-----------------|---------------------|--------------------|
| Group:    | BASE     | To Node: 1368   | Count:              | 1                  |
|           |          |                 | Friction Equation:  | Average Conveyance |
|           | UPSTREAM | DOWNSTREAM      | Solution Algorithm: | Automatic          |
| Geometry: | Circular | Circular        | Flow:               | Both               |
| Span(in); | 24.00    | 24.00           | Entrance Loss Coef: | 0,00               |
| Rise(in): | 24.00    | 24.00           | Exit Loss Coef:     | 0.00               |
| vert(ft): | -0.470   | -0.470          | Bend Loss Coef:     | 0.00               |

Stabilizer Option: None

| Manning's N:  | 0.013000 | 0.013000 | Outlet Ctrl Spec: Use dc or tw |
|---------------|----------|----------|--------------------------------|
| Top Clip(in): | 0.000    | 0.000    | Inlet Ctrl Spec: Use dn        |
| Bot Clip(in): | 0.000    | 0.000    | Stabilizer Option: None        |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

 
 Name:
 1371
 From Node:
 1371
 Length(ft):
 135,00

 Group:
 BASE
 To Node:
 1370
 Count:
 1
 Friction Equation: Average Conveyance UPSTREAM DOWNSTREAM Geometry: Circular Circular Span(in): 24.00 24.00 Solution Algorithm: Automatic Flow: Both Entrance Loss Coef: 0.00 Exit Loss Coef: 0.00 Rise(in): 24.00 24.00 Invert(ft): -0.500 Manning's N: 0.013000 Top Clip(in): 0.000 -0.470 Bend Loss Coef: 0,00 0.013000 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn 0.000

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

0,000

Bot Clip(in); 0.000

Downstream FHWA Inlet Edge Description: Circular Concrete; Square edge w/ headwall

| Name:                  | 1372     | From Node: | 1372 | Length(ft):         | 141.00             |
|------------------------|----------|------------|------|---------------------|--------------------|
| Group:                 | BASE     | To Node:   | 1371 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre>   | 24.00    | 24.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):              | 24.00    | 24.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | -0.480   | -0.500     |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec;   | Use dc or tw       |
| Top Clip(in):          | 0.000    | 0,000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name :               | 1373     | From Node: 1373      | Length(ft):         | 49.00              |
|----------------------|----------|----------------------|---------------------|--------------------|
| Group:               | BASE     | <b>To Noãe: 1372</b> | Count:              | 1                  |
|                      |          |                      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM           | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular             | Flow:               | Both               |
| <pre>Span(in):</pre> | 24.00    | 24.00                | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 24.00    | 24.00                | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | 0.200    | -0.480               | Bend Loss Coef:     | 0.00               |
| Manning's N:         | 0.013000 | 0.013000             | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0,000    | 0,000                | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000                | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

From Node: 1373 Length(ft): 80.00

Name: 13730UT

| Group:               | BASE         | To Node: 1   | 376      | Count:      | 1                  |
|----------------------|--------------|--------------|----------|-------------|--------------------|
|                      |              |              |          |             | Average Conveyance |
|                      | UPSTREAM     | DOWNSTREAM   | Solution | Algorithm:  | Automatic          |
| Geometry:            | Horz Ellípse | Horz Ellipse |          | Flow:       | Both               |
| <pre>Span(in):</pre> | 30.00        | 30.00        | Entrance | Loss Coef:  | 0.20               |
| Rise(in):            |              | 19.00        | Exit     | Loss Coef:  | 0.20               |
| Invert(ft):          |              | 0.390        | Bend     | Loss Coef;  | 0,00               |
| Manning's N:         | 0.013000     | 0.013000     | Outlet   | Ctrl Spec:  | Use dc or tw       |
| Top Clip(in):        | 0.000        | 0.000        | Inlet    | Ctrl Spec:  | Use dn             |
| Bot Clip(in):        | 0.000        | 0.000        | Stabili  | zer Option: | None               |

Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

| Name:                  | 13766        | From Node:   | 13766 | Length(ft);         | 100.00             |
|------------------------|--------------|--------------|-------|---------------------|--------------------|
| Group:                 | BASE         | To Node:     | 13767 | Count:              | 1                  |
|                        |              |              |       | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM     | DOWNSTREAM   |       | Solution Algorithm: | Automatic          |
| Geometry:              | Horz Ellipse | Horz Ellipse |       | Flow:               | Both               |
| Span(in):              | 18.00        | 18.00        |       | Entrance Loss Coef: | 0.20               |
| Rise(in):              | 12.00        | 12.00        |       | Exit Loss Coef;     | 0.20               |
| <pre>Invert(ft):</pre> | 0.830        | 0.830        |       | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000     | 0.013000     |       | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):          |              | 0.000        |       | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000        | 0.000        |       | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description; Horizontal Ellipse Concrete: Square edge with headwall

Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall

|                        | ·        |            |      |                     |                    |
|------------------------|----------|------------|------|---------------------|--------------------|
| Name:                  | 1379     | From Node: | 1379 | Length(ft):         | 108,00             |
| Group:                 | BASE     | To Node:   | 1373 | Count:              | 1                  |
|                        |          |            |      | Friction Equation:  | Average Conveyance |
|                        | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:              | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre>   | 18.00    | 18.00      |      | Entrance Loss Coef; | 0.00               |
| Rise(in):              | 18.00    | 18.00      |      | Exit Loss Coef:     | 0.00               |
| <pre>Invert(ft):</pre> | 0.230    | 0,200      |      | Bend Loss Coef:     | 0.00               |
| Manning's N:           | 0.013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in);          |          | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):          | 0.000    | 0.000      |      | Stabilizer Option:  | None               |

Upstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Name:                |          | From Node: |      | Length(ft):         | 30.00              |
|----------------------|----------|------------|------|---------------------|--------------------|
| Group:               | BASE     | To Node:   | 1379 | Count:              | 1                  |
|                      |          |            |      | Friction Equation:  | Average Conveyance |
|                      | UPSTREAM | DOWNSTREAM |      | Solution Algorithm: | Automatic          |
| Geometry:            | Circular | Circular   |      | Flow:               | Both               |
| <pre>Span(in):</pre> | 18.00    | 18.00      |      | Entrance Loss Coef: | 0.00               |
| Rise(in):            | 18.00    | 18.00      |      | Exit Loss Coef:     | 0.00               |
| Invert(ft):          | 0.240    | 0.230      |      | Bend Loss Coef:     | 0,00               |
| Manning's N:         | 0,013000 | 0.013000   |      | Outlet Ctrl Spec:   | Use dc or tw       |
| Top Clip(in):        | 0.000    | 0.000      |      | Inlet Ctrl Spec:    | Use dn             |
| Bot Clip(in):        | 0.000    | 0.000      |      | Stabilizer Option:  | None               |
|                      |          |            |      |                     |                    |

Downstream FHWA Inlet Edge Description: Circular Concrete: Square edge w/ headwall

| Group                                                                                                                                                                                                                                            | 1381<br>BASE                                                                                                                                                                                                                                 | To Node;                                                                                                                                                                                                                      | 1380                      | Length(ft):<br>Count:                                                                                                                                                                                              | 1                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| croab.                                                                                                                                                                                                                                           | 21,02                                                                                                                                                                                                                                        | 10 110120,                                                                                                                                                                                                                    | 1000                      | Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                                                                                       | Average Conveyance                                                                                                                  |
|                                                                                                                                                                                                                                                  | UPSTREAM                                                                                                                                                                                                                                     | DOWNSTREAM                                                                                                                                                                                                                    |                           | Solution Algorithm:                                                                                                                                                                                                | Automatic                                                                                                                           |
| Geometry:                                                                                                                                                                                                                                        | Circular                                                                                                                                                                                                                                     | Circular                                                                                                                                                                                                                      |                           | Flow:                                                                                                                                                                                                              | Both                                                                                                                                |
| Span(in):                                                                                                                                                                                                                                        | Circular<br>18.00                                                                                                                                                                                                                            | 18.00                                                                                                                                                                                                                         |                           | Entrance Loss Coef:                                                                                                                                                                                                | 0.00                                                                                                                                |
| Rise(in):                                                                                                                                                                                                                                        | 18.00                                                                                                                                                                                                                                        | 18.00                                                                                                                                                                                                                         |                           | Exit Loss Coef;                                                                                                                                                                                                    | 0.00                                                                                                                                |
| Invert(ft):                                                                                                                                                                                                                                      | 0.290                                                                                                                                                                                                                                        | 0.240                                                                                                                                                                                                                         |                           | Pond Iona Coof.                                                                                                                                                                                                    | 8 00                                                                                                                                |
| Manning's N:                                                                                                                                                                                                                                     | 0.013000                                                                                                                                                                                                                                     | 0.013000                                                                                                                                                                                                                      |                           | Outlet Ctrl Spec:                                                                                                                                                                                                  | Use dc or tw                                                                                                                        |
| Top Clip(in):                                                                                                                                                                                                                                    | 0.000                                                                                                                                                                                                                                        | 0.000                                                                                                                                                                                                                         |                           | Inlet Ctrl Spec;                                                                                                                                                                                                   | Use dn                                                                                                                              |
| Bot Clip(in):                                                                                                                                                                                                                                    | 18.00<br>19.00<br>0.290<br>0.013000<br>0.000<br>0.000                                                                                                                                                                                        | 0.000                                                                                                                                                                                                                         |                           | Stabilizer Option:                                                                                                                                                                                                 | None                                                                                                                                |
|                                                                                                                                                                                                                                                  | Inlet Edge Des<br>ete: Square ed                                                                                                                                                                                                             |                                                                                                                                                                                                                               |                           |                                                                                                                                                                                                                    |                                                                                                                                     |
|                                                                                                                                                                                                                                                  | A Inlet Edge D<br>ete: Square ed                                                                                                                                                                                                             |                                                                                                                                                                                                                               |                           |                                                                                                                                                                                                                    |                                                                                                                                     |
|                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              | ****                                                                                                                                                                                                                          |                           | Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                                                                        | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~                                                                                              |
|                                                                                                                                                                                                                                                  | 1382<br>BASE                                                                                                                                                                                                                                 | From Node:                                                                                                                                                                                                                    | 1382                      | Length(ft):                                                                                                                                                                                                        | 63.00<br>1                                                                                                                          |
|                                                                                                                                                                                                                                                  | JUNGE                                                                                                                                                                                                                                        | TO NODE:                                                                                                                                                                                                                      | 730T                      | Count:<br>Friction Equation:                                                                                                                                                                                       | 1<br>Averade Converses                                                                                                              |
|                                                                                                                                                                                                                                                  | UPSTREAM                                                                                                                                                                                                                                     | DOWNSTREAM                                                                                                                                                                                                                    |                           | Solution Algorithm.                                                                                                                                                                                                | Average conveyance<br>Automatic                                                                                                     |
| Geometry:                                                                                                                                                                                                                                        | Circular                                                                                                                                                                                                                                     | Circular                                                                                                                                                                                                                      |                           | Flow:                                                                                                                                                                                                              | Both                                                                                                                                |
| Span(in):                                                                                                                                                                                                                                        | 18,00                                                                                                                                                                                                                                        | 18.00                                                                                                                                                                                                                         |                           | Entrance Loss Coef:                                                                                                                                                                                                | 0.00                                                                                                                                |
| Rise(in):                                                                                                                                                                                                                                        | 18.00                                                                                                                                                                                                                                        | 18.00                                                                                                                                                                                                                         |                           | Exit Loss Coef:                                                                                                                                                                                                    | 0.00                                                                                                                                |
| Invert(ft):                                                                                                                                                                                                                                      | 0.330                                                                                                                                                                                                                                        | 0.290                                                                                                                                                                                                                         |                           | Bend Loss Coef.                                                                                                                                                                                                    | 0 00                                                                                                                                |
| Manning's N:                                                                                                                                                                                                                                     | 0.013000                                                                                                                                                                                                                                     | 0.013000                                                                                                                                                                                                                      |                           | Outlet Ctrl Spec:                                                                                                                                                                                                  | Use dc or tw                                                                                                                        |
|                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                               |                           |                                                                                                                                                                                                                    |                                                                                                                                     |
| Top Clip(in):                                                                                                                                                                                                                                    | 0.000                                                                                                                                                                                                                                        | 0.000                                                                                                                                                                                                                         |                           | Inlet Ctrl Spec;                                                                                                                                                                                                   | Use dn                                                                                                                              |
| pstream FHWA                                                                                                                                                                                                                                     | UPSTREAM<br>Circular<br>18.00<br>0.330<br>0.013000<br>0.000<br>0.000<br>Inlet Edge Des                                                                                                                                                       | cription:                                                                                                                                                                                                                     |                           | Inlet Ctrl Spec:<br>Stabilizer Option:                                                                                                                                                                             | Use dn                                                                                                                              |
| pstream FHWA<br>ircular Concr<br>ownstream FHW                                                                                                                                                                                                   |                                                                                                                                                                                                                                              | cription:<br>ge w/ headwall<br>escription:                                                                                                                                                                                    |                           | Inlet Ctrl Spec:                                                                                                                                                                                                   | Use dn                                                                                                                              |
| Destream FHWA<br>Fircular Concr<br>Hownstream FHW<br>Fircular Concr<br>Name:                                                                                                                                                                     | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL                                                                                                                                                                | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:                                                                                                                                                    | 1100                      | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):                                                                                                                                                              | Use dn<br>None<br>1900.00                                                                                                           |
| Destream FHWA<br>Fircular Concr<br>Hownstream FHW<br>Fircular Concr<br>Name:                                                                                                                                                                     | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed                                                                                                                                                                         | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall                                                                                                                                                                  | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                                                                                                    | Use dn<br>None<br>1900.00<br>2                                                                                                      |
| Destream FHWA<br>Fircular Concr<br>Hownstream FHW<br>Fircular Concr<br>Name:                                                                                                                                                                     | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE                                                                                                                                                        | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:                                                                                                                                        | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:                                                                                                                                                    | Use dn<br>None<br>1900.00<br>2                                                                                                      |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                                       | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic                                                                   |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                                       | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both                                                           |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef;                                                                       | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20                                                   |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:                                          | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.00                                   |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:                                          | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.00                                   |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:                                                             | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.00<br>Use dc or tw                   |
| Destream FHWA<br>Fircular Concr<br>Wownstream FHW<br>Fircular Concr<br>Name:<br>Group:                                                                                                                                                           | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM                                                                                                                                            | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNNSTREAM<br>Horz Flippo                                                                                                          | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.50<br>0.00<br>Use dc or tw<br>Use dn |
| pstream FHWA<br>Fircular Concr<br>HW<br>Fircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>pstream FHWA                                                | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>30.00<br>19.00<br>1.200<br>0.013000<br>0.000<br>0.000<br>0.000                                                          | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>30.00<br>19.00<br>0.013000<br>0.001<br>0.000<br>0.000<br>0.000                                        | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:                     | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.00<br>Use dc or tw<br>Use dn         |
| Destream FHWA<br>Sircular Concr<br>Nownstream FHW<br>Sircular Concr<br>Name:<br>Group:<br>Geometry:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Top Clip(in):<br>Bot Clip(in):<br>Bot Clip(in):<br>Destream FHWA Sorizontal Ello | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM<br>Horz Ellipse<br>30.00<br>19.00<br>1.200<br>0.013000<br>0.000<br>0.000<br>0.000                                                          | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>30.00<br>19.00<br>0.013000<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000 | 1100<br>1364B             | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.50<br>0.00<br>Use dc or tw<br>Use dn |
| <pre>pstream FHWA 'ircular Concr 'ownstream FHW 'ircular Concr</pre>                                                                                                                                                                             | Inlet Edge Des<br>ete: Square ed<br>A Inlet Edge D<br>ete: Square ed<br>CANAL<br>BASE<br>UPSTREAM<br>HOTZ Ellipse<br>30.00<br>19.00<br>1.200<br>0.013000<br>0.000<br>0.000<br>0.000<br>Inlet Edge Desc<br>ipse Concrete:<br>A Inlet Edge Des | cription:<br>ge w/ headwall<br>escription:<br>ge w/ headwall<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Horz Ellipse<br>30.00<br>19.00<br>0.013000<br>0.013000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000<br>0.000 | 1100<br>1364B<br>headwall | Inlet Ctrl Spec:<br>Stabilizer Option:<br>Length(ft):<br>Count:<br>Friction Equation:<br>Solution Algorithm:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | Use dn<br>None<br>1900.00<br>2<br>Average Conveyance<br>Automatic<br>Both<br>0.20<br>0.50<br>0.50<br>0.00<br>Use dc or tw<br>Use dn |

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| Name:<br>Group;                            | - | From Node:<br>To Node:                       | <br>Length(ft):<br>Count:                                               |      |
|--------------------------------------------|---|----------------------------------------------|-------------------------------------------------------------------------|------|
| Geometry:<br>Invert(ft):<br>TClpInitZ(ft): |   | DOWNSTREAM<br>Irregular<br>2.030<br>9999.000 | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Contraction Coef: | Both |

| <pre>Manning's N:<br/>Top Clip(ft):<br/>Bot Clip(ft):<br/>Main XSec:<br/>AuxElev1(ft):<br/>AuxElev2(ft):<br/>AuxElev2(ft):<br/>Aux XSec2:<br/>Top Width(ft):<br/>Depth(ft):<br/>Eot Width(ft):<br/>LtSdSlp(h/v):<br/>RtSdSlp(h/v):</pre>       | 0.000<br>0.000<br>1000<br>0.000<br>0.000                          | 0.000<br>0.000<br>1010<br>0.000<br>0.000                                         |      | Expansion Coef:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                                                                            | 0.000<br>0.000<br>Use dc or tw<br>Use dn                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Name:<br>Group:                                                                                                                                                                                                                                | 1020                                                              | From Node:<br>To Node:                                                           | 1010 | Length(ft):<br>Count:                                                                                                                                                                               |                                                                                 |
| Invert(ft):                                                                                                                                                                                                                                    | 2.030<br>9999.000<br>0.000<br>1010<br>0.000<br>0.000              | Irregular<br>2.320                                                               |      | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option: | Automatic<br>Both<br>0.100<br>0.300<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:                                                                                                                                                                                                                                | 1030                                                              | From Node:<br>To Node:                                                           | 1020 | Length(ft);<br>Count:                                                                                                                                                                               |                                                                                 |
| Geometry:<br>Invert(ft):<br>TClpInit2(ft):<br>Manning's N:<br>Top Clip(ft):<br>Bot Clip(ft):<br>Aux XSec1:<br>AuxElev1(ft):<br>Aux XSec2:<br>Top Width(ft):<br>Depth(ft):<br>LtSdSlp(h/v):<br>RtSdSlp(h/v):                                    | Irregular<br>2.320<br>9999.000<br>0.000<br>0.000<br>1020<br>0.000 | DOWNSTREAM<br>Irregular<br>1.780<br>9999.000<br>0.000<br>1030<br>0.000<br>0.000  |      | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Entrance Loss Coef:<br>Outlet Ctri Spec:<br>Inlet Ctri Spec:<br>Stabilizer Option:                    | Automatic<br>Both<br>0.100<br>0.300<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:                                                                                                                                                                                                                                |                                                                   | From Node:<br>To Node:                                                           |      | Length(ft);<br>Count:                                                                                                                                                                               |                                                                                 |
| Geometry:<br>Invert(ft):<br>TClpInit2(ft):<br>Manning's N:<br>Top Clip(ft):<br>Bot Clip(ft):<br>Main XSec:<br>AuxElev1(ft):<br>Aux XSec1:<br>AuxElev2(ft):<br>Cop Width(ft):<br>Depth(ft):<br>Eot Width(ft):<br>LtSdSlp(h/v):<br>RtSdSlp(h/v): | 9999.000<br>0.000<br>1030<br>0.000                                | DOWNSTREAM<br>Irregular<br>2.900<br>9999.000<br>0.000<br>0.000<br>0.000<br>0.000 |      | Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Contraction Coef:<br>Expansion Coef:<br>Entrance Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec:<br>Stabilizer Option:                    | Automatic<br>Both<br>0.100<br>0.300<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |

| Name:                                                                                                                                        | 1060                                                                                                                                      | Exon Made                                                                                                                                                                                                  | . 1050 Toopth/ft)                                                                                                                                                                                   | . 310 00                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Group                                                                                                                                        | 1060<br>BASE                                                                                                                              | To Node                                                                                                                                                                                                    | : 1050 Length(ft)<br>: 1100 Count                                                                                                                                                                   | : 1                                                                                               |
|                                                                                                                                              |                                                                                                                                           | DOWNSTREAM                                                                                                                                                                                                 |                                                                                                                                                                                                     | : Average Conveyance                                                                              |
| Geometry:                                                                                                                                    | Irregula                                                                                                                                  | r Irregular                                                                                                                                                                                                | Solution Algorithm                                                                                                                                                                                  |                                                                                                   |
| Invert(ft):                                                                                                                                  | 2.140                                                                                                                                     | 0.000                                                                                                                                                                                                      | Flow                                                                                                                                                                                                | Both                                                                                              |
| TClpInitZ(ft):<br>Manning's N:                                                                                                               |                                                                                                                                           | 9999.000                                                                                                                                                                                                   | Contraction Coef<br>Expansion Coef                                                                                                                                                                  |                                                                                                   |
|                                                                                                                                              |                                                                                                                                           | 0.000                                                                                                                                                                                                      | Entrance Loss Coef                                                                                                                                                                                  |                                                                                                   |
| Top Clip(ft):<br>Bot Clip(ft):                                                                                                               |                                                                                                                                           |                                                                                                                                                                                                            | Exit Loss Coef                                                                                                                                                                                      |                                                                                                   |
| Main XSec:                                                                                                                                   |                                                                                                                                           | 1060                                                                                                                                                                                                       | Outlet Ctrl Spec                                                                                                                                                                                    |                                                                                                   |
| AuxElev1(ft):<br>Aux XSec1:                                                                                                                  |                                                                                                                                           | 0.000                                                                                                                                                                                                      | Inlet Ctrl Spec<br>Stabilizer Option                                                                                                                                                                |                                                                                                   |
| AuxElev2(ft):                                                                                                                                |                                                                                                                                           | 0.000                                                                                                                                                                                                      | Scapilizer Option                                                                                                                                                                                   | . None                                                                                            |
| Aux XSec2:                                                                                                                                   |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
| Top Width(ft):                                                                                                                               |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
| Depth(ft):<br>Bot Width(ft):                                                                                                                 |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
| LtSdSlp(h/v):                                                                                                                                |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
| RtSdSlp(h/v):                                                                                                                                |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
|                                                                                                                                              |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
|                                                                                                                                              |                                                                                                                                           |                                                                                                                                                                                                            |                                                                                                                                                                                                     |                                                                                                   |
| Name:                                                                                                                                        | 1118                                                                                                                                      | From Node:                                                                                                                                                                                                 | 1118 Length(ft):                                                                                                                                                                                    | 50.00                                                                                             |
|                                                                                                                                              | BASE                                                                                                                                      | To Node:                                                                                                                                                                                                   | 1112 Count:                                                                                                                                                                                         |                                                                                                   |
|                                                                                                                                              | UPSTREAM                                                                                                                                  | DOWNSTREAM                                                                                                                                                                                                 | Friction Equation;<br>Solution Algorithm:                                                                                                                                                           | Average Conveyance                                                                                |
| Geometry:                                                                                                                                    | Circular                                                                                                                                  | Circular                                                                                                                                                                                                   | Solution Algorithm:                                                                                                                                                                                 | Automatic                                                                                         |
| Span(in):<br>Rise(in):                                                                                                                       | 24.00                                                                                                                                     | 24.00                                                                                                                                                                                                      | Flow:<br>Entrance Loss Coef:                                                                                                                                                                        |                                                                                                   |
| Invert(ft):                                                                                                                                  | 0.000                                                                                                                                     | 0.000                                                                                                                                                                                                      | Exit Loss Coef:                                                                                                                                                                                     |                                                                                                   |
| Manning's N:                                                                                                                                 | 0.013000                                                                                                                                  | 0.013000                                                                                                                                                                                                   | Outlet Ctrl Spec:                                                                                                                                                                                   |                                                                                                   |
| fop Clip(in):                                                                                                                                | 0,000                                                                                                                                     | Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000                                                                                                                                          | Inlet Ctrl Spec:<br>Solution Incs:                                                                                                                                                                  |                                                                                                   |
| wnstream FHWA                                                                                                                                | Inlet Ed                                                                                                                                  | e edge w/ headwall<br>ge Description:<br>e edge w/ headwall                                                                                                                                                |                                                                                                                                                                                                     |                                                                                                   |
| ** Weir 1 of 1                                                                                                                               | for Drop                                                                                                                                  | Structure 1118 ***                                                                                                                                                                                         |                                                                                                                                                                                                     | TABLE                                                                                             |
|                                                                                                                                              | Count:                                                                                                                                    |                                                                                                                                                                                                            | Bottom Clip(in): 0.000                                                                                                                                                                              |                                                                                                   |
|                                                                                                                                              |                                                                                                                                           | Vertical: Mavis<br>Both                                                                                                                                                                                    | Top Clip(in): 0.000<br>Weir Disc Coef: 3.200                                                                                                                                                        |                                                                                                   |
|                                                                                                                                              |                                                                                                                                           |                                                                                                                                                                                                            | Orifice Disc Coef: 0.600                                                                                                                                                                            |                                                                                                   |
|                                                                                                                                              |                                                                                                                                           | Rectangular                                                                                                                                                                                                |                                                                                                                                                                                                     |                                                                                                   |
|                                                                                                                                              | Span(in):                                                                                                                                 |                                                                                                                                                                                                            | Invert(ft): 0.000                                                                                                                                                                                   |                                                                                                   |
|                                                                                                                                              | Span(in):<br>Rise(in):                                                                                                                    | 24.00                                                                                                                                                                                                      | <pre>Invert(ft): 0.000 Control Elev(ft): 0.000</pre>                                                                                                                                                |                                                                                                   |
|                                                                                                                                              | Rise(in):                                                                                                                                 | 24.00<br>18.00                                                                                                                                                                                             | Control Elev(ft): 0.000                                                                                                                                                                             |                                                                                                   |
|                                                                                                                                              | Rise(in):                                                                                                                                 | 24.00<br>18.00                                                                                                                                                                                             | Control Elev(ft): 0.000<br>1134 Length(ft):                                                                                                                                                         | 50.00                                                                                             |
| Name:<br>Group:                                                                                                                              | Rise(in):                                                                                                                                 | 24.00<br>18.00<br>From Node:                                                                                                                                                                               | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:                                                                                                                                          | 50.00                                                                                             |
| Name:<br>Group:<br>Geometry:                                                                                                                 | RÎSE(în):<br>1134<br>BASE<br>UPSTREAM<br>Circular                                                                                         | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular                                                                                                                                         | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                             | 50.00<br>1<br>Average Conveyance<br>Automatic                                                     |
| Name:<br>Group:<br>Geometry:<br>Span(in);                                                                                                    | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00                                                                                | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00                                                                                                                                | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:                                                                                    | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None                                             |
| Name:<br>Group:<br>Geometry:                                                                                                                 | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00                                                                       | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular                                                                                                                                         | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:                                                                                             | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000                                    |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:                                                                     | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.000<br>0.013000                                         | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000                                                                                                  | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:                     | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw           |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):                                                    | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.020                                         | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.000                                                                                         | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):<br>Sot Clip(in):                                   | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000                                         | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.013000<br>0.000                                                                             | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:                     | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Cop Clip(in):<br>Sot Clip(in):<br>Dostream FHWA I                | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>nlet Edge                   | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.013000<br>0.000                                                                             | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Op Clip(in):<br>Sot Clip(in):<br>Detream FHWA I<br>rcular Concre | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000<br>nlet Edge<br>te: Square<br>Inlet Edg | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.013000<br>0.000<br>0.000<br>Description:                                                    | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Op Clip(in):<br>Sot Clip(in):<br>Detream FHWA I<br>rcular Concre | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000<br>nlet Edge<br>te: Square              | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000<br>Description:<br>e edge w/ headwall<br>ge Description:<br>e edge w/ headwall | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |
| Name:<br>Group:<br>Span(in):<br>Rise(in):<br>Invert(ft):<br>Manning's N:<br>Op Clip(in):<br>Sot Clip(in):<br>stream FHWA I<br>rcular Concre  | Rise(in):<br>1134<br>BASE<br>UPSTREAM<br>Circular<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000<br>nlet Edge<br>te: Square              | 24.00<br>18.00<br>From Node:<br>To Node:<br>DOWNSTREAM<br>Circular<br>24.00<br>24.00<br>0.000<br>0.013000<br>0.000<br>0.000<br>0.000<br>Description:<br>e edge w/ headwall<br>ge Description:              | Control Elev(ft): 0.000<br>1134 Length(ft):<br>1130 Count:<br>Friction Equation:<br>Solution Algorithm:<br>Flow:<br>Entrance Loss Coef:<br>Exit Loss Coef:<br>Outlet Ctrl Spec:<br>Inlet Ctrl Spec: | 50.00<br>1<br>Average Conveyance<br>Automatic<br>None<br>0.000<br>0.000<br>Use dc or tw<br>Use dn |

Bottom Clip(in): 0.000 Count: 1 Type: Vertical: Mavis Top Clip(in): 0.000 Top Clip(in): 0.000 Weir Disc Coef: 3.200 Orifice Disc Coef: 0.600 Flow: Both Flow: Both Geometry: Rectangular Span(in): 24.00 Invert(ft); 0.000 Control Elev(ft): 0.000 Rise(in): 18.00 ------Name: 1364C From Node: 1364C Length(ft): 511.00 To Node: 1364B Count: 1 Group: BASE UPSTREAM Friction Equation: Average Conveyance DOWNSTREAM Solution Algorithm: Automatic Flow: Both Geometry: Horz Ellipse Horz Ellipse Span(in): 18.00 Rise(in): 12.00 18,00 12.00 Entrance Loss Coef: 0.200 Exit Loss Coef: 0.200 0.013000 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec; Use dn Solution Incs: 10 Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall \*\*\* Weir 1 of 1 for Drop Structure 1364C \*\*\* TABLE Bottom Clip(in): 0.000 Count: 1 Type: Vertical: Mavis Flow: Both Geometry: Rectangular Type: Vertical: Mavis Flow: Both Geometry: Rectangular Type: Vertical: Mavis Weir Disc Coef: 3.200 Orifice Disc Coef: 0.600 Span(in): 40.20 Invert(ft): 0.720 Rise(in): 18.00 Control Elev(ft): 0,720 
 Name:
 1376
 From Node:
 1376
 Length(ft):
 291.00

 From:
 BSE
 To Node:
 13765
 Count:
 1
 Group: BASE To Node: 13766 Count: 1 UPSTREAM DOWNSTREAM Friction Equation: Average Conveyance Geometry: Horz Ellipse Horz Ellipse Solution Algorithm: Automatic Span(in): 30.00 Rise(in): 19.00 30.00 Flow: Both 19.00 Entrance Loss Coef: 0.200 Manning's N: 0.013000 Top Clip(in): 0.000 Bot Clip(in): 0.000 0.830 Exit Loss Coef: 0,200 0.013000 Outlet Ctrl Spec: Use dc or tw Inlet Ctrl Spec: Use dn 0.000 Solution Incs: 10 0.000 Upstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall Downstream FHWA Inlet Edge Description: Horizontal Ellipse Concrete: Square edge with headwall \*\*\* Weir 1 of 1 for Drop Structure 1376 \*\*\* TABLE Bottom Clip(in): 0.000 Top Clip(in): 0.000 Weir Disc Coef: 3.200 Orifice Disc Coef: 0.600 Count: 1 Type: Vertical: Mavis Flow: Both Geometry: Rectangular Span(in): 31.20 Invert(ft); 0.390 Rise(in): 22.20 Control Elev(ft): 0.390 Name: 1070 From Node: 1070 Group: BASE To Node: 1060 Flow: Both Count: 1 Type: Vertical: Mavis Geometry: Rectangular Span(in): 60.00 Rise(in): 18.00 Invert(ft): 0.100

|                                                 | · · · · · · · · · · · · · · · · · · · |                  |
|-------------------------------------------------|---------------------------------------|------------------|
| Control Elevation(ft):                          | 0.100                                 | TABLE            |
| Bottom Clip(in):<br>Top Clip(in);               |                                       |                  |
| Weir Discharge Coef:                            | 3.200                                 |                  |
| Orifice Discharge Coef:                         | 0.600                                 |                  |
|                                                 |                                       |                  |
| Name: 1072                                      | From Node:                            | 1070             |
| Group: BASE                                     | To Node:                              | 1070             |
| Flow: Both<br>Type: Vertical: Mavi              | Count:<br>s Geometry:                 | l<br>Rectangular |
| Span(in);                                       | 96.00                                 |                  |
| Rise(in):<br>Invert(ft):                        | 24.00                                 |                  |
| Control Elevation(ft):                          |                                       |                  |
| Bottom Clip(in):                                |                                       | TABLE            |
| Top Clip(in):<br>Weir Discharge Coef;           |                                       |                  |
| Orifice Discharge Coef:                         | 0.600                                 |                  |
|                                                 |                                       |                  |
|                                                 |                                       |                  |
| Name: 1080W<br>Group: BASE                      | From Node:<br>To Node:                | 1100             |
| Flow: None<br>Type: Vertical: Mavis             | Count:<br>Geometry:                   | 1<br>Irregular   |
| XSect                                           | 1080W                                 | -                |
| Invert(ft):<br>Control Elevation(ft):           | 4.300                                 |                  |
| Struct Opening Dim(ft):                         |                                       |                  |
| Bottom Clip(ft):                                |                                       | TABLE            |
| Top Clip(ft):<br>Weir Discharge Coef:           |                                       |                  |
| Orifice Discharge Coef:                         | 0.600                                 |                  |
|                                                 |                                       |                  |
| Name: 1114W                                     | From Node:                            | 1112             |
| Group: BASE                                     | To Node:                              | 1080             |
| Flow: Both<br>Type: Vertical: Mavis             | Count:<br>Geometry:                   |                  |
|                                                 | 1114W                                 |                  |
| Invert(ft):<br>Control Elevation(ft):           |                                       |                  |
| Struct Opening Dim(ft):                         | 9999.00                               | TABLE            |
| Bottom Clip(ft):<br>Top Clip(ft):               |                                       |                  |
| Weir Discharge Coef:                            | 3.200                                 |                  |
| Orifice Discharge Coef:                         | 0.000                                 |                  |
|                                                 |                                       |                  |
| Name: 1116W                                     | From Node:                            | 1116             |
| Group: BASE<br>Flow: Both                       | To Node:<br>Count;                    |                  |
| Type: Vertical: Mavis                           |                                       |                  |
| XSec:                                           |                                       |                  |
| Invert(ft);<br>Control Elevation(ft):           | 5.040                                 |                  |
| Struct Opening Dim(ft):                         | 9999.00                               | TABLE            |
| Bottom Clip(ft);<br>Top Clip(ft):               |                                       |                  |
| Weir Discharge Coef:<br>Orifice Discharge Coef: | 3.200                                 |                  |
| office procharge coef;                          | 0.000                                 |                  |
|                                                 |                                       |                  |
| Name: 1144W                                     | From Node:                            |                  |
| Group: BASE<br>Flow: Both                       | To Node:<br>Count:                    |                  |
|                                                 |                                       |                  |

```
Type: Vertical: Mavis
                                    Geometry: Irregular
                        XSec: 1144W
                 Invert(ft): 4,630
       Control Elevation(ft): 4.630
      Struct Opening Dim(ft): 9999.00
                                              TABLE
             Bottom Clip(ft): 0.000
      Top Clip(ft): 0.000
Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600
Name:1184WFrom Nucle:1105Group:BASETo Node:1144Place:BothCount:1
        Name: 1184W
                                From Node: 1184
                                      Count: 1
         Type: Vertical: Mavis Geometry: Irregular
                        XSec: 1184W
                 Invert(ft): 4.880
      Control Elevation(ft): 4.890
      Struct Opening Dim(ft): 9999.00
                                              TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
      Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600
Name: 1329W From Node: 1329
Group: BASE To Node: 1184
       Group: BASE
Flow: Both
                                   To Node: 1184
                                      Count: 1
        Type: Vertical: Mavis
                                   Geometry: Irregular
                       XSec: 1329W
      Invert(ft): 5.220
Control Elevation(ft): 5.220
      Struct Opening Dim(ft): 9999.00
                                             TABLE
            Bottom Clip(ft): 0.000
        Top Clip(ft): 0.000
Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600
   Name: 1337W From Node: 1337
                                  To Node: 1329
       Group: BASE
        Flow: Both Count: 1
Type: Vertical: Mavis Geometry: Irregular
                       XSec: 1337W
      Invert(ft): 4.670
Control Elevation(ft): 4.670
     Struct Opening Dim(ft): 9999.00
                                              TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
     Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600
_____

        Name:
        1347AW
        From Node:
        1347A

        Group:
        BASE
        To Node:
        1337

        Flow:
        Both
        Count:
        1

        Flow: Both
                                      Count: 1
        Type: Vertical: Mavis Geometry: Irregular
                       XSec: 1347AW
      Invert(ft): 3.240
Control Elevation(ft): 3.240
     Struct Opening Dim(ft): 9999.00
                                             TABLE
            Bottom Clip(ft): 0.000
               Top Clip(ft): 0.000
     Weir Discharge Coef: 3.200
Orifice Discharge Coef: 0.600
```

Name:1357WFrom Node:1357Group:BASETo Node:1347AFlow:BothCount:1Type:Vertical:MavisGeometry:Irregular XSec: 1357W Invert(ft): 3.520 Control Elevation(ft): 3.520 Struct Opening Dim(ft): 9999.00 TABLE Bottom Clip(ft): 0.000 Top Clip(ft); 0.000 Weir Discharge Coef: 3.200 Orifice Discharge Coef: 0.600 Name: 1360W From Node: 1360 Group: BASE To Node: 1357 Group: BASE To Node: 1357 Count: 1 Flow: Both Type: Vertical: Mavis Geometry: Irregular XSec: 1360W Invert(ft): 3.090 Control Elevation(ft): 3.090 Struct Opening Dim(ft): 9999.00 TABLE Bottom Clip(ft): 0.000 Top Clip(ft): 0.000 Weir Discharge Coef: 3.200 Orifice Discharge Coef: 0.600 \_\_\_\_\_ Name:1368WFrom Node:1368Group:BASETo Node:1360Flow:BothCount:1 Type: Vertical: Mavis Geometry: Irregular XSec: 1368W Invert(ft): 3.400 Control Elevation(ft): 3.400 Struct Opening Dim(ft): 9999.00 TABLE Bottom Clip(ft): 0.000 Top Clip(ft): 0.000 Weir Discharge Coef: 3.200 Orifice Discharge Coef: 0.600 Name: 1372W From Node: 1372 Group: BASE To Node: 1368 Flow: Both Count: 1 Type: Vertical: Mavis Geometry: Irregular Group: BASE XSec: 1372W Invert(ft): 3.320
Control Elevation(ft): 3.320 Struct Opening Dim(ft); 9999.00 TABLE Bottom Clip(ft): 0.000 Top Clip(ft): 0.000 Weir Discharge Coef: 3.200 Orifice Discharge Coef: 0.600 ------Name:1382WFrom Node:1382Group:BASETo Node:1372Flow:BothCount:1 Type: Vertical: Mavis Geometry: Irregular XSec: 1382W Invert(ft): 3.320 Control Elevation(ft): 3.320 Struct Opening Dim(ft): 9999.00 TABLE Bottom Clip(ft): 0.000

Top Clip(ft): 0.000 Weir Discharge Coef: 3.200 Orifice Discharge Coef: 0.600

| Name:<br>Group:                                                                                                                                                       | 1072 PUMP<br>BASE                                                                                                                                                                                      | From Node:<br>To Node:                                       |                                                                                                      | Count: 1<br>Flow: Positive              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------------------|
| #1:<br>#2:<br>#3:                                                                                                                                                     |                                                                                                                                                                                                        |                                                              | ELEV OFF(ft)<br>50.000<br>0.000<br>0.000                                                             |                                         |
| #4:                                                                                                                                                                   |                                                                                                                                                                                                        | 0.000<br>0.000                                               | 0.000                                                                                                |                                         |
| == Hydrology                                                                                                                                                          | Simulations ===                                                                                                                                                                                        |                                                              |                                                                                                      | *************************************** |
| Name:<br>Filename:                                                                                                                                                    |                                                                                                                                                                                                        | 00 Beach Road\ICE                                            | R\PROPOSED\SIM1.R32                                                                                  | 1                                       |
| Storm Dura<br>Rain                                                                                                                                                    | Defaults: Yes<br>tion(hrs): 24.00<br>fall File: FLMOI<br>mount(in): 2.00                                                                                                                               |                                                              |                                                                                                      |                                         |
|                                                                                                                                                                       |                                                                                                                                                                                                        |                                                              |                                                                                                      |                                         |
|                                                                                                                                                                       | Print Inc(min)                                                                                                                                                                                         |                                                              |                                                                                                      |                                         |
| 5.000                                                                                                                                                                 | 15.00                                                                                                                                                                                                  |                                                              |                                                                                                      |                                         |
| Name:<br>Filename:<br>Execute:                                                                                                                                        | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res                                                                                                                                        |                                                              | ***************************************                                                              |                                         |
| 6.000<br>=== Routing S<br>Name:<br>Filename:                                                                                                                          | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res                                                                                                                                        | Hydrology S<br>Beach Road\ICP                                | im: SIM1<br>R\PROPOSED\SIM1.I32                                                                      |                                         |
| 6.000<br>                                                                                                                                                             | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res<br>No<br>lta Z(ft): 1.00<br>Optimizer: 10.000<br>fime(hrs): 0.000                                                                      | Hydrology S<br>Beach Road\ICP                                | Sim: SIM1<br>R\PROFOSED\SIM1.I32<br>Patch: No<br>Delta Z Factor:<br>End Time(hrs):                   | 0.01000<br>36.00                        |
| 5.000<br>                                                                                                                                                             | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res<br>No<br>lta Z(ft): 1.00<br>Optimizer: 10.00                                                                                           | Hydrology S<br>Beach Road\ICP                                | sim: SIM1<br>R\PROFOSED\SIM1.I32<br>Patch: No<br>Delta Z Factor:                                     | 0.01000<br>36.00                        |
| S.000<br>S.000<br>Name:<br>Filename:<br>Execute:<br>Alternative:<br>Max De<br>Time Step (<br>Start ?<br>Min Calc ?<br>Boundar                                         | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res<br>No<br>lta Z(ft): 1.00<br>Optimizer: 10.00<br>Time(hrs): 0.000<br>Time(sec): 0.250<br>Cry Stages:<br>Print Inc(min)                  | Hydrology S<br>Hydrology S<br>00 Beach Road\ICP<br>start: No | <pre>im: SIM1 R\PROPOSED\SIM1.I32 Patch: No Delta Z Factor: End Time(hrs): Max Calc Time(sec):</pre> | 0.01000<br>36.00                        |
| S.000<br>Filename:<br>Filename:<br>Execute:<br>Alternative:<br>Max Del<br>Time Step (<br>Start 7<br>Min Calc 7<br>Boundar<br>ime(hrs)                                 | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res<br>No<br>lta Z(ft): 1.00<br>Optimizer: 10.00<br>Fime(hrs): 0.000<br>Fime(sec): 0.250<br>cy Stages:                                     | Hydrology S<br>Hydrology S<br>00 Beach Road\ICP<br>start: No | <pre>im: SIM1 R\PROPOSED\SIM1.I32 Patch: No Delta Z Factor: End Time(hrs): Max Calc Time(sec):</pre> | 0.01000<br>36.00                        |
| 6.000<br>=== Routing S:<br>Name:<br>Filename:<br>Execute:<br>Alternative:<br>Max Del<br>Time Step (<br>Start 7<br>Min Calc 7<br>Boundar<br>ime (hrs)<br>5.000<br>roup | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res<br>No<br>lta Z(ft): 1.00<br>Optimizer: 10.00<br>Time(hrs): 0.000<br>Fime(sec): 0.250<br>cry Stages:<br>Print Inc(min)<br>15.000<br>Run | Hydrology S<br>Hydrology S<br>00 Beach Road\ICP<br>start: No | <pre>im: SIM1 R\PROPOSED\SIM1.I32 Patch: No Delta Z Factor: End Time(hrs): Max Calc Time(sec):</pre> | 0.01000<br>36.00                        |
| 6.000<br>=== Routing S<br>Filename:<br>Filename:<br>Execute:<br>Alternative:<br>Max Del<br>Time Step (<br>Start 7<br>Min Calc 7<br>Boundar<br>ime(hrs)<br>6.000       | 15.00<br>imulations =====<br>SIM1<br>Q:\04222\009-00<br>Yes Res<br>No<br>lta Z(ft): 1.00<br>Optimizer: 10.00<br>Time(hrs): 0.000<br>Fime(sec): 0.250<br>cry Stages:<br>Print Inc(min)<br>15.000<br>Run | Hydrology S<br>Hydrology S<br>00 Beach Road\ICP<br>start: No | <pre>im: SIM1 R\PROPOSED\SIM1.I32 Patch: No Delta Z Factor: End Time(hrs): Max Calc Time(sec):</pre> | 0.01000<br>36.00                        |

**PROPOSED CONDITIONS OUTPUT** 

Proposed Condition with 2-inches of Rainfall; Open to Canal

|       |       |              | Max Time | Max   | Warning        | Max Delta | Max Surf | Max Time       | Max    | Max T |
|-------|-------|--------------|----------|-------|----------------|-----------|----------|----------------|--------|-------|
| Name  | Group | Simulation   | Stage    | Stage | Stage          | Stage     | Area     | Inflow         | Inflow | Outf  |
|       |       |              | hrs      | ft    | ft             | ft        | ft2      | hrs            | cfs    | outi  |
|       |       |              |          |       |                | LC.       |          | 111.0          |        |       |
| 1000  | BASE  | SIM1         | 18.57    | 2.924 | 4.600          | -0.1500   | 2801     | 12.25          | 0.131  | 18    |
| 1010  | BASE  | SIM1         | 18.56    | 2.924 | 3.800          | -0.9300   | 3728     | 17.49          | 0.055  | 18    |
| 1020  | BASE  | SIM1         | 18.56    | 2.924 | 3.600          | -1.2200   | 1629     | 12.22          | 0.233  | 12    |
| 1030  | BASE  | SIMI         | 18.56    | 2.924 | 3.700          |           |          | 12.24          |        |       |
| 1050  | BASE  |              |          |       |                | -0.6800   | 2037     |                | 0.870  | 18    |
|       |       | SIM1         | 18,82    | 2.508 | 3.600          | -1.1000   | 1538     | 18,55          | 0.155  | 18    |
| 1050  | BASE  | SIM1         | 18.85    | 2.270 | 4.900          | -1.0400   | 906      | 18.78          | 0,165  | 18    |
| 1060  | BASE  | SIM1         | 0.00     | 1.100 | 4.600          | *******   | 113      | 0.00           | 0.000  | 0     |
| 1070  | BASE  | SIM1         | 0.00     | 1.100 | 4.630          | 0.0000    | 113      | 0.00           | 0.000  | 0     |
| 1072  | BASE  | SIM1         | 0.00     | 1.100 | 4.630          | -0.0111   | 113      | 0.00           | 0.000  | 0     |
| 1080  | BASE  | SIM1         | 12.43    | 2.031 | 4.300          | -0.0092   | 144      | 12.19          | 9.851  | 12    |
| 1090  | BASE  | SIM1         | 12.39    | 2.058 | 4.560          | 0,0076    | 138      | 12.23          | 10.280 | 12    |
| 1100  | BASE  | SIM1         | 12,62    | 1.907 | 4.500          | 0.0004    | 37880    | 0.00           | 10.000 | 12    |
| 1110  | BASE  | SIM1         | 12.38    | 2.078 | 4.620          | 0.0031    | 249      | 14.07          | 8,882  | 12    |
| 1112  | BASE  | SIM1         | 12.37    | 2.080 | 4.830          | -0.0006   | 321      | 12.05          | 0.688  | 11    |
| 1114  | BASE  | SIM1         | 12.05    | 2.599 | 5.180          | 0.0001    | 273      | 12.01          | 0.699  | 12    |
| 1116  | BASE  | SIM1         | 12.02    | 2.767 | 5.040          | 0.0001    | 142      | 12.00          | 0.355  | 12    |
| 1118  | BASE  | SIM1         | 26.00    | 3,285 | 6.000          | 0.0000    | 29741    | 12.25          | 1.033  | 0     |
| 1120  | BASE  | SIM1         | 12.38    | 2.073 | 4.260          | -0.0093   | 115      | 12.00          | 0.296  | 14    |
| 1130  | BASE  | SIM1         | 12,34    | 2.128 | 4.360          | 0.0008    | 167      | 12,19          | 8.962  | 12    |
| 1132  | BASE  | SIM1         | 12.34    | 2.130 | 4.120          | 0.0005    | 114      | 12.25          | 0.288  | 10    |
| 1134  | BASE  | SIM1         | 27.00    | 4.334 | 6.000          | 0.0001    | 12262    | 12.50          | 1.397  | 0     |
| 1140  | BASE  | SIM1         | 12.32    | 2.157 | 4.200          | ~0.0010   | 179      | 12.17          | 8.724  |       |
| 1142  | BASE  | SIM1         |          |       |                |           |          |                |        | 12    |
|       |       |              | 12.32    | 2.161 | 3.720          | 0.0007    | 113      | 12.00          | 0.618  | 12    |
| 1144  | BASE  | SIM1         | 12.29    | 2.217 | 3,940          | 0,0063    | 116      | 0.00           | 4.096  | 0     |
| 1146  | BASE  | SIM1         | 12.27    | 2.256 | 5.700          | ~0.0083   | 115      | 12.00          | 1.776  | 0     |
| 1150  | BASE  | SIM1         | 12.32    | 2.180 | 4.490          | 0.0015    | 208      | 12.22          | 6.465  | 12    |
| 1151  | BASE  | SIM1         | 12.29    | 2.217 | 6.000          | -0.0093   | 115      | 12,00          | 1.709  | 0     |
| 1160  | BASE  | SIM1         | 12.31    | 2.194 | 4.860          | -0.0065   | 313      | 0.00           | 5.311  | 12    |
| 1161  | BASE  | SIM1         | 12.29    | 2.226 | 6,000          | -0.0109   | 115      | 12.00          | 1.561  | 0     |
| 1170  | BASE  | SIM1         | 12,31    | 2.199 | 5.150          | 0.0061    | 343      | 12.26          | 4.083  | 12    |
| 1180  | BASE  | SIM1         | 12.31    | 2.210 | 4.920          | 0.0010    | 291      | 12.25          | 4.112  | 12    |
| 1182  | BASE  | SIM1         | 12.31    | 2.214 | 4.600          | 0,0010    | 113      | 12.00          | 0.511  | 12    |
| 1184  | BASE  | SIM1         | 12,31    | 2.215 | 4.620          | 0.0008    | 114      | 12.00          | 0.583  | 12    |
| 1186  | BASE  | SIM1         | 12.28    | 2.334 | 5.840          | 0.0004    | 115      | 12.00          | 2.141  | 12    |
| 1188  | BASE  | SIM1         | 12.30    | 2.251 | 5.600          | -0.0006   | 115      | 12,00          | 0.702  | 12    |
| 1325  | BASE  | SIM1         | 12.31    | 2.228 | 5.180          | 0.0048    | 133      | 12.76          | 4.125  | 12    |
| 1327  | BASE  | SIM1         | 12.30    | 2.242 | 5.560          | -0.0060   | 131      | 12.21          | 3.008  | 12    |
| 1329  | BASE  | SIM1         | 12,31    | 2.244 | 5.690          | 0.0038    | 137      | 12.04          | 3.483  | 12    |
| 1334  | BASE  | SIM1         | 12.31    | 2.248 | 5.220          | -0.0036   | 136      | 1.77           | 0.770  | 12    |
| 1335A | BASE  | SIM1         | 12.31    | 2.246 | 4,680          | 0.0032    | 135      | 12.04          | 2.554  | 1     |
| 1337  | BASE  | SIMI         | 12,31    | 2.252 | 5.220          | ~0.0065   |          | 9.96           | 2.450  |       |
| 1338  | BASE  | SIM1<br>SIM1 | 12,31    | 2.234 | 5.220          | ~0.0065   | 130      | 9.90           |        | 12    |
| 1339  | BASE  |              |          | 2.244 | 5.320          | 0.0077    | 126      | 12.76          | 3.085  | 9     |
|       |       | SIM1         | 12.31    | 2.246 | 5.200          | -0.0063   | 127      | 10.02          | 2.675  | 12    |
| 1340  | BASE  | SIM1         | 12.30    | 2.241 | 4.430          | ~0.0063   | 121      | 15.54          | 1.915  | 10    |
| 1342  | BASE  | SIM1         | 12.31    | 2.239 | 4.750          | -0.0032   | 122      | 9.97           | 1.315  | 15    |
| 1343  | BASE  | SIM1         | 12.31    | 2.236 | 4,820          | -0,0031   | 123      | 14.47          | 1.254  | 9     |
| 1344  | BASE  | SIM1         | 12.31    | 2.234 | 4.410          | 0.0014    | 128      | 1.92           | 0.653  | 14    |
| 1345  | BASE  | SIM1         | 12.31    | 2.230 | 3.730<br>3.880 | -0.0018   | 126      | 14.44          | 2.061  | 1     |
| 1347  | BASE  | SIM1         | 12.31    | 2.229 | 3.880          | 0.0023    | 126      | 1.94           | 0.808  | 14    |
| 1347A | BASE  | SIMI         | 12.31    | 2.225 | 3.750          | 0.0035    | 126      | 11.80          | 3.111  | 1     |
| 1348  | BASE  | SIM1         | 12.31    | 2.220 | 3.570          | -0.0077   | 118      | 9,92           | 3.779  | 15    |
| 1350  | BASE  | SIM1         | 12.31    | 2.215 | 3.700          | 0.0083    | 117      | 14.07          | 3.251  | 9     |
| 1353  | BASE  | SIM1         | 12.32    | 2.210 | 3.780          | -0.0040   | 122      | 1.98           | 1.063  | 14    |
| 1354  | BASE  | SIM1         | 12.32    | 2.201 | 3.850          | -0.0034   | 125      | 11.76          | 1.311  | 1     |
| 1355  | BASE  | SIM1         | 12.32    | 2.193 | 3.960          | 0.0025    | 123      | 9.92           | 1.280  | 11    |
| 1356  | BASE  | SIM1         | 12.32    | 2.186 | 3.720          | -0.0030   | 121      | 15.59          | 2.466  | 9     |
| 1357  | BASE  | SIM1         | 12.32    | 2.180 | 3.880          | ~0.0021   | 123      | 0,01           | 0,832  | 15    |
| 1359  | BASE  | SIM1         | 12.32    | 2.164 | 3.760          | -0.0015   | 129      | 15.52          | 0.560  | 0     |
| 1360  | BASE  | SIM1         | 12.32    | 2.146 | 3.400          | 0.0019    | 134      | 11.83          | 0.972  | 15    |
| 1362  | BASE  | SIM1         | 12.32    | 2.084 | 3.220          | 0.0003    | 121      | 12,26          | 1.397  | 12    |
| 1364B | BASE  | SIM1         | 0.00     | 1.100 | 4.000          | 0.0000    | 3409     | 12.54          | 7.175  | 0     |
| 1364C | BASE  | SIM1         | 12.32    | 2.065 | 3.750          | 0.0006    | 125      | 12.29          | 1.309  | 12    |
| 1366  | BASE  | SIM1         | 12.32    | 2.140 | 3.730          | -0.0049   | 124      | 11.82          | 2.982  | 14    |
| 1367  | BASE  | SIM1         | 12,32    | 2.140 | 3.680          | 0.0044    | 124      | 11.82<br>11.84 | 1.385  | 14    |
| 1368  | BASE  | SIM1         | 12.32    | 2,131 | 3.680          | -0.0034   | 123      | 11.84          |        |       |
| 1370  | BASE  |              |          |       |                |           |          |                | 2.344  | 11    |
|       |       | SIM1         | 12.32    | 2.126 | 3.700          | 0,0034    | 122      | 11.84          | 1.216  | 11    |
| 1371  | BASE  | SIM1         | 12.32    | 2.117 | 3.720          | ~0.0022   | 127      | 11.82          | 0.593  | 11    |
| 1372  | BASE  | SIM1         | 12.32    | 2.108 | 3.380          | -0.0020   | 127      | 0.01           | 0.036  | 11    |
| 1373  | BASE  | SIM1         | 12.32    | 2.104 | 3.290          | -0,0003   | 138      | 12.27          | 0.819  | 12    |
| 1376  | BASE  | SIM1         | 12.32    | 2.078 | 3.780          | 0.0003    | 118      | 12,30          | 2.938  | 12    |
| 13766 | BASE  | SIM1         | 12.32    | 1.957 | 4.000          | 0.0002    | 134      | 12.31          | 2.935  | 12    |
| 13767 | BASE  | SIM1         | 0.00     | 1,100 | 4.000          | 0.0000    | 69       | 12.32          | 2.934  | 0     |
| 1379  | BASE  | SIM1         | 12.31    | 2.114 | 3.520          | 0,0007    | 118      | 12,25          | 0.833  | 12    |
| 1380  | BASE  | SIM1         | 12.31    | 2.119 | 3.600          | -0.0008   | 118      | 12.25          | 0.850  | 12    |
| 1381  | BASE  | SIM1         | 12.31    | 2.128 | 3.580          | 0.0004    | 119      | 12.06          | 0.873  | 12    |
| 1382  | BASE  | SIM1         | 12.31    | 2.135 | 3.610          | 0.0004    | 115      | 12.00          | 0.938  | 12    |
|       |       |              |          |       |                |           |          |                |        |       |

| Proposed Condition | with | 2-inches | of | Rainfall; | Closed | to | Canal |
|--------------------|------|----------|----|-----------|--------|----|-------|
|--------------------|------|----------|----|-----------|--------|----|-------|

|              |              | oposed condie | TOU WICH 2-              | -inches of         | Kaimiaii,              | ; crosed co              | Canai                   |                           |                      |               |
|--------------|--------------|---------------|--------------------------|--------------------|------------------------|--------------------------|-------------------------|---------------------------|----------------------|---------------|
| <br>Name     | Group        | Simulation    | Max Time<br>Stage<br>hrs | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max Time<br>Inflow<br>hrs | Max<br>Inflow<br>cfs | Max T<br>Outf |
| 1000         | BASE         | SIM1          | 18.57                    | 2,924              | 4.600                  | -0,1500                  | 2801                    | 12,25                     | D.131                | 17            |
| 1010         | BASE         | SIM1          | 18.57                    | 2.924              | 3.800                  | -0.9300                  | 3728                    | 17.57                     | 0.054                | 18            |
| 1020         | BASE         | SIM1          | 18.56                    | 2,924              | 3,600                  | -1.2200                  | 1629                    | 12.22                     | 0.233                | 12            |
| 1030         | BASE         | SIM1          | 18,56                    | 2,924              | 3,700                  | -0.6800                  | 2036                    | 12.24                     | 0.871                | 18            |
| 1040         | BASE         | SIM1          | 18.82                    | 2.508              | 3.600                  | -1.1000                  | 1538                    | 18.55                     | 0.155                | 18            |
| 1050         | BASE         | SIM1          | 18.86                    | 2,270              | 4.900                  | -1.0400                  | 919                     | 18.78                     | 0.165                | 18            |
| 1060         | BASE         | SIM1          | 0.00                     | 1.100              | 4.600                  |                          | 113                     | 0.00                      | 0.000                | 10            |
| 1070         | BASE         | SIM1          | 0.00                     | 1.100              | 4,630                  | 0.0000                   | 113                     | 0.00                      | 0.000                | 0             |
| 1072         | BASE         | SIM1          | 0.00                     | 1,100              | 4.630                  | -0.0111                  | 113                     | 0.00                      | 0.000                | ő             |
| 1080         | BASE         | SIM1          | 12.57                    | 2,232              | 4.300                  | ~0.0096                  | 1,40                    | 12.23                     | 12,111               | 12            |
| 1090         | BASE         | SIM1          | 12.50                    | 2.265              | 4.560                  | 0.0069                   | 118                     | 12.25                     | 12.795               | 12            |
| 1100         | BASE         | SIM1          | 12.84                    | 2.077              | 4.500                  | 0.0004                   | 42835                   | 12.26                     | 12.277               | 12            |
| 1110         | BASE         | SIM1          | 12.47                    | 2.302              | 4.620                  | 0,0064                   | 166                     | 12.08                     | 6.714                | 12            |
| 1112         | BASE         | SIM1          | 12.46                    | 2.302              | 4.830                  | -0.0007                  | 307                     | 12.05                     | 0.688                | 9             |
| 1114         | BASE         | SIM1          | 12,05                    | 2.599              | 5.180                  | 0.0001                   | 273                     | 12.01                     | 0.699                | 12            |
| 1116         | BASE         | SIM1          | 12.02                    | 2,767              | 5.040                  | 0,0001                   | 142                     | 12.00                     | 0.355                | 12            |
| 1118         | BASE         | SIM1          | 26.00                    | 3,285              | 6.000                  | 0.0000                   | 29741                   | 12.25                     | 1.033                | 0             |
| 1120         | BASE         | SIM1          | 12.47                    | 2.294              | 4,260                  | 0.0032                   | 115                     | 12.00                     | 0,296                | O             |
| 1130         | BASE         | SIM1          | 12.41                    | 2.410              | 4.360                  | 0.0009                   | 146                     | 12,25                     | 11.281               | 12            |
| 1132         | BASE         | SIM1          | 12.41                    | 2.412              | 4.120                  | 0,0005                   | 114                     | 12.25                     | 0.288                | 0             |
| 1134         | BASE         | SIM1          | 27.00                    | 4.334              | 6.000                  | 0.0000                   | 12262                   | 12.50                     | 1.397                | 0             |
| 1140         | BASE         | SIM1          | 12.38                    | 2.493              | 4.200                  | -0.0008                  | 138                     | 12,24                     | 11.031               | 12            |
| 1142         | BASE         | SIM1          | 12.38                    | 2.495              | 3.720                  | 0.0007                   | 113                     | 12.00                     | 0.618                | 12            |
| 1144         | BASE         | SIM1          | 12.35                    | 2.540              | 3.940                  | 0.0063                   | 116                     | 0.00                      | 4.096                | 0             |
| 1146         | BASE         | SIM1          | 12.32                    | 2.572              | 5.700                  | -0.0083                  | 115                     | 12.00                     | 1.776                | 0             |
| 1150         | BASE         | SIM1          | 12.37                    | 2,564              | 4.490                  | 0.0015                   | 146                     | 12.29                     | 8.993                | 12            |
| 1151         | BASE         | SIMI          | 12.35                    | 2.594              | 6.000                  | -0.0093                  | 115                     | 12.00                     | 1.709                | 0             |
| 1160         | BASE         | SIM1          | 12.37                    | 2.601              | 4.860                  | -0.0079                  | 136                     | 12.34                     | 7.872                | 12            |
| 1161         | BASE         | SIM1          | 12.36                    | 2.626              | 6.000                  | -0.0109                  | 115                     | 12.00                     | 1,561                | 0             |
| 1170         | BASE         | SIM1          | 12.37                    | 2.618              | 5.150                  | 0.0076                   | 136                     | 12.40                     | 6.925                | 12            |
| 1180<br>1182 | BASE         | SIM1          | 12.38                    | 2,656              | 4.920                  | 0.0012                   | 144                     | 12.39                     | 6.920                | 12            |
| 1182         | BASE<br>BASE | SIM1          | 12.37                    | 2.659              | 4.600                  | 0.0008                   | 113                     | 12.00                     | 0.511                | 12            |
| 1186         | BASE         | SIM1<br>SIM1  | $12.37 \\ 12.36$         | 2.660              | 4.620                  | 0.0007                   | 114                     | 12.00                     | 0.583                | 12            |
| 1188         | BASE         | SIMI          | 12.38                    | 2,851<br>2,807     | 5.840<br>5.600         | 0.0004                   | 115                     | 12.00                     | 2.141                | 12            |
| 1325         | BASE         | SIM1          | 12.38                    | 2.721              | 5.180                  | -0.0004<br>-0.0022       | 115                     | 12.00                     | 0.702                | 11            |
| 1327         | BASE         | SIM1          | 12.38                    | 2.777              | 5.560                  | 0.0013                   | 133<br>131              | 12.42<br>12.41            | 6.163<br>6.154       | 12            |
| 1329         | BASE         | SIM1          | 12.39                    | 2.803              | 5,690                  | -0.0025                  | 137                     | 12.51                     | 4.635                | 12<br>12      |
| 1334         | BASE         | SIM1          | 12.39                    | 2.830              | 5.220                  | -0.0024                  | 136                     | 12.54                     | 3.898                | 12            |
| 1335A        | BASE         | SIM1          | 12.40                    | 2.848              | 4.680                  | 0.0030                   | 135                     | 12.54                     | 3,870                | 12            |
| 1337         | BASE         | SIM1          | 12.40                    | 2.874              | 5.220                  | -0.0040                  | 130                     | 11.95                     | 7.482                | 12            |
| 1336         | BASE         | SIM1          | 12.41                    | 2.881              | 5.320                  | 0,0057                   | 125                     | 13.69                     | 4.556                | 11            |
| 1339         | BASE         | SIM1          | 12.41                    | 2.893              | 5.200                  | -0.0061                  | 127                     | 11.92                     | 6.105                | 13            |
| 1340         | BASE         | SIM1          | 12.41                    | 2.901              | 4.430                  | 0.0041                   | 121                     | 12.60                     | 3.032                | 11            |
| 1342         | BASE         | SIM1          | 12.42                    | 2.924              | 4.750                  | -0.0034                  | 122                     | 12.59                     | 3.002                | 12            |
| 1343         | BASE         | SIM1          | 12.43                    | 2.950              | 4.820                  | 0.0029                   | 123                     | 12.58                     | 2.973                | 12            |
| 1344         | BASE         | SIM1          | 12.43                    | 2.977              | 4.410                  | -0.0024                  | 128                     | 12.57                     | 2.943                | 12            |
| 1345         | BASE         | SIM1          | 12.44                    | 3,020              | 3,730                  | 0.0023                   | 126                     | 12.56                     | 2.916                | 12            |
| 1347         | BASE         | SIM1          | 12,44                    | 3.040              | 3.880                  | -0.0024                  | 126                     | 12.55                     | 2.890                | 12            |
| 1347A        | BASE         | SIM1          | 12.45                    | 3.084              | 3.750                  | 0,0027                   | 126                     | 19,09                     | 3.384                | 12            |
| 1348         | BASE         | SIM1          | 12.45                    | 3.097              | 3.570                  | -0.0041                  | 118                     | 11.16                     | 4.136                | 19            |
| 1350<br>1353 | BASE<br>BASE | SIM1          | 12.45                    | 3.109              | 3.700                  | 0.0044                   | 117                     | 18.18                     | 3.463                | 11            |
| 1354         | BASE         | SIM1<br>SIM1  | $12.46 \\ 12.46$         | 3.122              | 3.780                  | -0.0031                  | 122                     | 12.56                     | 2.338                | 18            |
| 1355         | BASE         | SIM1          | 12.46<br>12.46           | 3.145              | 3,850                  | 0.0020                   | 125                     | 12.54                     | 2.314                | 12            |
| 1356         | BASE         | SIM1          | 12.46                    | 3.162<br>3.182     | 3.960<br>3.720         | 0,0024<br>0,0024         | 123                     | 12.51                     | 2.295                | 12            |
| 1357         | BASE         | SIM1          | 12.46                    | 3.195              | 3.880                  | 0.0024                   | 121<br>123              | $22.20 \\ 12.42$          | 2.992                | 12            |
| 1359         | BASE         | SIMI          | 12.46                    | 3,206              | 3.760                  | 0.0014                   | 129                     | 12,64                     | 2.293<br>1.859       | 22<br>12      |
| 1360         | BASE         | SIM1          | 12.46                    | 3,217              | 3.400                  | 0.0013                   | 131                     | 12.42                     | 1.937                | 12            |
| 1362         | BASE         | SIM1          | 0.00                     | 1.100              | 3,220                  | 0.0000                   | 123                     | 0.00                      | 0.000                | 0             |
| 1364B        | BASE         | SIM1          | 0.00                     | 1,100              | 4.000                  | 0.0000                   | 3409                    | 12.84                     | 7.365                | õ             |
| 1364C        | BASE         | SIM1          | 0.00                     | 1.100              | 3.750                  | 0.0000                   | 117                     | 0.00                      | 0.000                | õ             |
| 1366         | BASE         | SIM1          | 12,46                    | 3.228              | 3.730                  | -0.0025                  | 124                     | 15.10                     | 1.565                | 12            |
| 1367         | BASE         | SIM1          | 12.46                    | 3,233              | 3.680                  | 0.0025                   | 123                     | 16.58                     | 1.686                | 15            |
| 1368         | BASE         | SIM1          | 12.46                    | 3,243              | 3.680                  | -0.0025                  | 123                     | 15.10                     | 1,618                | 16            |
| 1370         | BASE         | SIM1          | 12.46                    | 3.246              | 3.700                  | 0.0025                   | 122                     | 16.58                     | 1.552                | 15            |
| 1371         | BASE         | SIM1          | 12.46                    | 3.252              | 3,720                  | 0.0029                   | 127                     | 15.11                     | 1.709                | 16            |
| 1372         | BASE         | SIM1          | 12.46                    | 3.258              | 3.380                  | 0.0095                   | 123                     | 11,75                     | 8.093                | 15            |
| 1373         | BASE         | SIM1          | 12.46                    | 3,259              | 3.290                  | -0.0069                  | 120                     | 15.11                     | 0.947                | 15            |
| 1376         | BASE         | SIM1          | 0,00                     | 1.100              | 3,780                  | 0.0000                   | 113                     | 0.00                      | 0.000                | 0             |
| 13766        | BASE         | SIM1          | 0.00                     | 1.100              | 4.000                  | 0.0000                   | 182                     | 0.00                      | 0.000                | O             |
| 13767        | BASE         | SIM1          | 0.00                     | 1.100              | 4.000                  | 0.0000                   | 69                      | 0.00                      | 0.000                | 0             |
| 1379         | BASE         | SIM1          | 12.46                    | 3.266              | 3.520                  | 0.0014                   | 118                     | 11.01                     | 1.237                | 15            |
| 1380         | BASE         | SIM1          | 12.46                    | 3.269              | 3.600                  | -0.0011                  | 118                     | 12.25                     | 0.738                | 11            |
| 1381<br>1382 | BASE         | SIM1          | 12.46                    | 3.275              | 3.580                  | 0.0008                   | 119                     | 12.19                     | 0.813                | 12            |
| 1362         | BASE         | SIM1          | 12.46                    | 3.279              | 3.610                  | 0.0008                   | 115                     | 12.00                     | 0.938                | 12            |
|              |              |               |                          |                    |                        |                          |                         |                           |                      |               |

Proposed Condition with 3-inches of Rainfall; Open to Canal

|                | L            | Tobosca coudi | CION WICH .              | D. THEREP OF       | . Kaintais             | t, open co               | canal                   |                                              |                      |               |
|----------------|--------------|---------------|--------------------------|--------------------|------------------------|--------------------------|-------------------------|----------------------------------------------|----------------------|---------------|
| Name           | Group        | Simulation    | Max Time<br>Stage<br>hrs | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max Time<br>Inflow<br>hrs                    | Max<br>Inflow<br>cfs | Max T<br>Outf |
| 1000           | BASE         | SIM1          | 12.79                    | 3,122              | 4.600                  | -0.1500                  | 3152                    | 12.25                                        | 0.610                | 13            |
| 1010           | BASE         | SIM1          | 12.79                    | 3.121              | 3.800                  | -0.9300                  | 4152                    | 12.89                                        | 0.399                | 13            |
| 1020           | BASE         | SIM1          | 12.79                    | 3.121              | 3.600                  | -1.2200                  | 1832                    | 12.54                                        | 1.323                | 12            |
| 1030           | BASE         | SIM1          | 12.78                    | 3.116              | 3,700                  | ~0.6800                  | 2282                    | 12.53                                        | 2.185                | 12            |
| 1040           | BASE         | SIM1          | 12.80                    | 3.081              | 3.600                  | -1.1000                  | 1737                    | 12.53                                        | 2.147                | 12            |
| 1050           | BASE         | SIM1          | 12.87                    | 2.536              | 4.900                  | -1.0400                  | 3826                    | 12.71                                        | 2.120                | 13            |
| 1060           | BASE         | SIMI          | 0.00                     | 1.100              | 4.600                  | *******                  | 113                     | 0.00                                         | 0.000                | 0             |
| 1070           | BASE         | SIM1          | 0.00                     | 1.100              | 4.630                  | 0.0000                   | 113                     | 0,00                                         | 0.000                | 0             |
| 1072           | BASE         | SIM1          | 0.00                     | 1,100              | 4.630                  | -0.0111                  | 113                     | 0.00                                         | 0.000                | 0             |
| 1080           | BASE         | SIM1          | 12.43                    | 2.606              | 4.300                  | -0.0132                  | 133                     | 12.19                                        | 17,833               | 12            |
| 1090           | BASE         | SIM1          | 12.40                    | 2.655              | 4.560                  | -0.0139                  | 118                     | 12.16                                        | 17.622               | 12            |
| 1100           | BASE         | SIM1          | 12.80                    | 2.347              | 4.500                  | 0.0004                   | 50540                   | 12.20                                        | 18.592               | 12<br>12      |
| 1110           | BASE         | SIM1          | 12.35                    | 2,798              | 4.620<br>4.830         | -0.0090<br>-0.0006       | 145<br>264              | 12.16<br>12.01                               | 14.820<br>1.222      | 12            |
| 1112           | BASE<br>BASE | SIM1<br>SIM1  | 12.33<br>12.31           | $2.812 \\ 2.848$   | 5.180                  | 0.0001                   | 291                     | 12.01                                        | 1.219                | 12            |
| 1114<br>1116   | BASE         | SIM1          | 12.29                    | 2,880              | 5.040                  | -0.0001                  | 144                     | 12.00                                        | 0.617                | 12            |
| 1110           | BASE         | SIMI          | 26.00                    | 3,620              | 6.000                  | 0,0000                   | 30910                   | 12.25                                        | 2.482                | 0             |
| 1120           | BASE         | SIM1          | 12.35                    | 2.794              | 4,260                  | -0.0094                  | 114                     | 12.00                                        | 0.514                | 13            |
| 1130           | BASE         | SIM1          | 12.28                    | 3.074              | 4.360                  | -0.0011                  | 146                     | 12.19                                        | 16.206               | 12            |
| 1132           | BASE         | SIM1          | 12,28                    | 3,090              | 4.120                  | 0,0005                   | 114                     | 12.00                                        | 0.817                | 12            |
| 1134           | BASE         | SIM1          | 27.00                    | 5.617              | 6.000                  | 0.0002                   | 15130                   | 12.25                                        | 3.480                | 0             |
| 1140           | BASE         | SIM1          | 12.27                    | 3.242              | 4.200                  | 0.0012                   | 138                     | 12.18                                        | 15.449               | 12            |
| 1142           | BASE         | SIM1          | 12,26                    | 3,254              | 3.720                  | 0.0007                   | 113                     | 12.00                                        | 1.073                | 12            |
| 1144           | BASE         | SIM1          | 12.23                    | 3.415              | 3.940                  | 0.0063                   | 116                     | 0.00                                         | 4.096                | 12            |
| 1146           | BASE         | SIM1          | 12.20                    | 3.522              | 5.700                  | -0.0083                  | 115                     | $\begin{array}{c} 12.00\\ 12.21 \end{array}$ | 2.715<br>11,792      | 0<br>12       |
| 1150           | BASE         | SIM1          | 12,26                    | 3.367              | 4.490<br>6.000         | -0,0017<br>-0.0093       | 145<br>115              | 12.00                                        | 2.611                | 0             |
| 1151<br>1160   | BASE<br>BASE | SIM1<br>SIM1  | $12.24 \\ 12.26$         | 3.470<br>3.456     | 4.860                  | -0.0065                  | 134                     | 12.00                                        | 9.804                | 12            |
| 1161           | BASE         | SIM1          | 12,25                    | 3,541              | 6.000                  | -0.0109                  | 115                     | 12.00                                        | 2.386                | 0             |
| 1170           | BASE         | SIMI          | 12.26                    | 3.493              | 5.150                  | 0.0061                   | 136                     | 12.31                                        | 8.081                | 12            |
| 1180           | BASE         | SIM1          | 12,27                    | 3.560              | 4.920                  | 0,0015                   | 144                     | 12.30                                        | 8.062                | 12            |
| 1182           | BASE         | SIM1          | 12.26                    | 3.580              | 4,600                  | 0.0011                   | 113                     | 12.00                                        | 1.278                | 12            |
| 1184           | BASE         | SIM1          | 12.26                    | 3.574              | 4.620                  | 0.0009                   | 114                     | 12.00                                        | 1.012                | 12            |
| 1186           | BASE         | SIM1          | 12.25                    | 3.913              | 5.840                  | 0.0007                   | 115                     | 12.00                                        | 3.279                | 12            |
| 1188           | BASE         | SIM1          | 12.27                    | 3.713              | 5.600                  | 0.0007                   | 115                     | 12.00                                        | 1.072                | 12            |
| 1325           | BASE         | SIM1          | 12.27                    | 3.626              | 5.180                  | -0.0012                  | 133                     | 12.35                                        | 6.319                | 12            |
| 1327           | BASE         | SIM1          | 12,27                    | 3.683              | 5,560                  | 0.0020                   | 131                     | 12.35                                        | 6.291                | 12            |
| 1329           | BASE         | SIM1          | 12.28                    | 3.697              | 5,690                  | 0.0027                   | 137                     | 12.15<br>12.46                               | 4.196<br>1.947       | 12<br>11      |
| 1334           | BASE<br>BASE | SIM1<br>SIM1  | $12.28 \\ 12.28$         | 3.701<br>3.703     | 5.220<br>4.680         | -0,0031<br>0,0045        | 136<br>135              | 12.35                                        | 3.134                | 12            |
| 1335A<br>1337  | BASE         | SIM1          | 12.28                    | 3.714              | 5.220                  | -0.0093                  | 130                     | 11.59                                        | 3.745                | 12            |
| 1338           | BASE         | SIM1          | 12.28                    | 3.705              | 5.320                  | 0,0082                   | 125                     | 12.47                                        | 2.844                | 16            |
| 1339           | BASE         | SIM1          | 12.28                    | 3.710              | 5,200                  | -0.0054                  | 127                     | 16.06                                        | 3.591                | 12            |
| 1340           | BASE         | SIM1          | 12.28                    | 3.704              | 4.430                  | 0.0055                   | 121                     | 20.30                                        | 1.915                | 16            |
| 1342           | BASE         | SIM1          | 12.28                    | 3.708              | 4.750                  | 0,0037                   | 122                     | 11.20                                        | 1.361                | 20            |
| 1343           | BASE         | SIM1          | 12.28                    | 3.704              | 4.820                  | -0.0029                  | 123                     | 17,11                                        | 1.278                | 11            |
| 1344           | BASE         | SIM1          | 12.28                    | 3.706              | 4.410                  | 0.0025                   | 128                     | 11.59                                        | 0.769                | 17            |
| 1345           | BASE         | SIM1          | 12.28                    | 3.704              | 3.730                  | 0.0026                   | 126                     | 17.04                                        | 2.065                | 11            |
| 1347           | BASE         | SIM1          | 12.28                    | 3.706              | 3,880                  | 0.0024                   | 126                     | 11.59<br>20.31                               | 0.996<br>2.887       | 17<br>11      |
| 1347A          | BASE<br>BASE | SIM1          | $12.28 \\ 12.29$         | 3.703<br>3.696     | 3.750<br>3.570         | 0,0052<br>-0.0068        | 126<br>118              | 7.71                                         | 2.007<br>3.781       | 20            |
| 1348<br>1350   | BASE         | SIM1<br>SIM1  | 12.29                    | 3,690              | 3.700                  | 0.0072                   | 117                     | 20.31                                        | 3.061                | 7             |
| 1353           | BASE         | SIM1          | 12.29                    | 3.683              | 3.780                  | -0.0045                  | 122                     | 11.59                                        | 1,117                | 20            |
| 1354           | BASE         | SIM1          | 12.29                    | 3.671              | 3,850                  | 0.0030                   | 125                     | 19.99                                        | 1.312                | 11            |
| 1355           | BASE         | SIM1          | 12.30                    | 3,662              | 3.950                  | 0.0031                   | 123                     | 11.32                                        | 1.419                | 19            |
| 1356           | BASE         | SIM1          | 12.30                    | 3.652              | 3.720                  | -0,0030                  | 121                     | 17.13                                        | 2.474                | 11            |
| 1357           | BASE         | SIM1          | 12.30                    | 3.646              | 3.880                  | ~0.0027                  | 123                     | 11.59                                        | 0.964                | 17            |
| 1359           | BASE         | SIM1          | 12.30                    | 3.642              | 3.760                  | -0.0015                  | 129                     | 20.20                                        | 0.558                | 0             |
| 1360           | BASE         | SIM1          | 12.30                    | 3.639              | 3.400                  | 0,0020                   | 134                     | 11.59<br>12.26                               | 1.097<br>2.783       | 20<br>12      |
| 1362           | BASE<br>BASE | SIM1<br>SIM1  | 12.31<br>0.00            | 3.377<br>1.100     | 3,220<br>4,000         | 0.0006<br>0.0000         | 118<br>3409             | 12.20                                        | 11.852               | 0             |
| 1364B<br>1364C | BASE         | SIM1          | 12,31                    | 3.248              | 3.750                  | 0,0006                   | 114                     | 12.28                                        | 2.760                | 12            |
| 1366           | BASE         | SIM1          | 12.30                    | 3.631              | 3,730                  | 0.0038                   | 124                     | 15.83                                        | 3.076                | 11            |
| 1367           | BASE         | SIMI          | 12.30                    | 3,627              | 3.680                  | -0.0044                  | 123                     | 11.59                                        | 1.452                | 15            |
| 1368           | BASE         | SIM1          | 12,30                    | 3,620              | 3.680                  | -0,0042                  | 123                     | 15.83                                        | 2.585                | 11            |
| 1370           | BASE         | SIM1          | 12.30                    | 3.616              | 3.700                  | 0.0044                   | 122                     | 11.59                                        | 1.204                | 15            |
| 1371           | BASE         | SIM1          | 12.30                    | 3.609              | 3.720                  | ~0.0028                  | 127                     | 35.86                                        | 0.590                | 11            |
| 1372           | BASE         | SIM1          | 12,30                    | 3.602              | 3.380                  | 0.0016                   | 123                     | 0.01                                         | 0.036                | 35            |
| 1373           | BASE         | SIM1          | 12.30                    | 3.530              | 3.290                  | D.0006                   | 125                     | 12.13                                        | 1.769                | 12            |
| 1376           | BASE         | SIM1          | 12.31                    | 3.383              | 3,780                  | 0.0029                   | 118                     | 12,28                                        | 6.620                | 12            |
| 13766          | BASE         | SIM1          | 12.31                    | 2,975              | 4.000                  | -0.0029                  | 129                     | 12.30                                        | 6.604<br>6.600       | 12<br>0       |
| 13767          | BASE         | SIM1          | 0.00                     | 1.100<br>3.554     | 4.000<br>3.520         | 0.0000<br>0.0006         | 69<br>118               | 12.31<br>12.08                               | 1.884                | 12            |
| 1379<br>1380   | BASE<br>BASE | SIM1<br>SIM1  | 12.30<br>12.30           | 3,554              | 3,520<br>3,60D         | 0.0006                   | 118                     | 12.08                                        | 2,008                | 12            |
| 1380           | BASE         | SIMI          | 12.30                    | 3,589              | 3.580                  | 0.0006                   | 119                     | 12.01                                        | 2.165                | 12            |
| 1382           | BASE         | SIM1          | 12.30                    | 3.607              | 3,610                  | 0.0006                   | 115                     | 12.00                                        | 2.346                | 12            |
| 2202           |              | Q             |                          |                    |                        |                          |                         |                                              |                      |               |

Proposed Condition with 3-inches of Rainfall; Closed to Canal

|               | PI           | oposeu conurc | TOU WICH 3-              | fucues of          | Raimiaii,              | CIUSED CO                | Canar                   |                           |                      |               |
|---------------|--------------|---------------|--------------------------|--------------------|------------------------|--------------------------|-------------------------|---------------------------|----------------------|---------------|
| Name          | Group        | Simulation    | Max Time<br>Stage<br>hrs | Max<br>Stage<br>ft | Warning<br>Stage<br>ft | Max Delta<br>Stage<br>ft | Max Surf<br>Area<br>ft2 | Max Time<br>Inflow<br>hrs | Max<br>Inflow<br>cfs | Max T<br>Outf |
| 1000          | BASE         | SIM1          | 12.79                    | 3.122              | 4.600                  | -0.1500                  | 3152                    | 12.25                     | 0.610                | 13            |
| 1000          |              | SIMI<br>SIM1  | 12.79                    | 3.122              | 3.800                  | -0.9300                  | 4152                    | 12.89                     | 0.399                | 13            |
| 1010          | BASE         | SIMI          | 12.79                    | 3.121              | 3.600                  | -1.2200                  | 1832                    | 12.54                     | 1.323                | 12            |
| 1020          | BASE         |               | 12.79                    | 3.116              | 3.700                  | -0.6800                  | 2282                    | 12.53                     | 2.185                | 12            |
| 1030          | BASE         | SIM1          |                          |                    | 3.600                  | -1.1000                  | 1737                    | 12.53                     | 2.147                | 12            |
| 1040          | BASE         | SIM1          | 12,80                    | 3.081              | 4.900                  | -1.0400                  | 3898                    | 12.71                     | 2,120                | 13            |
| 1050          | BASE         | SIM1          | 13.15<br>0.00            | 2,712<br>1,100     |                        | ********                 | 113                     | 0.00                      | 0.000                | 0             |
| 1060          | BASE         | SIM1          | 0.00                     | 1.100              | 4,630                  | 0.0000                   | 113                     | 0.00                      | 0.000                | 0             |
| 1070          | BASE<br>BASE | SIM1          | 0.00                     | 1,100              | 4.630                  | -0.0111                  | 113                     | 0.00                      | 0.000                | õ             |
| 1072          | BASE         | SIM1<br>SIM1  | 12.26                    | 2,866              | 4.300                  | 0.0362                   | 121                     | 12.26                     | 23.079               | 12            |
| 1080<br>1090  | BASE         | SIM1          | 12,26                    | 2.941              | 4.560                  | -0.0139                  | 117                     | 12.29                     | 21.216               | 12            |
|               | BASE         | SIM1          | 13.14                    | 2.673              | 4.500                  | 0.0004                   | 58750                   | 12.26                     | 36.502               | 13            |
| 1100<br>1110  | BASE         | SIMI          | 12.27                    | 3.175              | 4.620                  | -0.0064                  | 145                     | 12.29                     | 23.235               | 12            |
| 1112          | BASE         | SIMI          | 12.28                    | 3 195              | 4,830                  | -0.0007                  | 218                     | 11.97                     | 1.074                | 12            |
| 1114          | BASE         | SIMI          | 12.29                    | 3.212              | 5,180                  | 0.0004                   | 268                     | 12.01                     | 1.219                | 11            |
| 1116          | BASE         | SIM1          | 12.29                    | 3.217              | 5.040                  | 0,0003                   | 145                     | 12.00                     | 0.617                | 12            |
| 1118          | BASE         | SIM1          | 26.00                    | 3,620              | 6.000                  | 0.0000                   | 30910                   | 12.25                     | 2.482                | 0             |
| 1120          | BASE         | SIM1          | 12.27                    | 3.178              | 4.260                  | 0.0081                   | 114                     | 12.00                     | 0.514                | 14            |
| 1130          | BASE         | SIM1          | 12.28                    | 3.627              | 4.360                  | 0.0011                   | 146                     | 12.21                     | 19.976               | 12            |
| 1132          | BASE         | SIM1          | 12.28                    | 3.642              | 4.120                  | 0,0008                   | 114                     | 12.00                     | 0,817                | 12            |
| 1134          | BASE         | SIM1          | 27.00                    | 5.617              | 6,000                  | 0.0001                   | 15130                   | 12.25                     | 3.480                | 0             |
| 1140          | BASE         | SIM1          | 12.28                    | 3.896              | 4,200                  | 0.0009                   | 138                     | 12.21                     | 19.268               | 12            |
| 1142          | BASE         | SIM1          | 12.28                    | 3,907              | 3.720                  | 0.0009                   | 113                     | 12.00                     | 1.073                | 12            |
| 1144          | BASE         | SIM1          | 12.27                    | 4.055              | 3.940                  | 0.0063                   | 116                     | 0.00                      | 4.096                | 12            |
| 1146          | BASE         | SIM1          | 12.26                    | 4.148              | 5.700                  | -0.0083                  | 115                     | 12.00                     | 2.715                | 0             |
| 1150          | BASE         | SIM1          | 12.29                    | 4,122              | 4.490                  | 0.0015                   | 145                     | 12.34                     | 15.895               | 12            |
| 1151          | BASE         | SIM1          | 12,29                    | 4.212              | 6.000                  | -0.0093                  | 939                     | 12.00                     | 2.611                | 0             |
| 1160          | BASE         | SIM1          | 12.29                    | 4.304              | 4.860                  | -0.0065                  | 134                     | 12.55                     | 14.323               | 12            |
| 1161          | BASE         | SIM1          | 12.28                    | 4,381              | 6.000                  | -0.0109                  | 115                     | 12.00                     | 2.386                | O             |
| 1170          | BASE         | SIM1          | 12,30                    | 4.392              | 5.150                  | 0.0060                   | 136                     | 12.74                     | 13.406               | 12            |
| 1180          | BASE         | SIM1          | 12.30                    | 4.549              | 4.920                  | 0,0012                   | 144                     | 12.65                     | 13,305               | 12            |
| 1182          | BASE         | SIM1          | 12.30                    | 4.566              | 4.600                  | 0.0012                   | 113                     | 12.00                     | 1.278                | 12            |
| 1184          | BASE         | SIM1          | 12.30                    | 4.561              | 4.620                  | 0.0012                   | 114                     | 12.00                     | 1.012                | 12            |
| 1186          | BASE         | SIM1          | 12.44                    | 5,009              | 5.840                  | ~0.0034                  | 9892                    | 12.00                     | 3,279                | 12            |
| 1188          | BASE         | SIM1          | 12.50                    | 4.971              | 5,600                  | -0.0062                  | 12855                   | 12.00                     | 1.072                | 12            |
| 1325          | BASE         | SIM1          | 12.32                    | 4.743              | 5.180                  | -0.0024                  | 133                     | 12.73                     | 12.364               | 12            |
| 1327          | BASE         | SIM1          | 12.33                    | 4,914              | 5.560                  | 0.0014                   | 131                     | 12.72                     | 12.235               | 12            |
| 1329          | BASE         | SIM1          | 12.33                    | 5.011              | 5.690                  | -0.0025                  | 137                     | 12,33                     | 31.381               | 12            |
| 1334          | BASE         | SIM1          | 12.33                    | 5.032              | 5.220                  | 0.0015                   | 136                     | 12.99                     | 7.339                | 12            |
| 1335A         | BASE         | SIM1          | 12.33                    | 5,030              | 4.680                  | 0.0030                   | 135                     | 12.15                     | 10.550               | 12            |
| 1337          | BASE         | SIM1          | 12.32                    | 5.224              | 5.220                  | 0.0047                   | 130                     | 11.99                     | 7.140<br>4.346       | 12<br>11      |
| 1338          | BASE         | SIM1          | 12.33                    | 5,058              | 5.320                  | 0.0065                   | 126                     | $11.73 \\ 11.41$          | 4.546                | 11            |
| 1339          | BASE         | SIM1          | 12.33                    | 5.068              | 5.200                  | -0.0055<br>0.0057        | 127<br>121              | 13.31                     | 2.891                | 11            |
| 1340          | BASE<br>BASE | SIM1          | 12.33<br>12.33           | 5.064<br>5.066     | 4.430<br>4.750         | 0.0033                   | 121                     | 13.31                     | 2,839                | 13            |
| 1342<br>1343  | BASE         | SIM1<br>SIM1  | 12.33                    | 5.064              | 4.820                  | -0.0029                  | 123                     | 13.32                     | 2.788                | 13            |
| 1345          | BASE         | SIM1          | 12.33                    | 5.065              | 4.410                  | -0.0024                  | 128                     | 13.32                     | 2.735                | 13            |
| 1345          | BASE         | SIM1          | 12.33                    | 5,063              | 3.730                  | -0.0026                  | 126                     | 13.32                     | 2.683                | 13            |
| 1347          | BASE         | SIMI          | 12,33                    | 5.068              | 3.880                  | 0.0026                   | 126                     | 13,32                     | 2.632                | 13            |
| 1347A         | BASE         | SIMI          | 12.32                    | 4,779              | 3.750                  | -0.0029                  | 126                     | 12.32                     | 280,631              | 11            |
| 1348          | BASE         | SIM1          | 12.33                    | 5.064              | 3.570                  | 0.0047                   | 118                     | 9,54                      | 4.162                | 12            |
| 1350          | BASE         | SIM1          | 12.33                    | 5.055              | 3.700                  | -0.0046                  | 117                     | 25.40                     | 3.454                | 9             |
| 1353          | BASE         | SIM1          | 12.33                    | 5.058              | 3.780                  | 0.0033                   | 122                     | 11.97                     | 2.651                | 25            |
| 1354          | BASE         | SIM1          | 12.33                    | 5.056              | 3.850                  | -0.0026                  | 125                     | 11.97                     | 2.941                | 11            |
| 1355          | BASE         | SIM1          | 12.33                    | 5.058              | 3.960                  | 0.0028                   | 123                     | 11.97                     | 3.227                | 11            |
| 1356          | BASE         | SIM1          | 12.33                    | 5.050              | 3.720                  | -0.0030                  | 121                     | 12.31                     | 12.042               | 11            |
| 1357          | BASE         | SIM1          | 12.32                    | 5.402              | 3.880                  | -0.0061                  | 123                     | 12,00                     | 5.683                | 12            |
| 1359          | BASE         | SIM1          | 12.32                    | 5.062              | 3.760                  | -0.0019                  | 129                     | 11.92                     | 2.158                | 11            |
| 1360          | BASE         | SIM1          | 12.32                    | 4.710              | 3.400                  | 0.0085                   | 131                     | 12.32                     | 348,500              | 12            |
| 1362          | BASE         | SIM1          | 0.00                     | 1.100              | 3,220                  | 0.0000                   | 123                     | 0.00                      | 0.000                | 0             |
| 1364B         | BASE         | SIM1          | 0.00                     | 1.100              | 4.000                  | 0.0000                   | 3409                    | 13.14                     | 12.275               | 0             |
| 1364C         | BASE         | SIM1          | 0.00                     | 1.100              | 3.750                  | 0.0000                   | 117                     | 0.00                      | 0.000                | 0             |
| 1366          | BASE         | SIM1          | 12.32                    | 5.081              | 3.730                  | 0.0029                   | 124                     | 11.41                     | 1.830                | 12            |
| 1367          | BASE         | SIM1          | 12.32                    | 5.071              | 3.680                  | 0.0032                   | 123                     | 12.31                     | 9.076                | 11            |
| 1368          | BASE         | SIMI          | 12.32                    | 5,443              | 3.680                  | 0.0047                   | 123                     | 11.99                     | $3.490 \\ 1.817$     | 12<br>11      |
| 1370          | BASE         | SIM1          | 12.32                    | 5.083              | 3.700                  | 0.0031                   | 122                     | 12.31                     | 1.817                | 11            |
| 1371          | BASE         | SIM1          | 12.32                    | 5.097              | 3.720                  | 0.0032                   | 127                     | $11.94 \\ 12.32$          | 318,981              | 12            |
| 1372          | BASE         | SIM1          | 12.32                    | 4.754              | 3.380                  | -0.0092<br>-0.0069       | 123<br>120              | 12.32                     | 0.967                | 12            |
| 1373          | BASE         | SIM1          | 12.32<br>0.00            | $5.128 \\ 1.100$   | 3.290<br>3.780         | 0.0000                   | 120                     | 0.00                      | 0.000                | 0             |
| 1376          | BASE         | SIM1<br>SIM1  | 0.00                     | 1,100              | 4.000                  | 0.0000                   | 182                     | 0.00                      | 0.000                | 0             |
| 13766         | BASE<br>BASE | SIMI<br>SIM1  | 0.00                     | 1,100              | 4.000                  | 0.0000                   | 69                      | 0.00                      | 0.000                | 0             |
| 13767<br>1379 | BASE         | SIM1          | 12.32                    | 5.127              | 3.520                  | -0.0016                  | 118                     | 11.55                     | 1.253                | 11            |
| 1380          | BASE         | SIM1          | 12,32                    | 5.129              | 3.600                  | 0.0016                   | 118                     | 11.93                     | 1.344                | 11            |
| 1380          | BASE         | SIM1          | 12.32                    | 5,129              | 3.580                  | 0.0010                   | 119                     | 12.30                     | 4.327                | 11            |
| 1382          | BASE         | SIM1          | 12,32                    | 5.329              | 3.610                  | 0.0023                   | 115                     | 12.00                     | 2.346                | 12            |
| 2502          |              | 1.00 m 1.00 m |                          |                    |                        |                          |                         |                           |                      |               |

**APPENDIX J** 

## SWFWMD PRE-APPLICATION MEETING MINUTES

| THIS' FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING<br>A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                       |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | FILE NUMBER:                                                                                                          |  |  |  |  |  |  |  |
| RESOURCE REGULATION DIVISION<br>PRE-APPLICATION MEETING NOTES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PA 3354                                                                                                               |  |  |  |  |  |  |  |
| Date:       April 12, 2005 11:00 a.m.         Project Name:       BEACH ROAD IMPROVEMENTS         Attendees:       Joe Hickle, P.E. w/WilsonMiller , Mike Jones (Environmental Services –Sarasota County), Ray Kurz, P.E.(Post Buckley),Peter Peduzzi, P.E. (Sarasota County Project Manager), Theresa Connor (General Manager/Stormwater Resources) - David Z. Sua, P.E. and Edward M. Craig <sup>N</sup> , CPSS w/ the District                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                       |  |  |  |  |  |  |  |
| County:       Sarasota       Sec/Twp/Rge:       13/37S/17E         Total Land Acreage:       Project Acreage:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                       |  |  |  |  |  |  |  |
| <ul> <li>Prior On-Site/Off-Site Permit Activity:</li> <li>An MSSW No. 40005814.000002 is associated with Beach Road, entitled "Sarasota Coussued July 19, 1991 (CSW / DLW, formerly of the District, were the District evaluators).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | unty - Beach Road"                                                                                                    |  |  |  |  |  |  |  |
| <ul> <li>Project Overview:</li> <li>Reported that bacterial pollutants are migrating from the stormwater runoff from the surrou into the Gulf where the public beach areas are. The design is targeted to improve the non concerns associated with the water quality challenges. A major point of concern was report upon the public health and safety concerns.</li> <li>Several options being discussed include enhancing / enlarging the existing stormwater mail located along the south side of Beach Road, and due east of Beach Way Drive, improvem existing stormwater drainage conveyance pipes, creation of a salt marsh habitat, open was partiag, trails, partiag, and representational areas.</li> </ul>                                                                                                                                         | n-human bacterial<br>orted to improve<br>anagement pond<br>ients to the internal /                                    |  |  |  |  |  |  |  |
| <ul> <li>parking, trails, gazebos, and recreational areas.</li> <li>There are some canals located waterward of the Gulf of Mexico, reported as upland cut ca<br/>proposed to receive additional discharges of stormwater.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | anals, that is                                                                                                        |  |  |  |  |  |  |  |
| Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easem<br>Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Oj<br>Habitats, Site Visit, etc.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ents, Drawdown Issues,<br>ptions, SHWL, Upland                                                                        |  |  |  |  |  |  |  |
| <ul> <li>At the above referenced location of the existing stormwater pond and possible future expareported that there are no wetlands located within this project area locale. PBS&amp;J, Inc. state area that may draw concern and reported that this area was a historical sand dune that had down and now persists with Australian pine and Brazilian pepper, both nuisance and exotic commented that this particular area does show signs of wetness, but expressed as merely surface water contributing area draining to and through this site location. District staff will this area relative to wetland / surface water habitat value, indicators, etc Based on the cassessment of this area by PBS&amp;J and Sarasota County Government staff, this area may concern environmentally.</li> </ul>                                                     | aff evaluated the<br>is been scraped<br>ic species. It was<br>i surrounding<br>need to field verify<br>descriptive    |  |  |  |  |  |  |  |
| <ul> <li>However, an 'informal wetland and surface water boundary determination' request is recorn submitted to the District for District staff field verification prior to application submittal. The these areas conducted pursuant to Ch. 62-340, F.A.C. Include in the submittal, at minimum soil survey, USGS topographic map, aerial map, and location map. District staff will need habitat value pursuant to Subsection 3.2.2.3 of the Basis of Review (B.O.R.) associated will and/or surface water features.</li> <li>Address secondary impacts pursuant to Subsection 3.2.7 of the Basis of Review (e.g., wat quality, threatened and endangered species, etc), where applicable.</li> <li>It was inquired if the area of salt marsh creation could be included for mitigation credits. The submitted species is the submitted species.</li> </ul> | e delineatyion of<br>m, a USDA-NRCS<br>to evaluate the<br>ith the wetland<br>ter quantity, water<br>his option may be |  |  |  |  |  |  |  |
| limited due to the legal requirements associated with mitigation credit ROMA or Mitigation<br>This option will need to be further evaluated during the permit evaluation phase.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                       |  |  |  |  |  |  |  |
| Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | s, receiving waterbody,                                                                                               |  |  |  |  |  |  |  |

etc.)

Use NRCS estimate of seasonal high at the new pond expansion area. For the hydraulic modeling, use practical available data for the receiving area.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- A new pumping assembly is contemplated with emergency overflow. Note that there is already an existing
  pumping station in the are of the existing pond. Assure that modeling demonstrates that no adverse quantity
  impacts will occur in the receiving area.
- Peak discharge attenuation is not going to drive this design. The existing system fills up rapidly, per the consultants. The pumping will be based on that storm that the system can currently handle, with an emergency overflow. A 5yr storm is contemplated.
- A ditch block is proposed in the southerly existing outfall ditch. Assure it is has a concrete core that extends a
  minimum of 2 feet into the ditch sides. Set the crest elevation of the overflow such that excess southerly
  discharges do not cause adverse water quantity impacts to adjacent property (flows overtopping the ditch
  banks).

## Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- This is a quality retrofit project. However, pumped discharges to the northerly Grand Canal will require hydraulic assessment, to demonstrate that adverse quantity impacts will not occur at the new discharge location.
- The new pond could create a new bird habitat and therefore result in northerly discharges that cause or contribute to possible violations of quality standards in the new receiving area. Additional BMP treatment chamber will be placed online with a wet detention system. A monitoring program will be proposed/required, with background sampling locations and parameters as well as criteria for success proposal, and a request for cessation of monitoring. Such proposal will be reviewed by staff, and may be required to be adjusted, as may be practical or necessary to protect the District's interest in not permitting a project that causes/contributes to violations of state water quality standards.
- Look into providing redundancy in the new pumping facility, like auxiliary power supply. Try to set the intake at the downstream area to which filtered runoff is discharged. A dual chambered pond system may be considered.
- Assure that reasonable assurance is provided that the new facilities will improve the water quality at the new receiving area. Data on the performance of the chambered filtration device will be helpful.
- Design the northerly outfall so that pumped inflows do not cause a sediment migration and delta formation problem in the receiving area of Grand Canal.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- Any activities proposed in Sovereign Submerged Lands will need to attain proprietary authorizations pursuant to Ch. 18-20 and/or 18-21, F.A.C., where applicable. A title determination with the Division of Submerged Lands in Tallahassee is recommended to be performed by the applicant prior to application submittal.
- If SSL proprietary authorizations are requested, provide a completed ERP Application Section G. (\$200.00 fee required, additional fees may be requested depending upon the proprietary authorization requested).

**Operation and Maintenance/Legal Information:** (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- Provide legal ownership and control.
- Refer to Subsection 6.1(h) of the Basis of Review and address this design alternative condition.
- The concurrence of the northerly receiving system for the new point of discharge will be necessary. Note that
  the County has powers of eminent domain. Therefore if new rights-of-way will be required for the project then
  the names and addresses of the current owners of such properties will be required. Otherwise, provide
  copies of the fee simple deed of ownership over the project area.

## Application Type and Fee Required:

 A Standard General (all other projects) ERP Application appears to qualify for this project, as discussed, if the qualifying wetland and/or surface water dredging and filling impacts are less than 1.0 acre in size (\$1,600.00 fee appears to qualify). Provide a completed ERP Application Sections A., C., and E. with supporting calculations and information.

**Other:** (Future Pre-Application Meetings, Fast Track, Submittel Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- It appears some of the project area could falls within the 'coastal construction control line'. Please refer to Tab C. of the ERP Manual under the Operating Agreement between FDEP and the SWFWMD, Section II, Part A(1)(j) for the responsibilities on authorization delegations between FDEP and the SWFWMD.
- Check for contaminated sites through FDEP. Provide any letters for the FDEP on their take on the CCCL. No work is currently proposed water ward of this line.
- Provide comments from the Division of Historical Resources for possible archeological artifacts.

**Disclaimer:** The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

D78 4/12/09 ENDW 04-1205 David Z. Sua, P.E. and Edward M. Graig<sup>IV</sup>, CPSS

## **APPENDIX K**

## SARASOTA COUNTY DRAFT REPORT REVIEW COMMENTS

# SARASOTA COUNTY

"Dedicated to Quality Service"

RECEIVED

August 15, 2005

AUG 1 7 2005

Mr. Joseph Hickle, P.E. Wilson Miller, Inc. 6900 Professional Parkway East, Suite 100 Sarasota, Florida 34240-8414

## Subject: Beach Road Drainage Improvements Feasibility Study Review Comments – Draft Report

Dear Mr. Hickle:

We thank you for the above mentioned draft report received on June 22, 2005. We offer the following comments for review and discussion. A follow-up meeting will be scheduled in September to review the report and you can present the recommendations with the project team.

- 1. Show a sample of each typical treatment alternative system identified in the report. Typical schematic of what they look like or sample detail cut sheets of how they work.
- 2. Ultraviolet (UV) was the preferred treatment method, how many units would be needed for this site and do we need to make any arrangements for electrical service upgrades?
- 3. Refer to the cost estimate, page 27, should line items be added for directional drilling crossing Beach Road and seawall connection/ flow dispersion unit?
- 4. Please provide an estimate of the annual operation and maintenance costs of the selected treatment system.
- 5. Based on the permitting requirements, it there any annual costs that could be estimated for the additional water quality testing?
- 6. Will there need to be any ditch bank improvements near or upstream of the concrete dam, so water will not flow around the structure?
- 7. Refer to page 14, Alternative 1, What is the recommend cleaning and maintenance schedule of the Beach Road piping system. Is there a level of sand or criteria level that could be an indicator for regular pipe cleaning for this specific area?
- 8. This project may take some time to be funded and master plan developed for the park; are there any recommendations or any improvements now that the County can do along the existing ditch outfall to the beach? Would it be in our best interest to break sunlight to the existing ditch discharge, do some overhead clearing of the exotic vegetation and pruning mangroves?

- 9. Enlarge the appendix H graphics to ledger size (11x17) and fold into the report.
- 10. Comment note by Theresa Connor. It is not clear if any habitat will be affected by the construction of the concrete ditch block and do we need to keep saltwater in the ditch?
- 11. Comment note by Theresa Connor. Will a permit be needed to construction of the ditch block?
- 12. Drainage report review:
  - a. Please provide templates with changes in model from existing to proposed.
  - b. Please confirm which rainfall data and hydrology control rainfall distribution was used and clarify design storm criteria i.e.: 10year 24 hour storm.
  - c. Warnings should be corrected.
  - d. Please illustrate location of low point of weir (4.33) and illustrate cross section location for the following weirs: 1337W.
  - e. Confirm which rainfall amount was used, hydrology simulations have 3 inches but data used only 2 inches.
  - f. Please use UH100C unit hydrograph for pre-development conditions.
  - g. Please clarify if the nodes with the nomenclature MH are manholes.
  - h. Show storm crossing from 1188 to 1329 and 1186 to 1327 on nodal map.
  - i. Please illustrate pipe length and/or invert for pipes on both the nodal map and the conceptual basin drawings for the following: 1161, 1151, 1146, 1144, 1134,1132,1112, 1080,1325,1188,1186,1146,1144,1132.
  - j. Pipe dimensions for 1116 in model do not correlate to data on nodal map.
  - k. Please clarify why 1072Pump has only positive flow. The help screen on the ICPR model indicates if positive flow is selected and the tailwater is higher than the head water the program reads it as zero flow.
  - 1. Illustrate following nodes on nodal map: 1072, 1134, 1118, 1046, and 1134.
  - m. Check upstream invert on channel 1060.
  - n. There are increases in the nodal path from 1382 to 1345 that have increased above warning stages from existing to proposed conditions, please adjust data or explain increases.
  - o. Node 1335A has a max stage that is higher than its warning stage.
  - p. Pipe 1337 length on conceptual drainage improvements does not coincide with length in model.
  - q. Inverts downstream of pipe 1130 in model do not coincide with inverts on conceptual drainage improvements
  - r. Illustrate pipe "CANAL" on the conceptual drainage plan or clarify.
  - s. Pleases clarify direction of flow on channel 1060.
  - t. Please illustrate location of "concrete ditch block weir" in ICPR model.
- 13. Environmental Services notes by Kathy Meaux. The report looks pretty good. The graph on page 18 is slightly off. The values for the samples do not match the graph. Also, the standard for a one grab sample is 800 cfu/100 ml, but it does not matter for this event, since all samples exceeded that also. I like the recommendation of expanding the existing

stormwater retention pond and installing the pump system. The other park enhancements would be a big plus. I don't think you would have any problem with getting the public

14. Parks & Recreation memo dated August 11, 2005 from Rob LaDue. Beaches and Natural Areas Parks staff have reviewed the subject PBS&J report, dated June 15, 2005 and have the following comments/questions:

"buy-in". We would, of course, help out with the monitoring of a new system.

- 1) Page 1 of the report indicates that "although no evidence of a human source was found for the indicator bacteria within the stormwater system, there was evidence that the stormwater conveyance system is acting as a reservoir, or breeding ground for indicator bacteria. Rainfall flushes high bacterial loads through the system, and probably re-suspends bacteria living in the sediments of the stormwater pipe, a vault structure, and drainage ditch, further elevating the load to receiving waters at the beach." Page 3 of the report indicates that the existing "vault-pond-ditch system has been considered a *possible* source of indicator bacteria at Siesta Key Beach." This information would strongly suggest that we are unsure whether the stormwater conveyance system is to blame for the problem, or if other sources (e.g., another stormwater system) might not be to blame. Given the cost to the County to implement the recommended alternative, might more definitive testing be initiated to verify that this system is the sole problem?
- 2) The legibility of the Appendix H aerial overlay keys was impossible to read and did not include a drawing for Alternative No. 3. However, it was evident from the drawings that construction proposed within Alternative Nos.1, 2, and the "Overall Site Plan" would impact native coastal hammock habitat that exists in the park. Pursuant to Policy II.2.a. of the Guiding Principles for Evaluating Development Proposals in Native Habitats Section of Chapter 2 (Environment Chapter) of the Sarasota County Comprehensive Plan, clusters of overstory and understory coastal hammock vegetation shall be left undisturbed. The extent of the impacts should be quantified with a habitat delineation survey for further review and comment.
- 3) Portions of the proposed construction located outside of the coastal hammock habitat will displace future park needs that are being identified for Siesta Public Beach (e.g., picnicking and parking areas). Parks and Recreation staff are reviewing options for a Siesta Beach Park Master Plan for this site, including a trail system. The proposed trail system shown on the Appendix H plans may be inadequate to meet identified needs (e.g., jogging trails will complete a loop). Until such time as Parks and Recreation staff has completed the Master Planning process, including public input and securing funding, design details for this stormwater system is premature.
- 4) The existing stormwater conveyance ditch that extends along the western edge of the project (shown in purple on the Appendix H drawings) contains mitigation that was previously required by the Florida Department of Environmental Protection (FDEP) for prior drainage improvements to Beach Road. This mitigation consists of mangroves that were installed within the ditch. Pursuant to Policy III.2.a. of the

Guiding Principles for Evaluating Development Proposals in Native Habitats Section of Chapter 2 (Environment Chapter) of the Sarasota County Comprehensive Plan, mangrove swamp shall be preserved or enhanced. It is unclear whether any impacts are proposed by this project to this area. The extent of any impacts should be quantified with a habitat delineation survey for further review and comment.

Should you have any questions, please contact me at (941) 861-0523.

Sincerely,

ter fedurm

Peter A. Peduzzi, P.E. Engineering Section Supervisor Watershed Management

cc: Theresa Connor, P.E., General Manager, Watershed Management Rodger Rasbury, General Manager, Program Management, Environmental Services Kirk Bagley, CFM, Manager, Operations and Maintenance, Watershed Management Jon Kramer, Acting Engineering Manager, Watershed Management Scott Woodman, P.E., Planning Section Supervisor, Watershed Management Lauren Torres, E.I., Project Manager, Watershed Management Kathy Meaux, Environmental Specialist III, Environmental Services Mike Jones, Environmental Specialist III, Natural Resources, EnSvcs George Tatge, Manager, Beaches and Natural Area Parks, Parks & Recreation Rob W. LaDue, Parks Supervisor, Beaches and Natural Areas Parks Raymond Kurz, Ph.D., Senior Environmental Scientist II, PBS&J

PAP: db

I: PLANNING Siesta Key Beach Road Study Report Review Letter.doc

| From:    | Michael Jones                           |
|----------|-----------------------------------------|
| To:      | LaDue, Rob                              |
| Date:    | 8/25/2005 4:03 PM                       |
| Subject: | Comments on your Siesta Beach Comments. |
| CC:      | Peduzzi, Peter                          |

## Hi Rob,

Your comments have been incorporated into the response from Stormwater to the consultant. Please keep in mind that this project was initiated to address the immediate concerns of citizens and Commissioners on Public Health Risks associated with last years beach closures. At present there is not even funding set up for implementing the project. Parks and Recreation staff are a part of this project team and have been invited to all major project meetings as well as solicited for input. With that in mind, I had the following comments on your comments #2 and #3.

Ĩ

- The legibility of the Appendix H aerial overlay keys was impossible to read and did not include a drawing for Alternative No. 3. However, it was evident from the drawings that construction proposed within Alternative Nos.1,
   and the "Overall Site Plan" would impact native coastal hammock habitat that exists in the park. Pursuant to Policy II.2.a. of the Guiding Principles for Evaluating Development Proposals in Native Habitats Section of Chapter
   (Environment Chapter) of the Sarasota County Comprehensive Plan, clusters of overstory and understory coastal
- hammock vegetation shall be left undisturbed. The extent of the impacts should be quantified with a habitat
- delineation survey for further review and comment.

I am not sure that the area was native coastal hammock. Based on the attached 1948 aerial, it appears that the area was historically a dune system. I think over the years development has occurred surrounding this particular area altering drainage in a way conducive to the development of a hammock like system. Additionally, site visits have indicated spoil deposits in the area. At present the "hammock" is of low quality and dense with exotic vegetation. This joint project provides a wonderful opportunity to enhance/create a quality coastal hammock in this natural area. This would be accomplished by exotic removal and planting of native species. This could be built into the project plan.

Furthermore, plans are not concrete and merely conceptual at this stage.

3. Portions of the proposed construction located outside of the coastal hammock habitat will displace future park needs that are being identified for Siesta Public Beach (e.g., picnicking and parking areas). Parks and Recreation staff are reviewing options for a Siesta Beach Park Master Plan for this site, including a trail system. The proposed trail system shown on the Appendix H plans may be inadequate to meet identified needs (e.g., jogging trails will complete a loop). Until such time as Parks and Recreation staff have completed the Master Planning process, including public input and securing funding, design details for this stormwater system is premature.

This project does not intend to supercede, or in anyway impact plans that Parks and Recreation has for the area. Addressing the concerns of the public and commissioners about public health protection and perception is not premature at this point due to last year's beach closure. The project actually provides an opportunity for cooperation between Parks and Recreation and Stormwater staff to meet the needs of public health safety and future public use.

So please let us know what Park's and Recreation envisions for the area. The alternative plans are conceptual and very flexible at this time. This project is intended to be a cooperative effort to best address future public and environmental needs.

Michael S. Jones, P.W.S. Environmental Specialist III Sarasota County Environmental Services 2817 Cattlemen Rd. Sarasota Fl, 34232