

**PREPARED FOR:**  
Smuggler's Group, LLC

**PREPARED DATE:**  
August 15, 2025

# DESIGN REPORT

## DRAINAGE REPORT AND STORMWATER MANAGEMENT PLAN FOR SMUGGLER'S COVE R.V. PARK 5612-5700 EAST HIGHWAY 98

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## CERTIFICATIONS PAGE

**THIS DESIGN REPORT HAS BEEN PREPARED UNDER THE DIRECT  
SUPERVISION OF REGISTERED PROFESSIONAL ENGINEER IN THE  
STATE OF FLORIDA.**

**Elizabeth S. Moore, PE  
Florida PE No 57607**



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# **SECTION 1**

## **PROJECT REPORT**

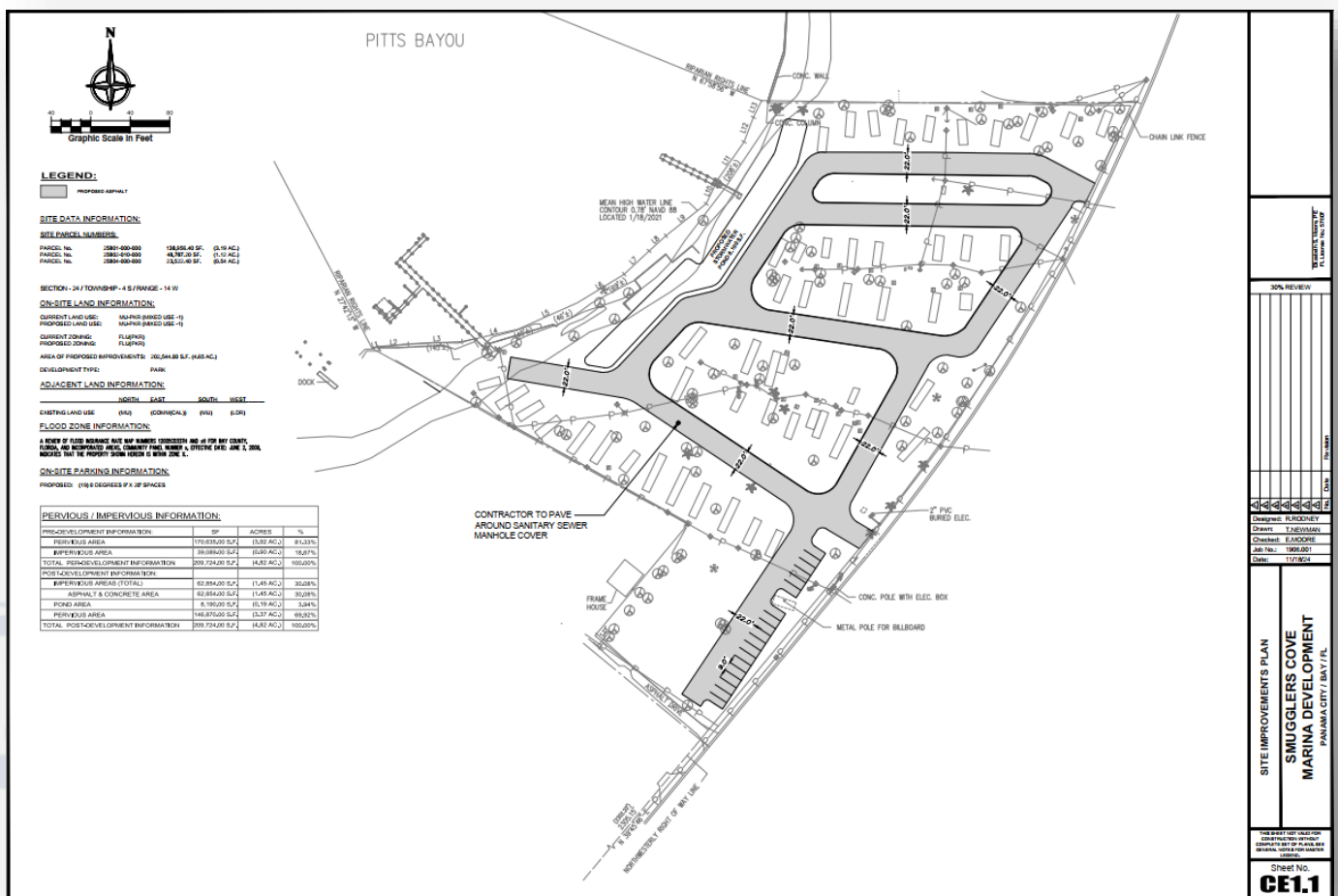


## 1.A – PROJECT NARRATIVE

Anchor Consulting Engineering and Inspection, Inc. (Anchor) has prepared this **Final Drainage Report** and **Stormwater Management Plan** on behalf of Smuggler's Group, LLC for the proposed development at 5612-5700 East Highway 98, Panama City, Florida (Parcel ID 25801-000-000, 25802-010-000, and 25804-000-000).

### SITE DEVELOPMENT

This site is designated as Mixed Use (MU) within the City of Parker. Additions to the existing R.V. Park development will include asphalt pavement and parking, as well as a stormwater management facility (SWMF).

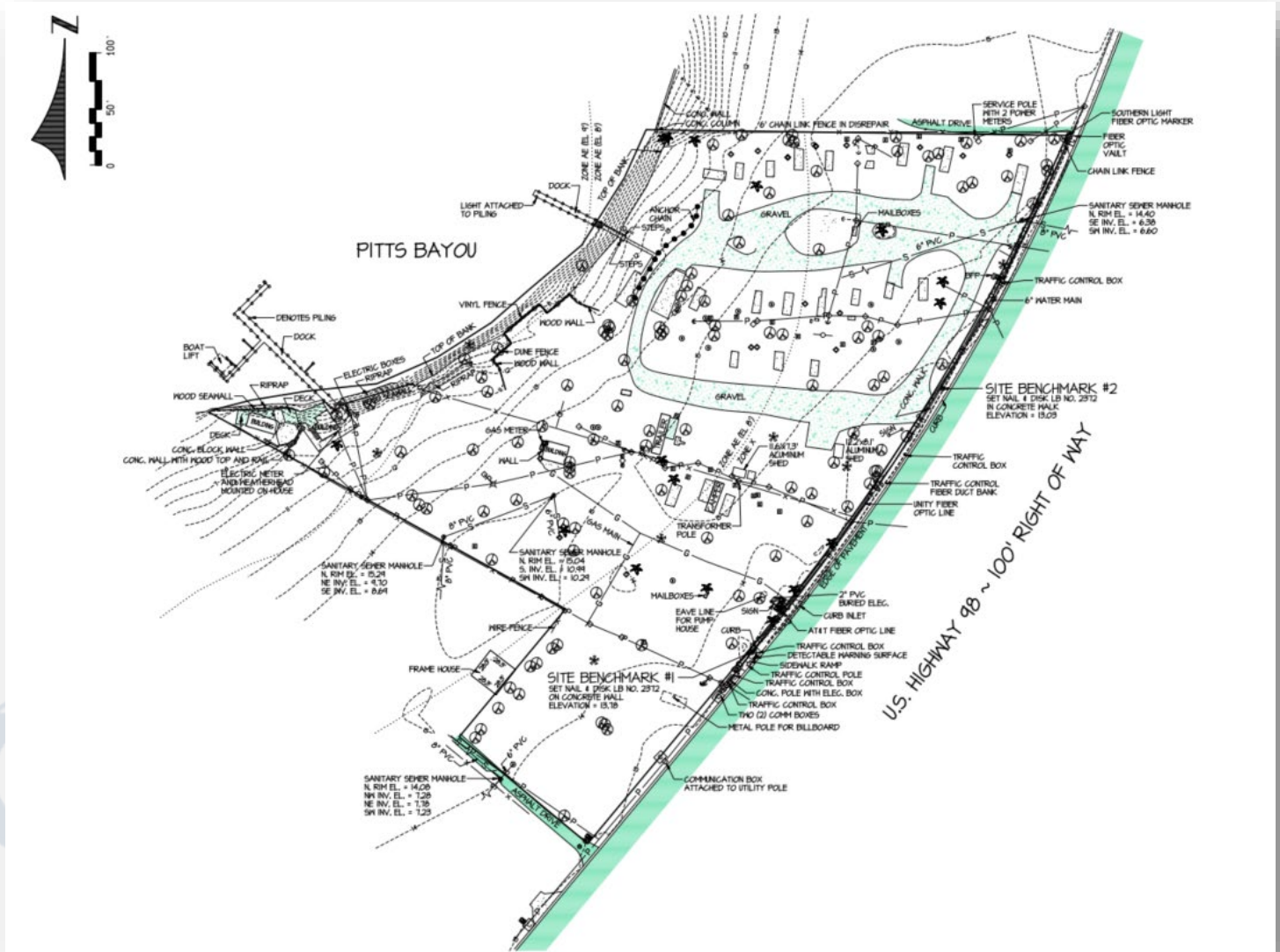


The proposed roadway will be constructed using asphaltic concrete on a stabilized base. Additionally, the site will have a dry SWMF along the north-western side of the property, adjacent to Pitts Bayou, for stormwater treatment purposes. This system was designed in accordance with the Environmental Resource Permit Applicant's handbook Volume II standards.



## **TOPOGRAPHIC SURVEY**

A topographic survey was performed by Buchanan & Harper on December 3, 2020, which depicts the contours and elevations of the site and surrounding areas. Furthermore, it depicts current site conditions as well as other topographic features such as utility lines and manhole locations.



## **1.B - STORMWATER MODELING TECHNIQUES**

ICPR, by Streamline Technologies, Inc., was used to model the stormwater facility. ICPR uses stage-versus-area data to develop the storage characteristics of the SWMF. This program is accepted by numerous regulatory agencies across Florida for drainage design and permitting. A copy of the ICPR data is included as **Appendix A**.

## **1.C - STORMWATER DESIGN CRITERIA**

### ***BASIN MAPS***

A copy of the basin maps are included as **Appendix B**. A number of factors were considered when determining the contributing area of the basin used in the drainage analysis and stormwater calculations. Some of these factors include land grading, flow patterns, and the existing site conditions.

### ***DESIGN CRITERIA***

As a result of adding impervious surfaces to the site, a stormwater management system is required to treat the increased runoff of the post-development site. The proposed stormwater system consists of one pond totaling 0.28 Ac-ft of storage volume. The system was designed in accordance with the Environmental Resource Permit: Applicant's Handbook Volume II and adheres to all applicable federal, state, and regulations. The required Treatment Volume for the drainage basin was calculated as 0.20 Ac-ft. Stormwater calculations are included as **Appendix C**.

## **1.D - EXISTING SITE CONDITIONS**

The site is relatively flat with a mild western slope before a steep drop-off towards the shoreline and currently contains boat docks, three driveways, a gravel roadway, utility lines, a wooden retaining wall, and concrete RV pads.

### ***CONTOURS***

According to the topographic survey provided by Buchanan & Harper, most of the site is relatively flat with minimal grade difference between elevations 12 to 15 feet before a steep drop-off near the shoreline.

### ***SOIL MAP***

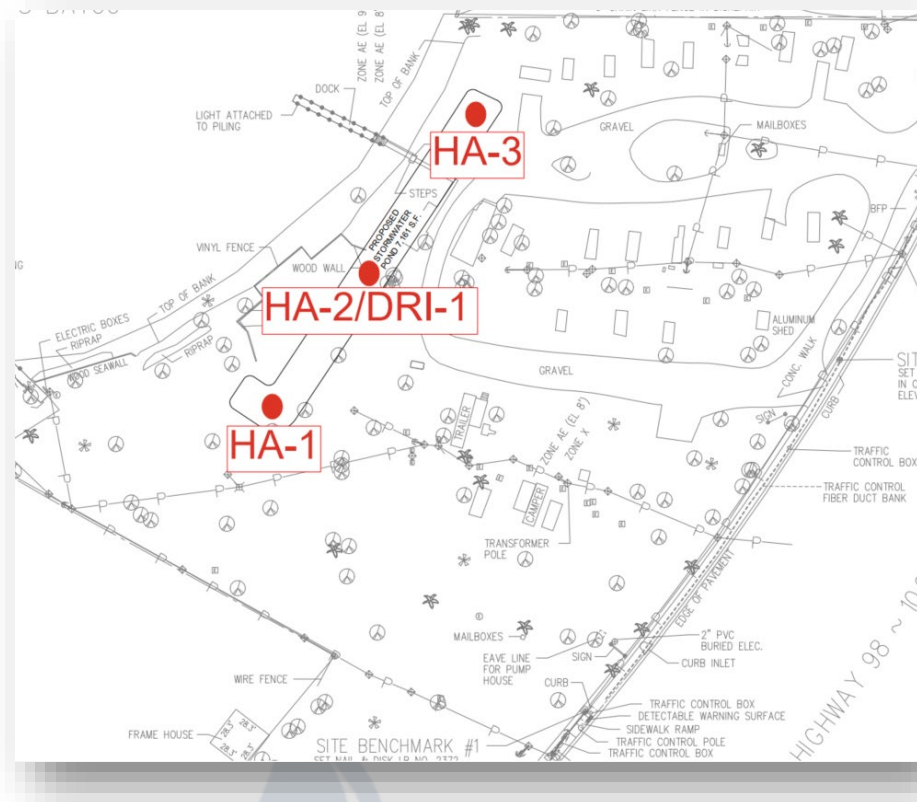
The United States Department of Agriculture (USDA) Web Soil Survey and Bay County GIS available data indicates that this parcel consists of approximately 59 percent Resota Fine Sand (0 to 5 percent slope) and approximately 41 percent Foxworth Sand (5 to 8 percent slope).

## **GEOTECHNICAL REPORT**

A Geotechnical Engineering Report dated December 8, 2024, was prepared by Magnum Engineering, Inc. (Magnum) for the aforementioned parcel. Magnum's exploration consisted of three 8- to 9-foot-deep hand auger borings and one double-ring infiltrometer test (DRI). The auger borings generally encountered slightly silty fine sands from the ground surface to the boring termination depths of 8 to 9 feet below existing grade.

Groundwater was encountered between 6.9 and 8.6 feet below existing grade. The estimated seasonal high groundwater depth ranges from 5.5 to 7.0 feet below existing grade. The double-ring infiltration test indicated an unfactored, sustained infiltration rate of 1.1 inches per hour (2.2 feet per day).

For more information, please review Magnum's Geotechnical Report included as **Appendix D**. The three borings and DRI test locations are depicted on the figure below.



## **WETLANDS**

According to Bay County GIS available data, topographic survey, and the National Wetlands Inventory available date, these parcels are bordered by Pitts Bayou which is an estuarine and marine wetland (E2AB3M) and estuarine and marine deepwater wetland (E1UBL). No freshwater wetlands are noted within the vicinity. No wetlands are anticipated to be impacted before, during or after construction.



## **1.E – PROPOSED DRAINAGE DESIGN**

The proposed stormwater management system is designed to treat excess runoff imposed by the increased post-development impervious area. The dry SWMF is strategically placed to the north-western side of the property and the site will be graded for optimized drainage to the stormwater management system with stormwater piping utilized to aid in runoff conveyance.

The proposed system meets or exceeds the required standards of the Florida Department of Environmental Protection (FDEP), Northwest Florida Water Management District (NFWFMD), and the City of Parker.

## **1.F – EROSION CONTROL**

Erosion and Sedimentation Control features have been provided on the plans to prevent and/or reduce offsite movement of sediment and deter any excessive erosion during construction through implementation of best management practices including the installation of a silt fence, inlet protection, and a stabilized construction entrance/exit on site.

A stormwater pollution prevention plan is included on Sheet CE0.3 of the construction drawings, with associated notes and details on Sheet CE0.4. These notes are included to ensure that all sedimentation and erosion control features shall be maintained throughout construction.

The plans have been designed following FDEP's "The Florida Stormwater, Erosion, and Sedimentation Control Manual."

## **1.G – STORMWATER FACILITY SYSTEM MAINTENANCE PLAN**

The owner will be responsible for ensuring the stormwater facilities are properly maintained.

### **STORMWATER MANAGEMENT SYSTEM SUMMARY**

The project consists of additions to the Smuggler's Cove R.V. Park located at 5612-5700 East Business 98, Parker, Florida. The stormwater management system was designed in accordance with the Environmental Resource Permit Applicant's Handbook Volume II and utilizes various Best Management Practices (BMPs) to limit pollution, sedimentation, and erosion. The system consists of one dry SWMF that collects water from the entire site via gravity and stormwater piping. The SWMF will be routinely and periodically maintained to supplement the BMPs used in design and construction.

### **ROUTINE MAINTENANCE**

The routine maintenance of the stormwater management system is critical to ensuring efficient performance, limiting pollution, erosion, and sedimentation, as well as increasing the longevity of the system. Routine maintenance will include but is not limited to:

- ❖ Mowing the bank slopes and area around the pond on a monthly basis or as needed.
- ❖ Inspecting the inlets, pipes, and outfall structure of the pond monthly for debris that could inhibit efficient performance and/or flow. Any debris will be removed and disposed of in a way that will prevent future impact.
- ❖ Removing trash from the site with greater emphasis around the pond area as to not allow it to enter the pond by wind, rain, or other means.
- ❖ Inspecting the entire stormwater management system for non-routine maintenance needs.



### **PERIODIC/NON-ROUTINE MAINTENANCE**

During routine inspection of the stormwater management system, necessary repairs or additional maintenance needs may be identified, which include but not be limited to:

- ❖ Removing overgrown or regrown trees from around the pond area.
- ❖ Excavating the pond if a large amount of sediment has accumulated in the pond bottom, which could limit the efficiency or allow excessive aquatic growth; thus, lowering the volume below design levels. This can often be identified when sediment is passing the discharge structure.
- ❖ Regrading or stabilizing the side slopes of the pond if it has been noted that erosion from excessive rain or other means has taken place during the periodic inspection. Upon erosion, the slopes will be reseeded and/or other erosion control materials may be installed.
- ❖ Repairing or replacing piping if deemed necessary by visual inspection or diminished performance.
- ❖ Repairing or maintaining any other need encountered by routine inspection.



## **SECTION 2**

# **APPENDICES**





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# **APPENDIX A**

## **ICPR DATA**



Simulation: 002Y024H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:02:36 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	36.0000

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

## Output Time Increments

## Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Restart File

Save Restart: False

## Resources &amp; Lookup Tables

## Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

## Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: 1

Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: 1

## Tolerances &amp; Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr  
  
 Smp/Man Basin Rain Global



Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic

Opt:

Rainfall Name: ~FDOT-24  
 Rainfall Amount: 6.00 in  
 Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area (1D): 100 ft2  
 Energy Switch (1D): Energy

Comment: 100 yr / 024 hr

Simulation: 025Y001H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:02:49 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	6.0000
	Hydrology [sec]	Surface Hydraulics [sec]		
Min Calculation Time:	60.0000	0.1000		
Max Calculation Time:		60.0000		

#### Output Time Increments

##### Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Restart File

Save Restart: False

#### Resources & Lookup Tables

Resources	Lookup Tables
Rainfall Folder:	Boundary Stage Set:
Unit Hydrograph Folder:	Extern Hydrograph Set:
	Curve Number Set: 1
	Green-Ampt Set:
	Vertical Layers Set:
	Impervious Set: 1

Tolerances & Options			
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight	0.5 dec		
Fact:			
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain	Global
		Opt:	
Max dZ:	1.0000 ft	Rainfall Name:	~FDOT-1
Link Optimizer Tol:	0.0001 ft	Rainfall Amount:	3.70 in
Edge Length Option:	Automatic	Storm Duration:	1.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area	100 ft2
		(1D):	
		Energy Switch (1D):	Energy

Comment: 100 yr / 001 hr

Simulation: 025Y002H

Scenario: Scenario1  
Run Date/Time: 7/14/2025 12:02:52 PM  
Program Version: ICPR4 4.07.08

General				
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Start Time:	0	0	0	0.0000
End Time:	0	0	0	8.0000
	Hydrology [sec]	Surface Hydraulics [sec]		
Min Calculation Time:	60.0000	0.1000		
Max Calculation Time:		60.0000		

Output Time Increments
------------------------

## Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Restart File

Save Restart: False

## Resources &amp; Lookup Tables

## Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

## Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: 1

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: 1

## Tolerances &amp; Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight 0.5 dec

Fact:

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Global  
Opt:

Rainfall Name: ~FDOT-2

Rainfall Amount: 4.80 in

Storm Duration: 2.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

(1D):

Energy Switch (1D): Energy

Comment: 100 yr / 002 hr

Simulation: 025Y004H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:02:56 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	12.0000

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

#### Output Time Increments

##### Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Restart File

Save Restart: False

#### Resources & Lookup Tables

##### Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

##### Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: 1

Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: 1

#### Tolerances & Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Global  
 Opt:

Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic

Rainfall Name: ~FDOT-4  
 Rainfall Amount: 5.92 in  
 Storm Duration: 4.0000 hr  
 Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area (1D): 100 ft2  
 Energy Switch (1D): Energy

Comment: 100 yr / 004 hr

Simulation: 025Y008H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:03:00 PM  
 Program Version: ICPR4 4.07.08

#### General

Run Mode: Normal

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Start Time:	0	0	0	0.0000
End Time:	0	0	0	16.0000

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

#### Output Time Increments

##### Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Restart File

Save Restart: False

#### Resources & Lookup Tables



Resources	Lookup Tables
Rainfall Folder:	Boundary Stage Set:
Unit Hydrograph Folder:	Extern Hydrograph Set:
	Curve Number Set: 1
	Green-Ampt Set:
	Vertical Layers Set:
	Impervious Set: 1

Tolerances & Options	
Time Marching: SAOR	IA Recovery Time: 24.0000 hr
Max Iterations: 6	
Over-Relax Weight: 0.5 dec	
Fact:	
dZ Tolerance: 0.0010 ft	Smp/Man Basin Rain Opt: Global
Max dZ: 1.0000 ft	Rainfall Name: ~FDOT-8
Link Optimizer Tol: 0.0001 ft	Rainfall Amount: 7.44 in
Edge Length Option: Automatic	Storm Duration: 8.0000 hr
	Dflt Damping (1D): 0.0050 ft
	Min Node Srf Area (1D): 100 ft2
	Energy Switch (1D): Energy

Comment: 100 yr / 008 hr

Simulation: 025Y024H				
Scenario:	Scenario1			
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Program Version:	ICPR4 4.07.08			

General				
Run Mode:	Normal			
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End Time:	0	0	0	36.0000
	Hydrology [sec]	Surface Hydraulics [sec]		
Min Calculation Time:	60.0000	0.1000		
Max Calculation Time:		60.0000		

## Output Time Increments

## Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Restart File

Save Restart: False

## Resources &amp; Lookup Tables

## Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

## Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: 1

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: 1

## Tolerances &amp; Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight 0.5 dec

Fact:

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Global  
Opt:

Rainfall Name: ~FDOT-24

Rainfall Amount: 10.60 in

Storm Duration: 24.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

(1D):

Energy Switch (1D): Energy

Comment: 100 yr / 024 hr

## Simulation: 100Y001H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:03:46 PM  
 Program Version: ICPR4 4.07.08

## General

Run Mode: Normal

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End Time:	0	0	0	6.0000

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

## Output Time Increments

## Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Restart File

Save Restart: False

## Resources &amp; Lookup Tables

## Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

## Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: 1

Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: 1

## Tolerances &amp; Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr  
  
 Smp/Man Basin Rain Global

Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic

Opt:

Rainfall Name: ~FDOT-1  
 Rainfall Amount: 4.50 in  
 Storm Duration: 1.0000 hr

Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area (1D): 100 ft2  
 Energy Switch (1D): Energy

Comment: 100 yr / 001 hr

Simulation: 100Y002H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:03:49 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	8.0000

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

#### Output Time Increments

##### Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Restart File

Save Restart: False

#### Resources & Lookup Tables

Resources	Lookup Tables
Rainfall Folder:	Boundary Stage Set:
Unit Hydrograph Folder:	Extern Hydrograph Set:
	Curve Number Set: 1
	Green-Ampt Set:
	Vertical Layers Set:
	Impervious Set: 1

Tolerances & Options			
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight	0.5 dec		
Fact:			
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain	Global
		Opt:	
Max dZ:	1.0000 ft	Rainfall Name:	~FDOT-2
Link Optimizer Tol:	0.0001 ft	Rainfall Amount:	5.98 in
Edge Length Option:	Automatic	Storm Duration:	2.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area	100 ft2
		(1D):	
		Energy Switch (1D):	Energy

Comment: 100 yr / 002 hr

#### Simulation: 100Y004H

Scenario: Scenario1  
Run Date/Time: 7/14/2025 12:03:53 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	12.0000
	Hydrology [sec]	Surface Hydraulics [sec]		
Min Calculation Time:	60.0000	0.1000		
Max Calculation Time:		60.0000		



## Output Time Increments

## Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Restart File

Save Restart: False

## Resources &amp; Lookup Tables

## Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

## Lookup Tables

Boundary Stage Set:

Extern Hydrograph Set:

Curve Number Set: 1

Green-Ampt Set:

Vertical Layers Set:

Impervious Set: 1

## Tolerances &amp; Options

Time Marching: SAOR

Max Iterations: 6

Over-Relax Weight 0.5 dec

Fact:

dZ Tolerance: 0.0010 ft

Max dZ: 1.0000 ft

Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Global  
Opt:

Rainfall Name: ~FDOT-4

Rainfall Amount: 7.52 in

Storm Duration: 4.0000 hr

Dflt Damping (1D): 0.0050 ft

Min Node Srf Area 100 ft2

(1D):

Energy Switch (1D): Energy

Comment: 100 yr / 004 hr

## Simulation: 100Y008H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:03:58 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	16.0000

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

## Output Time Increments

## Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

## Restart File

Save Restart: False

## Resources &amp; Lookup Tables

## Resources

Rainfall Folder:

Unit Hydrograph  
Folder:

## Lookup Tables

Boundary Stage Set:  
 Extern Hydrograph Set:  
 Curve Number Set: 1

Green-Ampt Set:  
 Vertical Layers Set:  
 Impervious Set: 1

## Tolerances &amp; Options

Time Marching: SAOR  
 Max Iterations: 6  
 Over-Relax Weight 0.5 dec  
 Fact:  
 dZ Tolerance: 0.0010 ft

IA Recovery Time: 24.0000 hr

Smp/Man Basin Rain Global

Max dZ: 1.0000 ft  
 Link Optimizer Tol: 0.0001 ft  
 Edge Length Option: Automatic

Opt:

Rainfall Name: ~FDOT-8  
 Rainfall Amount: 9.44 in  
 Storm Duration: 8.0000 hr

Dflt Damping (1D): 0.0050 ft  
 Min Node Srf Area 100 ft2  
 (1D):  
 Energy Switch (1D): Energy

Comment: 100 yr / 008 hr

Simulation: 100Y024H

Scenario: Scenario1  
 Run Date/Time: 7/14/2025 12:04:05 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	36.0000

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

#### Output Time Increments

##### Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

##### Restart File

Save Restart: False

#### Resources & Lookup Tables

Resources		Lookup Tables	
Rainfall Folder:		Boundary Stage Set:	
Unit Hydrograph Folder:		Extern Hydrograph Set:	
		Curve Number Set:	1
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	1

Tolerances & Options			
Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6		
Over-Relax Weight	0.5 dec		
Fact:			
dZ Tolerance:	0.0010 ft	Smp/Man Basin Rain Opt:	Global
Max dZ:	1.0000 ft		
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FDOT-24
Edge Length Option:	Automatic	Rainfall Amount:	13.44 in
		Storm Duration:	24.0000 hr
		Dflt Damping (1D):	0.0050 ft
		Min Node Srf Area (1D):	100 ft2
		Energy Switch (1D):	Energy

Comment: 100 yr / 024 hr
--------------------------

## Simple Basin: POST

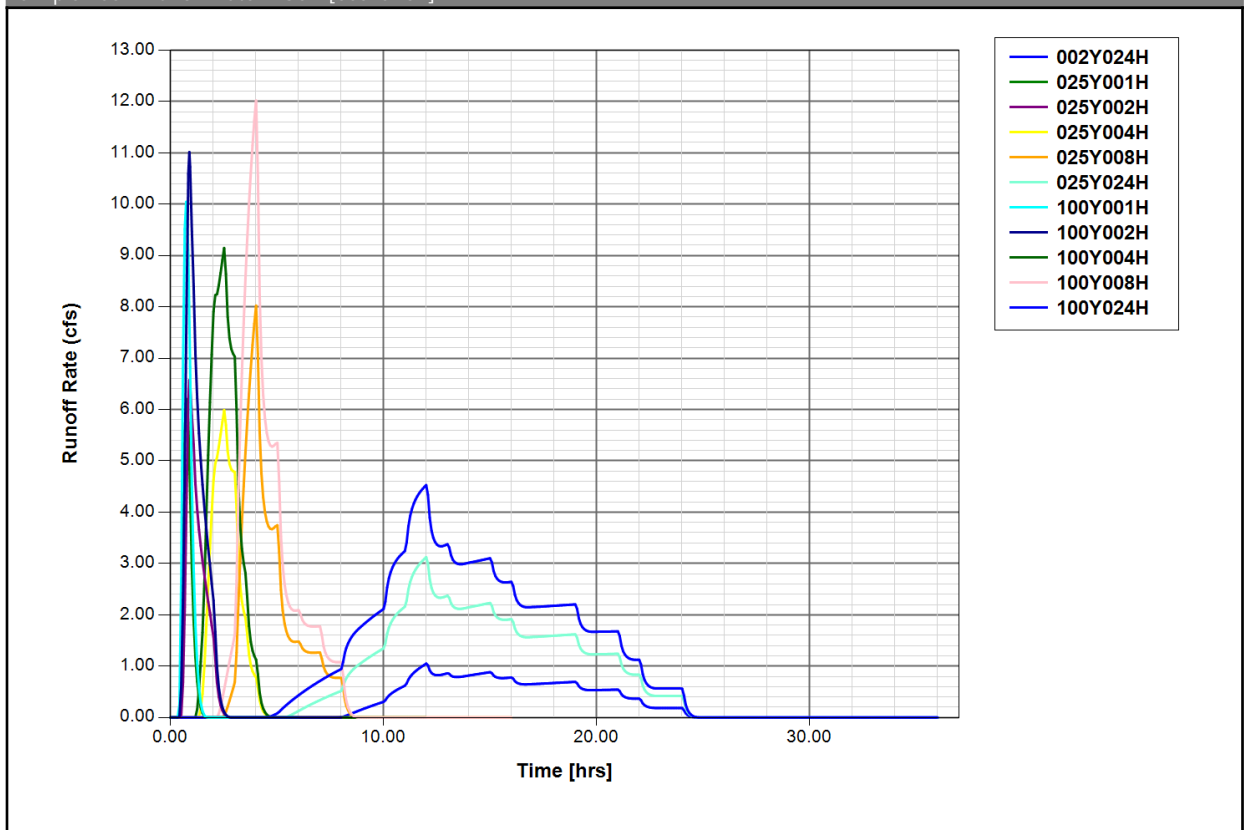
Scenario: Scenario1  
 Node: POND 1  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 10.0000 min  
 Max Allowable Q: 999999.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 4.8100 ac  
 Curve Number: 59.1  
 % Impervious: 0.00  
 % DCIA: 0.00  
 % Direct: 0.00  
 Rainfall Name:

Comment:

Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
POST	002Y024H	1.05	12.0167	6.00	1.85	4.8100	59.1	0.00	0.00
POST	025Y001H	6.20	0.7500	3.70	0.58	4.8100	59.1	0.00	0.00
POST	025Y002H	6.57	0.8833	4.80	1.13	4.8100	59.1	0.00	0.00
POST	025Y004H	5.99	2.5333	5.92	1.80	4.8100	59.1	0.00	0.00
POST	025Y008H	8.02	4.0167	7.44	2.83	4.8100	59.1	0.00	0.00
POST	025Y024H	3.12	12.0167	10.60	5.27	4.8100	59.1	0.00	0.00
POST	100Y001H	10.05	0.7333	4.50	0.97	4.8100	59.1	0.00	0.00
POST	100Y002H	11.02	0.8833	5.98	1.84	4.8100	59.1	0.00	0.00
POST	100Y004H	9.15	2.5167	7.52	2.89	4.8100	59.1	0.00	0.00
POST	100Y008H	12.02	4.0167	9.44	4.34	4.8100	59.1	0.00	0.00
POST	100Y024H	4.53	12.0000	13.44	7.68	4.8100	59.1	0.00	0.00

Simple Basin Runoff Rate: POST [Scenario1]





## Simple Basin: PRE

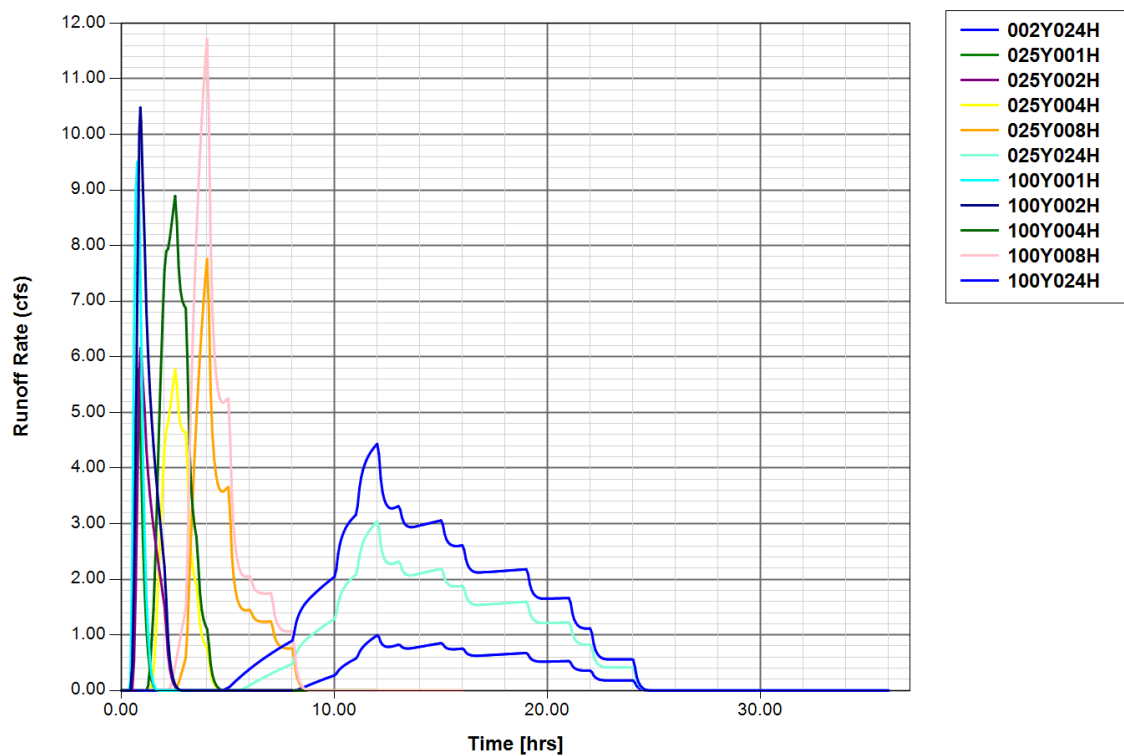
Scenario: Scenario1  
 Node: PRE  
 Hydrograph Method: NRCS Unit Hydrograph  
 Infiltration Method: Curve Number  
 Time of Concentration: 10.0000 min  
 Max Allowable Q: 999999.00 cfs  
 Time Shift: 0.0000 hr  
 Unit Hydrograph: UH323  
 Peaking Factor: 323.0  
 Area: 4.8100 ac  
 Curve Number: 58.1  
 % Impervious: 0.00  
 % DCIA: 0.00  
 % Direct: 0.00  
 Rainfall Name:

Comment:

## Simple Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
PRE	002Y024H	1.00	12.0167	6.00	1.77	4.8100	58.1	0.00	0.00
PRE	025Y001H	5.79	0.7500	3.70	0.54	4.8100	58.1	0.00	0.00
PRE	025Y002H	6.16	0.9000	4.80	1.07	4.8100	58.1	0.00	0.00
PRE	025Y004H	5.77	2.5333	5.92	1.72	4.8100	58.1	0.00	0.00
PRE	025Y008H	7.76	4.0167	7.44	2.73	4.8100	58.1	0.00	0.00
PRE	025Y024H	3.04	12.0167	10.60	5.13	4.8100	58.1	0.00	0.00
PRE	100Y001H	9.50	0.7333	4.50	0.91	4.8100	58.1	0.00	0.00
PRE	100Y002H	10.48	0.8833	5.98	1.76	4.8100	58.1	0.00	0.00
PRE	100Y004H	8.89	2.5333	7.52	2.79	4.8100	58.1	0.00	0.00
PRE	100Y008H	11.72	4.0167	9.44	4.21	4.8100	58.1	0.00	0.00
PRE	100Y024H	4.44	12.0000	13.44	7.51	4.8100	58.1	0.00	0.00

Simple Basin Runoff Rate: PRE [Scenario1]



Node: GWT

Scenario: Scenario1  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 6.00 ft  
 Warning Stage: 10.00 ft  
 Boundary Stage:

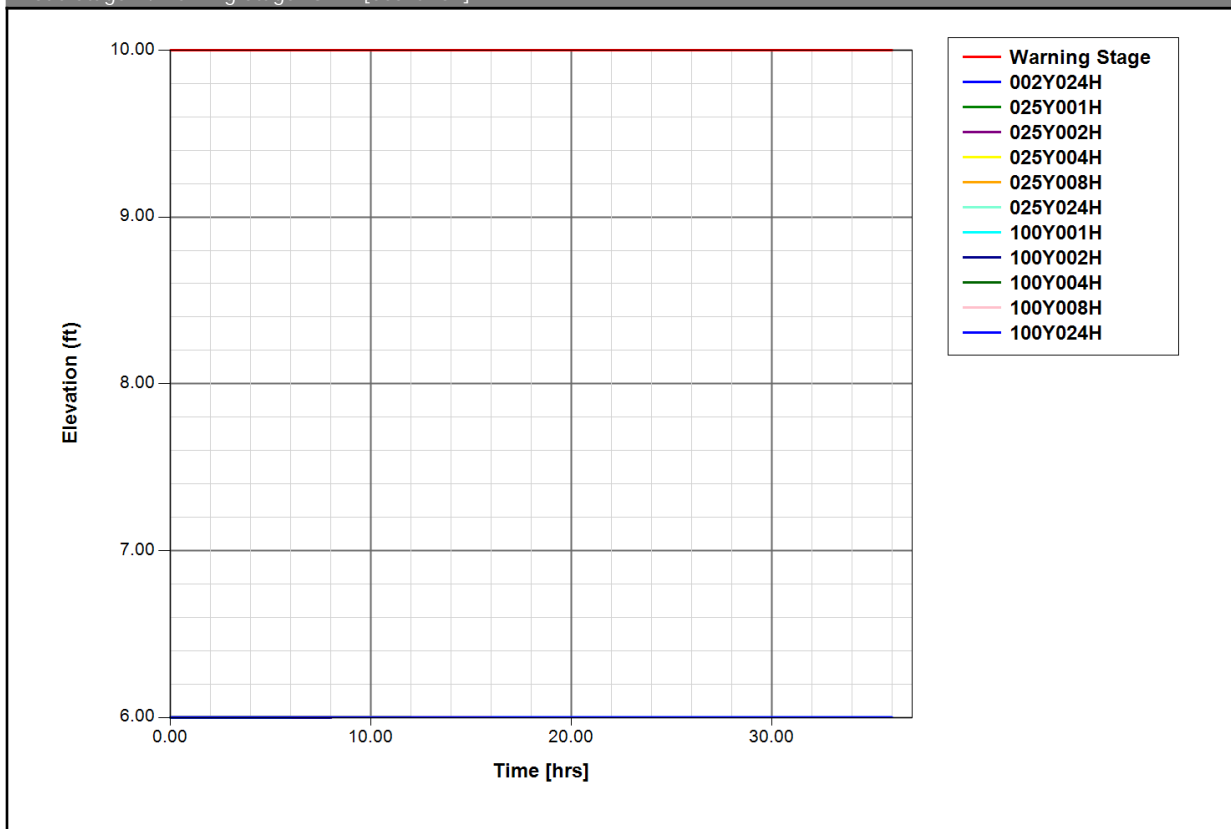
Comment:

Node Max Conditions w/ Times [Scenario1]

Node	Sim	Warning	Max	Min/Max	Max	Max	Max	Time to	Time to	Time to	Time to
------	-----	---------	-----	---------	-----	-----	-----	---------	---------	---------	---------

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 [ft <sup>2</sup> ]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
GWT	002Y02 4H	10.00	6.00	0.0000	0.09	0.00	0	0.0000	0.0000	15.0449	0.0000
GWT	025Y00 1H	10.00	6.00	0.0000	0.09	0.00	0	0.0000	0.0000	1.0977	0.0000
GWT	025Y00 2H	10.00	6.00	0.0000	0.09	0.00	0	0.0000	0.0000	1.1846	0.0000
GWT	025Y00 4H	10.00	6.00	0.0000	0.09	0.00	0	0.0000	0.0000	2.5795	0.0000
GWT	025Y00 8H	10.00	6.00	0.0000	0.10	0.00	0	0.0000	0.0000	4.0728	0.0000
GWT	025Y02 4H	10.00	6.00	0.0000	0.09	0.00	0	0.0000	0.0000	12.0295	0.0000
GWT	100Y00 1H	10.00	6.00	0.0000	0.10	0.00	0	0.0000	0.0000	0.9064	0.0000
GWT	100Y00 2H	10.00	6.00	0.0000	0.10	0.00	0	0.0000	0.0000	1.0798	0.0000
GWT	100Y00 4H	10.00	6.00	0.0000	0.10	0.00	0	0.0000	0.0000	2.5784	0.0000
GWT	100Y00 8H	10.00	6.00	0.0000	0.10	0.00	0	0.0000	0.0000	4.0775	0.0000
GWT	100Y02 4H	10.00	6.00	0.0000	0.09	0.00	0	0.0000	0.0000	12.0242	0.0000

Node Stage w/Warning Stage: GWT [Scenario1]



Node: POND 1

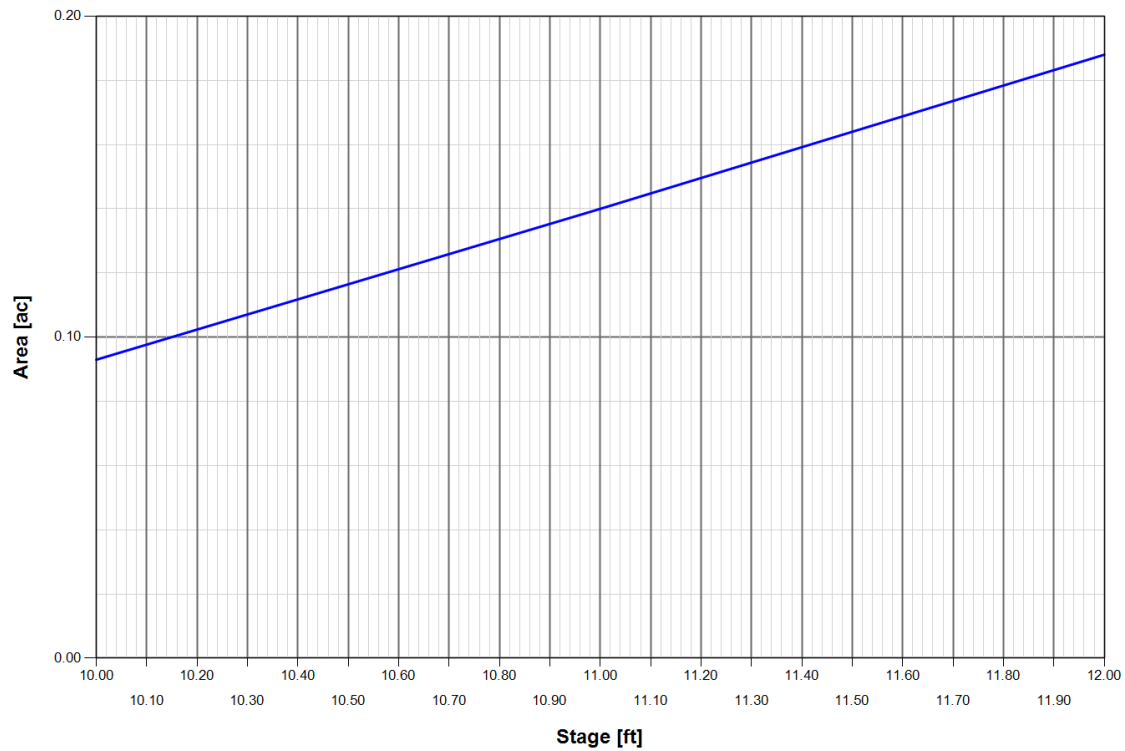
Scenario: Scenario1  
 Type: Stage/Area  
 Base Flow: 0.00 cfs  
 Initial Stage: 10.00 ft  
 Warning Stage: 12.00 ft

Stage [ft]	Area [ac]	Area [ft2]
10.00	0.0930	4051
11.00	0.1400	6098
12.00	0.1880	8189

Comment:

Node: POND 1

Scenario: Scenario1

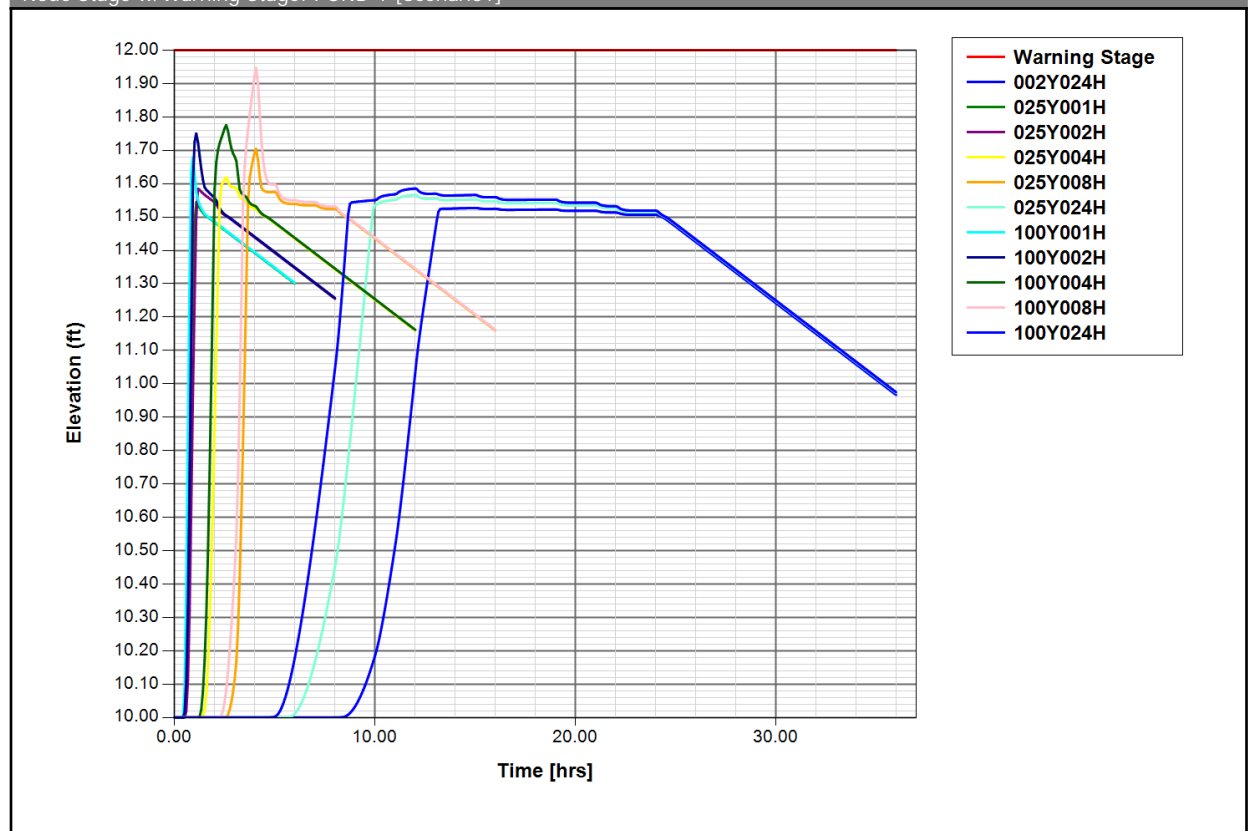


Node Max Conditions w/ Times [Scenario1]

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 [ft <sup>2</sup> ]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
POND 1	002Y02 4H	12.00	11.53	0.0010	1.05	0.88	7201	15.0449	8.7605	12.0173	15.0449
POND 1	025Y00 1H	12.00	11.54	0.0010	6.20	1.75	7237	1.0977	0.6350	0.7501	1.0977
POND 1	025Y00 2H	12.00	11.58	0.0010	6.57	4.43	7320	1.1846	0.9071	0.8834	1.1846
POND 1	025Y00 4H	12.00	11.62	0.0010	5.99	5.86	7392	2.5751	1.6648	2.5343	2.5795
POND 1	025Y00 8H	12.00	11.70	0.0010	8.02	7.68	7572	4.0682	3.6018	4.0187	4.0728
POND 1	025Y02 4H	12.00	11.57	0.0010	3.12	3.11	7283	12.0295	8.5298	12.0129	12.0295
POND 1	100Y00	12.00	11.68	0.0010	10.05	7.16	7516	0.9064	0.5722	0.7333	0.9064

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]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
	1H										
POND 1	100Y00 2H	12.00	11.75	0.0010	11.02	8.47	7666	1.0798	0.4973	0.8833	1.0798
POND 1	100Y00 4H	12.00	11.78	0.0010	9.15	8.89	7720	2.5784	1.6421	2.5178	2.5784
POND 1	100Y00 8H	12.00	11.95	0.0010	12.02	11.30	8078	4.0748	2.8448	4.0173	4.0775
POND 1	100Y02 4H	12.00	11.59	0.0010	4.53	4.52	7323	12.0242	6.3756	12.0075	12.0242

Node Stage w/Warning Stage: POND 1 [Scenario1]



Node: POST

Scenario: Scenario1

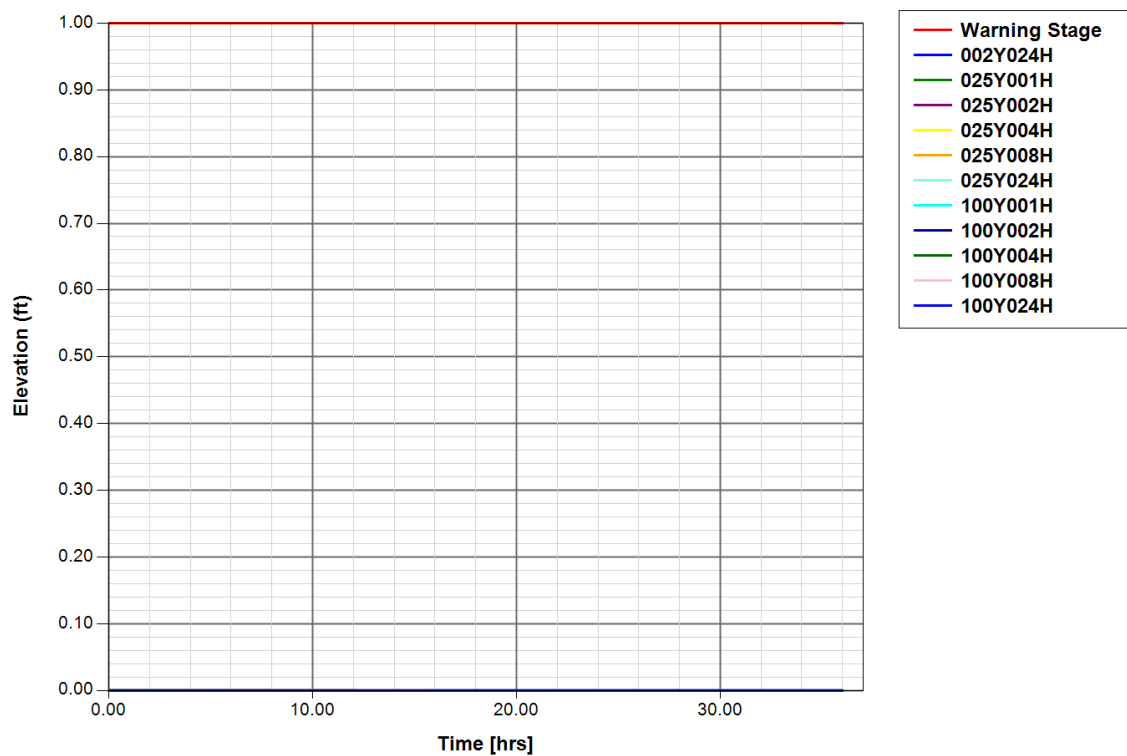
Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 0.00 ft  
 Warning Stage: 1.00 ft  
 Boundary Stage:

Comment:

Node Max Conditions w/ Times [Scenario1]

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]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
POST	002Y02 4H	1.00	0.00	0.0000	0.78	0.00	0	0.0000	0.0000	14.9783	0.0000
POST	025Y00 1H	1.00	0.00	0.0000	1.65	0.00	0	0.0000	0.0000	1.0926	0.0000
POST	025Y00 2H	1.00	0.00	0.0000	4.32	0.00	0	0.0000	0.0000	1.1789	0.0000
POST	025Y00 4H	1.00	0.00	0.0000	5.76	0.00	0	0.0000	0.0000	2.5751	0.0000
POST	025Y00 8H	1.00	0.00	0.0000	7.58	0.00	0	0.0000	0.0000	4.0773	0.0000
POST	025Y02 4H	1.00	0.00	0.0000	3.01	0.00	0	0.0000	0.0000	11.9962	0.0000
POST	100Y00 1H	1.00	0.00	0.0000	7.07	0.00	0	0.0000	0.0000	0.9050	0.0000
POST	100Y00 2H	1.00	0.00	0.0000	8.37	0.00	0	0.0000	0.0000	1.0776	0.0000
POST	100Y00 4H	1.00	0.00	0.0000	8.78	0.00	0	0.0000	0.0000	2.5898	0.0000
POST	100Y00 8H	1.00	0.00	0.0000	11.19	0.00	0	0.0000	0.0000	4.0802	0.0000
POST	100Y02 4H	1.00	0.00	0.0000	4.42	0.00	0	0.0000	0.0000	12.0409	0.0000

## Node Stage w/Warning Stage: POST [Scenario1]



## Node: PRE

Scenario: Scenario1  
 Type: Time/Stage  
 Base Flow: 0.00 cfs  
 Initial Stage: 0.00 ft  
 Warning Stage: 1.00 ft  
 Boundary Stage:

Comment:

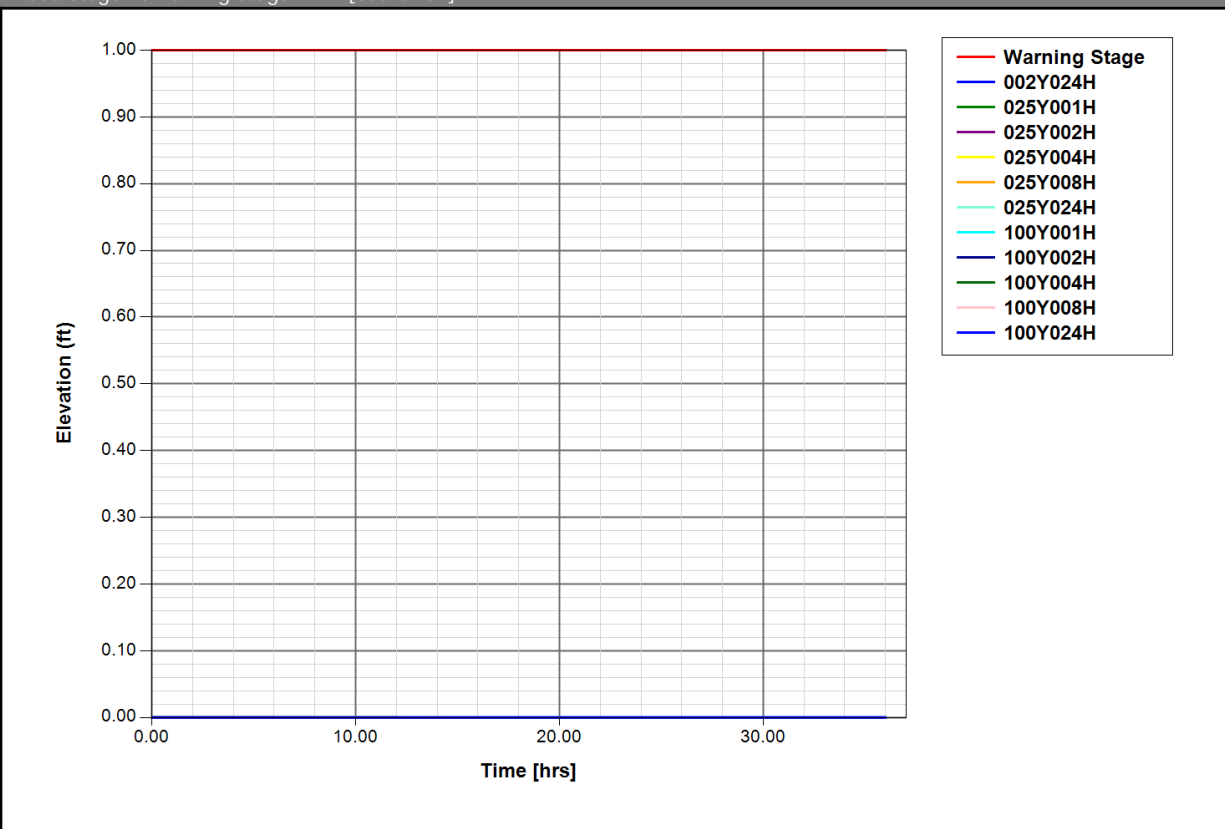
## Node Max Conditions w/ Times [Scenario1]

Node	Sim	Warning	Max	Min/Max	Max	Max	Max	Time to	Time to	Time to	Time to
------	-----	---------	-----	---------	-----	-----	-----	---------	---------	---------	---------



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 [ft <sup>2</sup> ]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
PRE	002Y02 4H	1.00	0.00	0.0000	0.99	0.00	0	0.0000	0.0000	12.0173	0.0000
PRE	025Y00 1H	1.00	0.00	0.0000	5.79	0.00	0	0.0000	0.0000	0.7501	0.0000
PRE	025Y00 2H	1.00	0.00	0.0000	6.16	0.00	0	0.0000	0.0000	0.9000	0.0000
PRE	025Y00 4H	1.00	0.00	0.0000	5.77	0.00	0	0.0000	0.0000	2.5343	0.0000
PRE	025Y00 8H	1.00	0.00	0.0000	7.76	0.00	0	0.0000	0.0000	4.0187	0.0000
PRE	025Y02 4H	1.00	0.00	0.0000	3.04	0.00	0	0.0000	0.0000	12.0129	0.0000
PRE	100Y00 1H	1.00	0.00	0.0000	9.50	0.00	0	0.0000	0.0000	0.7333	0.0000
PRE	100Y00 2H	1.00	0.00	0.0000	10.48	0.00	0	0.0000	0.0000	0.8833	0.0000
PRE	100Y00 4H	1.00	0.00	0.0000	8.89	0.00	0	0.0000	0.0000	2.5330	0.0000
PRE	100Y00 8H	1.00	0.00	0.0000	11.71	0.00	0	0.0000	0.0000	4.0173	0.0000
PRE	100Y02 4H	1.00	0.00	0.0000	4.43	0.00	0	0.0000	0.0000	12.0075	0.0000

Node Stage w/Warning Stage: PRE [Scenario1]



Drop Structure Link: OUTFALL		Upstream Pipe	Downstream Pipe
Scenario:	Scenario1	Invert: 7.10 ft	Invert: 7.00 ft
From Node:	POND 1	Manning's N: 0.0130	Manning's N: 0.0130
To Node:	POST	Geometry: Circular	Geometry: Circular
Link Count:	1	Max Depth: 1.50 ft	Max Depth: 1.50 ft
Flow Direction:	Both	Bottom Clip	
Solution:	Combine	Default: 0.00 ft	Default: 0.00 ft
Increments:	10	Op Table:	Op Table:
Pipe Count:	1	Ref Node:	Ref Node:
Damping:	0.0000 ft	Manning's N: 0.0000	Manning's N: 0.0000
Length:	4.80 ft	Top Clip	
FHWA Code:	0	Default: 0.00 ft	Default: 0.00 ft
Entr Loss Coef:	0.20	Op Table:	Op Table:
Exit Loss Coef:	1.00	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		
Pipe Comment:			

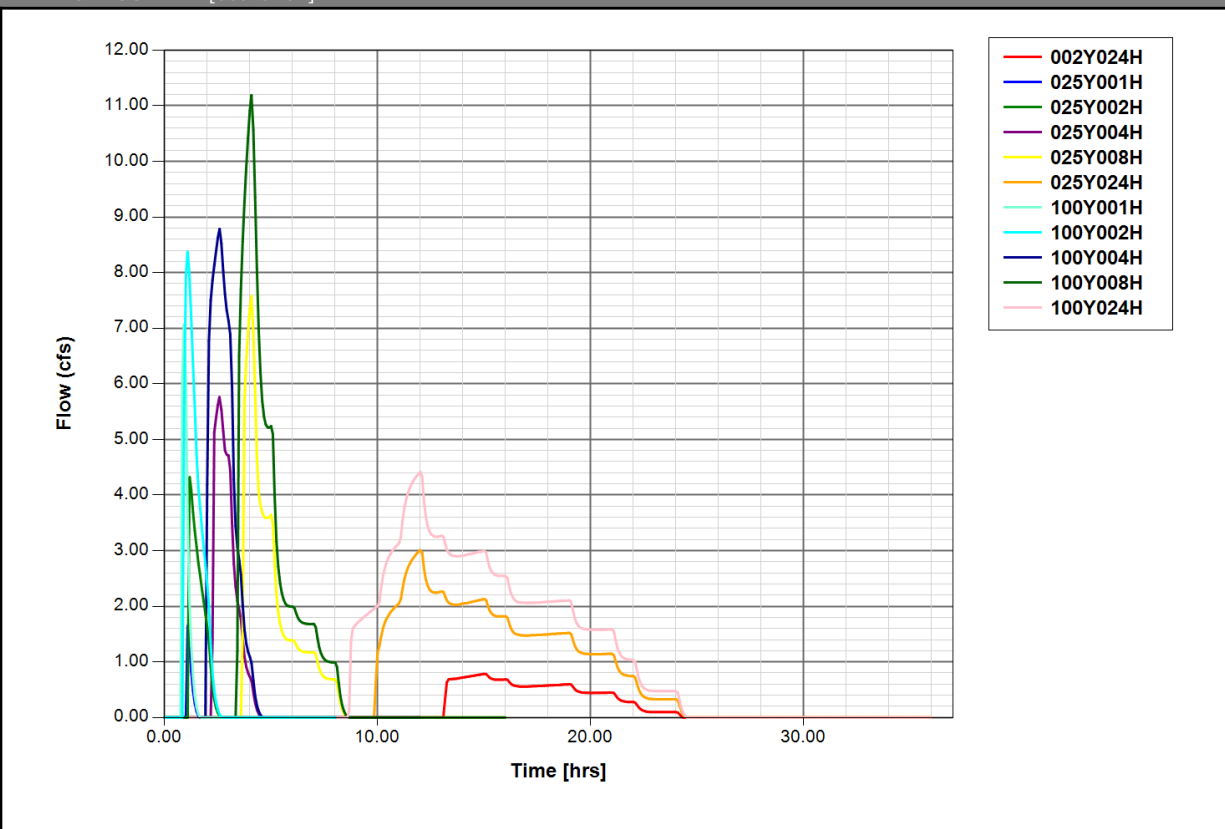
Weir Component	
Weir: 1	Bottom Clip
Weir Count: 26	Default: 0.00 ft
Weir Flow Direction: Both	Op Table:
Damping: 0.0000 ft	Ref Node:
Weir Type: Horizontal	Top Clip
Geometry Type: Rectangular	Default: 0.00 ft
Invert: 11.50 ft	Op Table:
Control Elevation: 11.50 ft	Ref Node:
Max Depth: 0.15 ft	Discharge Coefficients
Max Width: 0.92 ft	Weir Default: 3.200
Fillet: 0.00 ft	Weir Table:
	Orifice Default: 0.600
	Orifice Table:
Weir Comment:	
Drop Structure Comment:	

Link Min/Max Conditions with Times [Scenario1]

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Time to Max Flow [hrs]	Time to Min Flow [hrs]	Time to Min/Max Delta Flow [hrs]	Time to Max Us Velocity [hrs]	Time to Max Ds Velocity [hrs]
OUTFAL L - Pipe	002Y02 4H	0.78	0.00	0.02	0.00	0.00	14.9783	0.0000	13.1579	0.0000	0.0000
OUTFAL L - Weir: 1	002Y02 4H	0.79	0.00	0.02	0.00	0.00	14.9783	0.0000	13.1551	0.0000	0.0000
OUTFAL L - Pipe	025Y00 1H	1.65	0.00	0.03	0.00	0.00	1.0926	0.0000	1.0335	0.0000	0.0000
OUTFAL L - Weir: 1	025Y00 1H	1.66	0.00	0.03	0.00	0.00	1.0926	0.0000	1.0403	0.0000	0.0000
OUTFAL L - Pipe	025Y00 2H	4.32	0.00	-0.07	0.00	0.00	1.1789	0.0000	2.0908	0.0000	0.0000
OUTFAL L - Weir: 1	025Y00 2H	4.33	0.00	0.05	0.93	0.93	1.1789	0.0000	1.1097	1.1789	1.1789
OUTFAL L - Pipe	025Y00 4H	5.76	0.00	-0.10	0.00	0.00	2.5751	0.0000	3.1620	0.0000	0.0000
OUTFAL L - Weir: 1	025Y00 4H	5.77	0.00	-0.08	1.66	1.66	2.5751	0.0000	3.1000	2.5751	2.5751
OUTFAL L - Pipe	025Y00 8H	7.58	0.00	-0.09	0.00	0.00	4.0773	0.0000	5.1309	0.0000	0.0000
OUTFAL	025Y00	7.58	0.00	-0.07	2.18	2.18	4.0682	0.0000	5.1250	4.0682	4.0682

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Time to Max Flow [hrs]	Time to Min Flow [hrs]	Time to Min/Max Delta Flow [hrs]	Time to Max Us Velocity [hrs]	Time to Max Ds Velocity [hrs]
L - Weir: 1	8H										
OUTFAL L - Pipe	025Y02 4H	3.01	0.00	-0.07	0.00	0.00	11.9962	0.0000	12.1295	0.0000	0.0000
OUTFAL L - Weir: 1	025Y02 4H	3.02	0.00	-0.06	0.82	0.82	11.9962	0.0000	12.1295	11.9962	11.9962
OUTFAL L - Pipe	100Y00 1H	7.07	0.00	0.08	0.00	0.00	0.9050	0.0000	0.7958	0.0000	0.0000
OUTFAL L - Weir: 1	100Y00 1H	7.07	0.00	-0.08	2.03	2.03	0.9050	0.0000	1.0478	0.9050	0.9050
OUTFAL L - Pipe	100Y00 2H	8.37	0.00	-0.08	0.00	0.00	1.0776	0.0000	2.0839	0.0000	0.0000
OUTFAL L - Weir: 1	100Y00 2H	8.37	0.00	0.08	2.41	2.41	1.0776	0.0000	0.9094	1.0776	1.0776
OUTFAL L - Pipe	100Y00 4H	8.78	0.00	0.07	0.00	0.00	2.5898	0.0000	2.0015	0.0000	0.0000
OUTFAL L - Weir: 1	100Y00 4H	8.79	0.00	-0.07	2.52	2.52	2.5727	0.0000	3.2208	2.5727	2.5727
OUTFAL L - Pipe	100Y00 8H	11.19	0.00	-0.11	0.00	0.00	4.0802	0.0000	5.1164	0.0000	0.0000
OUTFAL L - Weir: 1	100Y00 8H	11.19	0.00	-0.08	3.22	3.22	4.0723	0.0000	5.1120	4.0723	4.0723
OUTFAL L - Pipe	100Y02 4H	4.42	0.00	0.07	0.00	0.00	12.0409	0.0000	11.1242	0.0000	0.0000
OUTFAL L - Weir: 1	100Y02 4H	4.43	0.00	-0.07	0.94	0.94	12.0075	0.0000	12.1309	12.0075	12.0075

Link Flow: OUTFALL [Scenario1]



## Percolation Link: PERC

Scenario:	Scenario1	Surface Area Option:	Vary Based on Stage/Area Table
From Node:	POND 1	Vertical Flow Termination:	Constant Rate
To Node:	GWT	Constant Rate:	1.100 fpd
Link Count:	1		
Flow Direction:	Both		
Aquifer Base Elevation:	0.00 ft		
Water Table Elevation:	6.00 ft		
Annual Recharge Rate:	0 ipy		
Horizontal Conductivity:	1.100 fpd		
Vertical Conductivity:	1.100 fpd		
Fillable Porosity:	0.300		
Layer Thickness:	4.00 ft		

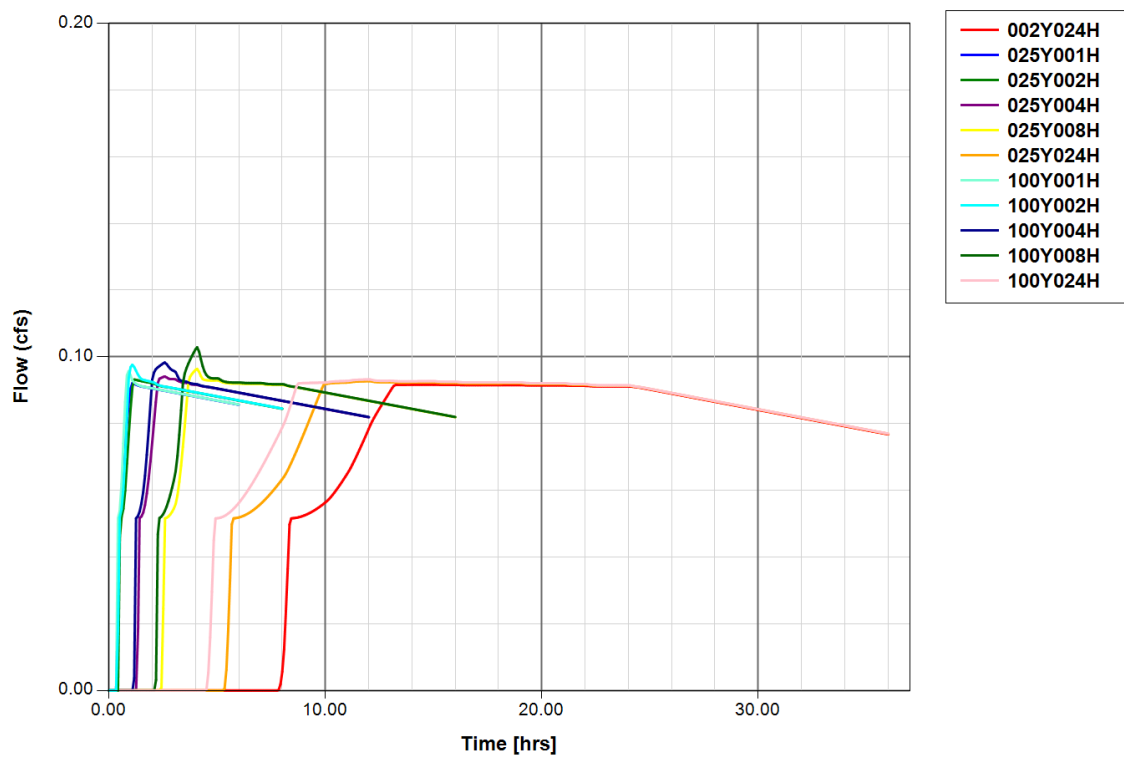
Comment:

## Link Min/Max Conditions with Times [Scenario1]

Link	Sim	Max	Min	Min/Max	Max Us	Max Ds	Time to	Time to	Time to	Time to	Time to
------	-----	-----	-----	---------	--------	--------	---------	---------	---------	---------	---------

Link Name	Sim Name	Max Flow [cfs]	Min Flow [cfs]	Min/Max Delta Flow [cfs]	Max Us Velocity [fps]	Max Ds Velocity [fps]	Time to Max Flow [hrs]	Time to Min Flow [hrs]	Time to Min/Max Delta Flow [hrs]	Time to Max Us Velocity [hrs]	Time to Max Ds Velocity [hrs]
PERC	002Y02 4H	0.09	0.00	0.00	0.00	0.00	15.0449	0.0000	8.3438	0.0000	0.0000
PERC	025Y00 1H	0.09	0.00	0.01	0.00	0.00	1.0977	0.0000	0.4282	0.0000	0.0000
PERC	025Y00 2H	0.09	0.00	0.01	0.00	0.00	1.1846	0.0000	0.4987	0.0000	0.0000
PERC	025Y00 4H	0.09	0.00	0.02	0.00	0.00	2.5795	0.0000	1.3635	0.0000	0.0000
PERC	025Y00 8H	0.10	0.00	0.01	0.00	0.00	4.0728	0.0000	2.5438	0.0000	0.0000
PERC	025Y02 4H	0.09	0.00	0.00	0.00	0.00	12.0295	0.0000	5.6605	0.0000	0.0000
PERC	100Y00 1H	0.10	0.00	0.01	0.00	0.00	0.9064	0.0000	0.3892	0.0000	0.0000
PERC	100Y00 2H	0.10	0.00	0.01	0.00	0.00	1.0798	0.0000	0.4332	0.0000	0.0000
PERC	100Y00 4H	0.10	0.00	0.02	0.00	0.00	2.5784	0.0000	1.2117	0.0000	0.0000
PERC	100Y00 8H	0.10	0.00	0.01	0.00	0.00	4.0775	0.0000	2.2438	0.0000	0.0000
PERC	100Y02 4H	0.09	0.00	0.00	0.00	0.00	12.0242	0.0000	4.8605	0.0000	0.0000

Link Flow: PERC [Scenario1]





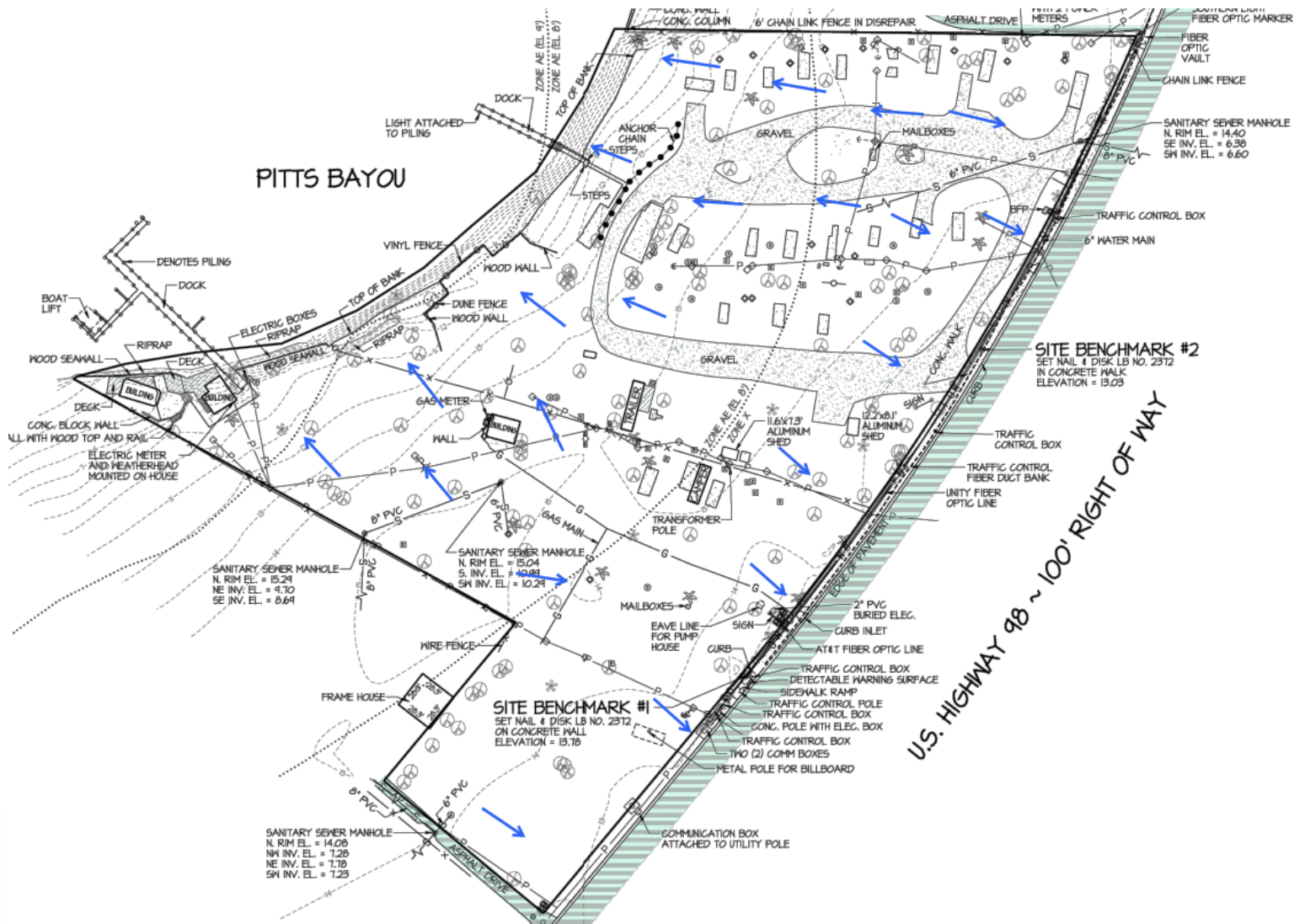
# **APPENDIX B**

## **BASIN MAPS**

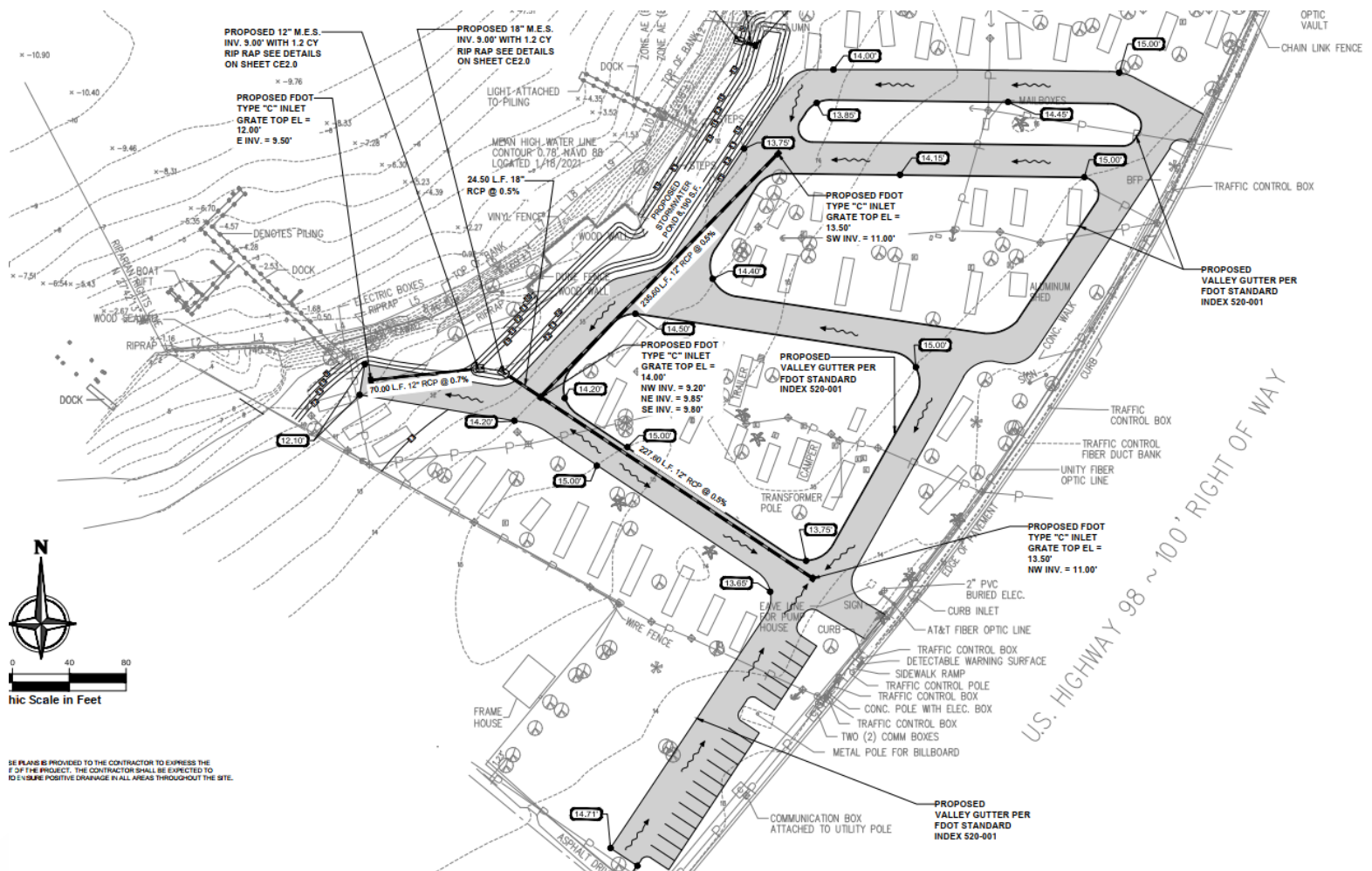




# Pre-Development Basin Map



# Post-Development Basin Map





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# **APPENDIX C**

## **STORMWATER**

## **CALCULATIONS**



## APPENDIX C - STORMWATER CALCULATIONS

### PRE-DEVELOPMENT

Total Drainage Area: **209,724 ft<sup>2</sup>**

Impervious Area: **39,089 ft<sup>2</sup>**

Pervious Area: **170,635 ft<sup>2</sup>**

$$CN = [(49 \times 170,635 \text{ ft}^2) + (98 \times 39,089 \text{ ft}^2)] / (209,724 \text{ ft}^2) = \mathbf{58.1}$$

### POST-DEVELOPMENT

Total Drainage Area: **209,724 ft<sup>2</sup>**

Asphalt & Concrete Area: **62,854 ft<sup>2</sup>**

Pervious Area: **138,680 ft<sup>2</sup>**

Pond Area: **8,190 ft<sup>2</sup>**

$$CN = [(39 \times 138,680 \text{ ft}^2) + (98 \times 62,854 \text{ ft}^2) + (100 \times 8,190 \text{ ft}^2)] / (209,724 \text{ ft}^2) = \mathbf{59.1}$$

### PROPOSED DRY TREATMENT FACILITY

Stage (ft)	Area (ft <sup>2</sup> )	Cumulative Volume (ft <sup>3</sup> )
10.00	4,033	0
11.00	6,082	5,058
12.00	8,190	12,194

### RUNOFF COEFFICIENT

$$C = [(0.95 \times 62,854 \text{ ft}^2) + (0.15 \times 138,680 \text{ ft}^2) + (1 \times 8,190 \text{ ft}^2)] / (209,724 \text{ ft}^2) = \mathbf{0.42}$$

### TREATMENT VOLUME

$$TV_{\text{required}} (V_r) = 0.50'' \times (1 \text{ ft}/12'') \times 209,724 \text{ ft}^2 = \mathbf{8,739 \text{ ft}^3}$$

### HEIGHT OF TREATMENT

$$H_T = (12 \text{ ft} - 11 \text{ ft}) \times [(8,739 \text{ ft}^3 - 5058 \text{ ft}^3) / (12,194 \text{ ft}^3 - 5,058 \text{ ft}^3)] + 11 \text{ ft} = \mathbf{11.52 \text{ ft}}$$

### TREATMENT DEPTH

$$H_v = 11.52 \text{ ft} - 10 \text{ ft} = \mathbf{1.52 \text{ ft}}$$

### HEIGHT OF WATER TO SATURATE SOIL

$$H_u = (f)(h_b) = 0.3 \times 4 \text{ ft} = 1.2 \text{ ft}$$

### VERTICAL ANALYSIS

$$K_{vu} = K_h = 2.2 \text{ ft/day} = \mathbf{1.1 \text{ in/hr}}$$

$$I_d = K_{vu} / \text{F.S.} = (2.2 \text{ ft/day}) / 2 = 1.1 \text{ ft/day} = \mathbf{0.55 \text{ in/hr}}$$

$$T_{\text{sat}} = [(f)(h_b)] / I_d = (0.3)(4 \text{ ft}) / 1.1 \text{ ft/day} = 1.091 \text{ days} = \mathbf{26.2 \text{ hours}}$$

### LATERAL ANALYSIS

$$V_{\text{lateral}} = V_r - V_u = 8,739 \text{ ft}^3 - [(4,033 \text{ ft}^2)(4 \text{ ft})(0.3)] = \mathbf{3,899 \text{ ft}^3}$$

$$H_{T\text{-lateral}} = (11 \text{ ft} - 10 \text{ ft}) \times [(3,899 \text{ ft}^3 - 0 \text{ ft}^3) / (5,058 \text{ ft}^3 - 0 \text{ ft}^3)] + 10 \text{ ft} = \mathbf{10.77 \text{ ft}}$$

$$HT = h_2 + h_b = (10.77 \text{ ft} - 10.00 \text{ ft}) + 4.00 \text{ ft} = \mathbf{4.77 \text{ ft}}$$

$$F_y = h_c / HT = (4 \text{ ft}) / (4.77 \text{ ft}) = \mathbf{0.838}$$

$$\text{Pond Dimensions: } L = \mathbf{323.4 \text{ ft}} \text{ and } W = \mathbf{25.3 \text{ ft}}$$

$$L/W = (323.4 \text{ ft}) / (25.3 \text{ ft}) = \mathbf{12.8}$$

$$\text{From ERP Design Aids Figure 1-7, } F_x = \mathbf{2.6}$$

Because there are no confining soil or rock layers near the basin bottom, a reasonable assumption is made that **H = 20 ft**.

$$D = H + (h_c/2) = 20 \text{ ft} + (4 \text{ ft}/2) = \mathbf{22 \text{ ft}}$$

$$T_{\text{lateral}} = (W^2) / [(4)(K_h)(D)(F_x^2)] = (25.3 \text{ ft})^2 / [(4)(2.2 \text{ ft/day})(22 \text{ ft})(2.6)^2] = 0.489 \text{ days} = \mathbf{11.7 \text{ hrs}}$$

### TOTAL TREATMENT RECOVERY

$$T_{\text{total}} = T_{\text{sat}} + T_{\text{lateral}} = 26.2 \text{ hours} + 11.7 \text{ hours} = \mathbf{37.9 \text{ hours}}$$

The time to recover the treatment volume is less than 72 hours therefore the design is sufficient.



**APPENDIX D**

**MAGNUM ENGINEERING**

**GEOTECHNICAL REPORT**

**(submitted separately)**

