RS&H

May 2025

Destin Executive Airport
Basin 1 Stormwater Analysis – Final Report

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Final Report
May 2025
Okaloosa County, FL
Contract No.: C20-2959-AP
RS&H No.: 1048-1915-013

Prepared by RS&H, Inc. at the
direction of Okaloosa County

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Executive Summary

ES.1 Background and Understanding

Okaloosa County (Owner) contracted with RS&H, Inc. (RS&H) to perform a stormwater analysis of Basin 1 at the Destin Executive Airport (DTS or Airport). Basin 1 is identified in the Airport's Stormwater Pollution Prevention Plan (SWPPP) and includes a majority of the infrastructure to the southwest of the runway on Airport property. The Study Area is depicted in **Figure ES-1**. The Airport is currently experiencing drainage issues with regards to standing water and flooding throughout the airfield and adjacent to stormwater outfalls after rainfall events. The highest priority area of concern is along the western portion of the airfield adjacent to the Airport tenant hangars, Airport access road, and vehicle access gate. Focusing solely on Basin 1, the analysis aims to provide recommendations to reduce existing flooding and manage future stormwater needs. The Airport is subject to the criteria of multiple laws and regulatory agencies, including the Clean Water Act (CWA), the Federal Water Pollution Control Act (FWPCA), Okaloosa County (County), the Northwest Florida Water Management District (NWFWMD), the Florida Department of Environmental Protection (FDEP), and the Federal Aviation Administration (FAA). All criteria from these laws and agencies were examined and applied when relevant throughout this analysis.

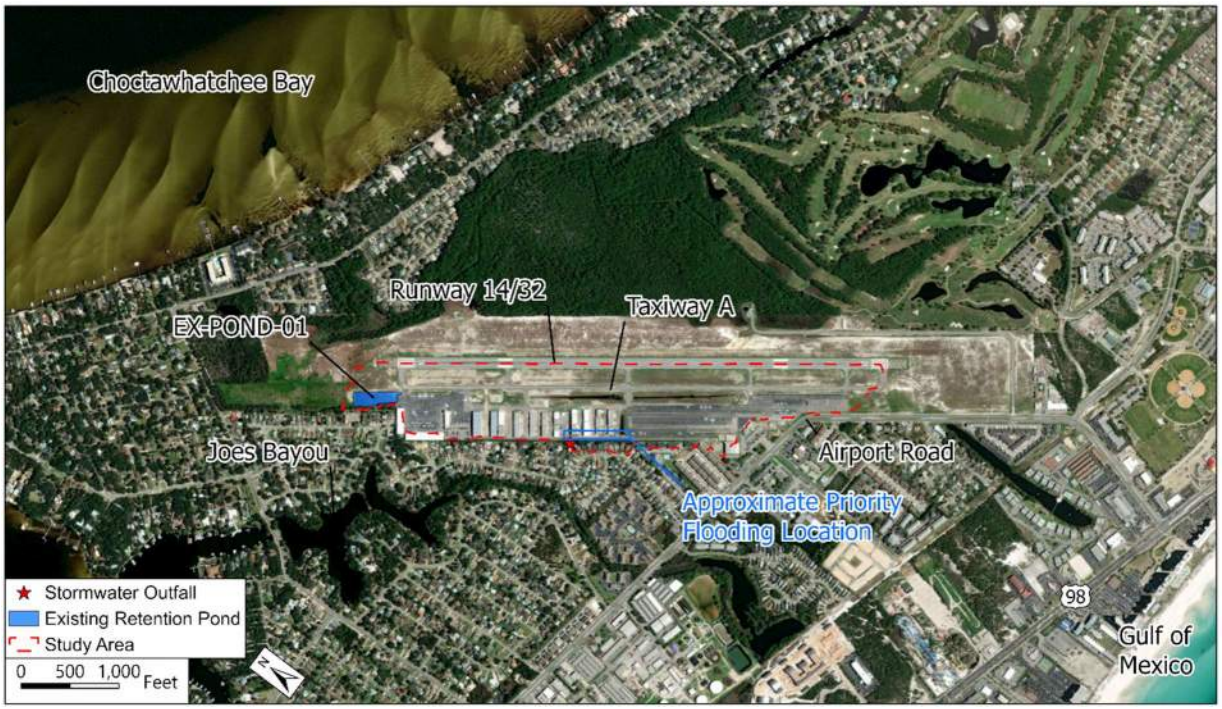

Figure ES-1: Study Area

ES.2 Data Collection and Existing Conditions

RS&H compiled existing stormwater infrastructure and site condition data from multiple sources to develop an understanding of the existing conditions within the Study Area. The Airport provided as-built plans, historical surveys, and photos of the Study Area. RS&H also used publicly available data sources to collect additional information including aerial imagery, light detection and ranging (LiDAR) elevation data, wetlands, floodplains, soils, and rainfall data.

Utilizing the topographic and as-built data collected, RS&H determined the Study Area has 27 existing drainage sub-basins labeled A through Z, as well as AA. The Study Area uses a combination of stormwater culverts and open channels to convey stormwater runoff. The Study Area has an outfall west of the t-hangars to Joe's Bayou that receives runoff from 15 of the sub-basins and a stormwater retention pond north of Taxiway A that receives runoff from the remaining 12 sub-basins. There are also two stormwater detention ponds upstream of the Joe's Bayou outfall. **Figure ES-2** presents the existing hydrology and stormwater infrastructure at DTS.

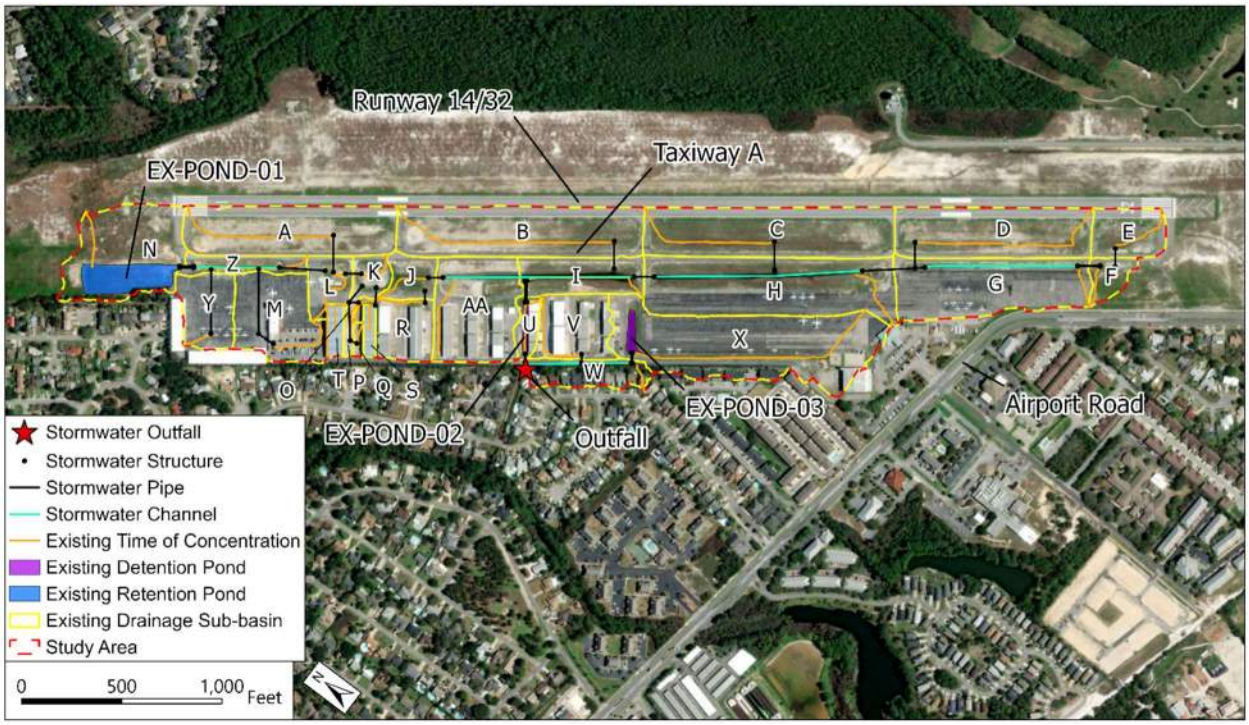

Figure ES-2: Existing Hydrology and Stormwater Infrastructure

ES.3 Permitting Summary

Stormwater discharge from DTS is covered under the Okaloosa County Phase 2 NPDES Permit and is also considered an industrial site according to the FDEP. Future construction disturbing equal to or greater than one acre at the Airport will require construction permitting from FDEP. The Environmental Resource Permit (ERP) program from NWFWMD includes multiple types of

work, including construction of stormwater management systems that discharge to surface waters and other land disturbances, so this permitting will likely also be required for future projects. Additionally, Okaloosa County requires any projects that impact the existing drainage system or where land development will take place submit a stormwater management plan that must be approved by the County prior to any project commencing.

ES.4 Criteria Summary

RS&H evaluated applicable stormwater management criteria, from local, state, and federal entities. These criteria determine the need for updating the existing stormwater infrastructure for existing and future development conditions at the Airport. RS&H utilized the following primary design criteria as guidance for the analysis.

- FAA Advisory Circular (AC) 150/5320-5D, Airport Drainage Design
- FAA AC 150/5200-33C, Hazardous Wildlife Attractants on or Near Airports
- Okaloosa County Development Design Standards
- NWFWMD Environmental Resource Permit (ERP) Applicant's Handbook Volumes I and II
- FDOT Drainage Manual

Major criteria that dictated the preliminary design of proposed stormwater infrastructure are discussed below.

- FAA AC 150/5320-5D, Airport Drainage Design
    - Runoff should not encroach onto airfield pavement for the 5-year, 24-hour storm.
    - The center 50% of runways, taxiways, and helipads, along the centerline, should be free of ponding from the 10-year, 24-hour storm.
- FAA AC 150/5200-33C, Hazardous Wildlife Attractants on or Near Airports
    - Maximum 48-hour drawdown time for detention ponds & completely dry between events.
- Okaloosa County Development Design Standards
    - Open Basin: Runoff rate for post-development basin shall not exceed pre-development rates for the Critical Storm.
    - Closed Basin: Post-development volume and runoff rate leaving the site shall not exceed the pre-development volume and runoff rate for the 100-year, 24-hour storm.

ES.5 Future Development Summary

RS&H considered near-term development at the Airport to understand future conditions at DTS. The Airport intends to construct three projects in the Study Area within the next five years. Due to limited design information, analysis of future development was limited to impacts to stormwater runoff from changes to the land use in the Study Area. The future projects included in the study are listed below.

- Taxiway A Reconstruction
- General Aviation Hangar Taxilane Realignment
- South Fixed Base Operator Apron Expansion and Optimization

The approximate buildout limits of future development are shown in **Figure ES-3**.

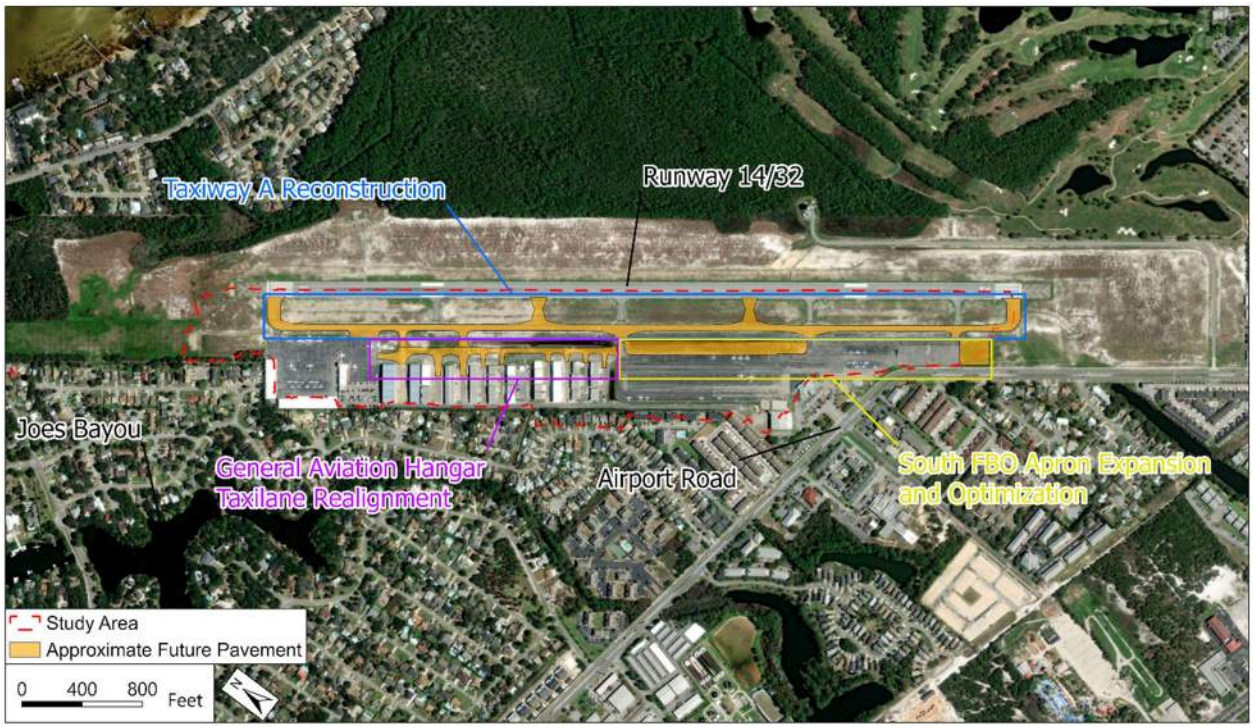

Figure ES-3: Future Airport Development

ES.6 Stormwater Analysis Summary

RS&H analyzed the Study Area under two hydrologic and hydraulic (H&H) scenarios to better understand the existing stormwater system and establish baseline results from it. The Existing Conditions – Existing Infrastructure model represents the Study Area in its current form and identified areas of the Airport experiencing flooding and other system shortcomings in regards to criteria discussed in **Section ES.4**. The Future Conditions – Existing Infrastructure model represents the Study Area with land use changes corresponding to the future development

discussed in **Section ES.5** to understand how the existing system would handle the changes to stormwater runoff resulting from development.

ES.7 System Improvements Summary

RS&H determined that the complete elimination of flooding in the Study Area is infeasible due to the existing conditions at the Airport such as high groundwater table, proximity to floodplains, and offsite outfall limitations. To eliminate flooding, a majority of which is located in the Outfall stormwater system, a significant increase in detention is required. However, the existing detention ponds in this system are limited in their footprint by existing airfield pavement and hangars. The ponds are also limited in depth by the invert elevation of the offsite outfall channel and the groundwater elevations at the Airport. However, RS&H utilized the results from the H&H model to develop specific infrastructure improvements to the Airport's stormwater management system as well as identify general items to help the system function properly under future conditions.

The Initial Improvements, presented in **Figure ES-4**, were based on reducing flooding concerns in the Existing Conditions – Existing Infrastructure model. RS&H modeled the Initial Improvements under both the existing and future conditions to provide results showing areas meeting FAA criteria discussed in **Section ES.4**, as well as areas to apply the General Improvements to in order to assist in reducing flooding. RS&H separated the Initial Improvements, listed below, into three groupings based on the area in which they reduce flooding.

- Initial Improvements
    - Roadside Ditch and Airport Access Road
        - Remove the existing Basin V 45 linear foot 12" CMP outlet pipe under the Airport access road (EX-P-30) and replace it with a dual 18" RCP culvert in the same location (P-P-02/P-P-03).
        - Excavate the existing roadside channel to the southwest of the Airport access road (EX-CH-08 and EX-CH-09) to better meet Airport outlet pipe elevations.
    - Outfall Drainage System – North End
        - Excavate the existing channel between the general aviation taxiway and Taxiway A (EX-CH-06) to the invert of the upstream pipe that discharges to it.
        - Raise the existing berm elevation between Basins J and K, directly southwest of Taxiway A connector A2 from 18.1 feet to 18.5 feet of elevation.

- Replace the Basin R outlet pipe, a 60 linear foot 18" concrete trench (EX-P-14) with 60 linear feet of 24" circular RCP (P-P-04) and match its downstream invert to its receiving pipe.

- Outfall Drainage System – South End
  - Remove 50 linear feet of 24" RCP to the south of Taxiway A connector A4 between Taxiway A and the general aviation apron (EX-P-04) and replace it with 20 linear feet of 36" RCP (P-P-01).
  - Extend the infield channel between Taxiway A connectors A4 and A5, between Taxiway A and the general aviation apron (EX-CH-01) to the above proposed pipe end section (P-ES-01). Excavate channel to meet existing upstream and proposed downstream pipe inverts.
  - Add 10 foot wide concrete bottom to the above channel (EX-CH-01).
  - Adjust the downstream invert of pipe under Taxiway A, between connectors A5 and A6 (EX-P-01) for positive flow from northeast to southwest.

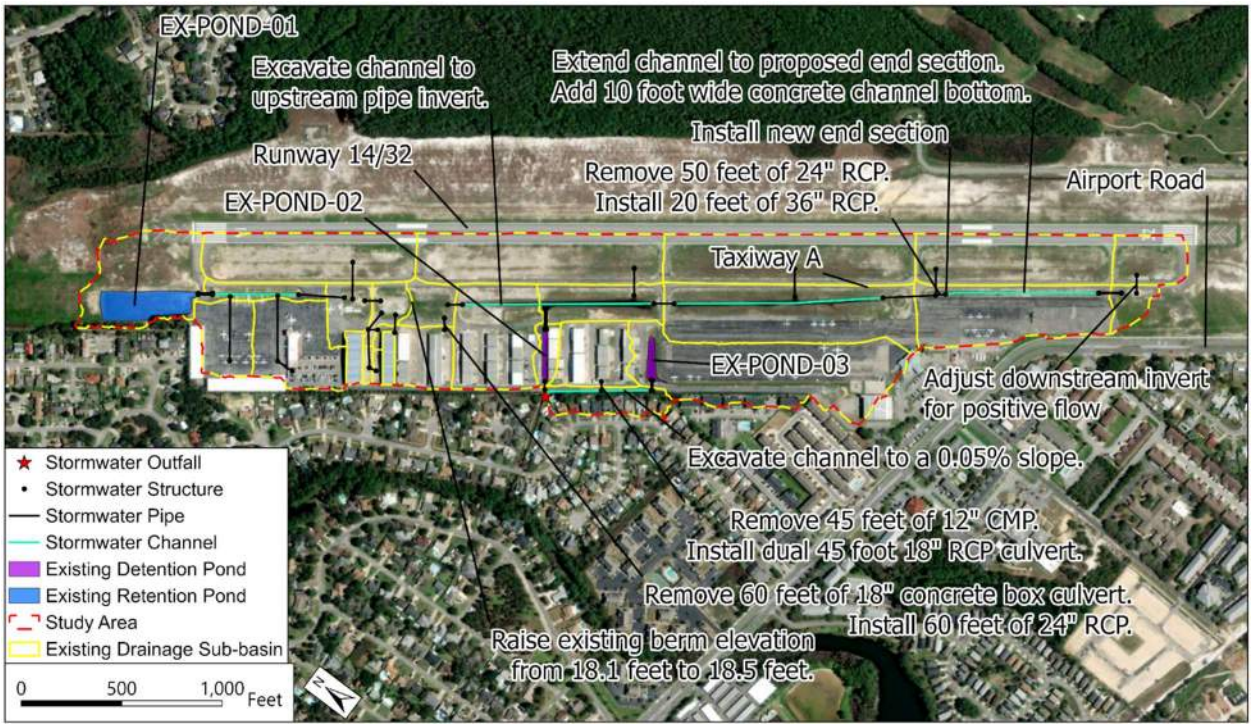

Figure ES-4: Initial Improvements

The General Improvements, presented in **Figure ES-5**, were based on issues identified in both the Existing Conditions – Existing Infrastructure and Future Conditions – Existing Infrastructure models. The General Improvements are anticipated to be enacted prior to or alongside the Initial Improvements to further decrease flooding at the Airport Basin 1 Outfall and improve overall system capacity to better handle increased runoff from future development. RS&H

recommends that maintenance aspects of the General Improvements be implemented in a timely manner as a routine system in order to maximize the hydraulic capacity of the system on a consistent basis. Additionally, all maintenance recommendations are generally applicable and do not reflect specific existing pipe and channel conditions.

- General Improvements
    - Coordinate with the City of Destin to clean debris from and maintain the Airport outfall channel.
    - Clear debris from and maintain pipes and channels on Airport property.
    - Optimize grading of infield areas to provide additional stormwater detention volume within the system.

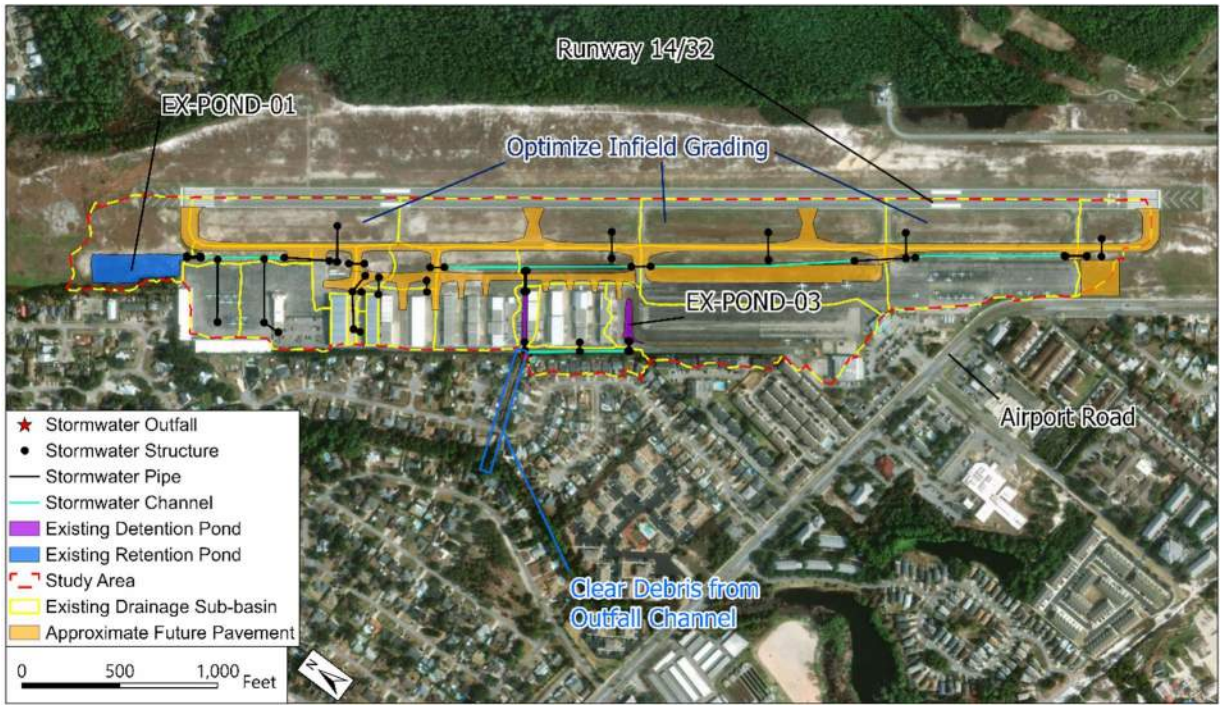

Figure ES-5: General Improvements

ES.8 Preliminary Opinion of Probable Cost

RS&H developed a preliminary opinion of probable cost (POPC) for the drainage elements associated with the Initial Improvements. The POPC is representative of a conceptual, planning level estimate. Given the preliminary nature of the cost estimate, the costs associated with the Initial Improvements are subject to vary based on final design and include a 30% contingency. **Table ES-1** presents the total POPC for the Initial Improvements.

Table ES-1: Preliminary Opinion of Probable Cost

Improvements	Cost
Roadside Ditch and Airport Access Road	$148,000
Outfall Drainage System – North End	$103,000
Outfall Drainage System – South End	$257,000
Total	$508,000

ES.9 Conclusion

The Initial Improvements provide reduced flooding in the modeled scenarios and should be implemented as soon as practical into design projects to limit the impacts of flooding in existing and future conditions. The Initial Improvements reduce flooding between the general aviation apron and t-hangars by approximately 6 inches. Additionally, the General Improvements should be implemented as timing and funding allows to further limit flooding at DTS.

Due to the existing flooding and constraining factors at DTS, RS&H recommends limiting future increases of impervious area within the Study Area to only development necessary for Airport operations - specifically development within the sub-basins that contribute to the Outfall - to minimize worsened flooding issues. Additionally, impervious area that is not consistent with NWFWMD ERP conditions should be removed and replaced with pervious elements in turn to promote infiltration and reduce runoff within the highly developed basins of the airport.

1 Introduction

1.1 Airport Description

The Destin Executive Airport (DTS or Airport) is a public use airport in Okaloosa County, Florida, located approximately one mile east of Destin, Florida. The Airport covers 395 acres (ac) and is currently owned and operated by Okaloosa County (Owner). The Airport has a single asphalt runway, Runway 14/32, that is 5,001 feet long and 100 feet wide, two fixed-base operators (FBO), and a variety of aircraft hangars. See **Figure 1-1** for an overview of the Airport.

Figure 1-1: Airport Overview

1.2 Project Background

Stormwater at DTS is subject to multiple federal, state, and local standards, including the Clean Water Act (CWA), Federal Water Pollution Control Act (FWPCA), Okaloosa County, the Florida Department of Environmental Protection (FDEP), the Northwest Florida Water Management District (NWFWMD), and the Federal Aviation Administration (FAA). The Airport is currently experiencing drainage issues with regards to standing water and flooding, specifically along the western portion of DTS and adjacent to the stormwater outfall, within the area identified as Basin 1 in the Airport's Stormwater Pollution Prevention Plan (SWPPP). The flooding of highest concern is located adjacent to tenant hangars, the entrance gate along the vehicle service road (VSR), and the outfall to Joe's Bayou, which is experiencing frequent instances of standing water.

1.3 Project Description

The Owner contracted RS&H, Inc. (RS&H) to perform a stormwater analysis of Basin 1 at the Airport to identify areas of concern and provide recommendations to more effectively manage stormwater. As a part of the analysis, RS&H was tasked with the following:

- Review existing site information, including the existing stormwater infrastructure and permits.
- Review regulatory information, including state and local stormwater requirements, design standards, and wildlife hazard assessments.
- Develop an existing conditions hydrologic and hydraulic (H&H) model.
- Develop a proposed conditions H&H model and analyze results.
- Evaluate stormwater management needs and Best Management Practices (BMPs) for future stormwater.
- Develop a comprehensive report of the above tasks.

The Study Area, shown in **Figure 1-2,** encompasses areas that contribute runoff to the stormwater system that outfalls to either the on-site retention pond (EX-POND-01) or to the stormwater outfall to Joe's Bayou, a majority of which is the aforementioned Basin 1.

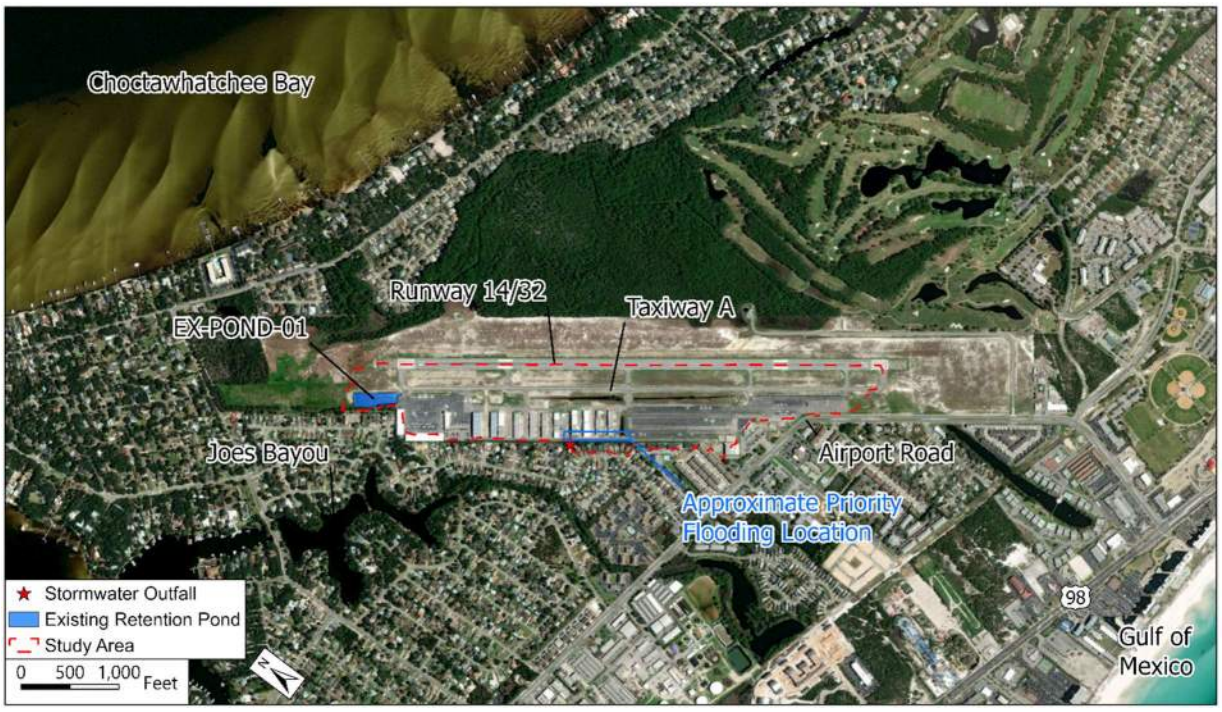

Figure 1-2: Study Area Overview

The results and recommendations of this stormwater analysis are pursuant to the following assumptions and limitations:

- A full geotechnical investigation was not conducted.
- A full topographical survey was not conducted.
- Downstream, off-airport storm sewer systems were not evaluated.
- Downstream receiving waters were not modeled or analyzed.
- Future stormwater infrastructure was developed to a 10% level. Final design will validate that applicable criteria are met.
- Condition assessment of the structures and pipes did not occur.
- Presence, concentration, and anticipated regulations of emerging contaminants were not considered in development of stormwater improvements.

To accomplish the goals of this analysis, RS&H conducted an H&H analysis to evaluate existing drainage conditions and impacts of future Airport development on the existing stormwater collection and conveyance system within the Study Area. This analysis was used to conceptually understand the major collection and conveyance features, control features, and stormwater management facilities with consideration of regulatory and design standards and provide recommendations to improve the existing deficiencies of the stormwater system and future development impacts.

2 Stormwater Programs and Design Criteria

2.1 Stormwater Discharge Program

The Clean Water Act (CWA) Section 402 established the National Pollutant Discharge Elimination System (NPDES), overseen by the United States Environmental Protection Agency (USEPA) to reduce water pollution from stormwater discharges. Phase I covered medium and large municipalities, while Phase II expanded to include small municipalities. The State of Florida administers its own NPDES Stormwater Program under the Florida Department of Environmental Protection (FDEP) that regulates Phase I and Phase II municipal separate storm sewer systems (MS4) throughout the state.

Discharges at the Airport are covered under the Okaloosa County Phase 2 NPDES Permit ID: FLR04E-073. **Figure 2-1** shows the inclusion of the Airport within this permit boundary.

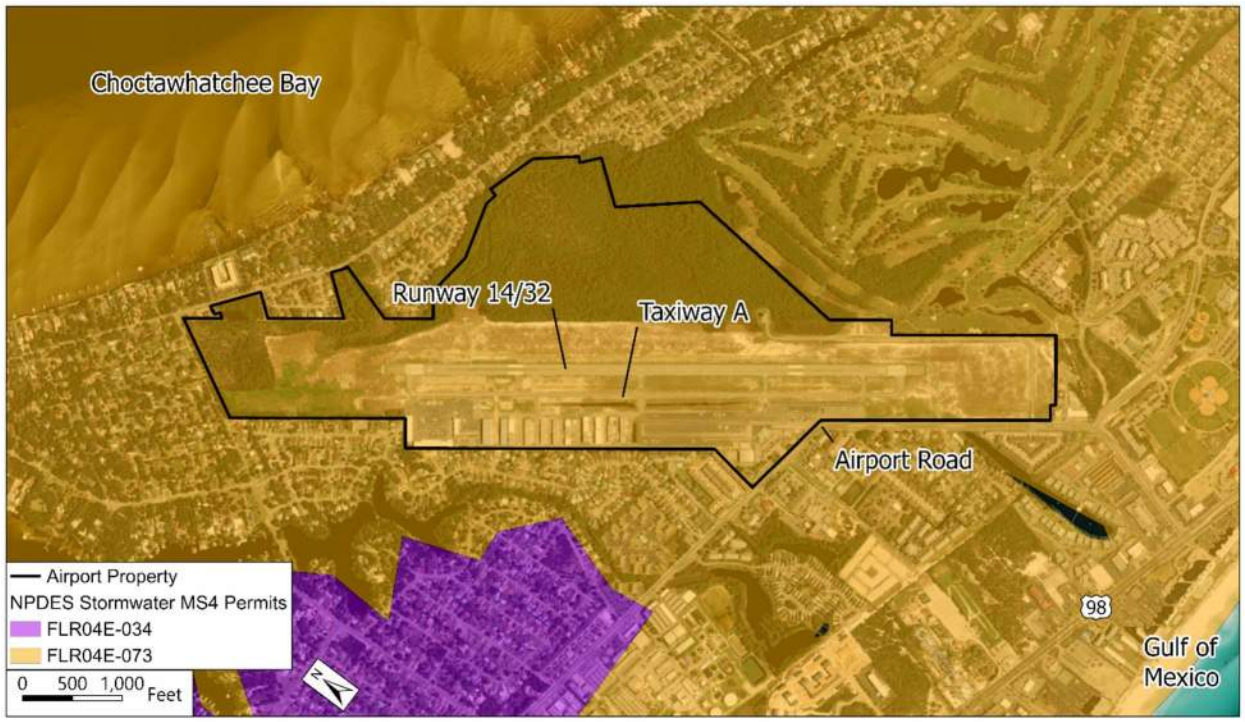

Figure 2-1: MS4 Phase II Permitted Area

FDEP requires additional permitting for stormwater discharges from industrial sites to further limit pollution of receiving water bodies. The Florida Multi-Sector Generic Permit for Stormwater Discharge Associated with Industrial Activity (MSGP) is required for any stormwater discharges from sites that have one or more of the 11 regulated industrial activities referenced in Rule 62-620 of the Florida Administrative Code (F.A.C.). The MSGP requires permittees to develop and implement a SWPPP, as well as additional monitoring in specific permits for facilities with higher pollution risk. The Airport is defined as an industrial site per Rule 62-620 of the F.A.C. and maintains an MSGP Permit under Facility ID: FLR05A818.

2.2 Future Permitting

FDEP requires a Construction Generic Permit (CGP) for stormwater discharges from construction activities that disturb at least one or more acres of land or disturb less than one acre but are part of a larger common plan of development or sale, and discharge stormwater to surface waters of the state or to surfaces waters of the state via an MS4. These construction activities are classified as Small and Large construction activities, defined as:

- Small Construction Activities
    - Disturbs equal to or greater than one and less than five acres of land, or
    - Disturbs less than one acre of land that is part of a larger common plan of development or sale that will ultimately disturb between one and five acres.
- Large Construction Activities

  - Disturbs five acres or greater of land, or
  - Disturbs less than five acres of land that is part of a larger common plan of development or sale that will ultimately disturb five acres or greater.

A CGP requires the permittee to do the following, including a generic permit fee, in order to be covered under the generic permit:

- Submit a CGP Notice of Intent (NOI) form to the FDEP prior to construction.
- Develop a construction SWPPP and implement it throughout the construction process.
- Submit a Notice of Termination (NOT) at the conclusion of construction where the CGP is no longer required.

The Florida Water Resources Act of 1972 established five water management districts with responsibilities of managing the state's water supply, water quality, flood protection, and natural resource protection. The NWFWMD is responsible for the area of the state including Okaloosa County; therefore, the Airport must comply with all applicable criteria from this management district. NWFWMD implements multiple permitting programs, one of which is the Environmental Resource Permit (ERP) program. An ERP is necessary for multiple types of work, including the construction of stormwater management systems that discharge to wetlands or surface waters and other kinds of land disturbance. Future development at DTS will likely require an ERP, unless the development is found to be exempt via discussion with NWFWMD during final design. The general requirements of an ERP involving construction of a stormwater management system include the following sections of the ERP application:

- Section A – General Information for All Activities
- Section C – Supplemental Information for Works of Other Activities In, On, or Over Wetlands and/or Other Surface Waters (As Needed)
- Section E – Supplemental Information Required for Works or Other Activities Involving a Stormwater Management System

The Okaloosa County Development Design Standards also require that projects, where an existing drainage system will be impacted or land development will take place, submit a stormwater management plan. Stormwater management plans must be submitted and approved by Okaloosa County prior to construction commencement. The stormwater management plan must contain the following:

- Vicinity sketch and legal description
- Basin and sub-basin boundaries
- Topographic site data

- Existing stormwater management system features (outfall structures, weirs, inlets, ponds, conveyance systems, easements, etc.)
- Description of all watercourses, water bodies, and wetlands
- Jurisdictional limits of all on-site wetland systems
- Soil information
- Flood zone designation
- Proposed development layout with horizontal and vertical controls
- Proposed stormwater management features (outfall structures, weirs, inlets, ponds, conveyance systems, easements, etc.)
- Design report
- Revisions
- Erosion and sediment control plan
- Documentation that all runoff leaving the project utilizes a Legal Positive Outfall
- Any other information that the developer or reviewing officials consider necessary for an evaluation of the proposed development

2.3 Design Criteria

Table 2-1 summarizes drainage specific criteria and standards relevant to existing and future drainage infrastructure at the Airport. Sources include FAA Advisory Circulars (AC), the Okaloosa County Development Design Standards, and the NWFWMD ERP Applicant's Handbook. RS&H did not address all of these criteria and standards in this analysis due to the preliminary nature of the report. All of these criteria, as well as other applicable standards, should be considered in final design of future infrastructure.

Table 2-1: Drainage Criteria Summary

Criteria Source	Criteria		
	Hydrology	Hydraulics	Water Quality
FAA AC 150/5200-33C – Hazardous Wildlife Attractants on or Near Airport	Maximum 48-hour drawdown time for detention ponds & completely dry between events.		
FAA AC 150/5320-5D – Airport Drainage Design	Runoff should not encroach onto airfield pavement for 5-year, 24-hour storm.	Pipe slopes to achieve min. pipe velocity of 3 ft/s.	
	The center 50% of runways, taxiways, and helipads, along the centerline, should be free of ponding from the 10-year, 24-hour storm.		
	Ponding will be limited around an apron inlet such that it does not exceed 4 inches.		

Criteria Source	Criteria		
	Hydrology	Hydraulics	Water Quality
Okaloosa County Development Design Standards	Critical Storm: design storm event that produces the highest post-development rate of discharge less the pre-development rate of discharge. Analysis for the 2-, 5-, 10-, and 25-year storms for the 1, 2, 4, 8 and 24-hour durations shall be performed to determine the Critical Storm.	Open Channel Minimum Slope: 0.3%	
	Open Basin: Runoff rate for post-development basin shall not exceed pre-development rates for the Critical Storm.	Cross Drain/Culvert Minimum Size: 18" Diameter or equivalent	
	Closed Basin: Post-development volume and runoff rate leaving the site shall not exceed the pre-development volume and runoff rate for the 100-year, 24-hour storm.	Cross Drain/Culvert Minimum Cover: 18" from top of pipe	
	Open Channel Design Frequency: Outfall Ditch - 25-year, 24-hour Swales – 10-year, 24-hour	Storm Drain Minimum Time of Concentration: 10 minutes	
	Cross Drain/Culvert Design Frequencies: 10-year, 24-hour, 100-year flood, 500-year flood	Storm Drain Minimum Velocity: 2.5 ft/s	
	Storm Drain Design Frequency: 10-year, 24-hour	Storm Drain Minimum Size: 18" Diameter	
	The banks of detention and retention areas shall slope at a grade of 3:1 or flatter to the bottom of a dry facility.	Storm Drain Minimum Cover: 18" from top of pipe	All non single-family detached residential subdivision projects shall provide retention, or detention with filtration of the first one (1) inch of runoff from the project area. Or if more restrictive, meet FDEP water quality requirements.
NWFWMD ERP Applicant's Handbook – Volume I			All stormwater treatment systems shall provide an 80% reduction of the average annual total phosphorus loading and a 55% reduction of the average annual total nitrogen loading from the propose project, or a reduction such that the post-development condition average annual loading of nutrients does not exceed the pre-development condition nutrient loading.*
NWFWMD ERP Applicant's Handbook – Volume II	Detention systems must be installed such that the peak rate of post-development runoff will		Apply design criteria and guidelines for Best Management Practices.

Criteria Source	Criteria		
	Hydrology	Hydraulics	Water Quality
	not exceed the pre-development peak-rate of runoff for the 25-year, 24-hour design storm.		

*Calculations for determining annual loading from the pre- and post-development loads are found in Section 9 of the NWFWMD ERP Applicant's Handbook – Volume I.

3 Existing Conditions

3.1 Data Collection

RS&H inventoried the Airport's drainage system through existing as-built plans, a site visit, and survey information. The following projects were utilized to gather survey information regarding the existing on-site drainage system:

- Taxiway A Rehabilitation (2019) – Designed but not constructed
- Taxilane Realignment Study (2023)

In addition to the above, RS&H collected information from topographic data, images from the site, and discussions with Airport staff. Airport staff provided further insight into the priority flooding location identified in **Figure 1-2**. Images from the site, corroborated by discussion with the Airport staff, show this area often inundated during and after rainfall events.

3.2 Overview of Existing System

For purposes of this analysis, RS&H analyzed flow rates at two points: one (1) outfall and one retention pond (EX-POND-01). These analysis points are based on the discharge points of the Study Area, where stormwater runoff either leaves Airport property or is retained on site. The majority of the Study Area uses a combination of stormwater culverts and open channels to convey stormwater runoff. Inlet structures and stormwater pipes, as well as trench drains are also utilized. **Figure 3-1** presents the existing outfall and retention pond along with other existing drainage features.

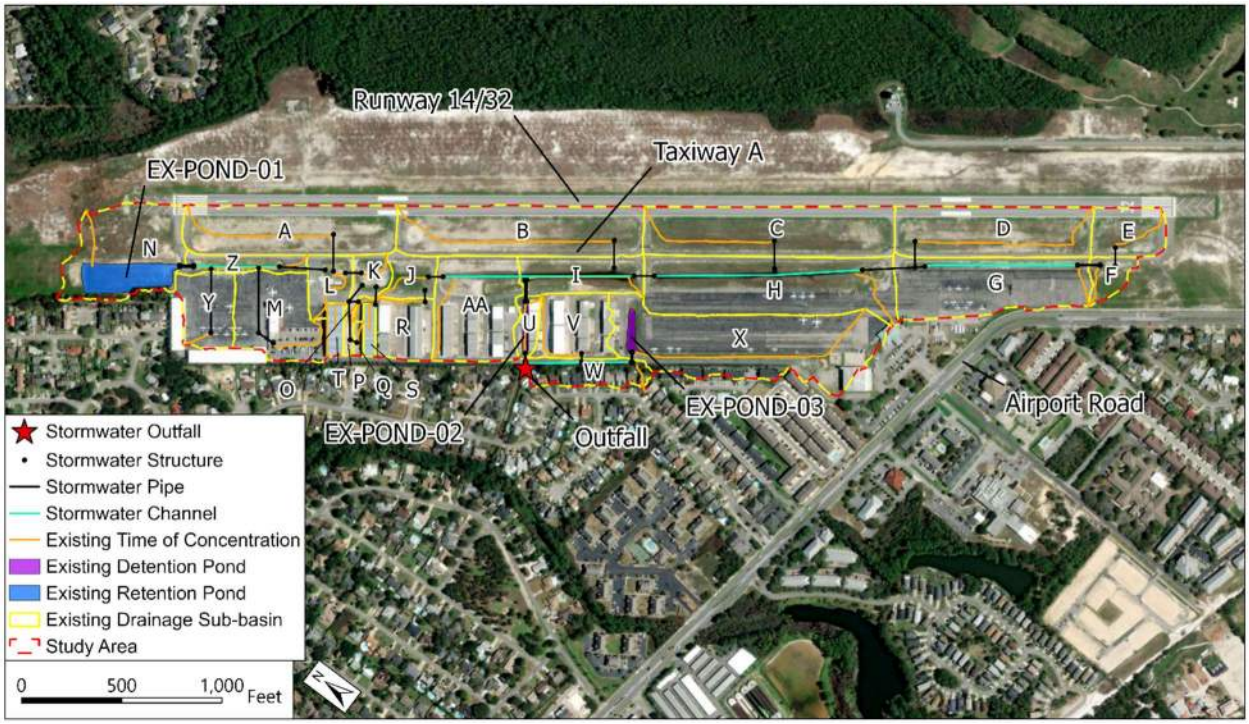

Figure 3-1: Existing Hydrology and Stormwater Infrastructure

Per the site visit, there is a buried cross culvert under the road adjacent to the hangars in the existing detention pond (EX-POND-03) area that would discharge stormwater runoff off Airport property if functioning properly. Topographic data shows the crown of the road at the vehicle access gate as a low point when compared to the stretches of road running to the northwest and southeast, making it an overtopping point when the capacity of the stormwater system is exceeded. The survey data shows the discharge pipes from EX-POND-03 are partially buried by the receiving ditch. RS&H identified these deficiencies in the stormwater system and layout of the roadway as factors contributing to the existing flooding.

3.3 Existing Site Data

3.3.1 Topography

RS&H gathered LiDAR information through the NOAA Digital Coast Data Access Viewer Application, last updated on October 17th, 2023. The LiDAR data was compiled from multiple sources including the Florida Department of Emergency Management and NWFWMD. Topographic data for this stormwater analysis is reported using the North American Vertical Datum of 1988 (NAVD 88).

3.3.2 Soils

The Natural Resources Conservation Service (NRCS) soils map and report for Okaloosa County, Florida (**Appendix A**) indicates the Study Area contains Kureb and Resota sands. **Table 3-1** and

Figure 3-2 summarize the properties and locations of each soil within the Study Area. All Study Area soils are hydrologic soil group (HSG) A according to the NRCS report. HSG A soils are indicative of soils with low runoff rates and high potential for infiltration. The infiltration rate of the most limiting layer for the soils present on site is 5.95 in/hr.

Table 3-1: NRCS Soil Types

Map Unit	Soil Type	Soil Composition	Area (ac)	HSG	Infiltration Rate (in/hr)	% Study Area
10	Kureb Sand, 0 to 8 percent slopes	80% Kureb and similar soils	47.26	A	5.95	54.7%
21	Resota Sand, 0 to 5 percent slopes	95% Resota and similar soils	39.15	A	19.98	45.3%

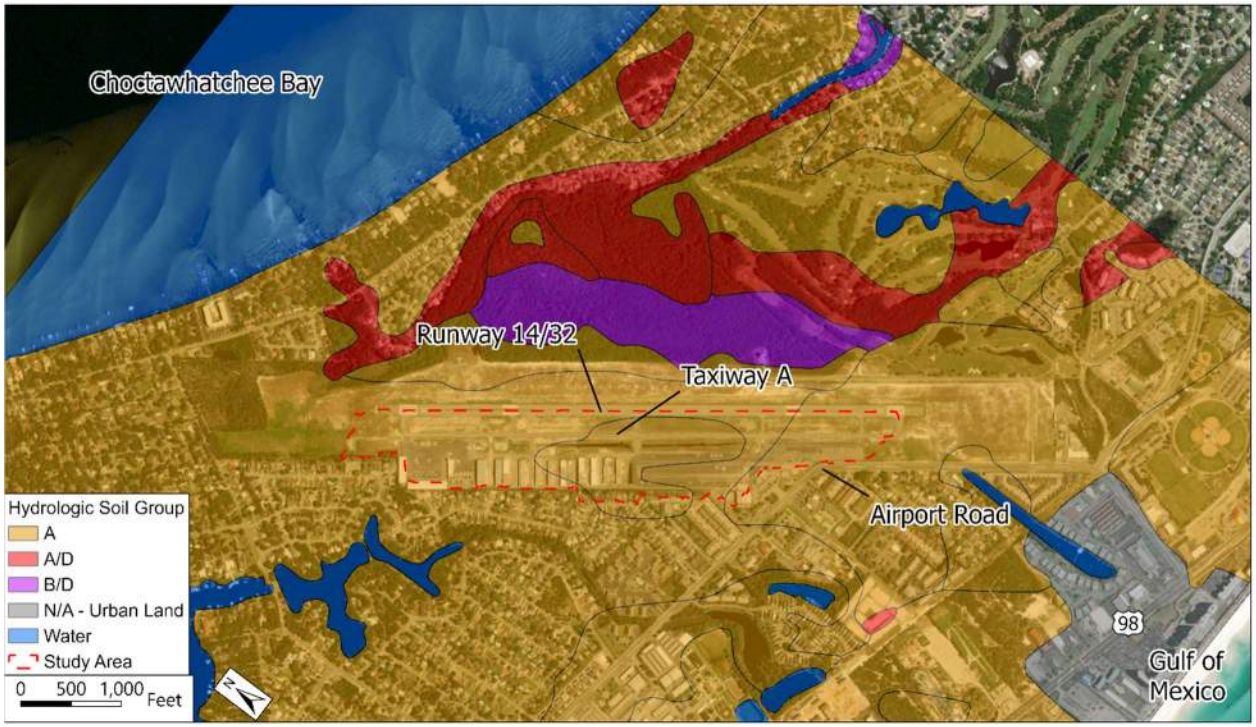

Figure 3-2: Study Area Soils

3.3.3 Land Cover

Pervious and impervious areas were defined to assist in H&H modeling. RS&H utilized available record drawings and Airport-provided files to determine existing land use conditions and supplemented them with satellite imagery from Google Earth Pro obtained on April 13th, 2023. See **Table 3-2** for existing land use conditions.

Table 3-2: Existing Land Use

Sub-basin	Pervious Area (ac)	Impervious Area (ac)
A	4.14	1.86
B	4.88	2.20
C	4.95	2.22
D	3.83	1.86
E	1.22	0.82
F	0.69	0.21
G	1.00	5.21
H	4.37	4.05
I	2.11	0.52
J	0.78	0.42
K	0.59	0.30
L	0.53	0.84
M	0.06	3.95
N	5.05	0.58
O	0.00	0.10
P	0.00	0.21
Q	0.00	0.20
R	0.30	1.89
S	0.00	0.36
T	0.02	0.49
U	0.34	0.41
V	0.68	2.05
W	1.09	0.78
X	2.35	7.34
Y	0.00	2.29
Z	0.59	0.67
AA	2.24	2.77

3.3.4 Drainage Subbasins

RS&H used site topography, as-built drawings, site visit observations, and previous Airport drainage surveys to determine existing sub-basins. A drainage sub-basin is a defined area where runoff travels to a common outlet. The Study Area consists of 27 sub-basins labeled A through Z, as well as AA. **Table 3-3** provides a summary of each sub-basin.

Table 3-3: Existing Sub-basin Summary

Sub-basin	Area (ac)	% Imp.	Tc (min.)	Ultimate Outfall ID
A	6.00	31.1%	16.8	EX-POND-01
B	7.08	31.1%	22.3	Outfall
C	7.17	31.0%	13.9	Outfall
D	5.69	32.6%	23.7	Outfall
E	2.04	40.3%	10.0	Outfall
F	0.90	76.5%	10.0	Outfall
G	6.21	16.2%	10.0	Outfall
H	8.42	48.1%	10.0	Outfall
I	2.63	24.6%	28.5	Outfall
J	1.20	35.1%	10.0	Outfall
K	0.89	66.0%	10.0	EX-POND-01
L	1.37	61.4%	10.0	EX-POND-01
M	4.01	98.6%	10.0	EX-POND-01
N	5.63	10.2%	10.0	EX-POND-01
O	0.10	97.3%	10.0	EX-POND-01
P	0.21	100.0%	10.0	EX-POND-01
Q	0.20	0.7%	10.0	EX-POND-01
R	2.19	86.3%	10.0	Outfall
S	0.36	0.3%	10.0	EX-POND-01
T	0.51	97.3%	10.0	EX-POND-01
U	0.75	45.7%	11.8	Outfall
V	2.73	75.0%	13.2	Outfall
W	1.87	58.1%	10.0	Outfall
X	9.69	75.8%	57.2	Outfall
Y	2.29	100.0%	10.0	EX-POND-01
Z	1.26	53.4%	12.5	EX-POND-01
AA	5.01	55.3%	10.9	Outfall

3.3.5 Wetlands

According to the National Wetland Inventory (NWI), a dataset of U.S. wetlands and deepwater habitats managed by the U.S. Fish and Wildlife Service, wetlands are not present within the Study Area. Therefore, any development within the Study Area would not require further permitting associated with wetland impacts. However, the presence or absence of wetlands should be verified during the design of all future development projects. **Figure 3-3** shows the wetlands in the vicinity of the Study Area.

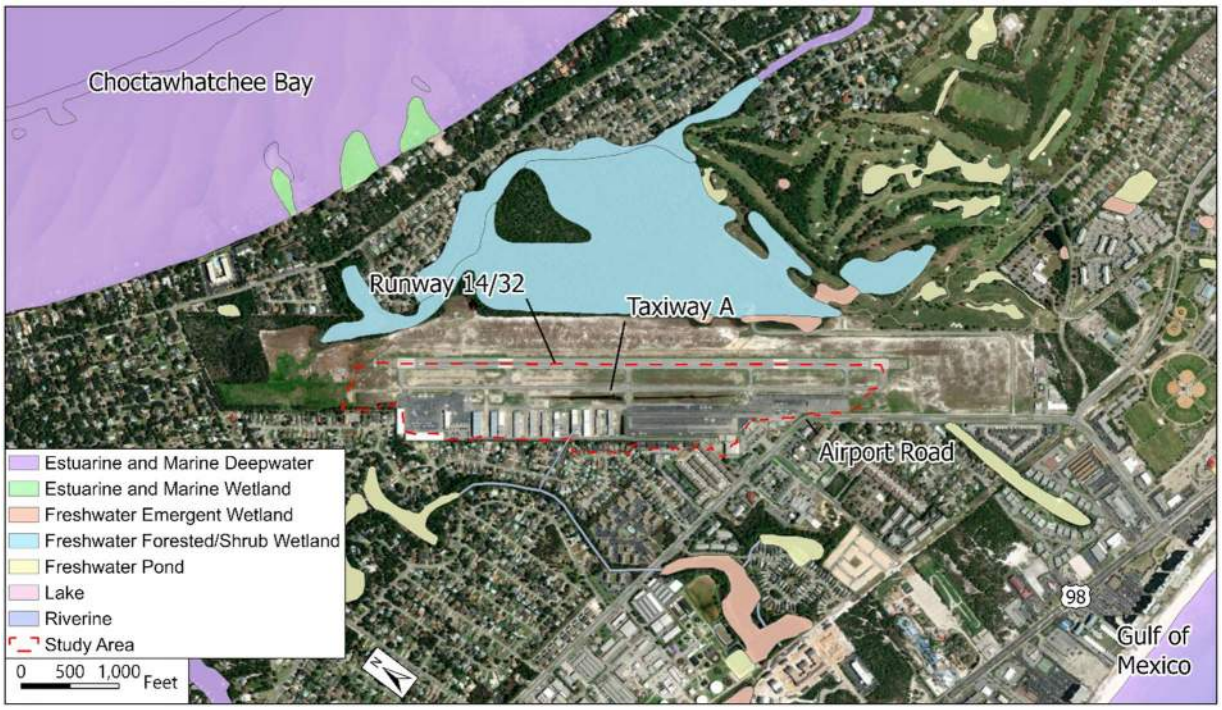

Figure 3-3: Study Area Wetlands

3.3.6 Wildlife Hazard Assessment

No FAA wildlife assessment have been conducted at the Airport. However, DTS is in close proximity to two large water bodies, the Choctawhatchee Bay and Gulf of Mexico, as well as Joe's Bayou and other wetlands. Therefore, wildlife poses a likely risk to aircraft at DTS.

3.3.7 Rainfall

The FDOT Drainage Design Guide identifies the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Point Precipitation Frequency Estimates as a reasonable source for rainfall depths of design storms. NOAA Atlas 14 provides rainfall depths for a variety of return periods. The rainfall depths are mean values located between estimated upper and lower confidence intervals. These intervals are based on historic depths from rainfall gauges, typically having a minimum of 30 years of data. RS&H gathered data from NOAA for the 5-, 10-, 25-, and

100-year, 24-hour design storms, as well as the 25-year, 8-hour design storm, based on criteria in **Section 2.3**. See **Table 3-4** for rainfall depths.

Table 3-4: Existing Rainfall Depths

Design Storm	Rainfall Depth (in)
5-year, 24-hour	7.54
10-year, 24-hour	9.12
25-year, 8-hour*	8.08
25-year, 24-hour	11.6
100-year, 24-hour	16.1

*Determined from NOAA Depth-Duration-Frequency curve for DTS

3.3.8 Floodplains

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) numbers 12091C0486J, 12091C0488J, and 12091C0489J, the Airport is located within the City of Destin, Community Number 125158. The Study Area is entirely outside of the 100-year and 500-year floodplains, and therefore any development within the Study Area would not require further permitting associated with floodplain impacts. However, the presence or absence of floodplains should be verified during the design of all future development projects. **Figure 3-4** shows the floodplains in the vicinity of the Study Area. **Appendix B**, **Exhibits 1**, **2**, and **3** show the FEMA FIRMs.

Figure 3-4: Study Area Floodplains

4 Future Airport Development

The projects below represent development that the Airport intends to complete within the next 5 years. The information for these projects was inventoried based on existing design documents, design documents under development, and future projects listed in the 2018 Airport Layout Plan (ALP) for DTS. Future conditions H&H modeling considers the buildout of these projects in order to properly size proposed stormwater infrastructure and analyze peak flow rates at each analysis point. Future land use was determined in a similar fashion using existing land use combined with approximate future pavement boundaries. **Figure 4-1** shows the future Airport development.

- Taxiway A Reconstruction
- General Aviation Hangar Taxilane Realignment
- South FBO Apron Expansion and Optimization

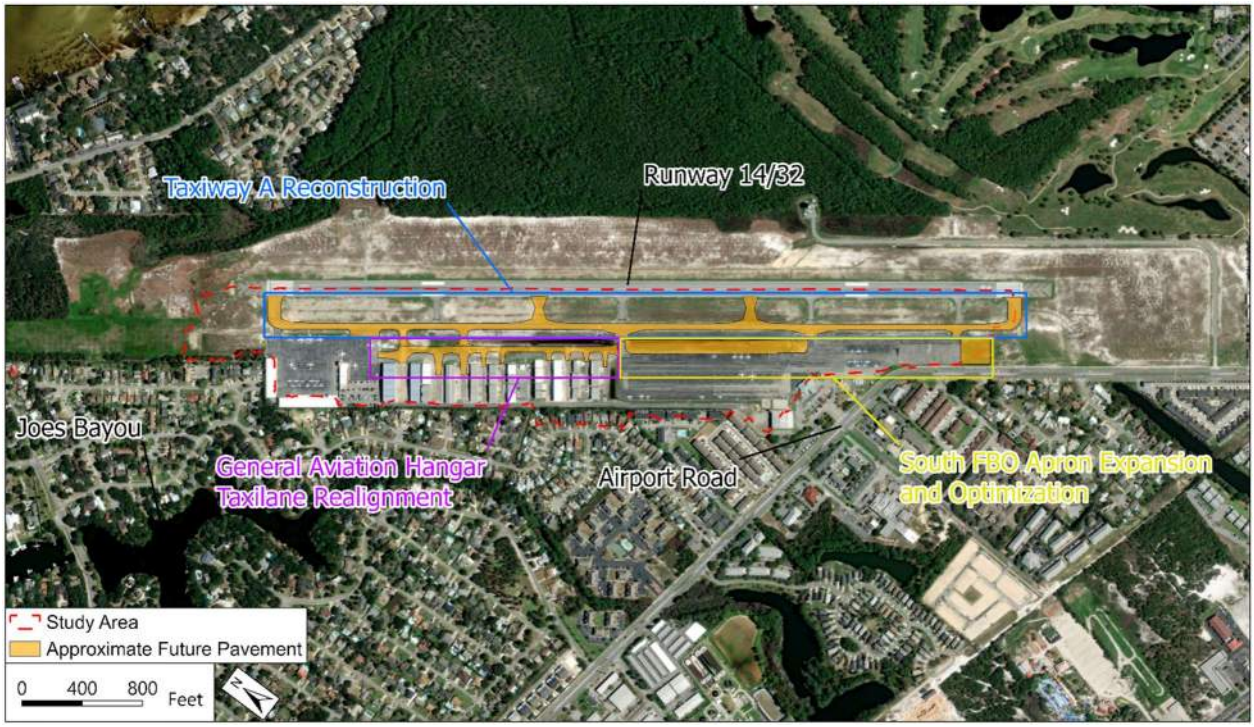

Figure 4-1: Future Airport Development

RS&H determined future sub-basins using existing drainage boundaries combined with assumed centerline crowns for future taxiways and taxilanes. **Table 4-1** provides a summary of each future sub-basin.

Table 4-1: Future Sub-basin Summary

Sub-basin	Area (ac)	% Imp.	Tc (min.)	Ultimate Outfall ID
A	9.93	31.1%	29.6	EX-POND-01
B	3.97	32.2%	10.0	Outfall
C	3.95	31.9%	12.1	Outfall
D	4.95	32.1%	12.1	Outfall
E	4.99	31.1%	18.8	Outfall
F	1.55	32.3%	10.0	Outfall
G	6.29	15.4%	10.0	Outfall
H	8.48	79.2%	10.0	Outfall
I	2.19	32.4%	28.5	Outfall
J	0.76	39.5%	10.0	Outfall
K	0.64	39.1%	10.0	EX-POND-01
L	1.40	67.1%	10.0	EX-POND-01
M	4.01	98.5%	10.0	EX-POND-01
N	5.63	10.3%	10.0	EX-POND-01
O	0.10	100.0%	10.0	EX-POND-01
P	0.21	100.0%	10.0	EX-POND-01
Q	0.20	95.0%	10.0	EX-POND-01
R	2.76	78.6%	10.0	Outfall
S	0.36	99.7%	10.0	EX-POND-01
T	0.51	98.0%	10.0	EX-POND-01
U	0.84	52.4%	18.6	Outfall
V	2.99	72.2%	14.4	Outfall
W	1.87	41.7%	10.0	Outfall
X	9.83	75.3%	57.2	Outfall
Y	2.28	100.0%	10.0	EX-POND-01
Z	1.26	54.0%	12.5	EX-POND-01
AA	5.08	60.0%	11.2	Outfall

Figure 4-2 shows the future Airport sub-basins.

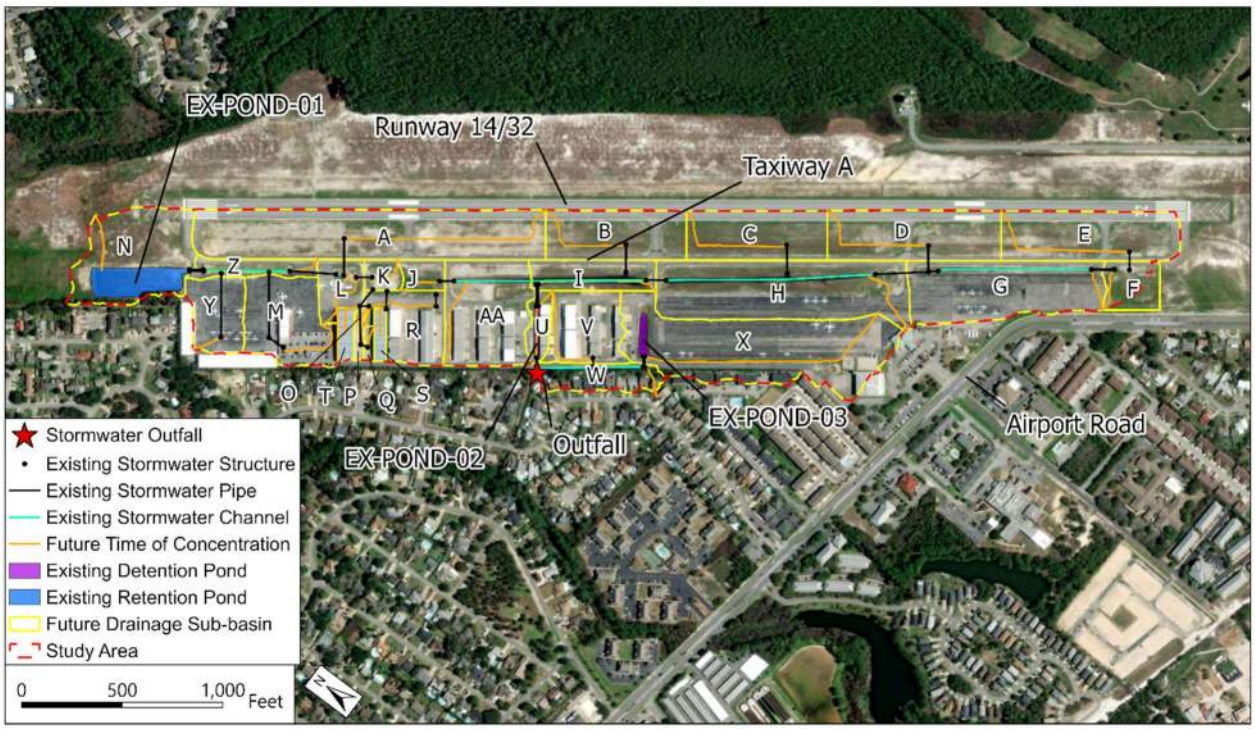

Figure 4-2: Future Hydrology and Existing Stormwater Infrastructure

5 Hydrologic and Hydraulic Modeling

5.1 Modeling Software

RS&H created a stormwater runoff model representing the Airport's drainage system and discharges to receiving waters. RS&H used the Interconnected Channel and Pond Routing version 4.07.08 (ICPR4) model released February 9, 2021. RS&H used the 1-dimensional hydrologic and hydraulic (H&H) capabilities of the ICPR4 software to model and simulate existing and future stormwater conditions under a variety of scenarios. All modeling results can be found in **Appendix C**.

The basic components of the 1-dimensional model are basins, nodes, and links. Nodes are placed throughout the network and represent drainage structures, stormwater storage areas, and outfalls. Stormwater runoff is determined for each basin and is routed to a designated node in the model. This model uses Soil Conservation Service (SCS) curve number methodology to model losses. Water surface elevations, or stages, are calculated at nodes based on inflows, outflows, and storage characteristics. Links, that can represent pipes, channels, weirs, and pond infiltration, are placed in between nodes to simulate the movement of water throughout the system.

5.2 Model Feature Naming Convention

Features in the model such as basins, nodes, links, and cross sections use the naming convention found in **Table 5-1**.

Table 5-1: Model Features Nomenclature

Feature	Name	Example
Manual Basin	Basin Letter	A
Node – Outfall	Outfall	Outfall
Node – Existing Inlet	EX – IN – #	EX-IN-01
Node – Existing Headwall	EX – HW – #	EX-HW-01
Node – Existing End Section	EX – ES - #	EX-ES-01
Node – Existing Retention/Detention Pond	EX – POND – #	EX-POND-01
Node – Groundwater	EX – POND – # – GW	EX-POND-01-GW
Link – Existing Pipe	EX – P – #	EX-P-01
Link – Existing Channel	EX – CH – #	EX-CH-01
Link – Percolation (Infiltration)	EX – POND – # – PERC	EX-POND-01-PERC
Link – Weir	EX – W – #	EX-W-01
Cross Section – Channel	EX – CH – CXS – #	EX-CH-CXS-01
Cross Section – Weir	EX – W – #	EX-W-01

5.3 Hydrologic Modeling

ICPR4 implements the NRCS unit hydrograph method with a peaking factor of 484. Runoff from a basin is for calculation of runoff peak discharge and total volume. For existing stormwater conditions, the hydrologic elements are input in the model from the inventoried base data, as described in **Section 3**. The existing condition model represents the site to the best knowledge of RS&H as of September 2024 per the provided resources. For future stormwater conditions, proposed hydrologic elements were assumed based on existing conditions with the incorporation of future Airport development. The following hydrologic parameters are discussed in detail in the following sections:

- Drainage Basins
- Drainage Outfalls
- Time of Concentration
- Rainfall Depths
- Land Use
- Curve Number

5.3.1 Drainage Basins

RS&H determined the existing sub-basins, shown in **Figure 3-1**, using methodology described in **Section 3.3**. RS&H determined future sub-basins, shown in **Figure 4-2**, based on existing drainage boundaries and future development described in **Section 4**. RS&H assumed future taxiway and taxilane pavement to be crowned along the centerline for the purpose of future drainage basin delineation.

5.3.2 Drainage Outfalls

RS&H identified one (1) discrete outfall point (Outfall) from the Study Area to an off-site channel, and one retention pond (EX-POND-01) that is self-contained up to the 100-year, 24-hour design storm. Fifteen (15) of the existing sub-basins contribute to the Outfall, while the other twelve (12) sub-basins contribute to the EX-POND-01. The Outfall and EX-POND-01 were used as critical locations in the model to compare flow rate data between the existing and future conditions. **Figure 3-1** provides the location of the outfall and retention pond.

5.3.3 Time of Concentration

Time of concentration (Tc) is the time it takes runoff to travel from the hydraulically most distant point in the watershed or basin to the point of interest. The point of interest in the stormwater model was typically the low point of a sub-basin such as an inlet or channel discharge point. Land cover, surface roughness, slope and flow regime were assigned to each flow path and the standard TR-55 methodology was applied to determine the Tc for each existing sub-basin within the project boundary. Due to a lack of future grading, a majority of future time of concentration calculations assumed minimal impacts to existing topography and infrastructure inverts to ensure positive drainage along Tc flow paths. Basins U and V required additional assumptions of 1% slopes for future taxiway and taxilane pavement and 0.5% slopes for future apron pavement and infield areas to ensure positive drainage along Tc flow paths. RS&H utilized a minimum Tc of 10 minutes per the Okaloosa County Development Design Standards. **Appendix D** contains the time of concentration calculations for existing and future sub-basins.

5.3.4 Rainfall Depths

RS&H utilized the rainfall data described in **Section 3.3** for existing and future conditions. NOAA provided information for the rainfall depths at the Study Area resulting in the 5-year, 10-year, 25-year, and 100-year, 24-hour design storms, as well as the 25-year, 8-hour design storm. These design storms were modeled based on criteria in **Section 2.3**.

5.3.5 Land Use

Land use impacts the amount of runoff produced by rainfall. RS&H examined the Study Area through existing as-built information and aerial photographs to determine existing impervious and pervious land covers. These conditions, along with the NRCS soil classifications, were used

to derive a generalized rainfall runoff relationship for a given area. RS&H used the planned Airport development described in **Section 4**, in addition to existing land uses, to determine future land uses in the future conditions model.

5.3.6 Curve Number

Runoff Curve Numbers (CN) indicate the runoff potential for land cover and are dependent on soil type and land cover. The model incorporates typical SCS CN methodology for runoff calculations as described in the TR-55 Manual. RS&H modeled areas with pervious land use using a CN of 49 for fair condition, Type A soil. Impervious areas, regardless of HSG, were modeled with a CN of 98. CN area calculations were performed within the ICPR model using map layers.

5.4 Hydraulic Modeling

For existing stormwater conditions, the hydraulic elements are input in the model from the inventoried survey and as-built data, as described in **Section 3**. For future stormwater conditions, proposed hydraulic elements have assumed inverts and locations based on existing topography and infrastructure for tie in, as well as future Airport development.

5.4.1 Nodes

ICPR4 utilizes nodes as a connection between links, storage areas within the drainage system, and system outfall points. Stage/area nodes are used to represent connections throughout the stormwater system. Time/stage nodes are used to represent outfalls with appropriate boundary conditions, the retention pond, and groundwater sinks. RS&H also assigned a warning stage elevation to nodes within the model. These elevations depended on what the node represented within the model and how flooding could result from said node. The warning stage for inlet nodes is the rim elevation of the structure. RS&H modeled additional stages above rim elevations to represent the surface storage in infields in order to understand ponding extents and determine areas requiring future improvements. The warning stage for the retention pond node is the edge of the top of pond to analyze pond overtopping. The warning stage for all end section and headwall nodes is the lowest point of the nearest pavement to assist in identifying areas exceeding FAA recommended pavement inundation limits. With these elevations in the model, a hydraulic grade line above the selected warning stage indicates water flooding out of the stormwater system. An initial stage is also used at each node to set the starting water depth for each analysis. RS&H selected the lowest pipe or channel invert as the initial stage for nodes representing drainage structures. For nodes representing retention and detention ponds, RS&H selected the ground elevation at the pond bottom as the initial stage. RS&H added additional nodes for groundwater to account for infiltration through the pond bottoms and sides.

5.4.2 Links

ICPR modeling utilizes links to represent connections between nodes, including pipes, culverts, and overland flow channels.

5.4.2.1 Pipes

DTS uses a combination of storm sewers and culverts to convey stormwater across the existing system. Pipe sizes, locations, and elevation data were modeled in AutoCAD, based on data gathered as discussed in **Section 3.1**, and imported into ICPR. Pipes were modeled with Manning's n roughness coefficients found in **Table 5-2** based on pipe materials. Pipes with headwalls, flared end sections, and inlets at the upstream end were modeled with entrance loss coefficients of 0.5, while those with mitered end sections at the upstream end were modeled with entrance loss coefficients of 0.7. All pipes were modeled with exit loss coefficients of 0.5.

Table 5-2: Manning's n for Pipes

Pipe Material	Manning's n
Reinforced Concrete Pipe (RCP)	0.012*
Polyvinyl Chloride (PVC)/Acrylonitrile Butadiene Styrene (ABS) Pipe	0.012**
Corrugated Metal Pipe (CMP)	0.020***

*FDOT Drainage Manual Section 3.6.4

**Assumed Manning's n equal to PVC - FDOT Drainage Manual Section 3.6.4

***Assumed Manning's n for HECMP using 12" to 24" CMP - FDOT Drainage Manual Section 3.6.4

5.4.2.2 Channels

Surface topography and aerial imagery indicate several channels at the Airport that are used for conveyance. To model the ditch geometry, cross sections were placed along the ditch systems using topography data described in **Section 3.3**. Cross sections were placed at upstream and downstream points of each length of channel in order to account for changes in cross sectional geometry. These cross sections were used in the model to account for storage and hydraulic capacity within the ditch. Stage/area nodes were placed near each cross section where a drainage structure exists. Nodes were connected by channel links that referenced the upstream and downstream cross sections for their respective geometries. All existing grass ditches on Airport property were modeled with a Manning's roughness coefficient of 0.060 for maintained grass vegetated channels with 2 to 6 inches of vegetation, per the FDOT Drainage Manual. The outfall channel normal depth calculations and modeled outfall channel used a Manning's roughness coefficient of 0.020 for a concrete paved channel with a roughened finish, per the FDOT Drainage Manual. Ditch modifications requiring a concrete channel bottom for increased hydraulic capacity also use a Manning's roughness coefficient of 0.020.

5.4.2.3 Percolation

RS&H incorporated percolation links into the model to simulate infiltration that occurs through the bottom of the existing retention pond (EX-POND-01) and detention ponds (EX-POND-02 and EX-POND-03) in the Study Area. Runoff is expected to infiltrate in these features given soil permeability and purpose to detain water, rather than conveying it directly to an outfall. RS&H assumed the bottom and sides of the existing retention pond contain Kureb sand, based on the location of the pond and the NRCS Soil Survey Report. According to the NRCS report, this soil type has infiltration rates ranging from 5.95 in/hr to 19.98 in/hr. To be conservative, RS&H set the vertical hydraulic conductivity (k_v) to 5.95 in/hr (11.90 ft/day). The horizontal conductivity (k_h) was determined by multiplying the vertical conductivity by 1.5, resulting in a k_h of 8.93 in/hr (17.85 ft/day). Additionally, the NRCS report listed the retention pond soils as 80 inches or more from the water table. However, a previous design project at DTS found the seasonal high groundwater table elevation to be approximately four feet below ground. For modeling purposes, RS&H used 48 inches (4 feet) from the bottom of the retention and detention ponds as the top of the water table.

5.4.2.4 Weirs

RS&H incorporated weir links into the model to simulate overtopping of berms, pavement, and other physical barriers that occurs on the Airport. To model the weir geometry, a cross section was placed along the approximate low point between two nodes or the point where overtopping would occur, using topography data described in **Section 3.3**. The low point of said cross section was used as the invert of the weir to determine the stage at which overtopping begins.

5.5 Modeling Scenarios

RS&H analyzed four conditions in separate modeling scenarios:

- Existing Conditions – Existing Infrastructure: This model represents the Airport's current land cover and stormwater infrastructure to analyze the system's existing capacity.
- Existing Conditions – Initial Improvements: This model represents the existing conditions model described above with modifications to the stormwater system described in **Section 7.1**.
- Future Conditions – Existing Infrastructure: This model represents the Airport's land cover assuming buildout described in **Section 4**. Existing stormwater infrastructure is assumed to be protected in future development and utilized in this model to understand the impacts on the system from future development.
- Future Conditions – Initial Improvements: This model represents the future conditions model described above with modifications to the stormwater system described in **Section 7.1**.

5.6 Boundary Conditions

RS&H determined outfall tailwater conditions utilizing existing topography data of the outfall channel. Due to limited information on the outfall channel, RS&H assumed the downstream portion of the channel has adequate capacity to handle downstream flows and will not impact the portion of channel being modeled. Additionally, because the portion of the Study Area contributing to the Outfall is the only flow to the channel at the point of modeling, the channel invert was used for the tailwater condition.

6 Analysis Results

6.1 Existing Conditions - Existing Infrastructure

The H&H model includes hydrologic analysis of the Study Area and hydraulic analysis of the corresponding stormwater collection, storage, and conveyance system. The Existing Conditions – Existing Infrastructure model represents elements discussed in **Section 3** and is modeled in accordance with **Section 5**. RS&H analyzed the peak flow rates for each design storm event identified in **Section 3.3** for the Study Area analysis points described in **Section 3.2**. RS&H also analyzed peak staging for each design storm and identified areas that are potential flooding risks.

6.1.1 Analysis Point Peak Flows

Section 2.3 outlines the Critical Storm criteria for open basins, including the system contributing to the Outfall, which states that future peak runoff rates shall not exceed existing peak runoff rates for the Critical Storm. RS&H analyzed the design storms discussed and determined the Critical Storm to be the 25-year, 8-hour storm. This storm was then used to find the discharge rate for the Existing Conditions – Existing Infrastructure model as a baseline for comparison throughout the analysis. The Outfall results for the Critical Storm are in **Table 6-1**.

Table 6-1: Outfall Results – Existing Conditions

Condition	25-year, 8-hour Peak Flow (cfs)
Existing Conditions – Existing Infrastructure	73.36

Section 2.3 also states that future runoff rates and volumes shall not exceed existing conditions in closed basins for the 100-year, 24-hour design storm, which includes the existing retention pond (EX-POND-01) and its contributing system. The flow rates shown are representative of the peak flow rate entering the retention pond due to the fact that it discharges runoff primarily via groundwater infiltration and does not have an outlet pipe. The pond results are in **Table 6-2**. It is important to note that the top of pond elevation is approximately 19.50'. Therefore, overtopping of the pond does occur in the Existing Conditions – Existing Infrastructure model.

Based on topography data, this flow overtops an earthen berm to the southeast to a contributing channel to the pond itself and does not leave Airport property.

Table 6-2: Retention Pond Results – Existing Conditions

Condition	100-year, 24-hour Peak Flow (cfs)	100-year, 24-hour Peak Staging (Elevation)
Existing Conditions – Existing Infrastructure	58.82	20.05

6.1.2 Flooding

RS&H also identified areas of inundation on Airport property. FAA AC 150/5320-5D recommends that runoff from the 5-year, 24-hour storm should not encroach onto airfield pavement and that ponding should not occur on the center 50% of all runways, taxiways, and helipads as a result of the 10-year, 24-hour storm. RS&H analyzed the existing stormwater system for these design storms and **Table 6-3** presents the modeled nodes that caused inundation of the pavement identified in the FAA AC. The FAA also recommends that ponding greater than four inches does not take place at apron inlets for the 5-year, 24-hour design storm. All apron inlets except one located at the end of a trench drain on the northwest side of the Study Area (EX-IN-08) staged lower than four inches for the 5-year, 24-hour design storm. RS&H used the model results to identify areas of improvement to reduce flooding. Additionally, images from the site taken August 31st, 2021, show inundation of the access road to the Airport as well as inside the access gate to Airport property, which further confirmed an area requiring stormwater improvements. Images are included in **Appendix E**.

Table 6-3: Flooding Locations – Existing Conditions – Existing Infrastructure

Node	Warning Stage (ft)	5-year, 24-hour Maximum Stage (ft)	10-year, 24-hour Maximum Stage (ft)
EX-ES-01	18.50	18.61	18.79
EX-ES-03/EX-ES-05	18.00	18.65	18.86
EX-ES-09	16.98	17.06	17.33
EX-ES-10	16.50	17.40	17.74
EX-HW-01	18.00	18.62	18.80
EX-HW-02	18.39	N/A	18.64
EX-HW-05	17.50	N/A	17.52
EX-HW-08	17.00	17.67	18.02
EX-HW-21	16.25	16.87	17.02
EX-IN-08	19.11	19.54	19.55
EX-POND-02	16.99	N/A	17.06
EX-POND-03	16.00	16.88	17.03

Figure 6-1 and **Figure 6-2** show inundation on and adjacent to the Airport and identify which nodes exceed FAA recommended encroachment limits for each design storm.

Figure 6-1: Existing Conditions – Existing Infrastructure 5-year, 24-hour Inundation Map

Figure 6-2: Existing Conditions – Existing Infrastructure 10-year, 24-hour Inundation Map

6.2 Future Conditions - Existing Infrastructure

The H&H model includes hydrologic analysis of the Study Area and hydraulic analysis of the corresponding stormwater collection, storage, and conveyance system. The Future Conditions – Existing Infrastructure model is based on the existing conditions model with modifications to reflect future Airport buildout as described in **Section 4**. The future conditions model is constructed in accordance with **Section 5**. RS&H analyzed the peak flow rates for each design storm event identified in **Section 3.3** for the Study Area analysis points described in **Section 3.2**. RS&H also analyzed peak staging for each design storm and identified areas that have potential flooding risks following future development.

6.2.1 Analysis Point Peak Flows

RS&H analyzed the Future Conditions – Existing Infrastructure models for the analysis points and compared the results to the Existing Conditions – Existing Infrastructure to determine the impacts from the future Airport buildout. The flow rates shown are representative of the peak flow rate entering each node due to the fact that the existing retention pond discharges runoff primarily via groundwater infiltration and does not have an outlet pipe. **Table 6-4** and **Table 6-5** show the comparisons for the Outfall and the existing retention pond.

Table 6-4: Outfall Existing vs Future Comparison

Condition	25-year, 8-hour Peak Flow (cfs)
Existing Conditions – Existing Infrastructure	73.36
Future Conditions – Existing Infrastructure	77.00
Change	**3.64**

Table 6-5: Retention Pond Existing vs Future Comparison

Condition	100-year, 24-hour Peak Flow (cfs)	100-year, 24-hour Peak Staging (Elevation)
Existing Conditions – Existing Infrastructure	58.82	20.05
Future Conditions – Existing Infrastructure	56.47	20.14
Change	**-2.35**	**0.09**

The peak flows for the Outfall in the future conditions are higher than existing conditions due to minor increases in runoff from increased impervious area based on the future land use. The existing retention pond saw varied results between the peak flow rate and peak staging. This is possibly due to an overall increase in future stormwater runoff volume which increases the staging, but a portion of the additional runoff flow in the 100-year, 24-hour storm event is temporarily detained by infields and does not increase the peak flow rate.

6.2.2 Flooding

RS&H identified areas of inundation on Airport property and analyzed nodes under the future conditions in the same nature as was done in **Section 6.1**. **Table 6-6** presents the modeled nodes that exceeded FAA encroachment recommendations.

Table 6-6: Flooding Locations – Future Conditions – Existing Infrastructure

Node	Warning Stage (ft)	5-year, 24-hour Maximum Stage (ft)	10-year, 24-hour Maximum Stage (ft)
EX-ES-01	18.50	18.61	18.79
EX-ES-03/EX-ES-05	18.00	18.67	18.89
EX-ES-09	16.98	17.11	17.36
EX-ES-10	16.50	17.47	17.79
EX-HW-01	18.00	18.60	18.77
EX-HW-02	18.39	N/A	18.73
EX-HW-05	17.50	N/A	17.54
EX-HW-08	17.00	17.60	17.90
EX-HW-21	16.25	16.91	17.07
EX-IN-08	19.11	19.54	19.55
EX-POND-02	16.99	N/A	17.08
EX-POND-03	16.00	16.93	17.08

Due to the lack of design information for future buildout and infields, RS&H used approximate existing pavement elevations to identify future pavement inundation. Additionally, infield storage was assumed to approximately match existing conditions. Therefore, RS&H did not report apron inlets that surcharged below the FAA recommended four-inch ponding as flooding locations. Confirmation that inlets meet FAA criteria should be addressed in final design of future developments and stormwater improvements. A majority of nodes staged slightly higher in the future conditions than existing conditions, the maximum increase being approximately 0.5" in the 5-year and 1" in the 10-year.

Figure 6-3 and **Figure 6-4** show inundation on and adjacent to the Airport and identify which nodes exceed FAA recommended encroachment limits for each design storm.

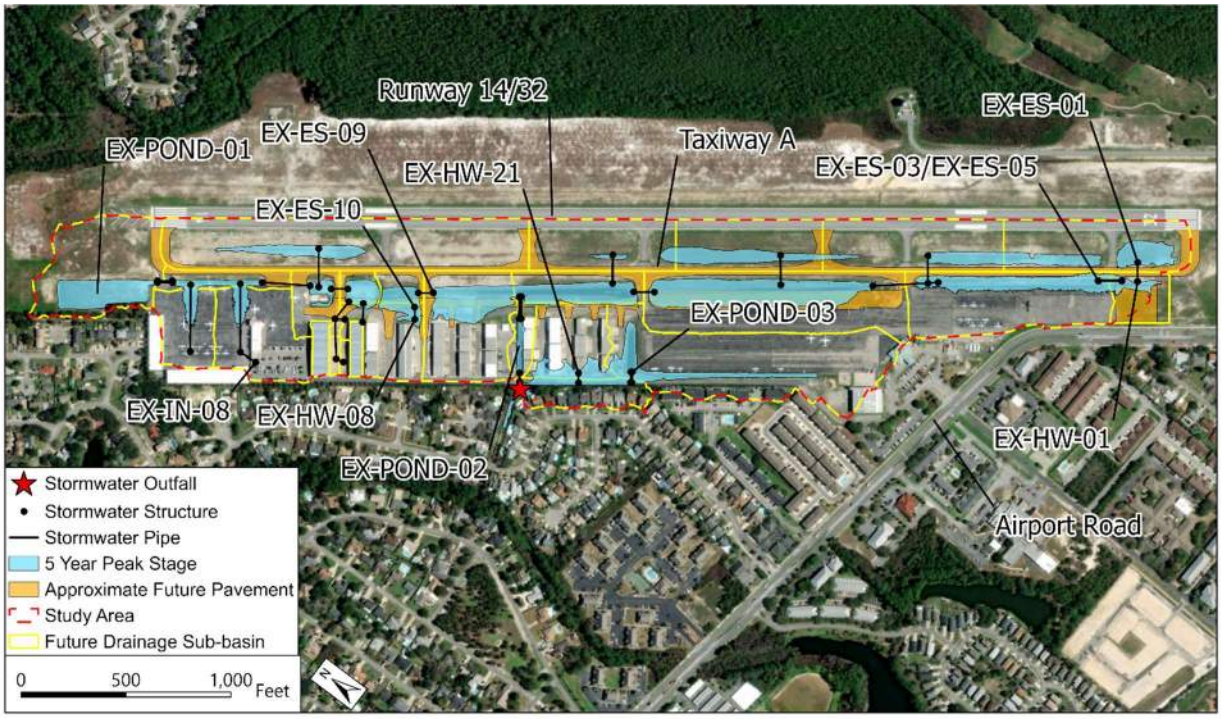

Figure 6-3: Future Conditions – Existing Infrastructure 5-year, 24-hour Inundation Map

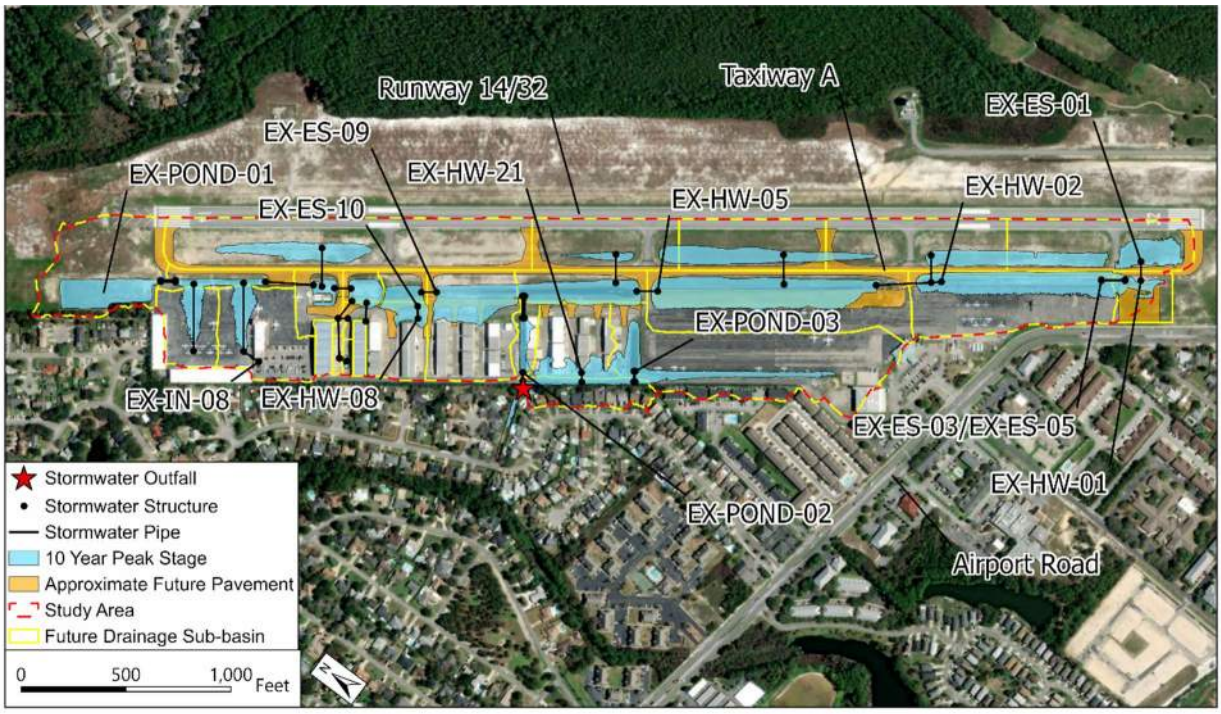

Figure 6-4: Future Conditions – Existing Infrastructure 10-year, 24-hour Inundation Map

The inundation for Existing Conditions shown in **Figure 6-1** and **Figure 6-2** varies from that in the Future Conditions shown in **Figure 6-3** and **Figure 6-4** due to a variety of factors, including

changes in basin boundaries, changes in impervious area within a basin, and changes to the time of concentration of a basin. A notable area of decreased inundation in Future Conditions for the 10-year, 24-hour design storm is in Basin V, which is adjacent to the existing detention pond (EX-POND-03), and includes multiple aircraft hangars. This reduction can be contributed to a reduction in the percentage of impervious area within the basin which reduces stormwater runoff. While this is an improvement from the Existing Conditions, flooding still occurs in this and other areas of concern in the Future Conditions and requires further improvements to limit damages and impacts to the Airport.

6.3 Initial Improvements

The Initial Improvements are discussed in detail in **Section 7.1**. The following sections present the results for the Existing and Future Conditions with Initial Improvements implemented to demonstrate the impacts to the Airport stormwater system.

6.3.1 Analysis Point Peak Flows

As discussed in **Section 2.3**, future runoff rates shall not exceed existing runoff rates for the Critical Storm in open basins, or basins discharging off site. In this case, the Critical Storm for the Outfall is the 25-year, 8-hour design storm. RS&H analyzed the Critical Storm in this analysis as a comparison before and after the Initial Improvements and as a baseline for future design. **Table 6-7** and **Table 6-8** compare flow rates at the Outfall of Existing and Future Conditions without and with the Initial Improvements for the Critical Storm.

Table 6-7: Existing Conditions – Existing Infrastructure vs Initial Improvements

Condition	25-year, 8-hour Peak Flow (cfs)
Existing Conditions – Existing Infrastructure	73.36
Existing Conditions – Initial Improvements	79.02
Change	**5.66**

Table 6-8: Future Conditions – Existing Infrastructure vs Initial Improvements

Condition	25-year, 8-hour Peak Flow (cfs)
Future Conditions – Existing Infrastructure	77.00
Future Conditions – Initial Improvements	81.97
Change	**4.97**

There is an increase in peak flow rate at the Outfall for both the Existing and Future Conditions after implementation of the Initial Improvements for the Critical Storm. RS&H designed the Initial Improvements to relieve areas of the stormwater system not currently meeting the FAA AC 150/5320-5D criteria and was also extremely limited in the ability to modify existing

detention ponds. Many of the Initial Improvements relied on increasing hydraulic capacity of the stormwater conveyance system to limit flooding at upstream areas while not increasing the capacity of detention areas, therefore, the Outfall saw an increase in peak flow rates. RS&H recommends that in final design of each of the Initial Improvements, the Outfall is analyzed and minor modifications to the Airport detention ponds are made, if required, to ensure the Critical Storm criterion is met, as well as other applicable criteria.

Section 2.3 also states that post-development volumes and runoff rates shall not exceed existing conditions in closed basins for the 100-year, 24-hour design storm. Because the retention pond (EX-POND-01) does not have an outlet, its contributing area is a closed basin and therefore subject to this criteria. RS&H analyzed the Existing and Future Conditions in this analysis as a comparison before and after the Initial Improvements and as a baseline for future design. **Table 6-9** and **Table 6-10** present the comparisons between Existing and Future Conditions peak flows into the pond and peak staging without and with the Initial Improvements.

Table 6-9: Existing Conditions – Existing Infrastructure vs Initial Improvements

Condition	100-year, 24-hour Peak Flow (cfs)	100-year, 24-hour Peak Staging (Elevation)
Existing Conditions – Existing Infrastructure	58.82	20.05
Future Conditions – Initial Improvements	59.47	20.08
Change	**0.65**	**0.03**

Table 6-10: Future Conditions – Existing Infrastructure vs Initial Improvements

Condition	100-year, 24-hour Peak Flow (cfs)	100-year, 24-hour Peak Staging (Elevation)
Existing Conditions – Existing Infrastructure	56.47	20.14
Future Conditions – Initial Improvements	56.90	20.18
Change	**0.43**	**0.04**

The Initial Improvements cause a minor increase to the peak flow rate into the retention pond, likely due to the increased height of the weir discussed in **Section 7.1** that limits stormwater from overtopping into the Outfall drainage system and instead sends that flow to the retention

pond. Additionally, the retention pond top elevation is approximately 19.50', which is overtopped in all 100-year, 24-hour storm scenarios in the tables above. As discussed in **Section 6.1**, this flow overtops an earthen berm to the southeast to a contributing channel to the pond itself and does not leave Airport property. RS&H recommends that in final design of the Initial Improvements, the retention pond and its conveyance system are analyzed and minor modifications made, if required, to ensure the pre- and post-development runoff rate criterion is met, as well as other applicable criteria.

6.3.2 Flooding

6.3.2.1 Existing Conditions

The existing conditions analysis for flooding compares the existing infrastructure results to the Initial Improvements. RS&H analyzed both the 5-year and 10-year, 24-hour design storms to address the FAA criteria described in **Section 6.1**. **Table 6-11** and **Table 6-12** present the comparisons of the flooding locations for the 5-year, 24-hour and 10-year, 24-hour storms located on Airport property.

Table 6-11: 5-year, 24-hour Flooding Locations – Existing Conditions

Table Number	Node Name	Warning Stage (ft)	Maximum Stage (ft) Existing Infrastructure	Maximum Stage (ft) Initial Improvements
1	EX-ES-01	18.50	18.61	18.04
2	EX-ES-03/EX-ES-05	18.00	18.65	17.93
3	EX-ES-09	16.98	17.06	16.89
4	**EX-ES-10**	**16.50**	**17.40**	**16.96**
5	EX-HW-01	18.00	18.62	18.00
6	EX-HW-08	17.00	17.67	16.97
7	**EX-HW-21 (P-HW-01/P-HW-02)**	**16.25**	**16.87**	**16.45**
8	**EX-IN-08**	**19.11**	**19.54**	**19.54**
9	**EX-POND-03**	**16.00**	**16.88**	**16.47**

The Initial Improvements brought a portion of the flooding locations within FAA recommended pavement encroachment limits for the 5-year, 24-hour storm. The nodes that do not meet this are bolded in the table above. As discussed in **Section 7.1**, the complete elimination of flooding in the Study Area is infeasible due to the existing site conditions that limit expansion of detention ponds. This impacts the location of highest flooding concern (**Figure 1-2**) due to the inability to significantly expand the existing detention pond (EX-POND-03). This area includes nodes numbered 7 and 9 in **Table 6-11**, both of which are connected to the detention pond

hydraulic grade line (HGL) and are limited by existing conditions. The two other bolded nodes, 4 and 8 in the table above, also did not meet the FAA inundation encroachment limits after the Initial Improvements. Node 4 in the table (EX-ES-10) is the upstream end of a culvert between Taxiway A and the general aviation taxilane directly southwest of Connector A2. RS&H identified the area as having a low pavement edge of 16.50 adjacent to it based on existing topography, however the entire system's HGL was unable to be lowered to that extent without significant additional storage provided in Pond 2 (EX-POND-02). Due to the existing condition restrictions (**Section 7.1**) providing enough additional storage in the detention pond is not feasible. However, Airport staff did not note this area as one of concern, and due to the limitations of the H&H model and existing site information it is possible this area is not flooding to the extent shown in the results. An apron inlet on the northwest side of the Study Area (EX-IN-08) also showed ponding greater than four inches above pavement according to the model. This node is at the upstream end of a trench drain that collects sheet flow from the aforementioned apron, and due to the limitations of H&H modeling, the entire drainage area to this trench drain was applied at this node. Therefore, it is possible this flooding does not occur as noted in the table above due to the trench drain's ability to collect flow along its entire length, rather than just at the upstream end in the form of an inlet structure as is modeled.

Table 6-12: 10-year, 24-hour Flooding Locations – Existing Conditions

Table Number	Node Name	Warning Stage (ft)	Maximum Stage (ft) Existing Infrastructure	Maximum Stage (ft) Initial Improvements
1	EX-ES-01	18.50	18.79	18.30
2	**EX-ES-03/EX-ES-05**	**18.00**	**18.86**	**18.22**
3	**EX-ES-09**	**16.98**	**17.33**	**17.21**
4	**EX-ES-10**	**16.50**	**17.74**	**17.36**
5	**EX-HW-01**	**18.00**	**18.80**	**18.26**
6	EX-HW-02 (P-ES-01)	18.39	18.64	18.20
7	EX-HW-05	17.50	17.52	17.44
8	**EX-HW-08**	**17.00**	**18.02**	**17.40**
9	EX-HW-10	19.08	19.00	19.13
10	EX-HW-21 (P-HW-01/P-HW-02)	16.25	17.02	16.56
11	EX-IN-08	19.11	19.55	19.55
12	EX-POND-02	16.99	17.06	16.98
13	EX-POND-03	16.00	17.03	16.57

The nodes listed in **Table 6-12** above in bold text do not meet the FAA encroachment criteria for the 10-year, 24-hour storm. Because the warning stages for pond, headwall, and end section

nodes are at the pavement edges and not the 50% mark of the runway, the Initial Improvements staging exceeding the warning stage is not an indication of inundation over the 50% mark. RS&H utilized existing topography data of adjacent pavement to confirm which nodes do and do not meet the 10-year, 24-hour encroachment criteria. Additionally, there are multiple nodes that stage above their warning stage in the table above that are not subject to this criteria due to not being in proximity of the infrastructure described by the FAA. However, these nodes represent instances of flooding, including on apron and Airport access road pavement, that are of concern to the Airport and are therefore noted in the table.

6.3.2.2 Future Conditions

The future conditions analysis for flooding compares the results from the Future Conditions – Existing Infrastructure model to the Future Conditions – Initial Improvements model. RS&H identified nodes on Airport property in **Table 6-13** and **Table 6-14** with bold text to indicate nodes currently not meeting FAA pavement encroachment and apron ponding criteria. RS&H recommends these areas be analyzed in final design of future development to meet these criteria. Implementation of the General Improvements will be beneficial to limiting pavement inundation but should also be analyzed in final design to confirm the scale of the benefit.

Table 6-13: 5-year, 24-hour Flooding Locations – Future Conditions

Node	Warning Stage (ft)	Maximum Stage (ft) Existing Infrastructure	Maximum Stage (ft) Initial Improvements
EX-ES-01	18.50	18.61	18.30
EX-ES-03/EX-ES-05	**18.00**	**18.67**	**18.10**
EX-ES-09	16.98	17.11	16.96
EX-ES-10	**16.50**	**17.47**	**17.07**
EX-HW-01	**18.00**	**18.60**	**18.18**
EX-HW-08	**17.00**	**17.60**	**17.09**
EX-HW-21 (P-HW-01/P-HW-02)	**16.25**	**16.91**	**16.47**
EX-IN-08	**19.11**	**19.54**	**19.54**
EX-POND-03	**16.00**	**16.93**	**16.49**

The nodes listed in **Table 6-13** in bold text do not meet the FAA recommended pavement encroachment limits for the 5-year, 24-hour storm. Although the flooding is reduced in the Future Conditions – Initial Improvements as compared to the Future Conditions – Existing Infrastructure, many of the nodes stage higher than taxiway and runway pavement elevations for the 5-year, 24-hour storm. The explanation for nodes exceeding this FAA recommendation in **Section 6.2** is also applicable to this scenario. Additionally, the increase in impervious area due

to future development caused higher staging at many of these nodes as compared to the existing condition, therefore leading to an increase in the number of nodes shown above. However, the lack of final design information surrounding these projects limits the accuracy of this modeling. Future developments should note these areas of concern in final design and perform additional modeling using updated grading, elevations, and additional information to provide a more thorough analysis.

Table 6-14: 10-year, 24-hour Flooding Locations – Future Conditions

Node	Warning Stage (ft)	Maximum Stage (ft) Existing Infrastructure	Maximum Stage (ft) Initial Improvements
EX-ES-01	18.50	18.79	18.53
EX-ES-03/EX-ES-05	**18.00**	**18.89**	**18.36**
EX-ES-09	**16.98**	**17.36**	**17.26**
EX-ES-10	**16.50**	**17.79**	**17.46**
EX-HW-01	**18.00**	**18.77**	**18.41**
EX-HW-02 (P-ES-01)	18.39	18.73	18.35
EX-HW-05	17.50	17.54	17.51
EX-HW-08	**17.00**	**17.90**	**17.49**
EX-HW-10	19.08	19.02	19.15
EX-HW-21 (P-HW-01/P-HW-02)	16.25	17.07	16.57
EX-IN-08	19.11	19.55	19.55
EX-POND-02	16.99	17.08	17.02
EX-POND-03	16.00	17.08	16.59

The nodes listed in **Table 6-14** in bold text do not meet the FAA encroachment criteria for the 10-year, 24-hour storm, based on existing site conditions relative to the future development conditions. Because the warning stages for pond, headwall, and end section nodes are at the existing pavement edges and not the 50% mark of the runway, nor at future pavement elevations, the Initial Improvements staging exceeding the warning stage is not an indication of inundation over the 50% mark. RS&H utilized existing topography data of existing pavement to confirm which nodes may or may not meet the 10-year, 24-hour encroachment criteria for future pavement. All flooding locations should be confirmed to meet this criteria in final design of future developments. Additionally, there are multiple nodes that stage above their warning stage in the table above that are not subject to this criteria due to not being in the proximity of the infrastructure described by the FAA. However, these nodes represent instances of flooding,

including on apron and Airport access road pavement, that are of concern to the Airport and are therefore noted in the table.

6.4 Water Quality

As described in **Section 2.3**, Okaloosa County requires development projects to provide retention or detention with filtration of the first one (1) inch of runoff from the project area. Because of the preliminary approach of this analysis, RS&H did not design water quality features for individual future development projects. However, implementation is possible alongside the Initial Improvements and future projects, including vegetated buffers and swales in regard to impacts to Airport infields and ponds. RS&H calculated an overall runoff volume resulting from the approximate project boundaries for the future development, including pavement and infield areas, described in **Section 4**, that will be required to be treated based on the aforementioned criteria. Water quality calculations and design of infrastructure will be required on a project by project basis in final design to ensure future developments meet this criteria. **Table 6-15** presents the water quality volume that will need to be treated in future conditions across future development sites. See **Appendix F** for a detailed water quality calculation breakdown.

Table 6-15: Water Quality Treatment Volume for Future Development

Project	Volume (cubic ft)	Volume (ac-ft)
Taxiway A Reconstruction	37,190	0.86
General Aviation Hangar Taxilane Realignment	14,380	0.34
South FBO Apron Expansion and Reconstruction	16,730	0.39

Additionally, NWFWMD ERP Applicant's Handbook – Volume I requires minimum levels of reduction of nutrient loading in stormwater runoff, depending on the type of project and the receiving waterbody of runoff. Because of the preliminary nature of the analysis and the lack of design information for future development, RS&H did not calculate required nutrient reduction and corresponding treatment volumes. These calculations should be performed during final project design. The NWFWMD ERP Applicant's Handbook – Volume II provides design criteria for a variety of Best Management Practices (BMP) that could be incorporated into final design of future Airport projects to treat stormwater runoff as required in Volume I. The following BMPs are included in the above standard and can be implemented at DTS:

- Retention Pond
- Stormwater Swale
- Vegetated Natural Buffer

7 System Improvements

7.1 Improvement Overview

RS&H analyzed multiple aspects of stormwater infrastructure to limit flooding in the existing and future conditions at the Airport. The Initial Improvements were based on the Existing Conditions analysis and modeling as specific items the Airport can implement to address the current flooding concerns and meet FAA criteria for the 5-year and 10-year, 24-hour storms described in **Section 6.1**. The Initial Improvements include hydraulic improvements to the Airport's collection and conveyance system and minor earthwork. **Figure 7-1** presents the areas of the Initial Improvements. RS&H separated the Initial Improvements into three groupings based on the area in which they reduce flooding. The Initial Improvements are listed below.

- Initial Improvements
    - Roadside Ditch and Airport Access Road
        - Remove the existing Basin V 45 foot 12" CMP outlet pipe under the Airport access road (EX-P-30) and replace it with a dual 18" RCP culvert in the same location (P-P-02/P-P-03).
        - Excavate the existing roadside channel to the southwest of the Airport access road (EX-CH-08 and EX-CH-09) to a 0.05% slope to better meet Airport outlet pipe elevations.
    - Outfall Drainage System – North End
        - Excavate the existing channel between the general aviation taxilane and Taxiway A (EX-CH-06) to the invert of the upstream pipe that discharges to it.
        - Raise the existing berm elevation between Basins J and K, directly southwest of Taxiway A connector A2 from 18.1 feet to 18.5 feet of elevation.
        - Replace the Basin R outlet pipe, a 60 foot 18" concrete box culvert (EX-P-14) with 60 feet of 24" circular RCP (P-P-04) and match its downstream invert to its receiving pipe.
    - Outfall Drainage System – South End
        - Remove 50 feet of 24" RCP to the south of Taxiway A connector A4 between Taxiway A and the general aviation apron (EX-P-04) and replace it with 20 feet of 36" RCP (P-P-01).
        - Extend the infield channel between Taxiway A connectors A4 and A5, between Taxiway A and the general aviation apron (EX-CH-01) to the above proposed pipe end section (P-ES-01). Excavate channel to meet existing upstream and proposed downstream pipe inverts.
        - Add 10 foot wide concrete bottom to the above channel (EX-CH-01).

        - Adjust the downstream invert of pipe under Taxiway A, between connectors A5 and A6 (EX-P-01) for positive flow from northeast to southwest.

RS&H also examined General Improvements for the Airport to take into account for maintenance of existing infrastructure, possible implementation of improvements into future design projects, including those described in **Section 4**, as well as to coordinate with local stormwater authorities about off-Airport drainage infrastructure that has the potential to impact the Airport. **Figure 7-2** presents the areas of General Improvements for the consideration of the Airport and City in future projects. The General Improvements are listed below.

- General Improvements
    - Coordinate with the City of Destin to clean debris from and maintain the Airport outfall channel.
    - Clear debris from and maintain pipes and channels on Airport property.
    - Optimize grading of infield areas to provide additional stormwater detention volume within the system.

RS&H determined via H&H modeling that complete elimination of flooding in the Study Area is infeasible due to existing constraints at the Airport. The existing detention ponds identified in **Figure 3-1** (EX-POND-02 and EX-POND-3) have a limited footprint because of existing adjacent airfield pavement and hangars and the airport access road. The detention ponds also are limited in depth by the invert elevation of the offsite outfall channel that the ponds drain to, which is owned and operated by the City of Destin, not the Airport. The Airport's proximity to floodplains and the high groundwater in the area, which is approximately four feet below ground based on previous design projects at the Airport, is also a limiting factor regarding pond depth. Because of these factors, significantly increasing detention pond storage is not feasible. RS&H recommends limiting future increases of impervious area within the Study Area to only development necessary for Airport operations, specifically development within the sub-basins that contribute to the Outfall. Additionally, current development should be limited to permitted impervious area as outlined in NWFWMD ERP conditions. If possible, limiting off-site development that contributes to the downstream of the outfall channel would assist in minimizing flooding as well. Limiting increases in impervious area limits the peak runoff from the site which will help from worsened flooding issues.

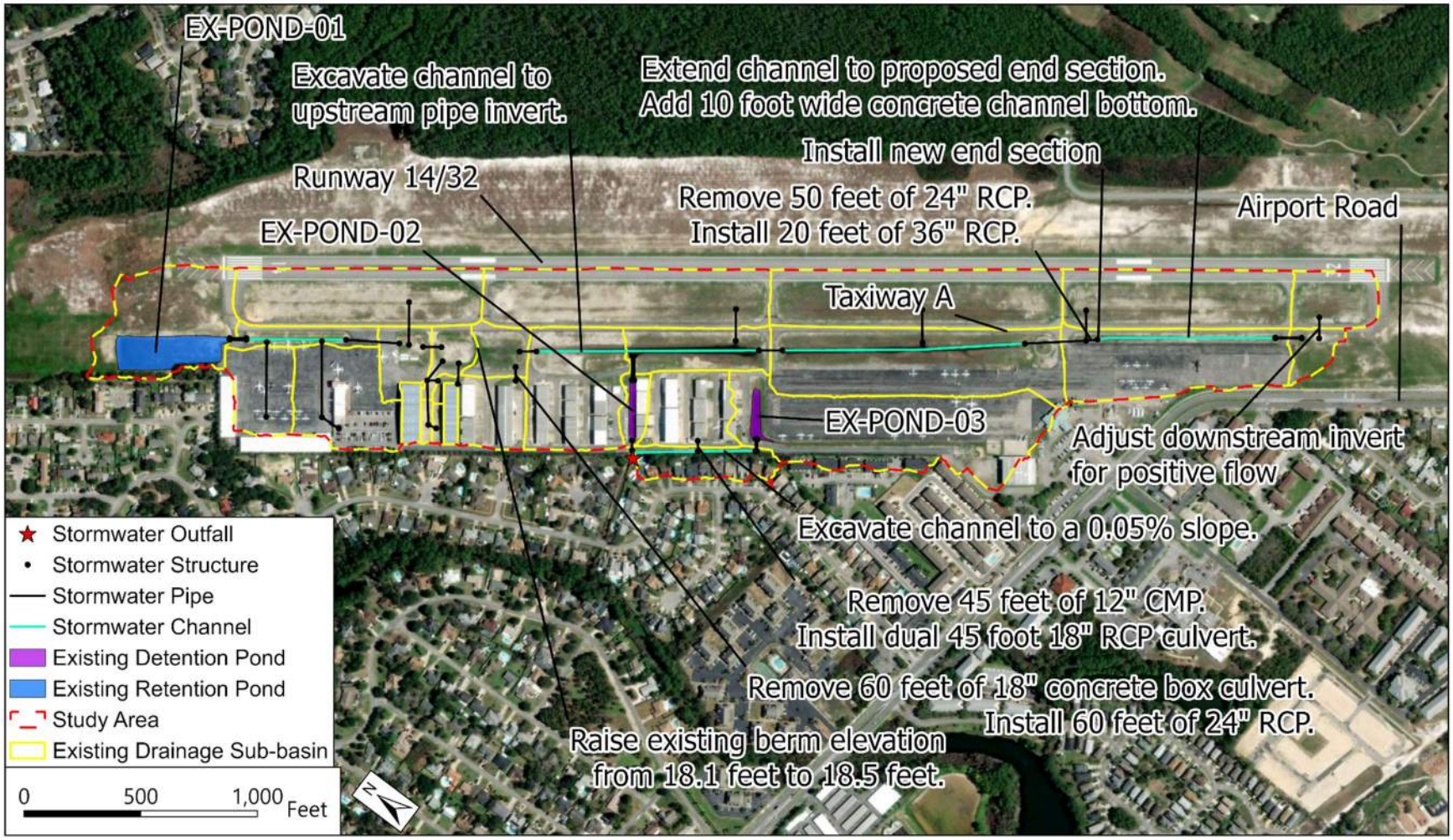

Figure 7-1: Initial Improvements

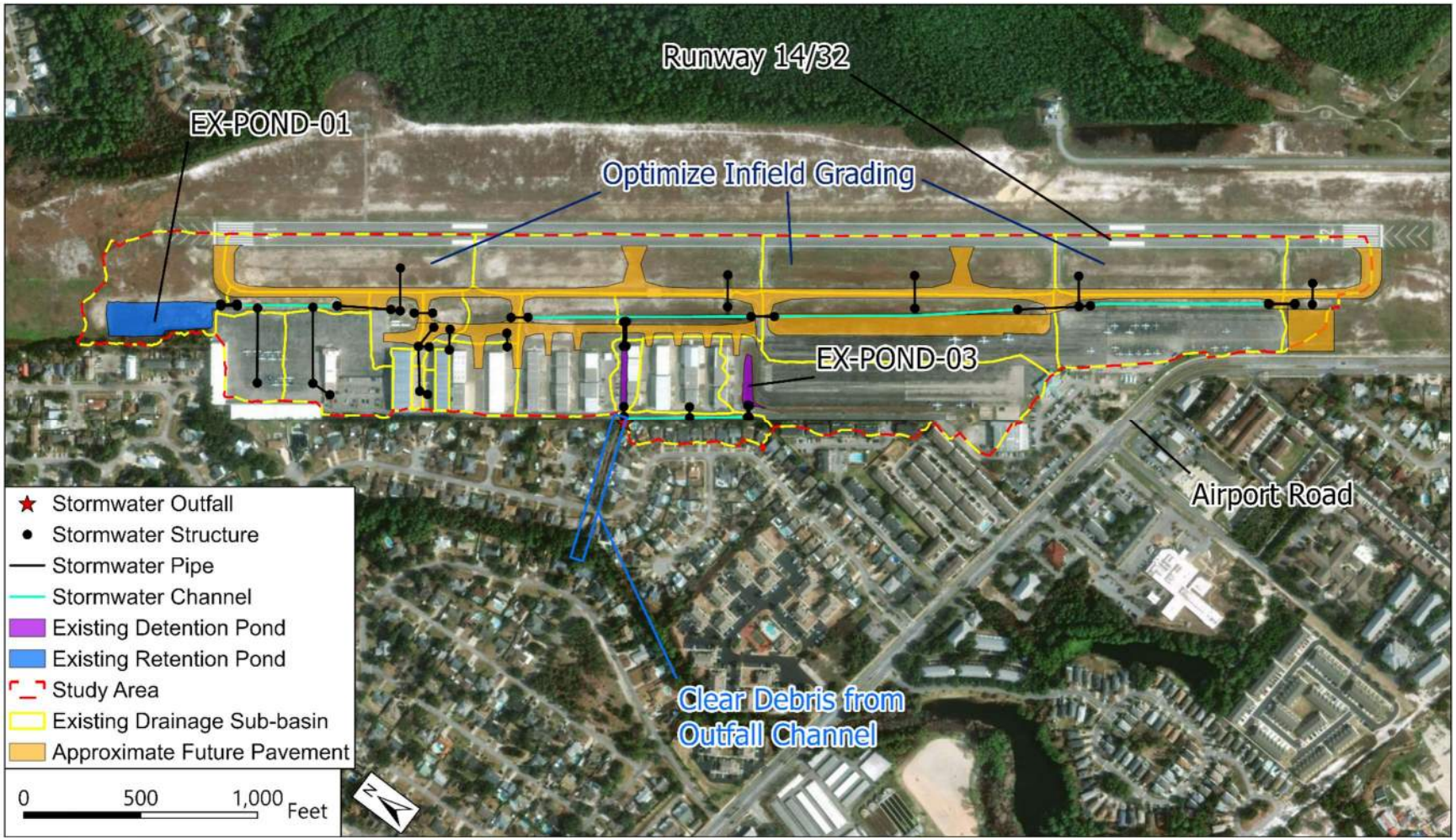

Figure 7-2: General Improvements

7.1.1 Initial Improvements

The Initial Improvements are outlined above and modeled in the Existing Conditions – Initial Improvements and the Future Conditions – Initial Improvements models. RS&H focused these improvements on reducing the existing flooding in locations across the Airport identified by nodes exceeding their warning stages in **Section 6.1**. These improvements can be grouped into three areas as described below. RS&H also modeled the Initial Improvements alongside future Airport development described in **Section 4** in order to provide future design considerations for pavement elevations at the flooding locations identified in **Section 6.2**, as well as understanding the impacts future infrastructure has on the improvements being proposed. As described in **Section 7.1**, complete elimination of flooding in the Study Area is not feasible, therefore the Initial Improvements are not a complete solution for eliminating flooding, rather multiple improvements that will benefit the system by reducing existing flooding and limiting increases of future flooding.

The first area of improvements, the Roadside Ditch and Airport Access Road improvements, aim to reduce flooding of the Airport access road and adjacent pavement. These improvements include removing the existing 45 linear feet 12" CMP (EX-P-30) Basin V outlet pipe that is currently filled with sediment and replacing it with a dual 18" RCP culvert (P-P-02/P-P-03). The 12" CMP is currently filled with sediment, per the field visit, but still did not have hydraulic capacity when modeled as unblocked in the H&H model. RS&H determined that based on the H&H model, a dual 18" RCP culvert provides the optimal amount of hydraulic capacity to drain the area flowing to it. This will require coordination with the City of Destin as the pipe replacement is under the Airport access road and there will need to be temporary roadway pavement removal and replacement. In addition to the new outfall pipe, RS&H recommends the Airport coordinate with the City of Destin to excavate the roadway drainage channel along the Airport access road (EX-CH-08 and EX-CH-09) from the Outfall point to the discharge of the existing detention pond between the hangars and general aviation apron (EX-POND-03). By excavating this to a lower elevation, the outlets of the Basin V pipe and detention pond pipes, that are currently either partially or entirely buried based on topography and survey data, will be exposed, therefore increasing the capacity for the pipe to discharge to the channel and assisting in the reduction of flooding of the road and adjacent Airport pavement. The proposed ditch slope is the minimum slope of 0.05% from the Florida Department of Transportation (FDOT) Drainage Manual, but the Okaloosa County Development Design Standards require a minimum slope of 0.3% for drainage channels. A variance from this criteria to use minimum FDOT standards would likely be required.

The second area of improvements RS&H identified as the Outfall Drainage System – North End, which is an area of inundated pavement in the 5-year, 24-hour storm at the northern upstream end of the stormwater system discharging to the Outfall, identified in **Figure 6-1**. This location,

southwest of Taxiway A connector A2 (EX-HW-08, EX-ES-09, and ES-ES-10) resulted in three items in the Initial Improvements. One improvement is excavating the existing channel between the general aviation taxilane and Taxiway A (EX-CH-06) to the upstream pipe that discharges to it. Excavation of this to the invert of the upstream pipe discharging to it will allow the upstream system to discharge to the channel at a higher capacity rather than being partially blocked. The proposed slope of this channel is 0.24%, which is lower than the Okaloosa County Development Design Standards minimum channel slope and will require a similar variance to that discussed above. The second improvement is raising the elevation of the existing berm, directly southwest of the Taxiway A connector A2, from 18.1 feet to 18.5 feet. The H&H model has a weir between the system contributing to the retention pond (EX-POND-01) and the system contributing to the Outfall. In both the Existing Conditions – Existing Infrastructure and Future Conditions – Existing Infrastructure models, this weir overtops from the retention pond system to the Outfall system due to the higher HGL in the retention pond system. Raising the berm's elevation approximately 0.4 feet would limit overtopping and reduce flooding of the Outfall system. The third improvement is replacing 60 linear feet of 18" concrete trench (EX-P-14) with 24" RCP (P-P-04). Upsizing this pipe, which has nearby taxilane pavement and a hangar, will increase its hydraulic capacity and would reduce flooding.

The third location RS&H identified as the Outfall Drainage System – South End, which is on the southeast side of the Airport, including and adjacent to Taxiway A connector A5 (EX-ES-01, EX-HW-01, and EX-ES-03/EX-ES-05). This location required multiple improvements to the infield channel between Taxiway A connectors A4 and A5 between Taxiway A and the general aviation apron (EX-CH-01). Improvements include excavating this channel to meet the existing upstream pipe invert and proposed downstream pipe invert, as well as the addition of a 10 foot concrete channel bottom, which will provide the system with additional hydraulic capacity to limit flooding and more quickly convey stormwater runoff. Additionally, removing 50 linear feet of 24" RCP to the south of Taxiway A connector A4 between Taxiway A and the general aviation and replacing it with 20 linear feet of 36" pipe, which provides additional hydraulic capacity. The additional 30 linear feet not to be replaced with pipe will be an extension of the above channel to provide additional infield storage volume. Lastly, adjusting the downstream invert of the pipe under Taxiway A between connectors A5 and A6 (EX-P-01) for positive drainage. This pipe was surveyed as an adverse pipe that limited the system's ability to drain effectively, causing flooding at the upstream end of the pipe. By lowering the downstream invert of the pipe to match the upstream invert of the next downstream pipe in the system, the area is able to drain more effectively.

7.1.2 General Improvements

The General Improvements are outlined above but were not modeled due to their nature as considerations for implementation in future design projects and maintenance of existing

stormwater infrastructure on and adjacent to the Airport. Given DTS discharges to a drainage channel that is not maintained and operated by the Airport itself, coordinating with the local stormwater authority to improve or increase the hydraulic capacity of the outfall ditch would benefit flooding and overall stormwater concerns on the Airport by providing a larger capacity for stormwater runoff to drain from the Airport's system. This includes regular maintenance and clearing of debris along the length of the outfall channel to maximize its hydraulic capacity on a consistent basis. RS&H also recommends that the Airport clears any debris from existing pipes and channels on Airport property and maintains them properly to maximize their hydraulic capacity on a consistent basis as well. All maintenance recommendations are generally applicable and do not reflect specific existing pipe and channel conditions. Lastly, RS&H recommends maximizing stormwater storage areas in infields and other pervious spaces on the Airport via grading as it would benefit the system by increasing its overall detention volume thereby reducing peak flow rates at the Outfall.

8 Preliminary Opinion of Probable Cost

RS&H developed a preliminary opinion of probable cost (POPC) for the drainage elements associated with the Initial Improvements described in **Section 7**. The preliminary opinion of probable cost is representative of a conceptual, planning level estimate. Given the preliminary nature of the cost estimate, the cost of the infrastructure included in the Initial Improvements is subject to vary based on final design. The following list summarizes the assumptions made as part of the opinion of cost:

- Program Management is 2.0% of the work subtotal.
- Construction Administration (CA), inspection, and testing fees are 6.0% of the work subtotal.
- Mobilization costs are 10% of the work subtotal.
- Design costs are 10% of the work subtotal.
- Safety and Security costs are 3.0% of the work subtotal.
- Maintenance of Traffic costs are 1.0% of the work subtotal.
- Project Survey and Stakeout costs are 1.5% of the work subtotal.
- Temporary Construction Item costs are 6.0% of the work subtotal
- Contingency of 30% of the sum of the above items was added for the final cost.

Table 8-1 presents the total POPC for the Initial Improvements. RS&H broke the costs into three areas of improvements as described in **Section 7.1**. See **Appendix G** for a more detailed cost breakdown.

Table 8-1: Preliminary Opinion of Probable Cost

Improvements	Cost
Roadside Ditch and Airport Access Road	$148,000
Outfall Drainage System – North End	$103,000
Outfall Drainage System – South End	$257,000
Total	$508,000

Both of the Outfall Drainage System areas of improvements are adjacent to future development projects as discussed in **Section 4**. Taxiway A and the General Aviation Taxilane both experience significant flooding in the existing conditions, which the Initial Improvements work to reduce. These improvements should be considered as a part of those projects in final design to ensure FAA 5-year and 10-year, 24-hour encroachment and ponding criteria are met. RS&H recommends reevaluation of the Initial Improvements to be incorporated into these projects during final design to ensure they work in conjunction with final grading and pavement elevations.

9 References

Federal Aviation Administration. (2013, August 15). *Advisory Circular 150/5320-5D: Airport Drainage Design*.

Federal Aviation Administration. (2020, February 21). *Advisory Circular 150/5200-33C: Hazardous Wildlife Attractants on or near Airports*.

Federal Emergency Management Agency. (2021, March 9). *Flood Insurance Rate Map: Okaloosa County, Florida and Incorporated Areas, Map Numbers 12091C0486J, 12091C0488J, and 12091C0489J*.

Florida Department of Environmental Protection. (2023, August 22). *Stormwater Discharges from Construction Activities*.

Florida Department of Environmental Protection. (2023, October 5). *Municipal Separate Storm Sewer Systems (MS4)*.

Florida Department of Environmental Protection. (2023, September 4). *Industrial Activity (MSGP) & (NEX)*.

Florida Department of Transportation. (2016, January). *Drainage Manual*.

Florida Department of Transportation. (2024, January). *Drainage Design Guide*.

Florida Department of Transportation. (2024, September 23). *Historical Item Average Cost Reports*. Statewide Moving Averages: 12 Month.

National Oceanic and Atmospheric Administration. (2023, October 17). *Digital Coast Data Access Viewer Application*.

National Oceanic and Atmospheric Administration. (2024). *Atlas 14 Point Precipitation Frequency Estimates*.

National Wetland Inventory. (2024). *National Wetland Inventory*.

Natural Resources Conservation Service. (2024, June 27). *Custom Soil Resource Report for Okaloosa County, Florida*.

Northwest Florida Water Management District. (2024, June 28). *Environmental Resource Permit Applicant's Handbook Volume I*.

Northwest Florida Water Management District. (2024, June 28). *Environmental Resource Permit Applicant's Handbook Volume II*.

Okaloosa County. (2015). *Land Development Code*. Chapter 6 – Development Design Standards, Section 6.06.00 Stormwater Management.

United States Army Corps of Engineers. (2024). *HEC-HMS Technical Reference Manual: CN Tables*. SCS TR-55 Table 2-2a – Runoff curve numbers for urban areas.

Appendix A: NRCS Soil Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Okaloosa County, Florida

June 27, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:27,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 400 800 1600 2400

Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Okaloosa County, Florida
Survey Area Data: Version 22, Aug 24, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Dec 10, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Beaches	10.0	0.3%
6	Dorovan muck, frequently flooded	63.0	2.0%
7	Duckston sand, frequently flooded	8.7	0.3%
10	Kureb sand, 0 to 8 percent slopes	1,105.1	36.0%
14	Lakeland sand, 12 to 30 percent slopes	8.3	0.3%
15	Leon sand, 0 to 2 percent slopes	67.1	2.2%
17	Mandarin sand, 0 to 3 percent slopes	251.7	8.2%
18	Newhan-Corolla complex, 2 to 30 percent slopes	490.5	16.0%
21	Resota sand, 0 to 5 percent slopes	231.6	7.5%
22	Rutlege fine sand, depressional	69.5	2.3%
27	Urban land	85.5	2.8%
99	Water	50.2	1.6%
100	Waters of the Gulf of Mexico	632.2	20.6%
Totals for Area of Interest		**3,073.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called

noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can

be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Okaloosa County, Florida

3—Beaches

Map Unit Setting

National map unit symbol: 1kh9r
Elevation: 0 to 10 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 57 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Beaches: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaches

Setting

Landform: Beaches on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear

Properties and qualities

Slope: 1 to 3 percent
Drainage class: Poorly drained
Runoff class: High
Depth to water table: About 0 to 72 inches
Frequency of flooding: Frequent

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Ecological site: F152AY220FL - Central Coastal Adjacent Tidal Zones
Forage suitability group: Forage suitability group not assigned (G133AA999FL)
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: Unranked

6—Dorovan muck, frequently flooded

Map Unit Setting

National map unit symbol: 1kh9v
Elevation: 0 to 450 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Dorovan and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dorovan

Setting

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Organic material

Typical profile

Oa1 - 0 to 4 inches: muck
Oa2 - 4 to 80 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very high (about 13.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B/D
Forage suitability group: Organic soils in depressions and on flood plains (G133AA645FL)
Other vegetative classification: Organic soils in depressions and on flood plains (G133AA645FL)
Hydric soil rating: Yes

Minor Components

Rutlege

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Hydric soil rating: Yes

Bibb

Percent of map unit: 2 percent

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G133AA345FL)
Hydric soil rating: Yes

Kinston

Percent of map unit: 2 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G133AA345FL)
Hydric soil rating: Yes

Leon

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Hydric soil rating: No

7—Duckston sand, frequently flooded

Map Unit Setting

National map unit symbol: 1kh9w
Elevation: 0 to 300 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Duckston and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Duckston

Setting

Landform: Swales on marine terraces, depressions on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear, concave

Across-slope shape: Concave, linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 12 inches: sand
Cg - 12 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Ecological site: F152AY215FL - Central Coastal Adjacent Flooded Interdunal Flats
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Hydric soil rating: Yes

Minor Components

Rutlege

Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F152AY220FL - Central Coastal Adjacent Tidal Zones
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Hydric soil rating: Yes

Leon

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY215FL - Central Coastal Adjacent Flooded Interdunal Flats
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Hydric soil rating: No

10—Kureb sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ttl6
Elevation: 10 to 40 feet
Mean annual precipitation: 62 to 70 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 232 to 262 days
Farmland classification: Not prime farmland

Map Unit Composition

Kureb and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kureb

Setting

Landform: Dunes on marine terraces, ridges on marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Eolian deposits or sandy fluvial or marine deposits

Typical profile

A - 0 to 4 inches: sand
E - 4 to 17 inches: sand
C/Bh - 17 to 68 inches: sand
C - 68 to 80 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F152AY205FL - Central Coastal Adjacent Dune

Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Hydric soil rating: No

Minor Components

Resota
Percent of map unit: 10 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Other vegetative classification: Sandy soils on rises, knolls, and ridges of mesic uplands (G152AA121FL)
Hydric soil rating: No

Mandarin
Percent of map unit: 5 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G152AA131FL)
Hydric soil rating: No

Corolla
Percent of map unit: 3 percent
Landform: Rises on dunes on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G152AA131FL)
Hydric soil rating: No

Newhan
Percent of map unit: 2 percent
Landform: Dunes on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY205FL - Central Coastal Adjacent Dune
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Hydric soil rating: No

14—Lakeland sand, 12 to 30 percent slopes

Map Unit Setting

National map unit symbol: 1khb3
Elevation: 20 to 300 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Lakeland and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lakeland

Setting

Landform: Hills on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 6 inches: sand
C - 6 to 80 inches: sand

Properties and qualities

Slope: 12 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G133AA113FL)
Other vegetative classification: Sandy soils on strongly sloping to steep side slopes of xeric uplands (G133AA113FL)

Hydric soil rating: No

Minor Components

Bonifay

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on strongly sloping to steep side slopes of mesic uplands (G133AA123FL)
Hydric soil rating: No

Foxworth

Percent of map unit: 3 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sandy soils on rises, knolls, and ridges of mesic uplands (G133AA121FL)
Hydric soil rating: No

15—Leon sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2rz0s
Elevation: 0 to 300 feet
Mean annual precipitation: 60 to 69 inches
Mean annual air temperature: 63 to 72 degrees F
Frost-free period: 252 to 306 days
Farmland classification: Not prime farmland

Map Unit Composition

Leon and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leon

Setting

Landform: Marine terraces, flatwoods
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 18 inches: sand

Bh - 18 to 26 inches: sand
E' - 26 to 65 inches: sand
B'h - 65 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 2 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F152AY320FL - East Central Sandy Flat
Forage suitability group: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL), North Florida Flatwoods (R152AY004FL)
Hydric soil rating: No

Minor Components

Leon, hydric

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY320FL - East Central Sandy Flat
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Hydric soil rating: Yes

Hurricane

Percent of map unit: 4 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY320FL - East Central Sandy Flat
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G133AA131FL)
Hydric soil rating: No

Pottsburg

Percent of map unit: 4 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf

Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY320FL - East Central Sandy Flat
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Hydric soil rating: No

Mandarin

Percent of map unit: 3 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY320FL - East Central Sandy Flat
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G152AA131FL)
Hydric soil rating: No

Rutlege

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F152AY350FL - East Central Sandy Lowland
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G152AA145FL), North Florida Flatwoods (R152AY004FL)
Hydric soil rating: Yes

Pickney

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: F152AY350FL - East Central Sandy Lowland
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL), North Florida Flatwoods (R152AY004FL)
Hydric soil rating: Yes

17—Mandarin sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1khb6
Elevation: 0 to 300 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Mandarin and similar soils: 94 percent
Minor components: 6 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mandarin

Setting

Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: sand
E - 5 to 26 inches: sand
Bh - 26 to 32 inches: sand
Bw - 32 to 54 inches: sand
C - 54 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F152AY320FL - East Central Sandy Flat
Forage suitability group: Sandy soils on rises and knolls of mesic uplands (G133AA131FL)
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G133AA131FL)
Hydric soil rating: No

Minor Components

Leon

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY320FL - East Central Sandy Flat

Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Hydric soil rating: No

Rutlege

Percent of map unit: 2 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F152AY350FL - East Central Sandy Lowland
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Hydric soil rating: Yes

Resota

Percent of map unit: 2 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Other vegetative classification: Sandy soils on rises, knolls, and ridges of mesic uplands (G133AA121FL)
Hydric soil rating: No

18—Newhan-Corolla complex, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2w4gq
Elevation: 0 to 20 feet
Mean annual precipitation: 60 to 73 inches
Mean annual air temperature: 63 to 72 degrees F
Frost-free period: 236 to 306 days
Farmland classification: Not prime farmland

Map Unit Composition

Newhan and similar soils: 60 percent
Corolla and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Newhan

Setting

Landform: Dunes on marine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear

Parent material: Sandy eolian deposits

Typical profile

C - 0 to 80 inches: sand

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F152AY205FL - Central Coastal Adjacent Dune
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Hydric soil rating: No

Description of Corolla

Setting

Landform: Rises on dunes on marine terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 3 inches: sand
C - 3 to 80 inches: sand

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A/D
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Forage suitability group: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Hydric soil rating: No

Minor Components

Duckston

Percent of map unit: 10 percent
Landform: Depressions on marine terraces, flats on marine terraces, swales on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: F152AY215FL - Central Coastal Adjacent Flooded Interdunal Flats
Other vegetative classification: Sandy soils on ridges and dunes of xeric uplands (G152AA111FL)
Hydric soil rating: Yes

21—Resota sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1khbb
Elevation: 0 to 230 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Resota and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Resota

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 3 inches: sand
E - 3 to 18 inches: sand
Bh - 18 to 22 inches: sand
B/C - 22 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 50.02 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Forage suitability group: Sandy soils on rises, knolls, and ridges of mesic uplands (G133AA121FL)
Other vegetative classification: Sandy soils on rises, knolls, and ridges of mesic uplands (G133AA121FL)
Hydric soil rating: No

Minor Components

Mandarin

Percent of map unit: 5 percent
Landform: Flats on marine terraces, rises on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY200FL - Central Coastal Adjacent Ridges and Rises
Other vegetative classification: Sandy soils on rises and knolls of mesic uplands (G133AA131FL)

22—Rutlege fine sand, depressional

Map Unit Setting

National map unit symbol: 1khbc
Elevation: 0 to 300 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F

Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Rutlege, depressional, and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rutlege, Depressional

Setting

Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy marine deposits and/or fluviomarine deposits

Typical profile

A - 0 to 13 inches: sand
C - 13 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Ecological site: F152AY350FL - East Central Sandy Lowland
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Other vegetative classification: Sandy soils on stream terraces, flood plains, or in depressions (G133AA145FL)
Hydric soil rating: Yes

Minor Components

Dorovan

Percent of map unit: 4 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F152AY345FL - East Central Sandy Flooded Lowland
Other vegetative classification: Organic soils in depressions and on flood plains (G133AA645FL)

Hydric soil rating: Yes

Leon

Percent of map unit: 3 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F152AY320FL - East Central Sandy Flat
Other vegetative classification: sandy soils on flats of mesic or hydric lowlands (G133AA141FL)
Hydric soil rating: No

27—Urban land

Map Unit Setting

National map unit symbol: 1khbj
Elevation: 20 to 300 feet
Mean annual precipitation: 65 to 73 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 236 to 266 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G133AA999FL)
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: Unranked

Minor Components

Bonifay

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex

Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: No

Troup

Percent of map unit: 5 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: No

Foxworth

Percent of map unit: 5 percent
Landform: Ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: No

Kureb

Percent of map unit: 5 percent
Landform: Dunes on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: No

Lakeland

Percent of map unit: 5 percent
Landform: Hills on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: No

99—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G133AA999FL)
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: Unranked

100—Waters of the Gulf of Mexico

Map Unit Composition

Water of the gulf of mexico: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water Of The Gulf Of Mexico

Interpretive groups

Land capability classification (irrigated): None specified
Forage suitability group: Forage suitability group not assigned (G133AA999FL)
Other vegetative classification: Forage suitability group not assigned (G133AA999FL)
Hydric soil rating: Unranked

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

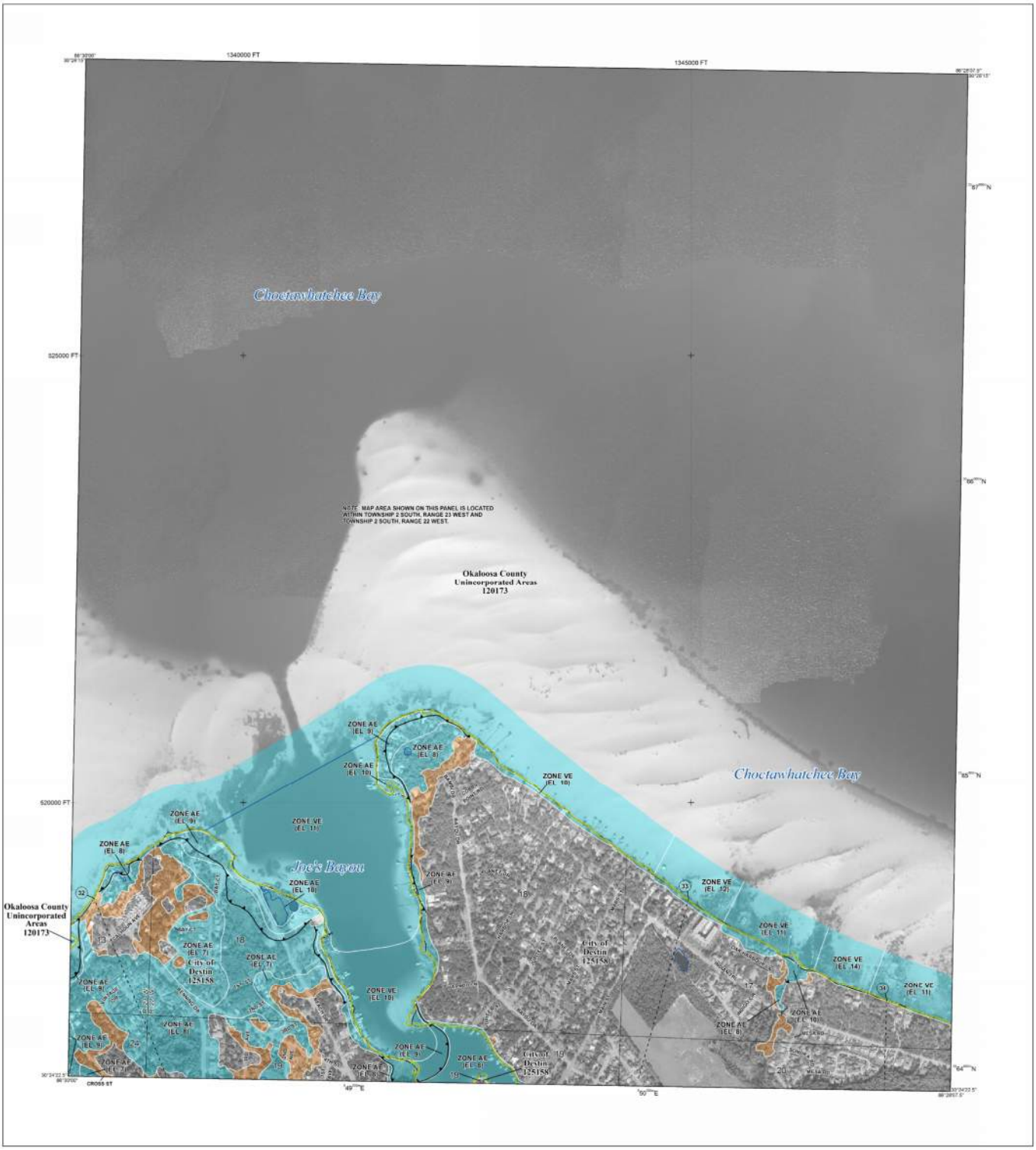
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix B: FEMA FIRMs

Exhibit 1



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee See Notes. Zone X
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall Non-accredited Levee, Dike, or Floodwall Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature Base Flood Elevation Line (BFE)
OTHER FEATURES	Limit of Study Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current date for each FIRM panel, how to order products or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the Florida Department of Transportation (FDOT). This information was derived from digital orthophotography at a 0.5-foot resolution from photography dated 2015.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the Zone VE, and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LiMWA)

SCALE

Map Projection:
Florida State Plane North FIPS Zone 0903; North American Datum 1983 (NAD83 GRS 1980 Spheroid); Vertical Datum: North American Vertical Datum of 1988

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR

* PANEL NOT PRINTED

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
OKALOOSA COUNTY, FLORIDA
and Incorporated Areas

PANEL 486 OF 494

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
DESTIN, CITY OF	125158	0486	J
OKALOOSA COUNTY	120173	0486	J

VERSION NUMBER
1.3.1.2

MAP NUMBER
12091C0486J

MAP REVISED
MARCH 9, 2021

Exhibit 2

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X

OTHER AREAS
- NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Accredited or Provisionally Accredited Levee, Dike, or Floodwall
- Non-accredited Levee, Dike, or Floodwall
- Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about the Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current date for each FIRM panel, how to order products or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the Florida Department of Transportation (FDOT). This information was derived from digital orthophotography at a 0.5-foot resolution from photography dated 2013.

LIMIT OF MODERATE WAVE ACTION. Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the Zone VE, and this LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LiMWA)

SCALE

Map Projection:
Florida State Plane North FIPS Zone 0903, North American Datum 1983 HARN, GRS 1980 Spheroid, Vertical Datum: North American Vertical Datum of 1988

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
OKALOOSA COUNTY, FLORIDA
and Incorporated Areas

PANEL 488 OF 494

FEMA

Panel Contains

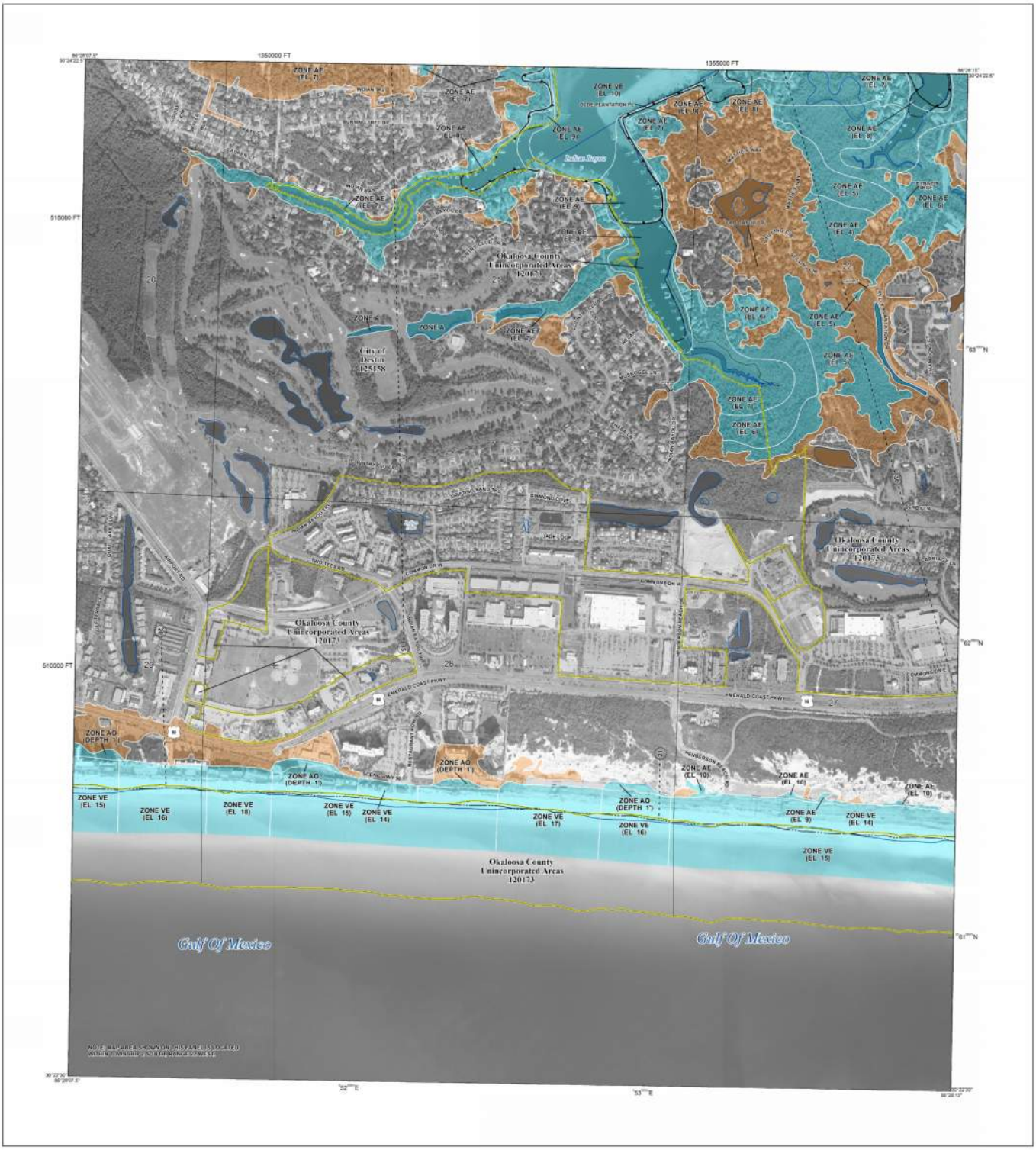
COMMUNITY	NUMBER	PANEL	SUFFIX
DESTIN, CITY OF	125158	0488	J
OKALOOSA COUNTY	120173	0488	J

VERSION NUMBER
1.3.1.2

MAP NUMBER
12091C0488J

MAP REVISED
MARCH 9, 2021

Exhibit 3



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X

OTHER AREAS
- NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
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- Accredited or Provisionally Accredited Levee, Dike, or Floodwall
- Non-accredited Levee, Dike, or Floodwall
- Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

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For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the Florida Department of Transportation (FDOT). This information was derived from digital orthophotography at a 0.5-foot resolution from photography dated 2013.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the Zone VE, and this LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LiMWA)

SCALE

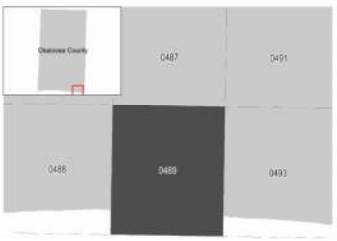
Map Projection:
Florida State Plane North FIPS Zone 0903, North American Datum 1983 HARN, GRS 1980 Spheroid, Vertical Datum: North American Vertical Datum of 1988

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
OKALOOSA COUNTY, FLORIDA
and Incorporated Areas

PANEL 489 OF 494

FEMA

Panel Contains

COMMUNITY	NUMBER	PANEL	SUFFIX
DESTIN, CITY OF	125158	0489	J
OKALOOSA COUNTY	120173	0489	J

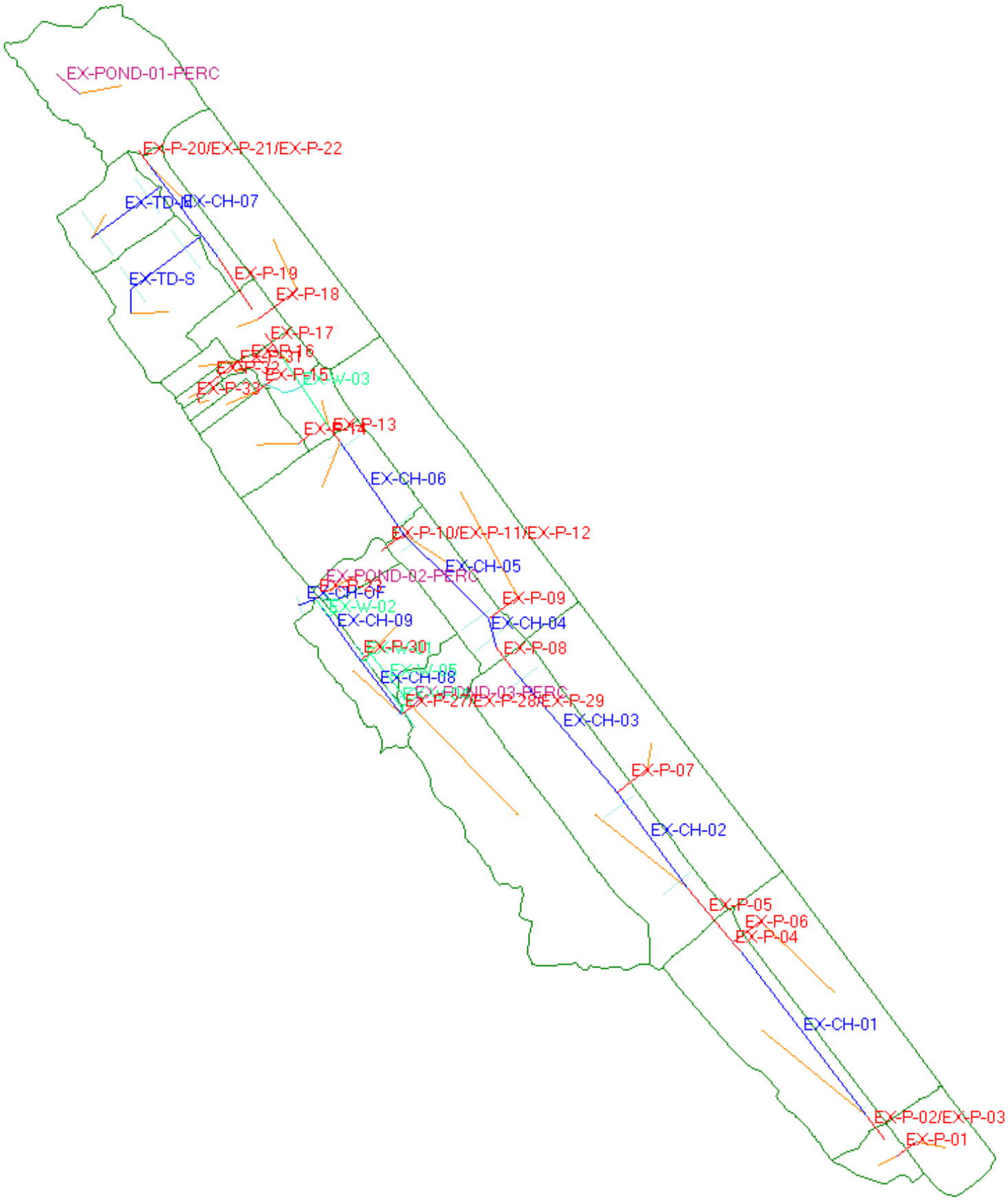
VERSION NUMBER
1.3.1.2

MAP NUMBER
12091C0489J

MAP REVISED
MARCH 9, 2021

Appendix C: ICPR Results

Existing Conditions - Existing Infrastructure Nodal Diagrams


EX-POND-01-PERC
EX-P-20/EX-P-21/EX-P-22
EX-TD-N
EX-CH-07
EX-TD-S
EX-P-19
EX-P-18
EX-P-17
EX-P-16
EX-P-15
EX-W-03
EX-P-13
EX-CH-06
EX-P-10/EX-P-11/EX-P-12
EX-CH-05
EX-POND-02-PERC
EX-CH-04
EX-W-02
EX-CH-09
EX-P-09
EX-P-30
EX-P-08
EX-CH-08
EX-P-27/EX-P-28/EX-P-29
EX-CH-03
EX-P-07
EX-CH-02
EX-P-05
EX-P-06
EX-P-04
EX-CH-01
EX-P-02/EX-P-03
EX-P-01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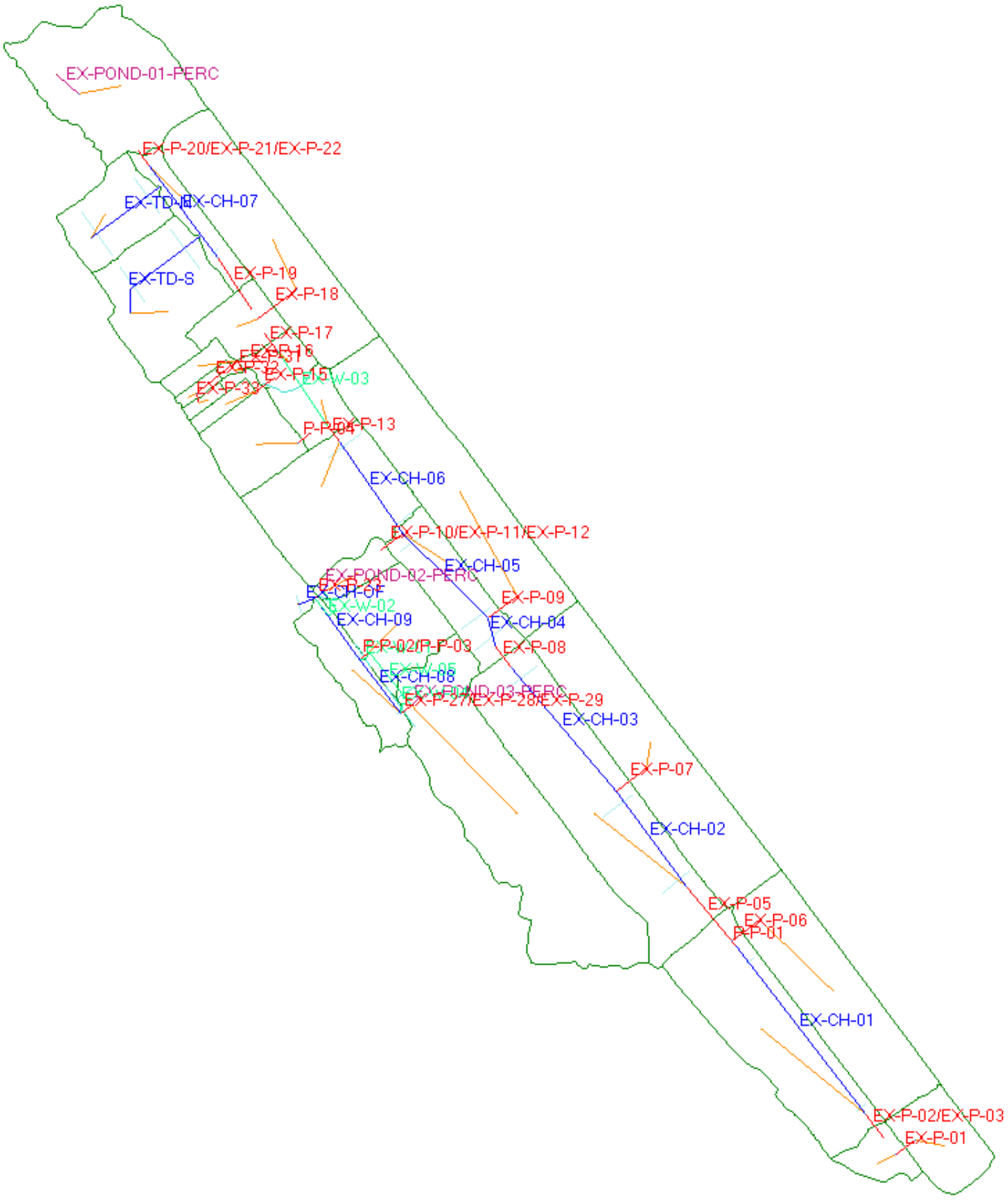
Existing Conditions - Initial Improvements Nodal Diagrams


EX-POND-01-PERC
EX-P-20/EX-P-21/EX-P-22
EX-TD-N
EX-CH-07
EX-TD-S
EX-P-19
EX-P-18
EX-P-17
EX-P-16
EX-P-31
EX-P-32
EX-P-15
EX-P-33
EX-W-03
P-P-04
EX-P-13
EX-CH-06
EX-P-10/EX-P-11/EX-P-12
EX-CH-05
EX-POND-02-PERC
EX-CH-0F
EX-W-02
EX-CH-09
EX-P-09
EX-CH-04
P-P-02/P-P-03
EX-P-08
EX-W-05
EX-CH-08
EX-POND-03-PERC
EX-P-27/EX-P-28/EX-P-29
EX-CH-03
EX-P-07
EX-CH-02
EX-P-05
EX-P-06
P-P-01
EX-CH-01
EX-P-02/EX-P-03
EX-P-01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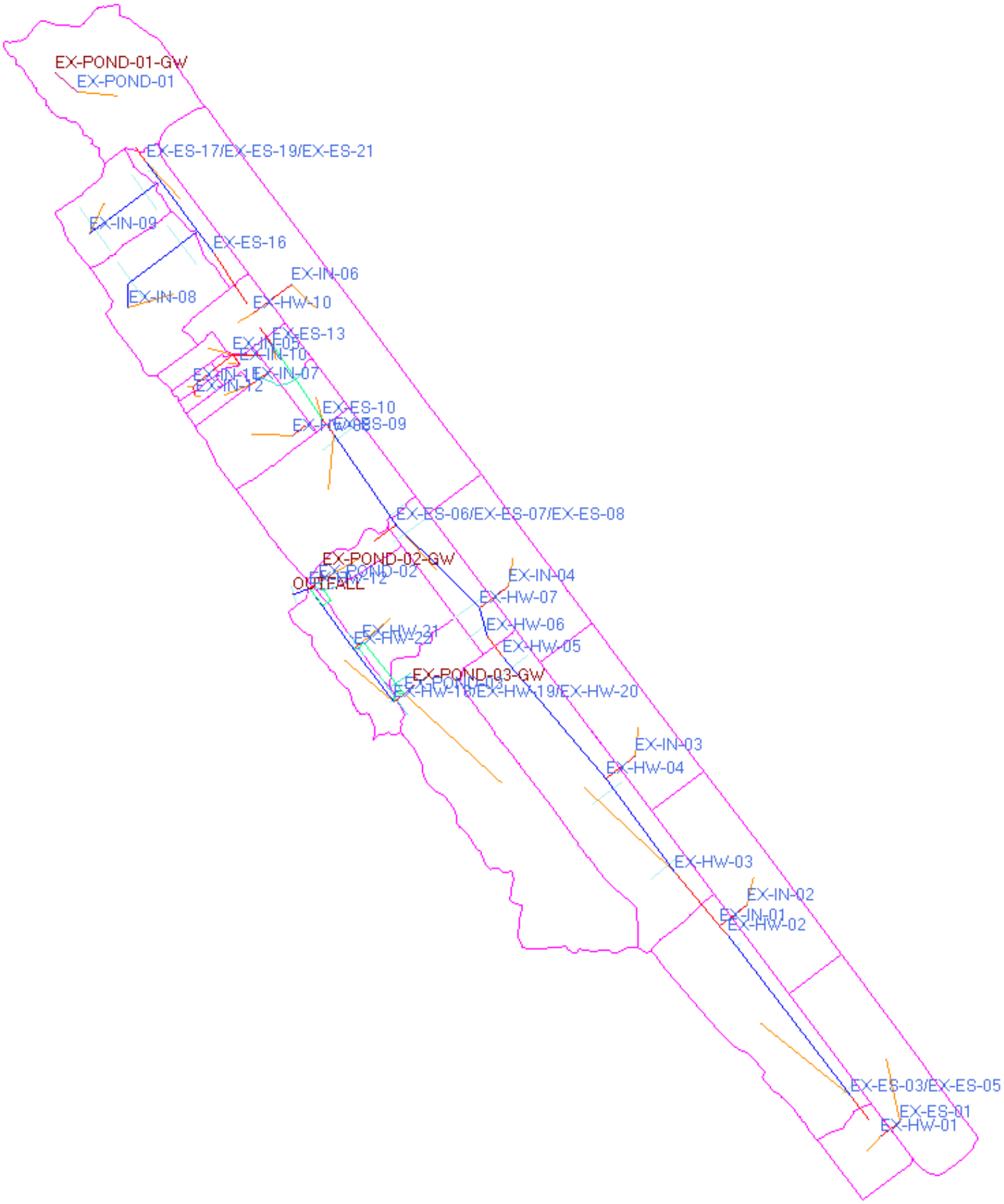
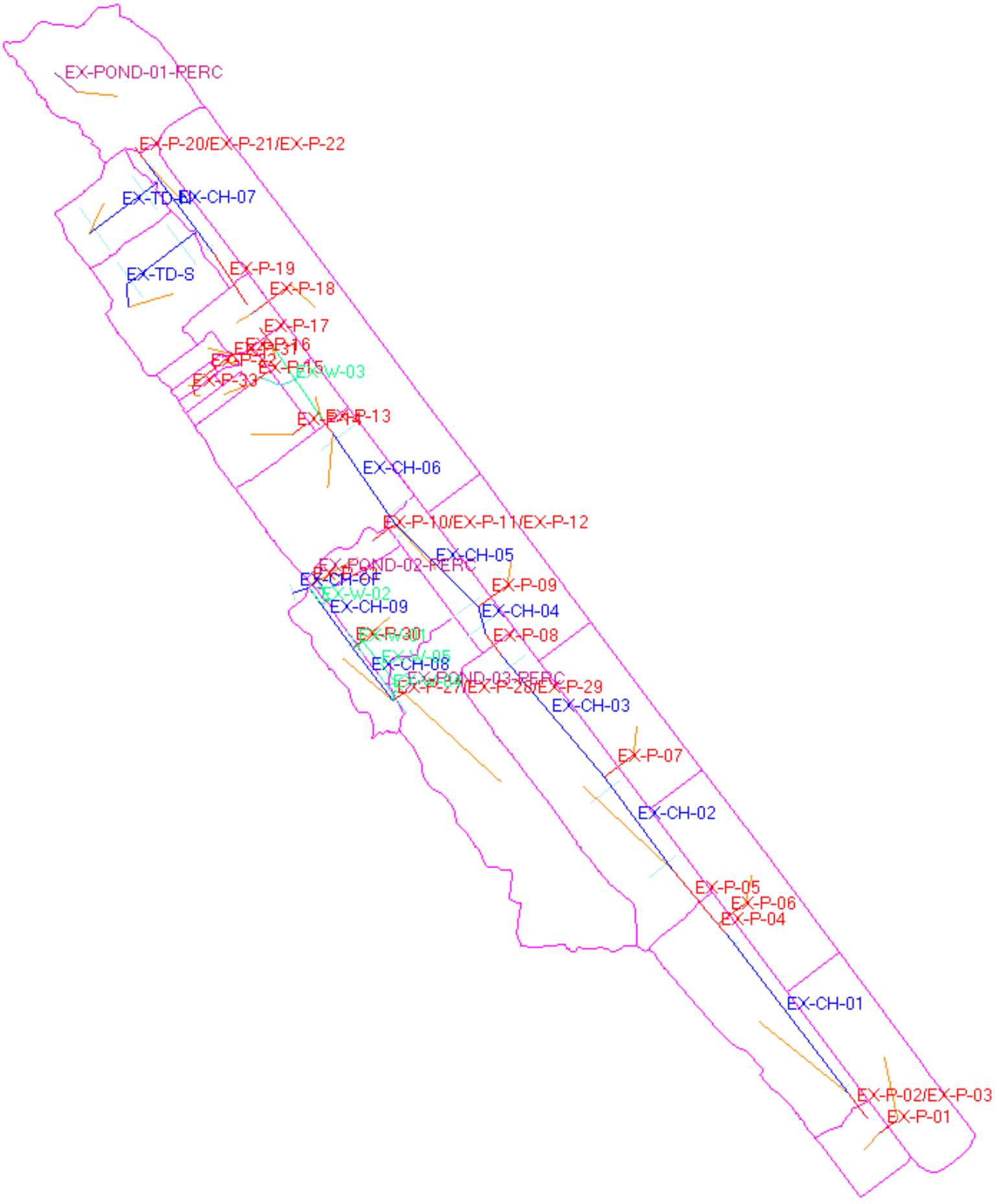
Future Conditions - Existing Infrastructure Nodal Diagrams




EX-POND-01-PERC
EX-P-20/EX-P-21/EX-P-22
EX-TD-E
EX-CH-07
EX-TD-S
EX-P-19
EX-P-18
EX-P-17
EX-P-16
EX-P-31
EX-P-32
EX-P-15
EX-P-33
EX-W-03
EX-P-13
EX-CH-06
EX-P-10/EX-P-11/EX-P-12
EX-CH-05
EX-POND-02-PERC
EX-CH-0F
EX-W-02
EX-CH-09
EX-P-09
EX-CH-04
EX-P-30
EX-W-01
EX-P-08
EX-W-05
EX-CH-08
EX-W-04
EX-POND-03-PERC
EX-P-27/EX-P-28/EX-P-29
EX-CH-03
EX-P-07
EX-CH-02
EX-P-05
EX-P-06
EX-P-04
EX-CH-01
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EX-P-01


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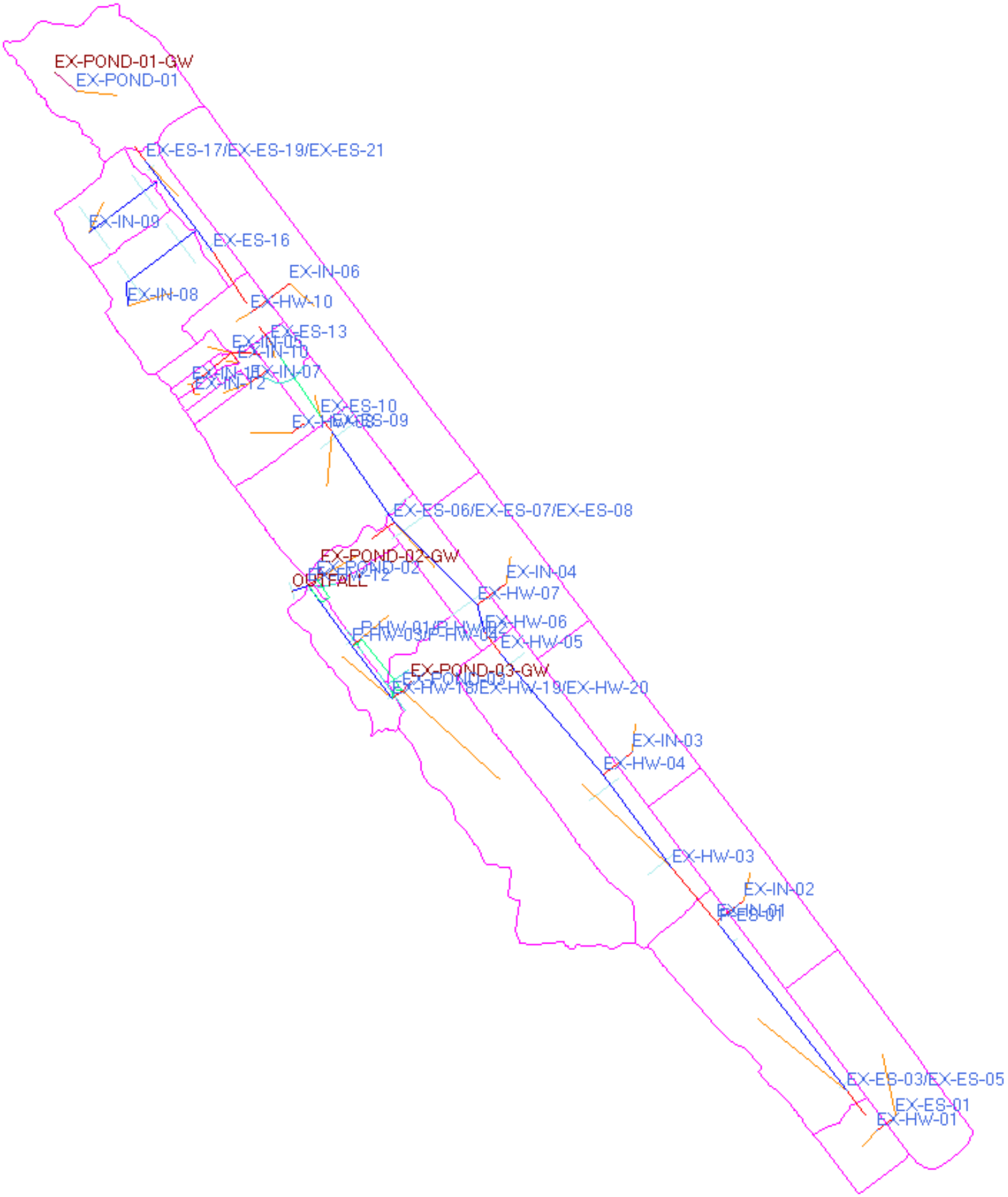
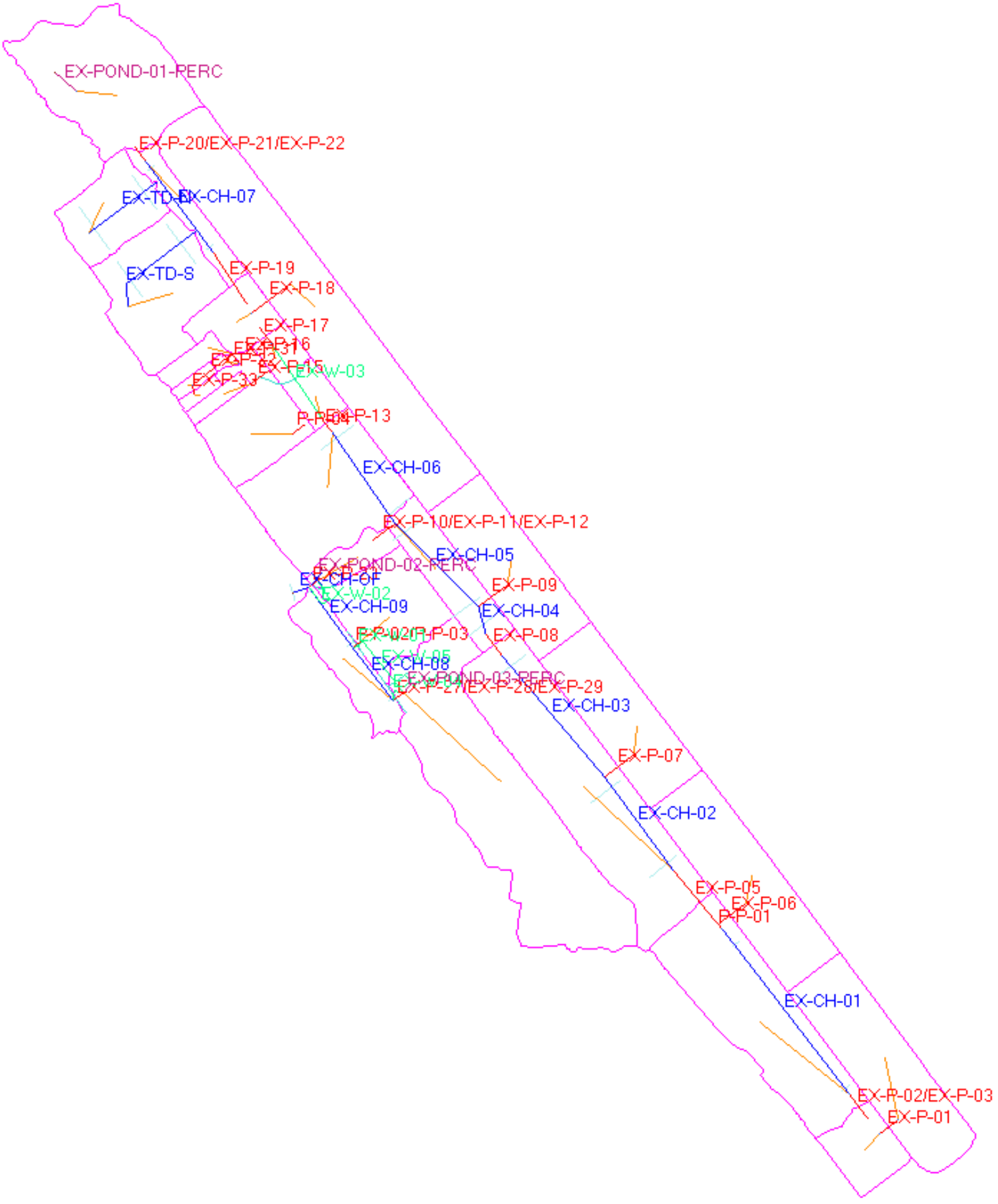
Future Conditions - Initial Improvements Nodal Diagrams




EX-POND-01-PERC
EX-P-20/EX-P-21/EX-P-22
EX-TD-E
EX-CH-07
EX-TD-S
EX-P-19
EX-P-18
EX-P-17
EX-P-16
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EX-P-13
EX-CH-06
EX-P-10/EX-P-11/EX-P-12
EX-CH-05
EX-POND-02-PERC
EX-CH-09
EX-W-02
EX-P-09
EX-CH-04
EX-P-08
EX-CH-08
EX-POND-03-PERC
EX-P-27/EX-P-28/EX-P-29
EX-CH-03
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EX-CH-02
EX-P-05
EX-P-06
EX-P-01
EX-CH-01
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EX-P-01


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Simulation Inputs

Simulation: Existing 10-year, 24-hour

Scenario: Existing Conditions - Existing Infrastructure
Run Date/Time: 11/11/2024 8:30:35 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	9.12 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Culert/Swale Design Frequency

Simulation: Existing 100-year, 24-hour

Scenario:	Existing Conditions - Existing Infrastructure
Run Date/Time:	11/11/2024 8:30:47 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 16.10 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Closed Basin Analysis - Okaloosa County Development Design Standards

Simulation: Existing 25-year, 24-hour

Scenario: Existing Conditions - Existing Infrastructure
Run Date/Time: 11/11/2024 8:30:58 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	11.60 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (Outfall)

Simulation: Existing 25-year, 8-hour

Scenario:	Existing Conditions - Existing Infrastructure
Run Date/Time:	11/11/2024 8:31:09 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 8.08 in
Storm Duration: 8.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (EX-POND-01)

Simulation: Existing 5-year, 24-hour

Scenario: Existing Conditions - Existing Infrastructure
Run Date/Time: 11/11/2024 8:31:18 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	7.54 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: FAA AC 150/5320-5D

Simulation: Existing 10-year, 24-hour

Scenario:	Existing Conditions - Initial Improvements
Run Date/Time:	11/11/2024 8:31:35 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 9.12 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Culert/Swale Design Frequency

Simulation: Existing 100-year, 24-hour

Scenario: Existing Conditions - Initial Improvements
Run Date/Time: 11/11/2024 8:31:46 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	16.10 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Closed Basin Analysis - Okaloosa County Development Design Standards

Simulation: Existing 25-year, 24-hour

Scenario:	Existing Conditions - Initial Improvements
Run Date/Time:	11/11/2024 8:31:59 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 11.60 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (Outfall)

Simulation: Existing 25-year, 8-hour

Scenario: Existing Conditions - Initial Improvements
Run Date/Time: 11/11/2024 8:32:12 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	8.08 in
Edge Length Option:	Automatic	Storm Duration:	8.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (EX-POND-01)

Simulation: Existing 5-year, 24-hour

Scenario:	Existing Conditions - Initial Improvements
Run Date/Time:	11/11/2024 8:32:21 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Existing, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 7.54 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: FAA AC 150/5320-5D

Simulation: Future 10-year, 24-hour

Scenario: Future Conditions - Existing Infrastructure
Run Date/Time: 11/11/2024 8:32:33 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	9.12 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Culert/Swale Design Frequency

Simulation: Future 100-year, 24-hour

Scenario:	Future Conditions - Existing Infrastructure
Run Date/Time:	11/11/2024 8:32:43 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 16.10 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Closed Basin Analysis - Okaloosa County Development Design Standards

Simulation: Future 25-year, 24-hour

Scenario: Future Conditions - Existing Infrastructure
Run Date/Time: 11/11/2024 8:32:54 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	11.60 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (Outfall)

Simulation: Future 25-year, 8-hour

Scenario:	Future Conditions - Existing Infrastructure
Run Date/Time:	11/11/2024 8:33:07 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 8.08 in
Storm Duration: 8.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (EX-POND-01)

Simulation: Future 5-year, 24-hour

Scenario: Future Conditions - Existing Infrastructure
Run Date/Time: 11/11/2024 8:33:15 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	7.54 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: FAA AC 150/5320-5D

Simulation: Future 10-year, 24-hour

Scenario:	Future Conditions - Initial Improvements
Run Date/Time:	11/11/2024 8:33:26 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 9.12 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Culert/Swale Design Frequency

Simulation: Future 100-year, 24-hour

Scenario: Future Conditions - Initial Improvements
Run Date/Time: 11/11/2024 8:33:38 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	16.10 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Closed Basin Analysis - Okaloosa County Development Design Standards

Simulation: Future 25-year, 24-hour

Scenario:	Future Conditions - Initial Improvements
Run Date/Time:	11/11/2024 8:33:51 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 11.60 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (Outfall)

Simulation: Future 25-year, 8-hour

Scenario: Future Conditions - Initial Improvements
Run Date/Time: 11/11/2024 8:34:07 PM
Program Version: ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:

Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~SCSIII-24
		Rainfall Amount:	8.08 in
Edge Length Option:	Automatic	Storm Duration:	8.0000 hr
Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment: Critical Storm Event - Okaloosa County Development Design Standards (EX-POND-01)

Simulation: Future 5-year, 24-hour

Scenario:	Future Conditions - Initial Improvements
Run Date/Time:	11/11/2024 8:34:15 PM
Program Version:	ICPR4 4.07.08

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	60.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set: Future, No Tailwater
Extern Hydrograph Set:
Curve Number Set: CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: Impervious
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic
Dflt Damping (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Smp/Man Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~SCSIII-24
Rainfall Amount: 7.54 in
Storm Duration: 24.0000 hr
Dflt Damping (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment: FAA AC 150/5320-5D

Basin Inputs

Manual Basin: E

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.0386 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8206	IMPERVIOUS	A			
1.2180	PERVIOUS	A			

Comment:

Manual Basin: F

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-HW-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.9044 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.6917	PERVIOUS	A			
0.2126	IMPERVIOUS	A			

Comment:

Manual Basin: G

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-03/EX-ES-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 6.2110 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0034	PERVIOUS	A			
5.2076	IMPERVIOUS	A			

Comment:

Manual Basin: D

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 23.7000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.6941 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.8584	IMPERVIOUS	A			
3.8357	PERVIOUS	A			

Comment:

Manual Basin: X

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-POND-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 57.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 9.6866 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
7.3404	IMPERVIOUS	A			
2.3462	PERVIOUS	A			

Comment:

Manual Basin: H

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-HW-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 8.4217 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
4.0504	IMPERVIOUS	A			
4.3714	PERVIOUS	A			

Comment:

Manual Basin: C

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 13.9000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 7.1695 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2237	IMPERVIOUS	A			
4.9459	PERVIOUS	A			

Comment:

Manual Basin: W

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-HW-18/EX-HW-19/EX-HW-20
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 1.8693 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0856	PERVIOUS	A			
0.7837	IMPERVIOUS	A			

Comment:

Manual Basin: V

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-HW-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 13.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.7264 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0457	IMPERVIOUS	A			
0.6807	PERVIOUS	A			

Comment:

Manual Basin: I

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-06/EX-ES-07/EX-ES-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 28.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.6318 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5194	IMPERVIOUS	A			
2.1124	PERVIOUS	A			

Comment:

Manual Basin: B

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-04
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 22.3000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 7.0795 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2018	IMPERVIOUS	A			
4.8777	PERVIOUS	A			

Comment:

Manual Basin: U

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-POND-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 11.8000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.7474 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.3413	PERVIOUS	A			
0.4062	IMPERVIOUS	A			

Comment:

Manual Basin: R

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-HW-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 2.1927 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.8931	IMPERVIOUS	A			
0.2996	PERVIOUS	A			

Comment:

Manual Basin: J

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.2025 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4226	IMPERVIOUS	A			
0.7798	PERVIOUS	A			

Comment:

Manual Basin: S

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-07
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.3643 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0012	PERVIOUS	A			
0.3631	IMPERVIOUS	A			

Comment:

Manual Basin: Q

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-12
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.1956 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0014	PERVIOUS	A			
0.1942	IMPERVIOUS	A			

Comment:

Manual Basin: P

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-11
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.2125 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2125	IMPERVIOUS	A			

Comment:

Manual Basin: T

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area: 0.5073 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4935	IMPERVIOUS	A			
0.0137	PERVIOUS	A			

Comment:

Manual Basin: K

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-13
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.8905 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5879	PERVIOUS	A			
0.3026	IMPERVIOUS	A			

Comment:

Manual Basin: M

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 4.0092 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.9524	IMPERVIOUS	A			
0.0568	PERVIOUS	A			

Comment:

Manual Basin: O

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.0964 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0938	IMPERVIOUS	A			
0.0026	PERVIOUS	A			

Comment:

Manual Basin: A

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-06
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 16.8000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 6.0020 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.8652	IMPERVIOUS	A			
4.1368	PERVIOUS	A			

Comment:

Manual Basin: L

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-HW-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 1.3716 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8421	IMPERVIOUS	A			
0.5295	PERVIOUS	A			

Comment:

Manual Basin: Y

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-IN-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.2837 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2834	IMPERVIOUS	A			
0.0002	PERVIOUS	A			

Comment:

Manual Basin: N

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-POND-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.6282 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5742	IMPERVIOUS	A			
5.0541	PERVIOUS	A			

Comment:

Manual Basin: Z

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-17/EX-ES-19/EX-ES-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.2638 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.6755	IMPERVIOUS	A			
0.5883	PERVIOUS	A			

Comment:

Manual Basin: AA

Scenario: Existing Conditions - Existing Infrastructure
Node: EX-ES-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.9000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.0121 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.7698	IMPERVIOUS	A			
2.2422	PERVIOUS	A			

Comment:

Manual Basin: E

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 2.0386 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8206	IMPERVIOUS	A			
1.2180	PERVIOUS	A			

Comment:

Manual Basin: F

Scenario: Existing Conditions - Initial Improvements
Node: EX-HW-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.9044 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.6917	PERVIOUS	A			
0.2126	IMPERVIOUS	A			

Comment:

Manual Basin: G

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-03/EX-ES-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 6.2110 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0034	PERVIOUS	A			
5.2076	IMPERVIOUS	A			

Comment:

Manual Basin: D

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 23.7000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.6941 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.8584	IMPERVIOUS	A			
3.8357	PERVIOUS	A			

Comment:

Manual Basin: X

Scenario: Existing Conditions - Initial Improvements
Node: EX-POND-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 57.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 9.6866 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
7.3404	IMPERVIOUS	A			
2.3462	PERVIOUS	A			

Comment:

Manual Basin: H

Scenario: Existing Conditions - Initial Improvements
Node: EX-HW-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 8.4217 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
4.0504	IMPERVIOUS	A			
4.3714	PERVIOUS	A			

Comment:

Manual Basin: C

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 13.9000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 7.1695 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2237	IMPERVIOUS	A			
4.9459	PERVIOUS	A			

Comment:

Manual Basin: W

Scenario: Existing Conditions - Initial Improvements
Node: EX-HW-18/EX-HW-19/EX-HW-20
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.8693 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0856	PERVIOUS	A			
0.7837	IMPERVIOUS	A			

Comment:

Manual Basin: V

Scenario: Existing Conditions - Initial Improvements
Node: P-HW-01/P-HW-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 13.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.7264 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.0457	IMPERVIOUS	A			
0.6807	PERVIOUS	A			

Comment:

Manual Basin: I

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-06/EX-ES-07/EX-ES-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 28.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.6318 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5194	IMPERVIOUS	A			
2.1124	PERVIOUS	A			

Comment:

Manual Basin: B

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-04
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 22.3000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 7.0795 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2018	IMPERVIOUS	A			
4.8777	PERVIOUS	A			

Comment:

Manual Basin: U

Scenario: Existing Conditions - Initial Improvements
Node: EX-POND-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 11.8000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.7474 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.3413	PERVIOUS	A			
0.4062	IMPERVIOUS	A			

Comment:

Manual Basin: R

Scenario: Existing Conditions - Initial Improvements
Node: EX-HW-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.1927 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.8931	IMPERVIOUS	A			
0.2996	PERVIOUS	A			

Comment:

Manual Basin: J

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.2025 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4226	IMPERVIOUS	A			
0.7798	PERVIOUS	A			

Comment:

Manual Basin: S

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-07
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.3643 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0012	PERVIOUS	A			
0.3631	IMPERVIOUS	A			

Comment:

Manual Basin: Q

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-12
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 0.1956 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0014	PERVIOUS	A			
0.1942	IMPERVIOUS	A			

Comment:

Manual Basin: P

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-11
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.2125 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2125	IMPERVIOUS	A			

Comment:

Manual Basin: T

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.5073 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4935	IMPERVIOUS	A			
0.0137	PERVIOUS	A			

Comment:

Manual Basin: K

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-13
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.8905 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5879	PERVIOUS	A			
0.3026	IMPERVIOUS	A			

Comment:

Manual Basin: M

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 4.0092 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.9524	IMPERVIOUS	A			
0.0568	PERVIOUS	A			

Comment:

Manual Basin: O

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 0.0964 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0938	IMPERVIOUS	A			
0.0026	PERVIOUS	A			

Comment:

Manual Basin: A

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-06
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 16.8000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 6.0020 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.8652	IMPERVIOUS	A			
4.1368	PERVIOUS	A			

Comment:

Manual Basin: L

Scenario: Existing Conditions - Initial Improvements
Node: EX-HW-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.3716 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.8421	IMPERVIOUS	A			
0.5295	PERVIOUS	A			

Comment:

Manual Basin: Y

Scenario: Existing Conditions - Initial Improvements
Node: EX-IN-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.2837 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2834	IMPERVIOUS	A			
0.0002	PERVIOUS	A			

Comment:

Manual Basin: N

Scenario: Existing Conditions - Initial Improvements
Node: EX-POND-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.6282 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5742	IMPERVIOUS	A			
5.0541	PERVIOUS	A			

Comment:

Manual Basin: Z

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-17/EX-ES-19/EX-ES-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 1.2638 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.6755	IMPERVIOUS	A			
0.5883	PERVIOUS	A			

Comment:

Manual Basin: AA

Scenario: Existing Conditions - Initial Improvements
Node: EX-ES-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.9000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.0121 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.7698	IMPERVIOUS	A			
2.2422	PERVIOUS	A			

Comment:

Manual Basin: F

Scenario: Future Conditions - Existing Infrastructure
Node: EX-HW-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.5515 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5023	PERVIOUS	A			
1.0492	IMPERVIOUS	A			

Comment:

Manual Basin: E

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 18.8000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 4.9854 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5466	IMPERVIOUS	A			
3.4388	PERVIOUS	A			

Comment:

Manual Basin: G

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-03/EX-ES-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 6.2878 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9692	PERVIOUS	A			
5.3186	IMPERVIOUS	A			

Comment:

Manual Basin: D

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.1000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 4.9480 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5895	IMPERVIOUS	A			
3.3585	PERVIOUS	A			

Comment:

Manual Basin: X

Scenario: Future Conditions - Existing Infrastructure
Node: EX-POND-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 57.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 9.8275 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
7.4000	IMPERVIOUS	A			
2.4275	PERVIOUS	A			

Comment:

Manual Basin: H

Scenario: Future Conditions - Existing Infrastructure
Node: EX-HW-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 8.4824 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
6.7170	IMPERVIOUS	A			
1.7654	PERVIOUS	A			

Comment:

Manual Basin: C

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.1000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 3.9496 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.2630	IMPERVIOUS	A			
2.6867	PERVIOUS	A			

Comment:

Manual Basin: W

Scenario: Future Conditions - Existing Infrastructure
Node: EX-HW-18/EX-HW-19/EX-HW-20
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.8693 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0854	PERVIOUS	A			
0.7839	IMPERVIOUS	A			

Comment:

Manual Basin: V

Scenario: Future Conditions - Existing Infrastructure
Node: EX-HW-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 14.4000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 2.9888 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1645	IMPERVIOUS	A			
0.8242	PERVIOUS	A			

Comment:

Manual Basin: B

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-04
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 3.9678 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.2779	IMPERVIOUS	A			
2.6899	PERVIOUS	A			

Comment:

Manual Basin: I

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-06/EX-ES-07/EX-ES-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 28.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.1910 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.7083	IMPERVIOUS	A			
1.4826	PERVIOUS	A			

Comment:

Manual Basin: U

Scenario: Future Conditions - Existing Infrastructure
Node: EX-POND-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 18.6000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.8435 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4073	PERVIOUS	A			
0.4362	IMPERVIOUS	A			

Comment:

Manual Basin: A

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-06
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 29.6000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 9.9303 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0910	IMPERVIOUS	A			
6.8393	PERVIOUS	A			

Comment:

Manual Basin: R

Scenario: Future Conditions - Existing Infrastructure
Node: EX-HW-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 2.7597 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1652	IMPERVIOUS	A			
0.5945	PERVIOUS	A			

Comment:

Manual Basin: J

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.7624 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2978	IMPERVIOUS	A			
0.4646	PERVIOUS	A			

Comment:

Manual Basin: S

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-07
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.3643 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0012	PERVIOUS	A			
0.3631	IMPERVIOUS	A			

Comment:

Manual Basin: Q

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-12
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.1956 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0014	PERVIOUS	A			
0.1942	IMPERVIOUS	A			

Comment:

Manual Basin: P

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-11
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.2125 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2125	IMPERVIOUS	A			

Comment:

Manual Basin: T

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area: 0.5073 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4960	IMPERVIOUS	A			
0.0113	PERVIOUS	A			

Comment:

Manual Basin: K

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-13
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.6412 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2469	IMPERVIOUS	A			
0.3944	PERVIOUS	A			

Comment:

Manual Basin: M

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 4.0092 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.9517	IMPERVIOUS	A			
0.0575	PERVIOUS	A			

Comment:

Manual Basin: O

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.0963 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0963	IMPERVIOUS	A			

Comment:

Manual Basin: L

Scenario: Future Conditions - Existing Infrastructure
Node: EX-HW-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.4002 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9390	IMPERVIOUS	A			
0.4612	PERVIOUS	A			

Comment:

Manual Basin: Z

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-17/EX-ES-19/EX-ES-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0

Area: 1.2638 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.6791	IMPERVIOUS	A			
0.5847	PERVIOUS	A			

Comment:

Manual Basin: Y

Scenario: Future Conditions - Existing Infrastructure
Node: EX-IN-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.2837 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2834	IMPERVIOUS	A			
0.0002	PERVIOUS	A			

Comment:

Manual Basin: N

Scenario: Future Conditions - Existing Infrastructure
Node: EX-POND-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.6282 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5838	IMPERVIOUS	A			
5.0445	PERVIOUS	A			

Comment:

Manual Basin: AA

Scenario: Future Conditions - Existing Infrastructure
Node: EX-ES-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 11.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.0826 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0482	IMPERVIOUS	A			
2.0344	PERVIOUS	A			

Comment:

Manual Basin: F

Scenario: Future Conditions - Initial Improvements
Node: EX-HW-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.5515 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5023	PERVIOUS	A			
1.0492	IMPERVIOUS	A			

Comment:

Manual Basin: E

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 18.8000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 4.9854 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5466	IMPERVIOUS	A			
3.4388	PERVIOUS	A			

Comment:

Manual Basin: G

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-03/EX-ES-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 6.2878 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9692	PERVIOUS	A			
5.3186	IMPERVIOUS	A			

Comment:

Manual Basin: D

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.1000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 4.9480 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.5895	IMPERVIOUS	A			
3.3585	PERVIOUS	A			

Comment:

Manual Basin: X

Scenario: Future Conditions - Initial Improvements
Node: EX-POND-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 57.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 9.8275 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
7.4000	IMPERVIOUS	A			
2.4275	PERVIOUS	A			

Comment:

Manual Basin: H

Scenario: Future Conditions - Initial Improvements
Node: EX-HW-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 8.4824 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
6.7170	IMPERVIOUS	A			
1.7654	PERVIOUS	A			

Comment:

Manual Basin: C

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-03
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.1000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 3.9496 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.2630	IMPERVIOUS	A			
2.6867	PERVIOUS	A			

Comment:

Manual Basin: W

Scenario: Future Conditions - Initial Improvements
Node: EX-HW-18/EX-HW-19/EX-HW-20
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.8693 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.0854	PERVIOUS	A			
0.7839	IMPERVIOUS	A			

Comment:

Manual Basin: V

Scenario: Future Conditions - Initial Improvements
Node: P-HW-01/P-HW-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 14.4000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.9888 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1645	IMPERVIOUS	A			
0.8242	PERVIOUS	A			

Comment:

Manual Basin: B

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-04
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 3.9678 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
1.2779	IMPERVIOUS	A			
2.6899	PERVIOUS	A			

Comment:

Manual Basin: I

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-06/EX-ES-07/EX-ES-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 28.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.1910 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.7083	IMPERVIOUS	A			
1.4826	PERVIOUS	A			

Comment:

Manual Basin: U

Scenario: Future Conditions - Initial Improvements
Node: EX-POND-02
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 18.6000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 0.8435 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4073	PERVIOUS	A			
0.4362	IMPERVIOUS	A			

Comment:

Manual Basin: A

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-06
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 29.6000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 9.9303 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0910	IMPERVIOUS	A			
6.8393	PERVIOUS	A			

Comment:

Manual Basin: R

Scenario: Future Conditions - Initial Improvements
Node: EX-HW-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.7597 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.1652	IMPERVIOUS	A			
0.5945	PERVIOUS	A			

Comment:

Manual Basin: J

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.7624 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2978	IMPERVIOUS	A			
0.4646	PERVIOUS	A			

Comment:

Manual Basin: S

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-07
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.3643 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0012	PERVIOUS	A			
0.3631	IMPERVIOUS	A			

Comment:

Manual Basin: Q

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-12
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 0.1956 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0014	PERVIOUS	A			
0.1942	IMPERVIOUS	A			

Comment:

Manual Basin: P

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-11
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.2125 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2125	IMPERVIOUS	A			

Comment:

Manual Basin: T

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-05
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.5073 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.4960	IMPERVIOUS	A			
0.0113	PERVIOUS	A			

Comment:

Manual Basin: K

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-13
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 0.6412 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.2469	IMPERVIOUS	A			
0.3944	PERVIOUS	A			

Comment:

Manual Basin: M

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-08
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 4.0092 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.9517	IMPERVIOUS	A			
0.0575	PERVIOUS	A			

Comment:

Manual Basin: O

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 0.0963 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.0963	IMPERVIOUS	A			

Comment:

Manual Basin: L

Scenario: Future Conditions - Initial Improvements
Node: EX-HW-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.4002 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.9390	IMPERVIOUS	A			
0.4612	PERVIOUS	A			

Comment:

Manual Basin: Z

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-17/EX-ES-19/EX-ES-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 12.5000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 1.2638 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.6791	IMPERVIOUS	A			
0.5847	PERVIOUS	A			

Comment:

Manual Basin: Y

Scenario: Future Conditions - Initial Improvements
Node: EX-IN-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 2.2837 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
2.2834	IMPERVIOUS	A			
0.0002	PERVIOUS	A			

Comment:

Manual Basin: N

Scenario: Future Conditions - Initial Improvements
Node: EX-POND-01
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484
Peaking Factor: 484.0
Area: 5.6282 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
0.5838	IMPERVIOUS	A			
5.0445	PERVIOUS	A			

Comment:

Manual Basin: AA

Scenario: Future Conditions - Initial Improvements
Node: EX-ES-09
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 11.2000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH484

Peaking Factor: 484.0
Area: 5.0826 ac

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coefficient Zone	Reference ET Station
3.0482	IMPERVIOUS	A			
2.0344	PERVIOUS	A			

Comment:

Node Inputs and Max Conditions

Node: EX-ES-01

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.06 ft
Warning Stage: 18.50 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0005	22
17.00	0.0049	215
17.50	0.1353	5896
18.00	0.3618	15761
18.50	0.5945	25895
19.00	0.9921	43216
19.50	1.3569	59107
20.00	1.6197	70554
20.50	1.8237	79440
21.00	2.0161	87821
21.50	2.0277	88329
22.00	2.0277	88329

Comment: Warning Stage: Edge Nearest Pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-01	Existing 10-year, 24-hour	18.50	18.79	0.0004	10.62	3.50	36028
EX-ES-01	Existing 100-year, 24-hour	18.50	19.53	0.0005	20.27	3.80	59892
EX-ES-01	Existing	18.50	19.07	0.0004	13.92	3.71	45519

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	25-year, 24-hour						
EX-ES-01	Existing 25-year, 8-hour	18.50	18.96	-0.0005	19.41	3.75	41731
EX-ES-01	Existing 5-year, 24-hour	18.50	18.61	0.0004	8.64	3.25	29751

Node: EX-ES-03/EX-ES-05

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 18.00 ft

Comment: Warning Stage: Lowest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-03/EX-ES-05	Existing 10-year, 24-hour	18.00	18.86	0.0018	34.52	30.12	14321
EX-ES-03/EX-ES-05	Existing 100-year, 24-hour	18.00	20.18	0.0018	63.64	48.92	14321
EX-ES-03/EX-ES-05	Existing 25-year, 24-hour	18.00	19.27	0.0018	44.78	37.84	14321
EX-ES-03/EX-ES-05	Existing 25-year, 8-hour	18.00	19.28	0.0018	75.76	58.99	14321
EX-ES-03/EX-ES-05	Existing 5-year, 24-hour	18.00	18.65	0.0018	28.07	24.92	14085

Node: EX-ES-06/EX-ES-07/EX-ES-08

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.00 ft
Warning Stage: 18.10 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-06/EX-ES-07/EX-ES-08	Existing 10-year, 24-hour	18.10	17.31	0.0009	53.01	42.35	41102
EX-ES-06/EX-ES-07/EX-ES-08	Existing 100-year, 24-hour	18.10	18.11	-0.0008	78.86	66.77	50214
EX-ES-06/EX-ES-07/EX-ES-08	Existing 25-year, 24-hour	18.10	17.68	-0.0007	62.31	52.00	45067
EX-ES-06/EX-ES-07/EX-ES-08	Existing 25-year, 8-hour	18.10	17.49	-0.0009	59.76	47.39	42976
EX-ES-06/EX-ES-07/EX-ES-08	Existing 5-year, 24-hour	18.10	17.01	0.0008	46.21	36.57	37035

Node: EX-ES-09

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.98 ft

Comment: Warning Stage: Low edge of pavement in infield
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-09	Existing 10-year, 24-hour	16.98	17.33	0.0008	41.07	36.70	20431
EX-ES-09	Existing 100-year, 24-hour	16.98	18.12	0.0006	71.80	60.55	23265
EX-ES-09	Existing 25-year, 24-hour	16.98	17.69	0.0007	53.12	46.77	21698
EX-ES-09	Existing 25-year, 8-hour	16.98	17.51	0.0007	56.38	49.06	21017
EX-ES-09	Existing 5-year, 24-hour	16.98	17.06	0.0008	32.63	26.89	19144

Node: EX-ES-10

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.02 ft
Warning Stage: 16.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.04	0.0002	11
15.50	0.0635	2765
16.00	0.1553	6767
16.50	0.2707	11791
17.00	0.3922	17084
17.50	0.5251	22872
18.00	0.6639	28919
18.50	0.7824	34083
19.00	0.8733	38042
19.50	0.9536	41538
20.00	1.0445	45497
20.50	1.1522	50188
21.00	1.2023	52374
21.50	1.2023	52374

Comment: Warning Stage: Lowest edge of pavement within infield
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-10	Existing 10-year, 24-hour	16.50	17.74	0.0010	35.70	23.19	25829
EX-ES-10	Existing 100-year, 24-hour	16.50	18.85	0.0008	53.61	27.68	36858
EX-ES-10	Existing 25-year, 24-hour	16.50	18.22	0.0010	42.81	26.07	31204
EX-ES-10	Existing 25-year, 8-hour	16.50	18.02	0.0010	46.77	25.99	29097
EX-ES-10	Existing 5-year, 24-hour	16.50	17.40	0.0010	30.51	19.16	21679

Node: EX-ES-13

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.28 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
15.59	0.0002	11
16.00	0.0020	86
16.50	0.2203	9596
17.00	0.3282	14298
17.50	0.3658	15933
18.00	0.3976	17321
18.50	0.4391	19128
19.00	0.4759	20731
19.50	0.5231	22786
20.00	0.5893	25670
20.50	0.8281	36073
21.00	0.8903	38782
21.50	0.8903	38782

Comment: Warning Stage: Elevation of nearest pavement
Desc: Mitered End Section
Stage areas for storage within basin

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-13	Existing 10-year, 24-hour	19.99	18.51	0.0005	22.64	22.30	19152
EX-ES-13	Existing 100-year, 24-hour	19.99	18.86	0.0004	36.21	35.99	20289
EX-ES-13	Existing 25-year, 24-hour	19.99	18.54	0.0004	27.77	27.55	19266
EX-ES-13	Existing 25-year, 8-hour	19.99	18.54	0.0005	28.76	27.31	19261
EX-ES-13	Existing 5-year, 24-hour	19.99	18.47	0.0006	18.53	17.97	19034

Node: EX-ES-16

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.89 ft
Warning Stage: 19.50 ft

Comment: Warning Stage: Nearest pavement elevation
Desc: Concrete Flared End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-16	Existing 10-year, 24-hour	19.50	18.97	0.0008	33.54	19.77	27768
EX-ES-16	Existing 100-year, 24-hour	19.50	20.04	0.0009	44.73	14.00	43227
EX-ES-16	Existing 25-year, 24-hour	19.50	19.26	0.0009	38.09	19.99	35825

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-16	Existing 25-year, 8-hour	19.50	19.18	0.0010	57.03	20.74	33589
EX-ES-16	Existing 5-year, 24-hour	19.50	18.78	-0.0009	32.76	18.63	19849

Node: EX-ES-17/EX-ES-19/EX-ES-21

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.14 ft
Warning Stage: 19.00 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-17/EX-ES-19/EX-ES-21	Existing 10-year, 24-hour	19.00	18.90	0.0007	40.01	33.28	18923
EX-ES-17/EX-ES-19/EX-ES-21	Existing 100-year, 24-hour	19.00	20.05	0.0008	43.57	21.09	33183
EX-ES-17/EX-ES-19/EX-ES-21	Existing 25-year, 24-hour	19.00	19.23	0.0009	50.66	33.52	26752
EX-ES-17/EX-ES-19/EX-ES-21	Existing 25-year, 8-hour	19.00	19.13	0.0010	78.49	35.84	24732
EX-ES-17/EX-ES-19/EX-ES-21	Existing 5-year, 24-hour	19.00	18.69	-0.0010	33.94	29.90	14849

Node: EX-HW-01

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.15 ft
Warning Stage: 18.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0002	11
17.00	0.0005	23
17.50	0.0119	516
18.00	0.0751	3271
18.50	0.2173	9467
19.00	0.4883	21269
19.50	0.8010	34890
20.00	0.8968	39064
20.50	0.8985	39139
21.00	0.8985	39139

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-01	Existing 10-year, 24-hour	18.00	18.80	-0.0010	6.96	4.83	16542
EX-HW-01	Existing 100-year, 24-hour	18.00	19.59	-0.0010	16.28	5.68	35667
EX-HW-01	Existing 25-year, 24-hour	18.00	19.10	-0.0010	9.91	5.34	23906
EX-HW-01	Existing 25-year, 8-hour	18.00	19.01	-0.0010	13.59	5.21	21501
EX-HW-01	Existing 5-year, 24-hour	18.00	18.62	-0.0010	5.80	4.33	12199

Node: EX-HW-02

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.63 ft
Warning Stage: 18.39 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-02	Existing 10-year, 24-hour	18.39	18.64	-0.0010	26.18	18.26	13281
EX-HW-02	Existing 100-year, 24-hour	18.39	20.15	0.0010	42.27	24.38	13281
EX-HW-02	Existing 25-year, 24-hour	18.39	19.19	-0.0010	32.65	20.34	13281
EX-HW-02	Existing 25-year, 8-hour	18.39	19.17	0.0010	51.03	21.33	13281
EX-HW-02	Existing 5-year, 24-hour	18.39	18.25	-0.0010	21.83	16.53	12547

Node: EX-HW-03

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.41 ft
Warning Stage: 18.48 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-03	Existing 10-year, 24-hour	18.48	17.58	0.0010	54.08	51.45	15627
EX-HW-03	Existing 100-year, 24-hour	18.48	18.46	0.0010	96.49	89.18	26682
EX-HW-03	Existing 25-year, 24-hour	18.48	17.95	0.0010	68.94	64.98	20828
EX-HW-03	Existing 25-year, 8-hour	18.48	17.83	0.0010	84.49	79.30	18819
EX-HW-03	Existing 5-year, 24-hour	18.48	17.33	0.0010	44.46	43.03	12041

Node: EX-HW-04

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.73 ft
Warning Stage: 17.77 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-04	Existing 10-year, 24-hour	17.77	17.53	0.0009	54.45	33.55	59315
EX-HW-04	Existing 100-year, 24-hour	17.77	18.45	0.0010	91.95	48.38	69957
EX-HW-04	Existing 25-year, 24-hour	17.77	17.92	0.0010	67.95	39.09	64261

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-04	Existing 25-year, 8-hour	17.77	17.72	0.0010	82.25	42.90	61881
EX-HW-04	Existing 5-year, 24-hour	17.77	17.24	0.0010	46.13	29.34	52879

Node: EX-HW-05

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.63 ft
Warning Stage: 17.50 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-05	Existing 10-year, 24-hour	17.50	17.52	0.0010	33.55	22.00	35679
EX-HW-05	Existing 100-year, 24-hour	17.50	18.45	-0.0010	48.38	25.95	41069
EX-HW-05	Existing 25-year, 24-hour	17.50	17.91	0.0010	39.09	22.27	38760
EX-HW-05	Existing 25-year, 8-hour	17.50	17.71	0.0010	42.90	23.98	36986
EX-HW-05	Existing 5-year, 24-hour	17.50	17.20	0.0010	29.34	21.87	31768

Node: EX-HW-06

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.45 ft
Warning Stage: 17.55 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-06	Existing 10-year, 24-hour	17.55	17.33	-0.0010	22.00	35.48	5807
EX-HW-06	Existing 100-year, 24-hour	17.55	18.12	-0.0010	25.95	48.44	6389
EX-HW-06	Existing 25-year, 24-hour	17.55	17.69	0.0010	22.27	39.34	6143
EX-HW-06	Existing 25-year, 8-hour	17.55	17.50	0.0010	23.98	38.40	5978
EX-HW-06	Existing 5-year, 24-hour	17.55	17.03	0.0010	21.87	30.57	5291

Node: EX-HW-07

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.01 ft
Warning Stage: 17.68 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-07	Existing 10-year, 24-hour	17.68	17.32	0.0010	42.00	28.94	28775
EX-HW-07	Existing 100-year, 24-hour	17.68	18.12	0.0010	56.86	35.32	35858
EX-HW-07	Existing 25-year, 24-hour	17.68	17.69	0.0010	46.46	30.74	32475
EX-HW-07	Existing 25-year, 8-hour	17.68	17.50	0.0010	45.77	30.94	30719
EX-HW-07	Existing 5-year, 24-hour	17.68	17.03	0.0010	37.20	27.40	26276

Node: EX-HW-08

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.73 ft
Warning Stage: 17.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.78	0.0002	11
17.00	0.0063	273
17.50	0.0642	2797
18.00	0.1642	7154
18.50	0.4352	18956
19.00	0.8827	38451
19.50	1.8748	81667
20.00	2.0593	89704
20.50	2.1601	94093
21.00	2.1888	95345
21.50	2.1888	95345

Comment: Warning Stage: Edge of lowest pavement
Desc: Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-08	Existing 10-year, 24-hour	17.00	18.02	0.0008	12.39	11.45	7624
EX-HW-08	Existing 100-year, 24-hour	17.00	18.94	0.0010	22.69	10.78	36189
EX-HW-08	Existing 25-year, 24-hour	17.00	18.43	0.0008	16.02	12.29	17279
EX-HW-08	Existing 25-year, 8-hour	17.00	18.45	0.0007	27.28	14.68	17722
EX-HW-08	Existing 5-year, 24-hour	17.00	17.67	-0.0008	10.10	9.97	4288

Node: EX-HW-10

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.63 ft
Warning Stage: 19.08 ft

Stage [ft]	Area [ac]	Area [ft2]
15.82	0.0005	22
16.00	0.0042	183
16.50	0.0309	1345
17.00	0.0630	2743
17.50	0.0988	4303
18.00	0.1299	5659
18.50	0.1729	7531
19.00	0.2178	9489
19.50	0.2971	12942
20.00	0.5742	25013
20.50	1.1087	48294
21.00	1.3623	59343
21.50	1.3717	59750
22.00	1.3717	59750

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-10	Existing 10-year, 24-hour	19.08	19.00	0.0009	17.62	15.65	9531
EX-HW-10	Existing 100-year, 24-hour	19.08	19.82	0.0009	24.49	18.41	20753
EX-HW-10	Existing 25-year, 24-hour	19.08	19.26	0.0009	19.95	16.17	11290
EX-HW-10	Existing 25-year, 8-hour	19.08	19.18	0.0008	24.85	16.20	10768
EX-HW-10	Existing 5-year, 24-hour	19.08	18.82	0.0009	15.96	15.34	8803

Node: EX-HW-12

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.06 ft
Warning Stage: 19.01 ft

Comment: Warning Stage: Nearest edge of pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-12	Existing 10-year, 24-hour	19.01	15.96	0.0006	69.43	69.42	2877
EX-HW-12	Existing 100-year, 24-hour	19.01	16.42	0.0008	114.02	114.02	3295
EX-HW-12	Existing 25-year, 24-hour	19.01	16.14	0.0008	85.97	85.97	3048

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-12	Existing 25-year, 8-hour	19.01	16.01	0.0008	73.37	73.36	2904
EX-HW-12	Existing 5-year, 24-hour	19.01	15.82	0.0007	58.73	58.72	2762

Node: EX-HW-18/EX-HW-19/EX-HW-20

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.01 ft
Warning Stage: 16.01 ft

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-18/EX-HW-19/EX-HW-20	Existing 10-year, 24-hour	16.01	17.03	0.0010	8.80	8.00	3402
EX-HW-18/EX-HW-19/EX-HW-20	Existing 100-year, 24-hour	16.01	17.48	0.0010	16.01	14.89	3689
EX-HW-18/EX-HW-19/EX-HW-20	Existing 25-year, 24-hour	16.01	17.21	0.0010	10.40	9.43	3519
EX-HW-18/EX-HW-19/EX-HW-20	Existing 25-year, 8-hour	16.01	17.05	0.0010	15.17	13.70	3416
EX-HW-18/EX-HW-19/EX-HW-20	Existing 5-year, 24-hour	16.01	16.88	0.0010	8.73	7.99	3312

Node: EX-HW-21

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.25 ft

Stage [ft]	Area [ac]	Area [ft2]
15.20	0.0002	11
15.50	0.0011	49
16.00	0.0222	968
16.50	0.2850	12415
17.00	0.7503	32684
17.50	2.0544	89488
18.00	2.6973	117492
18.50	2.7047	117815
19.00	2.7067	117903
19.50	2.7266	118769
20.00	2.7266	118769

Comment: Warning Stage: Nearest pavement low point

Buried Pipe

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-21	Existing 10-year, 24-hour	16.25	17.02	0.0010	22.72	20.90	34540
EX-HW-21	Existing 100-year, 24-hour	16.25	17.47	0.0010	42.07	34.51	86077
EX-HW-21	Existing 25-year, 24-hour	16.25	17.20	0.0010	29.47	26.22	55707
EX-HW-21	Existing 25-year, 8-hour	16.25	17.04	0.0010	27.45	21.55	37045
EX-HW-21	Existing 5-year, 24-hour	16.25	16.87	0.0010	18.30	17.04	27490

Node: EX-HW-22

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.18 ft

Comment: Warning Stage: Nearest pavement low point

Buried Pipe

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-22	Existing 10-year, 24-hour	16.18	17.00	0.0006	27.92	27.85	7280
EX-HW-22	Existing 100-year, 24-hour	16.18	17.46	0.0007	47.67	47.62	7914
EX-HW-22	Existing 25-year, 24-hour	16.18	17.19	0.0005	35.41	35.36	7537
EX-HW-22	Existing 25-year, 8-hour	16.18	17.03	0.0009	28.75	28.68	7309
EX-HW-22	Existing 5-year, 24-hour	16.18	16.86	0.0008	22.69	22.63	7094

Node: EX-IN-01

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.81 ft
Warning Stage: 18.29 ft

Stage [ft]	Area [ac]	Area [ft2]
13.81	0.0001	6
18.29	0.0001	6

Comment: Rim Elev: 18.29
Sump Elev: 13.81
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-01	Existing 10-year, 24-hour	18.29	17.86	-0.0012	21.81	21.82	560
EX-IN-01	Existing 100-year, 24-hour	18.29	18.75	-0.0011	25.77	25.76	560
EX-IN-01	Existing 25-year, 24-hour	18.29	18.20	-0.0013	23.23	23.24	560
EX-IN-01	Existing 25-year, 8-hour	18.29	18.11	-0.0011	24.14	24.15	561
EX-IN-01	Existing 5-year, 24-hour	18.29	17.62	0.0010	20.34	20.35	560

Node: EX-IN-02

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.27 ft
Warning Stage: 17.48 ft

Stage [ft]	Area [ac]	Area [ft2]
17.28	0.0002	11
17.50	0.0845	3679
18.00	0.6846	29822
18.50	1.4468	63023
19.00	2.8185	122775
19.50	3.8986	169821
20.00	4.3355	188853
20.50	4.7415	206540
21.00	5.4269	236394
21.50	5.6782	247342
22.00	5.6782	247342

Comment: Rim Elev: 17.48
Sump Elev: 15.27
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-02	Existing 10-year, 24-hour	17.48	18.45	-0.0013	18.00	4.36	59649
EX-IN-02	Existing 100-year, 24-hour	17.48	19.19	-0.0018	40.95	5.22	140406
EX-IN-02	Existing 25-year, 24-hour	17.48	18.74	-0.0016	25.81	4.55	92213
EX-IN-02	Existing 25-year, 8-hour	17.48	18.60	-0.0030	25.60	4.61	75241
EX-IN-02	Existing 5-year, 24-hour	17.48	18.23	-0.0016	13.34	4.43	44894

Node: EX-IN-03

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.07 ft
Warning Stage: 16.34 ft

Stage [ft]	Area [ac]	Area [ft2]
16.28	0.0005	22
16.50	0.1102	4798
17.00	0.7464	32512
17.50	1.3369	58235
18.00	1.9506	84970
18.50	2.9828	129929
19.00	4.4197	192522
19.50	5.2100	226948
20.00	5.6015	244001
20.50	6.1582	268250
21.00	6.9604	303193
21.50	7.1496	311438

Stage [ft]	Area [ac]	Area [ft2]
22.00	7.1496	311438

Comment: Rim Elev: 16.34
Sump Elev: 14.07
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-03	Existing 10-year, 24-hour	16.34	17.72	-0.0016	25.03	4.29	69891
EX-IN-03	Existing 100-year, 24-hour	16.34	18.70	-0.0037	56.89	5.65	155342
EX-IN-03	Existing 25-year, 24-hour	16.34	18.12	-0.0020	35.92	4.91	96149
EX-IN-03	Existing 25-year, 8-hour	16.34	17.88	-0.0035	43.36	4.90	78541
EX-IN-03	Existing 5-year, 24-hour	16.34	17.43	-0.0012	18.53	3.91	54836

Node: EX-IN-04

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.40 ft
Warning Stage: 17.02 ft

Stage [ft]	Area [ac]	Area [ft2]
17.02	0.0002	11
17.50	0.1037	4519
18.00	0.4584	19968
18.50	1.2198	53136
19.00	2.3458	102183
19.50	3.4985	152393
20.00	4.5256	197137
20.50	5.2728	229681
21.00	5.8744	255889

Stage [ft]	Area [ac]	Area [ft2]
21.50	6.5002	283150
22.00	6.9544	302935
22.50	7.0596	307516
23.00	7.0596	307516

Comment: Rim Elev: 17.02
Sump Elev: 14.40
Desc: Rectangular Junction Structure NF

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-04	Existing 10-year, 24-hour	17.02	18.38	0.0010	22.41	9.44	44931
EX-IN-04	Existing 100-year, 24-hour	17.02	19.22	0.0010	51.38	8.66	124054
EX-IN-04	Existing 25-year, 24-hour	17.02	18.74	0.0010	32.27	9.27	76226
EX-IN-04	Existing 25-year, 8-hour	17.02	18.54	-0.0010	32.39	9.54	57428
EX-IN-04	Existing 5-year, 24-hour	17.02	18.07	-0.0010	16.54	9.36	24821

Node: EX-IN-05

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.19 ft
Warning Stage: 20.02 ft

Stage [ft]	Area [ac]	Area [ft2]
19.60	0.0002	11
20.00	0.0049	215
20.50	0.2425	10565
21.00	0.5058	22033
21.50	0.5058	22033

Comment: Rim Elev: 20.02
Sump Elev: 16.19
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-05	Existing 10-year, 24-hour	20.02	19.52	0.0010	5.69	5.68	189
EX-IN-05	Existing 100-year, 24-hour	20.02	20.23	-0.0010	7.73	7.18	4938
EX-IN-05	Existing 25-year, 24-hour	20.02	19.85	-0.0010	6.45	6.44	189
EX-IN-05	Existing 25-year, 8-hour	20.02	20.20	-0.0010	8.79	7.34	4367
EX-IN-05	Existing 5-year, 24-hour	20.02	19.23	-0.0010	4.95	4.93	189

Node: EX-IN-06

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.96 ft
Warning Stage: 18.63 ft

Stage [ft]	Area [ac]	Area [ft2]
18.79	0.0002	11
19.00	0.0282	1226
19.50	0.4574	19925
20.00	1.7042	74233
20.50	3.1715	138149
21.00	4.3747	190564
21.50	4.8158	209778
22.00	5.4498	237395
22.50	5.9811	260536
23.00	5.9856	260732
23.50	5.9856	260732

Comment: Rim Elev: 18.63
Sump Elev: 15.96
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-06	Existing 10-year, 24-hour	18.63	19.66	-0.0029	20.34	12.51	37339
EX-IN-06	Existing 100-year, 24-hour	18.63	20.35	0.0010	46.43	10.97	118596
EX-IN-06	Existing 25-year, 24-hour	18.63	19.94	-0.0010	29.24	12.76	67801
EX-IN-06	Existing 25-year, 8-hour	18.63	19.83	-0.0015	32.70	13.02	56102
EX-IN-06	Existing 5-year, 24-hour	18.63	19.39	-0.0028	15.05	11.27	15961

Node: EX-IN-07

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
16.39	0.0001	6
19.99	0.0001	6

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Roof drain

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning	Max Stage	Min/Max	Max Total	Max Total	Max Surface

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-07	Existing 10-year, 24-hour	19.99	18.64	0.0010	2.24	2.23	100
EX-IN-07	Existing 100-year, 24-hour	19.99	19.03	-0.0010	3.97	3.96	100
EX-IN-07	Existing 25-year, 24-hour	19.99	18.76	-0.0010	2.86	2.85	100
EX-IN-07	Existing 25-year, 8-hour	19.99	19.17	-0.0010	5.01	4.92	100
EX-IN-07	Existing 5-year, 24-hour	19.99	18.55	-0.0010	1.85	1.83	100

Node: EX-IN-08

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.05 ft
Warning Stage: 19.11 ft

Comment: Rim Elev: 19.11
Desc: Upstream end of trench drain

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-08	Existing 10-year, 24-hour	19.11	19.55	0.0010	24.53	29.78	17836
EX-IN-08	Existing 100-year, 24-hour	19.11	20.05	0.0010	43.51	43.86	33871
EX-IN-08	Existing 25-year, 24-hour	19.11	19.55	0.0010	31.27	35.45	21392
EX-IN-08	Existing	19.11	19.66	-0.0010	54.73	55.60	21492

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	25-year, 8-hour						
EX-IN-08	Existing 5-year, 24-hour	19.11	19.54	0.0010	20.24	29.72	17552

Node: EX-IN-09

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.95 ft
Warning Stage: 19.00 ft

Comment: Rim Elev: 19.00
Sump Elev: 17.53
Desc: Upstream end of trench drain

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-09	Existing 10-year, 24-hour	19.00	19.31	0.0010	14.10	17.53	11520
EX-IN-09	Existing 100-year, 24-hour	19.00	20.05	0.0010	24.91	23.66	29809
EX-IN-09	Existing 25-year, 24-hour	19.00	19.35	0.0010	17.94	28.99	14931
EX-IN-09	Existing 25-year, 8-hour	19.00	19.48	0.0010	31.49	52.92	16261
EX-IN-09	Existing 5-year, 24-hour	19.00	19.26	-0.0012	11.65	13.11	10087

Node: EX-IN-10

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
20.00	0.0002	11
20.50	0.0864	3765
21.00	0.0963	4193
21.50	0.0963	4193

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-10	Existing 10-year, 24-hour	19.99	19.52	0.0010	0.58	0.58	100
EX-IN-10	Existing 100-year, 24-hour	19.99	20.24	-0.0010	1.04	1.22	1839
EX-IN-10	Existing 25-year, 24-hour	19.99	19.86	-0.0010	0.75	0.74	100
EX-IN-10	Existing 25-year, 8-hour	19.99	20.22	-0.0010	1.30	1.50	1641
EX-IN-10	Existing 5-year, 24-hour	19.99	19.23	-0.0010	0.48	0.49	100

Node: EX-IN-11

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.42 ft
Warning Stage: 20.28 ft

Stage [ft]	Area [ac]	Area [ft2]
20.19	0.0005	22
20.50	0.1610	7014
21.00	0.2115	9215
21.50	0.2115	9215

Comment: Rim Elev: 20.28
Sump Elev: 16.42
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-11	Existing 10-year, 24-hour	20.28	20.18	-0.0010	2.33	2.43	113
EX-IN-11	Existing 100-year, 24-hour	20.28	20.62	0.0010	2.96	2.78	7523
EX-IN-11	Existing 25-year, 24-hour	20.28	20.39	0.0010	2.61	2.79	4456
EX-IN-11	Existing 25-year, 8-hour	20.28	20.48	0.0010	3.17	2.91	6605
EX-IN-11	Existing 5-year, 24-hour	20.28	19.84	0.0010	2.02	2.00	113

Node: EX-IN-12

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.46 ft
Warning Stage: 20.06 ft

Stage [ft]	Area [ac]	Area [ft2]
19.99	0.0002	11
20.00	0.0005	22
20.50	0.1447	6304
21.00	0.1945	8474
21.50	0.1945	8474

Comment: Rim Elev: 20.06
Sump Elev: 16.457
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-12	Existing 10-year, 24-hour	20.06	20.22	-0.0012	1.20	1.78	2838
EX-IN-12	Existing 100-year, 24-hour	20.06	20.65	-0.0014	2.13	2.10	6935
EX-IN-12	Existing 25-year, 24-hour	20.06	20.43	-0.0016	1.53	2.19	5382
EX-IN-12	Existing 25-year, 8-hour	20.06	20.51	-0.0017	2.93	2.34	6330
EX-IN-12	Existing 5-year, 24-hour	20.06	19.89	0.0010	0.99	0.96	100

Node: EX-POND-01

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.26 ft
Warning Stage: 19.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.26	0.0002	11
15.50	0.0514	2238
16.00	0.8113	35341
16.50	1.0657	46423
17.00	1.1284	49155
17.50	1.1771	51275
18.00	1.2245	53340
18.50	1.2692	55287
19.00	1.3171	57375
19.50	1.3794	60086
20.00	1.7135	74642

Stage [ft]	Area [ac]	Area [ft2]
20.50	2.8926	126002
21.00	4.3342	188799
21.50	5.2224	227486
22.00	5.4948	239353
22.50	5.5268	240746
23.00	5.5439	241494
23.50	5.5639	242365
24.00	5.5816	243133
24.50	5.5888	243448
25.00	5.5947	243705
25.50	5.5964	243780
26.00	5.6028	244056
26.50	5.6028	244056

Comment: Initial Stage: Pond Bottom
Warning Stage: Top of Pond

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01	Existing 10-year, 24-hour	19.50	18.40	0.0010	47.75	7.53	54885
EX-POND-01	Existing 100-year, 24-hour	19.50	20.05	0.0010	58.82	5.23	79830
EX-POND-01	Existing 25-year, 24-hour	19.50	19.09	0.0009	57.30	7.74	57857
EX-POND-01	Existing 25-year, 8-hour	19.50	18.59	0.0009	58.80	7.67	55680
EX-POND-01	Existing 5-year, 24-hour	19.50	18.27	0.0008	39.78	7.32	54376

Node: EX-POND-01-GW

Scenario: Existing Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.26 ft
Warning Stage: 11.26 ft

Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.26
0	0	0	72.0000	10.26

Comment:

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01-GW	Existing 10-year, 24-hour	11.26	10.26	0.0000	7.53	0.00	0
EX-POND-01-GW	Existing 100-year, 24-hour	11.26	10.26	0.0000	5.23	0.00	0
EX-POND-01-GW	Existing 25-year, 24-hour	11.26	10.26	0.0000	7.74	0.00	0
EX-POND-01-GW	Existing 25-year, 8-hour	11.26	10.26	0.0000	7.67	0.00	0
EX-POND-01-GW	Existing 5-year, 24-hour	11.26	10.26	0.0000	7.32	0.00	0

Node: EX-POND-02

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.52 ft
Warning Stage: 16.99 ft

Stage [ft]	Area [ac]	Area [ft2]
13.52	0.0002	11
14.00	0.0235	1022
14.50	0.0575	2507
15.00	0.0831	3620
15.50	0.1027	4475
16.00	0.1210	5272
16.50	0.1410	6143
17.00	0.1875	8166

Stage [ft]	Area [ac]	Area [ft2]
17.50	0.4386	19107
18.00	0.5075	22109
18.50	0.5498	23948
19.00	0.6584	28682
19.50	0.7469	32534
20.00	0.7469	32534

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02	Existing 10-year, 24-hour	16.99	17.06	-0.0010	42.78	42.70	9607
EX-POND-02	Existing 100-year, 24-hour	16.99	17.49	-0.0008	67.52	67.48	19027
EX-POND-02	Existing 25-year, 24-hour	16.99	17.30	-0.0010	52.45	52.43	14870
EX-POND-02	Existing 25-year, 8-hour	16.99	17.18	-0.0010	47.85	47.82	12199
EX-POND-02	Existing 5-year, 24-hour	16.99	16.82	-0.0010	36.99	36.83	7533

Node: EX-POND-02-GW

Scenario: Existing Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.52 ft
Warning Stage: 9.52 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.52
0	0	0	72.0000	8.52

Comment:

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02-GW	Existing 10-year, 24-hour	9.52	8.52	0.0000	0.81	0.00	0
EX-POND-02-GW	Existing 100-year, 24-hour	9.52	8.52	0.0000	0.83	0.03	0
EX-POND-02-GW	Existing 25-year, 24-hour	9.52	8.52	0.0000	0.83	0.00	0
EX-POND-02-GW	Existing 25-year, 8-hour	9.52	8.52	0.0000	1.67	0.00	0
EX-POND-02-GW	Existing 5-year, 24-hour	9.52	8.52	0.0000	0.81	0.00	0

Node: EX-POND-03

Scenario: Existing Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.57 ft
Warning Stage: 16.00 ft

Stage [ft]	Area [ac]	Area [ft2]
13.57	0.0005	22
14.00	0.0437	1904
14.50	0.1055	4594
15.00	0.1523	6633
15.50	0.1949	8488
16.00	0.3011	13114
16.50	0.7044	30683
17.00	1.3208	57536
17.50	3.0391	132382
18.00	4.8400	210832
18.50	6.8102	296652
19.00	8.1436	354737
19.50	8.4417	367722
20.00	8.7085	379341
20.50	8.9740	390906
21.00	9.1595	398986
21.50	9.3728	408281
22.00	9.5815	417372

Stage [ft]	Area [ac]	Area [ft2]
22.50	9.6640	420965
23.00	9.6643	420978
23.50	9.6643	420978

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03	Existing 10-year, 24-hour	16.00	17.03	-0.0010	30.68	26.36	61686
EX-POND-03	Existing 100-year, 24-hour	16.00	17.48	-0.0009	58.09	46.17	129828
EX-POND-03	Existing 25-year, 24-hour	16.00	17.21	-0.0010	40.27	33.65	89643
EX-POND-03	Existing 25-year, 8-hour	16.00	17.05	-0.0010	39.11	34.46	64935
EX-POND-03	Existing 5-year, 24-hour	16.00	16.88	-0.0010	24.71	21.52	51289

Node: EX-POND-03-GW

Scenario: Existing Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.57 ft
Warning Stage: 9.57 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.57
0	0	0	72.0000	8.57

Comment:

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03-GW	Existing 10-year, 24-hour	9.57	8.57	0.0000	1.66	0.00	0
EX-POND-03-GW	Existing 100-year, 24-hour	9.57	8.57	0.0000	1.64	0.00	0
EX-POND-03-GW	Existing 25-year, 24-hour	9.57	8.57	0.0000	1.70	0.00	0
EX-POND-03-GW	Existing 25-year, 8-hour	9.57	8.57	0.0000	8.94	0.00	0
EX-POND-03-GW	Existing 5-year, 24-hour	9.57	8.57	0.0000	1.67	0.00	0

Node: OUTFALL

Scenario: Existing Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 0.00 ft
Warning Stage: 0.00 ft
Boundary Stage: OF-01

Comment: 5-year 16.474
10-year 16.633
25-year 16.824
100-year 17.116

Node Max Conditions [Existing Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
OUTFALL	Existing 10-year, 24-hour	0.00	14.00	0.0000	69.42	0.00	0
OUTFALL	Existing 100-year, 24-hour	0.00	14.00	0.0000	114.02	0.00	0

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
OUTFALL	Existing 25-year, 24-hour	0.00	14.00	0.0000	85.97	0.00	0
OUTFALL	Existing 25-year, 8-hour	0.00	14.00	0.0000	73.36	0.00	0
OUTFALL	Existing 5-year, 24-hour	0.00	14.00	0.0000	58.72	0.00	0

Node: EX-ES-01

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.06 ft
Warning Stage: 18.50 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0005	22
17.00	0.0049	215
17.50	0.1353	5896
18.00	0.3618	15761
18.50	0.5945	25895
19.00	0.9921	43216
19.50	1.3569	59107
20.00	1.6197	70554
20.50	1.8237	79440
21.00	2.0161	87821
21.50	2.0277	88329
22.00	2.0277	88329

Comment: Warning Stage: Edge Nearest Pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-01	Existing 10-year, 24-hour	18.50	18.30	0.0006	8.02	3.75	21856

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-01	Existing 100-year, 24-hour	18.50	19.17	0.0006	19.82	3.55	48737
EX-ES-01	Existing 25-year, 24-hour	18.50	18.67	0.0006	12.86	3.80	31881
EX-ES-01	Existing 25-year, 8-hour	18.50	18.55	-0.0006	18.50	3.93	27802
EX-ES-01	Existing 5-year, 24-hour	18.50	18.04	-0.0006	6.09	3.37	16668

Node: EX-ES-03/EX-ES-05

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 18.00 ft

Comment: Warning Stage: Lowest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-03/EX-ES-05	Existing 10-year, 24-hour	18.00	18.22	0.0007	36.39	27.79	14836
EX-ES-03/EX-ES-05	Existing 100-year, 24-hour	18.00	19.40	0.0010	63.64	49.65	14836
EX-ES-03/EX-ES-05	Existing 25-year, 24-hour	18.00	18.63	0.0008	44.78	34.99	14836
EX-ES-03/EX-ES-05	Existing 25-year, 8-hour	18.00	18.58	0.0008	75.75	49.73	14836
EX-ES-03/EX-	Existing	18.00	17.93	0.0006	30.73	24.11	14836

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
ES-05	5-year, 24-hour						

Node: EX-ES-06/EX-ES-07/EX-ES-08

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.00 ft
Warning Stage: 18.10 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-06/EX-ES-07/EX-ES-08	Existing 10-year, 24-hour	18.10	17.21	0.0008	50.43	40.47	40628
EX-ES-06/EX-ES-07/EX-ES-08	Existing 100-year, 24-hour	18.10	18.10	0.0008	78.10	66.45	50443
EX-ES-06/EX-ES-07/EX-ES-08	Existing 25-year, 24-hour	18.10	17.60	0.0007	60.42	49.67	44663
EX-ES-06/EX-ES-07/EX-ES-08	Existing 25-year, 8-hour	18.10	17.40	0.0009	57.74	44.86	42431
EX-ES-06/EX-ES-07/EX-ES-08	Existing 5-year, 24-hour	18.10	16.89	0.0008	43.01	34.53	35760

Node: EX-ES-09

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area

Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.98 ft

Comment: Warning Stage: Low edge of pavement in infield
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-09	Existing 10-year, 24-hour	16.98	17.21	0.0005	37.97	30.15	21109
EX-ES-09	Existing 100-year, 24-hour	16.98	18.11	0.0007	70.46	56.34	24312
EX-ES-09	Existing 25-year, 24-hour	16.98	17.60	0.0006	51.08	40.98	22633
EX-ES-09	Existing 25-year, 8-hour	16.98	17.40	-0.0005	56.85	46.93	21842
EX-ES-09	Existing 5-year, 24-hour	16.98	16.89	0.0005	27.52	22.28	19662

Node: EX-ES-10

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.02 ft
Warning Stage: 16.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.04	0.0002	11
15.50	0.0635	2765
16.00	0.1553	6767
16.50	0.2707	11791
17.00	0.3922	17084
17.50	0.5251	22872
18.00	0.6639	28919
18.50	0.7824	34083

Stage [ft]	Area [ac]	Area [ft2]
19.00	0.8733	38042
19.50	0.9536	41538
20.00	1.0445	45497
20.50	1.1522	50188
21.00	1.2023	52374
21.50	1.2023	52374

Comment: Warning Stage: Lowest edge of pavement within infield
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-10	Existing 10-year, 24-hour	16.50	17.36	0.0010	30.72	19.38	21227
EX-ES-10	Existing 100-year, 24-hour	16.50	18.79	0.0010	52.67	26.95	36377
EX-ES-10	Existing 25-year, 24-hour	16.50	17.93	0.0010	40.88	23.29	28046
EX-ES-10	Existing 25-year, 8-hour	16.50	17.64	0.0010	40.63	23.67	24534
EX-ES-10	Existing 5-year, 24-hour	16.50	16.96	0.0008	20.19	14.05	16653

Node: EX-ES-13

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.00 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
15.59	0.0002	11
16.00	0.0020	86
16.50	0.2203	9596
17.00	0.3282	14298
17.50	0.3658	15933

Stage [ft]	Area [ac]	Area [ft2]
18.00	0.3976	17321
18.50	0.4391	19128
19.00	0.4759	20731
19.50	0.5231	22786
20.00	0.5893	25670
20.50	0.8281	36073
21.00	0.8903	38782
21.50	0.8903	38782

Comment: Warning Stage: Elevation of nearest pavement
Desc: Mitered End Section
Stage areas for storage within basin

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-13	Existing 10-year, 24-hour	19.99	18.87	0.0010	18.49	17.38	20312
EX-ES-13	Existing 100-year, 24-hour	19.99	18.97	0.0005	32.44	32.20	20639
EX-ES-13	Existing 25-year, 24-hour	19.99	18.92	0.0007	24.01	23.59	20464
EX-ES-13	Existing 25-year, 8-hour	19.99	18.89	0.0006	26.09	20.63	20394
EX-ES-13	Existing 5-year, 24-hour	19.99	18.81	0.0008	15.33	11.62	20138

Node: EX-ES-16

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.89 ft
Warning Stage: 19.50 ft

Comment: Warning Stage: Nearest pavement elevation
Desc: Concrete Flared End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-16	Existing 10-year, 24-hour	19.50	19.00	0.0009	33.52	20.86	28888
EX-ES-16	Existing 100-year, 24-hour	19.50	20.07	0.0009	47.36	14.85	43227
EX-ES-16	Existing 25-year, 24-hour	19.50	19.30	0.0010	40.12	20.90	36429
EX-ES-16	Existing 25-year, 8-hour	19.50	19.20	0.0010	58.96	21.73	34458
EX-ES-16	Existing 5-year, 24-hour	19.50	18.81	-0.0009	32.36	19.85	21638

Node: EX-ES-17/EX-ES-19/EX-ES-21

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.14 ft
Warning Stage: 19.00 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-17/EX-ES-19/EX-ES-21	Existing 10-year, 24-hour	19.00	18.93	0.0010	40.77	33.57	19434
EX-ES-17/EX-ES-19/EX-ES-21	Existing 100-year, 24-hour	19.00	20.07	0.0008	44.81	21.64	33183
EX-ES-17/EX-ES-19/EX-ES-21	Existing 25-year, 24-hour	19.00	19.27	0.0010	51.16	33.69	27430

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-17/EX-ES-19/EX-ES-21	Existing 25-year, 8-hour	19.00	19.15	0.0010	78.64	36.06	24972
EX-ES-17/EX-ES-19/EX-ES-21	Existing 5-year, 24-hour	19.00	18.71	-0.0010	35.00	30.29	15199

Node: EX-HW-01

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.46 ft
Warning Stage: 18.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0002	11
17.00	0.0005	23
17.50	0.0119	516
18.00	0.0751	3271
18.50	0.2173	9467
19.00	0.4883	21269
19.50	0.8010	34890
20.00	0.8968	39064
20.50	0.8985	39139
21.00	0.8985	39139

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-01	Existing 10-year, 24-hour	18.00	18.26	0.0006	4.20	4.70	6504
EX-HW-01	Existing 100-year, 24-hour	18.00	19.18	0.0010	13.23	5.35	26052
EX-HW-01	Existing	18.00	18.63	0.0007	6.62	5.28	12638

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	25-year, 24-hour						
EX-HW-01	Existing 25-year, 8-hour	18.00	18.54	0.0007	8.88	5.31	10441
EX-HW-01	Existing 5-year, 24-hour	18.00	18.00	-0.0009	3.87	4.18	3262

Node: EX-HW-03

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.41 ft
Warning Stage: 18.48 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-03	Existing 10-year, 24-hour	18.48	17.56	0.0010	57.40	54.44	14650
EX-HW-03	Existing 100-year, 24-hour	18.48	18.45	0.0010	102.29	94.68	26629
EX-HW-03	Existing 25-year, 24-hour	18.48	17.88	0.0010	72.39	68.60	20045
EX-HW-03	Existing 25-year, 8-hour	18.48	17.87	0.0010	87.76	83.11	17888
EX-HW-03	Existing 5-year, 24-hour	18.48	17.37	0.0010	47.09	45.68	11558

Node: EX-HW-04

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.73 ft
Warning Stage: 17.77 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-04	Existing 10-year, 24-hour	17.77	17.46	0.0010	57.44	35.53	58206
EX-HW-04	Existing 100-year, 24-hour	17.77	18.44	0.0010	97.38	52.49	69918
EX-HW-04	Existing 25-year, 24-hour	17.77	17.85	0.0010	71.52	42.28	63350
EX-HW-04	Existing 25-year, 8-hour	17.77	17.65	0.0010	86.10	44.69	60903
EX-HW-04	Existing 5-year, 24-hour	17.77	17.17	0.0010	48.79	31.25	51080

Node: EX-HW-05

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.63 ft
Warning Stage: 17.50 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-05	Existing 10-year, 24-hour	17.50	17.44	0.0010	35.53	21.84	35056
EX-HW-05	Existing 100-year, 24-hour	17.50	18.44	0.0010	52.49	25.79	41069
EX-HW-05	Existing 25-year, 24-hour	17.50	17.84	0.0010	42.28	21.71	38135
EX-HW-05	Existing 25-year, 8-hour	17.50	17.63	0.0010	44.69	23.22	36451
EX-HW-05	Existing 5-year, 24-hour	17.50	17.13	0.0010	31.25	21.22	30486

Node: EX-HW-06

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.45 ft
Warning Stage: 17.55 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-06	Existing 10-year, 24-hour	17.55	17.23	0.0010	21.84	34.24	5677
EX-HW-06	Existing 100-year, 24-hour	17.55	18.11	0.0010	25.79	48.46	6385
EX-HW-06	Existing 25-year, 24-hour	17.55	17.61	0.0010	21.71	40.08	6071

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-06	Existing 25-year, 8-hour	17.55	17.41	0.0010	23.22	37.08	5884
EX-HW-06	Existing 5-year, 24-hour	17.55	16.92	0.0010	21.22	27.42	4937

Node: EX-HW-07

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.01 ft
Warning Stage: 17.68 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-07	Existing 10-year, 24-hour	17.68	17.23	0.0010	41.68	29.86	27869
EX-HW-07	Existing 100-year, 24-hour	17.68	18.11	0.0010	57.00	35.37	35834
EX-HW-07	Existing 25-year, 24-hour	17.68	17.61	0.0010	48.24	30.47	31758
EX-HW-07	Existing 25-year, 8-hour	17.68	17.41	0.0010	44.83	31.08	29678
EX-HW-07	Existing 5-year, 24-hour	17.68	16.92	0.0010	34.97	27.99	25091

Node: EX-HW-08

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.73 ft
Warning Stage: 17.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.78	0.0002	11
17.00	0.0063	273
17.50	0.0642	2797
18.00	0.1642	7154
18.50	0.4352	18956
19.00	0.8827	38451
19.50	1.8748	81667
20.00	2.0593	89704
20.50	2.1601	94093
21.00	2.1888	95345
21.50	2.1888	95345

Comment: Warning Stage: Edge of lowest pavement
Desc: Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-08	Existing 10-year, 24-hour	17.00	17.40	-0.0010	12.39	12.06	2296
EX-HW-08	Existing 100-year, 24-hour	17.00	18.81	0.0009	22.69	15.07	30866
EX-HW-08	Existing 25-year, 24-hour	17.00	17.99	0.0010	16.02	14.38	7085
EX-HW-08	Existing 25-year, 8-hour	17.00	18.05	0.0016	27.28	20.64	8452
EX-HW-08	Existing 5-year, 24-hour	17.00	16.97	-0.0010	10.10	10.10	285

Node: EX-HW-10

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.63 ft
Warning Stage: 19.08 ft

Stage [ft]	Area [ac]	Area [ft2]
15.82	0.0005	22
16.00	0.0042	183
16.50	0.0309	1345
17.00	0.0630	2743
17.50	0.0988	4303
18.00	0.1299	5659
18.50	0.1729	7531
19.00	0.2178	9489
19.50	0.2971	12942
20.00	0.5742	25013
20.50	1.1087	48294
21.00	1.3623	59343
21.50	1.3717	59750
22.00	1.3717	59750

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-10	Existing 10-year, 24-hour	19.08	19.13	0.0009	17.49	14.23	10372
EX-HW-10	Existing 100-year, 24-hour	19.08	19.85	0.0009	22.62	17.34	21420
EX-HW-10	Existing 25-year, 24-hour	19.08	19.35	0.0010	19.06	15.30	11910
EX-HW-10	Existing 25-year, 8-hour	19.08	19.26	0.0008	24.77	14.90	11302
EX-HW-10	Existing 5-year, 24-hour	19.08	18.96	0.0010	15.95	13.23	9335

Node: EX-HW-12

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.06 ft
Warning Stage: 19.01 ft

Comment: Warning Stage: Nearest edge of pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-12	Existing 10-year, 24-hour	19.01	15.99	0.0004	72.18	72.17	3261
EX-HW-12	Existing 100-year, 24-hour	19.01	16.51	0.0004	124.28	124.26	3864
EX-HW-12	Existing 25-year, 24-hour	19.01	16.19	0.0005	90.53	90.50	3499
EX-HW-12	Existing 25-year, 8-hour	19.01	16.07	0.0004	79.03	79.02	3355
EX-HW-12	Existing 5-year, 24-hour	19.01	15.83	0.0004	59.03	59.02	3073

Node: EX-HW-18/EX-HW-19/EX-HW-20

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.01 ft
Warning Stage: 16.01 ft

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-18/EX-HW-19/EX-HW-20	Existing 10-year, 24-hour	16.01	16.54	-0.0006	21.36	21.11	3618
EX-HW-18/EX-HW-19/EX-HW-20	Existing 100-year, 24-hour	16.01	17.06	-0.0006	26.36	24.13	3729
EX-HW-18/EX-HW-19/EX-HW-20	Existing 25-year, 24-hour	16.01	16.74	-0.0007	25.32	23.49	3729
EX-HW-18/EX-HW-19/EX-HW-20	Existing 25-year, 8-hour	16.01	16.62	0.0006	22.02	21.61	3671
EX-HW-18/EX-HW-19/EX-HW-20	Existing 5-year, 24-hour	16.01	16.33	0.0004	15.48	15.33	3486

Node: EX-IN-01

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.81 ft
Warning Stage: 18.29 ft

Stage [ft]	Area [ac]	Area [ft2]
13.81	0.0001	6
18.29	0.0001	6

Comment: Rim Elev: 18.29
Sump Elev: 13.81
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-01	Existing 10-year, 24-hour	18.29	18.02	0.0014	24.93	24.95	546
EX-IN-01	Existing 100-year,	18.29	19.01	0.0020	33.22	33.21	546

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
EX-IN-01	Existing 25-year, 24-hour	18.29	18.39	0.0016	27.07	27.08	546
EX-IN-01	Existing 25-year, 8-hour	18.29	18.29	0.0012	27.82	27.84	547
EX-IN-01	Existing 5-year, 24-hour	18.29	17.76	0.0015	22.93	22.95	546

Node: EX-IN-02

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.27 ft
Warning Stage: 17.48 ft

Stage [ft]	Area [ac]	Area [ft2]
17.28	0.0002	11
17.50	0.0845	3679
18.00	0.6846	29822
18.50	1.4468	63023
19.00	2.8185	122775
19.50	3.8986	169821
20.00	4.3355	188853
20.50	4.7415	206540
21.00	5.4269	236394
21.50	5.6782	247342
22.00	5.6782	247342

Comment: Rim Elev: 17.48
Sump Elev: 15.27
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-02	Existing 10-year,	17.48	18.47	-0.0014	18.00	4.73	60732

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
EX-IN-02	Existing 100-year, 24-hour	17.48	19.22	-0.0018	43.57	5.37	143321
EX-IN-02	Existing 25-year, 24-hour	17.48	18.76	-0.0017	25.81	4.74	94674
EX-IN-02	Existing 25-year, 8-hour	17.48	18.63	-0.0031	27.16	4.88	78228
EX-IN-02	Existing 5-year, 24-hour	17.48	18.24	-0.0017	13.34	4.74	45775

Node: EX-IN-03

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.07 ft
Warning Stage: 16.34 ft

Stage [ft]	Area [ac]	Area [ft2]
16.28	0.0005	22
16.50	0.1102	4798
17.00	0.7464	32512
17.50	1.3369	58235
18.00	1.9506	84970
18.50	2.9828	129929
19.00	4.4197	192522
19.50	5.2100	226948
20.00	5.6015	244001
20.50	6.1582	268250
21.00	6.9604	303193
21.50	7.1496	311438
22.00	7.1496	311438

Comment: Rim Elev: 16.34
Sump Elev: 14.07
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-03	Existing 10-year, 24-hour	16.34	17.70	-0.0012	25.03	4.15	68757
EX-IN-03	Existing 100-year, 24-hour	16.34	18.70	-0.0033	56.89	5.41	154759
EX-IN-03	Existing 25-year, 24-hour	16.34	18.10	-0.0015	35.92	4.69	94233
EX-IN-03	Existing 25-year, 8-hour	16.34	17.86	-0.0031	43.36	4.69	77576
EX-IN-03	Existing 5-year, 24-hour	16.34	17.42	-0.0010	18.53	3.82	54082

Node: EX-IN-04

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.40 ft
Warning Stage: 17.02 ft

Stage [ft]	Area [ac]	Area [ft2]
17.02	0.0002	11
17.50	0.1037	4519
18.00	0.4584	19968
18.50	1.2198	53136
19.00	2.3458	102183
19.50	3.4985	152393
20.00	4.5256	197137
20.50	5.2728	229681
21.00	5.8744	255889
21.50	6.5002	283150
22.00	6.9544	302935
22.50	7.0596	307516
23.00	7.0596	307516

Comment: Rim Elev: 17.02
Sump Elev: 14.40
Desc: Rectangular Junction Structure NF

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-04	Existing 10-year, 24-hour	17.02	18.37	0.0010	22.41	9.56	44206
EX-IN-04	Existing 100-year, 24-hour	17.02	19.21	0.0010	51.38	8.84	123563
EX-IN-04	Existing 25-year, 24-hour	17.02	18.73	-0.0010	32.27	9.40	75432
EX-IN-04	Existing 25-year, 8-hour	17.02	18.54	-0.0010	32.38	9.68	56576
EX-IN-04	Existing 5-year, 24-hour	17.02	18.06	0.0010	16.54	9.53	23832

Node: EX-IN-05

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.19 ft
Warning Stage: 20.02 ft

Stage [ft]	Area [ac]	Area [ft2]
19.60	0.0002	11
20.00	0.0049	215
20.50	0.2425	10565
21.00	0.5058	22033
21.50	0.5058	22033

Comment: Rim Elev: 20.02
Sump Elev: 16.19
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-05	Existing 10-year,	20.02	19.74	0.0010	5.53	5.44	193

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
EX-IN-05	Existing 100-year, 24-hour	20.02	20.32	-0.0010	7.43	6.53	6880
EX-IN-05	Existing 25-year, 24-hour	20.02	20.05	-0.0010	6.10	6.00	1245
EX-IN-05	Existing 25-year, 8-hour	20.02	20.22	-0.0010	8.75	7.32	4795
EX-IN-05	Existing 5-year, 24-hour	20.02	19.44	-0.0010	4.82	4.75	189

Node: EX-IN-06

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.96 ft
Warning Stage: 18.63 ft

Stage [ft]	Area [ac]	Area [ft2]
18.79	0.0002	11
19.00	0.0282	1226
19.50	0.4574	19925
20.00	1.7042	74233
20.50	3.1715	138149
21.00	4.3747	190564
21.50	4.8158	209778
22.00	5.4498	237395
22.50	5.9811	260536
23.00	5.9856	260732
23.50	5.9856	260732

Comment: Rim Elev: 18.63
Sump Elev: 15.96
Desc: Flat Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-06	Existing 10-year, 24-hour	18.63	19.69	-0.0010	20.34	11.65	40401
EX-IN-06	Existing 100-year, 24-hour	18.63	20.36	0.0010	46.43	10.64	120514
EX-IN-06	Existing 25-year, 24-hour	18.63	19.96	0.0010	29.24	12.02	70046
EX-IN-06	Existing 25-year, 8-hour	18.63	19.85	-0.0010	32.70	11.98	57519
EX-IN-06	Existing 5-year, 24-hour	18.63	19.44	-0.0010	15.05	11.02	17516

Node: EX-IN-07

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
16.39	0.0001	6
19.99	0.0001	6

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Roof drain

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-07	Existing 10-year, 24-hour	19.99	18.98	0.0010	2.24	2.19	100
EX-IN-07	Existing 100-year, 24-hour	19.99	19.41	-0.0010	3.97	3.96	100

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-07	Existing 25-year, 24-hour	19.99	19.13	0.0009	2.86	2.84	100
EX-IN-07	Existing 25-year, 8-hour	19.99	19.30	0.0010	5.01	4.85	100
EX-IN-07	Existing 5-year, 24-hour	19.99	18.85	0.0008	1.85	1.77	100

Node: EX-IN-08

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.05 ft
Warning Stage: 19.11 ft

Comment: Rim Elev: 19.11
Desc: Upstream end of trench drain

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-08	Existing 10-year, 24-hour	19.11	19.55	0.0010	24.53	29.76	17987
EX-IN-08	Existing 100-year, 24-hour	19.11	20.07	0.0010	43.51	43.41	33995
EX-IN-08	Existing 25-year, 24-hour	19.11	19.55	0.0010	31.27	35.56	21681
EX-IN-08	Existing 25-year, 8-hour	19.11	19.66	0.0010	54.72	55.76	21495
EX-IN-08	Existing 5-year, 24-hour	19.11	19.54	-0.0010	20.24	29.33	17534

Node: EX-IN-09

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.95 ft
Warning Stage: 19.00 ft

Comment: Rim Elev: 19.00
Sump Elev: 17.53
Desc: Upstream end of trench drain

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-09	Existing 10-year, 24-hour	19.00	19.31	0.0010	14.10	17.56	11537
EX-IN-09	Existing 100-year, 24-hour	19.00	20.07	0.0010	24.91	23.43	29809
EX-IN-09	Existing 25-year, 24-hour	19.00	19.35	0.0010	17.94	29.37	15451
EX-IN-09	Existing 25-year, 8-hour	19.00	19.48	0.0010	31.49	52.97	16267
EX-IN-09	Existing 5-year, 24-hour	19.00	19.26	-0.0010	11.65	13.16	10139

Node: EX-IN-10

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
20.00	0.0002	11
20.50	0.0864	3765
21.00	0.0963	4193

Stage [ft]	Area [ac]	Area [ft2]
21.50	0.0963	4193

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-10	Existing 10-year, 24-hour	19.99	19.74	-0.0010	0.58	0.57	100
EX-IN-10	Existing 100-year, 24-hour	19.99	20.33	-0.0010	1.04	1.05	2520
EX-IN-10	Existing 25-year, 24-hour	19.99	20.06	-0.0010	0.75	0.75	459
EX-IN-10	Existing 25-year, 8-hour	19.99	20.23	-0.0010	1.30	1.12	1772
EX-IN-10	Existing 5-year, 24-hour	19.99	19.44	0.0010	0.48	0.45	100

Node: EX-IN-11

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.42 ft
Warning Stage: 20.28 ft

Stage [ft]	Area [ac]	Area [ft2]
20.19	0.0005	22
20.50	0.1610	7014
21.00	0.2115	9215
21.50	0.2115	9215

Comment: Rim Elev: 20.28
Sump Elev: 16.42
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-11	Existing 10-year, 24-hour	20.28	20.24	0.0010	2.26	2.22	1139
EX-IN-11	Existing 100-year, 24-hour	20.28	20.64	-0.0010	2.91	2.73	7636
EX-IN-11	Existing 25-year, 24-hour	20.28	20.43	-0.0010	2.40	2.54	5384
EX-IN-11	Existing 25-year, 8-hour	20.28	20.49	-0.0010	3.16	2.63	6722
EX-IN-11	Existing 5-year, 24-hour	20.28	19.99	-0.0010	1.98	1.91	113

Node: EX-IN-12

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.46 ft
Warning Stage: 20.06 ft

Stage [ft]	Area [ac]	Area [ft2]
19.99	0.0002	11
20.00	0.0005	22
20.50	0.1447	6304
21.00	0.1945	8474
21.50	0.1945	8474

Comment: Rim Elev: 20.06
Sump Elev: 16.457
Desc: Grate Inlet

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-12	Existing 10-year,	20.06	20.27	-0.0011	1.20	1.71	3444

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
EX-IN-12	Existing 100-year, 24-hour	20.06	20.67	-0.0014	2.13	2.08	7024
EX-IN-12	Existing 25-year, 24-hour	20.06	20.46	-0.0014	1.53	2.01	5767
EX-IN-12	Existing 25-year, 8-hour	20.06	20.51	-0.0014	2.93	2.08	6345
EX-IN-12	Existing 5-year, 24-hour	20.06	20.03	-0.0010	0.99	0.94	406

Node: EX-POND-01

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.26 ft
Warning Stage: 19.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.26	0.0002	11
15.50	0.0514	2238
16.00	0.8113	35341
16.50	1.0657	46423
17.00	1.1284	49155
17.50	1.1771	51275
18.00	1.2245	53340
18.50	1.2692	55287
19.00	1.3171	57375
19.50	1.3794	60086
20.00	1.7135	74642
20.50	2.8926	126002
21.00	4.3342	188799
21.50	5.2224	227486
22.00	5.4948	239353
22.50	5.5268	240746
23.00	5.5439	241494
23.50	5.5639	242365
24.00	5.5816	243133
24.50	5.5888	243448
25.00	5.5947	243705

Stage [ft]	Area [ac]	Area [ft2]
25.50	5.5964	243780
26.00	5.6028	244056
26.50	5.6028	244056

Comment: Initial Stage: Pond Bottom
Warning Stage: Top of Pond

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01	Existing 10-year, 24-hour	19.50	18.74	0.0010	47.93	7.62	56288
EX-POND-01	Existing 100-year, 24-hour	19.50	20.08	0.0010	59.47	5.30	82417
EX-POND-01	Existing 25-year, 24-hour	19.50	19.20	0.0010	57.47	7.78	58467
EX-POND-01	Existing 25-year, 8-hour	19.50	18.73	0.0010	58.76	7.75	56238
EX-POND-01	Existing 5-year, 24-hour	19.50	18.61	0.0009	39.89	7.41	55735

Node: EX-POND-01-GW

Scenario: Existing Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.26 ft
Warning Stage: 11.26 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.26
0	0	0	72.0000	10.26

Comment:

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01-GW	Existing 10-year, 24-hour	11.26	10.26	0.0000	7.62	0.00	0
EX-POND-01-GW	Existing 100-year, 24-hour	11.26	10.26	0.0000	5.30	0.00	0
EX-POND-01-GW	Existing 25-year, 24-hour	11.26	10.26	0.0000	7.78	0.00	0
EX-POND-01-GW	Existing 25-year, 8-hour	11.26	10.26	0.0000	7.75	0.00	0
EX-POND-01-GW	Existing 5-year, 24-hour	11.26	10.26	0.0000	7.41	0.00	0

Node: EX-POND-02

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.52 ft
Warning Stage: 16.99 ft

Stage [ft]	Area [ac]	Area [ft2]
13.52	0.0002	11
14.00	0.0235	1022
14.50	0.0575	2507
15.00	0.0831	3620
15.50	0.1027	4475
16.00	0.1210	5272
16.50	0.1410	6143
17.00	0.1875	8166
17.50	0.4386	19107
18.00	0.5075	22109
18.50	0.5498	23948
19.00	0.6584	28682
19.50	0.7469	32534
20.00	0.7469	32534

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02	Existing 10-year, 24-hour	16.99	16.98	0.0010	40.94	40.68	8186
EX-POND-02	Existing 100-year, 24-hour	16.99	17.49	0.0010	67.23	67.12	19061
EX-POND-02	Existing 25-year, 24-hour	16.99	17.26	0.0010	50.23	50.10	13853
EX-POND-02	Existing 25-year, 8-hour	16.99	17.12	-0.0010	45.33	45.30	10845
EX-POND-02	Existing 5-year, 24-hour	16.99	16.72	0.0010	34.96	34.78	7134

Node: EX-POND-02-GW

Scenario: Existing Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.52 ft
Warning Stage: 9.52 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.52
0	0	0	72.0000	8.52

Comment:

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02-GW	Existing 10-year, 24-hour	9.52	8.52	0.0000	0.79	0.00	0
EX-POND-02-GW	Existing 100-year, 24-hour	9.52	8.52	0.0000	0.83	0.02	0

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02-GW	Existing 25-year, 24-hour	9.52	8.52	0.0000	0.81	0.00	0
EX-POND-02-GW	Existing 25-year, 8-hour	9.52	8.52	0.0000	1.48	0.00	0
EX-POND-02-GW	Existing 5-year, 24-hour	9.52	8.52	0.0000	0.77	0.00	0

Node: EX-POND-03

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.57 ft
Warning Stage: 16.00 ft

Stage [ft]	Area [ac]	Area [ft2]
13.57	0.0005	22
14.00	0.0437	1904
14.50	0.1055	4594
15.00	0.1523	6633
15.50	0.1949	8488
16.00	0.3011	13114
16.50	0.7044	30683
17.00	1.3208	57536
17.50	3.0391	132382
18.00	4.8400	210832
18.50	6.8102	296652
19.00	8.1436	354737
19.50	8.4417	367722
20.00	8.7085	379341
20.50	8.9740	390906
21.00	9.1595	398986
21.50	9.3728	408281
22.00	9.5815	417372
22.50	9.6640	420965
23.00	9.6643	420978
23.50	9.6643	420978

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03	Existing 10-year, 24-hour	16.00	16.57	-0.0010	30.68	29.73	34474
EX-POND-03	Existing 100-year, 24-hour	16.00	17.07	-0.0010	58.09	53.87	67976
EX-POND-03	Existing 25-year, 24-hour	16.00	16.74	-0.0010	40.27	38.55	43779
EX-POND-03	Existing 25-year, 8-hour	16.00	16.63	-0.0010	39.11	37.60	37935
EX-POND-03	Existing 5-year, 24-hour	16.00	16.47	-0.0010	24.71	23.15	29674

Node: EX-POND-03-GW

Scenario: Existing Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.57 ft
Warning Stage: 9.57 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.57
0	0	0	72.0000	8.57

Comment:

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03-GW	Existing 10-year, 24-hour	9.57	8.57	0.0000	0.83	0.00	0
EX-POND-03-GW	Existing 100-year, 24-hour	9.57	8.57	0.0000	0.93	0.00	0

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03-GW	Existing 25-year, 24-hour	9.57	8.57	0.0000	0.86	0.00	0
EX-POND-03-GW	Existing 25-year, 8-hour	9.57	8.57	0.0000	5.22	0.00	0
EX-POND-03-GW	Existing 5-year, 24-hour	9.57	8.57	0.0000	0.82	0.00	0

Node: Outfall

Scenario: Existing Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 0.00 ft
Warning Stage: 0.00 ft
Boundary Stage: OF-01

Comment:

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
Outfall	Existing 10-year, 24-hour	0.00	14.00	0.0000	72.17	0.00	0
Outfall	Existing 100-year, 24-hour	0.00	14.00	0.0000	124.26	0.00	0
Outfall	Existing 25-year, 24-hour	0.00	14.00	0.0000	90.50	0.00	0
Outfall	Existing 25-year, 8-hour	0.00	14.00	0.0000	79.02	0.00	0
Outfall	Existing 5-year, 24-hour	0.00	14.00	0.0000	59.02	0.00	0

Node: P-ES-01

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.83 ft
Warning Stage: 18.39 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-ES-01	Existing 10-year, 24-hour	18.39	18.20	0.0009	27.79	22.22	13758
P-ES-01	Existing 100-year, 24-hour	18.39	19.39	0.0010	43.66	33.22	13758
P-ES-01	Existing 25-year, 24-hour	18.39	18.62	0.0009	32.82	25.37	13758
P-ES-01	Existing 25-year, 8-hour	18.39	18.56	0.0010	47.31	27.82	13758
P-ES-01	Existing 5-year, 24-hour	18.39	17.89	0.0010	24.11	19.80	13758

Node: P-HW-01/P-HW-02

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.50 ft
Warning Stage: 16.25 ft

Stage [ft]	Area [ac]	Area [ft2]
15.20	0.0002	11
15.50	0.0011	49
16.00	0.0222	968
16.50	0.2850	12415

Stage [ft]	Area [ac]	Area [ft2]
17.00	0.7503	32684
17.50	2.0544	89488
18.00	2.6973	117492
18.50	2.7047	117815
19.00	2.7067	117903
19.50	2.7266	118769
20.00	2.7266	118769

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-HW-01/P-HW-02	Existing 10-year, 24-hour	16.25	16.56	0.0010	14.02	13.01	14706
P-HW-01/P-HW-02	Existing 100-year, 24-hour	16.25	17.05	-0.0010	40.28	35.70	38477
P-HW-01/P-HW-02	Existing 25-year, 24-hour	16.25	16.72	0.0010	24.73	24.03	21404
P-HW-01/P-HW-02	Existing 25-year, 8-hour	16.25	16.62	0.0010	27.45	25.30	17148
P-HW-01/P-HW-02	Existing 5-year, 24-hour	16.25	16.45	-0.0010	11.38	9.92	11329

Node: P-HW-03/P-HW-04

Scenario: Existing Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.20 ft
Warning Stage: 16.18 ft

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Existing Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-HW-03/P-HW-04	Existing 10-year, 24-hour	16.18	16.47	-0.0006	33.03	32.85	7786
P-HW-03/P-HW-04	Existing 100-year, 24-hour	16.18	17.03	0.0006	59.48	59.32	8165
P-HW-03/P-HW-04	Existing 25-year, 24-hour	16.18	16.70	-0.0007	42.88	42.71	8064
P-HW-03/P-HW-04	Existing 25-year, 8-hour	16.18	16.56	-0.0006	37.06	36.83	7924
P-HW-03/P-HW-04	Existing 5-year, 24-hour	16.18	16.26	-0.0004	25.21	25.02	7497

Node: EX-ES-01

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.06 ft
Warning Stage: 18.50 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0005	22
17.00	0.0049	215
17.50	0.1577	6867
18.00	0.7057	30742
18.50	1.3549	59018
19.00	2.3947	104313
19.50	3.3876	147562
20.00	3.8655	168379
20.50	4.2781	186355
21.00	4.8576	211596
21.50	4.9666	216344
22.00	4.9666	216344

Comment: Warning Stage: Edge Nearest Pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-01	Future 10-year, 24-hour	18.50	18.79	0.0004	19.88	4.08	85425
EX-ES-01	Future 100-year, 24-hour	18.50	19.50	0.0005	41.36	5.13	147223
EX-ES-01	Future 25-year, 24-hour	18.50	19.06	0.0004	27.16	4.44	109183
EX-ES-01	Future 25-year, 8-hour	18.50	18.93	-0.0005	29.81	4.46	98001
EX-ES-01	Future 5-year, 24-hour	18.50	18.61	0.0004	15.57	3.79	69099

Node: EX-ES-03/EX-ES-05

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 18.00 ft

Comment: Warning Stage: Lowest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-03/EX-ES-05	Future 10-year, 24-hour	18.00	18.89	0.0018	35.12	30.40	14321
EX-ES-03/EX-ES-05	Future 100-year, 24-hour	18.00	20.26	0.0018	64.62	48.71	14321
EX-ES-03/EX-ES-05	Future 25-year, 24-hour	18.00	19.32	0.0018	45.51	37.86	14321

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-03/EX-ES-05	Future 25-year, 8-hour	18.00	19.36	0.0018	77.15	59.39	14321
EX-ES-03/EX-ES-05	Future 5-year, 24-hour	18.00	18.67	0.0018	28.58	25.45	14159

Node: EX-ES-06/EX-ES-07/EX-ES-08

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.00 ft
Warning Stage: 18.10 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-06/EX-ES-07/EX-ES-08	Future 10-year, 24-hour	18.10	17.33	0.0008	55.04	42.66	41293
EX-ES-06/EX-ES-07/EX-ES-08	Future 100-year, 24-hour	18.10	18.11	0.0009	81.02	66.70	50201
EX-ES-06/EX-ES-07/EX-ES-08	Future 25-year, 24-hour	18.10	17.67	0.0008	64.70	51.94	45036
EX-ES-06/EX-ES-07/EX-ES-08	Future 25-year, 8-hour	18.10	17.51	-0.0010	64.62	47.95	43197
EX-ES-06/EX-ES-07/EX-ES-08	Future 5-year, 24-hour	18.10	17.05	0.0008	48.58	37.27	37769

Node: EX-ES-09

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.98 ft

Comment: Warning Stage: Low edge of pavement in infield
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-09	Future 10-year, 24-hour	16.98	17.36	0.0007	43.11	38.23	20511
EX-ES-09	Future 100-year, 24-hour	16.98	18.12	0.0006	74.62	62.93	23263
EX-ES-09	Future 25-year, 24-hour	16.98	17.69	0.0007	55.37	48.40	21697
EX-ES-09	Future 25-year, 8-hour	16.98	17.53	0.0006	60.71	52.45	21096
EX-ES-09	Future 5-year, 24-hour	16.98	17.11	0.0008	33.95	29.23	19315

Node: EX-ES-10

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.02 ft
Warning Stage: 16.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.03	0.0005	22
15.50	0.0655	2852
16.00	0.1544	6727
16.50	0.2444	10645

Stage [ft]	Area [ac]	Area [ft2]
17.00	0.2879	12540
17.50	0.3259	14198
18.00	0.3731	16253
18.50	0.4324	18837
19.00	0.5036	21937
19.50	0.5706	24854
20.00	0.6529	28438
20.50	0.7460	32496
21.00	0.7616	33173
21.50	0.7616	33173

Comment: Warning Stage: Lowest edge of pavement within infield
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-10	Future 10-year, 24-hour	16.50	17.79	0.0010	30.77	23.25	15376
EX-ES-10	Future 100-year, 24-hour	16.50	18.86	0.0008	43.23	28.01	21061
EX-ES-10	Future 25-year, 24-hour	16.50	18.26	0.0010	35.96	26.28	17583
EX-ES-10	Future 25-year, 8-hour	16.50	18.05	0.0010	40.40	26.22	16537
EX-ES-10	Future 5-year, 24-hour	16.50	17.47	0.0010	27.59	19.96	14102

Node: EX-ES-13

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.28 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
15.27	0.0002	11

Stage [ft]	Area [ac]	Area [ft2]
15.50	0.0006	24
16.00	0.0027	118
16.50	0.2175	9472
17.00	0.3168	13799
17.50	0.3459	15069
18.00	0.3709	16157
18.50	0.3936	17147
19.00	0.4196	18277
19.50	0.4403	19181
20.00	0.4823	21011
20.50	0.6089	26522
21.00	0.6407	27909
21.50	0.6407	27909

Comment: Warning Stage: Elevation of nearest pavement
Desc: Mitered End Section
Stage areas for storage within basin

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-13	Future 10-year, 24-hour	19.99	18.50	0.0004	22.09	21.84	17157
EX-ES-13	Future 100-year, 24-hour	19.99	18.87	0.0006	34.48	33.81	17985
EX-ES-13	Future 25-year, 24-hour	19.99	18.54	0.0005	27.01	26.82	17234
EX-ES-13	Future 25-year, 8-hour	19.99	18.54	0.0005	27.53	26.76	17233
EX-ES-13	Future 5-year, 24-hour	19.99	18.47	0.0005	18.32	17.94	17096

Node: EX-ES-16

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.89 ft

Warning Stage: 19.50 ft

Comment: Warning Stage: Nearest pavement elevation
Desc: Concrete Flared End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-16	Future 10-year, 24-hour	19.50	18.98	0.0009	33.37	19.88	28118
EX-ES-16	Future 100-year, 24-hour	19.50	20.14	0.0009	40.52	13.38	43227
EX-ES-16	Future 25-year, 24-hour	19.50	19.40	0.0009	37.63	17.20	37533
EX-ES-16	Future 25-year, 8-hour	19.50	19.19	0.0010	57.26	21.52	34318
EX-ES-16	Future 5-year, 24-hour	19.50	18.79	-0.0009	32.37	18.95	20291

Node: EX-ES-17/EX-ES-19/EX-ES-21

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.14 ft
Warning Stage: 19.00 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-17/EX-ES-19/EX-ES-21	Future 10-year, 24-hour	19.00	18.92	0.0008	39.99	33.23	19148
EX-ES-17/EX-ES-19/EX-ES-21	Future 100-year, 24-hour	19.00	20.14	0.0007	40.35	18.93	33183
EX-ES-17/EX-ES-19/EX-ES-21	Future 25-year, 24-hour	19.00	19.40	0.0009	50.28	28.51	30332
EX-ES-17/EX-ES-19/EX-ES-21	Future 25-year, 8-hour	19.00	19.15	0.0009	78.21	36.06	25012
EX-ES-17/EX-ES-19/EX-ES-21	Future 5-year, 24-hour	19.00	18.70	-0.0010	34.33	30.15	15061

Node: EX-HW-01

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.15 ft
Warning Stage: 18.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0002	11
17.00	0.0005	23
17.50	0.0121	527
18.00	0.1458	6351
18.50	0.5901	25704
19.00	1.0082	43917
19.50	1.4100	61419
20.00	1.5409	67123
20.50	1.5428	67205
21.00	1.5428	67205

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning	Max Stage	Min/Max	Max Total	Max Total	Max Surface

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-01	Future 10-year, 24-hour	18.00	18.77	-0.0010	12.70	5.70	35462
EX-HW-01	Future 100-year, 24-hour	18.00	19.50	-0.0010	24.91	6.94	61297
EX-HW-01	Future 25-year, 24-hour	18.00	19.04	-0.0010	16.83	6.13	45230
EX-HW-01	Future 25-year, 8-hour	18.00	18.96	-0.0010	24.86	6.14	42362
EX-HW-01	Future 5-year, 24-hour	18.00	18.60	-0.0010	10.30	5.24	29292

Node: EX-HW-02

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.63 ft
Warning Stage: 18.39 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-02	Future 10-year, 24-hour	18.39	18.73	0.0010	25.36	17.72	13281
EX-HW-02	Future 100-year, 24-hour	18.39	20.24	-0.0010	41.15	23.94	13281
EX-HW-02	Future 25-year, 24-hour	18.39	19.26	0.0010	31.62	19.93	13281
EX-HW-02	Future	18.39	19.29	0.0010	50.69	20.88	13281

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	25-year, 8-hour						
EX-HW-02	Future 5-year, 24-hour	18.39	18.35	-0.0010	21.40	16.28	12839

Node: EX-HW-03

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.41 ft
Warning Stage: 18.48 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-03	Future 10-year, 24-hour	18.48	17.70	0.0010	63.40	59.60	16511
EX-HW-03	Future 100-year, 24-hour	18.48	18.48	0.0010	108.46	100.48	26772
EX-HW-03	Future 25-year, 24-hour	18.48	17.96	0.0010	79.43	75.60	20952
EX-HW-03	Future 25-year, 8-hour	18.48	18.05	0.0010	110.67	102.80	20108
EX-HW-03	Future 5-year, 24-hour	18.48	17.48	0.0010	53.40	51.58	12651

Node: EX-HW-04

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.73 ft
Warning Stage: 17.77 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-04	Future 10-year, 24-hour	17.77	17.56	0.0008	60.70	38.48	59650
EX-HW-04	Future 100-year, 24-hour	17.77	18.46	0.0009	100.48	54.38	70015
EX-HW-04	Future 25-year, 24-hour	17.77	17.93	0.0010	76.11	45.19	64346
EX-HW-04	Future 25-year, 8-hour	17.77	17.76	-0.0009	103.37	56.71	62281
EX-HW-04	Future 5-year, 24-hour	17.77	17.28	0.0008	52.93	34.60	54167

Node: EX-HW-05

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.63 ft
Warning Stage: 17.50 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-05	Future 10-year, 24-hour	17.50	17.54	0.0010	38.48	21.62	35868
EX-HW-05	Future 100-year, 24-hour	17.50	18.46	0.0010	53.47	26.93	41069
EX-HW-05	Future 25-year, 24-hour	17.50	17.92	0.0010	45.19	22.33	38812
EX-HW-05	Future 25-year, 8-hour	17.50	17.75	0.0010	55.84	24.21	37252
EX-HW-05	Future 5-year, 24-hour	17.50	17.25	0.0010	34.60	21.84	32744

Node: EX-HW-06

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.45 ft
Warning Stage: 17.55 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-06	Future 10-year, 24-hour	17.55	17.34	0.0010	21.62	35.27	5820
EX-HW-06	Future 100-year, 24-hour	17.55	18.12	0.0010	26.93	51.03	6388
EX-HW-06	Future 25-year, 24-hour	17.55	17.68	0.0010	22.33	40.12	6138

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-06	Future 25-year, 8-hour	17.55	17.52	0.0010	24.21	38.77	5994
EX-HW-06	Future 5-year, 24-hour	17.55	17.07	0.0010	21.84	31.01	5345

Node: EX-HW-07

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.01 ft
Warning Stage: 17.68 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-07	Future 10-year, 24-hour	17.68	17.34	0.0010	36.97	24.55	28943
EX-HW-07	Future 100-year, 24-hour	17.68	18.11	0.0010	56.21	33.40	35853
EX-HW-07	Future 25-year, 24-hour	17.68	17.68	0.0010	43.37	26.39	32438
EX-HW-07	Future 25-year, 8-hour	17.68	17.52	0.0010	41.65	26.86	30914
EX-HW-07	Future 5-year, 24-hour	17.68	17.06	0.0010	32.37	24.80	26676

Node: EX-HW-08

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.73 ft
Warning Stage: 17.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.00	0.0002	11
16.50	0.0326	1421
17.00	0.1255	5468
17.50	0.2832	12335
18.00	0.4823	21011
18.50	0.8280	36070
19.00	1.3146	57264
19.50	2.3425	102041
20.00	2.5560	111341
20.50	2.7216	118553
21.00	2.7565	120074
21.50	2.7565	120074

Comment: Warning Stage: Edge of lowest pavement
Desc: Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-08	Future 10-year, 24-hour	17.00	17.90	0.0005	14.77	8.91	19307
EX-HW-08	Future 100-year, 24-hour	17.00	18.91	0.0007	27.67	6.27	53499
EX-HW-08	Future 25-year, 24-hour	17.00	18.32	0.0007	19.30	8.80	30780
EX-HW-08	Future 25-year, 8-hour	17.00	18.18	0.0006	32.19	11.10	26474
EX-HW-08	Future 5-year, 24-hour	17.00	17.60	-0.0008	11.94	8.40	14074

Node: EX-HW-10

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.63 ft
Warning Stage: 19.08 ft

Stage [ft]	Area [ac]	Area [ft2]
15.73	0.0002	11
16.00	0.0042	183
16.50	0.0334	1453
17.00	0.0652	2842
17.50	0.1011	4402
18.00	0.1324	5769
18.50	0.1720	7492
19.00	0.2184	9515
19.50	0.2928	12755
20.00	0.5775	25155
20.50	1.1597	50515
21.00	1.3907	60579
21.50	1.4003	60995
22.00	1.4003	60995

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-10	Future 10-year, 24-hour	19.08	19.02	0.0007	17.93	17.20	9664
EX-HW-10	Future 100-year, 24-hour	19.08	19.96	0.0009	24.96	19.48	24167
EX-HW-10	Future 25-year, 24-hour	19.08	19.33	0.0009	19.91	16.43	11688
EX-HW-10	Future 25-year, 8-hour	19.08	19.20	0.0009	24.04	17.42	10793
EX-HW-10	Future 5-year, 24-hour	19.08	18.85	-0.0008	16.28	17.42	8924

Node: EX-HW-12

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.06 ft
Warning Stage: 19.01 ft

Comment: Warning Stage: Nearest edge of pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-12	Future 10-year, 24-hour	19.01	15.99	0.0006	71.86	71.85	2916
EX-HW-12	Future 100-year, 24-hour	19.01	16.46	0.0007	118.95	118.95	3368
EX-HW-12	Future 25-year, 24-hour	19.01	16.18	0.0007	89.29	89.28	3091
EX-HW-12	Future 25-year, 8-hour	19.01	16.05	0.0007	77.01	77.00	2953
EX-HW-12	Future 5-year, 24-hour	19.01	15.85	0.0009	60.98	60.98	2790

Node: EX-HW-18/EX-HW-19/EX-HW-20

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.01 ft
Warning Stage: 16.01 ft

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-18/EX-HW-19/EX-HW-20	Future 10-year, 24-hour	16.01	17.08	0.0010	8.84	8.01	3433
EX-HW-18/EX-HW-19/EX-HW-20	Future 100-year, 24-hour	16.01	17.56	-0.0010	20.45	14.80	3729
EX-HW-18/EX-HW-19/EX-HW-20	Future 25-year, 24-hour	16.01	17.27	-0.0010	10.40	10.00	3556
EX-HW-18/EX-HW-19/EX-HW-20	Future 25-year, 8-hour	16.01	17.11	0.0010	15.17	13.51	3456
EX-HW-18/EX-HW-19/EX-HW-20	Future 5-year, 24-hour	16.01	16.92	0.0010	8.85	8.04	3338

Node: EX-HW-21

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.25 ft

Stage [ft]	Area [ac]	Area [ft2]
15.03	0.0002	11
15.50	0.0009	39
16.00	0.0237	1033
16.50	0.1945	8471
17.00	0.5355	23325
17.50	1.7685	77037
18.00	2.5308	110244
18.50	2.9905	130267
19.00	2.9905	130267

Comment: Warning Stage: Nearest pavement low point

Buried Pipe

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning	Max Stage	Min/Max	Max Total	Max Total	Max Surface

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-21	Future 10-year, 24-hour	16.25	17.07	0.0010	23.77	22.30	30465
EX-HW-21	Future 100-year, 24-hour	16.25	17.55	0.0010	45.21	37.32	80212
EX-HW-21	Future 25-year, 24-hour	16.25	17.26	0.0010	31.27	28.02	51378
EX-HW-21	Future 25-year, 8-hour	16.25	17.10	0.0010	28.13	23.34	34387
EX-HW-21	Future 5-year, 24-hour	16.25	16.91	0.0010	19.10	18.18	20763

Node: EX-HW-22

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.18 ft

Comment: Warning Stage: Nearest pavement low point

Buried Pipe

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-22	Future 10-year, 24-hour	16.18	17.05	0.0006	29.81	29.74	7347
EX-HW-22	Future 100-year, 24-hour	16.18	17.53	-0.0006	51.87	51.82	7981
EX-HW-22	Future 25-year, 24-hour	16.18	17.25	-0.0005	38.00	37.94	7619

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-22	Future 25-year, 8-hour	16.18	17.09	0.0009	31.21	31.14	7396
EX-HW-22	Future 5-year, 24-hour	16.18	16.90	0.0007	24.18	24.11	7147

Node: EX-IN-01

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.81 ft
Warning Stage: 18.29 ft

Stage [ft]	Area [ac]	Area [ft2]
13.81	0.0001	6
18.29	0.0001	6

Comment: Rim Elev: 18.29
Sump Elev: 13.81
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-01	Future 10-year, 24-hour	18.29	18.01	0.0010	21.42	21.44	560
EX-IN-01	Future 100-year, 24-hour	18.29	18.87	0.0010	26.13	26.13	560
EX-IN-01	Future 25-year, 24-hour	18.29	18.32	0.0010	23.21	23.23	560
EX-IN-01	Future 25-year, 8-hour	18.29	18.32	0.0010	23.85	23.87	560
EX-IN-01	Future 5-year, 24-hour	18.29	17.76	0.0010	20.15	20.16	560

Node: EX-IN-02

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.27 ft
Warning Stage: 17.48 ft

Stage [ft]	Area [ac]	Area [ft2]
16.94	0.0002	11
17.00	0.0025	108
17.50	0.1033	4499
18.00	0.4974	21668
18.50	1.1149	48567
19.00	2.0700	90169
19.50	2.7184	118413
20.00	3.0908	134634
20.50	3.3557	146173
21.00	3.7419	162997
21.50	4.9337	214913
22.00	4.9337	214913

Comment: Rim Elev: 17.48
Sump Elev: 15.27
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-02	Future 10-year, 24-hour	17.48	18.48	0.0010	17.74	4.11	47559
EX-IN-02	Future 100-year, 24-hour	17.48	19.24	-0.0010	39.99	4.40	103621
EX-IN-02	Future 25-year, 24-hour	17.48	18.77	-0.0010	25.35	4.01	71412
EX-IN-02	Future 25-year, 8-hour	17.48	18.63	-0.0010	32.61	4.00	59512
EX-IN-02	Future 5-year, 24-hour	17.48	18.26	0.0009	13.20	4.15	35678

Node: EX-IN-03

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.07 ft
Warning Stage: 16.34 ft

Stage [ft]	Area [ac]	Area [ft2]
16.27	0.0005	22
16.50	0.1139	4962
17.00	0.6635	28901
17.50	1.0492	45703
18.00	1.3475	58695
18.50	1.8419	80234
19.00	2.6302	114571
19.50	2.9682	129296
20.00	3.1236	136066
20.50	3.4488	150231
21.00	3.8751	168799
21.50	3.9398	171617
22.00	3.9398	171617

Comment: Rim Elev: 16.34
Sump Elev: 14.07
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-03	Future 10-year, 24-hour	16.34	17.59	0.0010	14.14	2.97	48108
EX-IN-03	Future 100-year, 24-hour	16.34	18.55	-0.0010	33.02	3.32	83852
EX-IN-03	Future 25-year, 24-hour	16.34	17.98	0.0010	20.21	3.20	58232
EX-IN-03	Future 25-year, 8-hour	16.34	17.79	-0.0017	25.98	3.71	53260
EX-IN-03	Future 5-year, 24-hour	16.34	17.31	0.0010	10.51	2.72	39330

Node: EX-IN-04

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.40 ft
Warning Stage: 17.02 ft

Stage [ft]	Area [ac]	Area [ft2]
16.64	0.0002	11
17.00	0.0455	1981
17.50	0.2523	10990
18.00	0.6976	30386
18.50	1.3608	59277
19.00	2.2865	99598
19.50	2.8249	123053
20.00	3.0638	133461
20.50	3.3129	144311
21.00	3.7120	161695
21.50	3.9314	171253
22.00	3.9557	172311
22.50	3.9557	172311

Comment: Rim Elev: 17.02
Sump Elev: 14.40
Desc: Rectangular Junction Structure NF

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-04	Future 10-year, 24-hour	17.02	17.75	0.0010	14.46	8.26	20840
EX-IN-04	Future 100-year, 24-hour	17.02	18.60	0.0008	32.46	7.80	67579
EX-IN-04	Future 25-year, 24-hour	17.02	18.12	-0.0010	20.61	8.38	37411
EX-IN-04	Future 25-year, 8-hour	17.02	17.96	0.0010	28.52	9.25	28859
EX-IN-04	Future 5-year, 24-hour	17.02	17.42	0.0010	10.77	7.91	9581

Node: EX-IN-05

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.19 ft
Warning Stage: 20.02 ft

Stage [ft]	Area [ac]	Area [ft2]
19.60	0.0002	11
20.00	0.0049	215
20.50	0.2425	10565
21.00	0.5058	22033
21.50	0.5058	22033

Comment: Rim Elev: 20.02
Sump Elev: 16.19
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-05	Future 10-year, 24-hour	20.02	19.52	0.0010	5.71	5.70	189
EX-IN-05	Future 100-year, 24-hour	20.02	20.23	0.0010	7.75	7.17	5004
EX-IN-05	Future 25-year, 24-hour	20.02	19.86	-0.0010	6.47	6.46	189
EX-IN-05	Future 25-year, 8-hour	20.02	20.21	-0.0010	8.81	7.26	4511
EX-IN-05	Future 5-year, 24-hour	20.02	19.24	0.0010	4.98	4.97	189

Node: EX-IN-06

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.96 ft

Warning Stage: 18.63 ft

Stage [ft]	Area [ac]	Area [ft2]
18.78	0.0002	11
19.00	0.0306	1335
19.50	0.5362	23358
20.00	1.9637	85540
20.50	3.6277	158024
21.00	5.0585	220347
21.50	5.5663	242467
22.00	6.1976	269969
22.50	6.6487	289616
23.00	9.9029	431369
23.50	9.9029	431369

Comment: Rim Elev: 18.63
Sump Elev: 15.96
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-06	Future 10-year, 24-hour	18.63	19.90	-0.0011	28.48	15.13	72531
EX-IN-06	Future 100-year, 24-hour	18.63	20.69	-0.0010	65.61	12.76	181693
EX-IN-06	Future 25-year, 24-hour	18.63	20.22	-0.0010	41.10	14.12	116743
EX-IN-06	Future 25-year, 8-hour	18.63	20.05	-0.0010	37.74	15.29	92478
EX-IN-06	Future 5-year, 24-hour	18.63	19.65	-0.0035	20.99	14.75	42593

Node: EX-IN-07

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft

Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
16.39	0.0001	6
19.99	0.0001	6

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Roof drain

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-07	Future 10-year, 24-hour	19.99	18.63	0.0007	2.24	2.23	100
EX-IN-07	Future 100-year, 24-hour	19.99	19.02	-0.0007	3.97	3.97	100
EX-IN-07	Future 25-year, 24-hour	19.99	18.76	0.0009	2.86	2.85	100
EX-IN-07	Future 25-year, 8-hour	19.99	19.19	-0.0010	5.01	4.94	100
EX-IN-07	Future 5-year, 24-hour	19.99	18.55	0.0005	1.85	1.83	100

Node: EX-IN-08

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.05 ft
Warning Stage: 19.11 ft

Comment: Rim Elev: 19.11
Desc: Upstream end of trench drain

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-08	Future 10-year, 24-hour	19.11	19.55	-0.0010	24.53	29.90	17872
EX-IN-08	Future 100-year, 24-hour	19.11	20.14	0.0010	43.50	40.50	34295
EX-IN-08	Future 25-year, 24-hour	19.11	19.55	0.0010	31.27	35.46	21939
EX-IN-08	Future 25-year, 8-hour	19.11	19.66	0.0010	54.72	57.15	21612
EX-IN-08	Future 5-year, 24-hour	19.11	19.54	0.0010	20.24	29.42	17553

Node: EX-IN-09

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.95 ft
Warning Stage: 19.00 ft

Comment: Rim Elev: 19.00
Sump Elev: 17.53
Desc: Upstream end of trench drain

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-09	Future 10-year, 24-hour	19.00	19.31	0.0010	14.10	17.34	11495
EX-IN-09	Future 100-year, 24-hour	19.00	20.14	0.0010	24.91	20.26	29809
EX-IN-09	Future 25-year,	19.00	19.40	0.0010	17.94	27.84	19319

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
EX-IN-09	Future 25-year, 8-hour	19.00	19.48	0.0010	31.49	53.09	16279
EX-IN-09	Future 5-year, 24-hour	19.00	19.26	-0.0012	11.65	13.13	10125

Node: EX-IN-10

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
20.00	0.0002	11
20.50	0.0864	3765
21.00	0.0963	4193
21.50	0.0963	4193

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-10	Future 10-year, 24-hour	19.99	19.53	-0.0010	0.59	0.59	100
EX-IN-10	Future 100-year, 24-hour	19.99	20.25	0.0010	1.05	1.17	1860
EX-IN-10	Future 25-year, 24-hour	19.99	19.87	0.0010	0.76	0.75	100
EX-IN-10	Future 25-year, 8-hour	19.99	20.22	-0.0011	1.33	1.53	1696

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-10	Future 5-year, 24-hour	19.99	19.25	-0.0010	0.49	0.50	100

Node: EX-IN-11

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.42 ft
Warning Stage: 20.28 ft

Stage [ft]	Area [ac]	Area [ft2]
20.19	0.0005	22
20.50	0.1610	7014
21.00	0.2115	9215
21.50	0.2115	9215

Comment: Rim Elev: 20.28
Sump Elev: 16.42
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-11	Future 10-year, 24-hour	20.28	20.19	0.0010	2.34	2.44	113
EX-IN-11	Future 100-year, 24-hour	20.28	20.62	0.0010	2.96	2.76	7530
EX-IN-11	Future 25-year, 24-hour	20.28	20.39	-0.0010	2.61	2.79	4529
EX-IN-11	Future 25-year, 8-hour	20.28	20.49	-0.0010	3.17	2.92	6682
EX-IN-11	Future 5-year, 24-hour	20.28	19.86	-0.0010	2.02	2.01	113

Node: EX-IN-12

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.46 ft
Warning Stage: 20.06 ft

Stage [ft]	Area [ac]	Area [ft2]
19.99	0.0002	11
20.00	0.0005	22
20.50	0.1447	6304
21.00	0.1945	8474
21.50	0.1945	8474

Comment: Rim Elev: 20.06
Sump Elev: 16.457
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-12	Future 10-year, 24-hour	20.06	20.23	-0.0012	1.20	1.80	2914
EX-IN-12	Future 100-year, 24-hour	20.06	20.65	-0.0014	2.13	2.09	6940
EX-IN-12	Future 25-year, 24-hour	20.06	20.43	-0.0016	1.53	2.20	5424
EX-IN-12	Future 25-year, 8-hour	20.06	20.51	-0.0017	2.89	2.34	6345
EX-IN-12	Future 5-year, 24-hour	20.06	19.91	-0.0010	0.99	0.96	100

Node: EX-POND-01

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.26 ft

Warning Stage: 19.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.26	0.0002	11
15.50	0.0514	2238
16.00	0.8113	35341
16.50	1.0657	46423
17.00	1.1284	49155
17.50	1.1771	51275
18.00	1.2245	53340
18.50	1.2692	55287
19.00	1.3171	57375
19.50	1.3794	60086
20.00	1.7135	74642
20.50	2.8926	126002
21.00	4.3342	188799
21.50	5.2224	227486
22.00	5.4948	239353
22.50	5.5268	240746
23.00	5.5439	241494
23.50	5.5639	242365
24.00	5.5816	243133
24.50	5.5888	243448
25.00	5.5947	243705
25.50	5.5964	243780
26.00	5.6028	244056
26.50	5.6028	244056

Comment: Initial Stage: Pond Bottom
Warning Stage: Top of Pond

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01	Future 10-year, 24-hour	19.50	18.66	0.0010	48.04	7.59	55956
EX-POND-01	Future 100-year, 24-hour	19.50	20.14	0.0009	56.47	5.24	89393
EX-POND-01	Future 25-year, 24-hour	19.50	19.40	0.0010	51.65	5.28	59565
EX-POND-01	Future 25-year, 8-hour	19.50	18.75	0.0010	59.49	7.76	56332

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01	Future 5-year, 24-hour	19.50	18.32	0.0008	39.97	7.38	54570

Node: EX-POND-01-GW

Scenario: Future Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.26 ft
Warning Stage: 11.26 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.26
0	0	0	72.0000	10.26

Comment:

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01-GW	Future 10-year, 24-hour	11.26	10.26	0.0000	7.59	0.00	0
EX-POND-01-GW	Future 100-year, 24-hour	11.26	10.26	0.0000	5.24	0.00	0
EX-POND-01-GW	Future 25-year, 24-hour	11.26	10.26	0.0000	5.28	0.00	0
EX-POND-01-GW	Future 25-year, 8-hour	11.26	10.26	0.0000	7.76	0.00	0
EX-POND-01-GW	Future 5-year, 24-hour	11.26	10.26	0.0000	7.38	0.00	0

Node: EX-POND-02

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.52 ft
Warning Stage: 16.99 ft

Stage [ft]	Area [ac]	Area [ft2]
13.52	0.0002	11
14.00	0.0235	1022
14.50	0.0575	2507
15.00	0.0831	3620
15.50	0.1027	4475
16.00	0.1210	5272
16.50	0.1430	6229
17.00	0.2033	8854
17.50	0.4594	20011
18.00	0.5456	23765
18.50	0.6508	28348
19.00	0.7597	33093
19.50	0.8432	36729
20.00	0.8432	36729

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02	Future 10-year, 24-hour	16.99	17.08	-0.0010	43.20	43.13	10657
EX-POND-02	Future 100-year, 24-hour	16.99	17.49	0.0009	67.83	67.80	19910
EX-POND-02	Future 25-year, 24-hour	16.99	17.30	-0.0009	52.59	52.44	15673
EX-POND-02	Future 25-year, 8-hour	16.99	17.19	-0.0010	48.54	48.51	13260
EX-POND-02	Future 5-year, 24-hour	16.99	16.86	-0.0010	37.77	37.68	8202

Node: EX-POND-02-GW

Scenario: Future Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.52 ft
Warning Stage: 9.52 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.52
0	0	0	72.0000	8.52

Comment:

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02-GW	Future 10-year, 24-hour	9.52	8.52	0.0000	0.82	0.00	0
EX-POND-02-GW	Future 100-year, 24-hour	9.52	8.52	0.0000	0.83	0.04	0
EX-POND-02-GW	Future 25-year, 24-hour	9.52	8.52	0.0000	0.83	0.00	0
EX-POND-02-GW	Future 25-year, 8-hour	9.52	8.52	0.0000	1.82	0.00	0
EX-POND-02-GW	Future 5-year, 24-hour	9.52	8.52	0.0000	0.81	0.00	0

Node: EX-POND-03

Scenario: Future Conditions - Existing Infrastructure
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.57 ft
Warning Stage: 16.00 ft

Stage [ft]	Area [ac]	Area [ft2]
13.57	0.0002	11

Stage [ft]	Area [ac]	Area [ft2]
14.00	0.0460	2002
14.50	0.1070	4661
15.00	0.1522	6631
15.50	0.1962	8547
16.00	0.3017	13143
16.50	0.6459	28137
17.00	1.1167	48642
17.50	2.2635	98597
18.00	3.2969	143612
18.50	4.2781	186355
19.00	4.8830	212705
19.50	4.9315	214814
20.00	5.0091	218194
20.50	5.1042	222338
21.00	5.1635	224922
21.50	5.1949	226289
22.00	5.3063	231143
22.50	5.3665	233766
23.00	9.8054	427125
23.50	9.8054	427125

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03	Future 10-year, 24-hour	16.00	17.08	-0.0010	31.00	27.51	56410
EX-POND-03	Future 100-year, 24-hour	16.00	17.56	-0.0009	58.80	49.20	104104
EX-POND-03	Future 25-year, 24-hour	16.00	17.27	-0.0009	40.73	35.41	75926
EX-POND-03	Future 25-year, 8-hour	16.00	17.11	-0.0010	39.50	35.61	60035
EX-POND-03	Future 5-year, 24-hour	16.00	16.93	-0.0010	24.96	22.37	45577

Node: EX-POND-03-GW

Scenario: Future Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.57 ft
Warning Stage: 9.57 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.57
0	0	0	72.0000	8.57

Comment:

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03-GW	Future 10-year, 24-hour	9.57	8.57	0.0000	1.67	0.00	0
EX-POND-03-GW	Future 100-year, 24-hour	9.57	8.57	0.0000	1.64	0.00	0
EX-POND-03-GW	Future 25-year, 24-hour	9.57	8.57	0.0000	1.70	0.00	0
EX-POND-03-GW	Future 25-year, 8-hour	9.57	8.57	0.0000	8.27	0.00	0
EX-POND-03-GW	Future 5-year, 24-hour	9.57	8.57	0.0000	1.66	0.00	0

Node: OUTFALL

Scenario: Future Conditions - Existing Infrastructure
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 0.00 ft
Warning Stage: 0.00 ft
Boundary Stage: OF-01

Comment: 5-year 16.474

10-year	16.633
25-year	16.824
100-year	17.116

Node Max Conditions [Future Conditions - Existing Infrastructure]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
OUTFALL	Future 10-year, 24-hour	0.00	14.00	0.0000	71.85	0.00	0
OUTFALL	Future 100-year, 24-hour	0.00	14.00	0.0000	118.95	0.00	0
OUTFALL	Future 25-year, 24-hour	0.00	14.00	0.0000	89.28	0.00	0
OUTFALL	Future 25-year, 8-hour	0.00	14.00	0.0000	77.00	0.00	0
OUTFALL	Future 5-year, 24-hour	0.00	14.00	0.0000	60.98	0.00	0

Node: EX-ES-01

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.06 ft
Warning Stage: 18.50 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0005	22
17.00	0.0049	215
17.50	0.1577	6867
18.00	0.7057	30742
18.50	1.3549	59018
19.00	2.3947	104313
19.50	3.3876	147562
20.00	3.8655	168379
20.50	4.2781	186355
21.00	4.8576	211596
21.50	4.9666	216344
22.00	4.9666	216344

Comment: Warning Stage: Edge Nearest Pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-01	Future 10-year, 24-hour	18.50	18.53	0.0006	18.30	4.84	61800
EX-ES-01	Future 100-year, 24-hour	18.50	19.27	-0.0008	40.77	5.13	127368
EX-ES-01	Future 25-year, 24-hour	18.50	18.82	0.0005	26.25	4.70	88241
EX-ES-01	Future 25-year, 8-hour	18.50	18.69	0.0006	29.83	4.91	76123
EX-ES-01	Future 5-year, 24-hour	18.50	18.30	0.0005	12.75	4.92	47857

Node: EX-ES-03/EX-ES-05

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 18.00 ft

Comment: Warning Stage: Lowest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-03/EX-ES-05	Future 10-year,	18.00	18.36	0.0007	36.77	27.52	14836

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
EX-ES-03/EX-ES-05	Future 100-year, 24-hour	18.00	19.54	0.0010	64.62	50.88	14836
EX-ES-03/EX-ES-05	Future 25-year, 24-hour	18.00	18.77	0.0008	45.51	35.84	14836
EX-ES-03/EX-ES-05	Future 25-year, 8-hour	18.00	18.78	0.0008	77.15	49.91	14836
EX-ES-03/EX-ES-05	Future 5-year, 24-hour	18.00	18.10	0.0005	31.35	24.26	14836

Node: EX-ES-06/EX-ES-07/EX-ES-08

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.00 ft
Warning Stage: 18.10 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-06/EX-ES-07/EX-ES-08	Future 10-year, 24-hour	18.10	17.25	0.0008	52.42	41.25	40985
EX-ES-06/EX-ES-07/EX-ES-08	Future 100-year, 24-hour	18.10	18.11	0.0008	80.59	66.67	50492
EX-ES-06/EX-ES-07/EX-ES-08	Future 25-year, 24-hour	18.10	17.62	0.0007	62.74	50.55	44933
EX-ES-06/EX-ES-07/EX-ES-08	Future 25-year, 8-hour	18.10	17.45	0.0008	61.83	46.20	43006

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-06/EX-ES-07/EX-ES-08	Future 5-year, 24-hour	18.10	16.95	0.0008	45.50	35.62	36777

Node: EX-ES-09

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.00 ft
Warning Stage: 16.98 ft

Comment: Warning Stage: Low edge of pavement in infield
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-09	Future 10-year, 24-hour	16.98	17.26	0.0005	40.16	31.77	21276
EX-ES-09	Future 100-year, 24-hour	16.98	18.11	0.0007	72.93	58.51	24330
EX-ES-09	Future 25-year, 24-hour	16.98	17.63	0.0006	52.99	42.18	22735
EX-ES-09	Future 25-year, 8-hour	16.98	17.46	0.0005	58.27	47.22	22066
EX-ES-09	Future 5-year, 24-hour	16.98	16.96	0.0005	30.02	23.53	19961

Node: EX-ES-10

Scenario: Future Conditions - Initial Improvements

Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.02 ft
Warning Stage: 16.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.03	0.0005	22
15.50	0.0655	2852
16.00	0.1544	6727
16.50	0.2444	10645
17.00	0.2879	12540
17.50	0.3259	14198
18.00	0.3731	16253
18.50	0.4324	18837
19.00	0.5036	21937
19.50	0.5706	24854
20.00	0.6529	28438
20.50	0.7460	32496
21.00	0.7616	33173
21.50	0.7616	33173

Comment: Warning Stage: Lowest edge of pavement within infield
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-10	Future 10-year, 24-hour	16.50	17.46	0.0010	27.83	19.82	14060
EX-ES-10	Future 100-year, 24-hour	16.50	18.83	0.0010	41.75	27.18	20861
EX-ES-10	Future 25-year, 24-hour	16.50	18.02	0.0010	34.12	23.42	16346
EX-ES-10	Future 25-year, 8-hour	16.50	17.77	0.0010	36.49	23.48	15292
EX-ES-10	Future 5-year, 24-hour	16.50	17.07	0.0009	21.44	15.45	12794

Node: EX-ES-13

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.28 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
15.27	0.0002	11
15.50	0.0006	24
16.00	0.0027	118
16.50	0.2175	9472
17.00	0.3168	13799
17.50	0.3459	15069
18.00	0.3709	16157
18.50	0.3936	17147
19.00	0.4196	18277
19.50	0.4403	19181
20.00	0.4823	21011
20.50	0.6089	26522
21.00	0.6407	27909
21.50	0.6407	27909

Comment: Warning Stage: Elevation of nearest pavement
Desc: Mitered End Section
Stage areas for storage within basin

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-13	Future 10-year, 24-hour	19.99	18.87	0.0009	18.06	17.40	17982
EX-ES-13	Future 100-year, 24-hour	19.99	18.96	0.0006	31.07	30.88	18195
EX-ES-13	Future 25-year, 24-hour	19.99	18.91	0.0007	23.27	23.00	18080
EX-ES-13	Future 25-year, 8-hour	19.99	18.89	0.0006	23.59	20.62	18040
EX-ES-13	Future 5-year, 24-hour	19.99	18.82	0.0008	14.21	12.48	17880

Node: EX-ES-16

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.89 ft
Warning Stage: 19.50 ft

Comment: Warning Stage: Nearest pavement elevation
Desc: Concrete Flared End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-16	Future 10-year, 24-hour	19.50	19.01	0.0010	33.36	20.94	29091
EX-ES-16	Future 100-year, 24-hour	19.50	20.17	0.0010	42.56	13.57	43227
EX-ES-16	Future 25-year, 24-hour	19.50	19.51	0.0010	40.07	18.33	40098
EX-ES-16	Future 25-year, 8-hour	19.50	19.22	0.0010	60.55	21.71	35105
EX-ES-16	Future 5-year, 24-hour	19.50	18.82	0.0009	32.33	20.10	22616

Node: EX-ES-17/EX-ES-19/EX-ES-21

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.14 ft
Warning Stage: 19.00 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Mitered End Section

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-ES-17/EX-ES-19/EX-ES-21	Future 10-year, 24-hour	19.00	18.95	0.0009	40.85	33.52	19693
EX-ES-17/EX-ES-19/EX-ES-21	Future 100-year, 24-hour	19.00	20.17	0.0007	41.79	19.36	33183
EX-ES-17/EX-ES-19/EX-ES-21	Future 25-year, 24-hour	19.00	19.51	0.0010	50.30	28.63	32201
EX-ES-17/EX-ES-19/EX-ES-21	Future 25-year, 8-hour	19.00	19.17	0.0010	78.09	36.34	25310
EX-ES-17/EX-ES-19/EX-ES-21	Future 5-year, 24-hour	19.00	18.73	-0.0009	35.61	30.64	15472

Node: EX-HW-01

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.46 ft
Warning Stage: 18.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.92	0.0002	11
17.00	0.0005	23
17.50	0.0121	527
18.00	0.1458	6351
18.50	0.5901	25704
19.00	1.0082	43917
19.50	1.4100	61419
20.00	1.5409	67123
20.50	1.5428	67205
21.00	1.5428	67205

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-01	Future 10-year, 24-hour	18.00	18.41	-0.0010	8.73	6.53	22061
EX-HW-01	Future 100-year, 24-hour	18.00	19.16	0.0010	22.44	6.76	49506
EX-HW-01	Future 25-year, 24-hour	18.00	18.71	0.0009	14.12	6.53	33248
EX-HW-01	Future 25-year, 8-hour	18.00	18.63	0.0010	20.21	6.57	30288
EX-HW-01	Future 5-year, 24-hour	18.00	18.18	-0.0010	6.12	6.11	13502

Node: EX-HW-03

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.41 ft
Warning Stage: 18.48 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-03	Future 10-year, 24-hour	18.48	17.74	0.0010	66.66	63.25	16952
EX-HW-03	Future 100-year, 24-hour	18.48	18.50	0.0010	113.70	105.47	26866
EX-HW-03	Future 25-year, 24-hour	18.48	17.96	0.0010	83.50	79.38	20745
EX-HW-03	Future	18.48	18.07	0.0010	113.92	105.69	20392

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	25-year, 8-hour						
EX-HW-03	Future 5-year, 24-hour	18.48	17.53	0.0010	56.69	54.70	12980

Node: EX-HW-04

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.73 ft
Warning Stage: 17.77 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-04	Future 10-year, 24-hour	17.77	17.53	0.0010	63.99	40.96	59308
EX-HW-04	Future 100-year, 24-hour	17.77	18.48	0.0010	105.47	58.16	70072
EX-HW-04	Future 25-year, 24-hour	17.77	17.91	0.0010	79.38	48.44	64077
EX-HW-04	Future 25-year, 8-hour	17.77	17.73	0.0010	106.18	58.94	62017
EX-HW-04	Future 5-year, 24-hour	17.77	17.26	0.0010	55.93	36.45	53610

Node: EX-HW-05

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.63 ft
Warning Stage: 17.50 ft

Comment: Warning Stage: Edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-05	Future 10-year, 24-hour	17.50	17.51	0.0010	40.96	23.19	35634
EX-HW-05	Future 100-year, 24-hour	17.50	18.48	0.0010	57.07	27.26	41069
EX-HW-05	Future 25-year, 24-hour	17.50	17.90	0.0010	47.99	24.52	38618
EX-HW-05	Future 25-year, 8-hour	17.50	17.72	0.0010	57.92	26.31	37040
EX-HW-05	Future 5-year, 24-hour	17.50	17.22	0.0010	36.45	22.78	32143

Node: EX-HW-06

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 12.45 ft
Warning Stage: 17.55 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-06	Future 10-year, 24-hour	17.55	17.27	0.0010	23.19	36.28	5731
EX-HW-06	Future 100-year, 24-hour	17.55	18.11	0.0010	27.26	51.27	6387
EX-HW-06	Future 25-year, 24-hour	17.55	17.63	0.0010	24.52	41.79	6094
EX-HW-06	Future 25-year, 8-hour	17.55	17.46	-0.0010	26.31	39.72	5936
EX-HW-06	Future 5-year, 24-hour	17.55	16.98	0.0010	22.78	29.93	5114

Node: EX-HW-07

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.01 ft
Warning Stage: 17.68 ft

Comment: Warning Stage: Nearest low edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-07	Future 10-year, 24-hour	17.68	17.26	0.0010	39.04	25.36	28214
EX-HW-07	Future 100-year, 24-hour	17.68	18.11	0.0010	56.49	33.69	35847
EX-HW-07	Future 25-year, 24-hour	17.68	17.63	0.0010	46.11	27.77	31982

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-07	Future 25-year, 8-hour	17.68	17.46	0.0010	42.52	27.29	30218
EX-HW-07	Future 5-year, 24-hour	17.68	16.98	0.0010	31.47	25.42	25681

Node: EX-HW-08

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.73 ft
Warning Stage: 17.00 ft

Stage [ft]	Area [ac]	Area [ft2]
16.00	0.0002	11
16.50	0.0326	1421
17.00	0.1255	5468
17.50	0.2832	12335
18.00	0.4823	21011
18.50	0.8280	36070
19.00	1.3146	57264
19.50	2.3425	102041
20.00	2.5560	111341
20.50	2.7216	118553
21.00	2.7565	120074
21.50	2.7565	120074

Comment: Warning Stage: Edge of lowest pavement
Desc: Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-08	Future 10-year, 24-hour	17.00	17.49	0.0009	14.77	12.25	12185
EX-HW-08	Future 100-year, 24-hour	17.00	18.85	-0.0009	27.67	10.29	50732

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-08	Future 25-year, 24-hour	17.00	18.04	-0.0010	19.30	13.02	22264
EX-HW-08	Future 25-year, 8-hour	17.00	17.80	0.0007	32.19	16.89	17617
EX-HW-08	Future 5-year, 24-hour	17.00	17.09	0.0009	11.94	11.15	6761

Node: EX-HW-10

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.63 ft
Warning Stage: 19.08 ft

Stage [ft]	Area [ac]	Area [ft2]
15.73	0.0002	11
16.00	0.0042	183
16.50	0.0334	1453
17.00	0.0652	2842
17.50	0.1011	4402
18.00	0.1324	5769
18.50	0.1720	7492
19.00	0.2184	9515
19.50	0.2928	12755
20.00	0.5775	25155
20.50	1.1597	50515
21.00	1.3907	60579
21.50	1.4003	60995
22.00	1.4003	60995

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall
Stage areas for storage area within basin

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-10	Future 10-year, 24-hour	19.08	19.15	0.0008	16.99	15.65	10480
EX-HW-10	Future 100-year, 24-hour	19.08	19.99	0.0008	23.14	18.58	25040
EX-HW-10	Future 25-year, 24-hour	19.08	19.47	0.0008	19.03	15.12	12552
EX-HW-10	Future 25-year, 8-hour	19.08	19.27	0.0008	23.78	16.12	11272
EX-HW-10	Future 5-year, 24-hour	19.08	19.00	0.0007	15.93	15.53	9507

Node: EX-HW-12

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.06 ft
Warning Stage: 19.01 ft

Comment: Warning Stage: Nearest edge of pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-12	Future 10-year, 24-hour	19.01	16.02	0.0004	74.44	74.42	3292
EX-HW-12	Future 100-year, 24-hour	19.01	16.55	-0.0005	128.10	128.09	3902
EX-HW-12	Future 25-year, 24-hour	19.01	16.22	0.0005	93.55	93.53	3536
EX-HW-12	Future	19.01	16.10	0.0004	81.97	81.97	3392

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	25-year, 8-hour						
EX-HW-12	Future 5-year, 24-hour	19.01	15.86	0.0004	61.41	61.40	3108

Node: EX-HW-18/EX-HW-19/EX-HW-20

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.01 ft
Warning Stage: 16.01 ft

Comment: Warning Stage: Nearest pavement low point
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-HW-18/EX-HW-19/EX-HW-20	Future 10-year, 24-hour	16.01	16.57	-0.0008	21.53	21.20	3634
EX-HW-18/EX-HW-19/EX-HW-20	Future 100-year, 24-hour	16.01	17.11	-0.0008	26.56	24.48	3729
EX-HW-18/EX-HW-19/EX-HW-20	Future 25-year, 24-hour	16.01	16.77	0.0007	25.53	23.54	3729
EX-HW-18/EX-HW-19/EX-HW-20	Future 25-year, 8-hour	16.01	16.65	-0.0008	22.49	21.50	3687
EX-HW-18/EX-HW-19/EX-HW-20	Future 5-year, 24-hour	16.01	16.37	0.0005	16.51	16.37	3509

Node: EX-IN-01

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.81 ft
Warning Stage: 18.29 ft

Stage [ft]	Area [ac]	Area [ft2]
13.81	0.0001	6
18.29	0.0001	6

Comment: Rim Elev: 18.29
Sump Elev: 13.81
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-01	Future 10-year, 24-hour	18.29	18.18	0.0016	24.93	24.96	546
EX-IN-01	Future 100-year, 24-hour	18.29	19.16	0.0016	32.93	32.92	546
EX-IN-01	Future 25-year, 24-hour	18.29	18.54	0.0015	27.34	27.36	546
EX-IN-01	Future 25-year, 8-hour	18.29	18.51	0.0015	28.35	28.38	546
EX-IN-01	Future 5-year, 24-hour	18.29	17.93	0.0016	23.67	23.69	546

Node: EX-IN-02

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.27 ft
Warning Stage: 17.48 ft

Stage [ft]	Area [ac]	Area [ft2]
16.94	0.0002	11

Stage [ft]	Area [ac]	Area [ft2]
17.00	0.0025	108
17.50	0.1033	4499
18.00	0.4974	21668
18.50	1.1149	48567
19.00	2.0700	90169
19.50	2.7184	118413
20.00	3.0908	134634
20.50	3.3557	146173
21.00	3.7419	162997
21.50	4.9337	214913
22.00	4.9337	214913

Comment: Rim Elev: 17.48
Sump Elev: 15.27
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-02	Future 10-year, 24-hour	17.48	18.51	0.0010	17.74	4.21	49327
EX-IN-02	Future 100-year, 24-hour	17.48	19.29	-0.0010	41.64	4.58	106506
EX-IN-02	Future 25-year, 24-hour	17.48	18.80	-0.0009	25.35	4.18	73877
EX-IN-02	Future 25-year, 8-hour	17.48	18.68	-0.0010	34.20	4.23	63265
EX-IN-02	Future 5-year, 24-hour	17.48	18.28	-0.0009	13.20	4.17	37002

Node: EX-IN-03

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.07 ft
Warning Stage: 16.34 ft

Stage [ft]	Area [ac]	Area [ft2]
16.27	0.0005	22
16.50	0.1139	4962
17.00	0.6635	28901
17.50	1.0492	45703
18.00	1.3475	58695
18.50	1.8419	80234
19.00	2.6302	114571
19.50	2.9682	129296
20.00	3.1236	136066
20.50	3.4488	150231
21.00	3.8751	168799
21.50	3.9398	171617
22.00	3.9398	171617

Comment: Rim Elev: 16.34
Sump Elev: 14.07
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-03	Future 10-year, 24-hour	16.34	17.57	0.0010	14.14	3.07	47548
EX-IN-03	Future 100-year, 24-hour	16.34	18.57	0.0010	33.17	3.48	84730
EX-IN-03	Future 25-year, 24-hour	16.34	17.97	0.0010	20.61	3.29	57851
EX-IN-03	Future 25-year, 8-hour	16.34	17.78	-0.0018	25.98	3.74	52855
EX-IN-03	Future 5-year, 24-hour	16.34	17.30	0.0010	10.51	2.89	38829

Node: EX-IN-04

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.40 ft

Warning Stage: 17.02 ft

Stage [ft]	Area [ac]	Area [ft2]
16.64	0.0002	11
17.00	0.0455	1981
17.50	0.2523	10990
18.00	0.6976	30386
18.50	1.3608	59277
19.00	2.2865	99598
19.50	2.8249	123053
20.00	3.0638	133461
20.50	3.3129	144311
21.00	3.7120	161695
21.50	3.9314	171253
22.00	3.9557	172311
22.50	3.9557	172311

Comment: Rim Elev: 17.02
Sump Elev: 14.40
Desc: Rectangular Junction Structure NF

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-04	Future 10-year, 24-hour	17.02	17.75	0.0010	14.46	8.33	20514
EX-IN-04	Future 100-year, 24-hour	17.02	18.59	0.0008	32.46	7.94	66933
EX-IN-04	Future 25-year, 24-hour	17.02	18.11	-0.0009	20.61	8.41	36986
EX-IN-04	Future 25-year, 8-hour	17.02	17.95	0.0010	28.53	9.31	28637
EX-IN-04	Future 5-year, 24-hour	17.02	17.41	-0.0010	10.77	7.95	9353

Node: EX-IN-05

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area

Base Flow: 0.00 cfs
Initial Stage: 16.19 ft
Warning Stage: 20.02 ft

Stage [ft]	Area [ac]	Area [ft2]
19.60	0.0002	11
20.00	0.0049	215
20.50	0.2425	10565
21.00	0.5058	22033
21.50	0.5058	22033

Comment: Rim Elev: 20.02
Sump Elev: 16.19
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-05	Future 10-year, 24-hour	20.02	19.75	-0.0010	5.51	5.41	189
EX-IN-05	Future 100-year, 24-hour	20.02	20.33	0.0010	7.46	6.55	6954
EX-IN-05	Future 25-year, 24-hour	20.02	20.05	0.0010	6.12	6.01	1351
EX-IN-05	Future 25-year, 8-hour	20.02	20.23	0.0010	8.73	7.16	5079
EX-IN-05	Future 5-year, 24-hour	20.02	19.48	-0.0010	4.84	4.78	189

Node: EX-IN-06

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.96 ft
Warning Stage: 18.63 ft

Stage [ft]	Area [ac]	Area [ft2]
18.78	0.0002	11

Stage [ft]	Area [ac]	Area [ft2]
19.00	0.0306	1335
19.50	0.5362	23358
20.00	1.9637	85540
20.50	3.6277	158024
21.00	5.0585	220347
21.50	5.5663	242467
22.00	6.1976	269969
22.50	6.6487	289616
23.00	9.9029	431369
23.50	9.9029	431369

Comment: Rim Elev: 18.63
Sump Elev: 15.96
Desc: Flat Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-06	Future 10-year, 24-hour	18.63	19.93	-0.0010	28.48	13.90	76399
EX-IN-06	Future 100-year, 24-hour	18.63	20.70	0.0009	65.61	12.60	183483
EX-IN-06	Future 25-year, 24-hour	18.63	20.23	-0.0010	41.10	13.57	119496
EX-IN-06	Future 25-year, 8-hour	18.63	20.07	-0.0010	37.74	14.18	95544
EX-IN-06	Future 5-year, 24-hour	18.63	19.70	0.0010	20.99	13.35	47672

Node: EX-IN-07

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
16.39	0.0001	6
19.99	0.0001	6

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Roof drain

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-07	Future 10-year, 24-hour	19.99	18.98	0.0009	2.24	2.21	100
EX-IN-07	Future 100-year, 24-hour	19.99	19.40	-0.0010	3.97	3.96	100
EX-IN-07	Future 25-year, 24-hour	19.99	19.13	-0.0010	2.86	2.85	100
EX-IN-07	Future 25-year, 8-hour	19.99	19.38	0.0010	5.01	4.86	100
EX-IN-07	Future 5-year, 24-hour	19.99	18.87	0.0008	1.85	1.78	100

Node: EX-IN-08

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 17.05 ft
Warning Stage: 19.11 ft

Comment: Rim Elev: 19.11
Desc: Upstream end of trench drain

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning	Max Stage	Min/Max	Max Total	Max Total	Max Surface

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-08	Future 10-year, 24-hour	19.11	19.55	0.0010	24.53	29.84	18011
EX-IN-08	Future 100-year, 24-hour	19.11	20.17	0.0010	43.50	38.63	34295
EX-IN-08	Future 25-year, 24-hour	19.11	19.55	0.0010	31.27	35.54	24021
EX-IN-08	Future 25-year, 8-hour	19.11	19.66	0.0010	54.72	57.49	21632
EX-IN-08	Future 5-year, 24-hour	19.11	19.54	0.0010	20.24	29.37	17542

Node: EX-IN-09

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.95 ft
Warning Stage: 19.00 ft

Comment: Rim Elev: 19.00
Sump Elev: 17.53
Desc: Upstream end of trench drain

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-09	Future 10-year, 24-hour	19.00	19.31	0.0010	14.10	17.38	11515
EX-IN-09	Future 100-year, 24-hour	19.00	20.17	0.0010	24.91	19.66	29809
EX-IN-09	Future 25-year, 24-hour	19.00	19.51	0.0010	17.94	27.68	22391

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-09	Future 25-year, 8-hour	19.00	19.48	0.0010	31.49	52.98	16269
EX-IN-09	Future 5-year, 24-hour	19.00	19.26	0.0010	11.65	13.18	10173

Node: EX-IN-10

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.39 ft
Warning Stage: 19.99 ft

Stage [ft]	Area [ac]	Area [ft2]
20.00	0.0002	11
20.50	0.0864	3765
21.00	0.0963	4193
21.50	0.0963	4193

Comment: Rim Elev: 19.99
Sump Elev: 16.39
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-10	Future 10-year, 24-hour	19.99	19.76	-0.0010	0.59	0.58	100
EX-IN-10	Future 100-year, 24-hour	19.99	20.34	0.0010	1.05	1.06	2549
EX-IN-10	Future 25-year, 24-hour	19.99	20.07	-0.0010	0.76	0.76	500
EX-IN-10	Future 25-year, 8-hour	19.99	20.25	-0.0010	1.33	1.15	1876
EX-IN-10	Future	19.99	19.48	-0.0010	0.49	0.46	100

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	5-year, 24-hour						

Node: EX-IN-11

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.42 ft
Warning Stage: 20.28 ft

Stage [ft]	Area [ac]	Area [ft2]
20.19	0.0005	22
20.50	0.1610	7014
21.00	0.2115	9215
21.50	0.2115	9215

Comment: Rim Elev: 20.28
Sump Elev: 16.42
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-11	Future 10-year, 24-hour	20.28	20.25	-0.0010	2.24	2.24	1354
EX-IN-11	Future 100-year, 24-hour	20.28	20.65	0.0010	2.91	2.73	7657
EX-IN-11	Future 25-year, 24-hour	20.28	20.43	0.0010	2.35	2.54	5530
EX-IN-11	Future 25-year, 8-hour	20.28	20.49	0.0010	3.17	2.63	6828
EX-IN-11	Future 5-year, 24-hour	20.28	20.02	-0.0010	1.98	1.91	113

Node: EX-IN-12

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 16.46 ft
Warning Stage: 20.06 ft

Stage [ft]	Area [ac]	Area [ft2]
19.99	0.0002	11
20.00	0.0005	22
20.50	0.1447	6304
21.00	0.1945	8474
21.50	0.1945	8474

Comment: Rim Elev: 20.06
Sump Elev: 16.457
Desc: Grate Inlet

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-IN-12	Future 10-year, 24-hour	20.06	20.28	-0.0012	1.20	1.73	3566
EX-IN-12	Future 100-year, 24-hour	20.06	20.67	-0.0014	2.13	2.07	7045
EX-IN-12	Future 25-year, 24-hour	20.06	20.46	-0.0013	1.53	2.01	5848
EX-IN-12	Future 25-year, 8-hour	20.06	20.51	-0.0014	2.90	2.08	6363
EX-IN-12	Future 5-year, 24-hour	20.06	20.06	-0.0010	0.99	1.01	715

Node: EX-POND-01

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 15.26 ft

Warning Stage: 19.50 ft

Stage [ft]	Area [ac]	Area [ft2]
15.26	0.0002	11
15.50	0.0514	2238
16.00	0.8113	35341
16.50	1.0657	46423
17.00	1.1284	49155
17.50	1.1771	51275
18.00	1.2245	53340
18.50	1.2692	55287
19.00	1.3171	57375
19.50	1.3794	60086
20.00	1.7135	74642
20.50	2.8926	126002
21.00	4.3342	188799
21.50	5.2224	227486
22.00	5.4948	239353
22.50	5.5268	240746
23.00	5.5439	241494
23.50	5.5639	242365
24.00	5.5816	243133
24.50	5.5888	243448
25.00	5.5947	243705
25.50	5.5964	243780
26.00	5.6028	244056
26.50	5.6028	244056

Comment: Initial Stage: Pond Bottom
Warning Stage: Top of Pond

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01	Future 10-year, 24-hour	19.50	18.86	0.0010	48.30	7.63	56775
EX-POND-01	Future 100-year, 24-hour	19.50	20.18	0.0010	56.90	5.24	92680
EX-POND-01	Future 25-year, 24-hour	19.50	19.51	0.0010	51.91	5.28	60506
EX-POND-01	Future 25-year, 8-hour	19.50	18.87	0.0010	59.52	7.83	56843

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01	Future 5-year, 24-hour	19.50	18.67	0.0009	40.20	7.46	56017

Node: EX-POND-01-GW

Scenario: Future Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.26 ft
Warning Stage: 11.26 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.26
0	0	0	72.0000	10.26

Comment:

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-01-GW	Future 10-year, 24-hour	11.26	10.26	0.0000	7.63	0.00	0
EX-POND-01-GW	Future 100-year, 24-hour	11.26	10.26	0.0000	5.24	0.00	0
EX-POND-01-GW	Future 25-year, 24-hour	11.26	10.26	0.0000	5.28	0.00	0
EX-POND-01-GW	Future 25-year, 8-hour	11.26	10.26	0.0000	7.83	0.00	0
EX-POND-01-GW	Future 5-year, 24-hour	11.26	10.26	0.0000	7.46	0.00	0

Node: EX-POND-02

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.52 ft
Warning Stage: 16.99 ft

Stage [ft]	Area [ac]	Area [ft2]
13.52	0.0002	11
14.00	0.0235	1022
14.50	0.0575	2507
15.00	0.0831	3620
15.50	0.1027	4475
16.00	0.1210	5272
16.50	0.1430	6229
17.00	0.2033	8854
17.50	0.4594	20011
18.00	0.5456	23765
18.50	0.6508	28348
19.00	0.7597	33093
19.50	0.8432	36729
20.00	0.8432	36729

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02	Future 10-year, 24-hour	16.99	17.02	0.0010	41.91	41.62	9326
EX-POND-02	Future 100-year, 24-hour	16.99	17.49	0.0010	67.71	67.67	19919
EX-POND-02	Future 25-year, 24-hour	16.99	17.27	0.0010	51.29	51.02	15014
EX-POND-02	Future 25-year, 8-hour	16.99	17.15	-0.0010	46.91	46.77	12358
EX-POND-02	Future 5-year, 24-hour	16.99	16.78	-0.0009	36.18	36.00	7792

Node: EX-POND-02-GW

Scenario: Future Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.52 ft
Warning Stage: 9.52 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.52
0	0	0	72.0000	8.52

Comment:

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-02-GW	Future 10-year, 24-hour	9.52	8.52	0.0000	0.80	0.00	0
EX-POND-02-GW	Future 100-year, 24-hour	9.52	8.52	0.0000	0.83	0.02	0
EX-POND-02-GW	Future 25-year, 24-hour	9.52	8.52	0.0000	0.82	0.00	0
EX-POND-02-GW	Future 25-year, 8-hour	9.52	8.52	0.0000	1.69	0.00	0
EX-POND-02-GW	Future 5-year, 24-hour	9.52	8.52	0.0000	0.79	0.00	0

Node: EX-POND-03

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 13.57 ft
Warning Stage: 16.00 ft

Stage [ft]	Area [ac]	Area [ft2]
13.57	0.0005	22

Stage [ft]	Area [ac]	Area [ft2]
14.00	0.0437	1904
14.50	0.1055	4594
15.00	0.1523	6633
15.50	0.1949	8488
16.00	0.3011	13114
16.50	0.7044	30683
17.00	1.3208	57536
17.50	3.0391	132382
18.00	4.8400	210832
18.50	6.8102	296652
19.00	8.1436	354737
19.50	8.4417	367722
20.00	8.7085	379341
20.50	8.9740	390906
21.00	9.1595	398986
21.50	9.3728	408281
22.00	9.5815	417372
22.50	9.6640	420965
23.00	9.6643	420978
23.50	9.6643	420978

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03	Future 10-year, 24-hour	16.00	16.59	-0.0010	31.00	30.24	35454
EX-POND-03	Future 100-year, 24-hour	16.00	17.11	-0.0010	58.81	54.93	74181
EX-POND-03	Future 25-year, 24-hour	16.00	16.77	-0.0010	40.73	39.26	45382
EX-POND-03	Future 25-year, 8-hour	16.00	16.66	-0.0010	39.50	38.25	39080
EX-POND-03	Future 5-year, 24-hour	16.00	16.49	-0.0010	24.96	23.81	30356

Node: EX-POND-03-GW

Scenario: Future Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 8.57 ft
Warning Stage: 9.57 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	8.57
0	0	0	72.0000	8.57

Comment:

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
EX-POND-03-GW	Future 10-year, 24-hour	9.57	8.57	0.0000	0.84	0.00	0
EX-POND-03-GW	Future 100-year, 24-hour	9.57	8.57	0.0000	0.93	0.00	0
EX-POND-03-GW	Future 25-year, 24-hour	9.57	8.57	0.0000	0.87	0.00	0
EX-POND-03-GW	Future 25-year, 8-hour	9.57	8.57	0.0000	5.38	0.00	0
EX-POND-03-GW	Future 5-year, 24-hour	9.57	8.57	0.0000	0.82	0.00	0

Node: OUTFALL

Scenario: Future Conditions - Initial Improvements
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 0.00 ft
Warning Stage: 0.00 ft
Boundary Stage: OF-01

Comment: 5-year 16.474

10-year	16.633
25-year	16.824
100-year	17.116

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
OUTFALL	Future 10-year, 24-hour	0.00	14.00	0.0000	74.42	0.00	0
OUTFALL	Future 100-year, 24-hour	0.00	14.00	0.0000	128.09	0.00	0
OUTFALL	Future 25-year, 24-hour	0.00	14.00	0.0000	93.53	0.00	0
OUTFALL	Future 25-year, 8-hour	0.00	14.00	0.0000	81.97	0.00	0
OUTFALL	Future 5-year, 24-hour	0.00	14.00	0.0000	61.40	0.00	0

Link Inputs and Min/Max Conditions

Node: P-ES-01

Scenario:	Future Conditions - Initial Improvements
Type:	Stage/Area
Base Flow:	0.00 cfs
Initial Stage:	13.83 ft
Warning Stage:	18.39 ft

Comment: Warning Stage: Nearest edge of pavement
Desc: Concrete Rectangular Headwall

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-ES-01	Future 10-year,	18.39	18.35	0.0010	26.99	21.95	13758

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						
P-ES-01	Future 100-year, 24-hour	18.39	19.54	0.0010	43.21	32.93	13758
P-ES-01	Future 25-year, 24-hour	18.39	18.76	0.0010	31.83	25.17	13758
P-ES-01	Future 25-year, 8-hour	18.39	18.77	0.0010	46.05	27.36	13758
P-ES-01	Future 5-year, 24-hour	18.39	18.07	0.0009	24.26	20.51	13758

Node: P-HW-01/P-HW-02

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.50 ft
Warning Stage: 16.25 ft

Stage [ft]	Area [ac]	Area [ft2]
15.03	0.0002	11
15.50	0.0009	39
16.00	0.0237	1033
16.50	0.1945	8471
17.00	0.5355	23325
17.50	1.7685	77037
18.00	2.5308	110244
18.50	2.9905	130267
19.00	2.9905	130267

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-HW-01/P-HW-02	Future 10-year, 24-hour	16.25	16.57	0.0010	14.95	14.26	10679

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-HW-01/P-HW-02	Future 100-year, 24-hour	16.25	17.09	-0.0010	41.23	37.31	33302
P-HW-01/P-HW-02	Future 25-year, 24-hour	16.25	16.75	0.0010	25.97	25.37	15964
P-HW-01/P-HW-02	Future 25-year, 8-hour	16.25	16.64	-0.0010	28.13	27.06	12540
P-HW-01/P-HW-02	Future 5-year, 24-hour	16.25	16.47	-0.0010	11.99	11.11	8096

Node: P-HW-03/P-HW-04

Scenario: Future Conditions - Initial Improvements
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 14.20 ft
Warning Stage: 16.18 ft

Comment: Warning Stage: Nearest pavement low point

Node Max Conditions [Future Conditions - Initial Improvements]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
P-HW-03/P-HW-04	Future 10-year, 24-hour	16.18	16.49	-0.0007	34.10	33.94	7828
P-HW-03/P-HW-04	Future 100-year, 24-hour	16.18	17.07	-0.0008	61.78	61.65	8174
P-HW-03/P-HW-04	Future 25-year, 24-hour	16.18	16.73	0.0007	44.37	44.22	8078
P-HW-03/P-HW-04	Future 25-year, 8-hour	16.18	16.59	-0.0007	38.21	38.00	7969
P-HW-03/P-HW-04	Future 5-year,	16.18	16.30	-0.0004	26.41	26.22	7547

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]
	24-hour						

Channel Link: EX-CH-01		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.98 ft	Invert:	16.66 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-03/EX-ES-05	Cross Section:	EX-CH-CXS-01	Cross Section:	EX-CH-CXS-02
To Node:	EX-HW-02				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	762.57 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-01	Existing 10-year, 24-hour	26.18	0.00	-0.03	0.60	3.36	1.94
EX-CH-01	Existing 100-year, 24-hour	42.27	0.00	-0.13	0.70	2.97	1.70
EX-CH-01	Existing 25-year, 24-hour	32.65	0.00	-0.06	0.64	3.21	1.85
EX-CH-01	Existing 25-year, 8-hour	51.03	0.00	-0.12	0.82	3.43	1.99
EX-CH-01	Existing 5-year, 24-hour	21.83	0.00	0.01	0.57	3.36	1.94

Channel Link: EX-CH-02		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.20 ft	Invert:	14.55 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-03	Cross Section:	EX-CH-CXS-03	Cross Section:	EX-CH-CXS-04
To Node:	EX-HW-04				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	440.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-02	Existing 10-year, 24-hour	51.45	0.00	-0.05	1.13	0.78	0.92
EX-CH-02	Existing 100-year, 24-hour	89.18	0.00	-0.17	1.13	0.65	0.88
EX-CH-02	Existing 25-year, 24-hour	64.98	0.00	-0.07	1.16	0.73	0.94
EX-CH-02	Existing 25-year, 8-hour	79.30	0.00	-0.12	1.19	1.03	1.09
EX-CH-02	Existing 5-year, 24-hour	43.03	0.00	-0.05	1.07	0.77	0.88

Channel Link: EX-CH-03		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.55 ft	Invert:	14.20 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-04	Cross Section:	EX-CH-CXS-04	Cross Section:	EX-CH-CXS-05
To Node:	EX-HW-05				

Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Length:	602.09 ft
Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-03	Existing 10-year, 24-hour	33.55	0.00	-0.07	0.50	1.59	0.90
EX-CH-03	Existing 100-year, 24-hour	48.38	0.00	-1.19	0.47	1.69	0.97
EX-CH-03	Existing 25-year, 24-hour	39.09	0.00	-0.14	0.49	1.62	0.94
EX-CH-03	Existing 25-year, 8-hour	42.90	0.00	-0.07	0.52	1.90	1.10
EX-CH-03	Existing 5-year, 24-hour	29.34	0.00	-0.04	0.52	1.59	0.90

Channel Link: EX-CH-04		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.34 ft	Invert:	13.78 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-06	Cross Section:	EX-CH-CXS-06	Cross Section:	EX-CH-CXS-07
To Node:	EX-HW-07				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	100.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				

Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-04	Existing 10-year, 24-hour	35.48	0.00	-29.15	0.38	0.24	0.26
EX-CH-04	Existing 100-year, 24-hour	48.44	0.00	-45.40	0.40	0.22	0.29
EX-CH-04	Existing 25-year, 24-hour	39.34	0.00	-34.95	0.39	0.23	0.27
EX-CH-04	Existing 25-year, 8-hour	38.40	0.00	-33.74	0.43	0.24	0.33
EX-CH-04	Existing 5-year, 24-hour	30.57	0.00	-21.63	0.38	0.23	0.26

Channel Link: EX-CH-05		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	13.78 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-07	Cross Section:	EX-CH-CXS-07	Cross Section:	EX-CH-CXS-08
To Node:	EX-ES-06/EX-ES-07 /EX-ES-08				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	443.99 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-05	Existing 10-year, 24-hour	28.94	0.00	0.53	0.21	0.35	0.28
EX-CH-05	Existing 100-year, 24-hour	35.32	-0.01	2.51	0.22	0.35	0.28
EX-CH-05	Existing 25-year, 24-hour	30.74	0.00	0.91	0.22	0.36	0.29
EX-CH-05	Existing 25-year, 8-hour	30.94	-0.01	0.74	0.22	0.38	0.29
EX-CH-05	Existing 5-year, 24-hour	27.40	0.00	0.34	0.22	0.35	0.28

Channel Link: EX-CH-06		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.45 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-09	Cross Section:	EX-CH-CXS-10	Cross Section:	EX-CH-CXS-09
To Node:	EX-ES-06/EX-ES-07 /EX-ES-08				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	425.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-06	Existing 10-year, 24-hour	36.70	0.00	-0.18	0.93	0.57	0.65
EX-CH-06	Existing 100-year, 24-hour	60.55	0.00	-0.16	0.72	0.73	0.59
EX-CH-06	Existing 25-year, 24-hour	46.77	0.00	-0.20	0.89	0.62	0.62
EX-CH-06	Existing 25-year, 8-hour	49.06	0.00	-0.19	1.04	1.04	0.76
EX-CH-06	Existing 5-year, 24-hour	26.89	0.00	-0.22	0.93	0.52	0.64

Channel Link: EX-CH-07		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.49 ft	Invert:	16.73 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-16	Cross Section:	EX-CH-CXS-11	Cross Section:	EX-CH-CXS-12
To Node:	EX-ES-17/EX-ES-19 /EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	427.42 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-07	Existing	19.77	-1.27	-0.13	0.44	2.47	1.42

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	10-year, 24-hour						
EX-CH-07	Existing 100-year, 24-hour	12.70	-7.12	0.68	0.46	2.50	1.43
EX-CH-07	Existing 25-year, 24-hour	19.99	-4.43	-0.28	0.46	2.49	1.43
EX-CH-07	Existing 25-year, 8-hour	20.58	-0.34	-0.15	0.45	2.38	1.36
EX-CH-07	Existing 5-year, 24-hour	18.63	-0.17	-0.03	0.47	2.46	1.41

Channel Link: EX-CH-08		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.16 ft	Invert:	15.05 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-18/EX-HW-19/EX-HW-20	Cross Section:	EX-CH-CXS-13	Cross Section:	EX-CH-CXS-14
To Node:	EX-HW-22				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	250.76 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-08	Existing 10-year, 24-hour	8.00	0.00	-0.02	0.57	0.88	0.59

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-08	Existing 100-year, 24-hour	13.29	0.00	-0.06	0.55	1.00	0.57
EX-CH-08	Existing 25-year, 24-hour	9.22	0.00	-0.02	0.56	0.84	0.57
EX-CH-08	Existing 25-year, 8-hour	8.69	0.00	-0.02	0.58	1.39	0.80
EX-CH-08	Existing 5-year, 24-hour	7.99	0.00	-0.02	0.58	1.06	0.61

Channel Link: EX-CH-09		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.05 ft	Invert:	14.76 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-22	Cross Section:	EX-CH-CXS-14	Cross Section:	EX-CH-CXS-15
To Node:	EX-HW-12				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	281.50 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-09	Existing 10-year, 24-hour	27.85	0.00	0.03	0.83	4.98	2.90
EX-CH-09	Existing 100-year, 24-hour	47.62	0.00	-0.02	0.98	5.60	3.29

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-09	Existing 25-year, 24-hour	35.36	0.00	0.02	0.89	5.21	3.05
EX-CH-09	Existing 25-year, 8-hour	28.68	0.00	-0.02	0.83	5.01	2.92
EX-CH-09	Existing 5-year, 24-hour	22.63	0.00	0.03	0.77	4.73	2.75

Channel Link: EX-CH-OF		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.06 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-12	Cross Section:	OUTFALL	Cross Section:	OUTFALL
To Node:	OUTFALL				
Link Count:	1				
Flow Direction:	Positive				
Damping:	0.0000 ft				
Length:	65.75 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-OF	Existing 10-year, 24-hour	69.42	0.00	0.10	3.80	5.56	4.66
EX-CH-OF	Existing 100-year, 24-hour	114.02	0.00	-0.15	4.40	6.23	5.31
EX-CH-OF	Existing 25-year, 24-hour	85.97	0.00	-0.11	4.05	5.81	4.93

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-OF	Existing 25-year, 8-hour	73.36	0.00	0.11	3.86	5.61	4.74
EX-CH-OF	Existing 5-year, 24-hour	58.72	0.00	-0.09	3.61	5.33	4.46

Pipe Link: EX-P-01		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	17.06 ft	Invert:	17.15 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-01	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	90.03 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-01	Existing 10-year, 24-hour	3.50	-2.81	0.05	2.03	2.03	2.03
EX-P-01	Existing 100-year, 24-hour	3.80	-3.55	0.05	2.21	2.21	2.21
EX-P-01	Existing 25-year, 24-hour	3.71	-2.77	0.06	2.15	2.15	2.15
EX-P-01	Existing 25-year, 8-hour	3.75	-3.37	0.05	2.18	2.18	2.18
EX-P-01	Existing	3.25	-2.88	0.06	1.88	1.89	1.89

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	5-year, 24-hour						

Pipe Link: EX-P-02/EX-P-03		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.46 ft	Invert:	16.39 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-HW-01	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-ES-03/EX-ES-05	Bottom Clip			
Link Count:	2	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	112.11 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Dual 12"x18" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-02/EX-P-03	Existing 10-year, 24-hour	4.83	-4.29	0.06	1.91	3.20	2.44
EX-P-02/EX-P-03	Existing 100-year, 24-hour	5.68	-9.73	0.11	-3.85	-3.85	-3.85
EX-P-02/EX-P-03	Existing 25-year, 24-hour	5.34	-5.66	0.06	-2.24	3.20	2.44
EX-P-02/EX-P-03	Existing 25-year, 8-hour	5.21	-7.97	0.12	-3.15	3.20	-3.15
EX-P-02/EX-P-03	Existing 5-year, 24-hour	4.33	-4.04	-0.06	1.71	3.20	2.44

Pipe Link: EX-P-04		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.63 ft	Invert:	14.46 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-02	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	48.92 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-04	Existing 10-year, 24-hour	18.26	0.00	-2.29	5.81	5.81	5.81
EX-P-04	Existing 100-year, 24-hour	24.38	-0.01	-1.55	7.76	7.76	7.76
EX-P-04	Existing 25-year, 24-hour	20.34	0.00	2.28	6.47	6.47	6.47
EX-P-04	Existing 25-year, 8-hour	21.33	0.00	-1.56	6.79	6.79	6.79
EX-P-04	Existing 5-year, 24-hour	16.53	0.00	2.27	5.26	5.26	5.26

Pipe Link: EX-P-05		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	13.81 ft	Invert:	13.41 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-01	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-03	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	262.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 36" RCP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-05	Existing 10-year, 24-hour	21.82	-0.07	2.22	3.09	3.09	3.09
EX-P-05	Existing 100-year, 24-hour	25.76	-0.13	1.88	3.64	3.64	3.64
EX-P-05	Existing 25-year, 24-hour	23.24	-0.09	2.14	3.29	3.29	3.29
EX-P-05	Existing 25-year, 8-hour	24.15	-0.26	-1.53	3.42	3.42	3.42
EX-P-05	Existing 5-year, 24-hour	20.35	-0.06	1.47	2.88	2.88	2.88

Pipe Link: EX-P-06		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.27 ft	Invert:	14.55 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-02	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	130.33 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	

Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 23"x14" Horizontal Elliptical CMP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-06	Existing 10-year, 24-hour	4.36	0.00	-0.15	2.53	2.53	2.53
EX-P-06	Existing 100-year, 24-hour	5.22	-0.10	0.22	3.03	3.03	3.03
EX-P-06	Existing 25-year, 24-hour	4.55	0.00	0.14	2.64	2.64	2.64
EX-P-06	Existing 25-year, 8-hour	4.61	-1.52	-0.12	2.68	2.68	2.68
EX-P-06	Existing 5-year, 24-hour	4.43	0.00	0.06	2.57	2.57	2.57

Pipe Link: EX-P-07		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.07 ft	Invert:	13.73 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-04	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	140.15 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 23"x14" Horizontal Elliptical CMP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-07	Existing 10-year, 24-hour	4.29	0.00	0.23	2.49	2.49	2.49
EX-P-07	Existing 100-year, 24-hour	5.65	0.00	-0.04	3.28	3.28	3.28
EX-P-07	Existing 25-year, 24-hour	4.91	0.00	-0.22	2.85	2.85	2.85
EX-P-07	Existing 25-year, 8-hour	4.90	0.00	-0.04	2.84	2.84	2.84
EX-P-07	Existing 5-year, 24-hour	3.91	0.00	-0.24	2.27	2.27	2.27

Pipe Link: EX-P-08		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	12.63 ft	Invert:	12.45 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-05	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-06	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	99.30 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 36" RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-08	Existing 10-year, 24-hour	22.00	-0.07	-1.88	3.11	3.11	3.11

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-08	Existing 100-year, 24-hour	25.95	-0.19	-1.55	3.67	3.67	3.67
EX-P-08	Existing 25-year, 24-hour	22.27	-0.10	-1.62	3.15	3.15	3.15
EX-P-08	Existing 25-year, 8-hour	23.98	-0.14	-1.31	3.39	3.39	3.39
EX-P-08	Existing 5-year, 24-hour	21.87	-0.13	-1.73	3.09	3.09	3.09

Pipe Link: EX-P-09		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.40 ft	Invert:	13.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-04	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	EX-HW-07	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	135.56 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 18" RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-09	Existing 10-year, 24-hour	9.44	0.00	-0.02	5.34	5.34	5.34
EX-P-09	Existing 100-year, 24-hour	8.66	0.00	0.05	4.90	4.90	4.90
EX-P-09	Existing	9.27	0.00	0.25	5.25	5.25	5.25

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 24-hour						
EX-P-09	Existing 25-year, 8-hour	9.54	0.00	-0.33	5.40	5.40	5.40
EX-P-09	Existing 5-year, 24-hour	9.36	0.00	-0.01	5.30	5.30	5.30

Pipe Link: EX-P-10/EX-P-11/EX-P-12		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.00 ft	Invert:	13.91 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-06/EX-ES-07 /EX-ES-08	Max Depth:	2.00 ft	Max Depth:	2.00 ft
		Bottom Clip			
To Node:	EX-POND-02	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	105.30 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 24"x38" Horizontal Elliptical RCP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-10/EX-P-11/EX-P-12	Existing 10-year, 24-hour	42.35	0.00	0.02	2.79	2.79	2.79
EX-P-10/EX-P-11/EX-P-12	Existing 100-year, 24-hour	66.77	0.00	0.03	4.40	4.40	4.40
EX-P-10/EX-P-11/EX-P-12	Existing 25-year, 24-hour	52.00	0.00	0.02	3.43	3.43	3.43
EX-P-10/EX-P	Existing	47.39	0.00	0.03	3.12	3.12	3.12

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
-11/EX-P-12	25-year, 8-hour						
EX-P-10/EX-P -11/EX-P-12	Existing 5-year, 24-hour	36.57	0.00	0.02	2.41	2.41	2.41

Pipe Link: EX-P-13		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.02 ft	Invert:	15.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-09	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	71.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24"x38" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-13	Existing 10-year, 24-hour	23.19	-0.13	0.03	4.58	4.58	4.58
EX-P-13	Existing 100-year, 24-hour	27.68	-0.25	-0.03	5.47	5.47	5.47
EX-P-13	Existing 25-year, 24-hour	26.07	-0.16	0.02	5.15	5.15	5.15
EX-P-13	Existing 25-year, 8-hour	25.99	-0.35	0.03	5.14	5.14	5.14
EX-P-13	Existing 5-year,	19.16	-0.13	-0.04	3.79	3.79	3.79

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						

Pipe Link: EX-P-14		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.73 ft	Invert:	15.65 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Rectangular		Geometry: Rectangular	
From Node:	EX-HW-08	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	EX-ES-10	Max Width:	1.50 ft	Max Width:	1.50 ft
Link Count:	1	Fillet:	0.00 ft	Fillet:	0.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	58.50 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.50	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment: 18" RCP Box Culvert					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-14	Existing 10-year, 24-hour	11.45	0.00	-0.27	5.09	5.95	5.19
EX-P-14	Existing 100-year, 24-hour	10.78	0.00	-0.25	4.79	4.79	4.79
EX-P-14	Existing 25-year, 24-hour	12.29	0.00	-0.28	5.46	5.95	5.46
EX-P-14	Existing 25-year, 8-hour	14.68	0.00	-0.33	6.52	6.63	6.52
EX-P-14	Existing 5-year, 24-hour	9.97	0.00	-0.23	4.43	5.79	4.89

Pipe Link: EX-P-15		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.22 ft	Invert:	16.15 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-07	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	88.26 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-15	Existing 10-year, 24-hour	2.23	0.00	-0.22	1.82	1.82	1.82
EX-P-15	Existing 100-year, 24-hour	3.96	0.00	-0.12	3.23	3.23	3.23
EX-P-15	Existing 25-year, 24-hour	2.85	0.00	-0.19	2.32	2.32	2.32
EX-P-15	Existing 25-year, 8-hour	4.92	0.00	0.18	4.01	4.01	4.01
EX-P-15	Existing 5-year, 24-hour	1.83	0.00	0.14	1.49	1.49	1.49

Pipe Link: EX-P-16		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.19 ft	Invert:	16.29 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-05	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	104.97 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 15" ABS

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-16	Existing 10-year, 24-hour	5.68	0.00	-0.23	4.63	4.63	4.63
EX-P-16	Existing 100-year, 24-hour	7.18	0.00	-0.24	5.85	5.85	5.85
EX-P-16	Existing 25-year, 24-hour	6.44	0.00	0.23	5.25	5.25	5.25
EX-P-16	Existing 25-year, 8-hour	7.34	0.00	-0.24	5.98	5.98	5.98
EX-P-16	Existing 5-year, 24-hour	4.93	0.00	-0.24	4.02	4.02	4.02

Pipe Link: EX-P-17		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.28 ft	Invert:	16.19 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-13	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	78.61 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	

Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24" ABS

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-17	Existing 10-year, 24-hour	0.39	-12.62	0.04	-4.02	-4.02	-4.02
EX-P-17	Existing 100-year, 24-hour	0.71	-18.41	0.04	-5.86	-5.86	-5.86
EX-P-17	Existing 25-year, 24-hour	0.52	-15.24	0.02	-4.85	-4.85	-4.85
EX-P-17	Existing 25-year, 8-hour	0.21	-14.42	-0.02	-4.59	-4.59	-4.59
EX-P-17	Existing 5-year, 24-hour	1.62	-10.62	0.10	-3.38	-3.38	-3.38

Pipe Link: EX-P-18		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.96 ft	Invert:	15.63 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-06	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	182.73 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24" RCP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-18	Existing 10-year, 24-hour	12.51	0.00	-0.69	3.98	3.98	3.98
EX-P-18	Existing 100-year, 24-hour	10.97	0.00	0.58	3.49	3.49	3.49
EX-P-18	Existing 25-year, 24-hour	12.76	0.00	-0.69	4.06	4.06	4.06
EX-P-18	Existing 25-year, 8-hour	13.02	0.00	-0.65	4.14	4.14	4.14
EX-P-18	Existing 5-year, 24-hour	11.27	0.00	-0.69	3.59	3.59	3.59

Pipe Link: EX-P-19		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.65 ft	Invert:	15.89 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-16	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	229.88 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-19	Existing 10-year, 24-hour	5.00	-2.19	-0.04	1.67	-1.78	1.59

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-19	Existing 100-year, 24-hour	4.95	-11.46	-0.03	-3.65	-3.65	-3.65
EX-P-19	Existing 25-year, 24-hour	4.64	-7.17	-0.02	-2.28	-2.28	-2.28
EX-P-19	Existing 25-year, 8-hour	4.90	-2.92	-0.04	1.59	-2.20	1.57
EX-P-19	Existing 5-year, 24-hour	7.37	-0.74	0.06	2.38	2.35	2.36

Pipe Link: EX-P-20/EX-P-21/EX-P-22		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.14 ft	Invert:	16.08 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-17/EX-ES-19 /EX-ES-21	Max Depth:	1.50 ft	Max Depth:	1.50 ft
		Bottom Clip			
To Node:	EX-POND-01	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	71.22 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment: Triple 18" RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-20/EX-P-21/EX-P-22	Existing 10-year, 24-hour	33.28	-0.62	-0.07	6.28	6.79	6.44
EX-P-20/EX-P-21/EX-P-22	Existing 100-year, 24-hour	21.09	-3.67	-0.05	3.98	4.24	3.98

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-20/EX-P-21/EX-P-22	Existing 25-year, 24-hour	33.52	-2.83	0.07	6.32	6.68	6.39
EX-P-20/EX-P-21/EX-P-22	Existing 25-year, 8-hour	35.84	0.00	-0.08	6.76	7.23	6.96
EX-P-20/EX-P-21/EX-P-22	Existing 5-year, 24-hour	29.90	-0.08	-0.08	5.64	6.52	6.08

Pipe Link: EX-P-23		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	13.81 ft	Invert:	14.06 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-POND-02	Max Depth:	4.00 ft	Max Depth:	4.00 ft
To Node:	EX-HW-12	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	41.48 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 48" RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-23	Existing 10-year, 24-hour	41.96	0.00	0.02	3.84	6.96	5.40
EX-P-23	Existing 100-year, 24-hour	54.49	0.00	0.02	4.50	7.54	5.97
EX-P-23	Existing 25-year, 24-hour	48.12	0.00	0.02	4.13	7.29	5.71
EX-P-23	Existing	44.96	0.00	0.02	3.98	7.12	5.55

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 8-hour						
EX-P-23	Existing 5-year, 24-hour	36.12	0.00	0.02	3.56	6.63	5.10

Pipe Link: EX-P-27/EX-P-28/EX-P-29		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	14.18 ft	Invert:	14.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-POND-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-18/EX-HW-19/EX-HW-20	Bottom Clip			
		Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	50.26 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment: Triple 14"x23" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-27/EX-P-28/EX-P-29	Existing 10-year, 24-hour	5.33	-0.60	0.28	1.03	1.03	1.03
EX-P-27/EX-P-28/EX-P-29	Existing 100-year, 24-hour	5.22	-1.33	0.33	1.01	1.01	1.01
EX-P-27/EX-P-28/EX-P-29	Existing 25-year, 24-hour	5.18	-0.98	0.33	1.00	1.00	1.00
EX-P-27/EX-P-28/EX-P-29	Existing 25-year, 8-hour	5.23	-1.95	0.59	1.01	-1.29	1.01
EX-P-27/EX-P	Existing	5.45	-0.43	0.43	1.05	1.05	1.05

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
-28/EX-P-29	5-year, 24-hour						

Pipe Link: EX-P-30		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	15.00 ft	Invert:	15.00 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-21	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-HW-22	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	None	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	44.80 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" CMP - Buried					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-30	Existing 10-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Existing 100-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Existing 25-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Existing 25-year, 8-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Existing 5-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00

Pipe Link: EX-P-31		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.39 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-10	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	46.20 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" PVC					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-31	Existing 10-year, 24-hour	0.58	-0.01	-0.19	0.47	0.47	0.47
EX-P-31	Existing 100-year, 24-hour	1.22	-0.01	0.26	1.00	1.00	1.00
EX-P-31	Existing 25-year, 24-hour	0.74	-0.01	-0.24	0.60	0.60	0.60
EX-P-31	Existing 25-year, 8-hour	1.50	-0.01	-0.24	1.22	1.22	1.22
EX-P-31	Existing 5-year, 24-hour	0.49	-0.02	-0.17	0.40	0.40	0.40

Pipe Link: EX-P-32		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.42 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-11	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	190.79 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 12" RCP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-32	Existing 10-year, 24-hour	2.43	0.00	-0.14	3.09	3.09	3.09
EX-P-32	Existing 100-year, 24-hour	2.78	0.00	0.14	3.54	3.54	3.54
EX-P-32	Existing 25-year, 24-hour	2.79	0.00	0.15	3.55	3.55	3.55
EX-P-32	Existing 25-year, 8-hour	2.91	0.00	0.13	3.70	3.70	3.70
EX-P-32	Existing 5-year, 24-hour	2.00	0.00	0.14	2.55	2.55	2.55

Pipe Link: EX-P-33		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.46 ft	Invert:	16.42 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-12	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-11	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	37.16 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	

Bend Location: 0.00 dec Manning's N: 0.0000 Manning's N: 0.0000
Energy Switch: Energy

Comment: 12" RCP

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-33	Existing 10-year, 24-hour	1.78	0.00	0.21	2.27	2.27	2.27
EX-P-33	Existing 100-year, 24-hour	2.10	-0.26	0.23	2.67	2.67	2.67
EX-P-33	Existing 25-year, 24-hour	2.19	0.00	0.25	2.79	2.79	2.79
EX-P-33	Existing 25-year, 8-hour	2.34	-0.72	-0.21	2.98	2.98	2.98
EX-P-33	Existing 5-year, 24-hour	0.96	0.00	-0.21	1.22	1.22	1.22

Percolation Link: EX-POND-01-PERC

Scenario:	Existing Conditions - Existing Infrastructure	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-01	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-01-GW	Perimeter 1:	1242.24 ft
Link Count:	1	Perimeter 2:	1559.77 ft
Flow Direction:	Both	Perimeter 3:	4691.45 ft
Aquifer Base Elevation:	10.26 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	11.26 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-01-PERC	Existing 10-year, 24-hour	7.53	0.00	-1.65	0.00	0.00	0.00
EX-POND-01-PERC	Existing 100-year, 24-hour	5.23	0.00	-2.31	0.00	0.00	0.00
EX-POND-01-PERC	Existing 25-year, 24-hour	7.74	0.00	-1.27	0.00	0.00	0.00
EX-POND-01-PERC	Existing 25-year, 8-hour	7.67	0.00	-1.74	0.00	0.00	0.00
EX-POND-01-PERC	Existing 5-year, 24-hour	7.32	0.00	-2.04	0.00	0.00	0.00

Percolation Link: EX-POND-02-PERC

Scenario:	Existing Conditions - Existing Infrastructure	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-02	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-02-GW	Perimeter 1:	570.36 ft
Link Count:	1	Perimeter 2:	896.45 ft
Flow Direction:	Both	Perimeter 3:	3852.24 ft
Aquifer Base Elevation:	8.52 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	9.52 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-02-PERC	Existing 10-year, 24-hour	0.81	0.00	0.00	0.00	0.00	0.00

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-02-PERC	Existing 100-year, 24-hour	0.83	-0.03	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Existing 25-year, 24-hour	0.83	0.00	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Existing 25-year, 8-hour	1.67	0.00	0.01	0.00	0.00	0.00
EX-POND-02-PERC	Existing 5-year, 24-hour	0.81	0.00	0.01	0.00	0.00	0.00

Percolation Link: EX-POND-03-PERC

Scenario:	Existing Conditions - Existing Infrastructure	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-03	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-03-GW	Perimeter 1:	590.34 ft
Link Count:	1	Perimeter 2:	927.02 ft
Flow Direction:	Both	Perimeter 3:	3982.99 ft
Aquifer Base Elevation:	8.57 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	9.57 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-03-PERC	Existing 10-year, 24-hour	1.66	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Existing 100-year, 24-hour	1.64	0.00	0.00	0.00	0.00	0.00
EX-POND-03-	Existing	1.70	0.00	0.00	0.00	0.00	0.00

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
PERC	25-year, 24-hour						
EX-POND-03-PERC	Existing 25-year, 8-hour	8.94	0.00	-1.42	0.00	0.00	0.00
EX-POND-03-PERC	Existing 5-year, 24-hour	1.67	0.00	0.00	0.00	0.00	0.00

Channel Link: EX-TD-N		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	16.95 ft	Invert:	16.43 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-09	Cross Section:	EX-TD-N01	Cross Section:	EX-TD-N02
To Node:	EX-ES-17/EX-ES-19 /EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	319.25 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-N	Existing 10-year, 24-hour	17.53	0.00	-0.62	3.05	7.10	4.41
EX-TD-N	Existing 100-year, 24-hour	23.66	0.00	0.65	2.95	4.95	3.14
EX-TD-N	Existing 25-year, 24-hour	28.99	0.00	7.77	3.10	8.12	4.58

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-N	Existing 25-year, 8-hour	52.92	0.00	18.56	3.09	13.10	7.05
EX-TD-N	Existing 5-year, 24-hour	13.11	0.00	1.52	4.46	6.80	4.41

Channel Link: EX-TD-S		Upstream		Downstream	
Scenario:	Existing Conditions - Existing Infrastructure	Invert:	17.05 ft	Invert:	16.31 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-08	Cross Section:	EX-TD-S01	Cross Section:	EX-TD-S02
To Node:	EX-ES-16				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	412.79 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-S	Existing 10-year, 24-hour	29.78	0.00	6.96	3.06	10.50	5.77
EX-TD-S	Existing 100-year, 24-hour	43.86	0.00	1.94	3.05	5.29	3.48
EX-TD-S	Existing 25-year, 24-hour	35.45	0.00	6.87	3.06	10.87	5.95
EX-TD-S	Existing 25-year, 8-hour	55.60	0.00	3.16	3.05	7.67	4.28

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-S	Existing 5-year, 24-hour	29.72	0.00	6.93	3.48	9.59	5.32

Weir Link: EX-W-01

Scenario:	Existing Conditions - Existing Infrastructure	**Bottom Clip**	
		Default:	0.00 ft
From Node:	EX-HW-21	Op Table:	
To Node:	EX-HW-22	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	**Discharge Coefficients**	
Invert:	16.40 ft	Weir Default:	2.800
Control Elevation:	16.40 ft	Weir Table:	
Cross Section:	Weir Basin V	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-01	Existing 10-year, 24-hour	20.90	0.00	0.02	1.05	1.05	1.05
EX-W-01	Existing 100-year, 24-hour	34.51	0.00	-0.02	0.99	0.99	0.99
EX-W-01	Existing 25-year, 24-hour	26.22	0.00	-0.02	1.05	1.05	1.05
EX-W-01	Existing 25-year, 8-hour	21.55	0.00	-0.03	1.15	1.15	1.15
EX-W-01	Existing 5-year, 24-hour	17.04	0.00	0.03	1.04	1.04	1.04

Weir Link: EX-W-02			
Scenario:	Existing Conditions - Existing Infrastructure	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-02	Op Table:	
To Node:	EX-HW-12	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	Discharge Coefficients	
Invert:	17.02 ft	Weir Default:	2.800
Control Elevation:	17.02 ft	Weir Table:	
Cross Section:	EX-W-02	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-02	Existing 10-year, 24-hour	0.07	0.00	0.00	0.00	0.00	0.00
EX-W-02	Existing 100-year, 24-hour	12.46	0.00	0.01	1.52	1.52	1.52
EX-W-02	Existing 25-year, 24-hour	3.72	0.00	0.00	1.31	1.31	1.31
EX-W-02	Existing 25-year, 8-hour	1.18	0.00	0.00	0.97	0.97	0.97
EX-W-02	Existing 5-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00

Weir Link: EX-W-03			
Scenario:	Existing Conditions - Existing Infrastructure	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-ES-13	Op Table:	
To Node:	EX-ES-10	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	

Geometry Type:	Irregular
Invert:	18.10 ft
Control Elevation:	18.10 ft
Cross Section:	EX-W-03

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-03	Existing 10-year, 24-hour	22.30	0.00	0.03	1.42	1.42	1.42
EX-W-03	Existing 100-year, 24-hour	35.99	0.00	-0.07	1.55	1.55	1.55
EX-W-03	Existing 25-year, 24-hour	27.55	0.00	0.03	1.48	1.48	1.48
EX-W-03	Existing 25-year, 8-hour	27.31	0.00	0.03	1.48	1.48	1.48
EX-W-03	Existing 5-year, 24-hour	17.97	0.00	0.03	1.36	1.36	1.36

Weir Link: EX-W-04

Scenario:	Existing Conditions - Existing Infrastructure
From Node:	EX-POND-03
To Node:	EX-HW-18/EX-HW-19/EX-HW-20
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	16.38 ft
Control Elevation:	16.38 ft
Cross Section:	EX-W-04

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-04	Existing 10-year, 24-hour	5.01	-1.64	-0.02	0.60	0.60	0.60
EX-W-04	Existing 100-year, 24-hour	9.91	-6.38	1.46	0.60	0.60	0.60
EX-W-04	Existing 25-year, 24-hour	6.72	-3.31	-0.04	0.59	0.59	0.59
EX-W-04	Existing 25-year, 8-hour	4.88	-6.83	0.01	0.59	0.59	0.59
EX-W-04	Existing 5-year, 24-hour	3.92	-0.41	-0.02	0.60	0.60	0.60

Weir Link: EX-W-05

Scenario:	Existing Conditions - Existing Infrastructure	**Bottom Clip**	
		Default:	0.00 ft
From Node:	EX-POND-03	Op Table:	
To Node:	EX-HW-21	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	**Discharge Coefficients**	
Invert:	16.17 ft	Weir Default:	2.800
Control Elevation:	16.17 ft	Weir Table:	
Cross Section:	EX-W-05	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-05	Existing 10-year, 24-hour	19.87	-4.97	0.04	-0.81	-0.81	-0.81
EX-W-05	Existing 100-year,	35.08	-1.59	0.04	-0.75	-0.75	-0.75

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-W-05	Existing 25-year, 24-hour	25.57	-1.99	0.02	-0.78	-0.78	-0.78
EX-W-05	Existing 25-year, 8-hour	20.17	-8.18	0.09	-0.91	-0.91	-0.91
EX-W-05	Existing 5-year, 24-hour	16.02	-6.58	0.05	-1.02	-1.02	-1.02

Channel Link: EX-CH-01		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.39 ft	Invert:	13.83 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-03/EX-ES-05	Cross Section:	EX-CH-CXS-01	Cross Section:	EX-CH-CXS-02
To Node:	P-ES-01				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	790.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-01	Existing 10-year, 24-hour	27.79	0.00	-0.09	1.31	1.00	0.77
EX-CH-01	Existing 100-year, 24-hour	43.66	0.00	-0.27	1.16	1.21	0.91
EX-CH-01	Existing 25-year,	32.82	0.00	-0.16	1.19	1.08	0.81

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-01	Existing 25-year, 8-hour	47.31	0.00	-0.13	1.33	1.33	1.00
EX-CH-01	Existing 5-year, 24-hour	24.11	0.00	-0.06	1.42	0.78	0.82

Channel Link: EX-CH-02		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	15.20 ft	Invert:	14.55 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-03	Cross Section:	EX-CH-CXS-03	Cross Section:	EX-CH-CXS-04
To Node:	EX-HW-04				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	440.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-02	Existing 10-year, 24-hour	54.44	0.00	-0.06	1.15	0.81	0.94
EX-CH-02	Existing 100-year, 24-hour	94.68	0.00	-0.17	1.14	0.68	0.90
EX-CH-02	Existing 25-year, 24-hour	68.60	0.00	-0.07	1.17	0.77	0.96
EX-CH-02	Existing 25-year,	83.11	0.00	-0.10	1.20	1.09	1.12

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-CH-02	Existing 5-year, 24-hour	45.68	0.00	-0.05	1.10	0.80	0.91

Channel Link: EX-CH-03		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.55 ft	Invert:	14.20 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-04	Cross Section:	EX-CH-CXS-04	Cross Section:	EX-CH-CXS-05
To Node:	EX-HW-05				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	602.09 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-03	Existing 10-year, 24-hour	35.53	0.00	-0.06	0.50	1.15	0.65
EX-CH-03	Existing 100-year, 24-hour	52.49	0.00	-0.69	0.47	1.49	0.83
EX-CH-03	Existing 25-year, 24-hour	42.28	0.00	-0.09	0.48	1.42	0.79
EX-CH-03	Existing 25-year, 8-hour	44.69	0.00	-0.06	0.52	1.55	0.88
EX-CH-03	Existing 5-year,	31.25	0.00	0.06	0.52	1.10	0.63

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						

Channel Link: EX-CH-04		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.34 ft	Invert:	13.78 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-06	Cross Section:	EX-CH-CXS-06	Cross Section:	EX-CH-CXS-07
To Node:	EX-HW-07				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	100.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-04	Existing 10-year, 24-hour	34.24	0.00	-25.53	0.29	0.22	0.21
EX-CH-04	Existing 100-year, 24-hour	48.46	-0.05	-44.07	0.28	-0.66	-0.33
EX-CH-04	Existing 25-year, 24-hour	40.08	0.00	-34.99	0.28	0.22	0.21
EX-CH-04	Existing 25-year, 8-hour	37.08	-0.37	-31.09	0.27	-1.15	-0.60
EX-CH-04	Existing 5-year, 24-hour	27.42	0.00	14.70	0.29	0.22	0.21

Channel Link: EX-CH-05		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	13.78 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-07	Cross Section:	EX-CH-CXS-07	Cross Section:	EX-CH-CXS-08
To Node:	EX-ES-06/EX-ES-07/EX-ES-08				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	443.99 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-05	Existing 10-year, 24-hour	29.86	-0.04	0.40	0.21	0.35	0.28
EX-CH-05	Existing 100-year, 24-hour	35.37	-0.06	2.19	0.23	0.36	0.29
EX-CH-05	Existing 25-year, 24-hour	30.47	-0.05	-0.78	0.22	0.36	0.29
EX-CH-05	Existing 25-year, 8-hour	31.08	-0.09	-0.61	0.22	0.47	0.29
EX-CH-05	Existing 5-year, 24-hour	27.99	-0.03	-0.15	0.22	0.35	0.27

Channel Link: EX-CH-06		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	15.00 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-09	Cross Section:	EX-CH-CXS-10	Cross Section:	EX-CH-CXS-09

To Node:	EX-ES-06/EX-ES-07 /EX-ES-08
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Length:	425.00 ft
Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-06	Existing 10-year, 24-hour	30.15	0.00	-0.27	0.72	0.77	0.54
EX-CH-06	Existing 100-year, 24-hour	56.34	0.00	-0.28	0.50	1.11	0.65
EX-CH-06	Existing 25-year, 24-hour	40.98	0.00	-0.25	0.60	1.01	0.59
EX-CH-06	Existing 25-year, 8-hour	46.93	0.00	-0.30	0.77	1.36	0.80
EX-CH-06	Existing 5-year, 24-hour	22.28	0.00	-0.25	0.74	0.68	0.56

Channel Link: EX-CH-07		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.49 ft	Invert:	16.73 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-16	Cross Section:	EX-CH-CXS-11	Cross Section:	EX-CH-CXS-12
To Node:	EX-ES-17/EX-ES-19 /EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				

Length:	427.42 ft
Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-07	Existing 10-year, 24-hour	20.86	-0.87	0.07	0.44	2.47	1.42
EX-CH-07	Existing 100-year, 24-hour	14.85	-5.97	-0.34	0.46	2.50	1.43
EX-CH-07	Existing 25-year, 24-hour	20.90	-3.17	-0.19	0.46	2.49	1.43
EX-CH-07	Existing 25-year, 8-hour	21.73	0.00	0.15	0.45	2.38	1.36
EX-CH-07	Existing 5-year, 24-hour	19.85	-0.07	0.18	0.48	2.46	1.41

Channel Link: EX-CH-08		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.33 ft	Invert:	14.20 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-18/EX-HW-19/EX-HW-20	Cross Section:	EX-CH-CXS-13	Cross Section:	EX-CH-CXS-14
To Node:	P-HW-03/P-HW-04				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	250.76 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				

Bend Loss Coef: 0.00
Bend Location: 0.00 dec
Energy Switch: Energy

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-08	Existing 10-year, 24-hour	21.11	-0.06	-0.03	0.59	-1.03	-0.55
EX-CH-08	Existing 100-year, 24-hour	24.13	-0.11	-0.03	0.69	-1.17	0.64
EX-CH-08	Existing 25-year, 24-hour	23.49	-0.07	0.03	0.67	-1.06	0.62
EX-CH-08	Existing 25-year, 8-hour	21.61	-0.20	-0.03	0.60	-1.32	-0.72
EX-CH-08	Existing 5-year, 24-hour	15.33	-0.06	-0.02	0.53	-1.02	-0.54

Channel Link: EX-CH-09		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.20 ft	Invert:	14.06 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	P-HW-03/P-HW-04	Cross Section:	EX-CH-CXS-14	Cross Section:	EX-CH-CXS-15
To Node:	EX-HW-12				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	281.50 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-09	Existing 10-year, 24-hour	32.85	0.00	-0.04	0.75	3.03	1.89
EX-CH-09	Existing 100-year, 24-hour	59.32	0.00	-0.04	0.95	3.54	2.23
EX-CH-09	Existing 25-year, 24-hour	42.71	0.00	-0.04	0.83	3.31	2.07
EX-CH-09	Existing 25-year, 8-hour	36.83	0.00	-0.04	0.79	3.16	1.97
EX-CH-09	Existing 5-year, 24-hour	25.02	0.00	-0.02	0.68	2.69	1.68

Channel Link: EX-CH-OF		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.06 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-12	Cross Section:	OUTFALL	Cross Section:	OUTFALL
To Node:	Outfall				
Link Count:	1				
Flow Direction:	Positive				
Damping:	0.0000 ft				
Length:	65.75 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-OF	Existing 10-year,	72.17	0.00	0.10	3.85	5.59	4.72

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-OF	Existing 100-year, 24-hour	124.26	0.00	-0.16	4.49	6.30	5.40
EX-CH-OF	Existing 25-year, 24-hour	90.50	0.00	0.12	4.11	5.90	5.01
EX-CH-OF	Existing 25-year, 8-hour	79.02	0.00	0.10	3.94	5.74	4.84
EX-CH-OF	Existing 5-year, 24-hour	59.02	0.00	0.08	3.62	5.32	4.47

Pipe Link: EX-P-01		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	17.06 ft	Invert:	16.46 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-01	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	90.03 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-01	Existing 10-year, 24-hour	3.75	0.00	0.27	3.47	2.18	2.59
EX-P-01	Existing 100-year, 24-hour	3.55	-2.72	0.28	3.31	2.06	2.54

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-01	Existing 25-year, 24-hour	3.80	-1.71	0.28	3.38	2.21	2.53
EX-P-01	Existing 25-year, 8-hour	3.93	-2.65	0.26	3.32	2.28	2.43
EX-P-01	Existing 5-year, 24-hour	3.37	0.00	0.26	3.46	1.96	2.58

Pipe Link: EX-P-02/EX-P-03		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.46 ft	Invert:	16.39 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-HW-01	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-ES-03/EX-ES-05	Bottom Clip			
Link Count:	2	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	112.11 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Dual 12"x18" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-02/EX-P-03	Existing 10-year, 24-hour	4.70	0.00	-0.02	1.86	1.86	1.86
EX-P-02/EX-P-03	Existing 100-year, 24-hour	5.35	-6.49	0.11	-2.56	-2.56	-2.56
EX-P-02/EX-P-03	Existing 25-year, 24-hour	5.28	-2.29	0.07	2.09	2.09	2.09
EX-P-02/EX-P	Existing	5.31	-3.95	0.07	2.10	2.10	2.10

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
-03	25-year, 8-hour						
EX-P-02/EX-P-03	Existing 5-year, 24-hour	4.18	0.00	-0.03	1.65	1.65	1.65

Pipe Link: EX-P-05		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	13.81 ft	Invert:	13.41 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-01	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-03	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	262.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 36" RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-05	Existing 10-year, 24-hour	24.95	-0.64	1.43	3.53	3.53	3.53
EX-P-05	Existing 100-year, 24-hour	30.78	-0.80	1.68	4.36	4.36	4.36
EX-P-05	Existing 25-year, 24-hour	27.08	-0.66	1.42	3.83	3.83	3.83
EX-P-05	Existing 25-year, 8-hour	27.84	-1.03	1.62	3.94	3.94	3.94
EX-P-05	Existing 5-year,	22.95	-0.57	1.44	3.25	3.25	3.25

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						

Pipe Link: EX-P-06		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	15.27 ft	Invert:	14.55 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-02	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	130.33 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical CMP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-06	Existing 10-year, 24-hour	4.73	0.00	0.14	2.74	2.74	2.74
EX-P-06	Existing 100-year, 24-hour	5.37	-2.67	0.24	3.12	3.12	3.12
EX-P-06	Existing 25-year, 24-hour	4.74	0.00	0.15	2.75	2.75	2.75
EX-P-06	Existing 25-year, 8-hour	4.88	-2.54	-0.16	2.83	2.83	2.83
EX-P-06	Existing 5-year, 24-hour	4.74	0.00	0.09	2.75	2.75	2.75

Pipe Link: EX-P-07		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.07 ft	Invert:	13.73 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-04	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	140.15 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical CMP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-07	Existing 10-year, 24-hour	4.15	0.00	0.19	2.41	2.41	2.41
EX-P-07	Existing 100-year, 24-hour	5.41	0.00	0.04	3.14	3.14	3.14
EX-P-07	Existing 25-year, 24-hour	4.69	0.00	-0.11	2.72	2.72	2.72
EX-P-07	Existing 25-year, 8-hour	4.69	0.00	-0.04	2.73	2.73	2.73
EX-P-07	Existing 5-year, 24-hour	3.82	0.00	-0.21	2.22	2.22	2.22

Pipe Link: EX-P-08		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	12.63 ft	Invert:	12.45 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-05	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-06	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	99.30 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 36" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-08	Existing 10-year, 24-hour	21.84	0.00	1.23	3.09	3.09	3.09
EX-P-08	Existing 100-year, 24-hour	25.79	0.00	-1.40	3.65	3.65	3.65
EX-P-08	Existing 25-year, 24-hour	21.71	0.00	1.25	3.07	3.07	3.07
EX-P-08	Existing 25-year, 8-hour	23.22	-0.21	-1.62	3.28	3.28	3.28
EX-P-08	Existing 5-year, 24-hour	21.22	0.00	1.53	3.00	3.00	3.00

Pipe Link: EX-P-09		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.40 ft	Invert:	13.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-04	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	EX-HW-07	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	135.56 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	

Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 18" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-09	Existing 10-year, 24-hour	9.56	0.00	-0.06	5.41	5.41	5.41
EX-P-09	Existing 100-year, 24-hour	8.84	0.00	0.05	5.00	5.00	5.00
EX-P-09	Existing 25-year, 24-hour	9.40	0.00	0.27	5.32	5.32	5.32
EX-P-09	Existing 25-year, 8-hour	9.68	0.00	0.09	5.48	5.48	5.48
EX-P-09	Existing 5-year, 24-hour	9.53	0.00	-0.01	5.39	5.39	5.39

Pipe Link: EX-P-10/EX-P-11/EX-P-12		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.00 ft	Invert:	13.91 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-06/EX-ES-07/EX-ES-08	Max Depth:	2.00 ft	Max Depth:	2.00 ft
		Bottom Clip			
To Node:	EX-POND-02	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	105.30 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 24"x38" Horizontal Elliptical RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-10/EX-P-11/EX-P-12	Existing 10-year, 24-hour	40.47	0.00	0.02	2.67	2.67	2.67
EX-P-10/EX-P-11/EX-P-12	Existing 100-year, 24-hour	66.45	0.00	0.03	4.38	4.38	4.38
EX-P-10/EX-P-11/EX-P-12	Existing 25-year, 24-hour	49.67	0.00	0.02	3.27	3.27	3.27
EX-P-10/EX-P-11/EX-P-12	Existing 25-year, 8-hour	44.86	0.00	0.03	2.96	2.96	2.96
EX-P-10/EX-P-11/EX-P-12	Existing 5-year, 24-hour	34.53	0.00	0.02	2.28	2.28	2.28

Pipe Link: EX-P-13		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	15.02 ft	Invert:	15.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-09	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	71.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24"x38" Horizontal Elliptical RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-13	Existing 10-year, 24-hour	19.38	0.00	-0.03	3.83	3.91	3.87

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-13	Existing 100-year, 24-hour	26.95	0.00	0.02	5.33	5.33	5.33
EX-P-13	Existing 25-year, 24-hour	23.29	0.00	0.02	4.60	4.60	4.60
EX-P-13	Existing 25-year, 8-hour	23.67	0.00	0.03	4.68	4.71	4.69
EX-P-13	Existing 5-year, 24-hour	14.05	0.00	-0.04	2.83	3.13	2.98

Pipe Link: EX-P-15		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.22 ft	Invert:	16.15 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-07	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	88.26 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-15	Existing 10-year, 24-hour	2.19	0.00	-0.13	1.79	1.79	1.79
EX-P-15	Existing 100-year, 24-hour	3.96	0.00	-0.08	3.23	3.23	3.23
EX-P-15	Existing	2.84	0.00	-0.23	2.32	2.32	2.32

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 24-hour						
EX-P-15	Existing 25-year, 8-hour	4.85	0.00	-0.14	3.95	3.95	3.95
EX-P-15	Existing 5-year, 24-hour	1.77	0.00	0.07	1.45	1.45	1.45

Pipe Link: EX-P-16		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.19 ft	Invert:	16.29 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-05	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	104.97 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-16	Existing 10-year, 24-hour	5.44	0.00	-0.22	4.43	4.43	4.43
EX-P-16	Existing 100-year, 24-hour	6.53	0.00	-0.23	5.32	5.32	5.32
EX-P-16	Existing 25-year, 24-hour	6.00	0.00	-0.21	4.89	4.89	4.89
EX-P-16	Existing 25-year,	7.32	0.00	0.23	5.97	5.97	5.97

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-P-16	Existing 5-year, 24-hour	4.75	0.00	-0.23	3.87	3.87	3.87

Pipe Link: EX-P-17		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.28 ft	Invert:	16.19 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-13	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	78.61 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" ABS					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-17	Existing 10-year, 24-hour	0.35	-9.12	-0.05	-2.90	-2.90	-2.90
EX-P-17	Existing 100-year, 24-hour	0.71	-17.34	-0.03	-5.52	-5.52	-5.52
EX-P-17	Existing 25-year, 24-hour	0.52	-11.93	0.02	-3.80	-3.80	-3.80
EX-P-17	Existing 25-year, 8-hour	0.26	-10.88	-0.03	-3.46	-3.46	-3.46
EX-P-17	Existing 5-year, 24-hour	3.55	-6.78	-0.06	-2.16	-2.16	-2.16

Pipe Link: EX-P-18		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	15.96 ft	Invert:	15.63 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-06	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	182.73 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-18	Existing 10-year, 24-hour	11.65	0.00	-0.69	3.71	3.71	3.71
EX-P-18	Existing 100-year, 24-hour	10.64	0.00	0.57	3.39	3.39	3.39
EX-P-18	Existing 25-year, 24-hour	12.02	0.00	-0.68	3.83	3.83	3.83
EX-P-18	Existing 25-year, 8-hour	11.98	0.00	-0.66	3.81	3.81	3.81
EX-P-18	Existing 5-year, 24-hour	11.02	0.00	-0.69	3.51	3.51	3.51

Pipe Link: EX-P-19		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.65 ft	Invert:	15.89 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-16	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	229.88 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-19	Existing 10-year, 24-hour	6.49	-1.68	0.03	2.07	2.07	2.07
EX-P-19	Existing 100-year, 24-hour	5.11	-9.67	-0.03	-3.08	-3.08	-3.08
EX-P-19	Existing 25-year, 24-hour	4.66	-5.47	-0.03	1.93	-1.90	-1.74
EX-P-19	Existing 25-year, 8-hour	5.37	-0.51	0.05	1.71	-2.20	1.71
EX-P-19	Existing 5-year, 24-hour	9.07	-0.21	0.04	2.89	2.89	2.89

Pipe Link: EX-P-20/EX-P-21/EX-P-22		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.14 ft	Invert:	16.08 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-17/EX-ES-19 /EX-ES-21	Max Depth:	1.50 ft	Max Depth:	1.50 ft
		Bottom Clip			
To Node:	EX-POND-01	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	71.22 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	

Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 18" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-20/EX-P-21/EX-P-22	Existing 10-year, 24-hour	33.57	-0.18	0.07	6.33	6.83	6.48
EX-P-20/EX-P-21/EX-P-22	Existing 100-year, 24-hour	21.64	-2.84	-0.04	4.08	4.27	4.08
EX-P-20/EX-P-21/EX-P-22	Existing 25-year, 24-hour	33.69	-1.59	0.07	6.35	6.69	6.42
EX-P-20/EX-P-21/EX-P-22	Existing 25-year, 8-hour	36.06	0.00	0.07	6.80	7.26	6.99
EX-P-20/EX-P-21/EX-P-22	Existing 5-year, 24-hour	30.29	0.00	0.07	5.71	6.55	6.13

Pipe Link: EX-P-23		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	13.81 ft	Invert:	14.06 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-POND-02	Max Depth:	4.00 ft	Max Depth:	4.00 ft
To Node:	EX-HW-12	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	41.48 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 48" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-23	Existing 10-year, 24-hour	40.04	-0.07	0.02	3.76	6.86	5.30
EX-P-23	Existing 100-year, 24-hour	54.58	-0.09	0.02	4.52	7.55	5.97
EX-P-23	Existing 25-year, 24-hour	46.99	-0.07	0.02	4.11	7.23	5.65
EX-P-23	Existing 25-year, 8-hour	43.39	-0.15	0.02	3.90	7.04	5.47
EX-P-23	Existing 5-year, 24-hour	34.10	-0.07	0.02	3.48	6.49	4.97

Pipe Link: EX-P-27/EX-P-28/EX-P-29		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.18 ft	Invert:	14.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-POND-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-18/EX-HW-19/EX-HW-20	Bottom Clip			
		Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	50.26 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 14"x23" Horizontal Elliptical RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-27/EX-P-28/EX-P-29	Existing 10-year,	11.20	-0.13	-0.14	2.16	2.16	2.16

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-P-27/EX-P-28/EX-P-29	Existing 100-year, 24-hour	8.87	-0.20	-0.03	1.71	1.71	1.71
EX-P-27/EX-P-28/EX-P-29	Existing 25-year, 24-hour	10.32	-0.16	-0.04	1.99	1.99	1.99
EX-P-27/EX-P-28/EX-P-29	Existing 25-year, 8-hour	10.69	-1.13	0.03	2.06	2.06	2.06
EX-P-27/EX-P-28/EX-P-29	Existing 5-year, 24-hour	12.47	-0.13	0.18	2.40	2.40	2.40

Pipe Link: EX-P-31		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.39 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-10	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	46.20 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" PVC					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-31	Existing 10-year, 24-hour	0.57	-0.02	-0.22	0.46	0.46	0.46
EX-P-31	Existing 100-year, 24-hour	1.05	-0.01	0.32	0.86	0.86	0.86

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-31	Existing 25-year, 24-hour	0.75	-0.01	-0.23	0.61	0.61	0.61
EX-P-31	Existing 25-year, 8-hour	1.12	-0.01	-0.20	0.91	0.91	0.91
EX-P-31	Existing 5-year, 24-hour	0.45	-0.01	-0.17	0.37	0.37	0.37

Pipe Link: EX-P-32		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.42 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-11	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	190.79 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-32	Existing 10-year, 24-hour	2.22	0.00	0.15	2.83	2.83	2.83
EX-P-32	Existing 100-year, 24-hour	2.73	0.00	-0.14	3.47	3.47	3.47
EX-P-32	Existing 25-year, 24-hour	2.54	0.00	0.13	3.23	3.23	3.23
EX-P-32	Existing	2.63	0.00	0.12	3.34	3.34	3.34

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 8-hour						
EX-P-32	Existing 5-year, 24-hour	1.91	0.00	0.14	2.43	2.43	2.43

Pipe Link: EX-P-33		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.46 ft	Invert:	16.42 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-12	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-11	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	37.16 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-33	Existing 10-year, 24-hour	1.71	0.00	0.24	2.17	2.17	2.17
EX-P-33	Existing 100-year, 24-hour	2.08	-0.38	-0.28	2.64	2.64	2.64
EX-P-33	Existing 25-year, 24-hour	2.01	0.00	-0.22	2.56	2.56	2.56
EX-P-33	Existing 25-year, 8-hour	2.08	-0.72	0.21	2.65	2.65	2.65
EX-P-33	Existing 5-year,	0.94	0.00	0.23	1.20	1.20	1.20

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						

Percolation Link: EX-POND-01-PERC

Scenario:	Existing Conditions - Initial Improvements	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-01	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-01-GW	Perimeter 1:	1242.24 ft
Link Count:	1	Perimeter 2:	1559.77 ft
Flow Direction:	Both	Perimeter 3:	4691.45 ft
Aquifer Base Elevation:	10.26 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	11.26 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-01-PERC	Existing 10-year, 24-hour	7.62	0.00	-1.49	0.00	0.00	0.00
EX-POND-01-PERC	Existing 100-year, 24-hour	5.30	0.00	-2.35	0.00	0.00	0.00
EX-POND-01-PERC	Existing 25-year, 24-hour	7.78	0.00	-1.19	0.00	0.00	0.00
EX-POND-01-PERC	Existing 25-year, 8-hour	7.75	0.00	-1.42	0.00	0.00	0.00
EX-POND-01-PERC	Existing 5-year, 24-hour	7.41	0.00	-1.88	0.00	0.00	0.00

Percolation Link: EX-POND-02-PERC

Scenario:	Existing Conditions - Initial Improvements	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-02	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-02-GW	Perimeter 1:	570.36 ft
Link Count:	1	Perimeter 2:	896.45 ft
Flow Direction:	Both	Perimeter 3:	3852.24 ft
Aquifer Base Elevation:	8.52 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	9.52 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-02-PERC	Existing 10-year, 24-hour	0.79	0.00	0.01	0.00	0.00	0.00
EX-POND-02-PERC	Existing 100-year, 24-hour	0.83	-0.02	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Existing 25-year, 24-hour	0.81	0.00	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Existing 25-year, 8-hour	1.48	0.00	0.01	0.00	0.00	0.00
EX-POND-02-PERC	Existing 5-year, 24-hour	0.77	0.00	0.00	0.00	0.00	0.00

Percolation Link: EX-POND-03-PERC

Scenario:	Existing Conditions - Initial Improvements	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-03	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-03-GW	Perimeter 1:	590.34 ft
Link Count:	1	Perimeter 2:	927.02 ft
Flow Direction:	Both	Perimeter 3:	3982.99 ft

Aquifer Base Elevation:	8.57 ft
Water Table Elevation:	9.57 ft
Annual Recharge Rate:	0 ipy
Horizontal Conductivity:	17.850 fpd
Vertical Conductivity:	11.900 fpd
Fillable Porosity:	0.400
Layer Thickness:	4.00 ft

Distance P1 to P2:	50.00 ft
Distance P2 to P3:	500.00 ft
# of Cells P1 to P2:	10
# of Cells P2 to P3:	50

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-03-PERC	Existing 10-year, 24-hour	0.83	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Existing 100-year, 24-hour	0.93	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Existing 25-year, 24-hour	0.86	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Existing 25-year, 8-hour	5.22	0.00	-0.01	0.00	0.00	0.00
EX-POND-03-PERC	Existing 5-year, 24-hour	0.82	0.00	-0.01	0.00	0.00	0.00

Channel Link: EX-TD-N		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	16.95 ft	Invert:	16.43 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-09	Cross Section:	EX-TD-N01	Cross Section:	EX-TD-N02
To Node:	EX-ES-17/EX-ES-19/EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	319.25 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				

Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-N	Existing 10-year, 24-hour	17.56	0.00	-0.55	3.05	7.10	4.41
EX-TD-N	Existing 100-year, 24-hour	23.43	0.00	0.65	2.96	4.89	3.15
EX-TD-N	Existing 25-year, 24-hour	29.37	0.00	7.73	3.10	8.13	4.59
EX-TD-N	Existing 25-year, 8-hour	52.97	0.00	18.59	3.09	12.96	6.98
EX-TD-N	Existing 5-year, 24-hour	13.16	0.00	-0.80	3.30	6.80	4.41

Channel Link: EX-TD-S		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	17.05 ft	Invert:	16.31 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-08	Cross Section:	EX-TD-S01	Cross Section:	EX-TD-S02
To Node:	EX-ES-16				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	412.79 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-S	Existing 10-year, 24-hour	29.76	0.00	6.99	3.06	10.20	5.63
EX-TD-S	Existing 100-year, 24-hour	43.41	0.00	1.79	3.05	5.14	3.48
EX-TD-S	Existing 25-year, 24-hour	35.56	0.00	6.88	3.06	11.08	6.06
EX-TD-S	Existing 25-year, 8-hour	55.76	0.00	3.16	3.05	7.67	4.28
EX-TD-S	Existing 5-year, 24-hour	29.33	0.00	6.89	4.27	10.03	5.54

Weir Link: EX-W-01

Scenario:	Existing Conditions - Initial Improvements	**Bottom Clip**	
		Default:	0.00 ft
From Node:	P-HW-01/P-HW-02	Op Table:	
To Node:	P-HW-03/P-HW-04	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	**Discharge Coefficients**	
Invert:	16.40 ft	Weir Default:	2.800
Control Elevation:	16.40 ft	Weir Table:	
Cross Section:	Weir Basin V	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-01	Existing 10-year, 24-hour	5.42	0.00	-0.01	0.88	0.88	0.88
EX-W-01	Existing 100-year,	32.71	0.00	0.05	1.17	1.17	1.17

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-W-01	Existing 25-year, 24-hour	20.56	0.00	-0.05	1.11	1.11	1.11
EX-W-01	Existing 25-year, 8-hour	11.88	0.00	-0.02	1.05	1.05	1.05
EX-W-01	Existing 5-year, 24-hour	0.33	0.00	0.00	0.50	0.50	0.50

Weir Link: EX-W-02

Scenario:	Existing Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-02	Op Table:	
To Node:	EX-HW-12	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	Discharge Coefficients	
Invert:	17.02 ft	Weir Default:	2.800
Control Elevation:	17.02 ft	Weir Table:	
Cross Section:	EX-W-02	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-02	Existing 10-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-W-02	Existing 100-year, 24-hour	12.59	0.00	0.01	1.52	1.52	1.52
EX-W-02	Existing 25-year, 24-hour	2.59	0.00	0.00	1.19	1.19	1.19
EX-W-02	Existing 25-year,	0.43	0.00	0.00	0.74	0.74	0.74

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-W-02	Existing 5-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00

Weir Link: EX-W-03

Scenario:	Existing Conditions - Initial Improvements	**Bottom Clip**	
		Default:	0.00 ft
From Node:	EX-ES-13	Op Table:	
To Node:	EX-ES-10	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	**Discharge Coefficients**	
Invert:	18.50 ft	Weir Default:	2.800
Control Elevation:	18.50 ft	Weir Table:	
Cross Section:	EX-W-03	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-03	Existing 10-year, 24-hour	17.38	0.00	0.04	1.35	1.35	1.35
EX-W-03	Existing 100-year, 24-hour	32.20	0.00	0.03	1.52	1.52	1.52
EX-W-03	Existing 25-year, 24-hour	23.59	0.00	0.04	1.44	1.44	1.44
EX-W-03	Existing 25-year, 8-hour	20.63	0.00	0.04	1.40	1.40	1.40
EX-W-03	Existing 5-year, 24-hour	11.62	0.00	0.04	1.25	1.25	1.25

Weir Link: EX-W-04			
Scenario:	Existing Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-03	Op Table:	
To Node:	EX-HW-18/EX-HW-19/EX-HW-20	Ref Node:	
		Top Clip	
Link Count:	1	Default:	0.00 ft
Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Broad Crested Vertical	Discharge Coefficients	
Geometry Type:	Irregular	Weir Default:	2.800
Invert:	16.38 ft	Weir Table:	
Control Elevation:	16.38 ft	Orifice Default:	0.600
Cross Section:	EX-W-04	Orifice Table:	
Comment:			

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-04	Existing 10-year, 24-hour	14.56	0.00	-0.05	0.99	0.99	0.99
EX-W-04	Existing 100-year, 24-hour	18.78	0.00	-0.04	0.85	0.85	0.85
EX-W-04	Existing 25-year, 24-hour	14.33	0.00	-0.06	0.92	0.92	0.92
EX-W-04	Existing 25-year, 8-hour	15.40	0.00	-0.04	0.97	0.97	0.97
EX-W-04	Existing 5-year, 24-hour	2.93	0.00	-0.01	0.66	0.66	0.66

Weir Link: EX-W-05			
Scenario:	Existing Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-03	Op Table:	
To Node:	P-HW-01/P-HW-02	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	

Geometry Type:	Irregular
Invert:	16.17 ft
Control Elevation:	16.17 ft
Cross Section:	EX-W-05

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-05	Existing 10-year, 24-hour	9.43	-3.42	0.03	0.94	0.94	0.94
EX-W-05	Existing 100-year, 24-hour	32.21	-8.58	0.08	-1.09	-1.09	-1.09
EX-W-05	Existing 25-year, 24-hour	20.93	-6.57	0.06	-1.04	-1.04	-1.04
EX-W-05	Existing 25-year, 8-hour	13.87	-13.34	0.07	-1.27	-1.27	-1.27
EX-W-05	Existing 5-year, 24-hour	8.33	-0.59	0.02	1.09	1.09	1.09

Pipe Link: P-P-01		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	13.83 ft	Invert:	13.81 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	P-ES-01	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	20.00 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: Proposed 36" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-01	Existing 10-year, 24-hour	22.22	-0.87	2.67	3.14	3.14	3.14
P-P-01	Existing 100-year, 24-hour	33.22	-1.02	2.86	4.70	4.70	4.70
P-P-01	Existing 25-year, 24-hour	25.37	-0.88	2.71	3.59	3.59	3.59
P-P-01	Existing 25-year, 8-hour	27.82	-1.33	-2.83	3.94	3.94	3.94
P-P-01	Existing 5-year, 24-hour	19.80	-0.66	2.81	2.80	2.80	2.80

Pipe Link: P-P-02/P-P-03		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	14.50 ft	Invert:	14.20 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	P-HW-01/P-HW-02	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	P-HW-03/P-HW-04	Bottom Clip			
Link Count:	2	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	44.80 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: Proposed Pipe to roadside ditch - Dual 18" RCP

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-02/P-P-03	Existing 10-year, 24-hour	10.65	0.00	-0.97	3.01	3.01	3.01

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-02/P-P-03	Existing 100-year, 24-hour	9.79	0.00	-0.73	2.77	2.77	2.77
P-P-02/P-P-03	Existing 25-year, 24-hour	10.88	0.00	-0.78	3.08	3.08	3.08
P-P-02/P-P-03	Existing 25-year, 8-hour	12.88	0.00	-0.87	3.64	3.64	3.64
P-P-02/P-P-03	Existing 5-year, 24-hour	9.83	0.00	-1.07	2.78	2.78	2.78

Pipe Link: P-P-04		Upstream		Downstream	
Scenario:	Existing Conditions - Initial Improvements	Invert:	15.73 ft	Invert:	15.02 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-08	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	58.50 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Proposed 24" RCP					

Link Min/Max Conditions [Existing Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-04	Existing 10-year, 24-hour	12.06	0.00	-0.94	5.73	4.99	5.29
P-P-04	Existing 100-year, 24-hour	15.07	0.00	0.52	5.40	4.83	5.03
P-P-04	Existing	14.38	0.00	0.75	5.70	5.14	5.39

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 24-hour						
P-P-04	Existing 25-year, 8-hour	20.64	0.00	-1.40	7.30	9.68	8.49
P-P-04	Existing 5-year, 24-hour	10.10	0.00	-1.05	5.47	4.80	4.96

Channel Link: EX-CH-01		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.98 ft	Invert:	16.66 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-03/EX-ES-05	Cross Section:	EX-CH-CXS-01	Cross Section:	EX-CH-CXS-02
To Node:	EX-HW-02				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	762.57 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-01	Future 10-year, 24-hour	25.36	0.00	-0.03	0.58	3.16	1.81
EX-CH-01	Future 100-year, 24-hour	41.15	0.00	-0.14	0.68	2.93	1.68
EX-CH-01	Future 25-year, 24-hour	31.62	0.00	-0.06	0.62	2.95	1.70
EX-CH-01	Future	50.69	0.00	-0.11	0.79	2.98	1.71

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 8-hour						
EX-CH-01	Future 5-year, 24-hour	21.40	0.00	-0.02	0.55	3.17	1.82

Channel Link: EX-CH-02		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.20 ft	Invert:	14.55 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-03	Cross Section:	EX-CH-CXS-03	Cross Section:	EX-CH-CXS-04
To Node:	EX-HW-04				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	440.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-02	Future 10-year, 24-hour	59.60	0.00	-0.07	1.17	1.36	0.98
EX-CH-02	Future 100-year, 24-hour	100.48	0.00	-0.19	1.15	1.52	0.93
EX-CH-02	Future 25-year, 24-hour	75.60	0.00	-0.08	1.18	1.44	0.98
EX-CH-02	Future 25-year, 8-hour	102.80	0.00	-0.15	1.23	1.78	1.17
EX-CH-02	Future	51.58	0.00	-0.05	1.14	1.31	0.95

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	5-year, 24-hour						

Channel Link: EX-CH-03		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.55 ft	Invert:	14.20 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-04	Cross Section:	EX-CH-CXS-04	Cross Section:	EX-CH-CXS-05
To Node:	EX-HW-05				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	602.09 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-03	Future 10-year, 24-hour	38.48	0.00	-0.06	0.51	1.61	0.93
EX-CH-03	Future 100-year, 24-hour	53.47	0.00	-0.67	0.48	1.75	1.01
EX-CH-03	Future 25-year, 24-hour	45.19	0.00	-0.06	0.50	1.69	0.98
EX-CH-03	Future 25-year, 8-hour	55.84	0.00	-0.07	0.53	1.98	1.15
EX-CH-03	Future 5-year, 24-hour	34.60	0.00	-0.07	0.52	1.59	0.90

Channel Link: EX-CH-04		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.34 ft	Invert:	13.78 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-06	Cross Section:	EX-CH-CXS-06	Cross Section:	EX-CH-CXS-07
To Node:	EX-HW-07				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	100.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-04	Future 10-year, 24-hour	35.27	0.00	-29.11	0.41	0.23	0.30
EX-CH-04	Future 100-year, 24-hour	51.03	0.00	-42.67	0.45	0.23	0.34
EX-CH-04	Future 25-year, 24-hour	40.12	0.00	-35.09	0.43	0.22	0.32
EX-CH-04	Future 25-year, 8-hour	38.77	0.00	-34.10	0.49	0.29	0.39
EX-CH-04	Future 5-year, 24-hour	31.01	0.00	-22.28	0.41	0.23	0.30

Channel Link: EX-CH-05		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	13.78 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-07	Cross Section:	EX-CH-CXS-07	Cross Section:	EX-CH-CXS-08
To Node:	EX-ES-06/EX-ES-07				

	/EX-ES-08
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Length:	443.99 ft
Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-05	Future 10-year, 24-hour	24.55	-0.04	0.72	0.22	0.38	0.28
EX-CH-05	Future 100-year, 24-hour	33.40	-0.05	2.58	0.22	0.37	0.28
EX-CH-05	Future 25-year, 24-hour	26.39	-0.04	-0.99	0.23	0.37	0.29
EX-CH-05	Future 25-year, 8-hour	26.86	-0.05	0.84	0.23	0.41	0.29
EX-CH-05	Future 5-year, 24-hour	24.80	-0.03	0.46	0.22	0.40	0.29

Channel Link: EX-CH-06		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.45 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-09	Cross Section:	EX-CH-CXS-10	Cross Section:	EX-CH-CXS-09
To Node:	EX-ES-06/EX-ES-07 /EX-ES-08				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	425.00 ft				

Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-06	Future 10-year, 24-hour	38.23	0.00	-0.20	0.90	0.57	0.62
EX-CH-06	Future 100-year, 24-hour	62.93	0.00	-0.13	0.72	0.70	0.59
EX-CH-06	Future 25-year, 24-hour	48.40	0.00	-0.18	0.86	0.62	0.60
EX-CH-06	Future 25-year, 8-hour	52.45	0.00	-0.20	1.00	0.94	0.74
EX-CH-06	Future 5-year, 24-hour	29.23	0.00	-0.21	0.88	0.50	0.61

Channel Link: EX-CH-07		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.49 ft	Invert:	16.73 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-16	Cross Section:	EX-CH-CXS-11	Cross Section:	EX-CH-CXS-12
To Node:	EX-ES-17/EX-ES-19 /EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	427.42 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				

Bend Location: 0.00 dec
Energy Switch: Energy

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-07	Future 10-year, 24-hour	19.88	-2.13	-0.14	0.46	2.50	1.43
EX-CH-07	Future 100-year, 24-hour	11.56	-6.78	-0.33	0.46	2.52	1.45
EX-CH-07	Future 25-year, 24-hour	17.20	-5.31	-0.49	0.47	2.51	1.44
EX-CH-07	Future 25-year, 8-hour	20.50	-1.55	-0.05	0.46	2.42	1.38
EX-CH-07	Future 5-year, 24-hour	18.95	-0.47	-0.04	0.47	2.50	1.44

Channel Link: EX-CH-08		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.16 ft	Invert:	15.05 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-18/EX-HW-19/EX-HW-20	Cross Section:	EX-CH-CXS-13	Cross Section:	EX-CH-CXS-14
To Node:	EX-HW-22				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	250.76 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-08	Future 10-year, 24-hour	8.01	0.00	-0.02	0.57	0.86	0.59
EX-CH-08	Future 100-year, 24-hour	14.63	0.00	0.82	0.55	1.01	0.57
EX-CH-08	Future 25-year, 24-hour	10.00	0.00	-0.02	0.56	0.85	0.57
EX-CH-08	Future 25-year, 8-hour	8.65	0.00	-0.02	0.58	1.38	0.80
EX-CH-08	Future 5-year, 24-hour	8.04	0.00	-0.02	0.58	1.06	0.61

Channel Link: EX-CH-09		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.05 ft	Invert:	14.76 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-22	Cross Section:	EX-CH-CXS-14	Cross Section:	EX-CH-CXS-15
To Node:	EX-HW-12				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	281.50 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-09	Future 10-year,	29.74	0.00	0.02	0.84	5.03	2.93

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-09	Future 100-year, 24-hour	51.82	0.00	-0.03	1.02	5.65	3.34
EX-CH-09	Future 25-year, 24-hour	37.94	0.00	-0.02	0.91	5.32	3.12
EX-CH-09	Future 25-year, 8-hour	31.14	0.00	0.02	0.85	5.07	2.96
EX-CH-09	Future 5-year, 24-hour	24.11	0.00	0.03	0.79	4.83	2.81

Channel Link: EX-CH-OF		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.06 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-12	Cross Section:	OUTFALL	Cross Section:	OUTFALL
To Node:	OUTFALL				
Link Count:	1				
Flow Direction:	Positive				
Damping:	0.0000 ft				
Length:	65.75 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-OF	Future 10-year, 24-hour	71.85	0.00	0.09	3.84	5.58	4.71
EX-CH-OF	Future 100-year,	118.95	0.00	0.16	4.45	6.23	5.33

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-OF	Future 25-year, 24-hour	89.28	0.00	-0.12	4.09	5.88	4.99
EX-CH-OF	Future 25-year, 8-hour	77.00	0.00	-0.10	3.92	5.70	4.81
EX-CH-OF	Future 5-year, 24-hour	60.98	0.00	0.09	3.65	5.38	4.52

Pipe Link: EX-P-01		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	17.06 ft	Invert:	17.15 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-01	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	90.03 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-01	Future 10-year, 24-hour	4.08	-3.60	0.05	2.37	2.39	2.37
EX-P-01	Future 100-year, 24-hour	5.13	-3.65	0.07	2.98	2.98	2.98
EX-P-01	Future 25-year, 24-hour	4.44	-3.51	0.05	2.58	2.58	2.58

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-01	Future 25-year, 8-hour	4.46	-4.57	0.06	-2.65	2.82	-2.65
EX-P-01	Future 5-year, 24-hour	3.79	-3.74	0.06	2.20	2.30	2.21

Pipe Link: EX-P-02/EX-P-03		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.46 ft	Invert:	16.39 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-HW-01	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-ES-03/EX-ES-05	Bottom Clip			
Link Count:	2	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	112.11 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Dual 12"x18" Horizontal Elliptical RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-02/EX-P-03	Future 10-year, 24-hour	5.70	-5.04	-0.06	2.25	3.20	2.44
EX-P-02/EX-P-03	Future 100-year, 24-hour	6.94	-10.93	0.09	-4.32	-4.32	-4.32
EX-P-02/EX-P-03	Future 25-year, 24-hour	6.13	-7.00	0.09	-2.77	3.20	-2.77
EX-P-02/EX-P-03	Future 25-year, 8-hour	6.14	-8.73	0.05	-3.45	-3.45	-3.45
EX-P-02/EX-P	Future	5.24	-4.31	0.06	2.07	3.20	2.44

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
-03	5-year, 24-hour						

Pipe Link: EX-P-04		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.63 ft	Invert:	14.46 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-02	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	48.92 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-04	Future 10-year, 24-hour	17.72	0.00	1.60	5.64	5.64	5.64
EX-P-04	Future 100-year, 24-hour	23.94	0.00	2.39	7.62	7.62	7.62
EX-P-04	Future 25-year, 24-hour	19.93	0.00	1.59	6.34	6.34	6.34
EX-P-04	Future 25-year, 8-hour	20.88	0.00	1.49	6.65	6.65	6.65
EX-P-04	Future 5-year, 24-hour	16.28	0.00	1.62	5.18	5.18	5.18

Pipe Link: EX-P-05		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	13.81 ft	Invert:	13.41 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-01	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-03	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	262.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 36" RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-05	Future 10-year, 24-hour	21.44	-0.14	-1.50	3.03	3.03	3.03
EX-P-05	Future 100-year, 24-hour	26.13	-0.29	-1.59	3.70	3.70	3.70
EX-P-05	Future 25-year, 24-hour	23.23	-0.19	-1.51	3.29	3.29	3.29
EX-P-05	Future 25-year, 8-hour	23.87	-0.47	1.38	3.38	3.38	3.38
EX-P-05	Future 5-year, 24-hour	20.16	-0.13	-1.51	2.85	2.85	2.85

Pipe Link: EX-P-06		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.27 ft	Invert:	14.55 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-02	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	130.33 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 23"x14" Horizontal Elliptical CMP

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-06	Future 10-year, 24-hour	4.11	0.00	0.25	2.39	2.39	2.39
EX-P-06	Future 100-year, 24-hour	4.40	-0.07	-0.23	2.55	2.55	2.55
EX-P-06	Future 25-year, 24-hour	4.01	0.00	0.18	2.33	2.33	2.33
EX-P-06	Future 25-year, 8-hour	4.00	-0.06	0.23	2.32	2.32	2.32
EX-P-06	Future 5-year, 24-hour	4.15	0.00	0.20	2.41	2.41	2.41

Pipe Link: EX-P-07		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.07 ft	Invert:	13.73 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-04	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	140.15 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	

Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 23"x14" Horizontal Elliptical CMP

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-07	Future 10-year, 24-hour	2.97	-0.59	-0.20	1.73	1.73	1.73
EX-P-07	Future 100-year, 24-hour	3.32	-1.54	0.09	1.93	1.93	1.93
EX-P-07	Future 25-year, 24-hour	3.20	-0.91	-0.22	1.86	1.86	1.86
EX-P-07	Future 25-year, 8-hour	3.71	-0.91	-0.04	2.15	2.15	2.15
EX-P-07	Future 5-year, 24-hour	2.72	-0.10	-0.20	1.58	1.58	1.58

Pipe Link: EX-P-08		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	12.63 ft	Invert:	12.45 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-05	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-06	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	99.30 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 36" RCP

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-08	Future 10-year, 24-hour	21.62	-0.14	-1.86	3.06	3.06	3.06
EX-P-08	Future 100-year, 24-hour	26.93	-0.06	-1.70	3.81	3.81	3.81
EX-P-08	Future 25-year, 24-hour	22.33	-0.12	-1.87	3.16	3.16	3.16
EX-P-08	Future 25-year, 8-hour	24.21	-0.05	-1.46	3.43	3.43	3.43
EX-P-08	Future 5-year, 24-hour	21.84	-0.02	-1.78	3.09	3.09	3.09

Pipe Link: EX-P-09		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.40 ft	Invert:	13.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-04	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	EX-HW-07	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	135.56 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 18" RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-09	Future 10-year, 24-hour	8.26	0.00	0.34	4.68	4.68	4.68

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-09	Future 100-year, 24-hour	7.80	0.00	0.08	4.42	4.42	4.42
EX-P-09	Future 25-year, 24-hour	8.38	0.00	0.34	4.74	4.74	4.74
EX-P-09	Future 25-year, 8-hour	9.25	0.00	-0.07	5.24	5.24	5.24
EX-P-09	Future 5-year, 24-hour	7.91	0.00	-0.38	4.47	4.47	4.47

Pipe Link: EX-P-10/EX-P-11/EX-P-12		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.00 ft	Invert:	13.91 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-06/EX-ES-07 /EX-ES-08	Max Depth:	2.00 ft	Max Depth:	2.00 ft
		Bottom Clip			
To Node:	EX-POND-02	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	105.30 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment: Triple 24"x38" Horizontal Elliptical RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-10/EX-P-11/EX-P-12	Future 10-year, 24-hour	42.66	0.00	0.02	2.81	2.81	2.81
EX-P-10/EX-P-11/EX-P-12	Future 100-year, 24-hour	66.70	0.00	0.03	4.39	4.39	4.39

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-10/EX-P-11/EX-P-12	Future 25-year, 24-hour	51.94	0.00	0.02	3.42	3.42	3.42
EX-P-10/EX-P-11/EX-P-12	Future 25-year, 8-hour	47.95	0.00	0.02	3.16	3.16	3.16
EX-P-10/EX-P-11/EX-P-12	Future 5-year, 24-hour	37.27	0.00	0.02	2.46	2.46	2.46

Pipe Link: EX-P-13		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.02 ft	Invert:	15.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-09	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	71.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24"x38" Horizontal Elliptical RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-13	Future 10-year, 24-hour	23.25	-0.14	0.03	4.60	4.60	4.60
EX-P-13	Future 100-year, 24-hour	28.01	-0.27	0.02	5.54	5.54	5.54
EX-P-13	Future 25-year, 24-hour	26.28	-0.17	-0.03	5.19	5.19	5.19
EX-P-13	Future	26.22	-0.38	0.03	5.18	5.18	5.18

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 8-hour						
EX-P-13	Future 5-year, 24-hour	19.96	-0.14	0.03	3.94	3.94	3.94

Pipe Link: EX-P-14		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.73 ft	Invert:	15.65 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Rectangular		Geometry: Rectangular	
From Node:	EX-HW-08	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	EX-ES-10	Max Width:	1.50 ft	Max Width:	1.50 ft
Link Count:	1	Fillet:	0.00 ft	Fillet:	0.00 ft
Flow Direction:	Both	Bottom Clip			
Damping:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	58.50 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0000	Manning's N:	0.0000
Exit Loss Coef:	0.50	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 dec	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0000	Manning's N:	0.0000
Comment: 18" RCP Box Culvert					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-14	Future 10-year, 24-hour	8.91	0.00	-0.21	3.96	5.23	4.18
EX-P-14	Future 100-year, 24-hour	6.27	0.00	-0.14	2.79	3.05	2.79
EX-P-14	Future 25-year, 24-hour	8.80	0.00	-0.20	3.91	4.75	3.97
EX-P-14	Future 25-year, 8-hour	11.10	0.00	-0.26	4.94	5.26	4.94
EX-P-14	Future	8.40	0.00	-0.20	3.73	5.25	4.15

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	5-year, 24-hour						

Pipe Link: EX-P-15		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.22 ft	Invert:	16.15 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-07	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	88.26 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-15	Future 10-year, 24-hour	2.23	0.00	-0.19	1.82	1.82	1.82
EX-P-15	Future 100-year, 24-hour	3.97	0.00	-0.07	3.23	3.23	3.23
EX-P-15	Future 25-year, 24-hour	2.85	0.00	-0.20	2.32	2.32	2.32
EX-P-15	Future 25-year, 8-hour	4.94	0.00	-0.21	4.02	4.02	4.02
EX-P-15	Future 5-year, 24-hour	1.83	0.00	-0.07	1.49	1.49	1.49

Pipe Link: EX-P-16		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.19 ft	Invert:	16.29 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-05	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	104.97 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-16	Future 10-year, 24-hour	5.70	0.00	-0.24	4.64	4.64	4.64
EX-P-16	Future 100-year, 24-hour	7.17	0.00	-0.24	5.84	5.84	5.84
EX-P-16	Future 25-year, 24-hour	6.46	-0.01	-0.25	5.26	5.26	5.26
EX-P-16	Future 25-year, 8-hour	7.26	0.00	0.23	5.92	5.92	5.92
EX-P-16	Future 5-year, 24-hour	4.97	0.00	-0.24	4.05	4.05	4.05

Pipe Link: EX-P-17		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.28 ft	Invert:	16.19 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-13	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	78.61 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24" ABS

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-17	Future 10-year, 24-hour	0.31	-12.88	0.02	-4.10	-4.10	-4.10
EX-P-17	Future 100-year, 24-hour	0.50	-19.48	0.01	-6.20	-6.20	-6.20
EX-P-17	Future 25-year, 24-hour	0.45	-16.43	0.03	-5.23	-5.23	-5.23
EX-P-17	Future 25-year, 8-hour	0.17	-14.57	0.01	-4.64	-4.64	-4.64
EX-P-17	Future 5-year, 24-hour	0.20	-11.10	-0.04	-3.53	-3.53	-3.53

Pipe Link: EX-P-18		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.96 ft	Invert:	15.63 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-06	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	182.73 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	

Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24" RCP

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-18	Future 10-year, 24-hour	15.13	0.00	0.63	4.82	4.82	4.82
EX-P-18	Future 100-year, 24-hour	12.76	0.00	0.49	4.06	4.06	4.06
EX-P-18	Future 25-year, 24-hour	14.12	0.00	-0.70	4.49	4.49	4.49
EX-P-18	Future 25-year, 8-hour	15.29	0.00	-0.62	4.87	4.87	4.87
EX-P-18	Future 5-year, 24-hour	14.75	0.00	-0.67	4.69	4.69	4.69

Pipe Link: EX-P-19		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.65 ft	Invert:	15.89 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-16	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	229.88 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24" RCP

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-19	Future 10-year, 24-hour	5.91	-3.72	-0.05	1.96	1.88	1.88
EX-P-19	Future 100-year, 24-hour	5.86	-10.86	-0.04	-3.46	-3.46	-3.46
EX-P-19	Future 25-year, 24-hour	5.06	-8.47	-0.05	-2.70	-2.70	-2.70
EX-P-19	Future 25-year, 8-hour	4.72	-4.05	0.05	1.68	-2.10	1.51
EX-P-19	Future 5-year, 24-hour	8.51	-1.09	0.04	2.72	2.71	2.71

Pipe Link: EX-P-20/EX-P-21/EX-P-22		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.14 ft	Invert:	16.08 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-17/EX-ES-19 /EX-ES-21	Max Depth:	1.50 ft	Max Depth:	1.50 ft
		Bottom Clip			
To Node:	EX-POND-01	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	71.22 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment: Triple 18" RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-20/EX-P -21/EX-P-22	Future 10-year,	33.23	-1.14	-0.09	6.27	6.75	6.40

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-P-20/EX-P-21/EX-P-22	Future 100-year, 24-hour	18.93	-4.34	-0.05	3.57	4.16	3.57
EX-P-20/EX-P-21/EX-P-22	Future 25-year, 24-hour	28.51	-3.36	0.04	5.38	5.46	5.39
EX-P-20/EX-P-21/EX-P-22	Future 25-year, 8-hour	36.06	-0.88	0.06	6.80	7.26	6.99
EX-P-20/EX-P-21/EX-P-22	Future 5-year, 24-hour	30.15	-0.11	0.07	5.69	6.53	6.10

Pipe Link: EX-P-23		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	13.81 ft	Invert:	14.06 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-POND-02	Max Depth:	4.00 ft	Max Depth:	4.00 ft
To Node:	EX-HW-12	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	41.48 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 48" RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-23	Future 10-year, 24-hour	42.34	0.00	0.02	3.85	6.98	5.42
EX-P-23	Future 100-year, 24-hour	54.75	0.00	0.02	4.52	7.53	5.96

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-23	Future 25-year, 24-hour	48.26	0.00	0.02	4.16	7.29	5.71
EX-P-23	Future 25-year, 8-hour	45.30	0.00	0.02	4.00	7.14	5.57
EX-P-23	Future 5-year, 24-hour	37.00	0.00	0.02	3.60	6.69	5.14

Pipe Link: EX-P-27/EX-P-28/EX-P-29		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	14.18 ft	Invert:	14.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-POND-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-18/EX-HW-19/EX-HW-20	Bottom Clip			
		Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	50.26 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment: Triple 14"x23" Horizontal Elliptical RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-27/EX-P-28/EX-P-29	Future 10-year, 24-hour	5.30	-0.54	0.30	1.02	1.02	1.02
EX-P-27/EX-P-28/EX-P-29	Future 100-year, 24-hour	5.32	-1.21	-1.36	1.02	1.02	1.02
EX-P-27/EX-P-28/EX-P-29	Future 25-year, 24-hour	5.16	-0.90	0.32	0.99	0.99	0.99

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-27/EX-P-28/EX-P-29	Future 25-year, 8-hour	5.21	-1.95	0.47	1.00	-1.27	1.00
EX-P-27/EX-P-28/EX-P-29	Future 5-year, 24-hour	5.43	-0.43	0.43	1.05	1.05	1.05

Pipe Link: EX-P-30		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	15.00 ft	Invert:	15.00 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-21	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-HW-22	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	None	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	44.80 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" CMP - Buried					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-30	Future 10-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Future 100-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Future 25-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Future 25-year, 8-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-P-30	Future	0.00	0.00	0.00	0.00	0.00	0.00

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	5-year, 24-hour						

Pipe Link: EX-P-31		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.39 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-10	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	46.20 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" PVC					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-31	Future 10-year, 24-hour	0.59	-0.02	-0.20	0.48	0.48	0.48
EX-P-31	Future 100-year, 24-hour	1.17	-0.03	0.33	0.95	0.95	0.95
EX-P-31	Future 25-year, 24-hour	0.75	-0.03	0.25	0.61	0.61	0.61
EX-P-31	Future 25-year, 8-hour	1.53	-0.01	0.22	1.25	1.25	1.25
EX-P-31	Future 5-year, 24-hour	0.50	-0.02	0.17	0.40	0.40	0.40

Pipe Link: EX-P-32		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.42 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-11	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	190.79 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" RCP					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-32	Future 10-year, 24-hour	2.44	0.00	0.14	3.10	3.10	3.10
EX-P-32	Future 100-year, 24-hour	2.76	0.00	0.14	3.51	3.51	3.51
EX-P-32	Future 25-year, 24-hour	2.79	0.00	-0.15	3.55	3.55	3.55
EX-P-32	Future 25-year, 8-hour	2.92	0.00	0.12	3.71	3.71	3.71
EX-P-32	Future 5-year, 24-hour	2.01	0.00	0.14	2.56	2.56	2.56

Pipe Link: EX-P-33		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.46 ft	Invert:	16.42 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-12	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-11	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	37.16 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 12" RCP

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-33	Future 10-year, 24-hour	1.80	-0.01	0.22	2.29	2.29	2.29
EX-P-33	Future 100-year, 24-hour	2.09	-0.26	0.25	2.66	2.66	2.66
EX-P-33	Future 25-year, 24-hour	2.20	0.00	-0.23	2.80	2.80	2.80
EX-P-33	Future 25-year, 8-hour	2.34	-0.72	-0.21	2.98	2.98	2.98
EX-P-33	Future 5-year, 24-hour	0.96	0.00	-0.27	1.23	1.23	1.23

Percolation Link: EX-POND-01-PERC

Scenario:	Future Conditions - Existing Infrastructure	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-01	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-01-GW	Perimeter 1:	1242.24 ft
Link Count:	1	Perimeter 2:	1559.77 ft
Flow Direction:	Both	Perimeter 3:	4691.45 ft
Aquifer Base Elevation:	10.26 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	11.26 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-01-PERC	Future 10-year, 24-hour	7.59	0.00	-1.54	0.00	0.00	0.00
EX-POND-01-PERC	Future 100-year, 24-hour	5.24	0.00	-2.31	0.00	0.00	0.00
EX-POND-01-PERC	Future 25-year, 24-hour	5.28	0.00	-2.34	0.00	0.00	0.00
EX-POND-01-PERC	Future 25-year, 8-hour	7.76	0.00	-1.46	0.00	0.00	0.00
EX-POND-01-PERC	Future 5-year, 24-hour	7.38	0.00	-1.93	0.00	0.00	0.00

Percolation Link: EX-POND-02-PERC

Scenario:	Future Conditions - Existing Infrastructure	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-02	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-02-GW	Perimeter 1:	570.36 ft
Link Count:	1	Perimeter 2:	896.45 ft
Flow Direction:	Both	Perimeter 3:	3852.24 ft
Aquifer Base Elevation:	8.52 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	9.52 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-02-PERC	Future 10-year, 24-hour	0.82	0.00	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Future 100-year, 24-hour	0.83	-0.04	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Future 25-year, 24-hour	0.83	0.00	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Future 25-year, 8-hour	1.82	0.00	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Future 5-year, 24-hour	0.81	0.00	0.01	0.00	0.00	0.00

Percolation Link: EX-POND-03-PERC

Scenario:	Future Conditions - Existing Infrastructure	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-03	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-03-GW	Perimeter 1:	590.34 ft
Link Count:	1	Perimeter 2:	927.02 ft
Flow Direction:	Both	Perimeter 3:	3982.99 ft
Aquifer Base Elevation:	8.57 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	9.57 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-03-PERC	Future 10-year, 24-hour	1.67	0.00	0.00	0.00	0.00	0.00

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-03-PERC	Future 100-year, 24-hour	1.64	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Future 25-year, 24-hour	1.70	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Future 25-year, 8-hour	8.27	0.00	-1.13	0.00	0.00	0.00
EX-POND-03-PERC	Future 5-year, 24-hour	1.66	0.00	0.00	0.00	0.00	0.00

Channel Link: EX-TD-N		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	16.95 ft	Invert:	16.43 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-09	Cross Section:	EX-TD-N01	Cross Section:	EX-TD-N02
To Node:	EX-ES-17/EX-ES-19/EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	319.25 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-N	Future 10-year, 24-hour	17.34	0.00	0.66	3.06	6.91	4.38
EX-TD-N	Future 100-year,	20.26	0.00	0.53	2.82	2.98	2.90

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-TD-N	Future 25-year, 24-hour	27.84	0.00	7.07	3.11	8.75	4.89
EX-TD-N	Future 25-year, 8-hour	53.09	0.00	18.65	3.11	12.96	6.98
EX-TD-N	Future 5-year, 24-hour	13.13	0.00	-1.37	4.17	6.71	4.41

Channel Link: EX-TD-S		Upstream		Downstream	
Scenario:	Future Conditions - Existing Infrastructure	Invert:	17.05 ft	Invert:	16.31 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-08	Cross Section:	EX-TD-S01	Cross Section:	EX-TD-S02
To Node:	EX-ES-16				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	412.79 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-S	Future 10-year, 24-hour	29.90	0.00	6.93	3.06	10.41	5.73
EX-TD-S	Future 100-year, 24-hour	40.50	0.00	0.71	3.02	4.57	3.31
EX-TD-S	Future 25-year,	35.46	0.00	6.98	3.06	11.08	6.06

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-TD-S	Future 25-year, 8-hour	57.15	0.00	3.16	3.06	7.67	4.28
EX-TD-S	Future 5-year, 24-hour	29.42	0.00	6.93	3.70	9.72	5.39

Weir Link: EX-W-01

Scenario:	Future Conditions - Existing Infrastructure	**Bottom Clip**	
		Default:	0.00 ft
From Node:	EX-HW-21	Op Table:	
To Node:	EX-HW-22	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	**Discharge Coefficients**	
Invert:	16.40 ft	Weir Default:	2.800
Control Elevation:	16.40 ft	Weir Table:	
Cross Section:	Weir Basin V	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-01	Future 10-year, 24-hour	22.30	0.00	0.02	1.06	1.06	1.06
EX-W-01	Future 100-year, 24-hour	37.32	0.00	-0.15	0.99	0.99	0.99
EX-W-01	Future 25-year, 24-hour	28.02	0.00	-0.02	1.05	1.05	1.05
EX-W-01	Future 25-year, 8-hour	23.34	0.00	-0.03	1.16	1.16	1.16
EX-W-01	Future 5-year,	18.18	0.00	0.03	1.05	1.05	1.05

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						

Weir Link: EX-W-02

Scenario:	Future Conditions - Existing Infrastructure
From Node:	EX-POND-02
To Node:	EX-HW-12
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	17.02 ft
Control Elevation:	17.02 ft
Cross Section:	EX-W-02

Bottom Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-02	Future 10-year, 24-hour	0.14	0.00	0.00	0.56	0.56	0.56
EX-W-02	Future 100-year, 24-hour	12.40	0.00	0.02	1.52	1.52	1.52
EX-W-02	Future 25-year, 24-hour	3.70	0.00	0.00	1.31	1.31	1.31
EX-W-02	Future 25-year, 8-hour	1.39	0.00	0.00	1.02	1.02	1.02
EX-W-02	Future 5-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00

Weir Link: EX-W-03

Scenario:	Future Conditions - Existing Infrastructure
From Node:	EX-ES-13
To Node:	EX-ES-10
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	18.10 ft
Control Elevation:	18.10 ft
Cross Section:	EX-W-03

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-03	Future 10-year, 24-hour	21.84	0.00	0.03	1.42	1.42	1.42
EX-W-03	Future 100-year, 24-hour	33.81	0.00	-0.04	1.53	1.53	1.53
EX-W-03	Future 25-year, 24-hour	26.82	0.00	0.02	1.48	1.48	1.48
EX-W-03	Future 25-year, 8-hour	26.76	0.00	0.03	1.48	1.48	1.48
EX-W-03	Future 5-year, 24-hour	17.94	0.00	-0.03	1.36	1.36	1.36

Weir Link: EX-W-04

Scenario:	Future Conditions - Existing Infrastructure
From Node:	EX-POND-03
To Node:	EX-HW-18/EX-HW-19/EX-HW-20
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	16.38 ft
Control Elevation:	16.38 ft
Cross Section:	EX-W-04

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-04	Future 10-year, 24-hour	5.42	-1.52	-0.02	0.60	0.60	0.60
EX-W-04	Future 100-year, 24-hour	16.91	-5.92	-14.14	0.60	0.60	0.60
EX-W-04	Future 25-year, 24-hour	7.40	-3.06	0.24	0.59	0.59	0.59
EX-W-04	Future 25-year, 8-hour	5.46	-7.06	0.02	0.59	0.59	0.59
EX-W-04	Future 5-year, 24-hour	4.22	-0.45	-0.02	0.60	0.60	0.60

Weir Link: EX-W-05

Scenario:	Future Conditions - Existing Infrastructure
From Node:	EX-POND-03
To Node:	EX-HW-21
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	16.17 ft
Control Elevation:	16.17 ft
Cross Section:	EX-W-05

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Existing Infrastructure]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-05	Future 10-year, 24-hour	20.53	-4.83	0.04	-0.81	-0.81	-0.81
EX-W-05	Future 100-year, 24-hour	36.76	-1.70	-0.25	-0.75	-0.75	-0.75
EX-W-05	Future 25-year, 24-hour	26.53	-2.13	0.02	-0.78	-0.78	-0.78
EX-W-05	Future 25-year, 8-hour	21.18	-7.23	0.05	-0.91	-0.91	-0.91
EX-W-05	Future 5-year, 24-hour	16.53	-6.43	0.05	-0.99	-0.99	-0.99

Channel Link: EX-CH-01		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.39 ft	Invert:	13.83 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-03/EX-ES-05	Cross Section:	EX-CH-CXS-01	Cross Section:	EX-CH-CXS-02
To Node:	P-ES-01				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	790.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-01	Future 10-year,	26.99	0.00	-0.10	1.18	0.95	0.73

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-01	Future 100-year, 24-hour	43.21	0.00	-0.38	1.18	1.19	0.90
EX-CH-01	Future 25-year, 24-hour	31.83	0.00	-0.17	1.16	0.99	0.75
EX-CH-01	Future 25-year, 8-hour	46.05	0.00	-0.19	1.30	1.29	0.97
EX-CH-01	Future 5-year, 24-hour	24.26	0.00	-0.06	1.23	0.80	0.71

Channel Link: EX-CH-02		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	15.20 ft	Invert:	14.55 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-03	Cross Section:	EX-CH-CXS-03	Cross Section:	EX-CH-CXS-04
To Node:	EX-HW-04				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	440.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-02	Future 10-year, 24-hour	63.25	0.00	-0.07	1.18	0.85	0.99
EX-CH-02	Future 100-year,	105.47	0.00	-0.20	1.16	0.72	0.94

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-02	Future 25-year, 24-hour	79.38	0.00	-0.09	1.18	0.79	0.98
EX-CH-02	Future 25-year, 8-hour	105.69	0.00	-0.15	1.24	1.14	1.17
EX-CH-02	Future 5-year, 24-hour	54.70	0.00	-0.04	1.16	0.86	0.96

Channel Link: EX-CH-03		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.55 ft	Invert:	14.20 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-04	Cross Section:	EX-CH-CXS-04	Cross Section:	EX-CH-CXS-05
To Node:	EX-HW-05				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	602.09 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-03	Future 10-year, 24-hour	40.96	0.00	-0.06	0.51	1.49	0.83
EX-CH-03	Future 100-year, 24-hour	57.07	0.00	-0.41	0.48	1.52	0.86
EX-CH-03	Future 25-year,	47.99	0.00	-0.09	0.50	1.51	0.84

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-CH-03	Future 25-year, 8-hour	57.92	0.00	-0.08	0.54	1.59	0.90
EX-CH-03	Future 5-year, 24-hour	36.45	0.00	-0.06	0.52	1.46	0.82

Channel Link: EX-CH-04		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.34 ft	Invert:	13.78 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-06	Cross Section:	EX-CH-CXS-06	Cross Section:	EX-CH-CXS-07
To Node:	EX-HW-07				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	100.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-04	Future 10-year, 24-hour	36.28	0.00	26.72	0.34	0.24	0.24
EX-CH-04	Future 100-year, 24-hour	51.27	-0.13	-42.87	0.34	-0.86	-0.43
EX-CH-04	Future 25-year, 24-hour	41.79	-0.01	-37.17	0.35	0.22	0.25
EX-CH-04	Future 25-year,	39.72	-0.50	-31.17	0.35	-1.24	-0.66

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-CH-04	Future 5-year, 24-hour	29.93	0.00	16.87	0.34	0.23	0.24

Channel Link: EX-CH-05		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	13.78 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-07	Cross Section:	EX-CH-CXS-07	Cross Section:	EX-CH-CXS-08
To Node:	EX-ES-06/EX-ES-07/EX-ES-08				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	443.99 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-05	Future 10-year, 24-hour	25.36	-0.08	0.52	0.22	0.36	0.29
EX-CH-05	Future 100-year, 24-hour	33.69	-0.12	2.33	0.23	0.35	0.29
EX-CH-05	Future 25-year, 24-hour	27.77	-0.09	-0.90	0.24	0.37	0.30
EX-CH-05	Future 25-year, 8-hour	27.29	-0.33	-0.67	0.24	0.47	0.31
EX-CH-05	Future	25.42	-0.05	-0.23	0.22	0.36	0.29

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	5-year, 24-hour						

Channel Link: EX-CH-06		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	15.00 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-09	Cross Section:	EX-CH-CXS-10	Cross Section:	EX-CH-CXS-09
To Node:	EX-ES-06/EX-ES-07 /EX-ES-08				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	425.00 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Downstream invert set to upstream invert of EX-P-10/EX-P-11/EX-P-12

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-06	Future 10-year, 24-hour	31.77	0.00	-0.10	0.66	0.78	0.49
EX-CH-06	Future 100-year, 24-hour	58.51	0.00	-0.19	0.50	1.10	0.65
EX-CH-06	Future 25-year, 24-hour	42.18	0.00	-0.18	0.52	1.01	0.59
EX-CH-06	Future 25-year, 8-hour	47.22	0.00	-0.14	0.68	1.35	0.79
EX-CH-06	Future 5-year, 24-hour	23.53	0.00	-0.17	0.69	0.67	0.51

Channel Link: EX-CH-07		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.49 ft	Invert:	16.73 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-ES-16	Cross Section:	EX-CH-CXS-11	Cross Section:	EX-CH-CXS-12
To Node:	EX-ES-17/EX-ES-19 /EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	427.42 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				
Comment:					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-07	Future 10-year, 24-hour	20.94	-1.32	-0.18	0.46	2.50	1.43
EX-CH-07	Future 100-year, 24-hour	13.57	-5.61	-0.53	0.46	2.52	1.45
EX-CH-07	Future 25-year, 24-hour	18.33	-4.30	-0.27	0.47	2.51	1.44
EX-CH-07	Future 25-year, 8-hour	21.71	-0.41	-0.07	0.46	2.42	1.38
EX-CH-07	Future 5-year, 24-hour	20.10	-0.12	-0.04	0.47	2.50	1.44

Channel Link: EX-CH-08		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.33 ft	Invert:	14.20 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-18/EX-HW-	Cross Section:	EX-CH-CXS-13	Cross Section:	EX-CH-CXS-14

	19/EX-HW-20
To Node:	P-HW-03/P-HW-04
Link Count:	1
Flow Direction:	Both
Damping:	0.0000 ft
Length:	250.76 ft
Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-08	Future 10-year, 24-hour	21.20	-0.06	-0.03	0.59	-1.05	-0.56
EX-CH-08	Future 100-year, 24-hour	24.48	-0.12	-0.04	0.69	-1.18	-0.64
EX-CH-08	Future 25-year, 24-hour	23.54	-0.07	0.03	0.67	-1.08	0.62
EX-CH-08	Future 25-year, 8-hour	21.50	-0.21	-0.03	0.62	-1.34	-0.73
EX-CH-08	Future 5-year, 24-hour	16.37	-0.06	-0.02	0.52	-1.03	-0.55

Channel Link: EX-CH-09		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.20 ft	Invert:	14.06 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	P-HW-03/P-HW-04	Cross Section:	EX-CH-CXS-14	Cross Section:	EX-CH-CXS-15
To Node:	EX-HW-12				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	281.50 ft				

Contraction Coef:	0.00
Expansion Coef:	0.00
Entr Loss Coef:	0.00
Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy
Comment:	

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-09	Future 10-year, 24-hour	33.94	0.00	-0.04	0.76	3.05	1.90
EX-CH-09	Future 100-year, 24-hour	61.65	0.00	-0.05	0.96	3.56	2.25
EX-CH-09	Future 25-year, 24-hour	44.22	0.00	0.04	0.84	3.35	2.09
EX-CH-09	Future 25-year, 8-hour	38.00	0.00	-0.04	0.80	3.17	1.98
EX-CH-09	Future 5-year, 24-hour	26.22	0.00	-0.02	0.69	2.73	1.71

Channel Link: EX-CH-OF		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.06 ft	Invert:	14.00 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-HW-12	Cross Section:	OUTFALL	Cross Section:	OUTFALL
To Node:	OUTFALL				
Link Count:	1				
Flow Direction:	Positive				
Damping:	0.0000 ft				
Length:	65.75 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				

Energy Switch: Energy

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-CH-OF	Future 10-year, 24-hour	74.42	0.00	-0.10	3.88	5.64	4.76
EX-CH-OF	Future 100-year, 24-hour	128.09	0.00	0.17	4.53	6.35	5.44
EX-CH-OF	Future 25-year, 24-hour	93.53	0.00	0.13	4.15	5.96	5.06
EX-CH-OF	Future 25-year, 8-hour	81.97	0.00	0.12	3.99	5.76	4.86
EX-CH-OF	Future 5-year, 24-hour	61.40	0.00	-0.08	3.66	5.39	4.53

Pipe Link: EX-P-01		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	17.06 ft	Invert:	16.46 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-01	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	90.03 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 23"x14" Horizontal Elliptical RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-01	Future 10-year, 24-hour	4.84	-1.92	0.43	3.62	2.81	2.88
EX-P-01	Future 100-year, 24-hour	5.13	-3.19	0.40	3.61	2.98	2.98
EX-P-01	Future 25-year, 24-hour	4.70	-2.77	0.38	3.48	2.73	2.80
EX-P-01	Future 25-year, 8-hour	4.91	-4.60	0.28	3.94	-2.91	3.25
EX-P-01	Future 5-year, 24-hour	4.92	-0.91	0.40	3.85	2.85	3.11

Pipe Link: EX-P-02/EX-P-03		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.46 ft	Invert:	16.39 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-HW-01	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-ES-03/EX-ES-05	Bottom Clip			
Link Count:	2	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	112.11 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Dual 12"x18" Horizontal Elliptical RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-02/EX-P-03	Future 10-year, 24-hour	6.53	-1.28	0.04	2.58	2.58	2.58
EX-P-02/EX-P	Future	6.76	-8.14	0.14	-3.22	-3.22	-3.22

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
-03	100-year, 24-hour						
EX-P-02/EX-P-03	Future 25-year, 24-hour	6.53	-4.30	0.13	2.58	2.58	2.58
EX-P-02/EX-P-03	Future 25-year, 8-hour	6.57	-5.68	0.18	2.60	2.60	2.60
EX-P-02/EX-P-03	Future 5-year, 24-hour	6.11	0.00	-0.02	2.41	2.41	2.41

Pipe Link: EX-P-05		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	13.81 ft	Invert:	13.41 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-01	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-03	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	262.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 36" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-05	Future 10-year, 24-hour	24.96	-0.94	1.42	3.53	3.53	3.53
EX-P-05	Future 100-year, 24-hour	31.28	-0.99	1.54	4.43	4.43	4.43
EX-P-05	Future 25-year,	27.36	-0.94	1.42	3.87	3.87	3.87

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-P-05	Future 25-year, 8-hour	28.38	-1.57	1.57	4.02	4.02	4.02
EX-P-05	Future 5-year, 24-hour	23.69	-0.85	1.46	3.35	3.35	3.35

Pipe Link: EX-P-06		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	15.27 ft	Invert:	14.55 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-02	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	130.33 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical CMP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-06	Future 10-year, 24-hour	4.21	0.00	0.21	2.45	2.45	2.45
EX-P-06	Future 100-year, 24-hour	4.58	-1.85	0.23	2.66	2.66	2.66
EX-P-06	Future 25-year, 24-hour	4.18	0.00	0.19	2.43	2.43	2.43
EX-P-06	Future 25-year, 8-hour	4.23	-1.73	0.24	2.46	2.46	2.46

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-06	Future 5-year, 24-hour	4.17	0.00	0.17	2.42	2.42	2.42

Pipe Link: EX-P-07		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.07 ft	Invert:	13.73 ft
		Manning's N:	0.0200	Manning's N:	0.0200
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-IN-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-04	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	140.15 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 23"x14" Horizontal Elliptical CMP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-07	Future 10-year, 24-hour	3.07	-0.53	-0.16	1.78	1.78	1.78
EX-P-07	Future 100-year, 24-hour	3.48	-1.74	-0.18	2.02	2.02	2.02
EX-P-07	Future 25-year, 24-hour	3.29	-1.02	-0.19	1.91	1.91	1.91
EX-P-07	Future 25-year, 8-hour	3.74	-1.02	-0.04	2.17	2.17	2.17
EX-P-07	Future 5-year, 24-hour	2.89	0.00	-0.20	1.68	1.68	1.68

Pipe Link: EX-P-08		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	12.63 ft	Invert:	12.45 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-05	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-HW-06	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	99.30 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 36" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-08	Future 10-year, 24-hour	23.19	0.00	0.76	3.28	3.28	3.28
EX-P-08	Future 100-year, 24-hour	27.26	-0.09	-1.48	3.86	3.86	3.86
EX-P-08	Future 25-year, 24-hour	24.52	0.00	-1.59	3.47	3.47	3.47
EX-P-08	Future 25-year, 8-hour	26.31	-0.57	0.94	3.72	3.72	3.72
EX-P-08	Future 5-year, 24-hour	22.78	0.00	1.15	3.22	3.22	3.22

Pipe Link: EX-P-09		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.40 ft	Invert:	13.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-04	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	EX-HW-07	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft

Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	135.56 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 18" RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-09	Future 10-year, 24-hour	8.33	0.00	-0.35	4.72	4.72	4.72
EX-P-09	Future 100-year, 24-hour	7.94	0.00	0.04	4.49	4.49	4.49
EX-P-09	Future 25-year, 24-hour	8.41	0.00	0.32	4.76	4.76	4.76
EX-P-09	Future 25-year, 8-hour	9.31	0.00	0.06	5.27	5.27	5.27
EX-P-09	Future 5-year, 24-hour	7.95	0.00	-0.35	4.50	4.50	4.50

Pipe Link: EX-P-10/EX-P-11/EX-P-12		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.00 ft	Invert:	13.91 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-06/EX-ES-07 /EX-ES-08	Max Depth:	2.00 ft	Max Depth:	2.00 ft
		Bottom Clip			
To Node:	EX-POND-02	Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	105.30 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	

Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 24"x38" Horizontal Elliptical RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-10/EX-P-11/EX-P-12	Future 10-year, 24-hour	41.25	0.00	0.02	2.72	2.72	2.72
EX-P-10/EX-P-11/EX-P-12	Future 100-year, 24-hour	66.67	0.00	0.03	4.39	4.39	4.39
EX-P-10/EX-P-11/EX-P-12	Future 25-year, 24-hour	50.55	0.00	0.02	3.33	3.33	3.33
EX-P-10/EX-P-11/EX-P-12	Future 25-year, 8-hour	46.20	0.00	0.02	3.04	3.04	3.04
EX-P-10/EX-P-11/EX-P-12	Future 5-year, 24-hour	35.62	0.00	0.02	2.35	2.35	2.35

Pipe Link: EX-P-13		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	15.02 ft	Invert:	15.00 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-ES-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-09	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	71.85 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 24"x38" Horizontal Elliptical RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-13	Future 10-year, 24-hour	19.82	0.00	0.03	3.92	3.93	3.93
EX-P-13	Future 100-year, 24-hour	27.18	0.00	0.02	5.37	5.37	5.37
EX-P-13	Future 25-year, 24-hour	23.42	0.00	0.03	4.63	4.63	4.63
EX-P-13	Future 25-year, 8-hour	23.48	0.00	0.03	4.64	4.64	4.64
EX-P-13	Future 5-year, 24-hour	15.45	0.00	0.03	3.05	3.30	3.17

Pipe Link: EX-P-15		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.22 ft	Invert:	16.15 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-07	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	88.26 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-15	Future 10-year, 24-hour	2.21	0.00	0.07	1.80	1.80	1.80

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-15	Future 100-year, 24-hour	3.96	0.00	-0.07	3.23	3.23	3.23
EX-P-15	Future 25-year, 24-hour	2.85	0.00	0.19	2.32	2.32	2.32
EX-P-15	Future 25-year, 8-hour	4.86	0.00	-0.17	3.96	3.96	3.96
EX-P-15	Future 5-year, 24-hour	1.78	0.00	-0.06	1.45	1.45	1.45

Pipe Link: EX-P-16		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.19 ft	Invert:	16.29 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-05	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-ES-13	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	104.97 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" ABS					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-16	Future 10-year, 24-hour	5.41	-0.01	-0.23	4.41	4.41	4.41
EX-P-16	Future 100-year, 24-hour	6.55	0.00	-0.24	5.34	5.34	5.34
EX-P-16	Future	6.01	0.00	-0.22	4.90	4.90	4.90

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 24-hour						
EX-P-16	Future 25-year, 8-hour	7.16	0.00	-0.23	5.84	5.84	5.84
EX-P-16	Future 5-year, 24-hour	4.78	-0.01	-0.23	3.90	3.90	3.90

Pipe Link: EX-P-17		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.28 ft	Invert:	16.19 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-13	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	78.61 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.70	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" ABS					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-17	Future 10-year, 24-hour	0.31	-9.54	0.02	-3.04	-3.04	-3.04
EX-P-17	Future 100-year, 24-hour	0.50	-18.58	-0.01	-5.91	-5.91	-5.91
EX-P-17	Future 25-year, 24-hour	0.45	-13.92	0.02	-4.43	-4.43	-4.43
EX-P-17	Future 25-year,	0.19	-11.10	0.01	-3.53	-3.53	-3.53

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-P-17	Future 5-year, 24-hour	1.81	-7.55	0.06	-2.40	-2.40	-2.40

Pipe Link: EX-P-18		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	15.96 ft	Invert:	15.63 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-06	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-HW-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	182.73 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-18	Future 10-year, 24-hour	13.90	0.00	0.64	4.42	4.42	4.42
EX-P-18	Future 100-year, 24-hour	12.60	0.00	-0.21	4.01	4.01	4.01
EX-P-18	Future 25-year, 24-hour	13.57	0.00	0.62	4.32	4.32	4.32
EX-P-18	Future 25-year, 8-hour	14.18	0.00	-0.61	4.51	4.51	4.51
EX-P-18	Future 5-year, 24-hour	13.35	0.00	-0.69	4.25	4.25	4.25

Pipe Link: EX-P-19		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.65 ft	Invert:	15.89 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-10	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-16	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	229.88 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 24" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-19	Future 10-year, 24-hour	7.21	-2.39	-0.04	2.29	2.29	2.29
EX-P-19	Future 100-year, 24-hour	5.86	-9.03	-0.02	-2.87	-2.87	-2.87
EX-P-19	Future 25-year, 24-hour	5.06	-6.91	-0.01	2.23	-2.20	-2.20
EX-P-19	Future 25-year, 8-hour	6.04	-1.81	-0.03	1.92	-2.10	1.92
EX-P-19	Future 5-year, 24-hour	9.76	-0.61	0.04	3.11	3.11	3.11

Pipe Link: EX-P-20/EX-P-21/EX-P-22		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.14 ft	Invert:	16.08 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-ES-17/EX-ES-19 /EX-ES-21	Max Depth:	1.50 ft	Max Depth:	1.50 ft
		Bottom Clip			
To Node:	EX-POND-01	Default:	0.00 ft	Default:	0.00 ft

Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	71.22 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.70	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 18" RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-20/EX-P-21/EX-P-22	Future 10-year, 24-hour	33.52	-0.51	-0.09	6.32	6.79	6.45
EX-P-20/EX-P-21/EX-P-22	Future 100-year, 24-hour	19.36	-2.71	-0.04	3.65	4.16	3.65
EX-P-20/EX-P-21/EX-P-22	Future 25-year, 24-hour	28.63	-2.05	-0.07	5.40	5.47	5.40
EX-P-20/EX-P-21/EX-P-22	Future 25-year, 8-hour	36.34	-0.07	0.07	6.85	7.30	7.03
EX-P-20/EX-P-21/EX-P-22	Future 5-year, 24-hour	30.64	-0.01	0.07	5.78	6.58	6.16

Pipe Link: EX-P-23		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	13.81 ft	Invert:	14.06 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-POND-02	Max Depth:	4.00 ft	Max Depth:	4.00 ft
To Node:	EX-HW-12	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	41.48 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	

Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: 48" RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-23	Future 10-year, 24-hour	40.93	-0.07	0.02	3.81	6.90	5.34
EX-P-23	Future 100-year, 24-hour	54.82	-0.10	0.02	4.53	7.54	5.97
EX-P-23	Future 25-year, 24-hour	47.72	-0.07	0.02	4.15	7.25	5.67
EX-P-23	Future 25-year, 8-hour	44.27	-0.15	0.02	3.96	7.09	5.52
EX-P-23	Future 5-year, 24-hour	35.31	-0.07	0.02	3.54	6.58	5.04

Pipe Link: EX-P-27/EX-P-28/EX-P-29		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.18 ft	Invert:	14.01 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
From Node:	EX-POND-03	Max Depth:	1.17 ft	Max Depth:	1.17 ft
To Node:	EX-HW-18/EX-HW-19/EX-HW-20	Bottom Clip			
		Default:	0.00 ft	Default:	0.00 ft
Link Count:	3	Op Table:		Op Table:	
Flow Direction:	Both	Ref Node:		Ref Node:	
Damping:	0.0000 ft	Manning's N:	0.0000	Manning's N:	0.0000
Length:	50.26 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.50	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0000	Manning's N:	0.0000
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment: Triple 14"x23" Horizontal Elliptical RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-27/EX-P-28/EX-P-29	Future 10-year, 24-hour	11.21	-0.13	-0.09	2.16	2.16	2.16
EX-P-27/EX-P-28/EX-P-29	Future 100-year, 24-hour	8.91	-0.21	-0.03	1.72	1.72	1.72
EX-P-27/EX-P-28/EX-P-29	Future 25-year, 24-hour	10.26	-0.16	-0.04	1.97	1.97	1.97
EX-P-27/EX-P-28/EX-P-29	Future 25-year, 8-hour	10.59	-1.01	0.03	2.04	2.04	2.04
EX-P-27/EX-P-28/EX-P-29	Future 5-year, 24-hour	12.21	-0.13	-0.13	2.35	2.35	2.35

Pipe Link: EX-P-31		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.39 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-10	Max Depth:	1.25 ft	Max Depth:	1.25 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	46.20 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 15" PVC					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-31	Future 10-year, 24-hour	0.58	-0.01	0.19	0.47	0.47	0.47

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-31	Future 100-year, 24-hour	1.06	-0.02	0.35	0.86	0.86	0.86
EX-P-31	Future 25-year, 24-hour	0.76	-0.02	0.22	0.62	0.62	0.62
EX-P-31	Future 25-year, 8-hour	1.15	-0.01	-0.25	0.94	0.94	0.94
EX-P-31	Future 5-year, 24-hour	0.46	-0.02	0.18	0.38	0.38	0.38

Pipe Link: EX-P-32		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.42 ft	Invert:	16.22 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-11	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-05	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	190.79 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-32	Future 10-year, 24-hour	2.24	0.00	0.15	2.85	2.85	2.85
EX-P-32	Future 100-year, 24-hour	2.73	0.00	0.14	3.48	3.48	3.48
EX-P-32	Future	2.54	0.00	0.15	3.24	3.24	3.24

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 24-hour						
EX-P-32	Future 25-year, 8-hour	2.63	-0.01	0.12	3.35	3.35	3.35
EX-P-32	Future 5-year, 24-hour	1.91	0.00	0.14	2.43	2.43	2.43

Pipe Link: EX-P-33		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.46 ft	Invert:	16.42 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-IN-12	Max Depth:	1.00 ft	Max Depth:	1.00 ft
To Node:	EX-IN-11	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	37.16 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: 12" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-P-33	Future 10-year, 24-hour	1.73	0.00	-0.30	2.20	2.20	2.20
EX-P-33	Future 100-year, 24-hour	2.07	-0.38	-0.24	2.64	2.64	2.64
EX-P-33	Future 25-year, 24-hour	2.01	0.00	0.25	2.56	2.56	2.56
EX-P-33	Future 25-year,	2.08	-0.73	-0.23	2.65	2.65	2.65

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-P-33	Future 5-year, 24-hour	1.01	0.00	-0.22	1.29	1.29	1.29

Percolation Link: EX-POND-01-PERC

Scenario:	Future Conditions - Initial Improvements	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-01	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-01-GW	Perimeter 1:	1242.24 ft
Link Count:	1	Perimeter 2:	1559.77 ft
Flow Direction:	Both	Perimeter 3:	4691.45 ft
Aquifer Base Elevation:	10.26 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	11.26 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-01-PERC	Future 10-year, 24-hour	7.63	0.00	-1.46	0.00	0.00	0.00
EX-POND-01-PERC	Future 100-year, 24-hour	5.24	0.00	-2.31	0.00	0.00	0.00
EX-POND-01-PERC	Future 25-year, 24-hour	5.28	0.00	-2.34	0.00	0.00	0.00
EX-POND-01-PERC	Future 25-year, 8-hour	7.83	0.00	-1.19	0.00	0.00	0.00
EX-POND-01-PERC	Future 5-year, 24-hour	7.46	0.00	-1.78	0.00	0.00	0.00

Percolation Link: EX-POND-02-PERC

Scenario:	Future Conditions - Initial Improvements	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-02	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-02-GW	Perimeter 1:	570.36 ft
Link Count:	1	Perimeter 2:	896.45 ft
Flow Direction:	Both	Perimeter 3:	3852.24 ft
Aquifer Base Elevation:	8.52 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	9.52 ft	Distance P2 to P3:	500.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	17.850 fpd	# of Cells P2 to P3:	50
Vertical Conductivity:	11.900 fpd		
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-02-PERC	Future 10-year, 24-hour	0.80	0.00	0.01	0.00	0.00	0.00
EX-POND-02-PERC	Future 100-year, 24-hour	0.83	-0.02	0.00	0.00	0.00	0.00
EX-POND-02-PERC	Future 25-year, 24-hour	0.82	0.00	0.01	0.00	0.00	0.00
EX-POND-02-PERC	Future 25-year, 8-hour	1.69	0.00	0.01	0.00	0.00	0.00
EX-POND-02-PERC	Future 5-year, 24-hour	0.79	0.00	0.01	0.00	0.00	0.00

Percolation Link: EX-POND-03-PERC

Scenario:	Future Conditions - Initial Improvements	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	EX-POND-03	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	EX-POND-03-GW	Perimeter 1:	590.34 ft
Link Count:	1	Perimeter 2:	927.02 ft
Flow Direction:	Both	Perimeter 3:	3982.99 ft

Aquifer Base Elevation:	8.57 ft		
Water Table Elevation:	9.57 ft	Distance P1 to P2:	50.00 ft
Annual Recharge Rate:	0 ipy	Distance P2 to P3:	500.00 ft
Horizontal Conductivity:	17.850 fpd	# of Cells P1 to P2:	10
Vertical Conductivity:	11.900 fpd	# of Cells P2 to P3:	50
Fillable Porosity:	0.400		
Layer Thickness:	4.00 ft		

Comment: Infiltration for Pond 01. Vertical conductivity determined from NRCS soil report - range from 5.95 in/hr to 19.98 in/hr. Used 5.95 in/hr as a conservative measure. Horizontal conductivity determined by multiplying the vertical by 1.5. Water table assumed 48" below bottom of pond based on past design projects.

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-POND-03-PERC	Future 10-year, 24-hour	0.84	0.00	-0.01	0.00	0.00	0.00
EX-POND-03-PERC	Future 100-year, 24-hour	0.93	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Future 25-year, 24-hour	0.87	0.00	0.00	0.00	0.00	0.00
EX-POND-03-PERC	Future 25-year, 8-hour	5.38	0.00	-0.01	0.00	0.00	0.00
EX-POND-03-PERC	Future 5-year, 24-hour	0.82	0.00	0.00	0.00	0.00	0.00

Channel Link: EX-TD-N		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	16.95 ft	Invert:	16.43 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-09	Cross Section:	EX-TD-N01	Cross Section:	EX-TD-N02
To Node:	EX-ES-17/EX-ES-19/EX-ES-21				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	319.25 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				

Exit Loss Coef:	0.00
Bend Loss Coef:	0.00
Bend Location:	0.00 dec
Energy Switch:	Energy

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-N	Future 10-year, 24-hour	17.38	0.00	0.67	3.06	6.91	4.38
EX-TD-N	Future 100-year, 24-hour	19.66	0.00	1.03	2.80	2.95	2.87
EX-TD-N	Future 25-year, 24-hour	27.68	0.00	7.00	3.11	8.82	4.92
EX-TD-N	Future 25-year, 8-hour	52.98	0.00	18.60	3.11	12.78	6.89
EX-TD-N	Future 5-year, 24-hour	13.18	0.00	-0.78	3.28	6.71	4.41

Channel Link: EX-TD-S		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	17.05 ft	Invert:	16.31 ft
		Manning's N:	0.0000	Manning's N:	0.0000
		Geometry:	Irregular	Geometry:	Irregular
From Node:	EX-IN-08	Cross Section:	EX-TD-S01	Cross Section:	EX-TD-S02
To Node:	EX-ES-16				
Link Count:	1				
Flow Direction:	Both				
Damping:	0.0000 ft				
Length:	412.79 ft				
Contraction Coef:	0.00				
Expansion Coef:	0.00				
Entr Loss Coef:	0.00				
Exit Loss Coef:	0.00				
Bend Loss Coef:	0.00				
Bend Location:	0.00 dec				
Energy Switch:	Energy				

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-TD-S	Future 10-year, 24-hour	29.84	0.00	6.95	3.06	10.15	5.60
EX-TD-S	Future 100-year, 24-hour	38.63	0.00	0.78	3.03	4.51	3.31
EX-TD-S	Future 25-year, 24-hour	35.54	0.00	-7.39	3.06	11.48	6.26
EX-TD-S	Future 25-year, 8-hour	57.49	0.00	3.15	3.06	7.67	4.28
EX-TD-S	Future 5-year, 24-hour	29.37	0.00	6.91	4.34	10.09	5.57

Weir Link: EX-W-01

Scenario:	Future Conditions - Initial Improvements	**Bottom Clip**	
		Default:	0.00 ft
From Node:	P-HW-01/P-HW-02	Op Table:	
To Node:	P-HW-03/P-HW-04	Ref Node:	
Link Count:	1	**Top Clip**	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	**Discharge Coefficients**	
Invert:	16.40 ft	Weir Default:	2.800
Control Elevation:	16.40 ft	Weir Table:	
Cross Section:	Weir Basin V	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-01	Future 10-year, 24-hour	7.02	0.00	-0.02	0.94	0.94	0.94
EX-W-01	Future 100-year,	34.32	0.00	0.05	1.17	1.17	1.17

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	24-hour						
EX-W-01	Future 25-year, 24-hour	22.02	0.00	-0.05	1.13	1.13	1.13
EX-W-01	Future 25-year, 8-hour	14.36	0.00	-0.05	1.08	1.08	1.08
EX-W-01	Future 5-year, 24-hour	0.80	0.00	0.00	0.60	0.60	0.60

Weir Link: EX-W-02

Scenario:	Future Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-02	Op Table:	
To Node:	EX-HW-12	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	Discharge Coefficients	
Invert:	17.02 ft	Weir Default:	2.800
Control Elevation:	17.02 ft	Weir Table:	
Cross Section:	EX-W-02	Orifice Default:	0.600
		Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-02	Future 10-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00
EX-W-02	Future 100-year, 24-hour	12.42	0.00	0.01	1.52	1.52	1.52
EX-W-02	Future 25-year, 24-hour	2.96	0.00	0.00	1.24	1.24	1.24
EX-W-02	Future 25-year,	0.81	0.00	0.00	0.88	0.88	0.88

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	8-hour						
EX-W-02	Future 5-year, 24-hour	0.00	0.00	0.00	0.00	0.00	0.00

Weir Link: EX-W-03			
Scenario:	Future Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-ES-13	Op Table:	
To Node:	EX-ES-10	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	
Geometry Type:	Irregular	Discharge Coefficients	
Invert:	18.50 ft	Weir Default:	2.800
Control Elevation:	18.50 ft	Weir Table:	
Cross Section:	EX-W-03	Orifice Default:	0.600
		Orifice Table:	
Comment:			

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-03	Future 10-year, 24-hour	17.40	0.00	0.04	1.35	1.35	1.35
EX-W-03	Future 100-year, 24-hour	30.88	0.00	0.02	1.51	1.51	1.51
EX-W-03	Future 25-year, 24-hour	23.00	0.00	0.04	1.43	1.43	1.43
EX-W-03	Future 25-year, 8-hour	20.62	0.00	0.04	1.40	1.40	1.40
EX-W-03	Future 5-year, 24-hour	12.48	0.00	0.04	1.27	1.27	1.27

Weir Link: EX-W-04			
Scenario:	Future Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-03	Op Table:	
To Node:	EX-HW-18/EX-HW-19/EX-HW-20	Ref Node:	
		Top Clip	
Link Count:	1	Default:	0.00 ft
Flow Direction:	Both	Op Table:	
Damping:	0.0000 ft	Ref Node:	
Weir Type:	Broad Crested Vertical	Discharge Coefficients	
Geometry Type:	Irregular	Weir Default:	2.800
Invert:	16.38 ft	Weir Table:	
Control Elevation:	16.38 ft	Orifice Default:	0.600
Cross Section:	EX-W-04	Orifice Table:	
Comment:			

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-04	Future 10-year, 24-hour	15.09	0.00	-0.06	0.98	0.98	0.98
EX-W-04	Future 100-year, 24-hour	19.45	0.00	0.04	0.85	0.85	0.85
EX-W-04	Future 25-year, 24-hour	14.54	0.00	-0.06	0.91	0.91	0.91
EX-W-04	Future 25-year, 8-hour	14.97	0.00	-0.06	0.94	0.94	0.94
EX-W-04	Future 5-year, 24-hour	4.69	0.00	-0.02	0.75	0.75	0.75

Weir Link: EX-W-05			
Scenario:	Future Conditions - Initial Improvements	Bottom Clip	
		Default:	0.00 ft
From Node:	EX-POND-03	Op Table:	
To Node:	P-HW-01/P-HW-02	Ref Node:	
Link Count:	1	Top Clip	
Flow Direction:	Both	Default:	0.00 ft
Damping:	0.0000 ft	Op Table:	
Weir Type:	Broad Crested Vertical	Ref Node:	

Geometry Type:	Irregular
Invert:	16.17 ft
Control Elevation:	16.17 ft
Cross Section:	EX-W-05

Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
EX-W-05	Future 10-year, 24-hour	10.14	-4.52	0.03	0.96	0.96	0.96
EX-W-05	Future 100-year, 24-hour	32.62	-9.51	0.08	-1.12	-1.12	-1.12
EX-W-05	Future 25-year, 24-hour	21.55	-7.71	0.06	-1.08	-1.08	-1.08
EX-W-05	Future 25-year, 8-hour	15.28	-14.78	0.04	-1.30	-1.30	-1.30
EX-W-05	Future 5-year, 24-hour	7.80	-1.48	-0.02	0.99	0.99	0.99

Pipe Link: P-P-01		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	13.83 ft	Invert:	13.81 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	P-ES-01	Max Depth:	3.00 ft	Max Depth:	3.00 ft
To Node:	EX-IN-01	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	20.00 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				

Comment: Proposed 36" RCP

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-01	Future 10-year, 24-hour	21.95	-0.96	2.72	3.10	3.10	3.10
P-P-01	Future 100-year, 24-hour	32.93	-1.11	2.80	4.66	4.66	4.66
P-P-01	Future 25-year, 24-hour	25.17	-1.07	2.48	3.56	3.56	3.56
P-P-01	Future 25-year, 8-hour	27.36	-1.76	2.74	3.87	3.87	3.87
P-P-01	Future 5-year, 24-hour	20.51	-0.98	2.85	2.90	2.90	2.90

Pipe Link: P-P-02/P-P-03		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	14.50 ft	Invert:	14.20 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	P-HW-01/P-HW-02	Max Depth:	1.50 ft	Max Depth:	1.50 ft
To Node:	P-HW-03/P-HW-04	Bottom Clip			
Link Count:	2	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	44.80 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Proposed Pipe to roadside ditch - Dual 18" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-02/P-P-03	Future 10-year, 24-hour	11.16	0.00	-0.75	3.16	3.16	3.16

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-02/P-P-03	Future 100-year, 24-hour	9.93	0.00	-0.87	2.81	2.81	2.81
P-P-02/P-P-03	Future 25-year, 24-hour	11.20	0.00	-0.75	3.17	3.17	3.17
P-P-02/P-P-03	Future 25-year, 8-hour	13.04	0.00	-1.07	3.69	3.69	3.69
P-P-02/P-P-03	Future 5-year, 24-hour	10.34	0.00	-1.05	2.92	2.92	2.92

Pipe Link: P-P-04		Upstream		Downstream	
Scenario:	Future Conditions - Initial Improvements	Invert:	15.73 ft	Invert:	15.02 ft
		Manning's N:	0.0120	Manning's N:	0.0120
		Geometry: Circular		Geometry: Circular	
From Node:	EX-HW-08	Max Depth:	2.00 ft	Max Depth:	2.00 ft
To Node:	EX-ES-10	Bottom Clip			
Link Count:	1	Default:	0.00 ft	Default:	0.00 ft
Flow Direction:	Both	Op Table:		Op Table:	
Damping:	0.0000 ft	Ref Node:		Ref Node:	
Length:	58.50 ft	Manning's N:	0.0000	Manning's N:	0.0000
FHWA Code:	0	Top Clip			
Entr Loss Coef:	0.50	Default:	0.00 ft	Default:	0.00 ft
Exit Loss Coef:	0.50	Op Table:		Op Table:	
Bend Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Location:	0.00 dec	Manning's N:	0.0000	Manning's N:	0.0000
Energy Switch:	Energy				
Comment: Proposed 24" RCP					

Link Min/Max Conditions [Future Conditions - Initial Improvements]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
P-P-04	Future 10-year, 24-hour	12.25	0.00	0.36	5.73	4.87	5.30
P-P-04	Future 100-year, 24-hour	10.29	0.00	0.30	4.51	3.31	3.86
P-P-04	Future	13.02	0.00	0.33	5.72	4.67	5.20

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Max Avg Velocity [fps]
	25-year, 24-hour						
P-P-04	Future 25-year, 8-hour	16.89	0.00	-1.11	6.30	9.04	7.67
P-P-04	Future 5-year, 24-hour	11.15	0.00	0.43	5.68	4.64	5.07

Appendix D: Time of Concentration Calculations

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin A
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	77	ft	23	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	22.17	ft	21.28	ft		ft		ft		
Elevation 2, E_2	21.28	ft	20.74	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.02	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr	0.03	hr		hr		hr		
	0.9	+	2.1	+		+		=	3.0	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	713	ft		ft		ft		ft		
Elevation 1, E_1	20.74	ft		ft		ft		ft		
Elevation 2, E_2	18.71	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.003			ft/ft		ft/ft		ft/ft		
Velocity, V	0.86			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.23			hr		hr		hr		
	13.8	+		+		+		=	13.8	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **16.8** **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin B
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	70	ft	30	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	22.25	ft	21.28	ft		ft		ft		
Elevation 2, E_2	21.28	ft	20.45	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.03	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.04	hr		hr		hr		
	0.8	+	2.4	+		+		=	3.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	1055	ft		ft		ft		ft		
Elevation 1, E_1	20.45	ft		ft		ft		ft		
Elevation 2, E_2	17.02	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.003			ft/ft		ft/ft		ft/ft		
Velocity, V	0.92			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.32			hr		hr		hr		
	19.1	+		+		+		=	19.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 22.3 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin C
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	70	ft	30	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	21.04	ft	19.56	ft		ft		ft		
Elevation 2, E_2	19.56	ft	18.88	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.02	ft/ft	0.02	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.04	hr		hr		hr		
	0.7	+	2.6	+		+		=	3.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	647	ft		ft		ft		ft		
Elevation 1, E_1	18.88	ft		ft		ft		ft		
Elevation 2, E_2	16.34	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.004			ft/ft		ft/ft		ft/ft		
Velocity, V	1.01			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.18			hr		hr		hr		
	10.7	+		+		+		=	10.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **13.9** **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin D
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	77	ft	23	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	21.00	ft	19.86	ft		ft		ft		
Elevation 2, E_2	19.86	ft	19.46	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.02	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.04	hr		hr		hr		
	0.8	+	2.4	+		+		=	3.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	922	ft		ft		ft		ft		
Elevation 1, E_1	19.46	ft		ft		ft		ft		
Elevation 2, E_2	17.48	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.002			ft/ft		ft/ft		ft/ft		
Velocity, V	0.75			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.34			hr		hr		hr		
	20.6	+		+		+		=	20.6	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 23.7 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin E
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.84	ft		ft		ft		ft		
Elevation 2, E_2	19.48	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.0	+		+		+		=	1.0	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	9	ft	243	ft		ft		ft		
Elevation 1, E_1	19.48	ft	19.33	ft		ft		ft		
Elevation 2, E_2	19.33	ft	17.06	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.017		0.009	ft/ft		ft/ft		ft/ft		
Velocity, V	2.62		1.56	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.00		0.04	hr		hr		hr		
	0.1	+	2.6	+		+		=	2.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin F
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	51	ft	49	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.03	ft	19.58	ft		ft		ft		
Elevation 2, E_2	19.58	ft	19.14	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.09	hr		hr		hr		
	0.7	+	5.6	+		+		=	6.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	126	ft		ft		ft		ft		
Elevation 1, E_1	19.14	ft		ft		ft		ft		
Elevation 2, E_2	16.46	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.021			ft/ft		ft/ft		ft/ft		
Velocity, V	2.35			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.9	+		+		+		=	0.9	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin G
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.03	ft		ft		ft		ft		
Elevation 2, E_2	19.09	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.2	+		+		+		=	1.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	91	ft	12	ft		ft		ft		
Elevation 1, E_1	19.09	ft	17.93	ft		ft		ft		
Elevation 2, E_2	17.93	ft	17.50	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.013		0.036	ft/ft		ft/ft		ft/ft		
Velocity, V	2.30		3.05	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01		0.00	hr		hr		hr		
	0.7	+	0.1	+		+		=	0.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin H
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.25	ft		ft		ft		ft		
Elevation 2, E_2	20.51	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.3	+		+		+		=	1.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	113	ft	156	ft		ft		ft		
Elevation 1, E_1	20.51	ft	19.24	ft		ft		ft		
Elevation 2, E_2	19.24	ft	16.50	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011		0.018	ft/ft		ft/ft		ft/ft		
Velocity, V	2.16		2.14	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01		0.02	hr		hr		hr		
	0.9	+	1.2	+		+		=	2.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin I
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	40	ft	60	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	18.07	ft	17.62	ft		ft		ft		
Elevation 2, E_2	17.62	ft	15.19	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.04	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.06	hr		hr		hr		
	0.5	+	3.7	+		+		=	4.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

Surface Description										
Flow Length, L		ft		ft		ft		ft		
Elevation 1, E_1		ft		ft		ft		ft		
Elevation 2, E_2		ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$				ft/ft		ft/ft		ft/ft		
Velocity, V				ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$				hr		hr		hr		
		+		+		+		=	0.0	min

Open Channel Flow [TR-55 equation 3-4]

		CD								
		Channel								
Open Channel	Front Slope, s_1	6.00	:1		:1		:1		:1	
	Bottom width, B	10.00	ft		ft		ft		ft	
	Back Slope, s_2	6.00	:1		:1		:1		:1	
	Depth, H	2.00	ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a		44.00	sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w		34.33	ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$		1.28	ft		ft		ft		ft	
Flow Length, L		538	ft		ft		ft		ft	
Elevation 1, E_1		15.19	ft		ft		ft		ft	
Elevation 2, E_2		14.24	ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$		0.002	ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n		0.200								
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.37	ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$		0.40	ft/s		ft/s		ft/s		ft/s	
		24.3	+		+		+	=	24.3	min

Total Time of Concentration

Sub-Basin Tc = **28.5** **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin J
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	72	ft	28	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	19.00	ft	17.49	ft		ft		ft		
Elevation 2, E_2	17.49	ft	16.79	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.02	ft/ft	0.03	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.04	hr		hr		hr		
	0.7	+	2.4	+		+		=	3.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	196	ft		ft		ft		ft		
Elevation 1, E_1	16.79	ft		ft		ft		ft		
Elevation 2, E_2	15.02	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.009			ft/ft		ft/ft		ft/ft		
Velocity, V	1.53			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.04			hr		hr		hr		
	2.1	+		+		+		=	2.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin K
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	29	ft	71	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.62	ft	20.29	ft		ft		ft		
Elevation 2, E_2	20.29	ft	16.14	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.06	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.06	hr		hr		hr		
	0.4	+	3.6	+		+		=	4.0	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	102	ft		ft		ft		ft		
Elevation 1, E_1	16.14	ft		ft		ft		ft		
Elevation 2, E_2	16.00	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.001			ft/ft		ft/ft		ft/ft		
Velocity, V	0.60			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.05			hr		hr		hr		
	2.8	+		+		+		=	2.8	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 10.0 * **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin L
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.12	ft		ft		ft		ft		
Elevation 2, E_2	19.91	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.1	+		+		+		=	1.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD		DE		EF			
Surface Description	Paved		Unpaved		Paved		Unpaved			
Flow Length, L	11	ft	26	ft	58	ft	17	ft		
Elevation 1, E_1	19.91	ft	19.81	ft	19.51	ft	18.87	ft		
Elevation 2, E_2	19.81	ft	19.51	ft	18.87	ft	18.50	ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.009		0.012	ft/ft	0.011	ft/ft	0.022	ft/ft		
Velocity, V	1.94		1.74	ft/s	2.13	ft/s	2.40	ft/s		
$T_t = L / (3600 * V)$	0.00		0.00	hr	0.01	hr	0.00	hr		
	0.1	+	0.2	+	0.5	+	0.1	=	0.9	min

Open Channel Flow [TR-55 equation 3-4]

		FG									
		Channel									
Open Channel	Front Slope, s_1	7.00	:1		:1		:1		:1		
	Bottom width, B	5.00	ft		ft		ft		ft		
	Back Slope, s_2	7.00	:1		:1		:1		:1		
	Depth, H	1.50	ft		ft		ft		ft		
Pipe	Diameter, D		in		in		in		in		
Cross Sectional Flow Area, a		23.25	sq ft		sq ft		sq ft		sq ft		
Wetted Perimeter, P_w		26.21	ft		ft		ft		ft		
Hydraulic radius, $r = a / P_w$		0.89	ft		ft		ft		ft		
Flow Length, L		191	ft		ft		ft		ft		
Elevation 1, E_1		18.50	ft		ft		ft		ft		
Elevation 2, E_2		16.95	ft		ft		ft		ft		
Channel Slope, $s = (E_1 - E_2) / L$		0.008	ft/ft		ft/ft		ft/ft		ft/ft		
Manning's Roughness coeff., n		0.200									
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.62	ft/s		ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$		0.09	ft/s		ft/s		ft/s		ft/s		
		5.1	+		+		+	=	5.1	min	

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin M
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.12	ft		ft		ft		ft		
Elevation 2, E_2	20.27	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.3	+		+		+		=	1.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	278	ft		ft		ft		ft		
Elevation 1, E_1	20.27	ft		ft		ft		ft		
Elevation 2, E_2	20.03	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.001			ft/ft		ft/ft		ft/ft		
Velocity, V	0.60			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.13			hr		hr		hr		
	7.8	+		+		+		=	7.8	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin N
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB											
Surface Description	Short grass prairie											
Manning's Roughness coeff., n	0.15											
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft				
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in				
Elevation 1, E_1	22.00	ft		ft		ft		ft				
Elevation 2, E_2	20.54	ft		ft		ft		ft				
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft				
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.14	hr		hr		hr		hr				
	8.2		+		+		+		=	8.2		min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC											
Surface Description	Unpaved											
Flow Length, L	183	ft		ft		ft		ft				
Elevation 1, E_1	20.54	ft		ft		ft		ft				
Elevation 2, E_2	16.50	ft		ft		ft		ft				
Watercourse Slope, $s = (E_1 - E_2) / L$	0.022			ft/ft		ft/ft		ft/ft				
Velocity, V	2.40			ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$	0.02			hr		hr		hr				
	1.3		+		+		+		=	1.3		min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1			
	Bottom width, B		ft		ft		ft		ft			
	Back Slope, s_2		:1		:1		:1		:1			
	Depth, H		ft		ft		ft		ft			
Pipe	Diameter, D		in		in		in		in			
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft			
Wetted Perimeter, P_w			ft		ft		ft		ft			
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft			
Flow Length, L			ft		ft		ft		ft			
Elevation 1, E_1			ft		ft		ft		ft			
Elevation 2, E_2			ft		ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n												
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s			
			+		+		+		=	0.0		min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin O
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.60	ft		ft		ft		ft		
Elevation 2, E_2	20.08	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	1.5	+		+		+		=	1.5	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Unpaved									
Flow Length, L	7	ft		ft		ft		ft		
Elevation 1, E_1	20.08	ft		ft		ft		ft		
Elevation 2, E_2	20.03	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.007			ft/ft		ft/ft		ft/ft		
Velocity, V	1.40			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.00			hr		hr		hr		
	0.1	+		+		+		=	0.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin P
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.54	ft		ft		ft		ft		
Elevation 2, E_2	20.29	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	2.1	+		+		+		=	2.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	13	ft		ft		ft		ft		
Elevation 1, E_1	20.29	ft		ft		ft		ft		
Elevation 2, E_2	20.28	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.001			ft/ft		ft/ft		ft/ft		
Velocity, V	0.57			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.4	+		+		+		=	0.4	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin Q
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.63	ft		ft		ft		ft		
Elevation 2, E_2	20.15	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	1.6	+		+		+		=	1.6	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	8	ft		ft		ft		ft		
Elevation 1, E_1	20.15	ft		ft		ft		ft		
Elevation 2, E_2	20.06	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011			ft/ft		ft/ft		ft/ft		
Velocity, V	2.12			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.00			hr		hr		hr		
	0.1	+		+		+		=	0.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin R
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	90	ft	10	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.59	ft	20.03	ft		ft		ft		
Elevation 2, E_2	20.03	ft	19.93	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr	0.03	hr		hr		hr		
	1.3	+	1.6	+		+		=	2.9	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD		DE		EF					
Surface Description	Unpaved		Paved		Unpaved					
Flow Length, L	106	ft	149	ft	77	ft		ft		
Elevation 1, E_1	19.93	ft	18.59	ft	17.47	ft		ft		
Elevation 2, E_2	18.59	ft	17.47	ft	15.73	ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.013		0.008	ft/ft	0.023	ft/ft		ft/ft		
Velocity, V	1.81		1.76	ft/s	2.42	ft/s		ft/s		
$T_t = L / (3600 * V)$	0.02		0.02	hr	0.01	hr		hr		
	1.0	+	1.4	+	0.5	+		=	2.9	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin S
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB								
Surface Description	Smooth surfaces								
Manning's Roughness coeff., n	0.011								
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft	
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in	
Elevation 1, E_1	20.42	ft		ft		ft		ft	
Elevation 2, E_2	20.38	ft		ft		ft		ft	
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft	
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.07	hr		hr		hr		hr	
	4.3	+		+		+		=	4.3 min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC								
Surface Description	Paved								
Flow Length, L	59	ft		ft		ft		ft	
Elevation 1, E_1	20.38	ft		ft		ft		ft	
Elevation 2, E_2	19.33	ft		ft		ft		ft	
Watercourse Slope, $s = (E_1 - E_2) / L$	0.018			ft/ft		ft/ft		ft/ft	
Velocity, V	2.70			ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$	0.01			hr		hr		hr	
	0.4	+		+		+		=	0.4 min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1
	Bottom width, B		ft		ft		ft		ft
	Back Slope, s_2		:1		:1		:1		:1
	Depth, H		ft		ft		ft		ft
Pipe	Diameter, D		in		in		in		in
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft
Wetted Perimeter, P_w			ft		ft		ft		ft
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft
Flow Length, L			ft		ft		ft		ft
Elevation 1, E_1			ft		ft		ft		ft
Elevation 2, E_2			ft		ft		ft		ft
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft
Manning's Roughness coeff., n									
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s
		+		+		+		=	0.0 min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin T
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.49	ft		ft		ft		ft		
Elevation 2, E_2	20.40	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.05	hr		hr		hr		hr		
	3.1	+		+		+		=	3.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	70	ft	32	ft		ft		ft		
Elevation 1, E_1	20.40	ft	20.39	ft		ft		ft		
Elevation 2, E_2	20.39	ft	20.02	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.000		0.012	ft/ft		ft/ft		ft/ft		
Velocity, V	0.24		1.74	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.08		0.01	hr		hr		hr		
	4.8	+	0.3	+		+		=	5.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin U
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC		CD				
Surface Description	Short grass prairie		Smooth surfaces		Short grass prairie				
Manning's Roughness coeff., n	0.15		0.011		0.15				
Flow Length, L (should be <= 100 ft)	25	ft	53	ft	15	ft		ft	
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in	5.89	in		in	
Elevation 1, E_1	18.06	ft	17.59	ft	17.03	ft		ft	
Elevation 2, E_2	17.59	ft	17.03	ft	14.50	ft		ft	
Land Slope, $s = (E_1 - E_2) / L$	0.02	ft/ft	0.01	ft/ft	0.17	ft/ft		ft/ft	
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.04	hr	0.01	hr	0.01	hr		hr	
	2.5	+	0.7	+	0.7	+		=	3.9 min

Shallow Concentrated Flow [TR-55 figure 3-1]

Surface Description								
Flow Length, L		ft		ft		ft		ft
Elevation 1, E_1		ft		ft		ft		ft
Elevation 2, E_2		ft		ft		ft		ft
Watercourse Slope, $s = (E_1 - E_2) / L$				ft/ft		ft/ft		ft/ft
Velocity, V				ft/s		ft/s		ft/s
$T_t = L / (3600 * V)$				hr		hr		hr
		+		+		+		= 0.0 min

Open Channel Flow [TR-55 equation 3-4]

		DE							
		Channel							
Open Channel	Front Slope, s_1	5.00	:1		:1		:1		:1
	Bottom width, B	7.00	ft		ft		ft		ft
	Back Slope, s_2	4.00	:1		:1		:1		:1
	Depth, H	2.50	ft		ft		ft		ft
Pipe	Diameter, D		in		in		in		in
Cross Sectional Flow Area, a		45.63	sq ft		sq ft		sq ft		sq ft
Wetted Perimeter, P_w		30.06	ft		ft		ft		ft
Hydraulic radius, $r = a / P_w$		1.52	ft		ft		ft		ft
Flow Length, L		248	ft		ft		ft		ft
Elevation 1, E_1		14.50	ft		ft		ft		ft
Elevation 2, E_2		13.81	ft		ft		ft		ft
Channel Slope, $s = (E_1 - E_2) / L$		0.003	ft/ft		ft/ft		ft/ft		ft/ft
Manning's Roughness coeff., n		0.200							
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.52	ft/s		ft/s		ft/s		ft/s
$T_t = L / (3600 * V)$		0.13	ft/s		ft/s		ft/s		ft/s
		7.9	+		+		+		= 7.9 min

Total Time of Concentration

Sub-Basin Tc = 11.8 min

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin V
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC		CD		DE			
Surface Description	Short grass prairie		Smooth surfaces		Short grass prairie		Smooth surfaces			
Manning's Roughness coeff., n	0.15		0.011		0.15		0.011			
Flow Length, L (should be <= 100 ft)	35	ft	34	ft	15	ft	16	ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in	5.89	in	5.89	in		
Elevation 1, E_1	18.03	ft	17.52	ft	17.28	ft	17.17	ft		
Elevation 2, E_2	17.52	ft	17.28	ft	17.17	ft	17.11	ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft	0.01	ft/ft	0.00	ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.06	hr	0.01	hr	0.04	hr	0.01	hr		
	3.6	+	0.6	+	2.3	+	0.4	=	6.8	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	EF		FG		GH		HI			
Surface Description	Paved		Unpaved		Paved		Unpaved			
Flow Length, L	202	ft	100	ft	34	ft	35	ft		
Elevation 1, E_1	17.11	ft	16.40	ft	16.22	ft	16.12	ft		
Elevation 2, E_2	16.40	ft	16.22	ft	16.12	ft	16.00	ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.004		0.002	ft/ft	0.003	ft/ft	0.003	ft/ft		
Velocity, V	1.21		0.68	ft/s	1.11	ft/s	0.95	ft/s		
$T_t = L / (3600 * V)$	0.05		0.04	hr	0.01	hr	0.01	hr		
	2.8	+	2.4	+	0.5	+	0.6	=	6.3	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 13.2 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin W
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB											
Surface Description	Short grass prairie											
Manning's Roughness coeff., n	0.15											
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft				
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in				
Elevation 1, E_1	21.34	ft		ft		ft		ft				
Elevation 2, E_2	18.90	ft		ft		ft		ft				
Land Slope, $s = (E_1 - E_2) / L$	0.02	ft/ft		ft/ft		ft/ft		ft/ft				
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.11	hr		hr		hr		hr				
	6.7		+		+		+		=	6.7	min	

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC											
Surface Description	Unpaved											
Flow Length, L	47	ft		ft		ft		ft				
Elevation 1, E_1	18.90	ft		ft		ft		ft				
Elevation 2, E_2	16.50	ft		ft		ft		ft				
Watercourse Slope, $s = (E_1 - E_2) / L$	0.051			ft/ft		ft/ft		ft/ft				
Velocity, V	3.66			ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$	0.00			hr		hr		hr				
	0.2		+		+		+		=	0.2	min	

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1			
	Bottom width, B		ft		ft		ft		ft			
	Back Slope, s_2		:1		:1		:1		:1			
	Depth, H		ft		ft		ft		ft			
Pipe	Diameter, D		in		in		in		in			
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft			
Wetted Perimeter, P_w			ft		ft		ft		ft			
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft			
Flow Length, L			ft		ft		ft		ft			
Elevation 1, E_1			ft		ft		ft		ft			
Elevation 2, E_2			ft		ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n												
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s			
			+		+		+		=	0.0	min	

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin X
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB											
Surface Description	Smooth surfaces											
Manning's Roughness coeff., n	0.011											
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft				
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in				
Elevation 1, E_1	20.18	ft		ft		ft		ft				
Elevation 2, E_2	19.19	ft		ft		ft		ft				
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft				
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr				
	1.2		+		+		+		=	1.2	min	

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD									
Surface Description	Paved		Unpaved									
Flow Length, L	180	ft	54	ft		ft		ft				
Elevation 1, E_1	19.19	ft	17.18	ft		ft		ft				
Elevation 2, E_2	17.18	ft	16.50	ft		ft		ft				
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011		0.013	ft/ft		ft/ft		ft/ft				
Velocity, V	2.15		1.81	ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$	0.02		0.01	hr		hr		hr				
	1.4		0.5		+		+		=	1.9	min	

Open Channel Flow [TR-55 equation 3-4]

		DE										
		Channel										
Open Channel	Front Slope, s_1	20.00	:1		:1		:1		:1			
	Bottom width, B	5.00	ft		ft		ft		ft			
	Back Slope, s_2	12.00	:1		:1		:1		:1			
	Depth, H	1.25	ft		ft		ft		ft			
Pipe	Diameter, D		in		in		in		in			
Cross Sectional Flow Area, a		31.25	sq ft		sq ft		sq ft		sq ft			
Wetted Perimeter, P_w		45.08	ft		ft		ft		ft			
Hydraulic radius, $r = a / P_w$		0.69	ft		ft		ft		ft			
Flow Length, L		941	ft		ft		ft		ft			
Elevation 1, E_1		16.50	ft		ft		ft		ft			
Elevation 2, E_2		14.18	ft		ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$		0.002	ft/ft		ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n		0.200										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.29	ft/s		ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$		0.90	ft/s		ft/s		ft/s		ft/s			
		54.1		+		+		=	54.1	min		

Total Time of Concentration

Sub-Basin Tc = 57.2 min

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin Y
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.77	ft		ft		ft		ft		
Elevation 2, E_2	19.38	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.0	+		+		+		=	1.0	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	56	ft		ft		ft		ft		
Elevation 1, E_1	19.38	ft		ft		ft		ft		
Elevation 2, E_2	18.80	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.010			ft/ft		ft/ft		ft/ft		
Velocity, V	2.07			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.4	+		+		+		=	0.4	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin Z
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.66	ft		ft		ft		ft		
Elevation 2, E_2	20.27	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	1.7	+		+		+		=	1.7	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	47	ft	10	ft		ft		ft		
Elevation 1, E_1	20.27	ft	20.02	ft		ft		ft		
Elevation 2, E_2	20.02	ft	19.00	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.005		0.106	ft/ft		ft/ft		ft/ft		
Velocity, V	1.48		5.26	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01		0.00	hr		hr		hr		
	0.5	+	0.0	+		+		=	0.6	min

Open Channel Flow [TR-55 equation 3-4]

		CD								
		Channel								
Open Channel	Front Slope, s_1	6.00	:1		:1		:1		:1	
	Bottom width, B	10.00	ft		ft		ft		ft	
	Back Slope, s_2	6.00	:1		:1		:1		:1	
	Depth, H	2.00	ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a		44.00	sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w		34.33	ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$		1.28	ft		ft		ft		ft	
Flow Length, L		438	ft		ft		ft		ft	
Elevation 1, E_1		19.00	ft		ft		ft		ft	
Elevation 2, E_2		16.10	ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$		0.007	ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n		0.200								
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.72	ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$		0.17	ft/s		ft/s		ft/s		ft/s	
		10.2	+		+		+		=	10.2	min

Total Time of Concentration

Sub-Basin Tc = 12.5 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin AA
Condition: Pre-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	47	ft	53	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	19.40	ft	18.75	ft		ft		ft		
Elevation 2, E_2	18.75	ft	18.38	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.11	hr		hr		hr		
	0.6	+	6.6	+		+		=	7.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD		DE		EF		FG			
Surface Description	Unpaved		Paved		Unpaved		Paved			
Flow Length, L	53	ft	131	ft	28	ft	39	ft		
Elevation 1, E_1	18.75	ft	18.16	ft	17.30	ft	17.20	ft		
Elevation 2, E_2	18.16	ft	17.30	ft	17.20	ft	16.89	ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011		0.007	ft/ft	0.004	ft/ft	0.008	ft/ft		
Velocity, V	1.70		1.65	ft/s	0.96	ft/s	1.81	ft/s		
$T_t = L / (3600 * V)$	0.01		0.02	hr	0.01	hr	0.01	hr		
	0.5	+	1.3	+	0.5	+	0.4	=	2.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1			
	Bottom width, B		ft		ft		ft			
	Back Slope, s_2		:1		:1		:1			
	Depth, H		ft		ft		ft			
Pipe	Diameter, D		in		in		in			
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft			
Wetted Perimeter, P_w			ft		ft		ft			
Hydraulic radius, $r = a / P_w$			ft		ft		ft			
Flow Length, L			ft		ft		ft			
Elevation 1, E_1			ft		ft		ft			
Elevation 2, E_2			ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s			
		+		+		+		=		min

Shallow Concentrated Flow (cont.)

	GH			
	Unpaved			
Flow Length, L	94	ft		
Elevation 1, E_1	16.89	ft		
Elevation 2, E_2	16.00	ft		
Channel Slope, $s = (E_1 - E_2) / L$	0.009	ft/ft		
Manning's Roughness coeff., n	1.57	ft/s		
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$	0.02	hr		
$T_t = L / (3600 * V)$	1.0	=	1.0	min

Total Time of Concentration

Sub-Basin Tc = 10.9 min

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin A
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	75	ft	25	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	21.71	ft	21.07	ft		ft		ft		
Elevation 2, E_2	21.07	ft	20.22	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.03	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr	0.03	hr		hr		hr		
	1.0	+	1.9	+		+		=	2.9	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	1002	ft		ft		ft		ft		
Elevation 1, E_1	20.22	ft		ft		ft		ft		
Elevation 2, E_2	18.71	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.002			ft/ft		ft/ft		ft/ft		
Velocity, V	0.63			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.44			hr		hr		hr		
	26.7	+		+		+		=	26.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **29.6** **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin B
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	70	ft	30	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	21.71	ft	20.98	ft		ft		ft		
Elevation 2, E_2	20.98	ft	19.89	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.04	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.04	hr		hr		hr		
	0.9	+	2.2	+		+		=	3.0	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	420	ft		ft		ft		ft		
Elevation 1, E_1	19.89	ft		ft		ft		ft		
Elevation 2, E_2	17.02	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.007			ft/ft		ft/ft		ft/ft		
Velocity, V	1.33			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.09			hr		hr		hr		
	5.3	+		+		+		=	5.3	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin C
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	56	ft	44	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.86	ft	20.16	ft		ft		ft		
Elevation 2, E_2	20.16	ft	18.57	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.04	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.05	hr		hr		hr		
	0.7	+	3.0	+		+		=	3.6	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	530	ft		ft		ft		ft		
Elevation 1, E_1	18.57	ft		ft		ft		ft		
Elevation 2, E_2	16.34	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.004			ft/ft		ft/ft		ft/ft		
Velocity, V	1.05			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.14			hr		hr		hr		
	8.4	+		+		+		=	8.4	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 12.1 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin D
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	71	ft	29	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	21.25	ft	20.46	ft		ft		ft		
Elevation 2, E_2	20.46	ft	19.33	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.04	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.03	hr		hr		hr		
	0.9	+	2.1	+		+		=	2.9	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	529	ft		ft		ft		ft		
Elevation 1, E_1	19.33	ft		ft		ft		ft		
Elevation 2, E_2	17.48	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.003			ft/ft		ft/ft		ft/ft		
Velocity, V	0.95			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.15			hr		hr		hr		
	9.2	+		+		+		=	9.2	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 12.1 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin E
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.011							
Flow Length, L (should be <= 100 ft)	60	ft	40	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	21.12	ft	20.34	ft		ft		ft		
Elevation 2, E_2	20.34	ft	19.45	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.02	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.01	hr		hr		hr		
	0.7	+	0.4	+		+		=	1.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	666	ft		ft		ft		ft		
Elevation 1, E_1	20.34	ft		ft		ft		ft		
Elevation 2, E_2	19.33	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.002			ft/ft		ft/ft		ft/ft		
Velocity, V	0.63			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.29			hr		hr		hr		
	17.7	+		+		+		=	17.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **18.8** **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin F
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	51	ft	49	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.03	ft	19.58	ft		ft		ft		
Elevation 2, E_2	19.58	ft	19.14	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.09	hr		hr		hr		
	0.7	+	5.6	+		+		=	6.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	126	ft		ft		ft		ft		
Elevation 1, E_1	19.14	ft		ft		ft		ft		
Elevation 2, E_2	16.46	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.021			ft/ft		ft/ft		ft/ft		
Velocity, V	2.35			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.9	+		+		+		=	0.9	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin G
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.03	ft		ft		ft		ft		
Elevation 2, E_2	19.09	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.2	+		+		+		=	1.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	91	ft	12	ft		ft		ft		
Elevation 1, E_1	19.09	ft	17.93	ft		ft		ft		
Elevation 2, E_2	17.93	ft	17.50	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.013		0.036	ft/ft		ft/ft		ft/ft		
Velocity, V	2.30		3.05	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01		0.00	hr		hr		hr		
	0.7	+	0.1	+		+		=	0.7	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 10.0 * min

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin H
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.25	ft		ft		ft		ft		
Elevation 2, E_2	20.51	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.3	+		+		+		=	1.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	253	ft	26	ft		ft		ft		
Elevation 1, E_1	20.51	ft	17.25	ft		ft		ft		
Elevation 2, E_2	17.25	ft	16.50	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.013		0.029	ft/ft		ft/ft		ft/ft		
Velocity, V	2.31		2.76	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.03		0.00	hr		hr		hr		
	1.8	+	0.2	+		+		=	2.0	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin I
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	50	ft	28	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	18.17	ft	16.99	ft		ft		ft		
Elevation 2, E_2	16.99	ft	15.00	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.02	ft/ft	0.07	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.03	hr		hr		hr		
	0.5	+	1.6	+		+		=	2.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

Surface Description									
Flow Length, L		ft		ft		ft		ft	
Elevation 1, E_1		ft		ft		ft		ft	
Elevation 2, E_2		ft		ft		ft		ft	
Watercourse Slope, $s = (E_1 - E_2) / L$				ft/ft		ft/ft		ft/ft	
Velocity, V				ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$				hr		hr		hr	
		+		+		+		=	0.0	min

Open Channel Flow [TR-55 equation 3-4]

		CD								
		Channel								
Open Channel	Front Slope, s_1	6.00	:1		:1		:1		:1	
	Bottom width, B	10.00	ft		ft		ft		ft	
	Back Slope, s_2	6.00	:1		:1		:1		:1	
	Depth, H	2.00	ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a		44.00	sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w		34.33	ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$		1.28	ft		ft		ft		ft	
Flow Length, L		529	ft		ft		ft		ft	
Elevation 1, E_1		15.00	ft		ft		ft		ft	
Elevation 2, E_2		14.24	ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$		0.001	ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n		0.200								
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.33	ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$		0.44	ft/s		ft/s		ft/s		ft/s	
		26.5	+		+		+	=	26.5	min

Total Time of Concentration

Sub-Basin Tc = **28.5** **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin J
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Short grass prairie									
Manning's Roughness coeff., n	0.15									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	18.73	ft		ft		ft		ft		
Elevation 2, E_2	15.38	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.03	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.10	hr		hr		hr		hr		
	5.9	+		+		+		=	5.9	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	115	ft		ft		ft		ft		
Elevation 1, E_1	15.38	ft		ft		ft		ft		
Elevation 2, E_2	15.02	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.003			ft/ft		ft/ft		ft/ft		
Velocity, V	0.90			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.04			hr		hr		hr		
	2.1	+		+		+		=	2.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 10.0 * **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin K
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	21	ft	79	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.51	ft	20.29	ft		ft		ft		
Elevation 2, E_2	20.29	ft	16.10	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.05	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.07	hr		hr		hr		
	0.3	+	4.0	+		+		=	4.4	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD									
Surface Description	Unpaved									
Flow Length, L	94	ft		ft		ft		ft		
Elevation 1, E_1	16.10	ft		ft		ft		ft		
Elevation 2, E_2	16.00	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.001			ft/ft		ft/ft		ft/ft		
Velocity, V	0.53			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.05			hr		hr		hr		
	3.0	+		+		+		=	3.0	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin L
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.12	ft		ft		ft		ft		
Elevation 2, E_2	19.91	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.1	+		+		+		=	1.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD		DE		EF			
Surface Description	Paved		Unpaved		Paved		Unpaved			
Flow Length, L	11	ft	26	ft	58	ft	17	ft		
Elevation 1, E_1	19.91	ft	19.81	ft	19.51	ft	18.87	ft		
Elevation 2, E_2	19.81	ft	19.51	ft	18.87	ft	18.50	ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.009		0.012	ft/ft	0.011	ft/ft	0.022	ft/ft		
Velocity, V	1.94		1.74	ft/s	2.13	ft/s	2.40	ft/s		
$T_t = L / (3600 * V)$	0.00		0.00	hr	0.01	hr	0.00	hr		
	0.1	+	0.2	+	0.5	+	0.1	=	0.9	min

Open Channel Flow [TR-55 equation 3-4]

		FG									
		Channel									
Open Channel	Front Slope, s_1	7.00	:1		:1		:1		:1		
	Bottom width, B	5.00	ft		ft		ft		ft		
	Back Slope, s_2	7.00	:1		:1		:1		:1		
	Depth, H	1.50	ft		ft		ft		ft		
Pipe	Diameter, D		in		in		in		in		
Cross Sectional Flow Area, a		23.25	sq ft		sq ft		sq ft		sq ft		
Wetted Perimeter, P_w		26.21	ft		ft		ft		ft		
Hydraulic radius, $r = a / P_w$		0.89	ft		ft		ft		ft		
Flow Length, L		191	ft		ft		ft		ft		
Elevation 1, E_1		18.50	ft		ft		ft		ft		
Elevation 2, E_2		16.95	ft		ft		ft		ft		
Channel Slope, $s = (E_1 - E_2) / L$		0.008	ft/ft		ft/ft		ft/ft		ft/ft		
Manning's Roughness coeff., n		0.200									
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.62	ft/s		ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$		0.09	ft/s		ft/s		ft/s		ft/s		
		5.1	+		+		+	=	5.1	min	

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin M
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.12	ft		ft		ft		ft		
Elevation 2, E_2	20.27	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.3	+		+		+		=	1.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	278	ft		ft		ft		ft		
Elevation 1, E_1	20.27	ft		ft		ft		ft		
Elevation 2, E_2	20.03	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.001			ft/ft		ft/ft		ft/ft		
Velocity, V	0.60			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.13			hr		hr		hr		
	7.8	+		+		+		=	7.8	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin N
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Short grass prairie									
Manning's Roughness coeff., n	0.15									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	22.00	ft		ft		ft		ft		
Elevation 2, E_2	20.54	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.14	hr		hr		hr		hr		
	8.2	+		+		+		=	8.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Unpaved									
Flow Length, L	183	ft		ft		ft		ft		
Elevation 1, E_1	20.54	ft		ft		ft		ft		
Elevation 2, E_2	16.50	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.022			ft/ft		ft/ft		ft/ft		
Velocity, V	2.40			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.02			hr		hr		hr		
	1.3	+		+		+		=	1.3	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin O
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.60	ft		ft		ft		ft		
Elevation 2, E_2	20.08	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	1.5	+		+		+		=	1.5	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Unpaved									
Flow Length, L	7	ft		ft		ft		ft		
Elevation 1, E_1	20.08	ft		ft		ft		ft		
Elevation 2, E_2	20.03	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.007			ft/ft		ft/ft		ft/ft		
Velocity, V	1.40			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.00			hr		hr		hr		
	0.1	+		+		+		=	0.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin P
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.54	ft		ft		ft		ft		
Elevation 2, E_2	20.29	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	2.1	+		+		+		=	2.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	13	ft		ft		ft		ft		
Elevation 1, E_1	20.29	ft		ft		ft		ft		
Elevation 2, E_2	20.28	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.001			ft/ft		ft/ft		ft/ft		
Velocity, V	0.57			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.4	+		+		+		=	0.4	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin Q
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.63	ft		ft		ft		ft		
Elevation 2, E_2	20.15	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr		
	1.6	+		+		+		=	1.6	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	8	ft		ft		ft		ft		
Elevation 1, E_1	20.15	ft		ft		ft		ft		
Elevation 2, E_2	20.06	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011			ft/ft		ft/ft		ft/ft		
Velocity, V	2.12			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.00			hr		hr		hr		
	0.1	+		+		+		=	0.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin R
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	90	ft	10	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	20.59	ft	20.03	ft		ft		ft		
Elevation 2, E_2	20.03	ft	19.93	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr	0.03	hr		hr		hr		
	1.3	+	1.6	+		+		=	2.9	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD		DE		EF					
Surface Description	Unpaved		Paved		Unpaved					
Flow Length, L	185	ft	121	ft	100	ft		ft		
Elevation 1, E_1	19.93	ft	17.94	ft	17.64	ft		ft		
Elevation 2, E_2	17.94	ft	17.64	ft	15.73	ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011		0.002	ft/ft	0.019	ft/ft		ft/ft		
Velocity, V	1.67		1.01	ft/s	2.23	ft/s		ft/s		
$T_t = L / (3600 * V)$	0.03		0.03	hr	0.01	hr		hr		
	1.8	+	2.0	+	0.7	+		=	4.6	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin S
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.42	ft		ft		ft		ft		
Elevation 2, E_2	20.38	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.07	hr		hr		hr		hr		
	4.3	+		+		+		=	4.3	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	59	ft		ft		ft		ft		
Elevation 1, E_1	20.38	ft		ft		ft		ft		
Elevation 2, E_2	19.33	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.018			ft/ft		ft/ft		ft/ft		
Velocity, V	2.70			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.4	+		+		+		=	0.4	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin T
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.49	ft		ft		ft		ft		
Elevation 2, E_2	20.40	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.05	hr		hr		hr		hr		
	3.1	+		+		+		=	3.1	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD							
Surface Description	Paved		Unpaved							
Flow Length, L	70	ft	32	ft		ft		ft		
Elevation 1, E_1	20.40	ft	20.39	ft		ft		ft		
Elevation 2, E_2	20.39	ft	20.02	ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.000		0.012	ft/ft		ft/ft		ft/ft		
Velocity, V	0.24		1.74	ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.08		0.01	hr		hr		hr		
	4.8	+	0.3	+		+		=	5.1	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin U
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC									
Surface Description	Smooth surfaces		Short grass prairie									
Manning's Roughness coeff., n	0.011		0.15									
Flow Length, L (should be <= 100 ft)	23	ft	77	ft		ft		ft				
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in				
Elevation 1, E_1	18.00	ft	17.77	ft		ft		ft				
Elevation 2, E_2	17.77	ft	17.39	ft		ft		ft				
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.00	ft/ft		ft/ft		ft/ft				
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.17	hr		hr		hr				
	0.4	+	10.3	+		+		=	10.6	min		

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD											
Surface Description	Unpaved											
Flow Length, L	17	ft		ft		ft		ft				
Elevation 1, E_1	17.39	ft		ft		ft		ft				
Elevation 2, E_2	14.50	ft		ft		ft		ft				
Watercourse Slope, $s = (E_1 - E_2) / L$	0.170			ft/ft		ft/ft		ft/ft				
Velocity, V	6.65			ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$	0.00			hr		hr		hr				
	0.0	+		+		+		=	0.0	min		

Open Channel Flow [TR-55 equation 3-4]

		DE											
		Channel											
Open Channel	Front Slope, s_1	5.00	:1		:1		:1		:1				
	Bottom width, B	7.00	ft		ft		ft		ft				
	Back Slope, s_2	4.00	:1		:1		:1		:1				
	Depth, H	2.50	ft		ft		ft		ft				
Pipe	Diameter, D		in		in		in		in				
Cross Sectional Flow Area, a		45.63	sq ft		sq ft		sq ft		sq ft				
Wetted Perimeter, P_w		30.06	ft		ft		ft		ft				
Hydraulic radius, $r = a / P_w$		1.52	ft		ft		ft		ft				
Flow Length, L		248	ft		ft		ft		ft				
Elevation 1, E_1		14.50	ft		ft		ft		ft				
Elevation 2, E_2		13.81	ft		ft		ft		ft				
Channel Slope, $s = (E_1 - E_2) / L$		0.003	ft/ft		ft/ft		ft/ft		ft/ft				
Manning's Roughness coeff., n		0.200											
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.52	ft/s		ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$		0.13	ft/s		ft/s		ft/s		ft/s				
		7.9	+		+		+		=	7.9	min		

Total Time of Concentration

Sub-Basin Tc = 18.6 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin V
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC		CD					
Surface Description	Smooth surfaces		Short grass prairie		Smooth surfaces					
Manning's Roughness coeff., n	0.011		0.15		0.011					
Flow Length, L (should be <= 100 ft)	22	ft	54	ft	24	ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in	5.89	in		in		
Elevation 1, E_1	18.00	ft	17.78	ft	17.51	ft		ft		
Elevation 2, E_2	17.78	ft	17.51	ft	17.39	ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.00	ft/ft	0.01	ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.13	hr	0.01	hr		hr		
	0.4	+	7.7	+	0.5	+		=	8.5	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	EF		FG		GH		HI			
Surface Description	Paved		Unpaved		Paved		Unpaved			
Flow Length, L	202	ft	100	ft	34	ft	35	ft		
Elevation 1, E_1	17.39	ft	16.40	ft	16.22	ft	16.12	ft		
Elevation 2, E_2	16.40	ft	16.22	ft	16.12	ft	16.00	ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.005		0.002	ft/ft	0.003	ft/ft	0.003	ft/ft		
Velocity, V	1.42		0.68	ft/s	1.11	ft/s	0.95	ft/s		
$T_t = L / (3600 * V)$	0.04		0.04	hr	0.01	hr	0.01	hr		
	2.4	+	2.4	+	0.5	+	0.6	=	5.9	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 14.4 **min**

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin W
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Short grass prairie									
Manning's Roughness coeff., n	0.15									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	21.34	ft		ft		ft		ft		
Elevation 2, E_2	18.90	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.02	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.11	hr		hr		hr		hr		
	6.7	+		+		+		=	6.7	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Unpaved									
Flow Length, L	47	ft		ft		ft		ft		
Elevation 1, E_1	18.90	ft		ft		ft		ft		
Elevation 2, E_2	16.50	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.051			ft/ft		ft/ft		ft/ft		
Velocity, V	3.66			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.00			hr		hr		hr		
	0.2	+		+		+		=	0.2	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = 10.0 * min

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin X
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB											
Surface Description	Smooth surfaces											
Manning's Roughness coeff., n	0.011											
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft				
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in				
Elevation 1, E_1	20.18	ft		ft		ft		ft				
Elevation 2, E_2	19.19	ft		ft		ft		ft				
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft				
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr				
	1.2	+		+		+		=	1.2	min		

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD									
Surface Description	Paved		Unpaved									
Flow Length, L	180	ft	54	ft		ft		ft				
Elevation 1, E_1	19.19	ft	17.18	ft		ft		ft				
Elevation 2, E_2	17.18	ft	16.50	ft		ft		ft				
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011		0.013	ft/ft		ft/ft		ft/ft				
Velocity, V	2.15		1.81	ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$	0.02		0.01	hr		hr		hr				
	1.4	+	0.5	+		+		=	1.9	min		

Open Channel Flow [TR-55 equation 3-4]

		DE										
		Channel										
Open Channel	Front Slope, s_1	20.00	:1		:1		:1		:1			
	Bottom width, B	5.00	ft		ft		ft		ft			
	Back Slope, s_2	12.00	:1		:1		:1		:1			
	Depth, H	1.25	ft		ft		ft		ft			
Pipe	Diameter, D		in		in		in		in			
Cross Sectional Flow Area, a		31.25	sq ft		sq ft		sq ft		sq ft			
Wetted Perimeter, P_w		45.08	ft		ft		ft		ft			
Hydraulic radius, $r = a / P_w$		0.69	ft		ft		ft		ft			
Flow Length, L		941	ft		ft		ft		ft			
Elevation 1, E_1		16.50	ft		ft		ft		ft			
Elevation 2, E_2		14.18	ft		ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$		0.002	ft/ft		ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n		0.200										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.29	ft/s		ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$		0.90	ft/s		ft/s		ft/s		ft/s			
		54.1	+		+		+		=	54.1	min	

Total Time of Concentration

Sub-Basin Tc = 57.2 min

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	11/11/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin Y
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB									
Surface Description	Smooth surfaces									
Manning's Roughness coeff., n	0.011									
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in		
Elevation 1, E_1	20.77	ft		ft		ft		ft		
Elevation 2, E_2	19.38	ft		ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft		ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.02	hr		hr		hr		hr		
	1.0	+		+		+		=	1.0	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC									
Surface Description	Paved									
Flow Length, L	56	ft		ft		ft		ft		
Elevation 1, E_1	19.38	ft		ft		ft		ft		
Elevation 2, E_2	18.80	ft		ft		ft		ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.010			ft/ft		ft/ft		ft/ft		
Velocity, V	2.07			ft/s		ft/s		ft/s		
$T_t = L / (3600 * V)$	0.01			hr		hr		hr		
	0.4	+		+		+		=	0.4	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1		:1	
	Bottom width, B		ft		ft		ft		ft	
	Back Slope, s_2		:1		:1		:1		:1	
	Depth, H		ft		ft		ft		ft	
Pipe	Diameter, D		in		in		in		in	
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft		sq ft	
Wetted Perimeter, P_w			ft		ft		ft		ft	
Hydraulic radius, $r = a / P_w$			ft		ft		ft		ft	
Flow Length, L			ft		ft		ft		ft	
Elevation 1, E_1			ft		ft		ft		ft	
Elevation 2, E_2			ft		ft		ft		ft	
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft		ft/ft	
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s		ft/s	
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s		ft/s	
		+		+		+		=	0.0	min

Total Time of Concentration

Sub-Basin Tc = **10.0 *** **min**

** 10-minute minimum per Okaloosa County Development Design Standards Section 6.06.104*

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin Z
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB											
Surface Description	Smooth surfaces											
Manning's Roughness coeff., n	0.011											
Flow Length, L (should be <= 100 ft)	100	ft		ft		ft		ft				
Two-yr, 24-hr rainfall, P_2	5.89	in		in		in		in				
Elevation 1, E_1	20.66	ft		ft		ft		ft				
Elevation 2, E_2	20.27	ft		ft		ft		ft				
Land Slope, $s = (E_1 - E_2) / L$	0.00	ft/ft		ft/ft		ft/ft		ft/ft				
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.03	hr		hr		hr		hr				
	1.7	+		+		+		=	1.7	min		

Shallow Concentrated Flow [TR-55 figure 3-1]

	BC		CD									
Surface Description	Paved		Unpaved									
Flow Length, L	47	ft	10	ft		ft		ft				
Elevation 1, E_1	20.27	ft	20.02	ft		ft		ft				
Elevation 2, E_2	20.02	ft	19.00	ft		ft		ft				
Watercourse Slope, $s = (E_1 - E_2) / L$	0.005		0.106	ft/ft		ft/ft		ft/ft				
Velocity, V	1.48		5.26	ft/s		ft/s		ft/s				
$T_t = L / (3600 * V)$	0.01		0.00	hr		hr		hr				
	0.5	+	0.0	+		+		=	0.6	min		

Open Channel Flow [TR-55 equation 3-4]

		CD										
		Channel										
Open Channel	Front Slope, s_1	6.00	:1		:1		:1		:1			
	Bottom width, B	10.00	ft		ft		ft		ft			
	Back Slope, s_2	6.00	:1		:1		:1		:1			
	Depth, H	2.00	ft		ft		ft		ft			
Pipe	Diameter, D		in		in		in		in			
Cross Sectional Flow Area, a		44.00	sq ft		sq ft		sq ft		sq ft			
Wetted Perimeter, P_w		34.33	ft		ft		ft		ft			
Hydraulic radius, $r = a / P_w$		1.28	ft		ft		ft		ft			
Flow Length, L		438	ft		ft		ft		ft			
Elevation 1, E_1		19.00	ft		ft		ft		ft			
Elevation 2, E_2		16.10	ft		ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$		0.007	ft/ft		ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n		0.200										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$		0.72	ft/s		ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$		0.17	ft/s		ft/s		ft/s		ft/s			
		10.2	+		+		+		=	10.2	min	

Total Time of Concentration

Sub-Basin Tc = 12.5 min

Destin Executive Airport Drainage Study

Comp. By:	JKK
Date:	9/17/2024
Chk. By:	SRW
Job No:	10481915013

Time of Concentration Calculations

Sub-Basin Name: Basin AA
Condition: Post-Development

Sheet Flow [TR-55 equation 3-3]

	AB		BC							
Surface Description	Smooth surfaces		Short grass prairie							
Manning's Roughness coeff., n	0.011		0.15							
Flow Length, L (should be <= 100 ft)	47	ft	53	ft		ft		ft		
Two-yr, 24-hr rainfall, P_2	5.89	in	5.89	in		in		in		
Elevation 1, E_1	19.40	ft	18.75	ft		ft		ft		
Elevation 2, E_2	18.75	ft	18.38	ft		ft		ft		
Land Slope, $s = (E_1 - E_2) / L$	0.01	ft/ft	0.01	ft/ft		ft/ft		ft/ft		
$Tt = 0.007 * (n * L)^{0.8} / (P_2^{0.5} * s^{0.4})$	0.01	hr	0.11	hr		hr		hr		
	0.6	+	6.6	+		+		=	7.2	min

Shallow Concentrated Flow [TR-55 figure 3-1]

	CD		DE		EF		FG			
Surface Description	Unpaved		Paved		Unpaved		Paved			
Flow Length, L	53	ft	131	ft	92	ft	53	ft		
Elevation 1, E_1	18.75	ft	18.16	ft	17.30	ft	16.77	ft		
Elevation 2, E_2	18.16	ft	17.30	ft	16.77	ft	16.62	ft		
Watercourse Slope, $s = (E_1 - E_2) / L$	0.011		0.007	ft/ft	0.006	ft/ft	0.003	ft/ft		
Velocity, V	1.70		1.65	ft/s	1.22	ft/s	1.08	ft/s		
$T_t = L / (3600 * V)$	0.01		0.02	hr	0.02	hr	0.01	hr		
	0.5	+	1.3	+	1.3	+	0.8	=	3.9	min

Open Channel Flow [TR-55 equation 3-4]

Open Channel	Front Slope, s_1		:1		:1		:1			
	Bottom width, B		ft		ft		ft			
	Back Slope, s_2		:1		:1		:1			
	Depth, H		ft		ft		ft			
Pipe	Diameter, D		in		in		in			
Cross Sectional Flow Area, a			sq ft		sq ft		sq ft			
Wetted Perimeter, P_w			ft		ft		ft			
Hydraulic radius, $r = a / P_w$			ft		ft		ft			
Flow Length, L			ft		ft		ft			
Elevation 1, E_1			ft		ft		ft			
Elevation 2, E_2			ft		ft		ft			
Channel Slope, $s = (E_1 - E_2) / L$			ft/ft		ft/ft		ft/ft			
Manning's Roughness coeff., n										
Velocity, $V = 1.49 * r^{2/3} * s^{1/2} / n$			ft/s		ft/s		ft/s			
$T_t = L / (3600 * V)$			ft/s		ft/s		ft/s			
		+		+		+		=		min

Shallow Concentrated Flow (cont.)

GH			
Unpaved			
16	ft		
16.62	ft		
16.00	ft		
0.039	ft/ft		
3.18	ft/s		
0.00	hr		
0.1	=	0.1	min

Total Time of Concentration

Sub-Basin Tc = 11.2 min

Appendix E: Site Photos

Exhibit 1 - August 31, 2021: 4.00 inches, 24-hour rainfall


Exhibit 2 - August 31, 2021: 4.00 inches, 24-hour rainfall

Appendix F: Water Quality Calculations

DESTIN EXECUTIVE AIRPORT
BASIN 1 STORMWATER ANALYSIS

WATER QUALITY TREATMENT CALCULATIONS

Prepared By: RS&H, Inc.
Date Prepared: November 4, 2024

Project Name	Approximate Project Area (Ac)	Water Quality Treatment Volume (cubic feet)	Water Quality Treatment Volume (acre-feet)
Taxiway A Reconstruction	10.24	37190	0.86
General Aviation Hangar Taxilane Realignment	3.96	14380	0.34
South FBO Apron Expansion and Reconstruction	4.61	16730	0.39

Water Quality Volume Rainfall Depth (Inches)*	1.0

*Okaloosa County Development Design Standards - Section 6.06.06 Stormwater Quality Criteria

Appendix G: Preliminary Opinion of Probable Cost

Engineer's Preliminary Opinion of Probable Cost (POPC)

Destin Executive Airport
Destin Executive Airport Drainage Study

RS&H Project No.: 1048-1915-013
Date: 11-11-2024

Roadside Ditch and Airport Access Road				
Item Description	**Unit of Measure**	**Estimated Quantities**	**Estimated Unit Price**	**Estimated Totals**
Drainage Items				
Demolish Existing Storm Pipe	LF	45	$ 40.00	$ 1,800
Demolish Existing Storm Structure	EA	2	$ 2,500.00	$ 5,000
Demolish Existing Pavement	SY	20	$ 10.00	$ 200
Replace Airfield Pavement	TN	-	$ 400.00	$ -
Replace Roadway Pavement	TN	20	$ 300.00	$ 6,000
Install Storm Pipe	LF	90	$ 200.00	$ 18,000
Install Drainage Structure (Inlet/Manhole/End Section)	EA	4	$ 12,000.00	$ 48,000
Concrete Channel Bottom	SY	-	$ 125.00	$ -
Channel Excavation	CY	90	$ 25.00	$ 2,250

Subtotal	**$**	**81,250**
Program Management (2.0%)	**$**	**1,625**
CA (6.0%)	**$**	**4,875**
Mobilization (10.0%)	**$**	**8,125**
Design (10.0%)	**$**	**8,125**
Safety and Security (3.0%)	**$**	**2,438**
Maintenanace of Traffic (1.0%)	**$**	**813**
Project Survey and Stakeout (1.5%)	**$**	**1,219**
Temp. Construction Items (6.0%)	**$**	**4,875**
Contingency (30%)	**$**	**34,003**

Opinion of Probable Cost - Total:	**$**	**148,000**

Engineer's Preliminary Opinion of Probable Cost (POPC)

Destin Executive Airport
Destin Executive Airport Drainage Study

RS&H Project No.: 1048-1915-013
Date: 11-11-2024

Outfall Drainage System - North End				
Item Description	**Unit of Measure**	**Estimated Quantities**	**Estimated Unit Price**	**Estimated Totals**
Drainage Items				
Demolish Existing Storm Pipe	LF	60	$ 40.00	$ 2,400
Demolish Existing Storm Structure	EA	2	$ 2,500.00	$ 5,000
Demolish Existing Pavement	SY	40	$ 10.00	$ 400
Replace Airfield Pavement	TN	30	$ 400.00	$ 12,000
Replace Roadway Pavement	TN	-	$ 300.00	$ -
Install Storm Pipe	LF	60	$ 200.00	$ 12,000
Install Drainage Structure (Inlet/Manhole/End Section)	EA	2	$ 12,000.00	$ 24,000
Concrete Channel Bottom	SY	-	$ 125.00	$ -
Channel Excavation	CY	20	$ 25.00	$ 500.00

Subtotal	**$**	**56,300**
Program Management (2.0%)	**$**	**1,126**
CA (6.0%)	**$**	**3,378**
Mobilization (10.0%)	**$**	**5,630**
Design (10.0%)	**$**	**5,630**
Safety and Security (3.0%)	**$**	**1,689**
Maintenanace of Traffic (1.0%)	**$**	**563**
Project Survey and Stakeout (1.5%)	**$**	**845**
Temp. Construction Items (6.0%)	**$**	**3,378**
Contingency (30%)	**$**	**23,562**

Opinion of Probable Cost - Total:	**$**	**103,000**

Engineer's Preliminary Opinion of Probable Cost (POPC)

Destin Executive Airport
Destin Executive Airport Drainage Study

RS&H Project No.: 1048-1915-013
Date: 11-11-2024

Outfall Drainage System - South End				
Item Description	**Unit of Measure**	**Estimated Quantities**	**Estimated Unit Price**	**Estimated Totals**
Drainage Items				
Demolish Existing Storm Pipe	LF	50	$ 40.00	$ 2,000
Demolish Existing Storm Structure	EA	1	$ 2,500.00	$ 2,500
Demolish Existing Pavement	SY	30	$ 10.00	$ 300
Replace Airfield Pavement	TN	20	$ 400.00	$ 8,000
Replace Roadway Pavement	TN	-	$ 300.00	$ -
Install Storm Pipe	LF	20	$ 200.00	$ 4,000
Install Drainage Structure (Inlet/Manhole/End Section)	EA	1	$ 12,000.00	$ 12,000
Concrete Channel Bottom	SY	850	$ 125.00	$ 106,250.00
Channel Excavation	CY	250	$ 25.00	$ 6,250.00

Subtotal	**$**	**141,300**
Program Management (2.0%)	**$**	**2,826**
CA (6.0%)	**$**	**8,478**
Mobilization (10.0%)	**$**	**14,130**
Design (10.0%)	**$**	**14,130**
Safety and Security (3.0%)	**$**	**4,239**
Maintenanace of Traffic (1.0%)	**$**	**1,413**
Project Survey and Stakeout (1.5%)	**$**	**2,120**
Temp. Construction Items (6.0%)	**$**	**8,478**
Contingency (30%)	**$**	**59,134**

Opinion of Probable Cost - Total:	**$**	**257,000**