City of Madison, Wisconsin

East Isthmus and Yahara River Watershed Study
Existing Conditions Model Report

200-166078-20001
November 2025

TETRA TECH

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Approved April 15, 2026 by City of Madison Board of Park Commissioners, Legistar File #92653
Approved April 22, 2026 by City of Madison Board of Public Works, Legistar File #92775

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ACKNOWLEDGEMENTS

Tetra Tech appreciates the valuable contribution of the following people to the success of this project.

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- Jojo O'Brien, Project Manager
- Ryan Stenjem, Engineer
- Richie Breidenbach, Engineer
- Hannah Mohelnitzky, Public Information Officer
- Janet Schmidt, Principal Engineer
- Greg Fries, Assistant City Engineer
- Alaina Baker, Water Resource Specialist
- Caroline Burger, Former City Staff

University of Wisconsin

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EXECUTIVE SUMMARY

Background

Recognizing the changing rain patterns, and likelihood of more frequent future large rain events, the City of Madison (City) is conducting a multi-faceted approach to address stormwater flooding. As one component of that approach, the City is developing comprehensive stormwater management studies for each watershed within the City. The studies are conducted in two phases. Throughout both phases, the City incorporates multiple opportunities for public involvement and interaction.

Phase 1 includes the development of a hydrologic/hydraulic stormwater runoff model representing the physical and drainage properties of the watershed under existing conditions. The model is calibrated from flow meter data and used to identify areas in the watershed which are most likely to flood.

Phase 2 uses the model to evaluate mitigation alternatives and/or infrastructure improvements to eliminate or reduce flooding impacts from large rain events.

The improvements documented in this report are not meant to be full design-level efforts; they are conceptual solutions that help the City's Engineering Division understand the magnitude of the solution needed in a given area to meet the targets. As projects are looked at further, and if they move to the point they are contemplated for programming, projects will then go into a more detailed design phase. This project phase collects detailed data needed for design and looks at refined design, permitting, and environmental issues associated with the particular project.

This document reports on the methods, procedures, and results of the East Isthmus Yahara Watershed Study. The project area covers 1,635 acres (2.55 square miles) on either side of the Yahara River between Lakes Mendota and Monona.

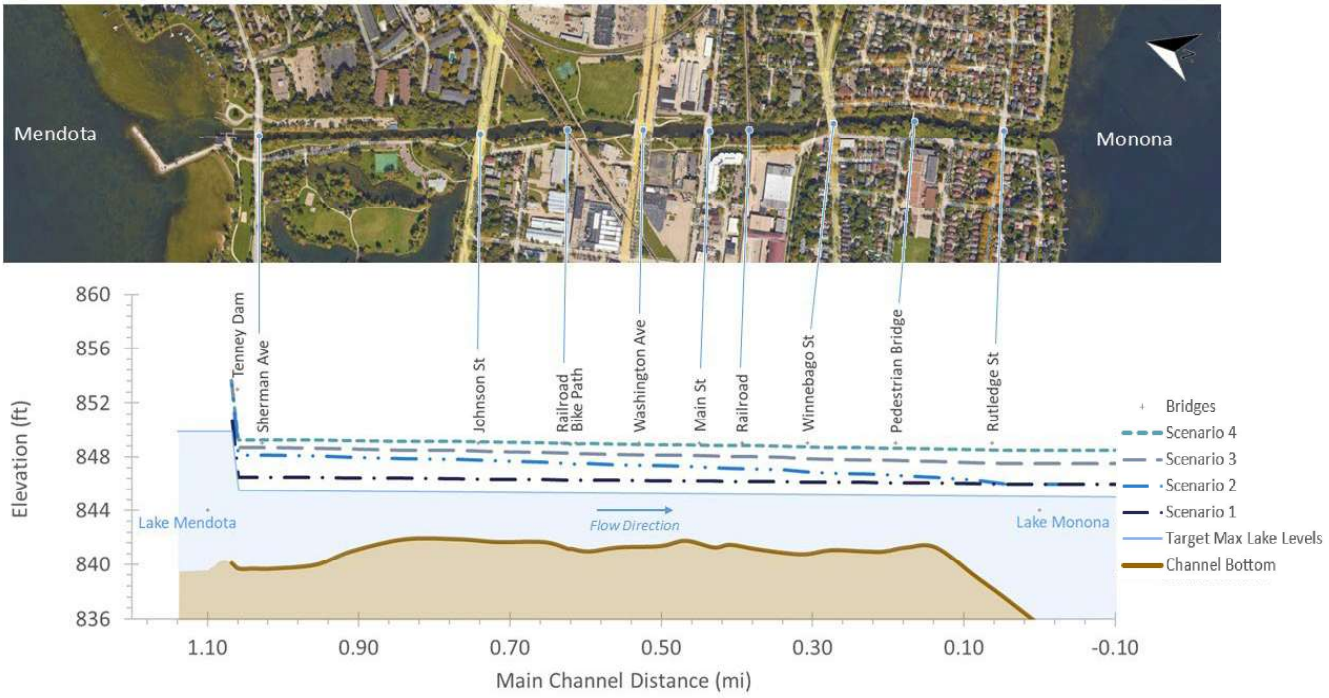
Including High Lake Level Flooding in the Modeling

The East Isthmus Yahara watershed is greatly impacted by the water levels in the lakes and Yahara River. It is covered in dense urban development and many areas are low-lying. During high lake levels or times of high flow rates in Yahara River, water from Lake Monona and the river back-up into the storm sewers. This causes the storm sewers to drain more slowly, increasing the flooding risk.

Additionally, the water levels in the lake and the Yahara River can be highly variable depending on recent precipitation and the management of Tenney Dam. An extensive evaluation of past lake levels and Yahara River flow rates was completed to focus the scope of the study and provide insights on the expected range of lake and river conditions. With guidance from the City, a statistical analysis of historic river discharge and lake level data was completed, and four scenarios were picked to use throughout the modeling efforts of the study. The water level of the four scenarios can be found in

Figure ES-1-1 below and the full description of the analysis found in Appendix E.

Figure ES-1-1: Yahara River Profile with Scenarios



Additional information can be found in the City of Madison's East Isthmus Yahara Watershed Study Flood Mapping online story map at https://storymaps.arcgis.com/stories/3b8df78e5f124ad5bb4bf43ef37f6ed8 (last accessed 8/1/2025)

City's Flood Mitigation Targets

This analysis uses the City's current flood mitigation targets to assess the flood risk and identify mitigation solutions. The City's flood mitigation goals for the East Isthmus Yahara Watershed Study are as follows.

- No surcharging onto the street for up to the 10% annual chance storm (10-year design storm)
- The centerline of street to remain passable during the 4% annual chance storm, (25-year design storm) with no more than 0.2 feet of water at the centerline for 100-feet.
- No home or business will be flooded during the 1% annual chance storm, (100-year design storm), which includes model-projected flooding of 6 inches or more within a 5-foot buffer of buildings.
- Enclosed depressions to be served to the 1% annual chance storm, (100-year design storm). An enclosed depression is defined as a low area of land with no natural outlet and it was considered served during the 1% annual chance storm if it had less than 1-foot of flooding in it and did not impact private property.
- Greenway crossings at streets to be served to the 1% annual chance storm, (100-year design storm).
- Safely convey stormwater during the 0.2% annual chance storm, (500-year design storm).
- Provide flooding solutions that do not negatively impact downstream properties.

Existing Conditions Results

The existing conditions analysis, in Scenario 1, found the following when compared to the City's flood mitigation targets:

- Approximately 6.5 (26.5%) of the 24.5 miles of storm sewer evaluated, were projected to surcharge to grade during the 10% annual chance storm, thus not meeting the target. That includes 301 of the 1,051 modeled manholes predicted to flood (29%). Projected surcharging is solely based on pipe capacity because inlet capacity was not evaluated.
- Approximately 3 miles (5.3%) of the 56 miles of streets evaluated were projected to have more than 0.2 feet of water at the centerline during the 4% annual chance storm, thus not meeting the target.
- One hundred (100) buildings (1.3%) of the 7,421 buildings in the watershed, are projected to be at risk of flooding (more than 6 inches of projected water depth within 5 feet of structure) during the 1% annual chance storm, thus not meeting the target. An additional 254 structures have less than 6 inches of projected water depth within the 5-foot buffer.
- Of the 2 enclosed depressions evaluated during the study, both are not served during the 1% annual chance storm, thus not meeting the target.
- There are no greenways in the watershed.
- The 0.2% annual chance storm was not explicitly evaluated for impact to private property or safety during this study. However, overland flow is limited to streets and the defined channels, and therefore, no specific areas of unsafe conveyance beyond the other Level of Service (LoS) targets are identified.

Recommended Solutions and Costs

An extensive process was conducted, following the existing conditions analysis, to brainstorm, evaluate, and ultimately identify solutions to meet the City's flood mitigation targets. During this process, five different strategies for flood mitigation were evaluated. Unique to this watershed, green infrastructure, dredging, and pumping/lift stations strategies were all evaluated alongside the typical strategies of improving stormwater storage and pipe conveyance. Ultimately, many of these proposed mitigation strategies were found to have limited viability due to technical and practical constraints, leaving increasing pipe conveyance as the preferred strategy. From the recommended solutions, seven standalone projects were identified and are included in Table ES-1-1 with their estimated opinion of probable cost (OPC). Figures depicting each standalone project are provided later in the report in Section 14.0. Other storm pipe improvements outside of the standalone projects are also recommended and should be considered during other work such as road improvement projects.

Table ES-1-1 Standalone Projects - OPC Summary

Project	OPC
Capital City Trail Storm Sewer	$2,400,000
Wilson Street	$1,500,000
Pennsylvania Avenue	$33,300,000
Commercial Avenue	$8,200,000
East Johnson Street	$3,900,000
Paterson Relief Pipe	$8,800,000
North Blount Street	$6,000,000

Recommended Solutions Results

As the recommended solutions were being evaluated in Scenario 1, they were compared to the flood mitigation targets. Table ES 1-2 includes a summary of the flood mitigation targets for the existing conditions and recommended mitigation. Figure 14-10, Figure 14-11, and Figure 14-12 in Section 14.0 depict the existing conditions in the watershed, highlighting where the targets are not met. Figure 14-22, Figure 14-23, and Figure 14-24 in Section 14.0 depict the flood control summary within the watershed with the selected mitigations implemented.

There are still locations where the flood mitigation targets are not met. The targets cannot be met for various reasons including lack of physical space, topographic relief limitations, and land use change concerns. Detailed information can be found in Section 10.0 of this report.

Table ES 1-2: Existing Conditions and Recommended Solutions Results (Scenario 1)

Design Storm Event	Target	Watershed-wide metric	Existing Conditions	Recommended Solutions
10% Annual Chance	No surcharging onto street	1,051 modeled structures	301 structures impacted (28.6%)	22 structures impacted (2.1%)
25% Annual Chance	Centerline of Street Passable	56.1 miles of road	3.0 miles of roads impacted (5.3%)	0.1 miles of roads impacted (0.2%)
1% Annual Chance	No home or business will be flooded	7,421 buildings/ structures	100 buildings impacted (1.3%)	4 buildings impacted (0.1%)
	Enclosed Depression Served	2 enclosed depressions	2 enclosed depression that impacts private property when overflowing	1 enclosed depression that impacts private property when overflowing
	Greenway Crossing at Streets served	*No greenway crossings are present in this watershed*		
0.2% Annual Chance	Safely Convey Stormwater, i.e. limited impact on private property	7,421 buildings/ structures	216 buildings impacted (2.9%)	121 buildings impacted (1.6%)

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DEFINITIONS

Term	Definition
1D	one dimensional
2D	two dimensional
ASCII	American Standard Code for Information Interchange
DCIA	Impervious area that drains directly to a storm sewer. Non-DCIA is impervious area that drains over a pervious surface prior to entering a storm sewer.
DEM	Digital Elevation Map
DNR	Department of Natural Resources
DTM	Digital Terrian Model
EIY	East Isthmus Yahara
HEC-RAS	Hydrologic Engineering Center – River Analysis System
HEC-SSP	Hydrologic Engineering Center Statistical Software Package
HGL	Hydraulic Grade Line
HSG	Hydrologic Soil Group
LOS	Level of Service
MSE	Midwest Southeast
NAD	North American Datum
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High Water Mark
OPC	Opinion of Probable Cost
PFC	Peak Flow Control
PFCI	Peak Flow Control Infrastructure
PIM	Public Information Meeting
ROW	Right-of-Way
SLU	Standard Land Use
SWMM	Stormwater Management Model
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WinSLAMM	Source Loading and Management Model
WSE	Water Surface Elevation

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND AND PURPOSE

Over the last several years, the City of Madison has been evaluating its storm sewer system to understand potential flooding risks caused by large rainfalls and develop recommendations to mitigate the risk. The studies are being conducted by watershed. The focus of this evaluation is on the East Isthmus and Yahara River (East Isthmus) watershed. Figure 1-1 shows the limits of the East Isthmus Yahara watershed.

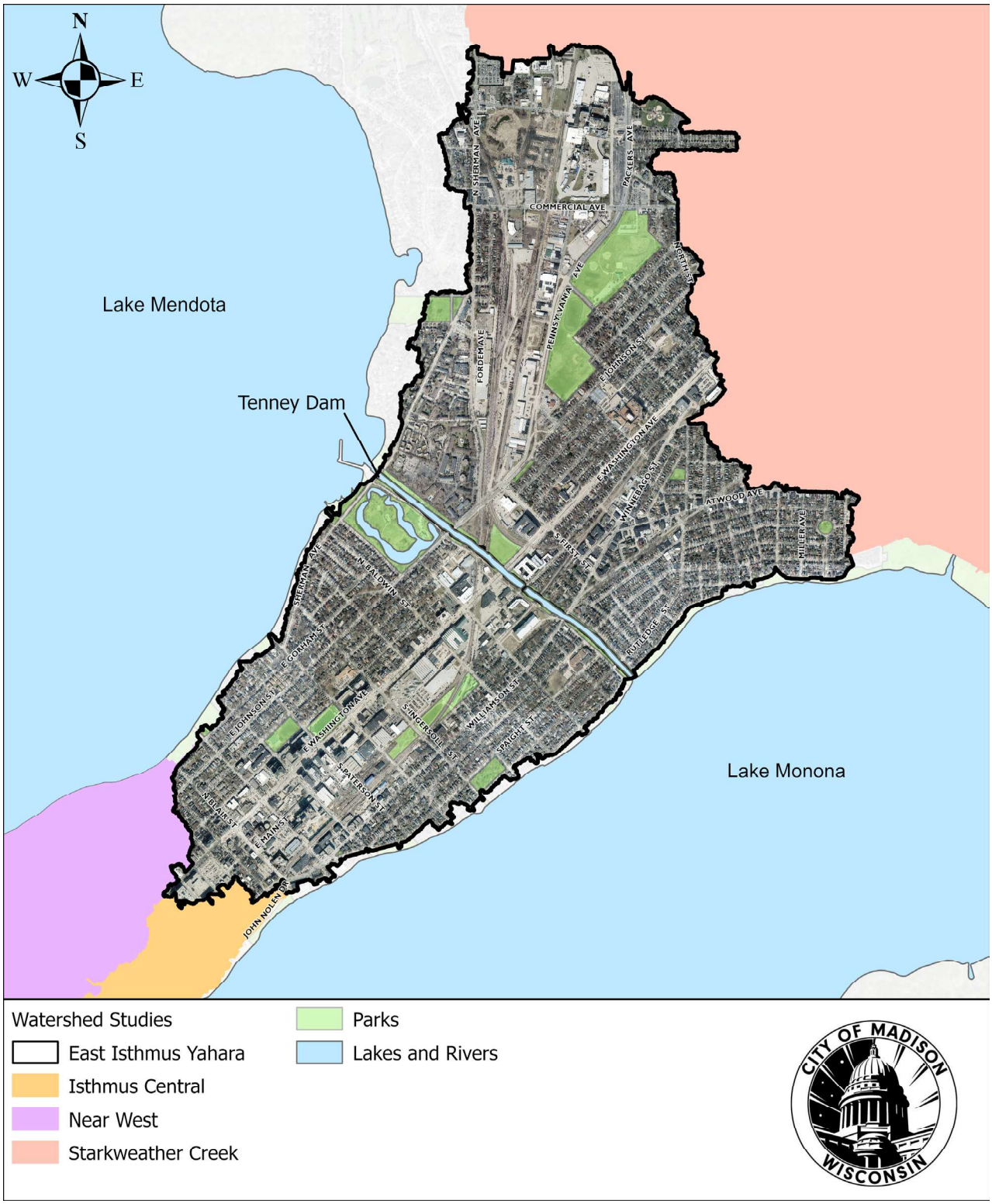
1.2 SCOPE OF STUDY

The project's scope of study included the tasks listed below:

- Review existing data, perform limited field investigation, and update GIS datasets.
  - This task included the review of the city-provided GIS storm sewer records to identify missing or erroneous data and update as necessary based on available drawings and/or field investigation. Record drawings were provided by the city. In cases where record documents could not verify data, assumptions were made.
- Developing a monitoring plan and reviewing data during the monitoring period.
- Develop existing conditions model.
  - Model development included estimating hydrology, selecting design boundary conditions, building the model network in XPSWMM , and calibrating the model.
- Execute the existing conditions model for the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year, 24-hour rainfalls (the 50, 20, 10, 4, 2, 1, and 0.5% chance storms).
- Evaluate Flood Mitigation Alternatives
  - Identify causes of flooding including undersized surface storage, insufficient capacity in pipe network, high tailwater conditions.
  - Develop a Peak Flow Control Infrastructure (PFCI) model or a high-level idyllic solution to solve flooding. This scenario may not be feasible for the watershed due to existing limitations.
  - Develop a "feasible" solution that considers limitations such as utility conflicts, environmental concerns, and space restrictions. Various mitigation alternatives will be considered including underground storage, lift stations, and pipe conveyance improvements. The solution will be separated into regional solutions and local sewer upgrades.
  - Assess the 500-year storm and identify potential upgrades to meet the City's level of service target.
- Evaluate the potential impact of Green Infrastructure implementation in the watershed. This high-level analysis will quantify the maximum volume of water needed to be managed during the 10-, 25-,

and 100-year, 24-hour storm (10, 4, and 1% chance storms) and convert it to an area of green infrastructure across the watershed.

Figure 1-1: East Isthmus and Yahara River Watershed Location Map



1.3 HISTORIC FLOODING IN WATERSHED

The East Isthmus Yahara watershed is a densely developed urban area with many challenges that contribute to a considerable record of past flooding. The topography is similar to a bathtub, with low-lying areas inland and higher elevations near the lakes. Many of these low-lying areas were once wetlands that were filled in as the City grew. Today in these low-lying areas, storm sewers are necessary to allow stormwater runoff to drain to the Yahara River and Lake Monona. Some areas in this storm sewer system have limited capacity available to drain runoff and this can contribute to flooding. Additionally, during high lake levels or when high rates of water are released at Tenney Dam through the Yahara River, water from Lake Monona and the Yahara River back-up the storm sewer system and low-lying areas of the Isthmus become even more prone to flooding.

Figure 14-1 in Section 14 shows a collection of different types of flood reports that have been collected within the watershed, including flood reports received from residents from October 2019 to August 2025. Five areas, which are called out on Figure 14-1, have been identified by residents during public information meetings or in discussions with the City as areas of significant concern for flooding. These areas include:

A. Third Street between E Johnson and E Dayton Streets. Flooding is frequently reported at the E Johnson and Third Street intersection, often making the road impassable for vehicles.
B. The parking lot at 2059 Atwood Avenue. This lot drains to a catch basin whose rim is less than 1.5 feet above the crown of the downstream pipe. When the hydraulic grade line in downstream pipe is above the elevation of the catch basin, the parking lot is unable to drain. During larger storms, the downstream pipe is predicted to surcharge to an elevation higher than the rim causing flooding in the parking lot.
C. Mifflin Street between North Paterson to North Blount Streets. This area is an enclosed depression, and the flooding makes the road impassable for vehicles.
D. The intersection of Wilson and Ingersoll Streets. This intersection is at the upstream end of a pipe network with known capacity issues.
E. Multiple locations along the Yahara River and Lake Monona shoreline. The city has received various flood reports where the Yahara outlets to Lake Monona.

These five locations are not an exhaustive list of areas that flood on the Isthmus. Instead, these locations represent real world observed conditions that help confirm the model's predictive flooding. They are spread out across the watershed and help guide where alternatives should be considered.

1.4 SUMMARY OF PAST STUDIES

There are no past detailed watershed wide studies of flash flooding of the East Isthmus Yahara watershed.

1.5 COORDINATE SYSTEM AND VERTICAL DATUM

The hydraulic model and mapping data shown in this report use the North American Datum (NAD) 1983 HARN Wisconsin CRS Dane (US Feet) coordinate system. Elevations utilize the North American Vertical Datum of 1988 (NAVD88). Some record documents reference elevations in the City of Madison Datum, which is 845.60 feet below NAVD88 (City of Madison Datum = NAVD88 – 845.60 feet).

1.6 FLOOD MITIGATION TARGETS

The City has the following flood mitigation targets, referred to as Level of Service (LoS) targets. These targets may change in the future as more information becomes available. Table 1-1 lists the flood mitigation LoS targets.

Table 1-1 Flood Mitigation LoS Targets

No.	Focus	Description	Design Storm
1	Collection System	No surcharging of the collection system onto the street.	10%
2	Passable Streets*	Street to remain passable to automobiles with no more than 0.2 feet of water at the centerline for more than 100 feet.	4%
3	Building Flooding, Enclosed Depressions, and Greenway Crossings	No home or business will be flooded and enclosed depressions and greenway crossings at streets will be served.	1%
4	Safe Conveyance	Safely convey stormwater runoff.	0.2%
5	Downstream Impacts	Provide flooding solutions that do not negatively impact downstream properties.	All

**The City updated the standard to 0.5 feet of ponding at the centerline for studies starting later than 2020.*

2.0 GUIDANCE AND DATA SOURCES

2.1 MODELING GUIDANCE DOCUMENT

The hydraulic model and flood mitigation solutions were developed following the City of Madison's Modeling Guidance for Round 3 Study Consultants dated July 14, 2020. The Modeling Guidance defines acceptable modeling methods and input parameters. The Modeling Guidance is in Appendix A.

2.2 DATA SOURCES

The data sources used for this watershed study include:

- GIS datasets from the City include reported flood locations, land use, impervious area, building footprints, public and private storm sewer infrastructure, city limits, greenways, ponds, lakes, rivers, parks, and roads.
- The City's GTWeb viewer, which contains infrastructure mapping.
- Construction plans for the following projects (City project number)
  - Helena Street, Jenifer Street, and Russell Street - 2021 (11189)
  - Russell Street Assessment - 2022 (13708)
  - Hartmeyer Redevelopment - 2024 (14534)
  - Rutledge Street Assessment - 2024 (8742)
- City's 2016 LiDAR data.
- City's 2022 LiDAR data
- NRCS Soil Survey for Dane County.

Table 2-1: Digital Source Files summarizes the digital source files that were used. Changes to the source files after the date shown in the table are not incorporated into the watershed study.

Table 2-1: Digital Source Files

Data Type	Source Data Set	File Name	File Date
Land Use / Impervious Area / Right-of-way/	2020 Impervious Cover	IsthmusWatershed_WinSLAMMSourceArea.gdb	10/30/2020
Buildings	2020 Impervious Cover, Hartmeyer Development	Buildings_2024	
Storm Sewer	City Database	Storm_Data_05062020.gdb	5/6/2020
Lakes and Rivers	City Database	Lakes_and_Rivers.shp	2/20/2020
Greenways & Ponds	City Database	Greenways_and_Ponds.shp	2/20/2020
Parks	City Database	Parks.shp	2/20/2020
Elevation	City Database	Madison_Merged DEMs.gdb City_of_Madison_DEM_2022.tif Hartmeyer Development tifs • HartmeyerPublic.tif • Multifamily FG.tif • OverflowSwale.tif • Senior Living.tif (	6/1/2020 10/11/2022 9/24/2024
Soils	NRCS	NRCS_HSG_Madison_02-03-2021	2/3/2021
Reported Flood Locations	City Database	FloodReports_ForConsultants.gdb	8/18/2025

3.0 WATER RESOURCES INVENTORY

3.1 STUDY SETTING

The East Isthmus Yahara watershed is a low-lying, densely developed downtown area between Lake Mendota and Lake Monona and bisected by the Yahara River. The 1,635-acre watershed is approximately 63% impervious and has several large green spaces on both sides of the Yahara River. The watershed borders the Central Isthmus and Near West watersheds to the southwest and the Starkweather Creek Central watershed to the northeast.

Lakes Mendota and Monona are part of a managed system where dams are used to maintain state-regulated lake levels and move water through a very flat watershed. The Tenney Dam, located at the entrance of the Yahara River from Lake Mendota, is manually operated by Dane County and flow through the dam impacts flow rate in the Yahara River, the level of Lake Monona downstream, and the flooding on the Isthmus.

3.2 TOPOGRAPHY

At the start of this project, the City's 2016 LiDAR data was used as the source for ground elevation. This data was used to delineate the subwatersheds and create the 2D model. In March 2023, the City provided updated data and the 2D surface in the model was updated using the 2022 LiDAR data.

The Isthmus watershed has similar topography to a bathtub where the interior portion is relatively flat and the outer edges near the lakes are at higher elevations. The watershed has several depressed internally draining areas, two of which have been identified as enclosed depressions as part of this study. Section 4.3.2.8 includes additional information about these areas.

Figure 14-2 in Section 14.0 shows the topography across the watershed which ranges from 848 feet on Mifflin Street to 923 feet at the southwestern most point of the watershed on East Washington Avenue.

3.3 DRAINAGE SYSTEMS

The East Isthmus Yahara watershed is fully urbanized. As such, the local drainage system entirely consists of a constructed urban stormwater conveyance system with curb and gutter and storm sewers. The Yahara River, which bisects the Isthmus conveys water north to south from Lake Mendota to Lake Monona and is the receiving water for some of the stormwater outfalls. While the Yahara River accepts local drainage, it is also part of a much larger watershed.

3.3.1 Natural System

Lake Mendota, Lake Monona, and the Yahara River, which connects the two lakes are critical, natural drainage features within the East Isthmus Yahara watershed.

Dams are used to regulate flows into and out of Lake Monona and control the lake's water surface elevation. In 1979, the predecessor agency to the State of Wisconsin Department of Natural Resources (DNR) established

the most recent regulations defining acceptable winter and summer water levels on the Yahara Chain of Lakes, which balance competing interests including navigation, flood control, fisheries, and wildlife, although the lake levels do occasionally fall outside the regulatory range. The lake levels during the summer season, which lasts from the first spring runoff event after March 1 to October 31,[1] are higher than the winter lake levels.

This study focuses on higher lake levels that are more likely to impact flooding than low lake levels, so flood water surface elevations on Lake Monona are important to consider. As part of this study, the lake level return intervals were calculated using the United States Army Corps of Engineers (USACE) Hydrologic Engineering Center's Statistical Software Package (HEC-SSP). Additional information about the analysis can be found in Appendix E. Table 3-1 lists the regulatory and flood water surface elevations for Lakes Mendota and Monona.

Table 3-1: Lake Mendota and Lake Monona Water Surface Elevations

	Lake Mendota Water Surface Elevation (feet)	Lake Monona Water Surface Elevation (feet)
Target Winter Minimum†	848.0	842.0
Target Summer Maximum†	849.4	845.0
Ordinary High Water Mark†	850.50	845.62
100-year Flood*	852.60	847.50
Record High Lake Level	852.52	848.31

† Dane County Lake Level Management Guide for the Yahara Chain of Lakes, page 5, Table 1. Elevations converted from NGVD29 to NAVD88.
*Dane County Flood Insurance Study (FIS) Report, April 9, 2025, Table 10

3.3.2 Constructed System

The East Isthmus Yahara watershed has outfalls that drain to the Yahara River and Lake Monona. Of the 36 outfalls that drain to the Yahara River, 24 of them were included in the model and of the 22 outfalls draining to Lake Monona, 7 were modeled. Table 3-2 lists the outfalls modeled as well as their size and tributary area.

[1] *Dane County Lake Level Management Guide for the Yahara Chain of Lakes*, page 5.

Table 3-2: Modeled Storm Sewer Outfalls

Outfall Name	Location	Discharge Location	Size (inches)	Invert Elevation (feet)	Drainage Area (acres)
AE5442-008	Tenney Park Parking Lot	Yahara River	36	843.6	34.6
HD5443-063	E Johnson St.	Yahara River	48 x 120	841.31	420.2
MO01D0111D	E Johnson St.	Yahara River	36	845.00	51.1
MO01B0112D	E Johnson St.	Yahara River	63 x 98	840.05	181.6
AE5543-098	E Washington Ave.	Yahara River	30	846.87	16.2
AE5543-123	Yahara Parkway	Yahara River	12	844.38	0.2
AE5543-070	E Main St.	Yahara River	24	845.31	18.7*
AE5543-143	E Main St.	Yahara River	24	845.04	
MO02A0106D	Winnebago St.	Yahara River	54	842.13	48.9
AE5644-048	Jenifer St.	Yahara River	24	844.00	13.8*
AE5644-050	Jenifer St.	Yahara River	24	844.00	
AE5744-075	Rutledge St.	Yahara River	18	844.50	1.6
AE5442-027	Tenney Park	Yahara River	21	844.50	39.4
HD5443-054	E Johnson St.	Yahara River	48 x 60	842.99	60.1
AE5443-031	Thornton Ave.	Yahara River	18	845.50	1.4
AE5443-038	E Dayton St.	Yahara River	21	846.28	1.4
AE5542-031	Thornton Ave.	Yahara River	21	845.60	3.1
Washington Ave Outfall	E Washington Ave.	Yahara River	60 x 120	840.56	231.7
AE5543-129	Yahara River Bike Path	Yahara River	12	846.07	0.8
AE5543-133	E Main St.	Yahara River	30	843.43	15.3
IYHRV	Thornton Ave.	Yahara River	36	844.15	14.3
AE5644-058	Winnebago St.	Yahara River	21	845.00	7.2
Jenifer St Outfall	Jenifer St.	Yahara River	36	839.05	12.9
MO03B0100D	Spaight St.	Yahara River	30 x 48	842.08	38.2
Russell St	Russell St.	Lake Monona	24	844.16	19.3
AE5844-002	Schurz Ave.	Lake Monona	24	845.10	21.9
Dunning St	Dunning St.	Lake Monona	36 x 42	844.60	53.3

Outfall Name	Location	Discharge Location	Size (inches)	Invert Elevation (feet)	Drainage Area (acres)
AE5943-038	Miller Ave.	Lake Monona	36	845.60	44.5
AE5547-023	S Few St.	Lake Monona	24	844.13	104.9
Blount Outfall	Blount St.	Lake Monona	66 x 72	841.39	42.1
MO04U0089A	Blair St.	Lake Monona	121 x 77	839.32	52.0

*East Main and Jenifer Street have two outfalls.

The storm system in the East Isthmus Yahara watershed has a wide variety of pipe shapes and sizes ranging from 6-inch round pipes to 120 x 48-inch box sewers. The existing storm sewer network has approximately 50.8 miles of storm sewer, of which approximately 24.5 miles are evaluated in the hydraulic model.

Table 3-3 summarizes the length of sewer evaluated in the hydraulic model by size and shape. The criteria for selecting pipes to be modeled included active pipes greater than 18-inches that were not catch basin leads and did not drain into Lake Mendota. Some pipes that are smaller than 18-inches were included for connectivity. Figure 14-3 in Section 14.0 shows modeled and non-modeled sewers.

Table 3-3: Storm Sewer Summary

Size (inches)	Shape	Length Evaluated in Model (feet)	Length not Evaluated in Model (feet)	Total Length (feet)
6	Circular	0	1,049	1,049
8	Circular	39	1,879	1,919
10	Circular	0	668	668
12	Circular	1,324	91,617	92,941
15	Circular	1,695	32,006	33,701
18	Circular	20,376	5,250	25,626
20	Circular	4,977	261	5,238
21	Circular	7,566	841	8,407
24	Circular	11,322	1,594	12,916
27	Circular	2,513	0	2,513
30	Circular	9,477	46	9524
33	Circular	620	0	620
36	Circular	6,761	0	6761
42	Circular	909	0	909
48	Circular	901	0	901
54	Circular	2,573	0	2573
66	Circular	573	0	573
27.6 x 18	Box	600	0	600
27.6 x 20.4	Box	340	0	340
36 x 18	Box	503	0	503
36 x 24	Box	594	0	594
36 x 27.6	Box	1,610	0	1610
36 x 30	Box	307	0	307
36 x 36	Box	1,030	0	1030
42 x 24	Box	483	0	483
42 x 30	Box	609	0	609
42 x 36	Box	525	0	525
48 x 30	Box	1,140	0	1,140
48 x 36	Box	25	0	25
60 x 24	Box	610	0	610

Size (inches)	Shape	Length Evaluated in Model (feet)	Length not Evaluated in Model (feet)	Total Length (feet)
60 x 48	Box	1,804	0	1,804
63.6 x 36	Box	320	0	320
66 x 36	Box	27	0	27
72 x 36	Box	715	0	715
72 x 66	Box	640	0	640
78 x 30	Box	327	0	327
75.6 x 42	Box	382	0	382
96 x 36	Box	1,534	0	1,534
96 x 48	Box	338	0	338
120 x 48	Box	5,908	0	5,908
120 x 60	Box	4,812	0	4,812
14 x 23	Elliptical	3,275	2,670	5,944
19 x 30	Elliptical	3,281	450	3,731
24 x 38	Elliptical	7,249	11	7,260
29 x 45	Elliptical	1,956	116	2,072
34 x 53	Elliptical	2,827	32	2,859
38 x 60	Elliptical	571	0	571
43 x 68	Elliptical	1,202	0	1,202
48 x 76	Elliptical	1,401	0	1,401
63 x 98	Elliptical	4,744	0	4,744
72 x 113	Elliptical	770	0	770

3.4 RUNOFF CONDITIONS

Stormwater runoff generated from the land surface varies with the magnitude of impervious area, soil type, and topography.

3.4.1 Land Use

The East Isthmus Yahara watershed is a highly developed urban area with a significant portion being residential. The land use data provided by the City, is categorized into seven general types for the Isthmus and summarized in Table 3-4. Figure 14-4 in Section 14.0 includes as a visual representation of the land use.

Table 3-4: Existing Land Use

Land Use Type	Area (acres)	Percent of Total Area (%)
Residential	612.4	37
Institutional	12.1	2
Commercial	335.0	20
Industrial	226.8	14
Mixed Use	80.9	5
Open Space/Parks	149.4	9
Street Right of Way	218.2	13
Total	**1634.8**	**100**

3.4.2 Impervious Area

The City of Madison's 2020 Impervious Cover layer was used to define pervious and impervious areas. The watershed is approximately 63% impervious, including streets, parking lots, and building roofs. Table 3-5 summarizes the watershed imperviousness.

Table 3-5: Watershed Surface Composition

Surface Type	Area (acres)
Pervious	604.8
Impervious	1030.0
Total	**1634.8**

3.4.3 Soil Type

Hydrologic Soil Group (HSG) classifications from the Natural Resources Conservation Service (NRCS) Soil Survey for Dane County are used in the model to estimate infiltration parameters for pervious surfaces. The NRCS classifies some soils in the watershed as type B/D and C/D. These classifications indicate that when saturated, the soils share characteristics similar to a type D soil. For this analysis, the soils classified as type B/D and C/D, were reclassified as type D. Table 3-6 summarizes the East Isthmus Yahara watershed HSG groups.

Table 3-6: Summary of Hydraulic Soil Groups for Pervious Surfaces

HSG	Pervious Area (acres)	Percent (%)
A	0	0%
B	156.2	26%
C	77.9	13%
D	370.7	61%
Total	604.8	**100%**

Note: Table excludes impervious areas.

3.4.4 Wetlands

Wetlands were identified using data from the Wisconsin Department of Natural Resources Wetland Inventory List (last accessed 10/14/2025). The inventory includes two wetlands, an emergent/wet meadow near the intersection of North Sherman Avenue and Roth Street and the open water of Tenny Pond Lagoon in Tenny Park.

4.0 MODEL DEVELOPMENT

4.1 MODELING SOFTWARE

XPSWMM™ version 2020.1 by Innovyze was used to create a model analyzing the hydrology and hydraulics of the watershed. In December 2024, the software was updated to XPSWMM™ version 2024.2. The results from both versions of the software were compared and there were minimal differences. The 2024.2 version of the software was used for the rest of the study.

The model has both one dimensional (1D) and two-dimensional (2D) model components. The sewer flow and the Yahara River are modeled as 1D, and the overland flow and flooding are modeled as 2D.

4.2 RAINFALL FILES

The hydraulic model includes measured rainfall events for calibration and eight 24-hour design rainfall events to evaluate the flood risk in accordance with the City's flood mitigation targets.

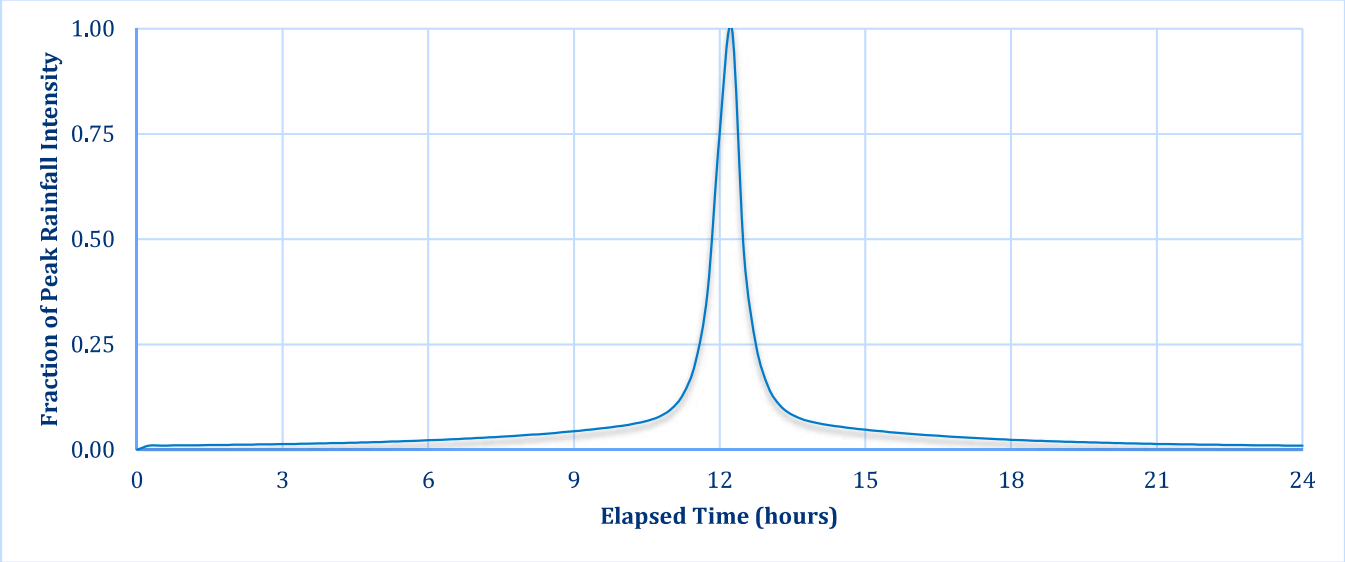
4.2.1 Design Rain Events

All the design rainfall events use the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 rainfall depths are listed in the City's Modeling Guidance with the MSE4 24-hour rainfall distribution in 15-minute increments. The MSE rainfall distribution is a nested distribution in which the rainfall intensity for each smaller increment of time is nested within each other (e.g. the 100-year, 15-minute rainfall is nested within the 100-year, 30-minute rainfall, which is nested within the 100-year, 60-minute rainfall, etc.). Table 4-1 lists the modeled design storms, their 24-hour rainfall depth, and their peak rainfall intensity. Figure 4-1 shows the unit design storm hyetograph applied to the design rainfall depths.

Table 4-1: Design Storm Rainfall Depths

Recurrence Interval (years)	Percent Annual Chance	Rainfall Depth (inches)	Peak 15-minute Rainfall Intensity (in/hr)
1	100%	2.5	1.7
2	50%	2.8	1.9
5	20%	3.5	2.4
10	10%	4.1	2.8
25	4%	5.0	3.4
50	2%	5.7	3.9
100	1%	6.6	4.5
500	0.2%	8.8	6.0

Figure 4-1: Design Storm Unit Hyetograph



4.2.2 Measured Rain Events

The City has three rain gages within or near the East Isthmus Yahara Watershed. The two gages within the watershed are McPike Park and Eken Park, and the gage in Olbrich Park is 0.2 miles east of the watershed boundary. The monitoring period for this study extended from June 2020 to September 2021 with monitoring paused during the winter months. The summer of 2020 had limited rainfall and the data was not used in the calibration of the model. Table 4-2 includes the rainfall events greater than 1 inch recorded during the 2021 monitoring period at McPike Park.

Table 4-2: Measured Rain Events greater than 1 inch

Date (2021)	Total Rainfall (inches)*	Peak Hour Rainfall (inches)	Duration (hours)
April 16	1.17	1.17	0.6
May 3	1.13	0.74	4.7
June 18	1.83	1.09	2.8
July 14	1.31	0.86	20.1
August 7	1.46	1.41	5.8
August 9	1.16	0.58	8.1
September 13	2.49	1.45	10.6
September 20	1.03	0.67	3.67

* Rainfall logged at McPike Park rain gage.

4.3 HYDROLOGIC MODEL DEVELOPMENT

Hydrology is the relationship between rainfall and runoff. The basis for the hydrologic method and the acceptable range of model inputs is defined in the City's Modeling Guidance.

4.3.1 SWMM Runoff Description

Hydrologic calculations for each subwatershed in the model were executed in the hydraulic model using the Storm Water Management Model (SWMM) runoff non-linear reservoir method. The non-linear reservoir method uses drainage area size, width, slope, imperviousness, and soil infiltration parameters to calculate runoff for a rain event. Runoff is loaded to nodes in the 1D portion of the hydraulic model.

4.3.2 Subwatershed Input Data

A drainage area was defined for every inlet in the East Isthmus Yahara watershed using the 2016 DEM and an automated process in GIS. The automated drainage area delineations were reviewed and modified as needed. After the initial delineation, drainage areas tributary to private or non-modeled inlets were merged with the closest downstream modeled inlet area. The hydraulic model includes 773 subwatersheds shown in Figure 14-5 in Section 14.0.

4.3.2.1 Area

The subwatershed delineation yielded the spatial polygons shown in Figure 14-5 in Section 14.0.
The subwatersheds range in size from 0.004 to 45.6 acres, with a median area of 2.11 acres.

4.3.2.2 Impervious Area

Hydrologic input parameters were calculated for each subwatershed, which were divided into three subcatchments based on surface type and runoff routing, including:

- Directly connected impervious area (DCIA). Impervious area that drains directly to a storm sewer.
- Indirectly connected impervious area (non-DCIA). Impervious area that drains over a pervious surface prior to entering a storm sewer.
- Pervious area. Areas that allow infiltration, such as lawn area.

The different areas were delineated using the WinSLAMM GIS polygon layer. The layer included the type of impervious surface (roof, road ROW, landscaped area, etc), whether the area was connected/disconnected, and the type of soil. Additional information about the WinSLAMM ground cover layer is included in Appendix G. Figure 14-6 in Section 14.0.

Table 4-3 summarizes DCIA and non-DCIA areas within the watershed.

Table 4-3: Directly and Indirectly Connected Impervious Area Summary

Impervious Area Type	Impervious Area (acres)	Portion of Impervious Area (%)
DCIA	788.6	77
non-DCIA	241.4	23
Total	**1030.0**	**100.0**

4.3.2.3 Width

The subwatershed width defines the general shape of a subwatershed and the maximum distance runoff travels to reach the subwatershed outlet and primarily impacts peak flow rate predicted by the model. Each of the three subcatchments (DCIA, non-DCIA, and pervious areas) that comprise the subwatershed area have the same width.

To calculate the widths, the longest flow path in each subwatershed was calculated using GIS. Then the total area of each subwatershed was divided by the longest flow path for the width. Widths were adjusted during model calibration, which found the peak flow rates to be related to the street (DCIA) width.

4.3.2.4 Slope

The subwatershed slope defines how quickly runoff reaches the subwatershed outlet. Like the width, the slope primarily impacts peak flow rate but is more well defined than the width. A slope for each subwatershed, uniformly assigned to all three subcatchments, was calculated by dividing the difference between the high and low elevation points by the longest flow path length within the subwatershed.

4.3.2.5 Infiltration

The pervious subcatchment of each subwatershed was assigned infiltration characteristics based upon an area-weighted composite HSG soil type for the subwatershed. The City's Modeling Guidance requires the Horton infiltration method to be used. The composite infiltration parameters were added to the model in 10% increments (e.g. 10% HSG B and 90% HSG C or 30% HSG C and 70% HSG D, etc.). Table 4-4 shows the base Horton infiltration parameters used to develop the area-weighted composite parameters. Appendix B summarizes the composite soil group parameters in the Modeled Horton Infiltration Data Table.

Table 4-4: Horton Infiltration Parameters

HSG Group	Maximum Infiltration Rate (in/hr)	Minimum Infiltration Rate (in/hr)	Decay Rate (1/hr)	Dry Days
A	4.0	1.0	4.0	3.1
B	2.0	0.5	4.0	4.4
C	1.0	0.2	4.0	7.0
D	0.5	0.1	4.0	9.9
Water	0.0	0.0	0.0	0.0

4.3.2.6 Antecedent Moisture Conditions

Antecedent moisture conditions define the initial saturation levels of the soil at the beginning of a storm event. In conditions where the soil is saturated at the beginning of an event, maximum infiltration rates and depression storage are reduced. Conversely, in dry conditions the maximum infiltration rate and depression storage are higher than normal. For the purposes of this study, typical antecedent moisture conditions are assumed and are represented by the parameters in Table 4-4.

4.3.2.7 Depression Storage

Surface depressions can store runoff and are accounted for in the hydraulic model in the depression storage input. The amount of runoff volume is reduced by the amount of depression storage. For design rainfall events, typical depression storage inputs generally do not impact the peak runoff rate. The City's Modeling Guidance requires each subcatchment to have a depression storage of 0.05 inches for impervious areas and 0.15 inches for pervious areas, and 25% of the subcatchment area to have zero depression storage.

4.3.2.8 Internally Drained Areas

An internally drained area is an area without a drainage outlet. No internally drained areas are in this watershed.

4.3.2.9 Runoff Routing

Runoff from DCIA and pervious subcatchments are loaded directly to a node in the 1D model network. Runoff from the non-DCIA subcatchment is routed to the pervious area subcatchment, before being loaded to the 1D network, allowing for infiltration of Indirectly connected impervious area runoff (see Section 4.3.2.2).

4.3.3 Evaporation

Evaporation is assumed to be zero during the calibration and design rainfall events.

4.4 1D HYDRAULIC MODEL DEVELOPMENT

The 1D portion of the hydraulic model includes storm sewers, manholes, inlets, and outfalls. The Yahara River also was modeled as a 1D channel with Lakes Mendota and Monona represented by 1D nodes. The hydraulic model only includes storm sewers 18 inches in diameter or greater, plus smaller pipes that are necessary for model connectivity. The modeled storm system is included in Figure 14-7 in Section 14.0. The 1D hydraulic input parameters used in the hydraulic model are summarized in Tables 1 and 2 in Appendix C.

4.4.1 Open Channel Conveyance System

The Yahara River bisects the Isthmus and has 36 outfalls draining into it. The City provided a HEC-RAS model of the river between Lakes Mendota and Monona. The cross-section data in the HEC-RAS model was updated from a 2020 bathymetric survey and was then added to the model as a 1D channel. The twenty-four Yahara River outfalls included in the model were connected to the 1D channel to recreate the backwater conditions caused by the water levels in the river. Appendix E includes additional information about tailwater analysis done along the river.

4.4.2 Closed Conduit Conveyance System

The City provided GIS storm sewer data that included alignment, invert elevations, shape, pipe size and material, as well as node data that included inlet and manhole locations. Record drawings were used to fill in missing data not found in the GIS data. If the required data was not found in either data source, the following assumptions were made to fill in the gaps:

- Missing invert elevations were interpolated between the nearest known upstream and downstream invert elevations, assuming a constant slope between the known points.
- The nearest known upstream pipe size was used when pipe sizes were missing.

A survey was conducted to measure the depth of sediment in 22 storm structures spread across the watershed. The measured depth of sediment varied, ranging from less than an inch to more than a foot. The results of that survey can be found in Appendix H. After reviewing the information, it was decided that there was not enough data to incorporate a standard level of sedimentation across the pipe network and therefore no modifications were made to incorporate sedimentation into the model.

Entrance and exit losses represent energy losses at manholes and inlets caused by the contraction and expansion of flow. In the model, the entrance and exit losses are added to storm sewers based on the manhole or inlet configuration. Table 4-5 summarizes the entrance and exit losses from the City's Modeling Guidance. Pipes discharging to outfalls at Lake Monona were assigned an exit loss of 1.0 to represent the expansion of flow into a still body of water. There are no outfalls discharging to Lake Mendota.

Table 4-5: Entrance and Exit Loss Coefficients

Configuration	Entrance Loss Coefficients in Effluent Sewer	Exit Loss Coefficients in Influent Sewer
Straight-through manhole	0.05	0.05
45-degree bend manhole	0.25	0.25
90-degree bend manhole	0.5	0.5
Tee manhole	0.5	0.5
Cross manhole	0.5	0.5
Blind Tap	0.5	0.5

4.4.3 Inlet Capacity Analysis

Storm sewer systems include inlets, primarily along street curbs, that allow runoff from the ground surface into the storm sewer. Inlet capacity defines the maximum rate of runoff that can be conveyed into the storm sewer. In most storm sewer systems, the inlet capacity is designed to have the same level of service as the storm sewer, but that is not always the case. The number of inlets, their location, and debris on the inlet can impact observed flooding because when there is insufficient inlet capacity, runoff will collect on the street and either bypass the inlet (if on a slope) and continue as overland flow or pond if the inlet is at a low point.

Following the Modeling Guidance, inlet capacity was not evaluated as part of this study. It is possible that portions of the existing network are limited by inlet capacity and not conveyance capacity, hence are not captured by the model. Therefore, it is possible that flooding predicted by the model (or lack thereof) would underestimate actual flooding. This is likely occurring on Linden Ave. Furthermore, recommended mitigation improvements that increase conveyance capacity may need to be paired with inlet capacity improvements.

4.4.4 Detention Pond Analysis

There are no detention ponds in the East Isthmus Yahara watershed.

4.4.5 Open Water/Backwater Effects

There are two types of boundary conditions in the model. A downstream boundary condition for the outfalls that discharge to Lake Monona is used to set the downstream hydraulic grade line at Lake Monona's water surface elevation. An upstream boundary condition representing flow from Lake Mendota into the Yahara River was applied at the upstream end of the Yahara River. The Lake Monona water surface elevation and the inflow from Lake Mendota were assumed to be constant in the model simulations.

For the calibration events, the Lake Monona water surface elevation and Yahara River discharge rate represent the measured conditions during the calibration and are listed in Table 5-3.

For the design storm simulations, each design storm is simulated for four sets of boundary conditions, which are shown in Table 4-6. The boundary conditions used in the model were selected through a sensitivity

analysis of 24 sets of boundary conditions in a HEC-RAS model that had been previously prepared, which runs more quickly than the XPSWMM model. It would have been impractical to run all 24 sets of boundary conditions in the XPSWMM model. The four sets that were selected provide a range of the more common results of the original 24 simulations, representing various conditions including the more extreme. The memorandum that describes the boundary condition selection is in Appendix E.

Table 4-6: 1D Boundary Conditions for Design Storm Simulations

Scenario	Lake Monona WSE (feet)	Yahara River Flow Rate (cfs)
1	846.0	250
2	846.0	700
3	847.5	700
4	848.5	700

4.5 2D HYDRAULIC MODEL DEVELOPMENT

The 2D portion of the hydraulic model is used to represent overland flow, both along the streets and through other man-made or natural conveyance routes. The 2D model utilizes topographic data and 2D land use to simulate the overland flow. The 2D portion of the model is connected to the 1D portion of the model at nodes in 1D model to allow water to move between the two systems.

4.5.1 Topographic Data

All areas of the watershed are included in the 2D portion of the model. An ASCII grid file with the East Isthmus Yahara watershed topography was referenced within the 2D Job Control settings. Referencing the DEM externally instead of creating a DTM within the model allows for faster run times for model scenarios.

The ASCII grid was updated in 2022 and 2024. The 2022 update updated the topography using the 2022 LiDAR data provided by the City in October 2022. The 2024 update included revised terrain around the Hartmeyer Development which included the proposed grading and detention areas. The revised terrain also extended south along Ruskin Street between Commercial Avenue and Roth Street.

4.5.2 2D Grid

The 2D grid is used to complete the 2D calculations and display the flooding results. XPSWMM uses square grid cells, but the grid can be rotated to align with overland channels, predominantly streets in this watershed. In the East Isthmus Yahara model, the 2D grid was rotated to align with East Washington Avenue. However, when the results were exported to GIS, they did not include the rotation due to a software limitation.

Water that enters the grid moves between grid cells based on the elevations assigned to the grid cell from the DTM. The 2D grid covers the entire watershed. A 20- by 20-foot grid was used in model simulations, which allows for multiple grid cells to span the ROW providing more precise overland flow calculations and creating

more detailed flooding results along streets and near buildings. Smaller grid cells were considered, however the runtime was excessive.

4.5.3 2D Land Use and Roughness Values

Land use was defined throughout the 2D grid, and each land use was assigned a Manning roughness coefficient representing the ability to convey overland flow. The lower the roughness coefficient the more effective overland flow conveyance.

Surfaces within the watershed were attributed to one of four 2D land use classifications: roadway, non-roadway impervious, pervious silty soil (HSG Type B/C), and pervious clay soil (HSG Type D) using the City's SLU dataset. There are no pervious sandy soils (HSG Type A) within the watershed. The land use polygons for each classification were georeferenced into the model, with the affected variables being roughness coefficients. Table 4-7 provides the 2D land use roughness.

Table 4-7: 2D Land Use Roughness Coefficients

2D Land Use	Manning's Roughness Coefficient
Roadway	0.016
Non-roadway Impervious	0.100
Buildings	Inactive/No Flow Area
Pervious Silty & Clay Soil	0.240

4.5.4 Inactive Areas

Inactive areas are portions of the hydraulic model that cannot convey flow. Physical barriers, such as buildings or walls, are common inactive areas. Stormwater flowing along the 2D surface redirects around inactive areas. Building footprints from WinSLAMM GIS data were added to the model as inactive areas. The buildings layer was updated in 2024 to include The View and The Victoria, both large buildings constructed as part of the Hartmeyer Development along Ruskin Street between Commercial Avenue and Roth Street.

4.5.5 1D/2D Interface

All runoff is loaded to the 1D portion of the model, but water can be exchanged between the 1D and 2D portions of the model in both directions at 1D model nodes and at 1D/2D interface lines.

At 1D model nodes, water in the 1D system spills onto the 2D grid when the 1D hydraulic grade line (HGL) exceeds the spill crest of a structure, assuming the structure is not sealed. Water can flow back from the 2D grid to the 1D system when there is inundation within a grid cell containing an inlet and capacity within the storm sewer to convey additional flow.

4.5.6 2D Boundary Conditions

In the model, 2D boundaries were created at both lakes and along the Yahara River. They vary based on the scenarios described in Table 4-6 . The 2D boundaries and allow for overland flow to flow out of the model and into the water bodies. At downstream Lake Monona, the 2D boundary conditions were set the same as the 1D boundary conditions and the upstream Lake Mendota was set 4.5 feet higher than Lake Monona. The 2D boundary along the Yahara River was assumed to consistent the entire length of the river and was set to 0.5 feet higher than Lake Monona. Table 4-8 summarizes the data for each boundary condition scenario.

Table 4-8: 2D Boundary Conditions for Design Storm Simulations

Scenario	Lake Monona WSE (feet)	Yahara River WSE (feet)	Lake Mendota WSE (feet)
1	846.0	846.5	850.5
2	846.0	846.5	850.5
3	847.5	848	852
4	848.5	849	853

5.0 MODEL CALIBRATION

Calibration is the process by which model inputs are adjusted such that model results reasonably match the measured data. A calibrated model has less uncertainty than an un-calibrated model.

Flow and rainfall monitoring was completed in the East Isthmus Yahara watershed to provide data for calibration. Calibration was completed for flow volume, rate, and depth at two locations and for depth at three locations.

5.1 BASEFLOW CONDITIONS

The baseflow simulated in the sewers at the calibration locations is zero based on the flow monitoring data.

5.2 RECORDED RAINFALL AND FLOW DATA

5.2.1 Monitoring Locations

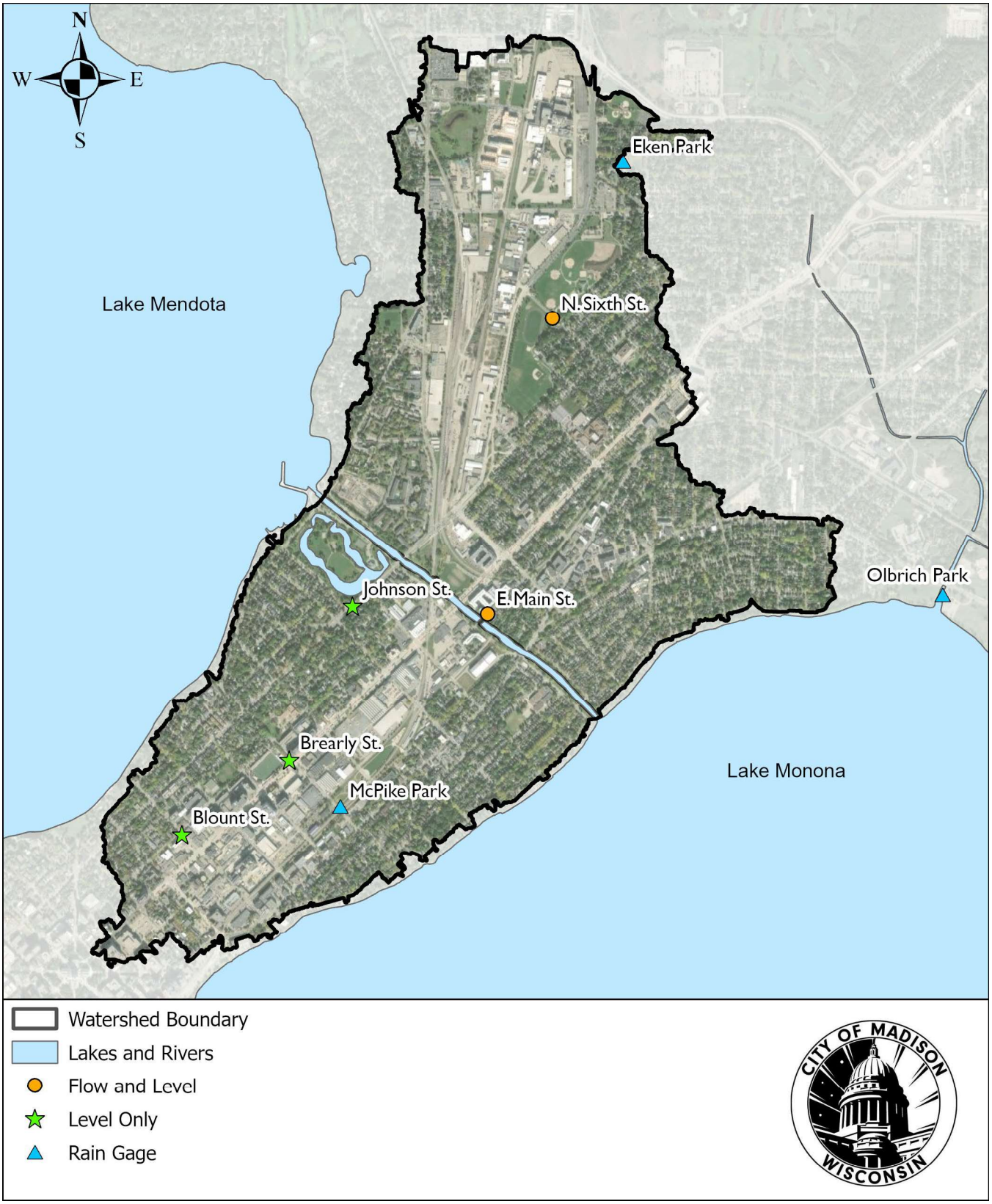
Flow meters were placed in five locations within the watershed to provide data for calibration. Three rain gauges in and near the watershed were used to correlate the measured flow data to rainfall. The flow monitoring locations were chosen in areas of historical flooding or because the location represented a relatively uniform location representative of the general characteristics of the watershed.

Monitoring occurred from June 2020 to September 2021, exclusive of the winter months from November through March. Level recorders were added at Blount, Brearly, and Johnson Streets southwest of the Yahara River and two area/velocity probes were installed on East Main and North Sixth Streets on the northeast side of the Yahara River. Table 5-1 lists the flow and rainfall monitoring locations.

Table 5-1. Flow and Rainfall Monitoring Locations

Monitoring Location	Meter Name	Tributary Area (acres)	Data Collected
Blount Street	--	30	Water Level
Brearly Street	EIY03	11	Water Level
Johnson Street	EIY07	55	Water Level
East Main Street	EIY02	26	Flow, Velocity, Water Level
North Sixth Street	EIY01	22	Flow, Velocity, Water Level
McPike Park	--	--	Rainfall
Eken Park	--	--	Rainfall
Olbrich Park	--	--	Rainfall

Figure 5-1. Map of Flow and Rainfall Monitoring Locations



5.2.2 Calibration Events

Three storms were chosen as calibration events based on rainfall depth, peak rainfall intensity, and quality of flow monitoring data. Since the monitoring period in 2020 was characterized by dry conditions with limited rainfall and flow monitoring difficulties, all three storms that were selected, May 3, June 18, and August 7, occurred in 2021.

Rainfall can vary significantly across a larger watershed, so rainfall from three rain gages was used in calibration. Each modeled subwatershed was assigned to the nearest rain gauge using a Theissen polygon approach, shown in Figure 14-9 in Section 14.0. Table 5-2 summarizes the rainfall data from the three gages for the calibration events.

Table 5-2. Rainfall Data for Calibration Events

Event	Total Rainfall (inches)			Peak Hour Rainfall Intensity (inches per hour)			Approx. Recurrence Interval+
	McPike Park	Eken Park	Olbrich Park	McPike Park	Eken Park	Olbrich Park	McPike Park
May 3, 2021	1.13	0.80	-*	0.74	0.50	-*	100% annual chance
June 18, 2021	1.83	1.70	1.83	1.09	1.10	1.11	50% annual chance
August 7, 2021	1.46	0.87	1.20	1.41	0.83	0.87	100% annual chance

* The rain gage at Olbrich Park did not log a rain event on May 3, 2021. Subwatersheds assigned to the Olbrich Park rain gauge for the other calibration events were assigned to one of the remaining gauges for this event.
+ Approximate Recurrence Intervals were estimated using the peak rainfall intensity.

5.2.3 USGS Data

Flooding in the East Isthmus Yahara watershed is known to be impacted by flows in the Yahara River and the level of Lake Monona. Data recorded by the United States Geological Survey (USGS) was used to approximate the flows in the Yahara River and the level of Lake Monona for each calibration event. Table 5-3 lists the Yahara River discharge and Lake Monona water surface elevation for the calibration events. The flow rates and lake levels added to the model are the daily mean on the days of the events. The model dynamically routes runoff from the watershed through the Yahara River adding to the discharge input at the upstream end of the river entering from Lake Mendota. While Lake Monona levels fluctuate, they typically fluctuated over a period of days rather than hours as simulated in the model.

Table 5-3. USGS Gage Data for Yahara River and Lake Monona

Event	Yahara River Daily Mean Discharge (cfs) USGS Gaging Station 05428500	Lake Monona Daily Mean WSE (feet NAVD88) USGS Gaging Station 054290000
May 3, 2021	92.7	844.76
June 18, 2021	48.5	844.91
August 7, 2021	67.5	844.84

5.3 CALIBRATION PROCESS

For stormwater collection systems, the calibration process begins by calibrating the hydrology (flow volume and peak flow rate) first. Then the hydraulic calibration, the flow depth or hydraulic grade line, is calibrated.

The two locations where both depth and velocity were recorded were calibrated first to establish the hydrologic conditions in the metered areas, which were the applied to the un-metered areas of the watershed.

Once the hydrologic conditions were applied throughout the watershed, the flow depth at all five monitoring locations could be calibrated. Modeled depth may be impacted by pipe and channel roughness coefficients, minor losses at manholes, and sediment depth in the sewers. At the level meters on Blount Street, Brearly Street, Johnson Street, the sewer invert was below the water surface elevation of either the Yahara River or Lake Monona. In these cases, the water depths measured when the meters were installed, were used to confirm the depths recorded at the meters during no rainfall conditions. Adjustments of up to 0.5 feet were made at the Brearly Street meter so that the depth and boundary condition matched during no rainfall conditions.

Each of the model inputs and the adjustments made during calibration are summarized in the list below.

5.3.1 Model Inputs Adjusted during Calibration

- Area. Drainage areas were initially delineated to all individual catch basins in the City's GIS dataset. During calibration, the delineation and subsequent areas were only adjusted to account for private catch basins not in the City's GIS dataset or to keep individual buildings within a single subwatershed.
- Width. The width was used to calibrate peak flow rate. Madison's modeling guidance requires the width of all three subcatchments within a subwatershed to have the same width. The width of the directly connected impervious area is most important to the peak flow rate.
- Maximum and minimum infiltration rates. Infiltration rates were area-weighted and were based on the City's modeling guidance. Maximum infiltration rates were not adjusted but minimum infiltration rates were adjusted to aid in the calibration of flow volume. Many of the soils in the watershed are classified as urban soils by NRCS, which may not be similar to neighboring soils that have hydrologic soil group classifications.

5.3.2 Model Inputs Not Adjusted during Calibration

- Imperviousness (Total). Not adjusted because impervious cover mapping available in the watershed.
- Directly connected impervious area. Based on the impervious cover mapping. Not adjusted as part of the calibration.
- Slope. Not adjusted during calibration because it is a term in the same equation as the width and the average slope data estimated from topographic data are more accurate than the width.
- Impervious and pervious area Manning roughness coefficients. Set to 0.016 and 0.20, respectively based on the City's modeling guidance. These values were not changed during the calibration.

- Impervious and pervious area depression storage. Set to 0.05 and 0.15 inches, respectively, based on the City's modeling guidance. The City's modeling guidance sets the fraction of impervious area with zero depression storage at 25%. These values were not changed during the calibration.
- Subarea routing. The non-directly connected impervious area was routed to the pervious area as defined in the hydraulic modeling guidance. These values were not changed during calibration as it was based on the impervious cover mapping.
- Infiltration decay constant. Set to 4.0 in/hr based on the City's modeling guidance.
- Manning roughness coefficients for pipes and channels. Selected based on pipe material or channel condition following the City's modeling guidance. No adjustments were made during the calibration.
- Pipe sedimentation. Many of the pipes in the watershed are known to have sediment deposition. Pipe sedimentation was evaluated during the process of building the model, but ultimately it was decided that there was not enough data to incorporate a standard level of sedimentation across the pipe network. See Section 4.4.2 for more details. No adjustments were made during the calibration.

While several of the variables were adjusted slightly, the subwatershed widths had to be reduced significantly to match the measured peak flow rate. The widths were systematically reduced by 50% until the widths were approximately 15 to 30 feet, which corresponds to the typical width of a street. The street comprises most of the directly connected impervious area and factors greatly into the modeled peak flow rate.

In the upper NE corner of the watershed, the widths were increased. After discussions with the City, it was decided that the model was not predicting the flooding that had been observed. Therefore, the previously calibrated widths were increased by 25% in this section of the watershed in the Atwood area.

5.4 CALIBRATION RESULTS

For purposes of this project, the model is considered well calibrated if the overall average model bias for water surface elevations is within +/- 5% with reasonable effort made to minimize the largest absolute error while at the same time balancing that effort with the relative importance of the model results at each monitoring site location. The largest absolute error at each monitored location is defined as +/- 25%. Where the calibration could not be achieved within these tolerances, the reasons and potential impacts were described.

Calibration results at each monitoring location are included in Table 5-4 through Table 5-8 and in Figure 5-2 through Figure 5-10. The figures show an overview of calibration by plotting the measured data versus the modeled data. On these figures, a perfect calibration would show all the data points on the blue diagonal (1:1 line) where measured and modeled values are equal.

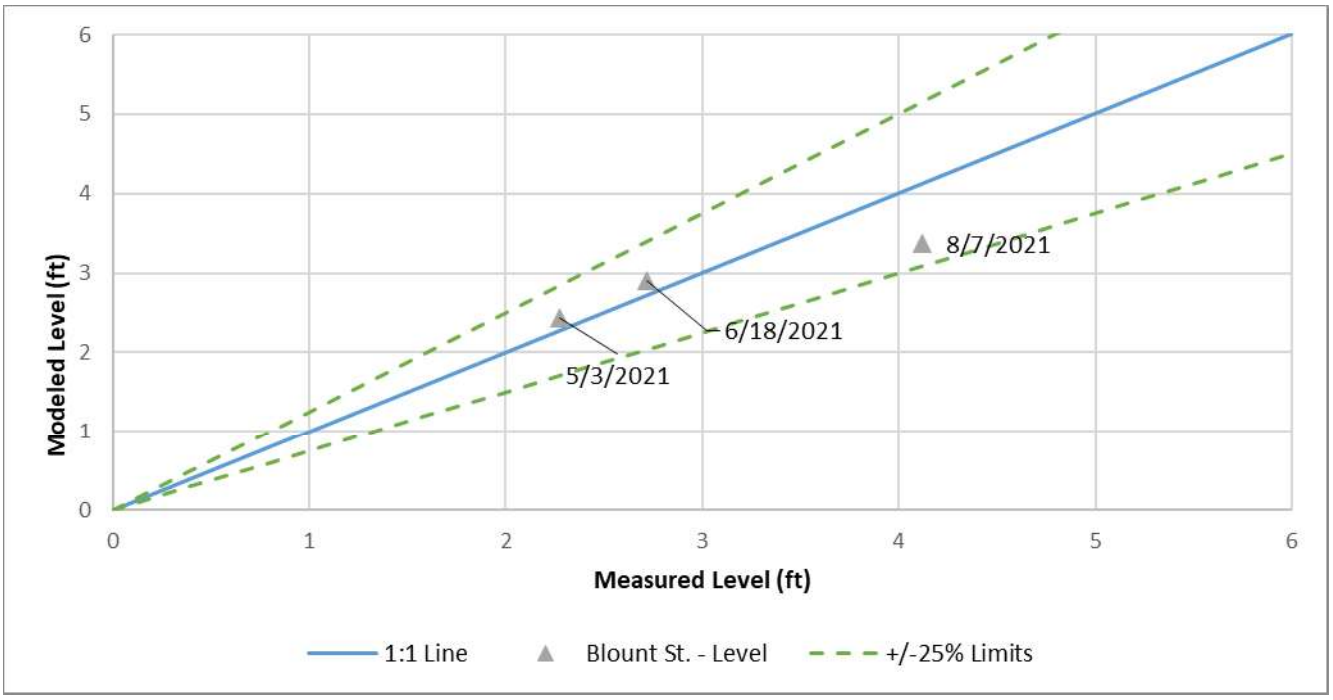
5.4.1 Blount Street

The Blount Street meter recorded level only and was greatly impacted by the Lake Monona water surface elevation because the meter elevation was similar to the lake's water surface elevation. The tributary area to the meter was 30 acres. The model overestimated depth at the site for two of the three storms; however, all three events were withing the +/- 25% tolerance.

Table 5-4. Blount Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Peak Level (feet)	2.27	2.72	4.12
Modeled Peak Level (feet)	2.44	2.90	3.37
Difference (%)	+7	+7	-18

Figure 5-2: Blount Street Level Calibration Plot



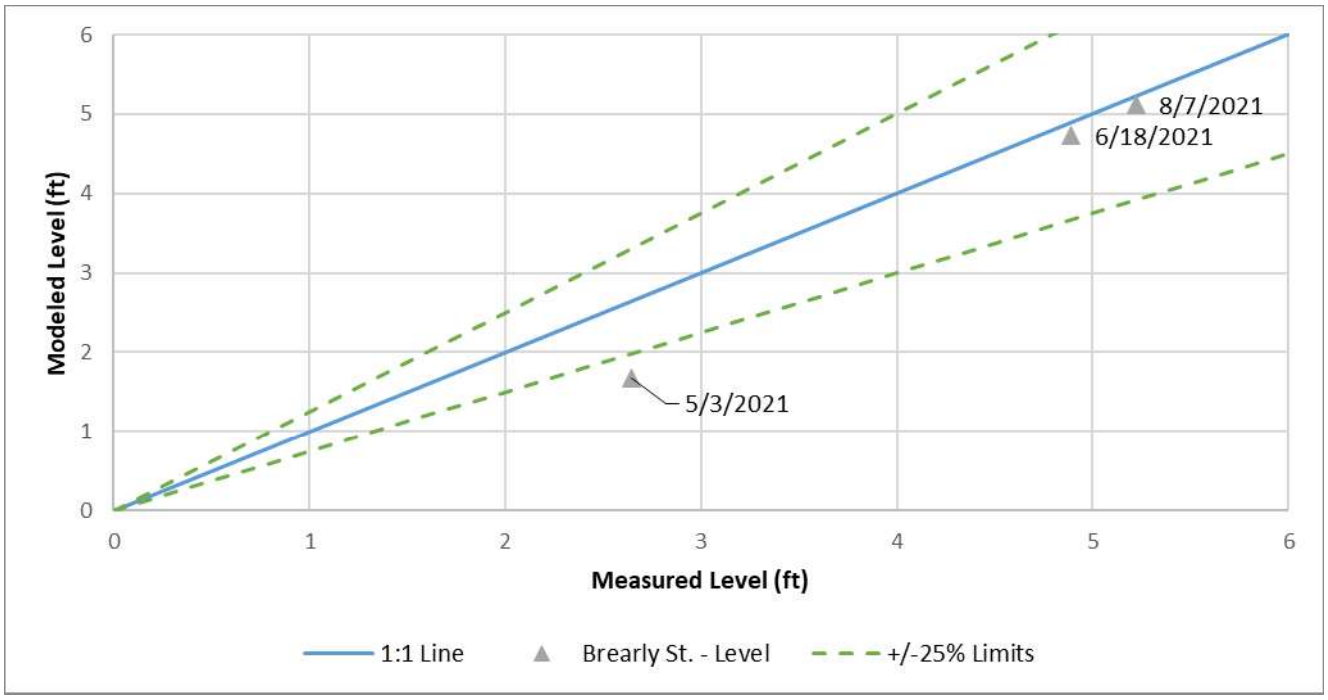
5.4.2 Brearly Street

The Brearly Street meter recorded level only and the tributary area to the meter was approximately 11 acres. During the May 3, 2021 event, the model underestimated depth at the site resulting in less projected flooding once the hydraulic grade line reaches the ground surface. The model results had a similar shape as the metered results however the peak depth was lower in the modeled results.

Table 5-5. Brearly Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Peak Level (feet)	2.64	4.89	5.22
Modeled Peak Level (feet)	1.68	4.73	5.12
Difference (%)	-36	-3	-2

Figure 5-3: Brearly Street Level Calibration Plot



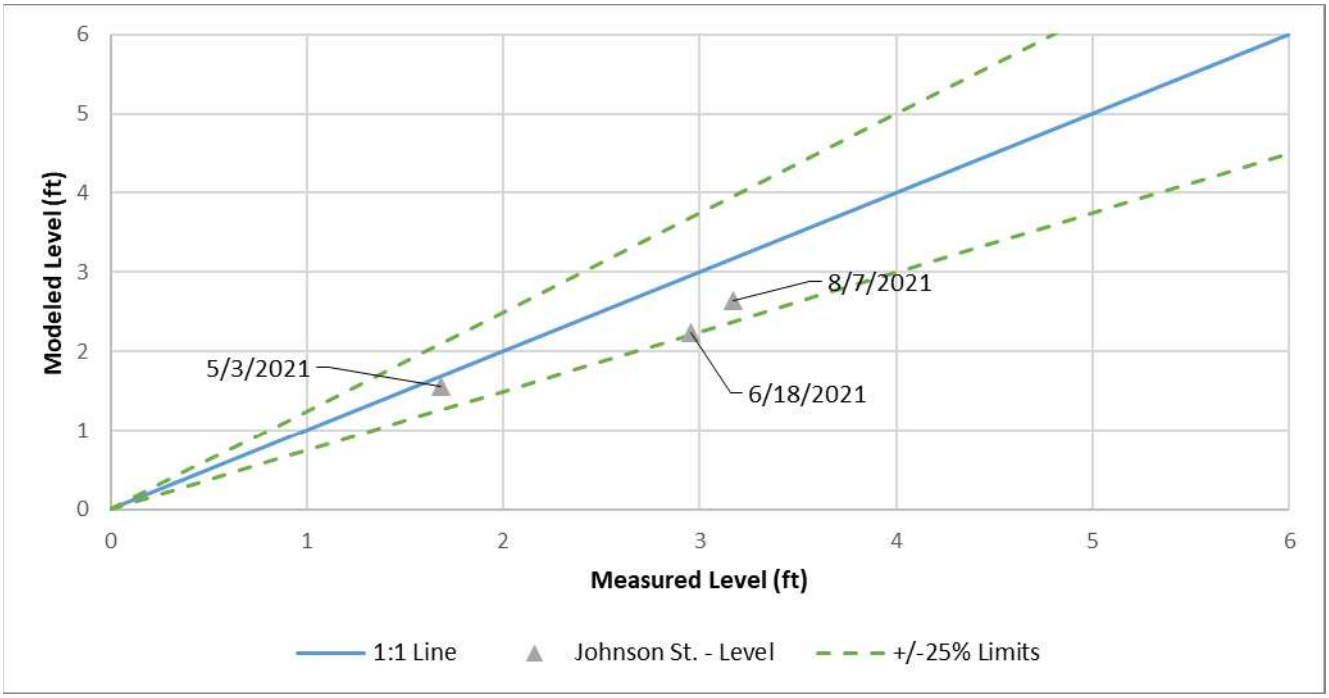
5.4.3 Johnson Street

The Johnson Street meter recorded level only and had a tributary area of approximately 55 acres. The model underestimated depth at the site but the modeled and measured levels were all within the calibration tolerances.

Table 5-6. Johnson Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Peak Level (feet)	1.68	2.96	3.17
Modeled Peak Level (feet)	1.56	2.24	2.64
Difference (%)	-7	-24	-17

Figure 5-4: Johnson Street Level Calibration Plot



5.4.4 East Main Street

Both velocity and depth were recorded at the East Main Street meter and were used to calculate a measured flow rate and volume. The tributary area to the meter is 26 acres.

The data collected for the May 3 event was difficult to calibrate as the rain gage assigned to most of the tributary area, Olbrich Park, did not log this event. For the June 18 and August 7 events, the depth at the monitoring location was tied closely to the Yahara River level as was well calibrated. However, only the June 18 event provided quality volume and flow rate data for calibration because the flow rates and volume measured during the August 7 storms were unrealistically low for the contributing drainage area and the amount of rainfall received. No level of calibration was able to match all three events.

Table 5-7. East Main Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Volume (cubic feet)	54,700	42,000	5,700
Modeled Volume (cubic feet)*	27,500	58,400	41,000
Difference (%)	-50	+39	+619
Measured Peak Flow Rate (cfs)	10.97	9.48	4.44
Modeled Peak Flow Rate (cfs)	6.7	8.79	13.61
Difference (%)	-39	-7	+206
Measured Peak Level (feet)	1.52	1.93	2.05
Modeled Peak Level (feet)	1.08	2.08	2.08
Difference (%)	-29	+8	+2

**Modeled volumes do not include volume past the peak time of measured data*

Figure 5-5: East Main Street Volume Calibration Plot

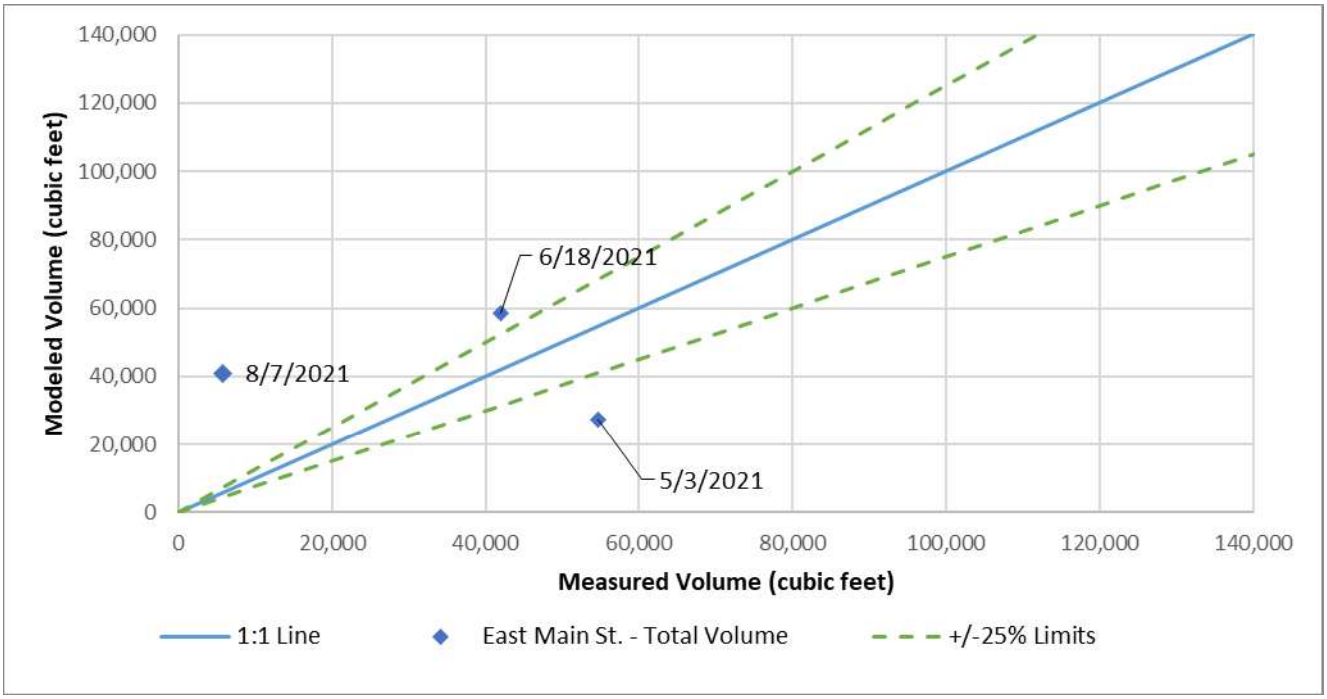


Figure 5-6: East Main Street Peak Flow Rate Calibration Plot

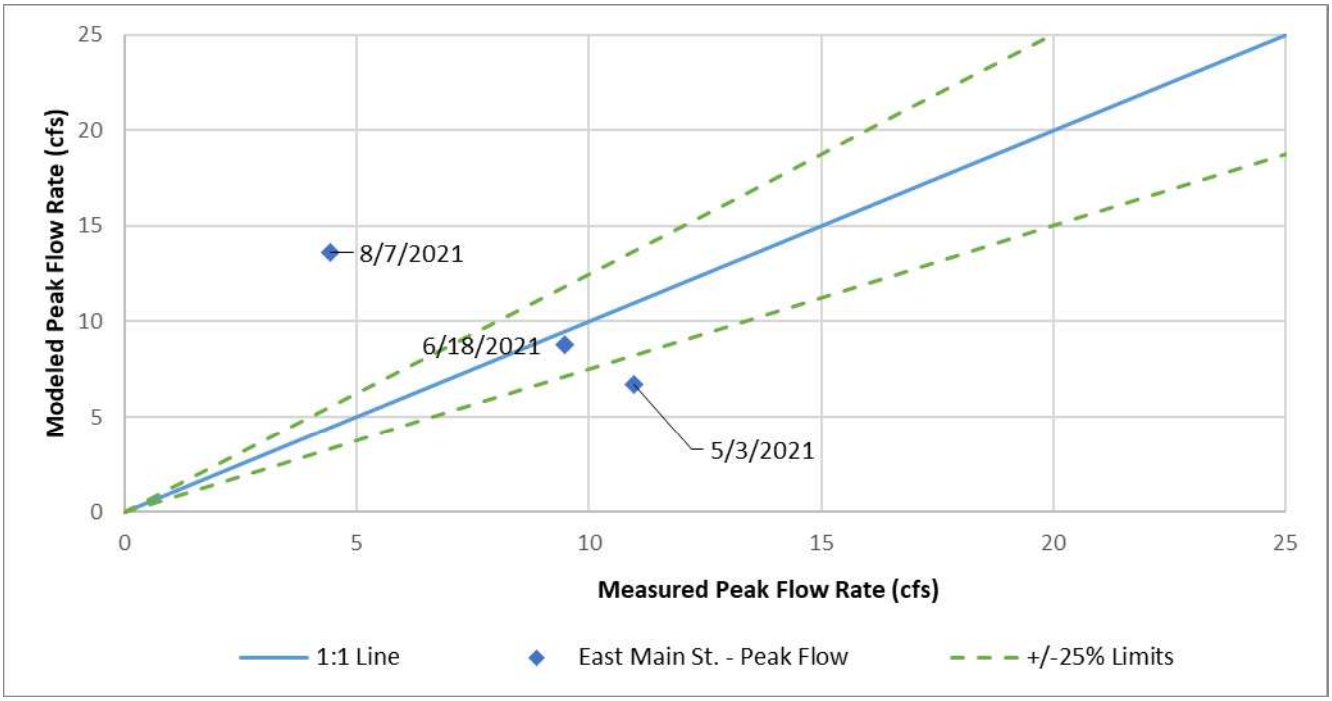
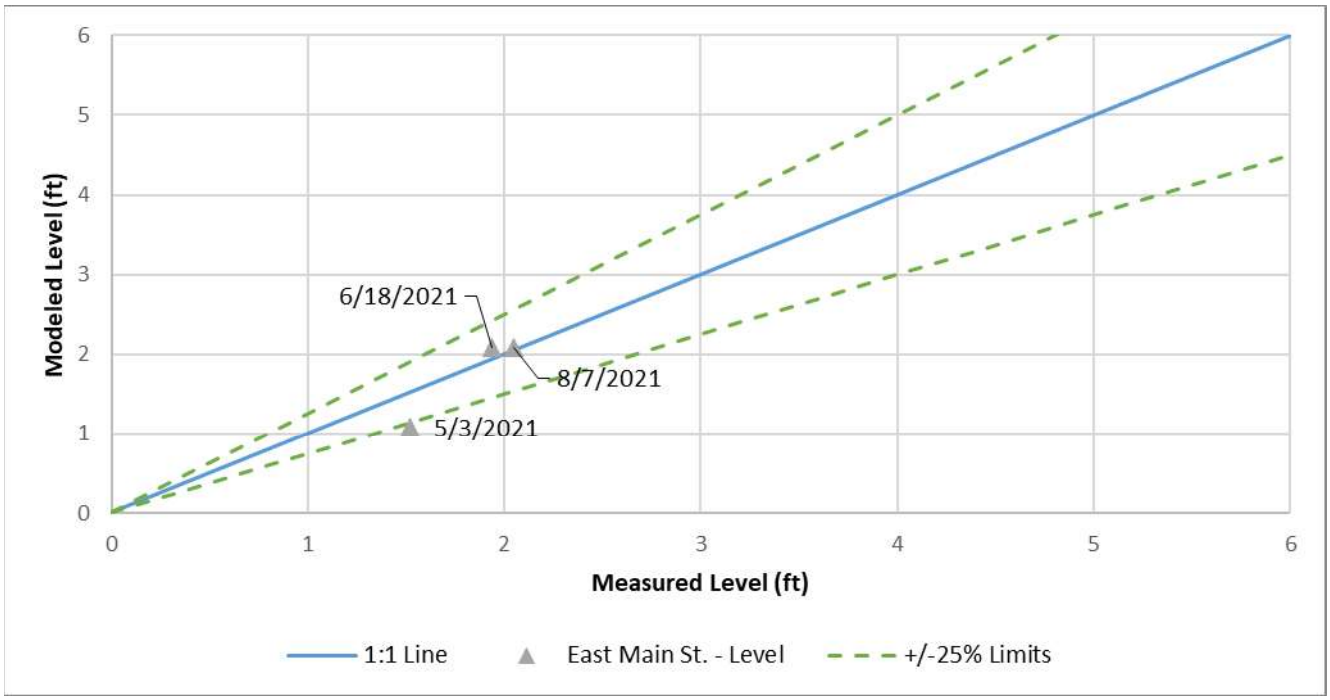


Figure 5-7: East Main Street Level Calibration Plot



5.4.5 North Sixth Street

Both velocity and depth were recorded at the North Sixth Street meter and were used to calculate a measured flow rate and volume. The tributary area to the meter is 22 acres.

The August 7 storm was calibrated within the acceptable tolerances for the volume, flow rate, and level. Two of the three storm events were calibrated within the acceptable tolerances for volume and level. No level of calibration was able to match all three events.

Table 5-8. North Sixth Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Volume (cubic feet)	5,700	13,700	37,300
Modeled Volume (cubic feet) *	4,200	13,800	31,800
Difference (%)	-26	+1	-15
Measured Peak Flow Rate (cfs)	10.26	13.28	20.23
Modeled Peak Flow Rate (cfs)	6.19	19.30	19.55
Difference (%)	-40	45	-3
Measured Peak Level (feet)	1.48	3.54	2.24
Modeled Peak Level (feet)	1.42	2.16	2.20
Difference (%)	-4	-39	-2

**Modeled volumes do not include volume past the peak time of measured data*

Figure 5-8: North Sixth Street Volume Calibration Plot

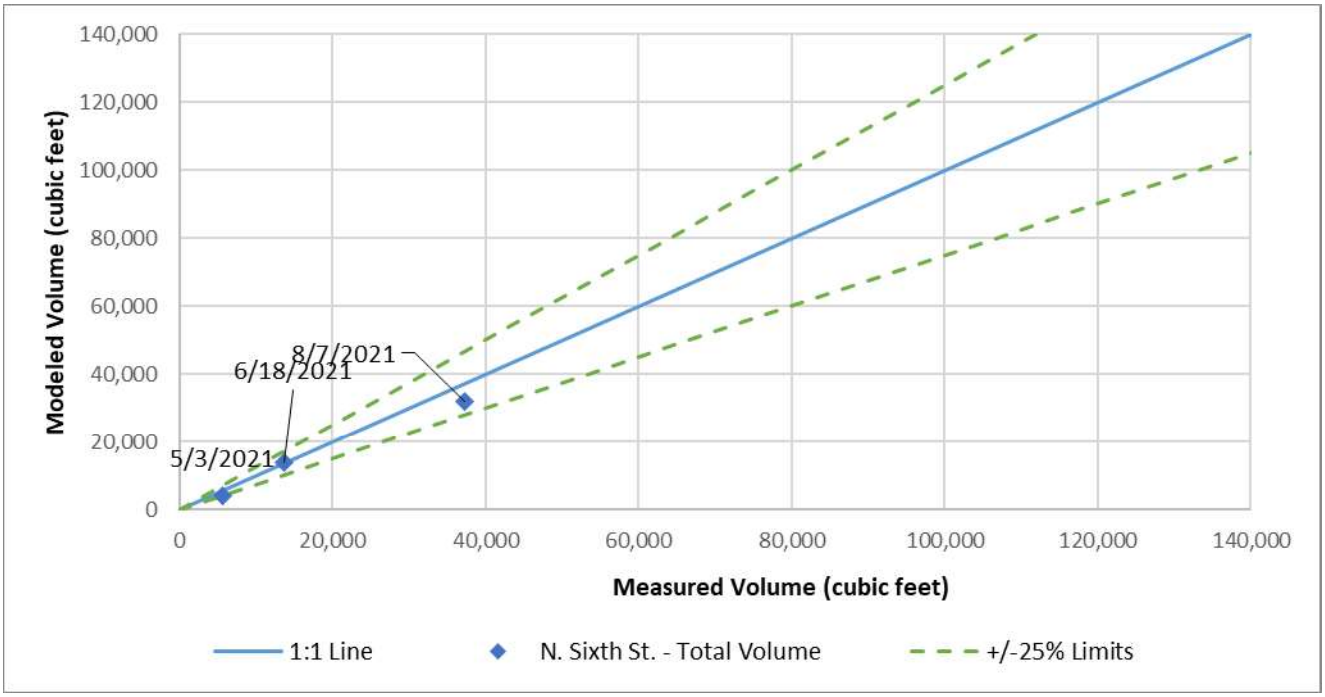


Figure 5-9: North Sixth Street Peak Flow Rate Calibration Plot

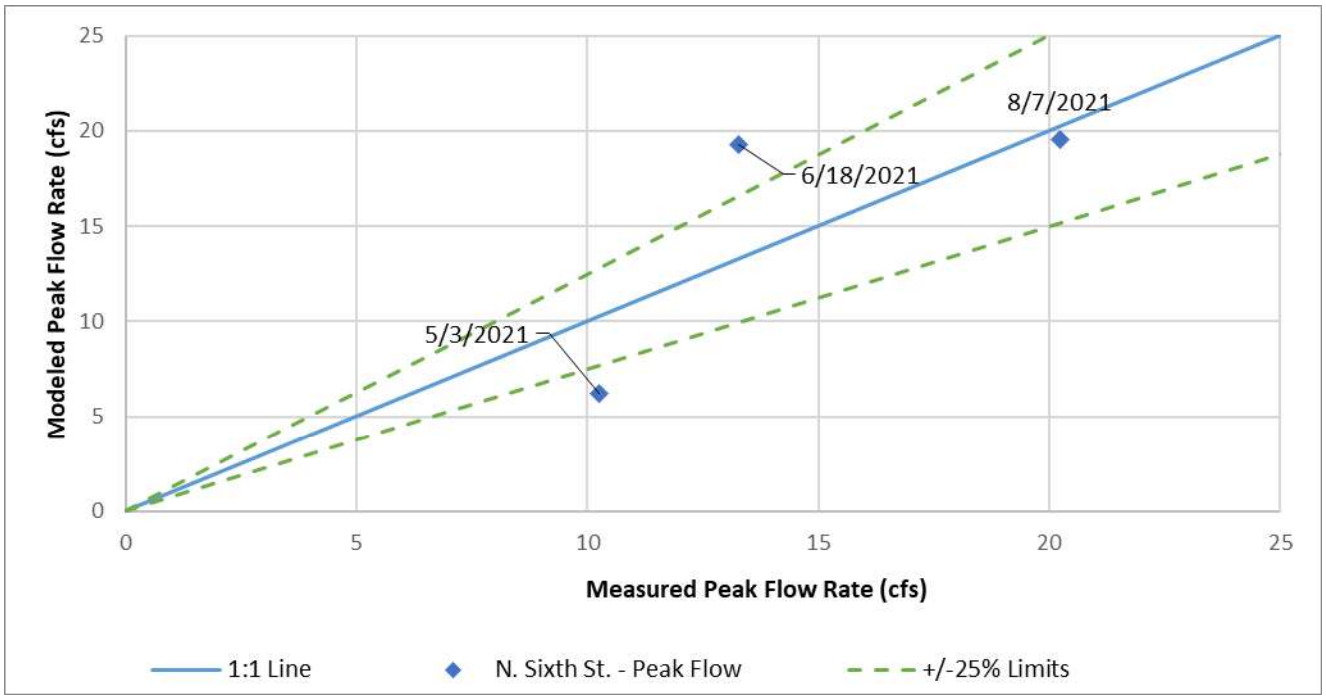
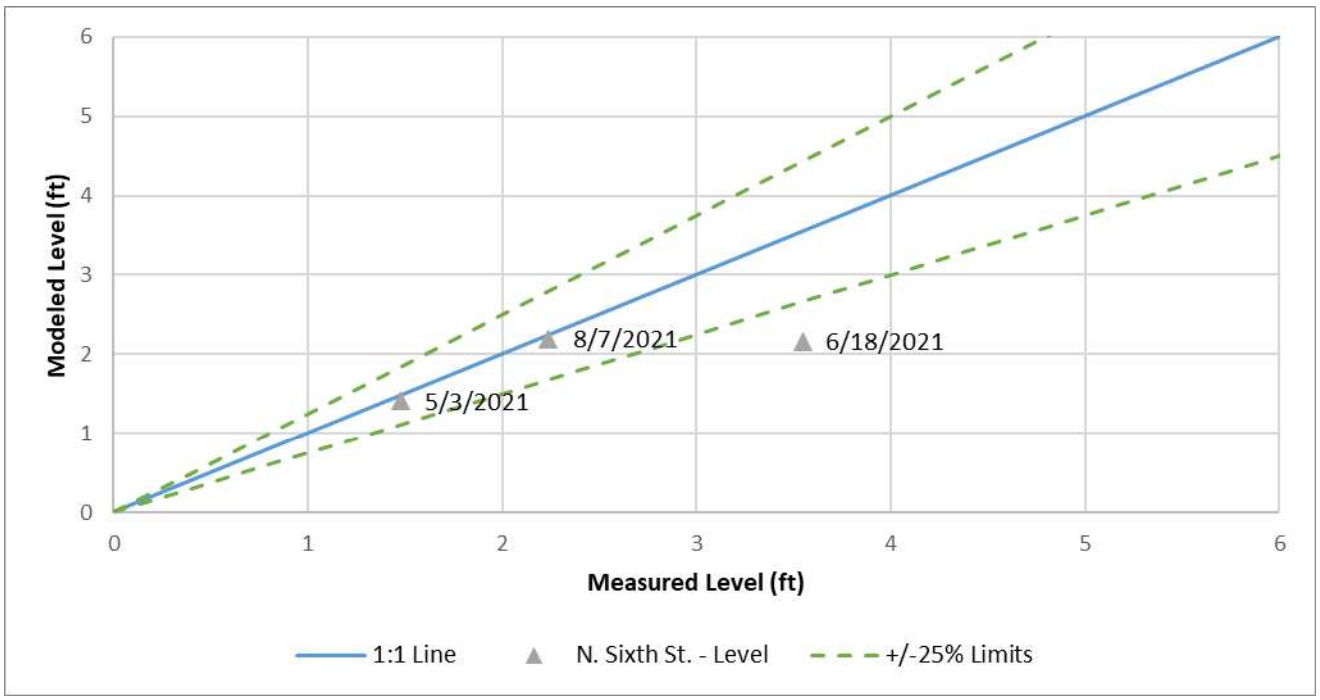


Figure 5-10: North Sixth Street Level Calibration Plot



5.5 CALIBRATION CONCLUSIONS

The North Sixth and East Main Street meters were used to define the hydrologic parameters of the watershed. The calibration for both locations resulted in a consistent subwatershed width, which nicely represented the typical width of a street. For the storm events that had quality measured data, the model calibration was within specified tolerances for volume, peak flow rate, and depth. The calibrated hydrology was applied to the un-metered areas of the watershed.

At the three monitoring locations with levels, the shape of the model outputs is very similar to the monitoring results. The modeled depths are typically within 25% of the measured depths for at least two of the three storms at every level location.

6.0 RESULTS EVALUATION

The hydraulic model was used to predict areas of sewer surcharging and surface flooding during each of the design storms.

6.1 EVALUATION APPROACH

The model results from Scenario 1 were evaluated against the City's flood mitigation targets to identify flood-prone areas.

Existing condition flood inundation maps were created for each of the design storms referenced in Table 4-1 and are included in Section 14.0. Results were exported as ASCII raster files with cell sizes equivalent to the modeled grid cell size of 20 feet.

6.2 SURCHARGE TO GRADE (LOS TARGET #1)

Level of Service Target #1 requires no surcharging to grade during the 10% annual chance storm, (10-year design storm). Any surcharging to grade predicted by the model during the 10% annual chance storm event does not meet LoS Target #1.

During Scenario 1, the model predicts surcharging to grade to occur at 301 manholes and inlets shown in Figure 14-10 in Section 14.0. Of the 56.1 miles of storm sewer evaluated, approximately 6.5 miles of them surcharged to grade during the 10% design storm. This equates to 5.3% not meeting LoS Target #1. Only the sewers immediately downstream of the manholes predicted to surcharge to grade were considered in the length of sewer not meeting LoS Target #1, although sewers further downstream may contribute to the high HGL.

6.3 STREET CENTERLINE FLOODING (LOS TARGET #2)

The City defines a non-drivable street as one with more than 0.2 feet of water depth at the street centerline for 100-feet. Level of Service Target #2 requires all streets be drivable during the 4% annual chance storm, (25-year design storm). It should be noted that the City updated the standard to 0.5 feet of ponding at the centerline for studies starting later than 2020.

For scenario 1, the locations where the model predicts more than 0.2 feet of flooding at the centerline for 100-feet are shown in Figure 14-11 in Section 14.0. The following eight locations had the longest flooding along the centerline:

- East Mifflin Street from Dayton Row to South Paterson Street, ~1,370 feet flooded.
- North Blount Street from East Dayton Street to Washington Avenue, ~740 feet flooded.
- E Dayton and Ingersoll Streets next to Lapham Elementary School, ~600 feet flooded.
- East Wilson Street in both directions from the S Ingersoll Street intersection, ~1,000 feet flooded.
- East Dayton Street from Second Street to Third Street, ~ 600 feet flooded.

- East Johnson Street from Pennsylvania Ave to Fourth Street, ~775 feet flooded.
- Pennsylvania Avenue along Demetral Park, ~1,360 feet flooded.
- N Sixth Street from Packers Avenue to Hoard Street, ~610 feet flooded.

Of the 56 miles of streets evaluated in the study, approximately 3 miles have more than 0.2 feet of water at the centerline during the 4% annual chance storm. This equates to 5.3% of the street not meeting the target.

6.4 BUILDING FLOODING (LOS TARGET #3)

Level of Service Target #3 requires that no buildings are flooded during the 1% chance annual storm, (100-year design storm). Building flooding was estimated by utilizing a spatial join between exported flood rasters and the building footprint feature class. Buildings within a 5-foot buffer of a 2D grid cell with a flood depth greater than 6 inches are considered to be at risk for flooding, as specified by the City. One hundred (100) buildings, or 1.3%, are projected to be flooded during the 1% annual storm event.

Figure 14-12 in Section 14.0 shows the buildings that are projected to flood during the 1% chance annual storm. A list of buildings that are projected to be flooded are listed in Appendix F.

An additional 254 buildings are not considered to be at-risk of flooding based on the City's LoS Target #3 but are within a 5-foot buffer of flooding less than 6 inches. Most of these buildings are primarily located immediately adjacent to the sidewalk where less than 6 inches of flooding would be contained below the top of curb and not flood the building. The flood depth map uses the 2D grid results which maps the flooding in 20-foot by 20-foot grids. Therefore, in the areas where less than 6-inches of flooding predicted, the flood depth map may overpredict the footprint of flooding and flag buildings as at risk of flooding.

6.5 ENCLOSED DEPRESSIONS AND GREENWAYS (LOS TARGET #3)

An enclosed depression within this study is defined as a low area of land with no natural outlet and it was considered served during the 1% annual chance storm if it had less than 1-foot of flooding in it and did not impact private property.

Two enclosed depressions, or low areas of land with no natural outlet, were identified as part of the East Isthmus Yahara watershed study. These enclosed depressions are located near the intersections of East Washington Avenue and North Livingston Street as well as North Blount and Mifflin streets and therefore did not meet the target. Other frequently flooded areas within the watershed are internally drained (no natural outlet) but did not meet the flood depth criteria, such as the intersection of Johnson and Third.

Both enclosed depressions were predicted to have flooding greater than 1 foot with the flooding expanding outside of the ROW, impacting private property.

There are no greenways in this watershed.

6.6 POINT FLOODING DEPTH AND DURATION

Fifty (50) indicator points throughout the watershed were defined to characterize the projected flooding during the design storms. Figure 14-13 in Section 14.0 shows the 50 indicator points and highlights the 15 points included Table 6-1. Table 6-1 includes the inundation peak depth and duration of flooding at the indicator points for the four design storms corresponding to level of service targets under Scenario 1 (10%, 4%, 1%, and 0.2% annual chance storms). The 15 indicator points included in the summary table, are at locations predicted to frequently flood or locations with known historic flooding. The Point Inundation Maximum Depth-Duration Timeseries Data for all 50 indicator points and each boundary condition scenario is included in Appendix D.

Table 6-1: Point Inundation Maximum Depth-Duration Timeseries Data – Scenario 1 – Existing Conditions

	Point #	Ground Surface Elevation (feet)	10% Annual (LOS #1)	4% Annual (LOS #2)	1% Annual (LOS #3)	0.2% Annual (LOS #4)
Peak Flood Depth (feet)	2	850.21	0.74	0.84	0.98	1.54
	4	848.77	1.03	1.28	1.59	2.18
	5	849.66	1.00	1.17	1.38	1.86
	7	847.85	0.00	0.50	1.00	1.27
	12	849.72	1.13	1.48	1.85	2.21
	15	849.79	1.04	1.29	1.39	1.47
	23	852.44	1.16	1.87	2.56	2.89
	25	850.70	0.24	0.54	0.89	1.13
	31	850.68	1.43	1.71	2.02	2.33
	37	852.79	0.66	1.00	1.67	2.27
	39	849.68	0.73	0.95	1.20	1.67
	44	851.25	0.68	0.77	0.92	1.06
	48	849.68	1.02	1.22	1.47	1.92
	49	851.73	1.47	1.60	1.73	1.88
	50	849.68	0.91	1.07	1.30	1.76
Flood Duration (hours)	2	-	11.08	11.17	11.25	11.42
	4	-	3.75	4.33	5.08	6.33
	5	-	2.67	3.33	4.08	5.33
	7	-	0.00	10.92	11.08	11.17
	12	-	1.58	2.33	4.33	6.25
	15	-	10.92	11.00	11.17	11.33
	23	-	0.75	1.33	1.83	2.25
	25	-	0.50	1.08	1.75	2.58
	31	-	10.92	11.00	11.17	11.33
	37	-	10.92	11.08	11.25	11.33
	39	-	3.00	3.75	5.08	6.75
	44	-	3.50	4.33	5.58	7.17
	48	-	11.17	11.25	11.25	11.50
	49	-	11.08	11.17	11.33	11.50
	50	-	2.33	3.00	3.83	5.00

6.7 LIMITATIONS

The hydraulic model was built in accordance with the City's Modeling Guidance to maintain the standard used by the City to understand flood risks and prioritize alternatives. Even so, models have limitations, and their output has some uncertainty so models should be understood to be approximations of actual flooding that could occur. Approximations in input data, simplifications of methods to calculate flow rate and HGL, and uncertainty in calibration are examples of potential sources of uncertainty.

6.7.1 Hydrologic Uncertainty

Actual conditions that differ from the inputs in the model can lead to higher or lower flooding than predicted by the model. Some hydrologic factors that could impact the flood results are weather and/or soil conditions that are higher or lower than average values used in the model. Future changes to land use, especially redevelopment that includes stormwater control on private property, could reduce flooding relative to the model prediction.

6.7.2 Inlet Capacity

Inlet capacity was not considered as part of this study. As such, the inlets were assumed to have no capacity restrictions. Inlet capacity must be analyzed independently during design to ensure inlet capacity at least matches, if not exceeds, pipe capacity. It is possible that inlet capacity limitations lead to flooding not predicted by the model.

6.7.3 Building First Floor Elevations

Building first floor elevations were assumed to match the fronting ground surface elevation because first floor elevations were not available. Buildings with a first-floor elevation or other point of entry that does not match the model assumption may or may not flood as predicted by the model. Additional survey data of key buildings may be useful in refining the flooding risk.

6.8 SUMMARY OF HISTORICAL FLOODING COMPARISON

In Section 1.3, known flooding areas in the watershed were identified. The model results were reviewed for these locations and confirmed the flood risk.

Table 6-2 summarizes model predicted flood depths during Scenario 1 for design storms associated with LoS Targets at the five historical flood locations identified by residents during public information meetings or during discussions with the City.

Table 6-2: Model Predicted Existing Condition Results for Historical Flood Locations (Scenario 1)

24-hour Design Storm	Point A (Third and Johnson St) Flood Depth (feet)	Point B (2059 Atwood St) Flood Depth (feet)	Point C (Mifflin St) Flood Depth (feet)	Point D (Wilson and Ingersoll Sts) Flood Depth (feet)	Point E (Yahara River and Lake Monona) Flood Depth (feet)
10-year	1.13	1.16	1.00	0.68	0.53
25-year	1.48	1.87	1.17	0.77	0.53
100-year	1.85	2.56	1.38	0.92	0.83
500-year	2.21	2.89	1.86	1.06	1.17

6.9 HYDRAULIC PERFORMANCE SUMMARY

Table 6-3 summarizes the sewer surcharging (LoS Target #1), street centerline flooding (LoS Target #2) and building flooding (LoS Target #3) for all boundary condition scenarios.

Table 6-3: Hydraulic Performance Summary – Existing Conditions

Design Storm	Length of Sewers Surcharged to Grade (miles) – 10% chance LOS Target #1	Length of Street with Centerlines with >0.2 of Flooding (miles) – 4% chance LOS Target #2	Buildings At Risk for Flooding (Flooding Depth > 6 in) 1% chance LOS Target #3	Buildings adjacent to Flooding Depth < 6 in 1% chance*
Scenario 1	6.5	3.0	100	254
Scenario 2	6.7	3.0	107	243
Scenario 3	7.5	3.2	115	255
Scenario 4	8.1	3.9	135	266
Total in Watershed	**24.5**	**56.1**	**7,421**	**7,421**

† Total sewer length represents modeled pipes only.

* Excludes buildings with a projected flooding depth greater than 6 inches

7.0 PUBLIC ENGAGEMENT

As part of the East Isthmus Yahara watershed study, three public information meetings were conducted. The City also set up a project website, sent postcards, and used social media to interact with the residents who live in the watershed. Figure 7-1 includes a summary of the various interactions had over the course of the study.

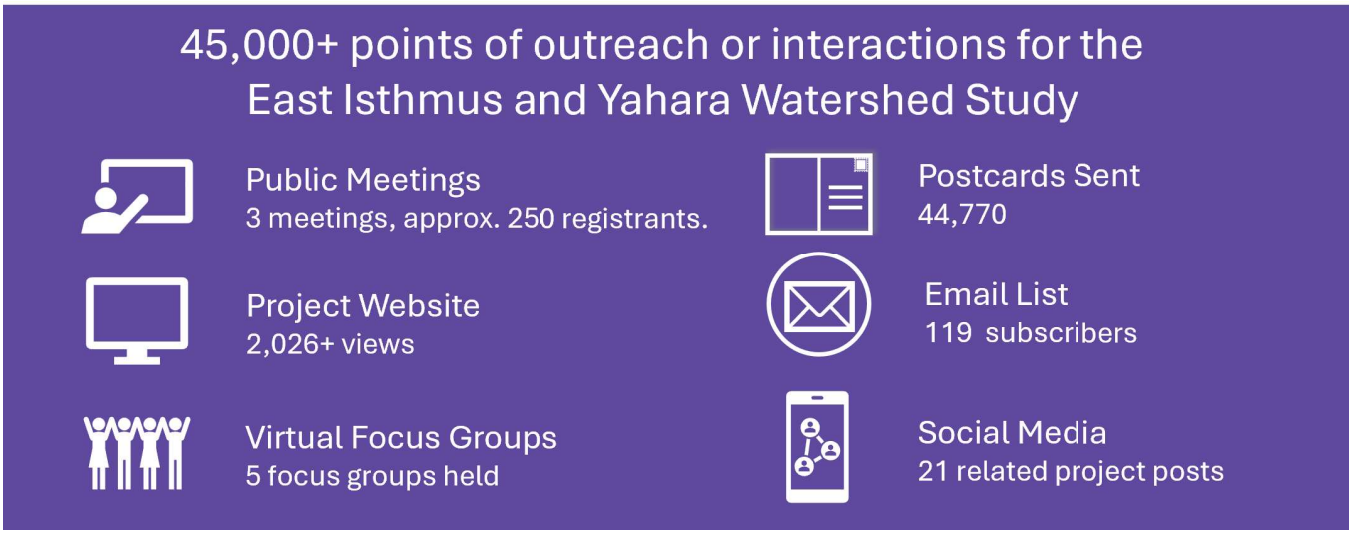


Figure 7-1: Public Engagement Statistics

7.1 PUBLIC INFORMATION MEETINGS

The first public information meeting (PIM) was conducted on August 26, 2020. During the meeting, an overview of the study was presented and included historic precipitation, design storms, a summary of the City's flood mitigation targets, and the goals of the watershed study.

The second public information meeting occurred on October 6, 2022. This meeting provided a project update on the model construction and calibration. It also offered the public a chance to review and comment on existing condition flood inundation maps for the watershed.

The final public information meeting occurred on July 25, 2025. The focus of this meeting was to present the mitigation strategies considered and the recommended solutions for the watershed. This public meeting also included focus groups during which the public could ask questions and voice concerns on the topics listed in Table 7-1.

Recordings of the PIMs and their PowerPoint presentations are provided on the City's project website: https://www.cityofmadison.com/engineering/projects/east-isthmus-and-yahara-river-watershed-study (last accessed 8/1/2025)

A 30-day Public Comment Period was held for the public to review and comment on the Final Draft East Isthmus Yahara Watershed Study Report. The Public Comment Period ended January 13, 2026. The public comments can be found in Appendix J.

7.2 FOCUS GROUPS

As part of PIM 3, breakout rooms were set up for residents to gather additional information about the topics discussed during the presentation. Table 7-1 summarizes the breakout room topics and the concerns raised by residents.

Table 7-1: PIM 3 – Focus Group Summaries

Topic	Discussion Points
Standalone Projects: Pennsylvania and Commercial Avenues	• The frequent flooding at Third and Johnson St. • How to set up detours and alert systems to route around flooding.
Standalone Project: E Johnson St and Dredging Impacts	• Dane County's dredging program • The flooding observed in Tenney Park's parking lots
Standalone Projects: Capital City Trail, Wilson St, Paterson Relief Pipe, & N Blount St.	• A private drainage issue
Other Local Sewer Improvements	• No participants
Green Infrastructure	• The City's terrace rain garden program.

8.0 SOLUTIONS DEVELOPMENT

8.1 ALTERNATIVES DEVELOPMENT APPROACH

Alternatives were developed through an iterative process beginning with brainstorming possible solutions for the flooding predicted during Scenario 1, Lake Monona set at an elevation of 846 feet and Yahara River with a flow of 250 cfs. A detailed analysis of each mitigation alternative was done, identifying several as non-viable due to technical or practical constraints. The viable solutions were then run in the model for scenario 4 to evaluate their effectiveness.

8.2 MITIGATION ALTERNATIVES

8.2.1 Pumping/Lift Stations at River

The unique geography of the Isthmus can increase pluvial flooding when water from Lake Monona and the Yahara River back-up the storm sewer system. One mitigation strategy analyzed was the addition of lift stations at some or all the outfalls along the Yahara River. The collection system would operate as it does now during low tailwater conditions. The stations would pump stormwater out of the system during high tailwater conditions in the river and lakes to maintain a lower hydraulic grade in the collection system. The lift stations would also increase the velocity in the pipe network during high water conditions, reducing sediment aggradation in the pipes and, thus, increasing available capacity.

The addition of lift stations along the Yahara River would mitigate impacts of river and lake water surface elevations but would not mitigate flooding due to pipe conveyance limitations. This mitigation alternative is not recommended due to operations and maintenance concerns, locations for lift stations being limited to parkland, and the high capital and operating costs.

8.2.2 Storage at Parks

One mitigation alternative evaluated was adding stormwater storage systems in the City's parks. Reynolds Park and Demetral Park were both considered for underground storage systems as they are close to areas frequently predicted to flood.

At Reynolds Park, located in the southwest portion of the watershed, water was redirected from the frequently flooded Blount and Mifflin intersection. The park has approximately 1 acre of open space where an underground storage system was assessed. To store the required volume, the practice cannot drain by gravity and would require a pumping system to drain.

At Demetral Park, two locations were assessed for underground storage. At the first location, flow would be redirected from 4th Street and would require a storage volume of 413,000 cf. The other location considered was between 6th and 7th streets and would require a storage volume of 786,000 cf.

Table 8-1: Storage Alternative – Summary

Location	Required Storage (cf) (100-yr, 24-hr Storm, S1)	Estimated Depth of Underground Storage* (ft)
Reynold's Park	11,000,000	25.6
Demetral Park – 4th Street	413,000	9.5
Demetral Park – 6th & 7th Street	769,000	17.7

**Assumes a 1-acre footprint*

The storage systems in the parks, summarized in Table 8-1, are predicted to reduce the flooding at nearby intersections but not eliminate it. Whereas, the recommended pipe capacity improvements had a larger impact on reducing flooding. Due to the significantly higher operating and maintenance costs, required pumping systems, and lesser benefits, underground storage was not considered a viable mitigation alternative.

8.2.3 Yahara River Dredging

Dane County is leading a dredging effort on the Yahara River to the Stoughton Dam, approximately 19 miles downstream of the East Isthmus. The purpose of the dredging is to improve conveyance, or how quickly water can move, out of the Yahara Chain of Lakes so that the County can more closely operate the lakes within the state-mandated lake level ranges. As of summer 2025, the County has completed phases 1 and 2 of the project, dredging the river between Lake Monona and Mud Lake, which is downstream of the East Isthmus

Yahara Watershed. Preliminary findings show that the dredging, paired with aquatic plant removal, has successfully increased flows out of the system.

The portion of the Yahara River between Lakes Mendota and Monona was originally considered for inclusion in the overall dredging effort. However, this portion of the river does not significantly impact the County's ability to convey water downstream and manage lake levels. Therefore, it was left up to the City of Madison to analyze if dredging the portion of the river would help mitigate flash flooding in the East Isthmus during high lake levels. This analysis was completed with this study and is described below.

Additional information about the County's project can be found on their webpage, https://lwrd.danecounty.gov/CurrentProjects/Detail/Yahara-River-Sediment-Removal-Project (last accessed 8/1/2025). Additional links on the County's management of lake levels and flood management can be found below:

- Yahara River Flooding
- Lake Levels & Information
- 2024 update on lake level management from November 2024 Dane Co Lakes & Watershed Commission Meeting Recording

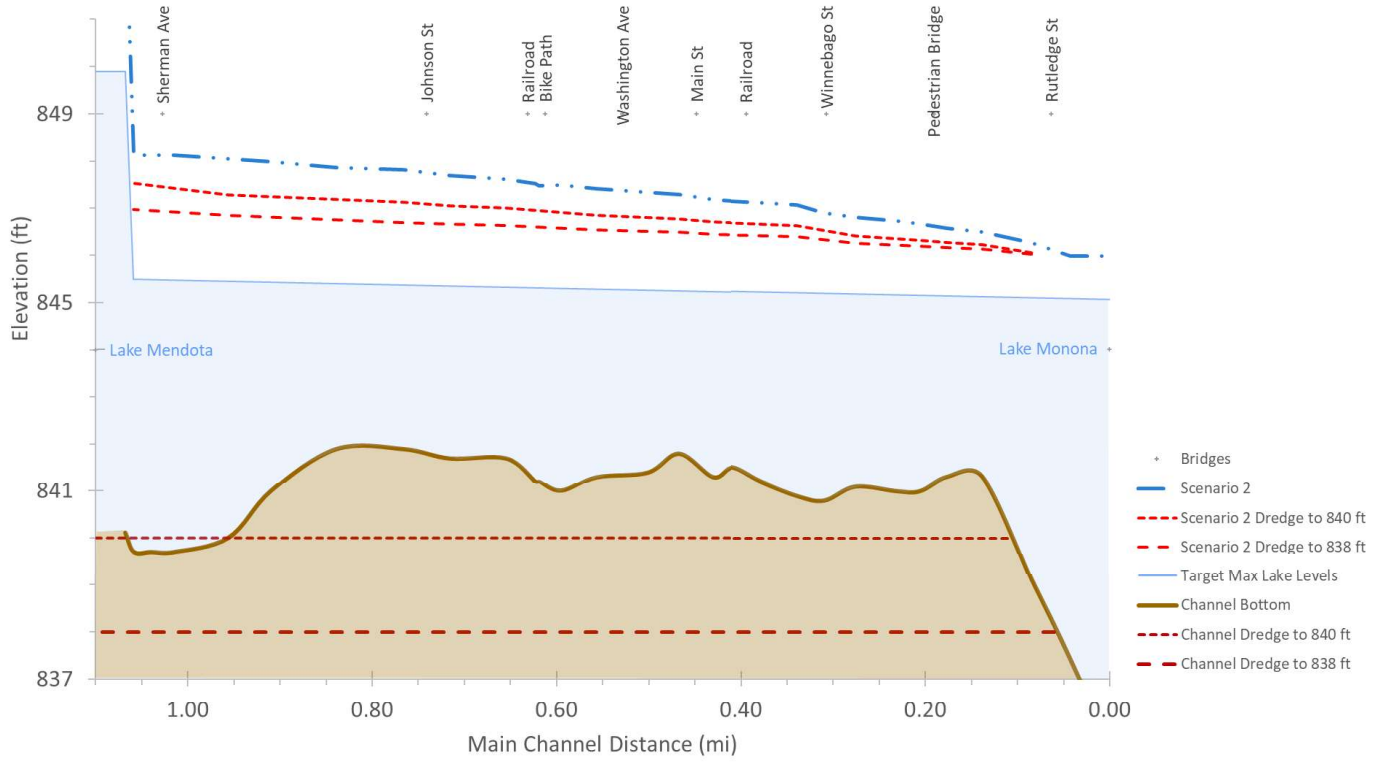
8.2.3.1 Dredging Analysis from Lake Mendota to Lake Monona – Impacts on the East Isthmus Yahara Watershed

The East Isthmus Yahara watershed has 36 outfalls discharging to the Yahara River that are impacted by the depth of water in the river between Lake Mendota and Lake Monona. An analysis of the impact of dredging the river from Lake Mendota to Lake Monona was modeled to assess the impact dredging has on the predicted flooding in the isthmus.

The analysis reviewed the impact of dredging the river bottom to elevations of 840 feet and 838 feet. Dredging to 840 feet would have an average cut of 1.5 feet of riverbed or approximately 8,700 cubic yards or sediment removal, while dredging to 838 feet has an average cut of 3.5 feet and approximately 20,000 cubic yards of sediment removal. The analysis for each dredging depth was done for the four boundary condition scenarios listed in Table 4-6.

Scenario 2, flow in the Yahara River set to 700 cfs and Lake Monona tailwater set to 846.0 feet, was the boundary condition that dredging had the largest impact. Figure 8-1 includes the predicted water level in the Yahara river for both dredging depths. Figures showing the results from scenarios 1, 3 and 4 are included in the Section 14.0.

Figure 8-1: Scenario 2 – Model Dredging Results



When the river is dredged to 838 feet and Lake Monona is at an 846-foot elevation, a smaller number of storm sewers are submerged reducing the hydraulic grade line (HGL), or water level, in the collection system. This reduces the predicted flooding in some areas of the Isthmus during smaller storms, such as the 1-year and 2-year storms. Dredging has little impact during larger storms in all scenarios because the storm sewers are undersized for the larger events.

The feasibility and potential cost of dredging the Yahara River between Lakes Mendota and Monona were also reviewed. This portion of the river has low bridge clearances that will limit equipment access in the water and require multiple equipment launches. This will heavily disturb the parkway which is registered as a Historic Landmark Parkway on the National Register of Historic Places. The parkway also has limited space for material dewatering and disposal. The project also has several unknown factors such as the number of utilities that will require relocation and if the sediment removed is contaminated or not. These unknown factors could greatly increase the cost of the project which was estimated to be close to $10 million.

While dredging has an impact during smaller storms, it does not meet the LoS goals for the larger storms and was not considered as a viable mitigation alternative at this time.

8.2.4 Green Infrastructure Analysis

Green infrastructure (GI) is a mitigation alternative that collects stormwater and either stores, infiltrates, or evapotranspirates it reducing the flows entering the storm sewer. GI is typically designed to manage runoff

from smaller storms, like the 100% or 50% annual chance storms (1-year or 2-year design storms) and can be an effective way to filter stormwater (improve water quality) before it enters natural waterways.

GI was considered as a mitigation alternative and evaluated from two perspectives: impact during the 100-yr storm at a high level implementation and as a neighborhood case study during smaller storms.

8.2.4.1 100-yr Storm

A high-level analysis was conducted to quantify the GI needed to mitigate flooding across the entire watershed during the 1% annual chance storm (100-year, 24-hour storm). During this storm, approximately 4.8 million cubic feet of water is predicted to pond in the isthmus. If a green infrastructure practice has a storage depth of 12 inches, approximately 187 acres of land is needed for GI to mitigate flooding. In the East Isthmus Yahara watershed, that is approximately 30% of all impervious area. The estimated capital costs of the GI is ~$500 million which does not include annual operation and maintenance needs. It was decided that this mitigation alternative was not a viable option.

8.2.4.2 2-year Storm Study Area – Johnson and Third Street

The Johnson Street and Third Street intersection and surrounding area are predicted to flood approximately 17,900 cubic feet during the 50% annual chance storm (2-year, 24-hour storm). An analysis was conducted to determine the level of GI needed in the 26.3-acre study area to mitigate the predicted flooding. The findings from the analysis include:

1. If every parcel in the neighborhood installed a 550 square foot rain garden, a 60% reduction in street flooding is predicted. The average front yard on Mifflin and Third streets is 245 square feet and does not have the needed 550 square feet.
2. Terrace rain gardens, or GI constructed in the green space between the sidewalk and street, can be constructed however, more than twice the available terrace space is needed to mitigate all flooding. Additionally, this would conflict with the street trees that currently occupy 85% of terraces in this area. Mature tree canopies can also provide flood mitigation in this area.
3. Installing permeable pavement on all the streets in the study area does not eliminate flooding as the GI systems fill up at the beginning of the storm and do not mitigate the peak of the storm.

The East Isthmus Yahara Watershed land characteristics pose several challenges to GI, specifically the high groundwater and low infiltration rates. The Johnson and Third Street study area has primarily types B/D and C/D soils with low infiltration rates and high groundwater on the Isthmus both limit the effectiveness of GI. GI can have a larger impact in other areas of the watershed; however, it is not a viable option to eliminate the predicted small storm flooding in the Johnson and Third street study area.

8.2.5 Pipe Conveyance Improvements

The final mitigation strategy analyzed was to increase the capacity of the existing system. For the first part of the analysis, an idealized mitigation alternative was prepared that increased pipe capacity until the LoS goals were met, or the increased conveyance had no additional impact on flooding. This idealized alternative was not practical and did not consider constructability constraints such as space limitations and underground

utilities. Cooperative discussions with City staff, knowledge of the existing system, and public meeting information, including public flood reporting, helped modestly pare down the recommended improvements to the seven standalone projects and 10.7 miles of additional local storm improvements.

9.0 RECOMMENDED ALTERNATIVES

The recommended pipe conveyance improvements were separated into two groups, local storm improvements and standalone projects. Any major solutions with box culverts with a width greater than 3 feet were identified as standalone projects while recommended pipes less than 60-inches would be upsized as part of road projects.

It should be noted that the improvements documented in this report are not meant to be full design-level efforts; they are conceptual solutions that help the City's Engineering Division understand the magnitude of solution needed in a given area to meet the targets. As projects are looked at further, and if they move to the point they are contemplated for programming, then projects will then go into a more detailed design phase. This project phase collects detailed data needed for design and looks at refined design, permitting, and environmental issues associated with the particular project. It should also be noted that inlet capacity was not evaluated as part of this study, therefore, the recommended mitigation improvements may need to be paired with inlet capacity improvements.

9.1 LOCAL STORM IMPROVEMENTS

Figure 14-14 in Section 14 includes the approximately 56,500 feet of local storm sewer improvements recommended in the watershed. These upgrades will happen gradually during future street reconstruction projects. It is unlikely that a recently rebuilt street will see upgrades for many years.

9.2 STANDALONE PROJECTS

In the East Isthmus Yahara watershed, seven standalone projects were identified and are shown in Figure 14-14 in Section 14.0. The projects are

1. Capital City Trail
2. Wilson Street
3. Pennsylvania Ave
4. Commercial Avenue
5. East Johnson Street
6. Paterson Relief Pipe
7. North Blount Street

9.2.1 Capital City Trail

The Capital City Trail project is along the Capital City bike path from Brearly Street to 360 feet south of Livingston Street in the southwest quadrant of the watershed. The project replaces old pipes that are failing and increases conveyance along the trail. The recommended pipes, summarized in Table 9-1, reduce the predicted flooding in the East Wilson and South Ingersoll streets intersection. This project is designed already and is bid to be constructed in 2025-26. Figure 14-15 in Section 14.0 shows the recommended improvements.

Table 9-1: Recommended Pipes for Capital City Trail Project

Pipe Size	Shape	Approx. Length (feet)
24 in x 38 in	Elliptical	25
43 in x 68 in	Elliptical	930
3 ft x 6 ft	Rectangular Box	90
4 ft x 6 ft	Rectangular Box	635

9.2.2 Wilson Street

The Wilson Street project is upstream of the Capital City Trail project extending from Few Street to Brearly Street. During the 10-year, 24-hour storm (scenario 1), the existing system is under capacity and over 12 inches of flooding is predicted in the East Wilson and South Ingersoll streets intersection. This recommended standalone project includes the upsizing of 1,320 feet of horizontal elliptical pipes with larger rectangular boxes. Table 9-2 summarizes of the pipe sizes and Figure 14-16 in Section 14.0 shows the improvements.

Table 9-2: Recommended Pipes for Wilson Street Project

Pipe Size	Shape	Approx. Length (feet)
3 ft x 4 ft	Rectangular Box	550
3 ft x 6 ft	Rectangular Box	1,050
4 ft x 6 ft	Rectangular Box	665

9.2.3 Pennsylvania Avenue

The existing 10-foot by 4-foot box sewer from Commercial Avenue to the Yahara River conveys stormwater to the river from a 420-acre tributary area. The system has capacity issues during the 10-year storm which amplifies flooding upstream of the pipes draining to the box sewer. To increase conveyance, dual 5-foot by 12-foot box sewers are recommended from North Sixth Street to the Yahara River. This standalone project is predicted to relieve the flooding predicted on Johnson and Third Streets, one of the locations identified in Section 1.3 as having historic flooding. Figure 14-17 in Section 14.0 shows the recommended improvements and are summarized in Table 9-3.

Table 9-3: Recommended Pipes for Pennsylvania Avenue Project

Pipe Size	Shape	Approx. Length (feet)
5 ft x 15 ft	Rectangular Box	1,150
5 ft x 12 ft	Rectangular Box (Dual Boxes)	4,900

9.2.4 Commercial Avenue

The 3-foot by 2.3-foot box pipe along Commercial Avenue has a tributary area of approximately 153 acres and is collecting water from the industrial region to the north and the residential area to the west. The pipe is predicted to have capacity issues during the 10-year storm causing flooding at the Commercial and Packer Avenues intersection and along Michigan Court, a residential street where flooding has been reported.

To reduce flooding and meet the LoS goals in this area, increased conveyance is recommended. The recommended improvements for this standalone project are summarized in Figure 14-18 in Section 14.0 and Table 9-4. The Commercial Avenue project is just upstream of the Pennsylvania Avenue project and recommends upsizing the system to reduce upstream flooding.

Table 9-4: Recommended Pipes for Commercial Avenue Project

Pipe Size	Shape	Approx. Length (feet)
2.3 ft x 6.5 ft	Rectangular Box	1 850
3 ft x 6.5 ft	Rectangular Box	1,075
3 ft x 10 ft	Rectangular Box	200
3 ft x 11 ft	Rectangular Box	600
4 ft x 11 ft	Rectangular Box	675

9.2.5 East Johnson Street

East Johnson Street collects water from the neighborhood just southwest of Tenney Park and conveys it via a 4-foot by 5-foot box culvert to the Yahara River. To meet the 4% annual chance and 1% annual chance LoS goals in this neighborhood, increased conveyance is recommended along East Johnson Street, Gorham Street, and Few Street. The recommended improvements are summarized in Table 9-5 and in Figure 14-19 in Section 14.0.

Table 9-5: Recommended Pipes for East Johnson Street Project

Pipe Size	Shape	Approx. Length (feet)
2 ft x 4 ft	Rectangular Box	350
2 ft x 7 ft	Rectangular Box	600
4 ft x 7 ft	Rectangular Box	1,775

9.2.6 Paterson Relief Pipe

The Paterson Relief Pipe project recommends adding a new pipe down Paterson Street from East Washington Avenue to Lake Monona to help relieve the East Washington Box sewer. The East Washington Box sewer is a mostly flat pipe extending from North Livingston Avenue to the Yahara River. To drain the enclosed depressions in the Blount Street/Mifflin Street area, the invert of the pipe is 846.1 feet, 0.4 feet below the

scenario 1 Yahara River boundary condition. Therefore, the East Washington box is frequently in a backwater condition with limited capacity during rain events. The existing 5-foot by 10-foot box sewer is the largest pipe that can fit under the road due to utility restrictions. To create additional capacity, a relief pipe down Paterson Street is recommended.

The project recommends constructing a 6- by 10-foot box from the East Washington Box to Williamson Street. From that intersection, a 9-foot round pipe would be directionally drilled out to Lake Monona. From Williamson Street to Jenifer Street, the elevation increases by 20 feet. To have the pipe flow by gravity, the invert elevation would be approximately 35 feet below the surface. For constructability, a trenchless installation using a tunnel boring machine will be required. Figure 14-20 in Section 14.0 includes the recommended improvements which are also summarized in Table 9-6.

Table 9-6: Recommended Pipes for Paterson Relief Pipe Project

Pipe Size	Shape	Approx. Length (feet)
6 ft x 10 ft	Rectangular Box	1,775
9 ft	Round (directionally drilled)	855

9.2.7 North Blount Street

The outfall on North Blount Street has a tributary area of 42.1 acres and discharges into Lake Monona. The existing system is 5.5-foot by 6-foot box sewer which helps drain the enclosed depressions in the East Mifflin Street and East Dayton Street areas. The invert of the outfall is 841.4 feet which is 4.6 feet below the scenario 1 Lake Monona level and is frequently in a backwater condition with limited capacity during rain events.

This standalone project also recommends the upsizing of 750 feet of box sewer on Washington Avenue as well as the box culvert to the lake on Blount Street. Table 9-7 summarizes the pipe improvements which are shown on Figure 14-21 in Section 14.0.

Table 9-7: Recommended Pipes for North Blount Street Project

Pipe Size	Shape	Approx. Length (feet)
4 ft x 6 ft	Rectangular Box	550
4 ft x 8 ft	Rectangular Box	200
4.5 ft x 10 ft	Rectangular Box	995
5.5 ft x 10 ft	Rectangular Box	625

9.3 SEDIMENTATION IN THE PIPES

To evaluate the effects of sediment accumulation on the capacity of the recommended conveyance improvements, uniform layers of 3, 6, and 12 inches of sediment were added to every pipe across the watershed. Then the 10%,4%, and 1% annual chance storm (Scenario 1) were re-run with the recommended

improvements. The results showed increased flooding, as anticipated, due to the sediment reducing the capacity of the pipe. This was especially observed in areas with smaller diameter pipes.

9.4 COORDINATION AND PERMITS

The recommended local sewer improvements and the standalone projects largely take place within existing streets right of way or easements. The large-scale box culvert and storm sewer pipe installation projects are expected to require significant utility coordination efforts during the design and construction efforts.

For any conveyance improvements that cross lands owned or maintained by parks, coordination with Parks department staff and the Board of Parks Commissioners is required. Both parties will also be involved in the design portion of the project. This includes any new or improved storm sewer outfalls to the lakes or within the Yahara River Parkway.

The construction of these projects will require various permits and Table 9-8 includes a preliminary assessment of the which permits are anticipated. Prior to each project moving into the detailed design phase, a more in-depth review of the required permits should be done.

Table 9-8: Anticipated Permits

Project	Anticipated Permits Required			
	City of Madison Erosion Control *(>4,000 sf of disturbance)*	**WNDR Stormwater NOI** *(>1 ac of disturbance)*	**Intake or Outfall Structure General Permit***	**WDNR Water Quality Certification** *(if wetlands are present)*
Capital City Trail	Yes	Yes		
Wilson Street	Yes	Yes		
Pennsylvania Ave	Yes	Yes	Yes	Yes
Commercial Ave	Yes	Yes		
East Johnson St	Yes	Yes	Yes	Yes
Paterson Relief Pipe	Yes	Yes	Yes	Yes
North Blount St	Yes	Yes	Yes	Yes

**Note: There are exceptions to this permit and it will depend on the final design*

9.5 WATER QUALITY BENEFITS

Both the standalone projects and local storm improvements will include a water quality component. Each conveyance improvement will assess potential treatments such as catch basins, sediment traps, manufactured treatment devices and other water quality treatment features at the time of detailed design.

9.6 HYDRAULIC COMPARISON

Table 9-9 summarizes the sewer surcharging (LoS Target #1), street centerline flooding (LoS Target #2) and building flooding (LoS Target #3) for all design storms with the recommended PFC solution.

Table 9-9: Hydraulic Performance Summary – PFC Solution

Design Storm	Length of Sewers Surcharged to Grade (miles) – 10% chance LOS Target #1	Length of Street with Centerlines with >0.2 of Flooding (miles) – 4% chance LOS Target #2	Buildings At Risk for Flooding (Flooding Depth > 6 in) 1% chance LOS Target #3	Buildings adjacent to Flooding Depth < 6 in 1% chance
Scenario 1	0.6	0.1	4	56
Scenario 2	0.7	0.1	5	56
Scenario 3	1.5	0.3	6	82
Scenario 4	3.3	0.5	32	112
Total in Watershed	**24.5**	**56.1**	**7,421**	**7,421**

† Total sewer length represents modeled pipes only.
* Excludes buildings with a projected flooding depth greater than 6 inches

9.6.1 Sewers

The City's LoS Target #1 is to eliminate surcharging to grade during the 10% chance annual storm. In Scenario 1, approximately 2,914 feet of sewer are projected to surcharge to grade at 22 of the 1,051 manholes in the watershed during the 10% annual storm. This equates to 2% of sewers not meeting the conveyance capacity target, a 91% reduction from existing conditions. The remaining structures predicted to flood are shown in Figure 14-22 in Section 14.0.

9.6.2 Streets

The City's LoS target is to maintain drivability during the 4% chance annual storm. Drivability is defined as having no more than 0.2 feet of flooding at the center of the street for 100 feet. Within the watershed, approximately 0.2% of streets are not meeting LoS Target #2 in Scenario 1, a 97% reduction from existing conditions. The predicted flooding during the 4% annual chance storm and the roadways not meeting Los #2 are included in Figure 14-23 in Section 14.0.

9.6.3 Buildings

The City's target to prevent building flooding is assessed during the 1% annual chance design storm. Any flooding within 5 feet of the building is considered a flooded building. Of the 7,421 buildings within the

watershed, the model predicts four (4) do not meet LoS Target #3 during Scenario 1. This is a 96% reduction from the existing conditions evaluation.

An additional 96 buildings are not considered to be at-risk of flooding based on the City's LoS Target #3 but are within a 5-foot buffer of flooding less than 6 inches. These buildings are primarily located immediately adjacent to the sidewalk where less than 6 inches of flooding would be contained below the top of curb and not flood the building. The buildings predicted to flood during the 1% annual chance storm are included in Figure 14-24 in Section 14.0.

9.6.4 Enclosed Depressions and Greenways

The City's LoS target to service enclosed depressions during the 1% annual chance storm. For the two enclosed depressions in the East Isthmus Yahara watershed, one depression meet the target of having less than 1-foot of flooding and whose flooding footprint did not extend outside of the ROW during Scenario 1. The enclosed depression at the intersection of East Washington Avenue and North Livingston Street. The enclosed depression at North Blount and Mifflin streets intersection did not meet this target. This is a 50% reduction from the existing conditions evaluation.

There are no greenways located in the watershed.

10.0 AREAS IN WHICH LOS TARGETS ARE NOT MET

The LoS goals were not met along Mifflin Street from North Blount Street to North Paterson Street. This area is a low-lying area that drains to the East Washington box. The East Washington box sewer is a 5-foot by 10-foot sewer with a backwater condition from the Yahara River. Due to existing utility conflicts, this box culvert cannot be upsized which limits the ability to reduce flooding in the areas tributary to the sewer. The Paterson Relief Pipe standalone project helps reduce the predicted flooding in this area however due to the enclosed depressions, the LoS goals are not able to be met. Other mitigation strategies, such as underground storage, were considered but there is limited open space in this area and storage was not a viable solution.

Four buildings did not meet the LoS Target #3. Two of these buildings, are industrial buildings in the northwestern portion of the watershed that have low spots next to the structure. These low spots are where nearby flooding ponds. Of the other two buildings, one is located along the Yahara River and the other on East Mifflin Street Between North Livingston Street and North Blount Street.

11.0 CLIMATE RESILIENCE ANALYSIS

A climate resilience analysis was done for the watershed by reviewing the 0.2% annual chance storm. The analysis was done by running the model by upsizing pipes greater than the sizes in the recommended alternatives to evaluate the impact during the 0.2% annual chance storm, (500-year, 24-hour storm). It was found that the additional upsizing did not have a significant enough impact during the storm event to justify the additional costs. The predicted flooding during the 0.2% annual chance storm with the recommended pipe conveyance improvements discussed in Section 9.0 is included in Figure 14-25 in Section 14.0.

12.0 COST ESTIMATE

Estimated opinions of probable cost (OPCs) were developed for each standalone project using bid data (2024) provided by the City. The estimated OPCs include general overhead costs such as mobilization and traffic control. They do not include estimated costs for design or account for future material costs. Table 12-1 includes a summary of the OPCs for each standalone project.

Table 12-1: OPC Summary

Project	OPC
Capital City Trail Storm Sewer	$2,400,000
Wilson Street	$1,500,000
Pennsylvania Avenue	$33,300,000
Commercial Avenue	$8,200,000
East Johnson Street	$3,900,000
Paterson Relief Pipe	$8,800,000
North Blount Street	$6,000,000

13.0 RECOMMENDED IMPLEMENTATION ORDER

The local storm improvements are upgrades that will be implemented during future street reconstruction projects as they are scheduled. For the recently rebuilt streets, it is unlikely that storm upgrades will be constructed for many years.

The recommended implementation order for the standalone projects outlined in Section 9.2 was prioritized by locations, with downstream projects given a higher priority to avoid moving flooding from an upstream area to a downstream area. The recommended implementation order is in Table 13-1.

Table 13-1: Project Implementation Order

Order	Project	Notes
1	Capital City Trail Storm Sewer	*Bid to be constructed in 2025-2026 due to failing pipe.*
2	Wilson Street	*Can be constructed after Project 1.*
3	Pennsylvania Avenue	*Downstream of Project 4 and should be constructed first.*
4	Commercial Avenue	*Project 3 is downstream and should be constructed first.*
5	East Johnson Street	*Not impacted by other projects*
6	Paterson Relief Pipe	*Not impacted by other projects*
7	North Blount Street	*Not impacted by other projects*

Citywide Priority

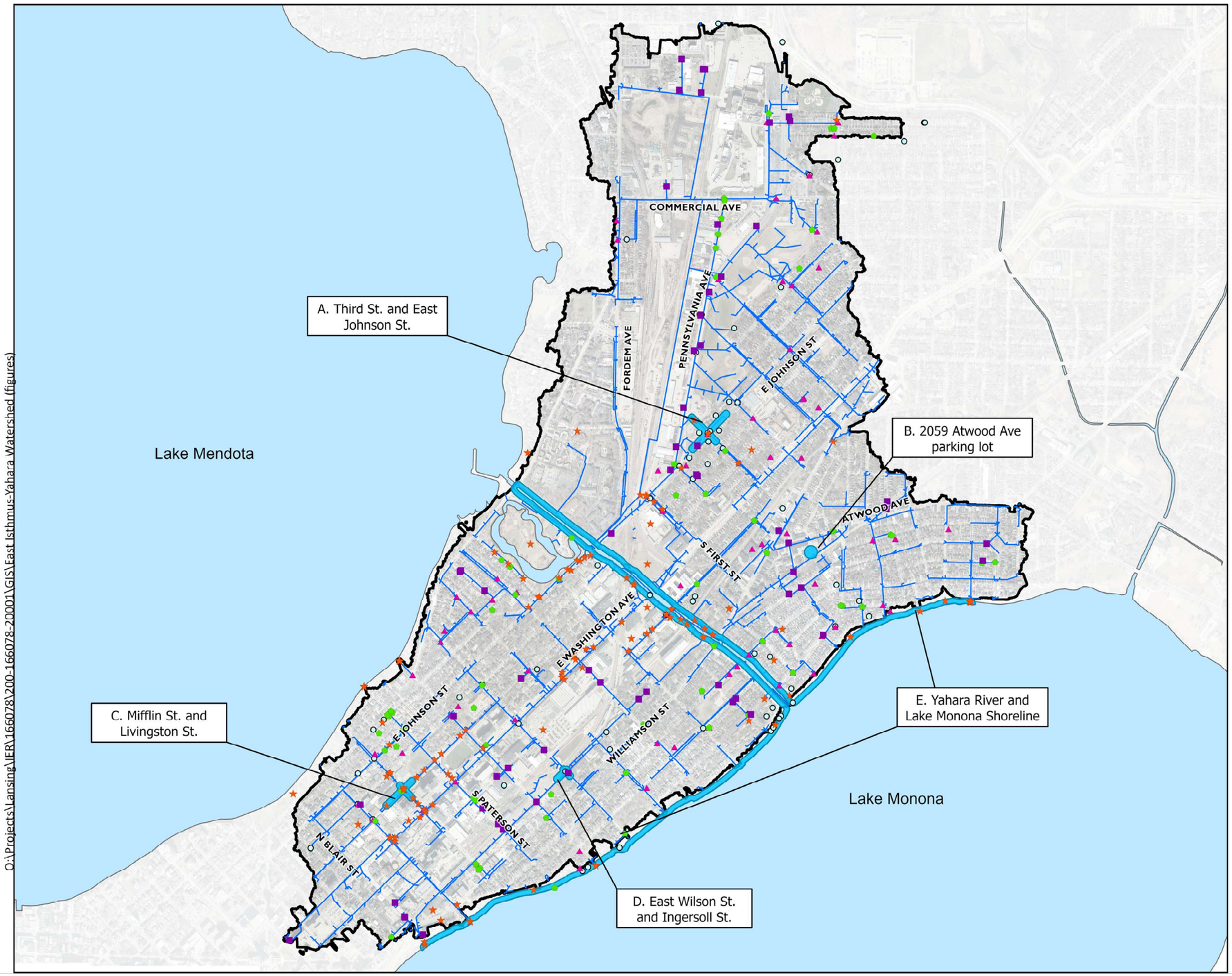
The City is conducting similar watershed studies for all the watersheds in the City. All watersheds are expected to have numerous recommendations resulting from the studies. The City has developed a process to rank and prioritize the order in which the solutions might be implemented if and when funding and public support are obtained. The process includes an extensive evaluation to score projects based on feasibility, constructability, cost, projected benefits, and racial equity and social justice parameters. This working database of projects is updated as each study is completed and reevaluated at least annually as part of the Storm Water Utility budgeting process.

14.0 ADDITIONAL FIGURES

Historic Flooding In Watershed

Figure 14-1
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI



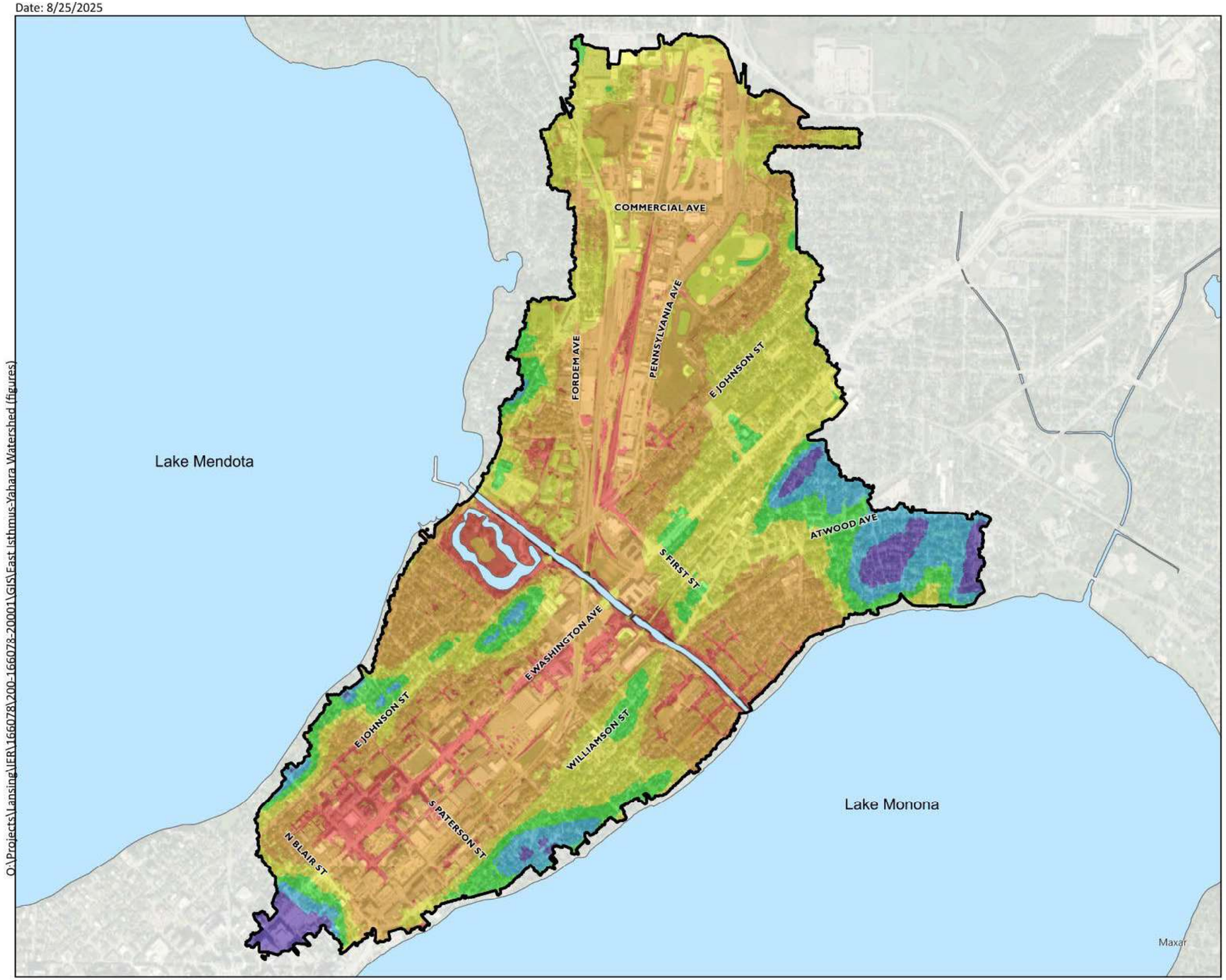
Lakes and Rivers
Watershed Boundary
Existing Storm Sewers
Flooding Focus Areas
Priority Inlets
Flooding Related to August 20, 2018 Storm Event
Operations Flooding Locations
Historic Flood Locations
Resident Reported Flooding (As of 8/18/2025)

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 8/25/2025



O:\Projects\Lansing\IER\166078\200-166078-20001\GIS\East Isthmus-Yahara Watershed (figures)

Topography In Watershed

Figure 14-2
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

Lakes and Rivers

Watershed Boundary

Surface Elevation (feet-NAVD88)

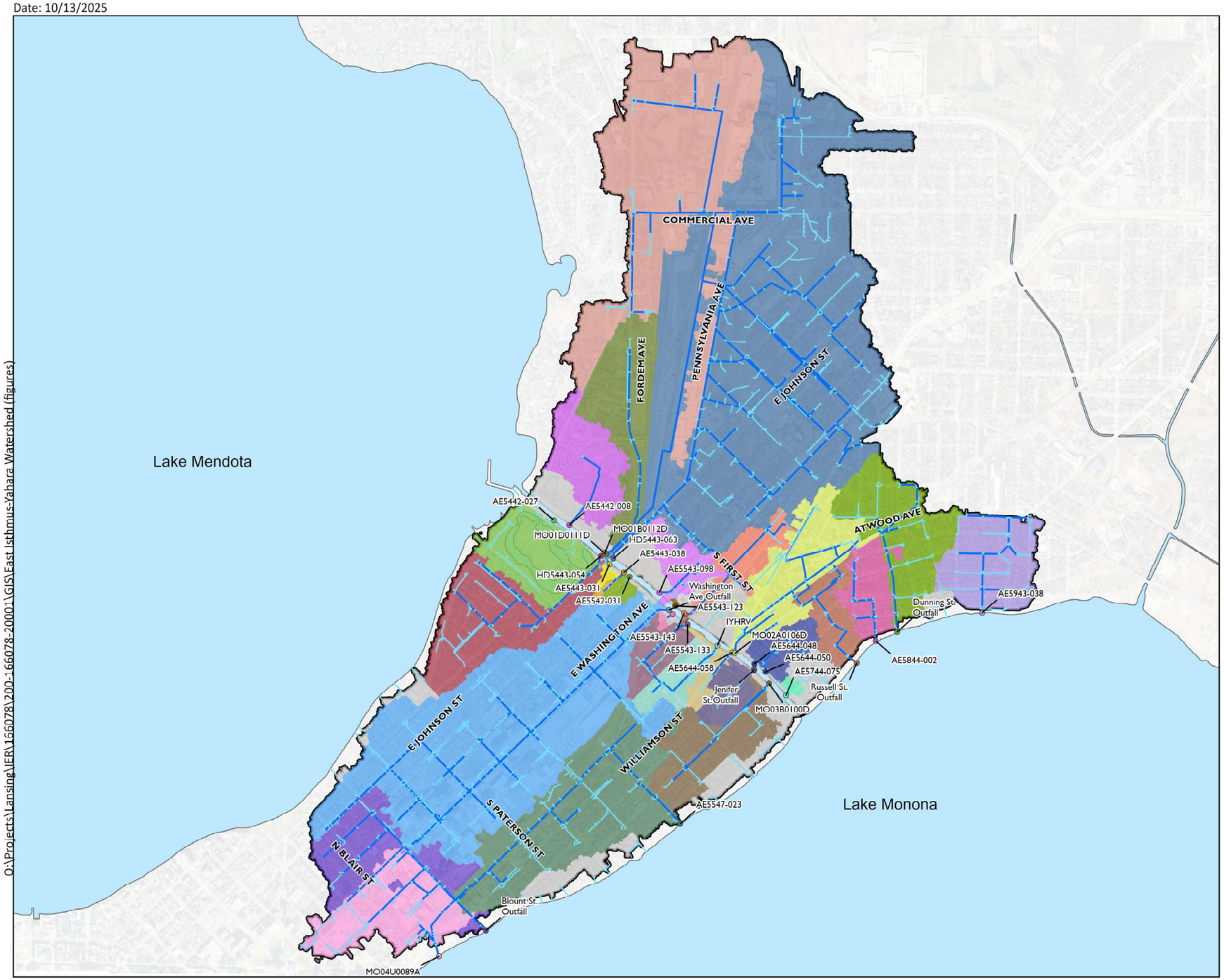
- < 850
- 850 - 855
- 855 - 865
- 865 - 875
- 875 - 885
- > 885

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Constructed Drainage System

Figure 14-3
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Lakes and Rivers
- Watershed Boundary
- Modeled Storm Sewer
- Not Modeled Storm Sewer

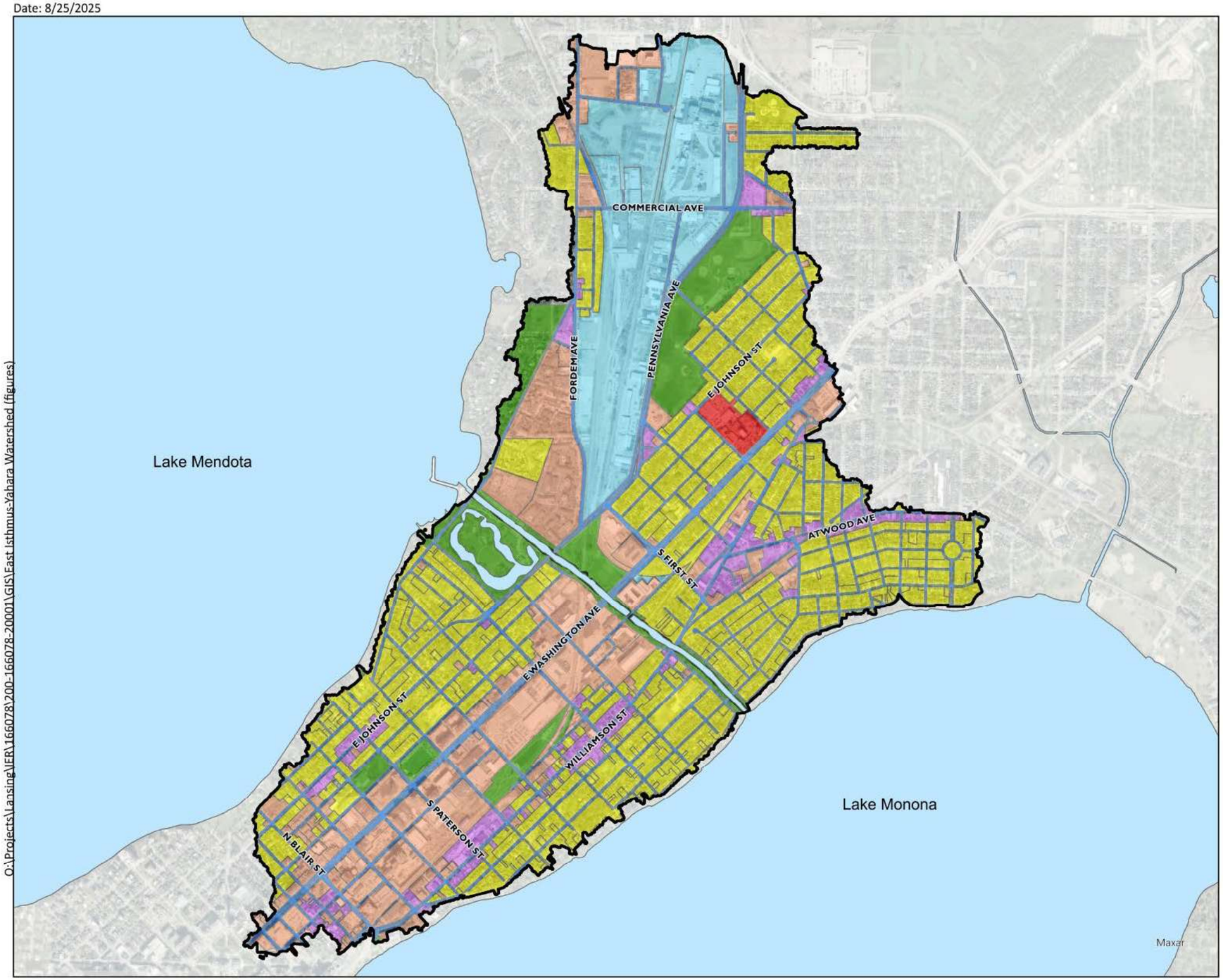
Outfall Tributary Areas
- AE5442-008
- AE5442-027
- AE5543-070
- AE5543-098
- AE5543-133
- AE5547-023
- AE5644-048
- AE5644-058
- AE5744-075
- AE5844-002
- AE5943-038
- HD5443-054
- HD5443-063
- MO01B0112D
- MO01D0111D
- MO02A0106D
- MO03B0100D
- MO04U0089A
- Blount Street Outfall
- Dunning Street Outfall
- Russell Street Outfall
- Washington Avenue Outfall
- Jenifer Street Outfall
- IYHRV
- AE5543-129
- AE5443-031
- AE5443-038
- AE5542-031
- AE5543-123
- Outfall Not Modeled
- Direct Discharge

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 8/25/2025



Watershed Land Use Types

Figure 14-4
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

Lakes and Rivers

Watershed Boundary

Land Use Type

Institutional

Commercial

Residential

Industrial

Open Space/Parks

Mixed Use

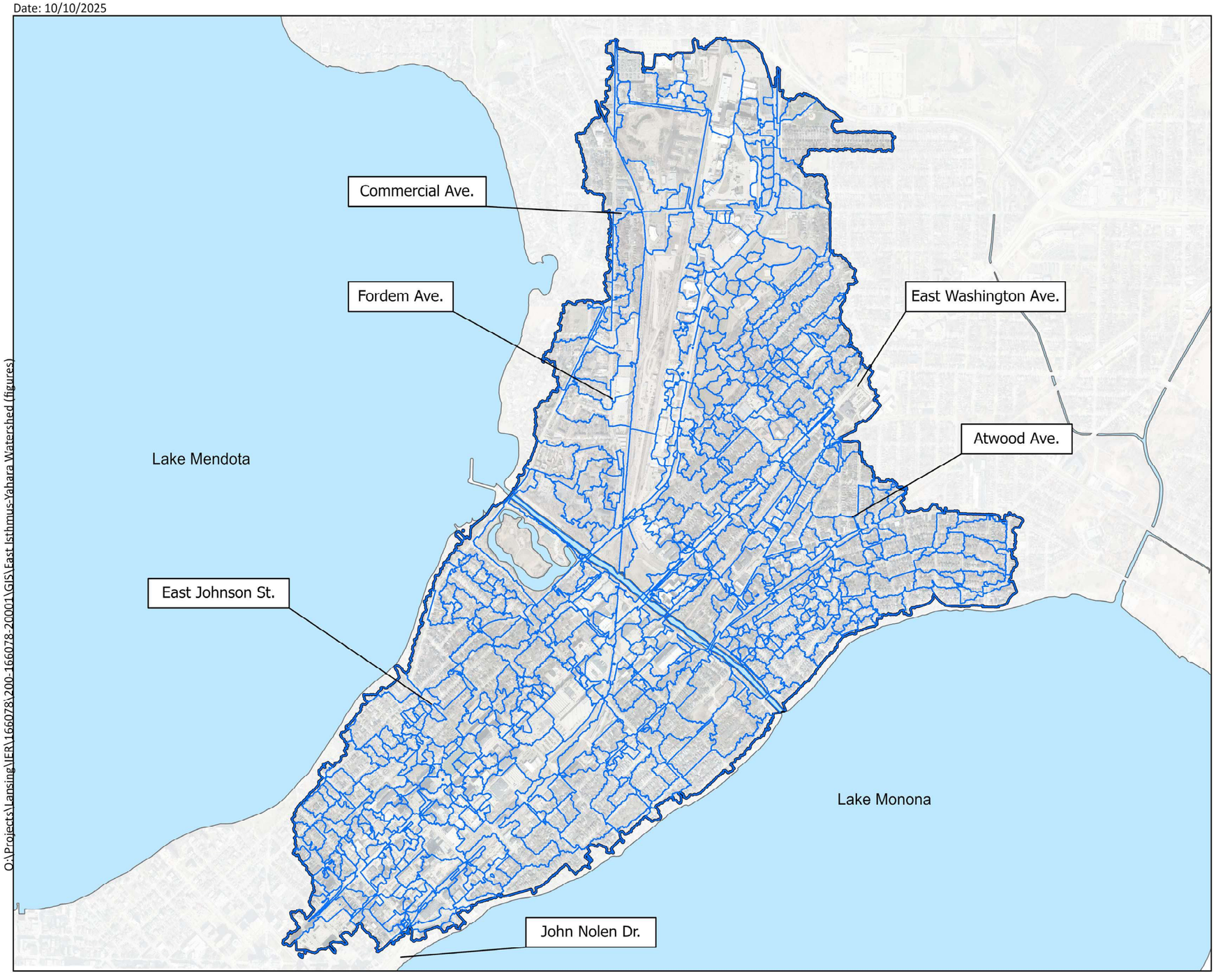
Street Right of Way

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



Delineated Subwatersheds

Figure 14-5
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

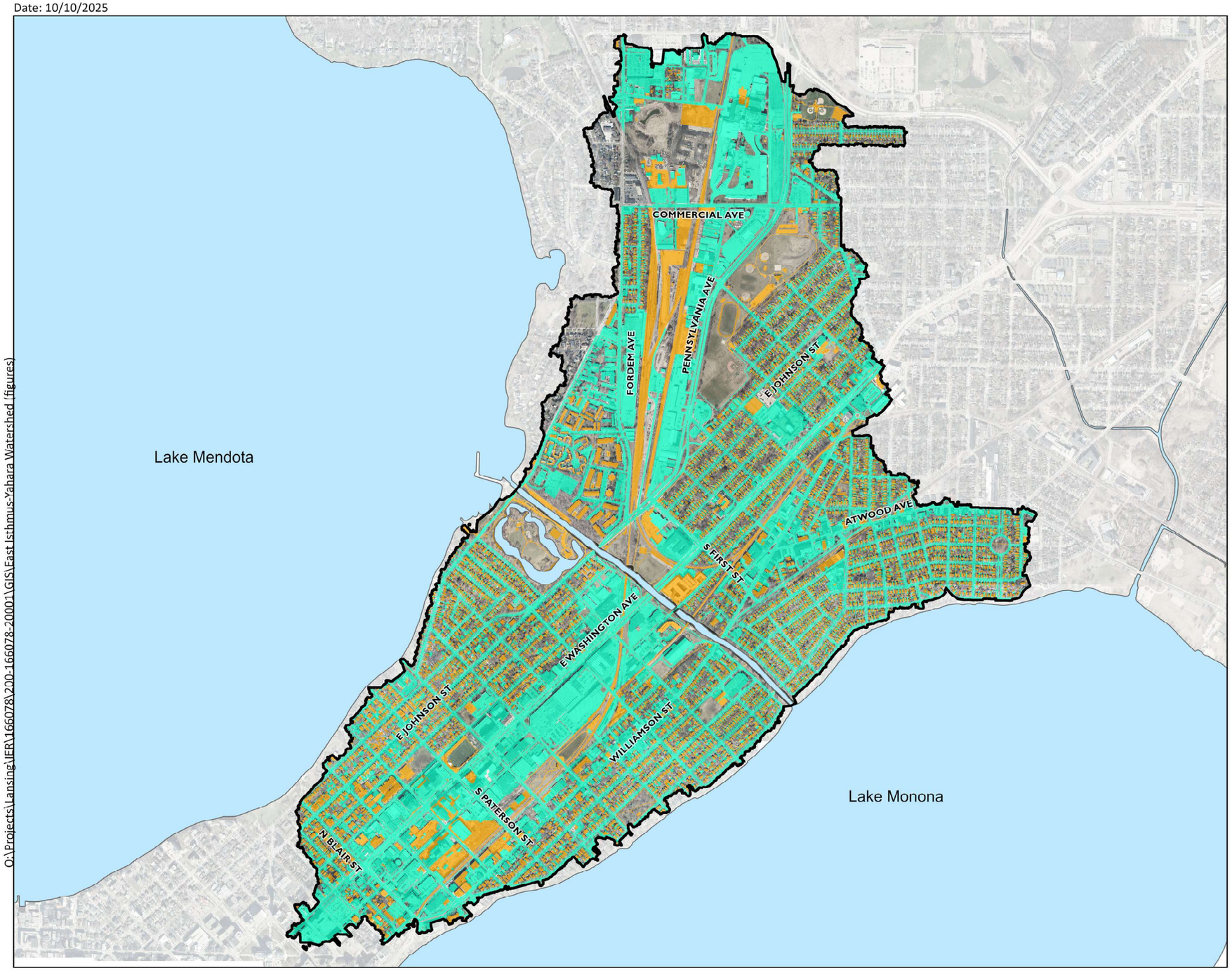
- Lakes and Rivers
- Watershed Boundary
- Inlet Subwatershed Boundary

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



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Impervious Areas

Figure 14-6
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

Lakes and Rivers

Watershed Boundary

Impervious Areas

Connected

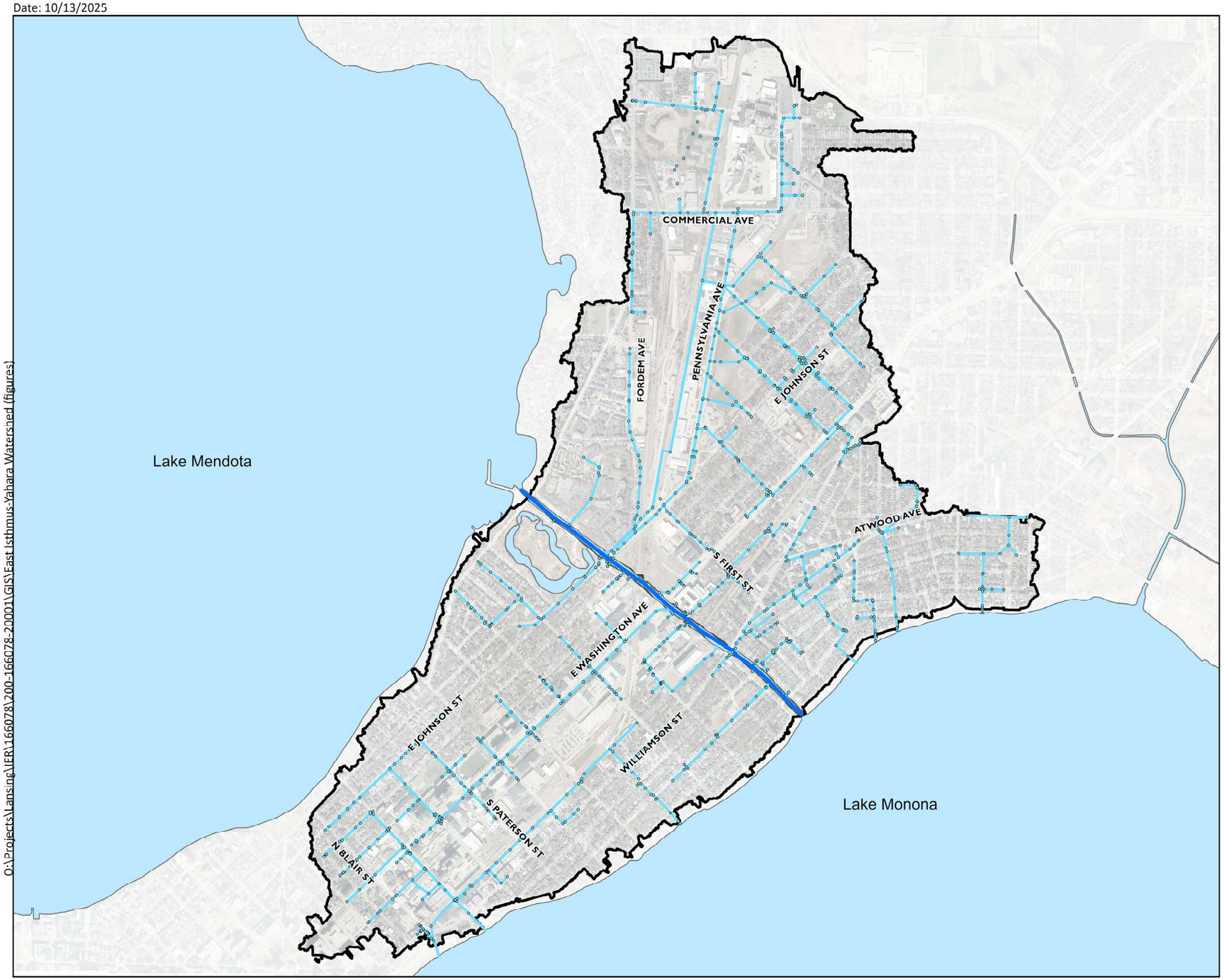
Disconnected

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Modeled Storm System

Figure 14-7
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

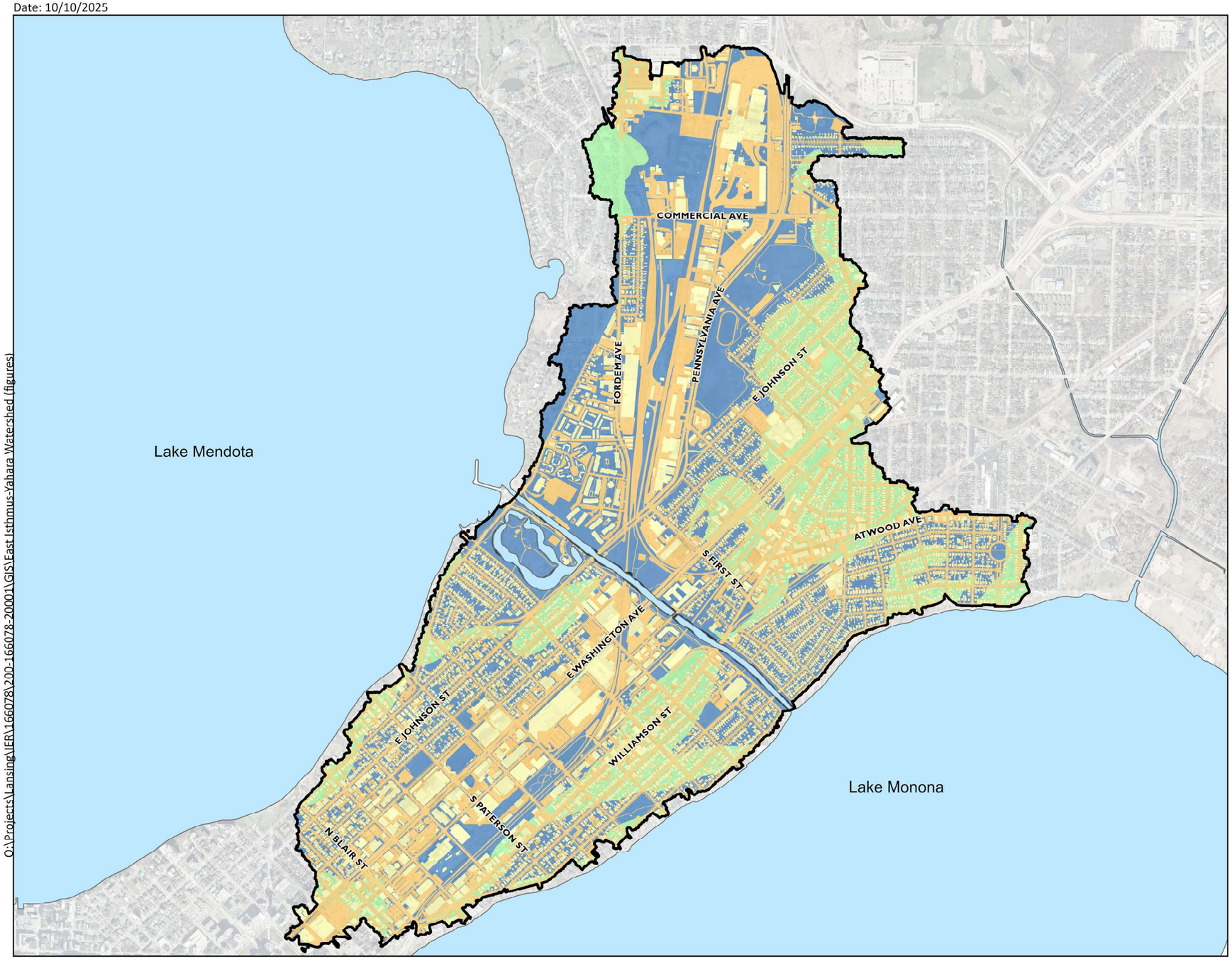
- Lakes and Rivers
- Watershed Boundary
- Modeled Storm Structure
- Modeled Storm Sewer
- Yahara River - Modeled as 1D Channel

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



2D Land Use and Surface Roughness

Figure 14-8
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

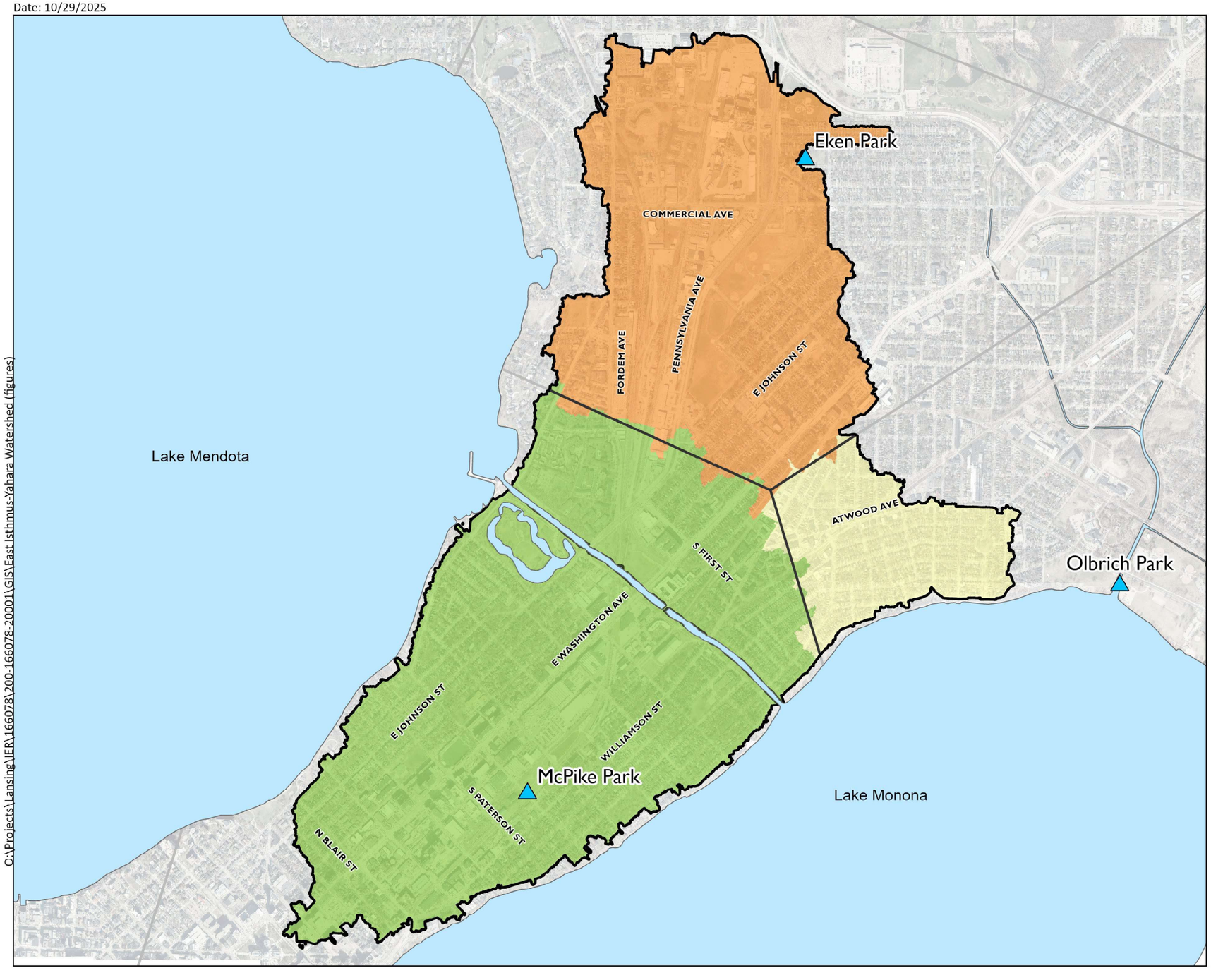
- Lakes and Rivers
- Watershed Boundary
- Roadway - 0.016 Mannings
- Building - Inactive Area
- Pervious with Silty Soil - 0.24 Mannings
- Pervious with Clayey Soil - 0.24 Mannings

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/29/2025



Thiessen Polygons in Watershed

Figure 14-9
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Lakes and Rivers
- Watershed Boundary

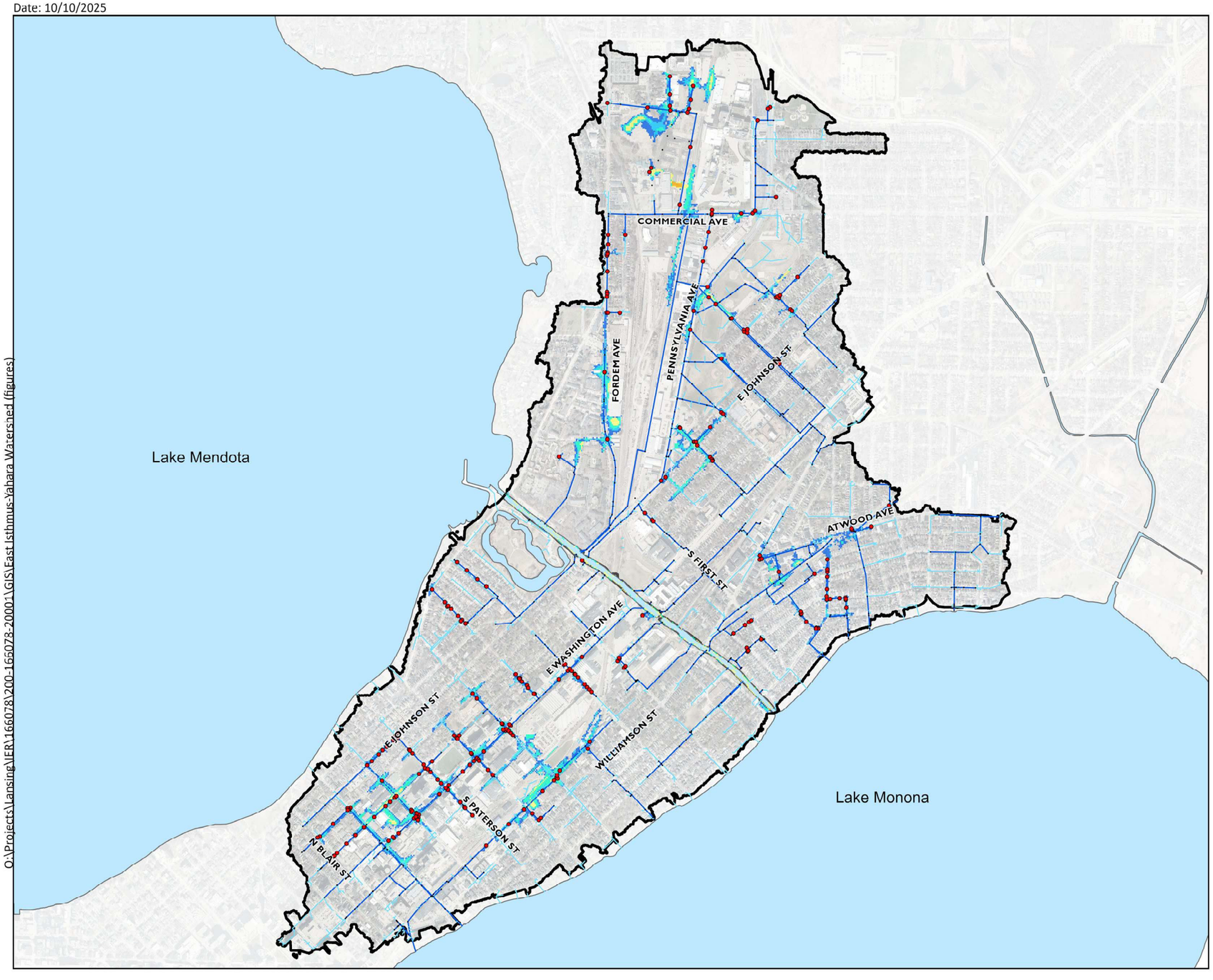
Subwatersheds Assigned Rain Gage
- Eken Park
- McPike Park
- Olbrich Park
- Rain Gage
- Thiessen Polygons

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



10% Annual Chance Storm - LoS Target #1 Scenario 1

Figure 14-10
East Isthmus Yahara
Watershed Study Report
City of Madison
Dane County, WI

Lakes and Rivers

Watershed Boundary

Storm Structure Predicted to Flood

Storm Structure

Modeled Sewer

Modeled Storm Sewer

Not Modeled Storm Sewer

Inundation (Feet)

0 - 0.25

0.25 - 0.5

0.5 - 1

1 - 3

3 - 6

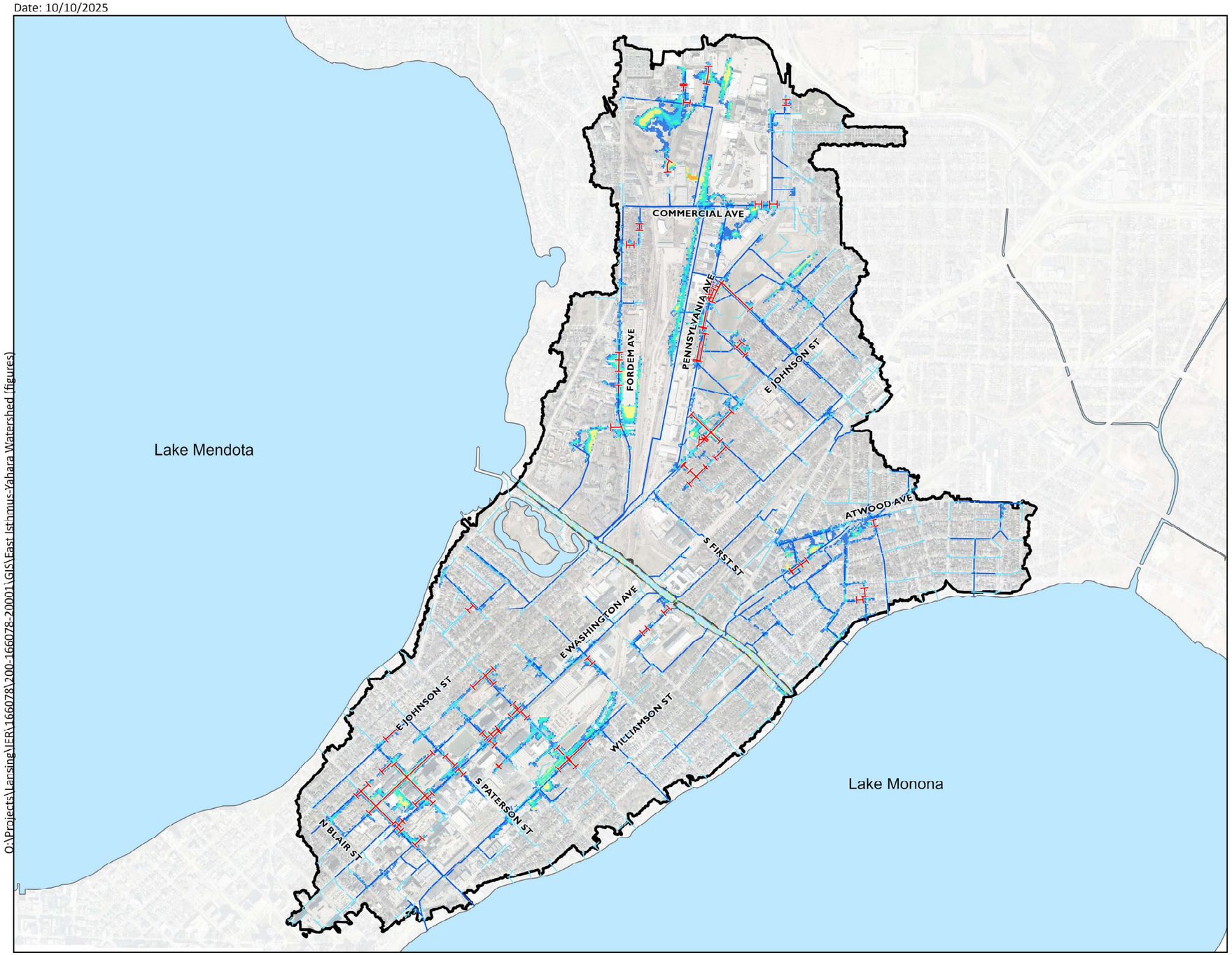
>6 ft

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



4% Annual Chance Storm - LoS Target #2 Scenario 1

Figure 14-11
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Lakes and Rivers
- Watershed Boundary
- Road Impassible - 0.2' or greater at centerline
- Modeled Storm Sewer
- Not Modeled Storm Sewer

Inundation (Feet)

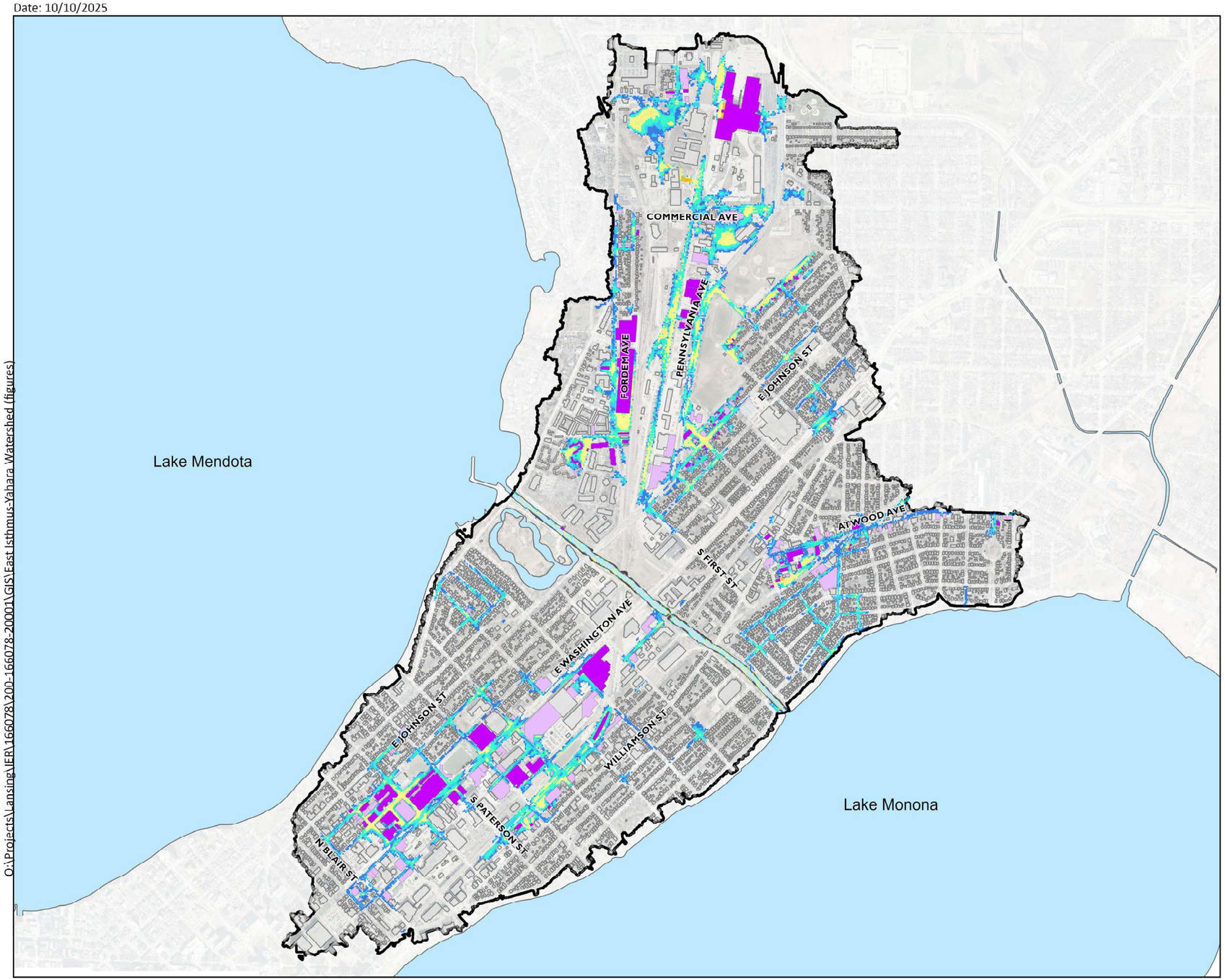
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- 1 - 3
- 3 - 6
- >6

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



1% Annual Chance Storm - LoS Target #3 Scenario 1

Figure 14-12
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

Lakes and Rivers
Watershed Boundary

Inundation (Feet)
0 - 0.25
0.25 - 0.5
0.5 - 1
1 - 3
3 - 6
> 6 ft

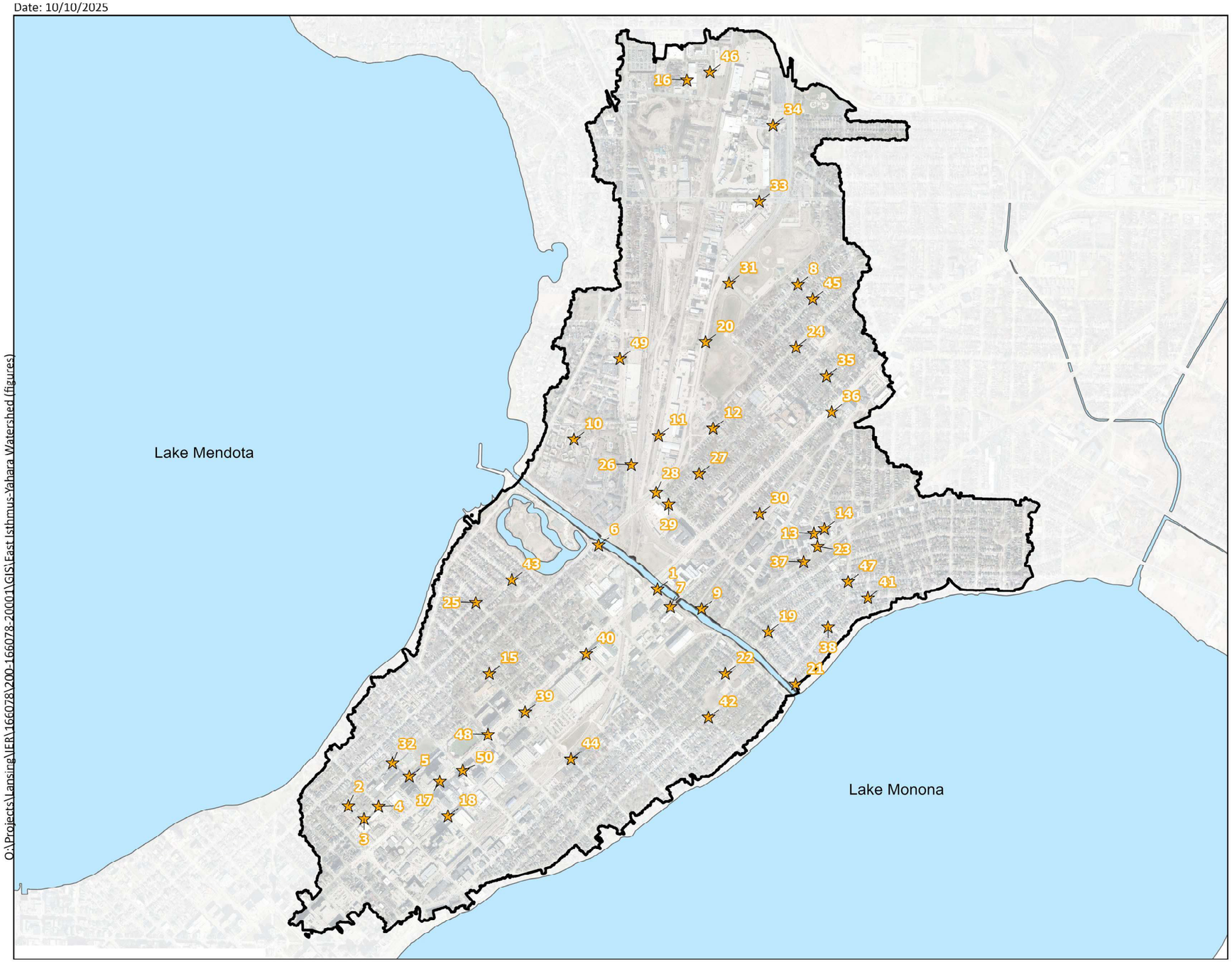
Building Flooding during 1% Annual Chance Storm
<6 in
>6 in
Buildings

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/10/2025



50 Flood Indicator Points in Watershed

Figure 14-13
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

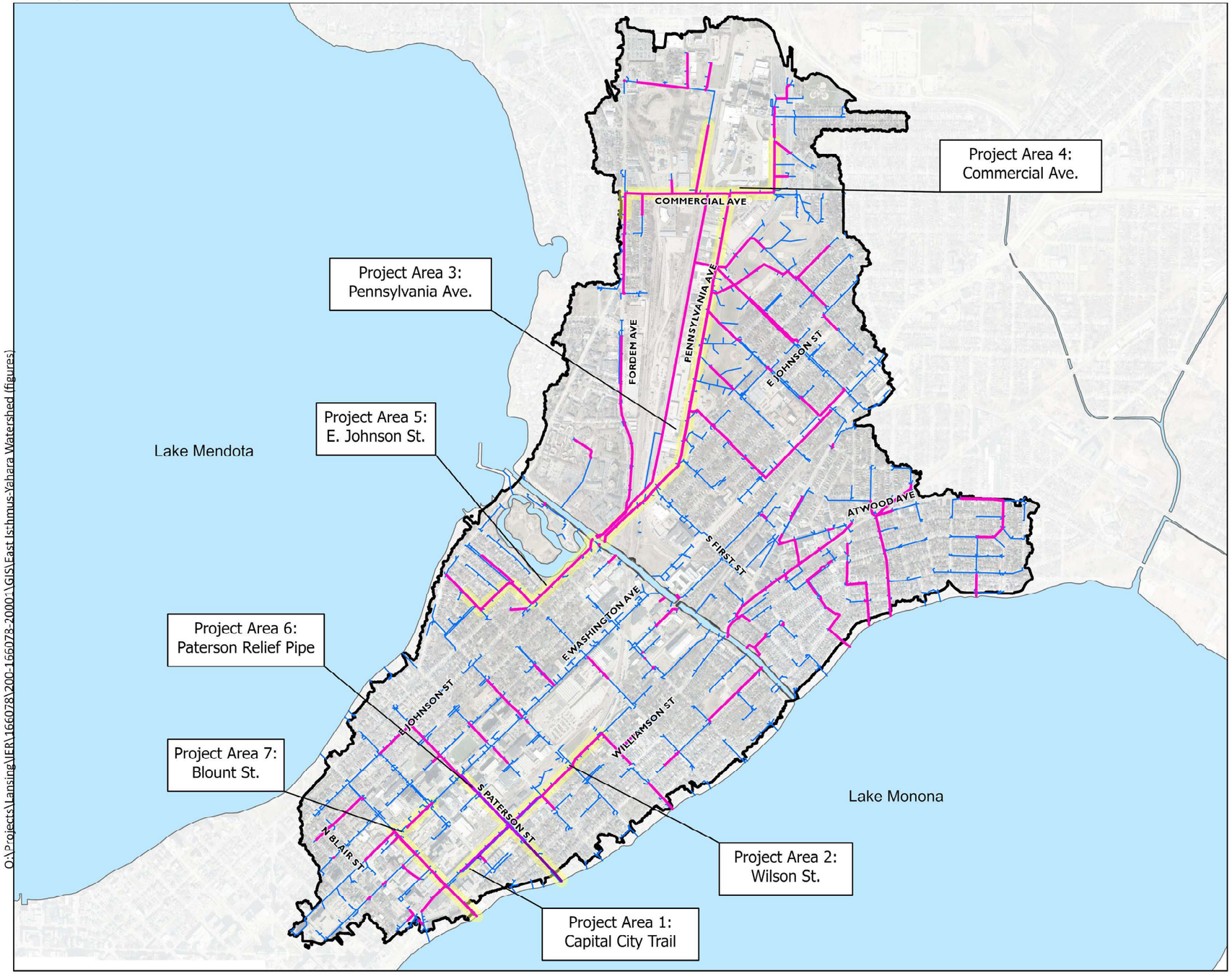
- Lakes and Rivers
- Watershed Boundary
- Flood Indicator Point

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Recommended Improvements

Figure 14-14
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Lakes and Rivers
- Watershed Boundary
- Standalone Projects

Proposed Storm Improvement

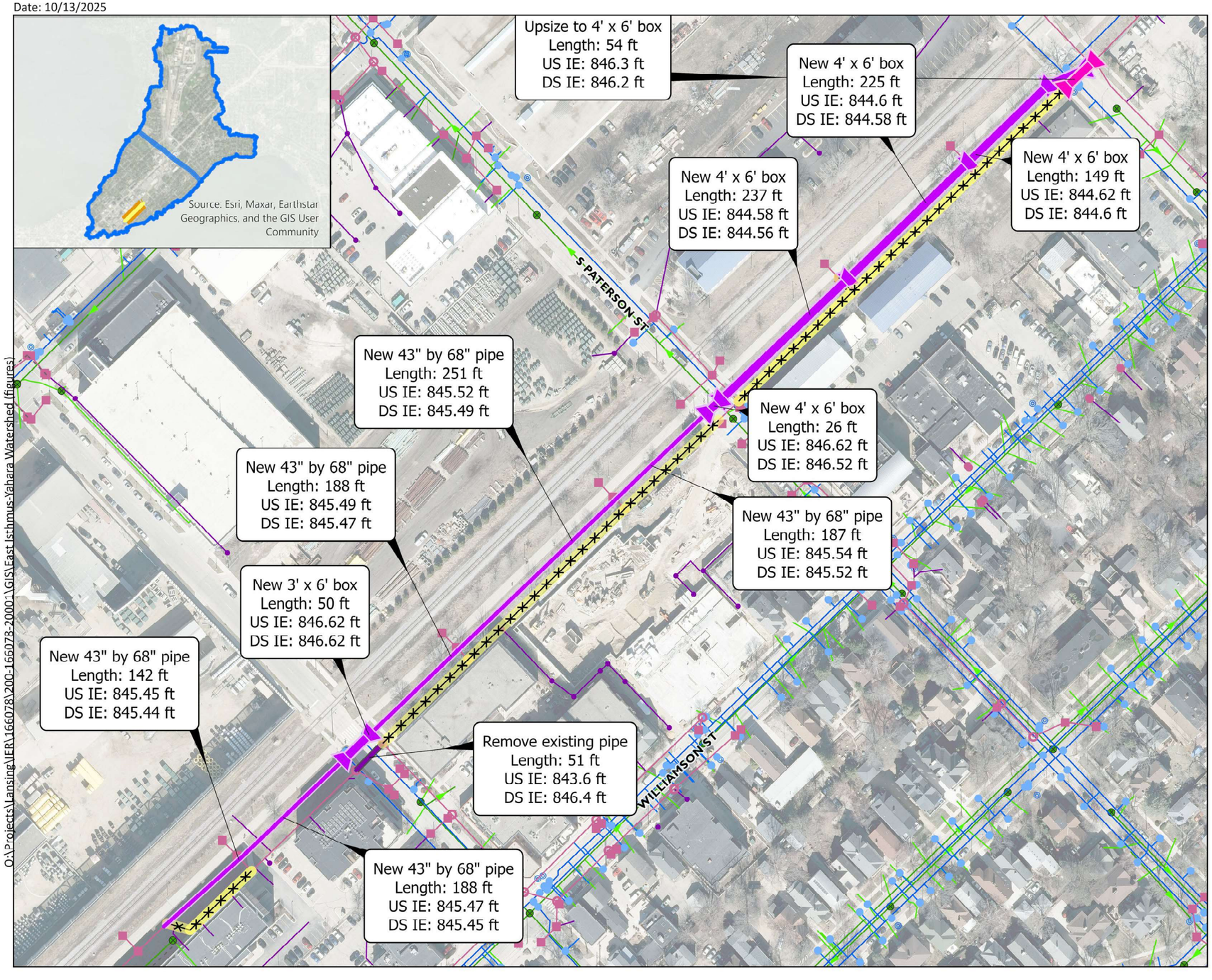
- New
- Special
- Upsize
- Existing Storm System

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Project Area 1 - Capital City Trail

Figure 14-15
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH

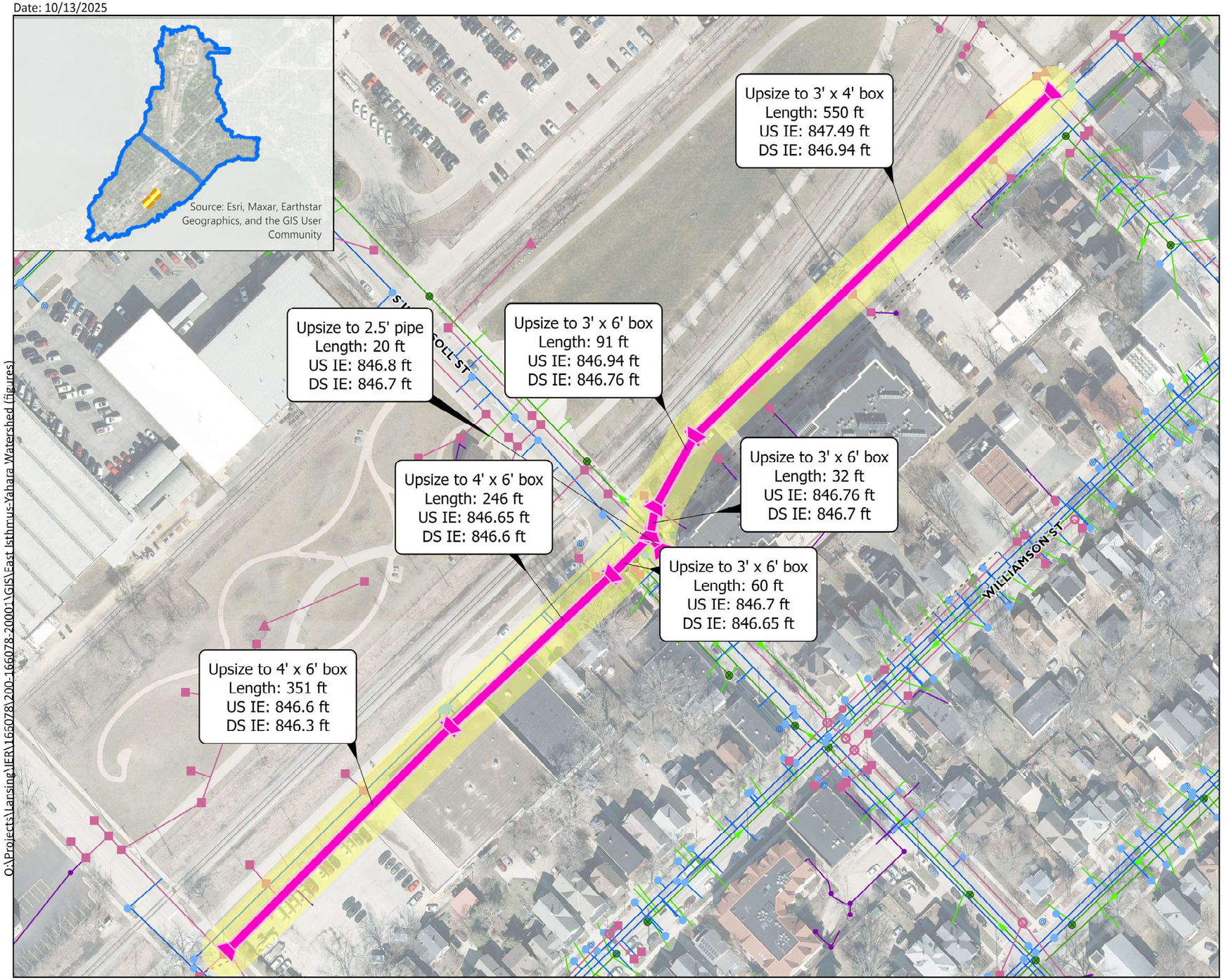
Proposed Pipes
- New
- Parallel
- Removal
- Special
- Upsize
- Valve
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 50 100 200 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Project Area 2 - Wilson St.

Figure 14-16
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

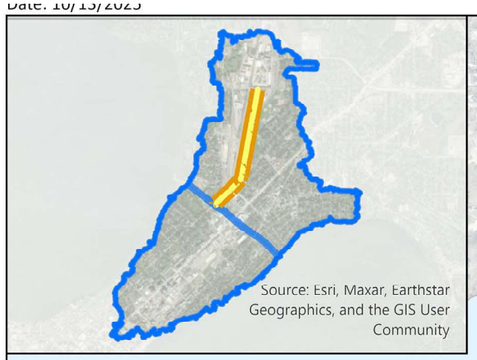
Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH
- Valve
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 40 80 160 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2023



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Project Area 3 - Pennsylvania Ave

Figure 14-17
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

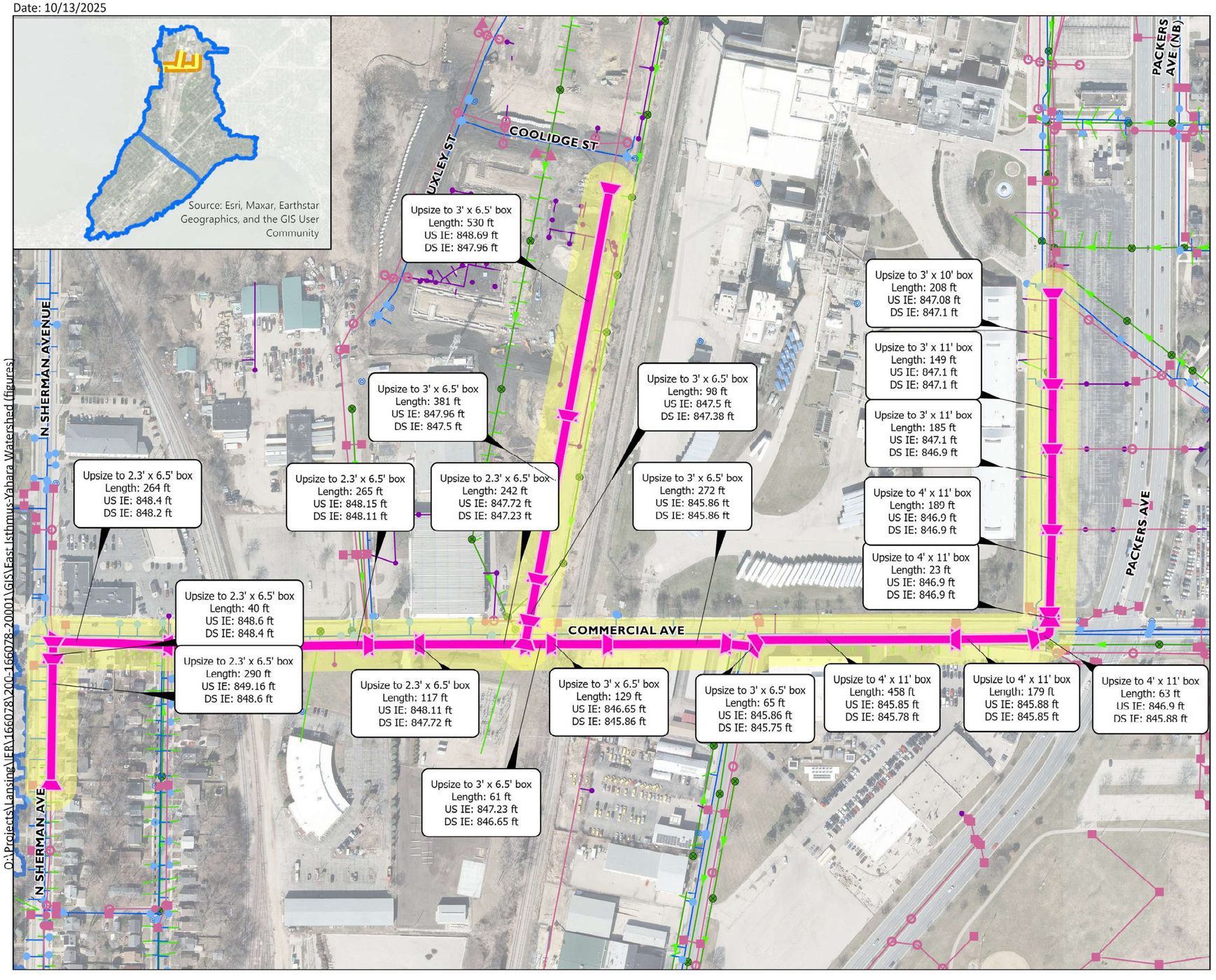
Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH
- Valve
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 260 520 1,040 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



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Project Area 4 - Commercial Ave

Figure 14-18
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

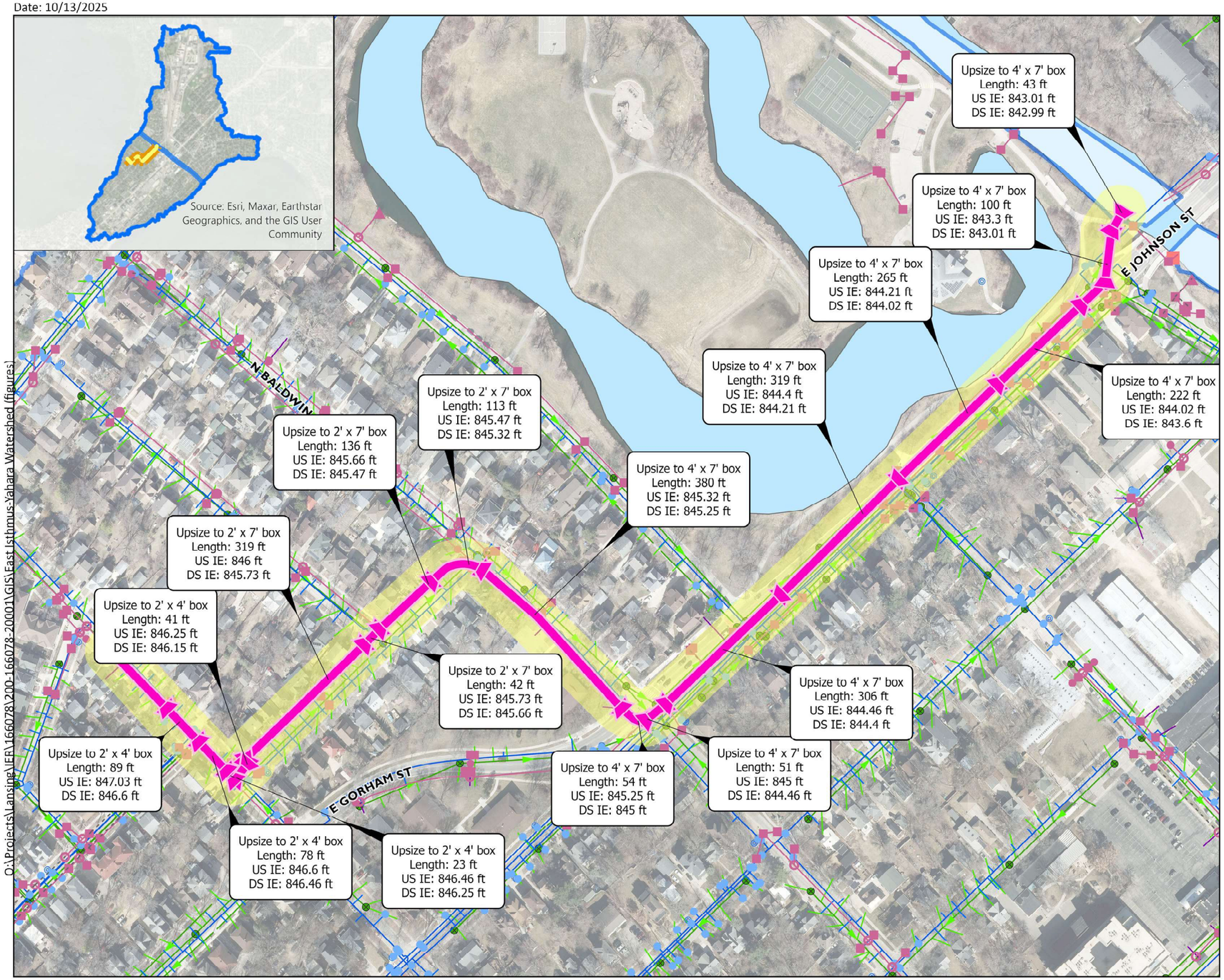
Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH
- Valve
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 90 180 360 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Project Area 5 - East Johnson St

Figure 14-19
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

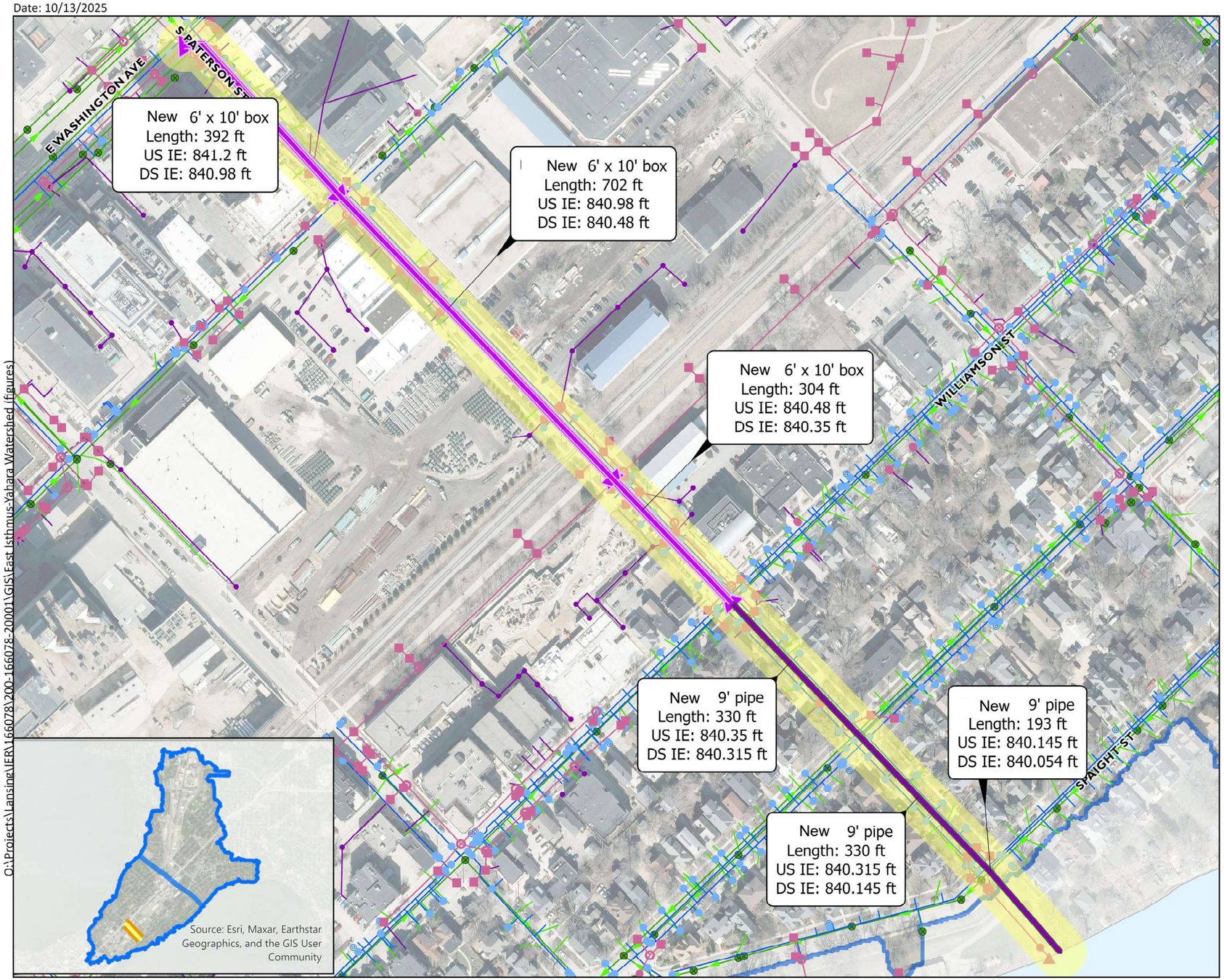
Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH
- Valve
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 75 150 300 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



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Project Area 6 - Paterson Relief Pipe

Figure 14-20
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Pipes
- New
- Parallel
- Removal
- Special
- Upsize

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH
- Valve

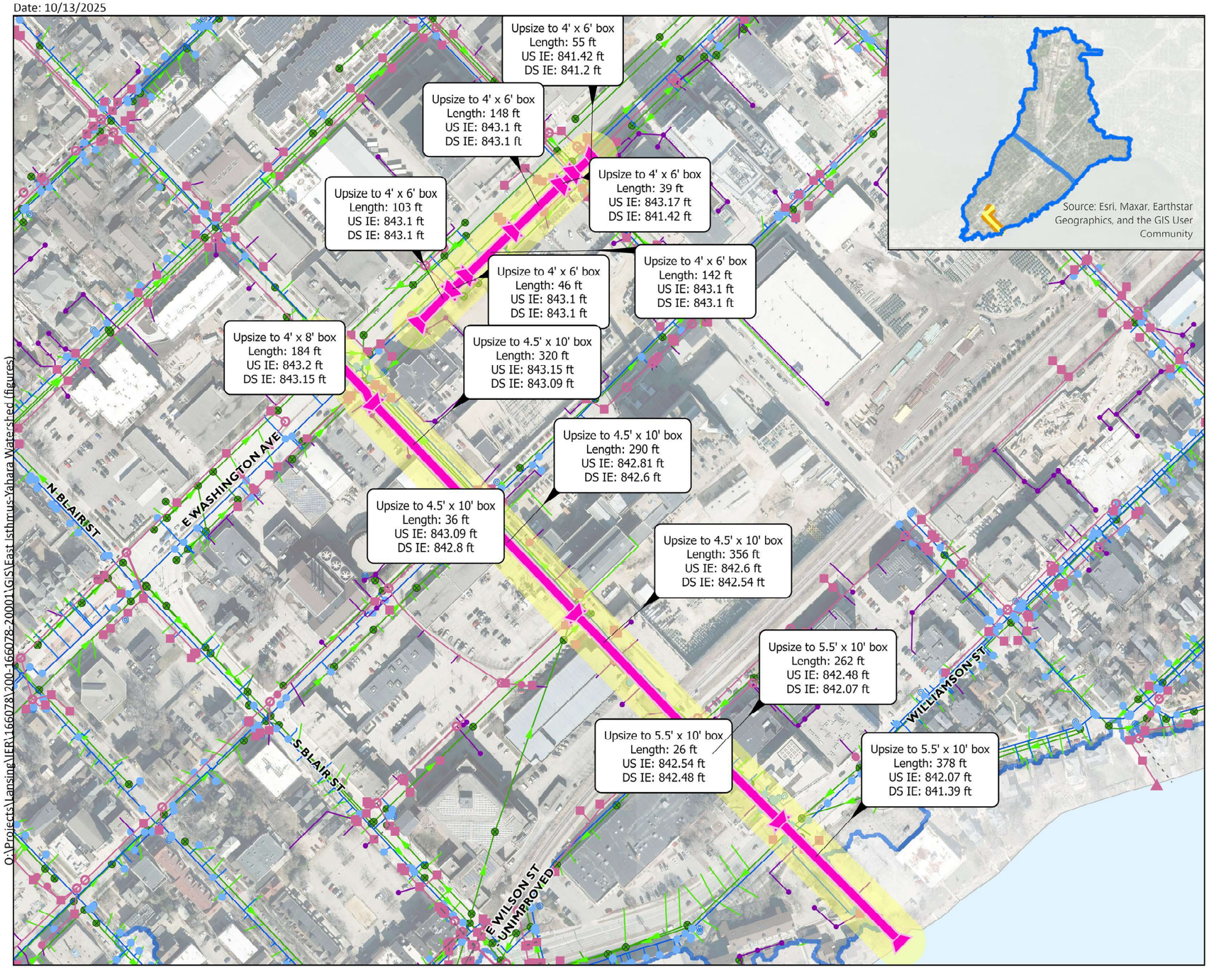
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 70 140 280 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



Project Area 7 - Blount St

Figure 14-21
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Watershed Study Area
- Lakes and Rivers

Proposed Boxes
- New
- Parallel
- Removal
- Special
- Upsize

Storm Pipes
- Abandoned
- Removed
- Main

Storm Structures
- Inlet
- Headwall
- Other
- Apron End
- Access MH
- Valve
- Watermain
- Water Service Line
- Hydrant
- Sanitary Main
- Sanitary Lateral

N

0 87.5 175 350 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025

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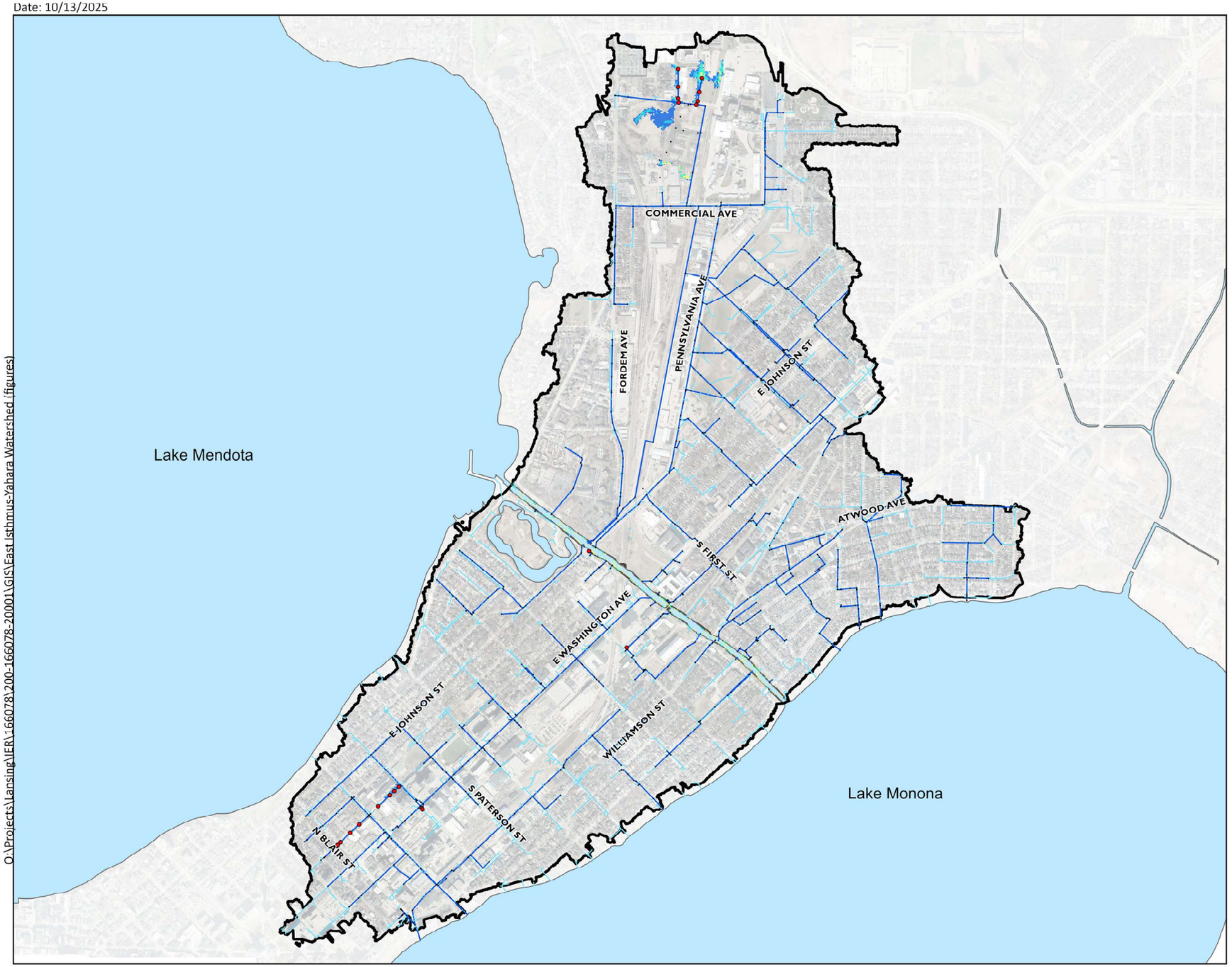


10% Annual Chance Storm - LoS Target #2 - with Recommendations Scenario 1

Figure 14-22
East Isthmus Yahara
Watershed Study Report
City of Madison
Dane County, WI

- Lakes and Rivers
- Watershed Boundary
- Storm Structure Predicted to Flood
- Storm Structure

Modeled Sewer
- Modeled Storm Sewer
- Not Modeled Storm Sewer

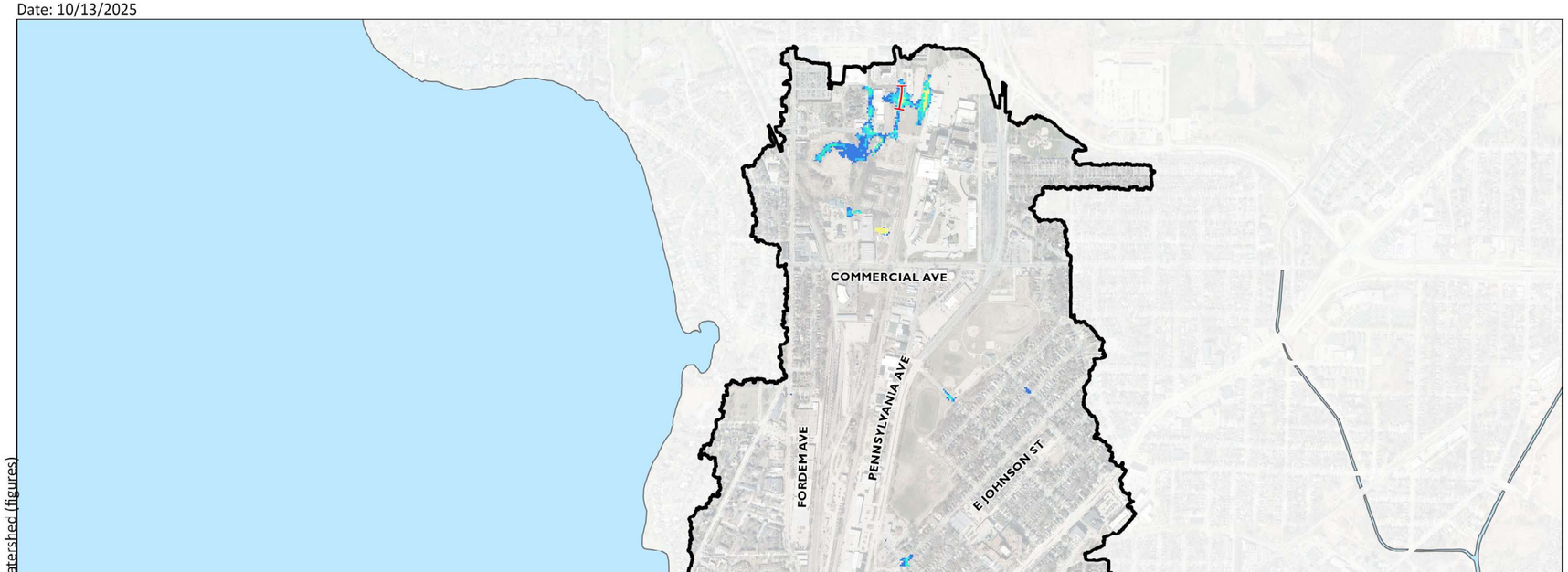
Inundation (Feet)
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- 1 - 3
- 3 - 6
- >6 ft

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



4% Annual Chance Storm - LoS Target #2 - with Recommendations Scenario 1

Figure 14-23
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

- Lakes and Rivers
- Watershed Boundary
- Road Impassible - 0.2' or greater at centerline

Inundation (Feet)

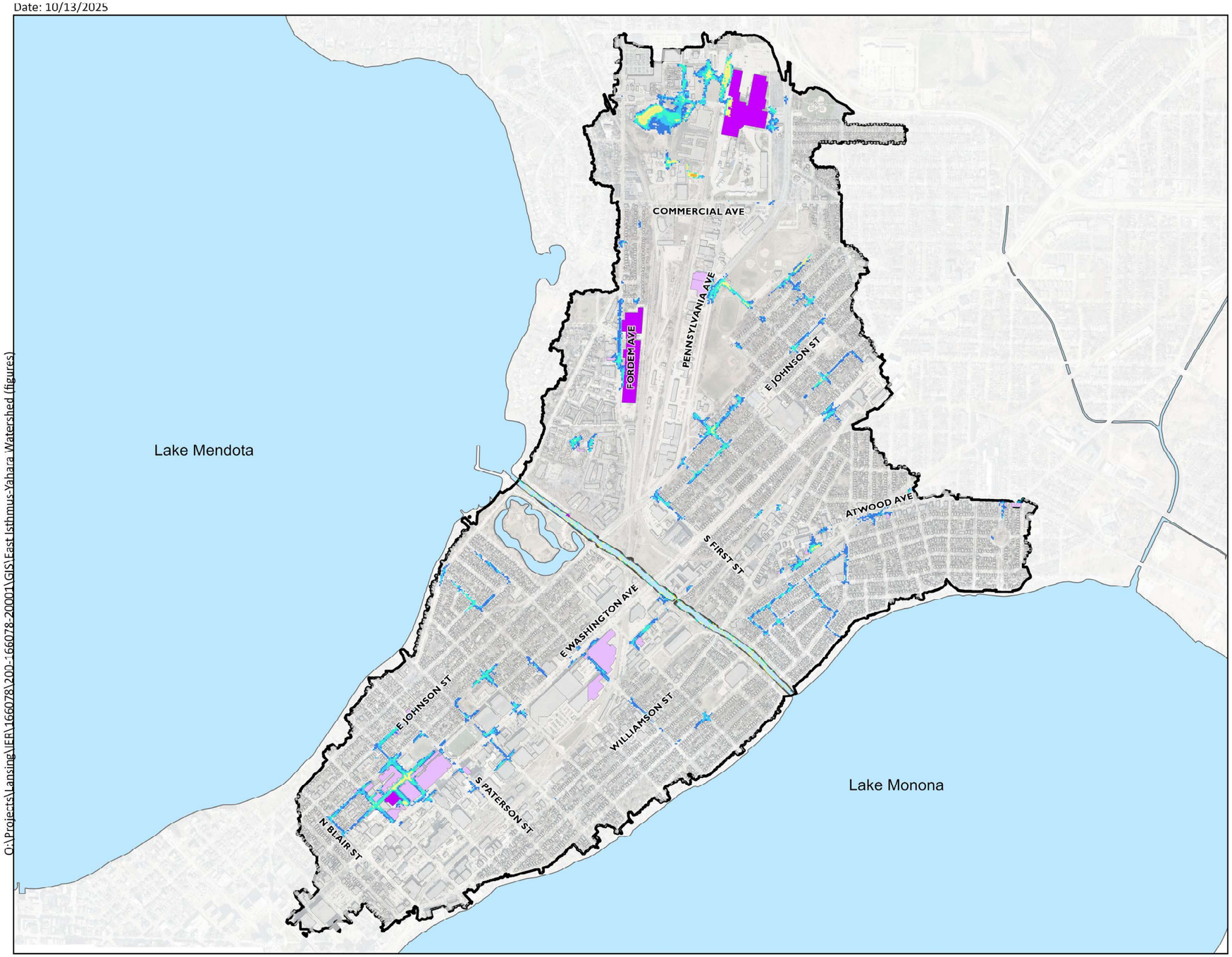
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- 1 - 3
- 3 - 6
- 6 - 20

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



1% Annual Chance Storm - LoS Target #3 - with Recommendations Scenario 1

Figure 14-24
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

Lakes and Rivers

Watershed Boundary

Building Flooding during 1% Annual Chance Storm
- <6 in
- >6 in

Buildings

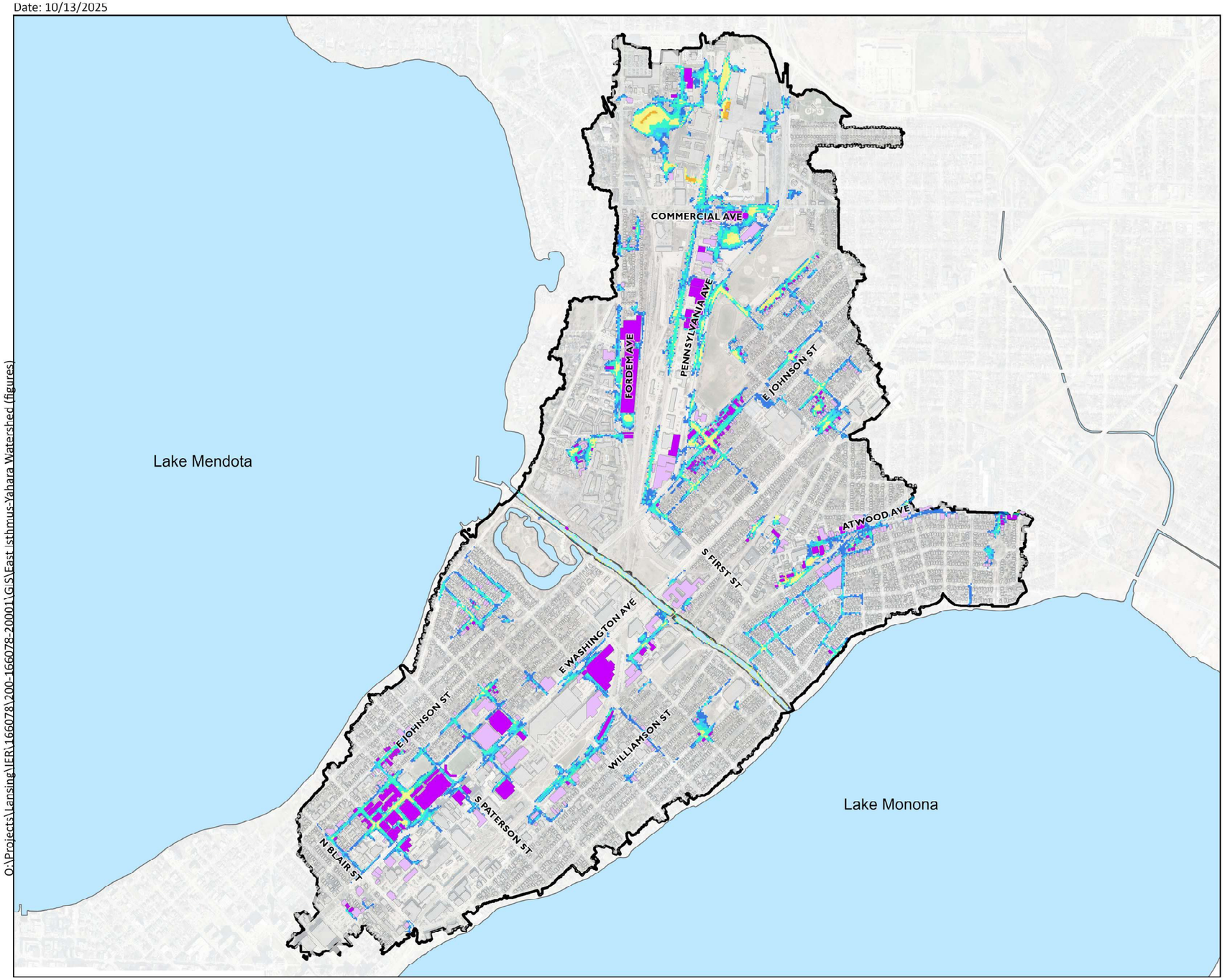
Inundation (Feet)
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 1
- 1 - 3
- 3 - 6
- 6 - 20

N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Date: 10/13/2025



0.2% Annual Chance Storm - with Recommendations Scenario 1

Figure 14-25
East Isthmus Yahara
Watershed Study Report

City of Madison
Dane County, WI

Lakes and Rivers
Watershed Boundary

Inundation (Feet)
0 - 0.25
0.25 - 0.5
0.5 - 1
1 - 3
3 - 6
6 - 20
Buildings

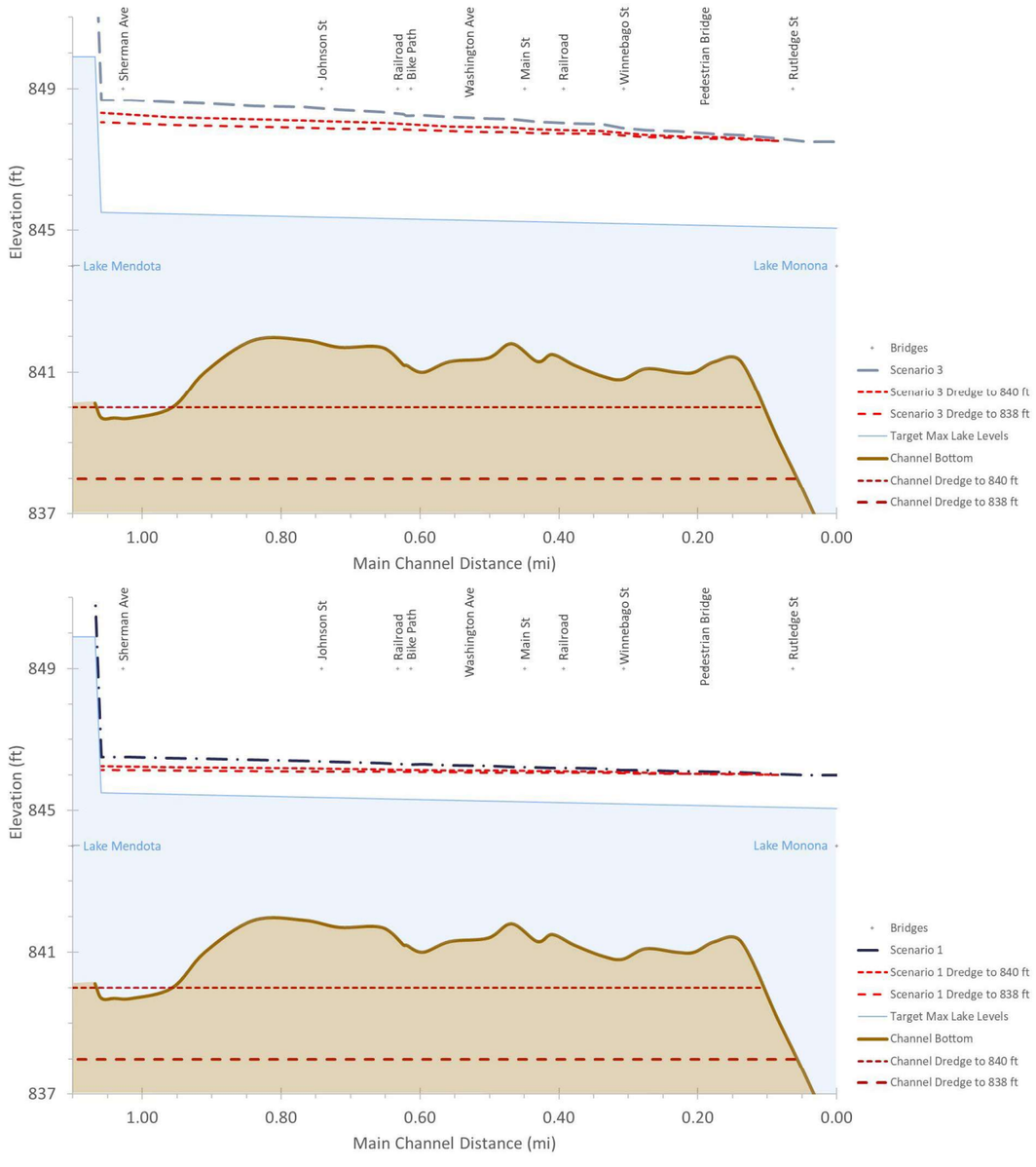
Building Flooding during 0.2% Annual Chance Storm
<6 in
>6 in

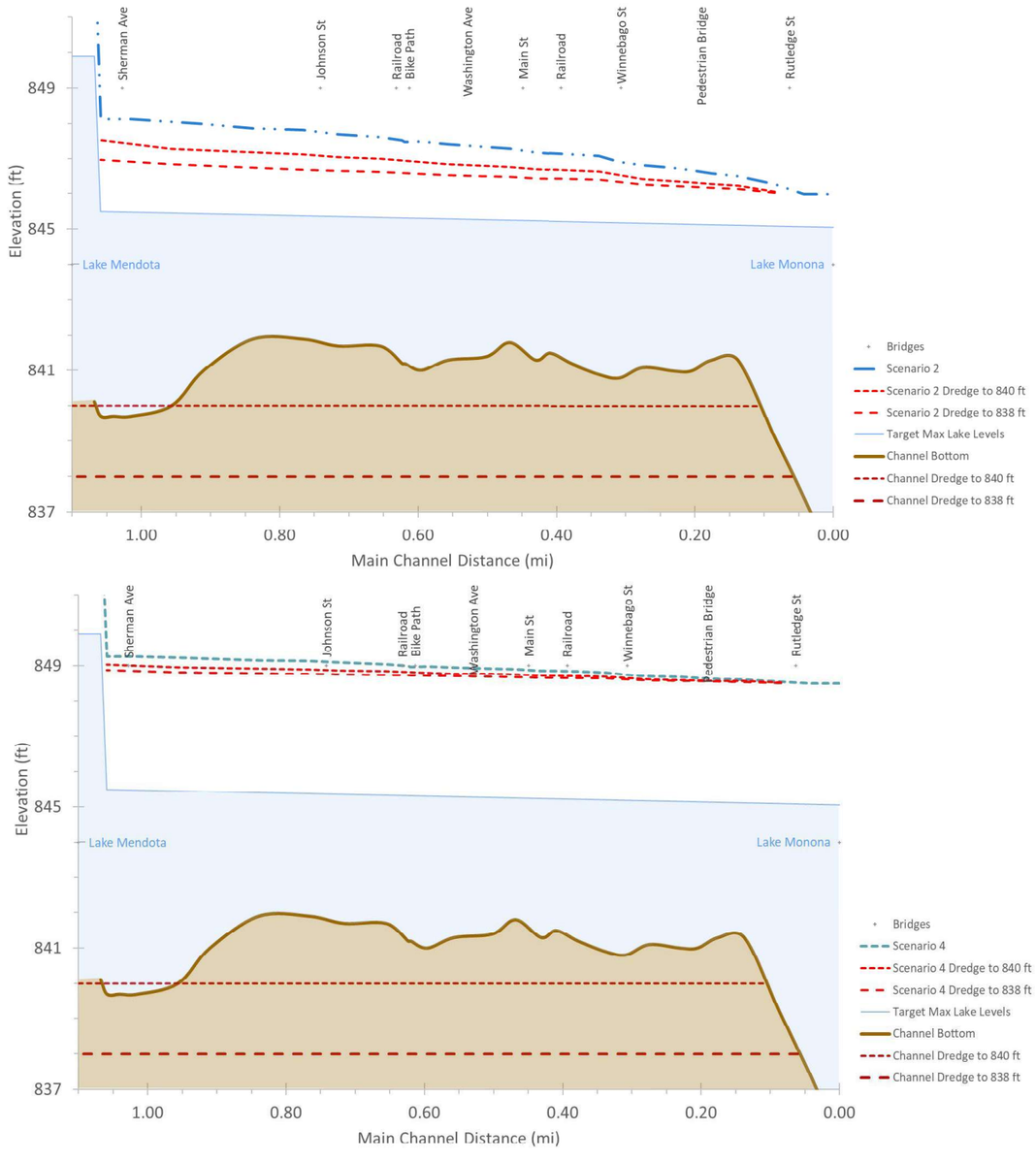
N

0 500 1,000 2,000 Feet

CITY OF MADISON ENGINEERING

Figure 14-26: Yahara River – Dredging Results Scenarios 1-4





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APPENDIX A: HYDRAULIC MODELING GUIDANCE

MODELING GUIDANCE

Version 2020_07_14 (DRAFT)

Round 3 Study Consultants

The City recognizes that an important aspect of modeling is professional judgement; and it will be up to the Consultant to appropriately define parameters, variables, and methodology. However, it is in the City's best interest to have relative uniformity amongst City models. This guidance document was developed to provide uniformity. Where inputs and assumptions differ from those outlined in this document, the Consultant will be expected to justify and document the differences and reasons for the differences.

The purpose of the watershed modeling is to construct planning-level models of the watershed to identify locations with significant conveyance system deficiencies. The identified solutions will be conceptual solutions, not design-level solutions. Characterization of localized street flooding is not a focus.

City of Madison Flooding Level of Service Goals

1. 10-year design storm event:
    a. No surcharging onto the street for up to the 10-year design storm; water shall be contained within the pipes and structures.
    b. There are locations within the City where low points exist that pond water; these low points are excluded from this goal and will be addressed as streets are redesigned.
    c. For locations limited by known inlet capacity, allow no more than 0.5 feet of water above storm sewer inlet rim.
2. 25-year design storm event:
    a. Centerline of street to remain passable during 25-year design storm with no more than 0.2 feet of water at the centerline.
    b. Note that the Watershed Study modeling approach will not explicitly account for cross flow conditions where more gutter flow on one side of the street can overtop the crown.
3. 100-year design storm event:
    a. No home or business will be flooded during the 100-year design storm.
    b. Enclosed depressions to be served to the 100-year design storm (which can include safe overland flow within street, easements, greenways or other public lands).
    c. Greenway crossings at streets to be served to the 100-year design storm.
4. 500-year design storm event:
    a. Safely convey stormwater; i.e. limited impact on private property
5. Provide flooding solutions that do not negatively impact downstream properties.

Due to the inherent variability and complexity of stormwater conveyance systems, it is understand it may not be practical to meet the above level of service goals in all areas of the City.

Guidance for Solutions

1. For the purpose of the watershed studies "deficiencies" in the system shall be defined as existing infrastructure, drainage capacity, or system limitations that fail to meet the goals stated in 1-5 above.
2. Watershed deficiencies will be reviewed, and solutions will be provided up to, the 100-yr design storm.
3. In areas where flooding occurs in events exceeding the 100-year storm, those areas will not be prioritized for engineering solutions, but will be identified in existing conditions model for 500-year event storms.
4. Proposed solutions will be identified for only the publicly owned drainage system.
5. Drainage issues that are private (water from the public infrastructure such as streets, greenways, ponds and/or easements is not the cause of the drainage issue) will not require modeling solutions but should be noted, where possible, in the existing conditions analysis so staff may

work with property owners if necessary. (See Also Hydraulics section of Modeling Guidance for discussion on private system existing conditions modeling.)

Emergency Vehicle Allowable Flood Depths (email from Fleet on 5/12/2020)

1. SUVs – up to 6-inches
2. Large Trucks – up to 3-feet
3. Ambulances, vans, and pick-up trucks – between 6-inches and 3-feet

MODELING PARAMETERS:

Initial model parameters are the following items:

1. Include storm sewers and culvert segments for the trunk line drainage system and major conveyance to that system. Additional conveyance components may be included if felt necessary by the modeler to understand the conveyance system drainage.
2. Inlet capacity will not be included in the model. It is assumed that sufficient inlets are present accommodate stormwater. In areas where there is known chronic flooding that has been reported to Engineering, additional detail may be requested.
3. Incorporate significant existing storm water management facilities (public and private) into the model.
4. Subdivide provided outfall basins into smaller watersheds as needed in order to properly execute the model.
5. Coordinate System and Vertical Datum
    a. Horizontal Coordinate System: Wisconsin County Coordinate System – Dane Zone NAD83 (HARN).
    b. Vertical Datum: NAVD88 (pre 2007 adjustment) ft (City of Madison Datum + 845.6)
    c. Various data sources have different horizontal and vertical datums, check datum for each data source prior to use.
6. Monitoring Data Time Zone: Different sources of monitoring data use different time zones. Also, some adjust for daylight savings time whereas others do not. When using the monitoring data, check both the time zone and if the data is adjusted for daylight savings time.
7. Monitoring Data Review: Familiarize yourself with the location of the monitoring gage at each site. Also, visit the monitoring site following a rain event to review the site conditions for things that would impact the measurements. For example, is there debris clogging anything?
8. Naming convention
    a. Names are limited to 20 characters where possible. Both PC-SWMM and XP-SWMM can take lengthy names but both indicate shorter is better for avoiding truncating names.
    b. Subcatchments:
        i. Begin with Subcatchments naming convention provided by the City in the Outfall Basin feature class.
            1. Add a three-digit designator to the end of the name, beginning with 000
            2. As subcatchments are subdivided, increase the added designator by 1.
            3. Example: ME04-A-0014-H *(Provided by City)* → ME04-A-0014-H-MAD-C-000 *(For the original basin)* → ME04-A-0014-H-001 *(For first subdivision)*
        ii. Final outfall basin feature class file, including supporting files used to compute runoff timing and volume parameters shall be part of the deliverables provided to the City of Madison.
    c. Structures and Junctions:
        i. Node (Junction/Storage/Outfall) names for existing structures shall retain the asset identification provided by the City.
        ii. Proposed Structure names are to be determined by the Consultant but shall be given a "logical" name that reflects general location, function, or other.
        iii. For junctions that need to be added that are storm sewer tees as constructed, use the downstream manhole / structure with "_01" added in increasing order moving from downstream to upstream. For example, the first junction added for a tee upstream of MI3350-001 would be MI3350-001_01

d. Pipes:
    i. Conduit names for existing pipes shall retain the asset identification provided by the City, except that:
        1. The first two letters (i.e AE, IN, etc) can be removed
        2. Leads with an asset ID that takes up all 20 characters can be shortened to the corresponding assigned ID. For example, IN3350-032_AS3350-007_3350-001 can be changed to 3350-032_3350-001_001
    ii. Proposed Pipe names are to be determined by the Consultant but shall be named in a manner similar to the City pipe naming convention, which includes the upstream and downstream structure names.
e. Channel/Street Flow Segments:
    i. Conduit names for drainage-ways shall be named in a manner that identifies the greenway segment it represents by Greenway Node Number and the distance from the upstream end. Example: GR7541-062_125 would represent a channel segment that begins 125 feet into the North Door Creek Greenway – Sprecher Road Section.
    ii. Conduit names for streets shall be named with "Rd_"[US_Node_Name]_[DS_Node_Name] and remove the first two letters in the node name similar to how pipes are named.
f. Natural Channels:
    i. Natural channel transects shall be named with the same ID as the conduit name.
    ii. Street models as natural channels shall be named in a manner that is easily identifiable for the street or street type it represents.
    iii. A shapefile shall be created documenting where natural channel transects are cut.
g. Other SWMM Features (Weirs, orifices, etc)
    i. Other SWMM features shall have readily identifiable names corresponding to the type of feature they are trying to model. For example, an orifice for a detention pond should have an ID that is "<Detention Pond ID>_ORIF_01", keeping within a 20 character limit.
h. Ponds
    i. Use the pond name identifier from GT-Viewer combined with a common name. For example, the ponds at Odana Hills Golf Course would be "PD3461-001_OdanaHills"
    ii. Use abbreviation of name if unofficial full name creates a model name longer than 20 characters.
i. Non-City owned infrastructure
    i. Consultant may choose name if consistent naming convention is not created by entity that owns infrastructure
    ii. If Consultant chooses name, all infrastructure owned by another entity shall start with the same few characters. For example, DOT infrastructure could all start with "DOT-" or Fitchburg owned infrastructure could start with "Fit-"

9. Rainfall
    a. MSE4 24-hour Distribution and NOAA Atlas 14 Depths

Recurrence Interval (years)	Rainfall Depth (inches)
2	2.8
5	3.5
10	4.1
25	5.0
50	5.7
100	6.6
500	8.8

    b. Long-Duration Storm – Two 24-hour, 100-year MSE4 storm events with the time between

peak rainfalls shorted from 24 hours to 12 hours.

10. Hydrology (SWMM Method with Horton Infiltration) (References: A, B, C, J)
    - Parameters listed are default parameters and may need to be adjusted based on calibration data.

    a. Subcatchment Detail for Street Drainage
        i. Contributing area to the existing storm sewer system that is to be modeled (Determined on a watershed by watershed basis)

    b. SWMM Routing Parameters (if calibration is not available to adjust parameters)
        i. Percent Impervious - Follow Step 1 (pages 1-3) of the "HowTo_CalculateCN" document.
        ii. DCIA – Reference WinSLAMM Standard Land Use DCIA Spreadsheet
        iii. Width – Estimated based on subcatchment shape. Estimation methodology shall be documented.
        A single width shall be calculated for the entire subcatchment and used for all three sub-areas.
        It is expected Width is one of the first calibration parameters for peak flow.
        iv. Slope – Computed manually or estimated based on LiDAR. Computation or estimation methodology shall be documented.
        v. In XP-SWMM, each subcatchment is to be split into area of (1) DCIA, (2) non-DCIA, and (3) pervious area. Within the model, the non-DCIA shall be routed to the pervious area.
        vi. In PC-SWMM, indicate the percent being routed to pervious in the subcatchment attribute.

    c. Horton Infiltration
        i. For typical urban pervious area (Based on range of values for different soil types, moisture conditions, and vegetation conditions found in Reference A):

HSG Group[a]	Max Infil. Rate (in/hr)	Min Infil. Rate (in/hr)	Decay Rate (1/hr)	Dry Days[b]	Maximum Infiltration Volume (in)
A	4.0	1.0	4.0	3.1	
B	2.0	0.5	4.0	4.4	sandy
C	1.0	0.2	4.0	7.0	silty
D	0.5	0.1	4.0	9.9	clayey
Water	0	0	0	0	

        [a]For HSG listed as A/D, B/D, C/D, the default approach will be to assume the HSG associated with the lower infiltration rate (HSG D).
        [b]Use equation 4-12, pg 99, SWMM Reference Manual Volume 1 – Hydrology (Revised), January 2016
        ii. Impervious Manning's n – 0.016
        iii. Pervious Manning's n – 0.20
        iv. Depression Storage for Impervious – 0.05 inches
        v. Depression Storage for Pervious – 0.15 inches
        vi. Zero Depression Storage – 25 percent
        vii. Factors for adjusting
            1. Forest – Multiply max and min infiltration rates by 2.
            2. Farmland (row crops) – Multiply max and min infiltration rates by 1.2.
            3. Farmland (close crops) - Multiply max and min infiltration rates by 1.8.
            4. Other land uses – discuss with City staff
        viii. Area-weight the Horton Infiltration parameters for each subcatchment based on the area of each soil type within a subcatchment. Remove impervious area from area-weighting.
        ix. It is understood the NRCS/SCS updates the soil mapping at various times. The project teams will identify a date the soils data will be downloaded and that will be the data used for the duration of the project.

d. Evaporation: Turn off evaporation from calibration and design storm event runs.

11. 1D Hydraulics (References: A, B, D, E, F, G)
    - Dynamic mode with constant / variable timestep sufficient to model system accurately.
    - Conduit lengthening shall not be used unless prior approval from City on reason.
    - Parameters are default parameters and may need to be adjusted based on calibration data.
    - This list is not intended to be exhaustive.

    a. System to be Modeled
        i. Public
            1. Standard: Trunk line and major conveyance components to trunk line.
            2. Process for Exceptions: Provide justification for conveyance components not included.
            3. Use engineering judgement for inclusion of additional detail beyond this standard.
        ii. Private
            1. Standard: Not included
            2. Process for requiring inclusion of private pipes:
                a. Stormwater management detention facilities providing significant detention
                b. When necessary to understand the functioning of the public system. For example, the West Towne Mall parking lot drainage system.
        iii. Greenways and major surface drainages
        iv. Significant stormwater detention facilities (public and private).
            1. Private systems may be simplified if serving a single site.
            2. Provide justification for detention facilities not included.

    b. Loss Coefficients (see drawing at end of document)
        i. Entry
            1. Culverts – Select Inlet Type based on the Help File or HEC-RAS Hydraulic Reference Manual
            2. Storm Sewer (internal at MHs) = 0.05
            3. Storm Drainage Structures (MH) at 45 degree bend = 0.25
            4. Storm Drainage Structures (MH) at 90 degree bend = 0.5
            5. For culverts and entrances to storm sewer from an open channel or pond, both the energy loss coefficient and the inlet control (culvert code) shall be used.
        ii. Exit
            1. Culverts –
                a. Exit closed conduit to open channel = 0.5
                b. Exit closed conduit to lake or pond = 1.0
            2. Storm Sewer (internal at MHs) = 0.05
            3. Storm Drainage Structures (MH) at 45 degree bend = 0.25
            4. Storm Drainage Structures (MH) at 90 degree bend = 0.5

    c. Coefficient of Discharge
        i. Weirs
            1. Sharp Crested – 3.0
            2. Roadway embankment – 2.6
            3. Flatter overflow – Use engineering judgment
        ii. Orifices
            1. 0.6

    d. Manning's n
        i. Pipes
            1. Concrete Pipe: 0.013
            2. Other n values shall be chosen within generally acceptable ranges.
        ii. Channels
            1. Use Chow's Open Channel Hydraulics, Reference E

iii. Bank Flow, including developed urban areas
1. Use Chow's Open Channel Hydraulics, Reference E

e. Transect Placement and Modifiers
i. Splitting long open channels
1. Changes in cross section
2. Significant changes in slope and roughness
3. Overflow points
ii. Segment Lengths
iii. Channel Geometry
iv. Provide shapefile where natural channel transects are selected along with XS Identifier

f. Tailwater Conditions:
i. Lake Mendota: one foot over Summer Maximum – 851.10
ii. Lake Monona: TBD
iii. Lake Wingra (100-year WSE): 848.0
iv. Yahara River between Lakes Mendota and Monona: TBD

g. Inlet Clogging Factors
i. Continuous Slopes
1. Street slope < 1% - 25% Clogging
2. Street slope >= 1% - No Clogging
ii. Sags – 50% Clogging

12. 2D Data (References: A, G, H, I)
a. Surface Roughness – The average Manning's n may vary by land cover / land use. Referencing TR-55, the following roughness can be used for sheet flow conditions. Choose based on professional judgement and document in the report.
i. Impervious areas - 0.1
ii. Turf grass areas - 0.24
iii. Wooded – 0.4
iv. Prairie – 0.15
v. Other – reference TR-55

b. Channel Roughness: Where the 2D surface experiences channel flow, rather than sheet flow, utilize the Manning's n values for open channels

c. There is not currently a city-wide impervious area layer. The consultant may choose to delineate the impervious area for the watershed.
Or, the existing data may be utilized. The following assumptions can be made using the existing land use data:
i. For non-residential parcels, impervious and pervious area is available, therefore, that shall be used.
ii. A percent impervious is available for residential parcels. Calculate a composite roughness using the percent impervious area. Remove roofs from the composite roughness calculation – reference the Dane County land use for residential roofs. (roofs will be entered as blocked obstructions)
iii. Average the roughness within the ROW based impervious and pervious area.

d. Blocked Obstructions – enter roofs as Inactive Areas in XP-SWMM and Obstructions in PC-SWMM
i. Non-residential – use City impervious area data for roofs
ii. Residential – use Dane County roof layer

e. Grid cell/mesh size: Use size that balances model run time and sufficient 2D overland flow detail.

f. Grid/mesh orientation: Where possible, align grid/mesh with major channel flow direction. If not practical, then use orientation that minimizes run time.

13. Non-Modeling Data
a. When utilizing XP-SWMM, provide attributed describing the source of data in the representative GIS feature classes

b. When utilizing PC-SWMM, also add attributes to the entities describing their data sources.

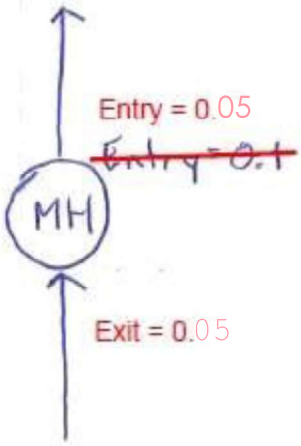
14. Solutions
    a. Analysis – what are the underlying causes of flooding in:
        i. Areas reported in the "Flood Download" from City staff
        ii. Other flooded areas in the modeling not identified in the "Flood Download"
            1. If more than 10 total areas, work with City staff to prioritize locations to evaluate
        iii. City to identify suggested solutions and provide to Consultant for consideration
        iv. Consultant to identify solutions independently and take lead on overall solutions for watershed
    b. Prioritize Solutions
        i. Property Damage
        ii. Major arterials where emergency vehicles cannot get through
        iii. More criteria - TBD
    c. Displaying solutions/Order of solutions
        i. Show each solution independently and then combined
        ii. Order
            1. Property/pipe owned by Stormwater Utility
            2. Pipe size needed to solve remainder of issues
            3. Other public properties
                a. Janet will provide areas where there are non-starters in Parks
            4. Private properties
    d. Overlay TIP map with inundation mapping to understand where immediate future project opportunities are
    e. Freeboard – City does not have a minimum freeboard requirement
    f. Properties adjacent to greenway and new greenway crossings – Current ordinance states property low building opening must be 4' above invert of downstream greenway street structure crossing. Therefore, may need to make structures wider, instead of deeper, to not flood upstream properties

REFERENCES

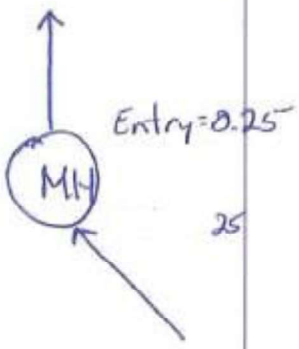
A. Model Help Files and User Forums
B. Storm Water Management Model version 5.1 User's Manual. (Available at: https://www.epa.gov/water-research/storm-water-management-model-swmm-version-51-users-manual)
C. SWMM reference manual volume I – hydrology (Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100NYRA.txt)
D. SWMM reference manual volume volume II – hydraulics (Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi/P100S9AS.PDF?Dockey=P100S9AS.PDF)
E. Chow, Open Channel Hydraulics, 1959
F. HEC-RAS Hydraulic Reference Manual. (Available at: https://www.hec.usace.army.mil/software/hec-ras/documentation/HEC-RAS%205.0%20Reference%20Manual.pdf)
G. ASCE Two-Dimensional Modeling Using HEC-RAS, Lecture 8 – Troubleshooting and Reviewing, Page 31; 2017.
H. Australian Rainfall & Runoff Revision Projects, Project 15: Two Dimensional Modeling in Urban and Rural Floodplains, November 2012.
I. FLO-2D Reference Manual, FLO-2D Software, 2012.
J. ASCE Manual of Engineering Practice No 28.

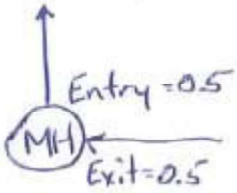
References/Notes

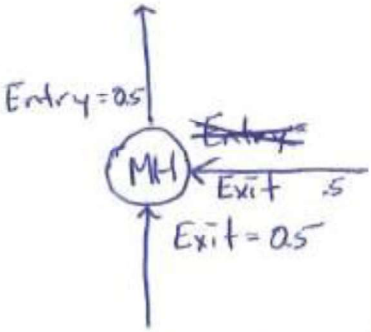
Straight-Through Manhole



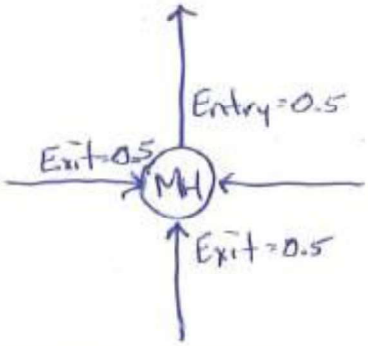
45° Bend Manhole

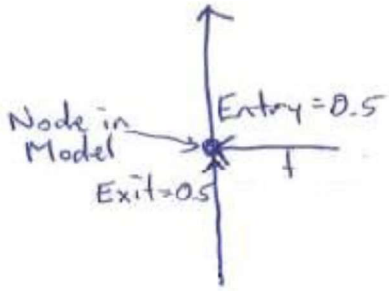






TEE (No Manhole)





APPENDIX B: HYDROLOGIC INPUT PARAMETERS

Table 1. Subcatchment XP-Table Input Data

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5441-003	1	1	2.753	100	0.027	33.086	60C40D	AS5441-003	Outlet	No Redirection
AS5441-003	2	2	1.253	100	0.027	33.086	60C40D	AS5441-003	SubCatchment 3	Impervious Runoff to Pervious
AS5441-003	3	3	3.385	0	0.027	33.086	60C40D	AS5441-003	Outlet	Pervious Area to Outlet
IN5441-004	1	1	1.108	100	0.015	31.773	10C90D	IN5441-004	Outlet	No Redirection
IN5441-004	2	2	0.685	100	0.015	31.773	10C90D	IN5441-004	SubCatchment 3	Impervious Runoff to Pervious
IN5441-004	3	3	2.536	0	0.015	31.773	10C90D	IN5441-004	Outlet	Pervious Area to Outlet
IN5441-005	1	1	0.83	100	0.018	29.888	100Percent Type D	IN5441-005	Outlet	No Redirection
IN5441-005	2	2	1.434	100	0.018	29.888	100Percent Type D	IN5441-005	SubCatchment 3	Impervious Runoff to Pervious
IN5441-005	3	3	1.563	0	0.018	29.888	100Percent Type D	IN5441-005	Outlet	Pervious Area to Outlet
IN5441-006	1	1	0.001	100	0.153	9.602	100Percent Type D	IN5441-006	Outlet	No Redirection
IN5441-006	3	3	0.005	0	0.153	9.602	100Percent Type D	IN5441-006	Outlet	Pervious Area to Outlet
AS5442-002	1	1	0.892	100	0.012	18.469	100Percent Type D	AS5442-002	Outlet	No Redirection
AS5442-002	2	2	0.099	100	0.012	18.469	100Percent Type D	AS5442-002	SubCatchment 3	Impervious Runoff to Pervious
AS5442-002	3	3	0.341	0	0.012	18.469	100Percent Type D	AS5442-002	Outlet	Pervious Area to Outlet
IN5442-007	1	1	2.336	100	0.017	34.924	100Percent Type D	IN5442-007	Outlet	No Redirection
IN5442-007	2	2	0.845	100	0.017	34.924	100Percent Type D	IN5442-007	SubCatchment 3	Impervious Runoff to Pervious
IN5442-007	3	3	1.743	0	0.017	34.924	100Percent Type D	IN5442-007	Outlet	Pervious Area to Outlet
AE5442-008			0	0	0	0	No Pervious Area	AE5442-008	SubCatchment 1	Inactive
AS5443-002	1	1	0.54	100	0.069	35.697	100Percent Type B	AS5443-002	Outlet	No Redirection
AS5443-002	2	2	0.359	100	0.069	35.697	100Percent Type B	AS5443-002	SubCatchment 3	Impervious Runoff to Pervious
AS5443-002	3	3	0.784	0	0.069	35.697	100Percent Type B	AS5443-002	Outlet	Pervious Area to Outlet
AS5443-006	1	1	0.536	100	0.049	28.146	100Percent Type B	AS5443-006	Outlet	No Redirection
AS5443-006	2	2	0.347	100	0.049	28.146	100Percent Type B	AS5443-006	SubCatchment 3	Impervious Runoff to Pervious
AS5443-006	3	3	0.839	0	0.049	28.146	100Percent Type B	AS5443-006	Outlet	Pervious Area to Outlet
AS5443-013	1	1	1.031	100	0.044	12.936	60B40C	AS5443-013	Outlet	No Redirection
AS5443-013	2	2	0.509	100	0.044	12.936	60B40C	AS5443-013	SubCatchment 3	Impervious Runoff to Pervious
AS5443-013	3	3	1.283	0	0.044	12.936	60B40C	AS5443-013	Outlet	Pervious Area to Outlet
AS5343-001	1	1	1.432	100	0.01	30.993	100Percent Type D	AS5343-001	Outlet	No Redirection
AS5343-001	2	2	1.256	100	0.01	30.993	100Percent Type D	AS5343-001	SubCatchment 3	Impervious Runoff to Pervious
AS5343-001	3	3	1.484	0	0.01	30.993	100Percent Type D	AS5343-001	Outlet	Pervious Area to Outlet
AS5343-002	1	1	0.51	100	0.006	33.615	100Percent Type D	AS5343-002	Outlet	No Redirection
AS5343-002	2	2	0.475	100	0.006	33.615	100Percent Type D	AS5343-002	SubCatchment 3	Impervious Runoff to Pervious
AS5343-002	3	3	1.119	0	0.006	33.615	100Percent Type D	AS5343-002	Outlet	Pervious Area to Outlet
AS5343-005		1	0	100	0	0	No Pervious Area	AS5343-005	Outlet	Inactive
AS5344-022	1	1	0.9	100	0.034	41.584	40B60D	AS5344-022	Outlet	No Redirection
AS5344-022	2	2	0.467	100	0.034	41.584	40B60D	AS5344-022	SubCatchment 3	Impervious Runoff to Pervious
AS5344-022	3	3	1.158	0	0.034	41.584	40B60D	AS5344-022	Outlet	Pervious Area to Outlet
AS5445-003	1	1	1.28	100	0.026	21.489	30B70C	AS5445-003	Outlet	No Redirection
AS5445-003	2	2	0.979	100	0.026	21.489	30B70C	AS5445-003	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5445-003	3	3	2.099	0	0.026	21.489	30B70C	AS5445-003	Outlet	Pervious Area to Outlet
AS5445-004	1	1	0.132	100	0.011	18.421	100Percent Type D	AS5445-004	Outlet	No Redirection
AS5445-004	2	2	0.084	100	0.011	18.421	100Percent Type D	AS5445-004	SubCatchment 3	Impervious Runoff to Pervious
AS5445-004	3	3	0.097	0	0.011	18.421	100Percent Type D	AS5445-004	Outlet	Pervious Area to Outlet
AS5445-005	1	1	0.661	100	0.015	12.467	20C80D	AS5445-005	Outlet	No Redirection
AS5445-005	2	2	0.558	100	0.015	12.467	20C80D	AS5445-005	SubCatchment 3	Impervious Runoff to Pervious
AS5445-005	3	3	1.232	0	0.015	12.467	20C80D	AS5445-005	Outlet	Pervious Area to Outlet
AS5445-008	1	1	0.462	100	0.039	24.592	100Percent Type D	AS5445-008	Outlet	No Redirection
AS5445-008	2	2	0.122	100	0.039	24.592	100Percent Type D	AS5445-008	SubCatchment 3	Impervious Runoff to Pervious
AS5445-008	3	3	0.23	0	0.039	24.592	100Percent Type D	AS5445-008	Outlet	Pervious Area to Outlet
AS5445-009			0	0	0	0	No Pervious Area	AS5445-009	SubCatchment 1	Inactive
AS5445-010	1	1	0.644	100	0.007	10.358	100Percent Type D	AS5445-010	Outlet	No Redirection
AS5445-010	2	2	0.118	100	0.007	10.358	100Percent Type D	AS5445-010	SubCatchment 3	Impervious Runoff to Pervious
AS5445-010	3	3	0.207	0	0.007	10.358	100Percent Type D	AS5445-010	Outlet	Pervious Area to Outlet
IN5445-038	1	1	0.485	100	0.021	3.958	100Percent Type D	IN5445-038	Outlet	No Redirection
IN5445-038	3	3	0.038	0	0.021	3.958	100Percent Type D	IN5445-038	Outlet	Pervious Area to Outlet
IN5445-039	1	1	0.034	100	0.025	4.87	100Percent Type D	IN5445-039	Outlet	No Redirection
IN5445-039	3	3	0.004	0	0.025	4.87	100Percent Type D	IN5445-039	Outlet	Pervious Area to Outlet
IN5445-040	1	1	0.352	100	0.011	18.003	100Percent Type D	IN5445-040	Outlet	No Redirection
IN5445-040	3	3	0.024	0	0.011	18.003	100Percent Type D	IN5445-040	Outlet	Pervious Area to Outlet
IN5445-041	1	1	0.372	100	0.011	17.855	100Percent Type D	IN5445-041	Outlet	No Redirection
IN5445-041	3	3	0.03	0	0.011	17.855	100Percent Type D	IN5445-041	Outlet	Pervious Area to Outlet
IN5445-042	1	1	0.735	100	0.012	30.924	100Percent Type D	IN5445-042	Outlet	No Redirection
IN5445-042	2	2	0.002	100	0.012	30.924	100Percent Type D	IN5445-042	SubCatchment 3	Impervious Runoff to Pervious
IN5445-042	3	3	0.163	0	0.012	30.924	100Percent Type D	IN5445-042	Outlet	Pervious Area to Outlet
IN5445-043	1	1	0.666	100	0.007	24.798	100Percent Type D	IN5445-043	Outlet	No Redirection
IN5445-043	2	2	0.235	100	0.007	24.798	100Percent Type D	IN5445-043	SubCatchment 3	Impervious Runoff to Pervious
IN5445-043	3	3	0.154	0	0.007	24.798	100Percent Type D	IN5445-043	Outlet	Pervious Area to Outlet
IN5445-044			0	0	0	0	No Pervious Area	IN5445-044	SubCatchment 1	Inactive
IN5445-045	1	1	3.114	100	0.035	25.056	90B10D	IN5445-045	Outlet	No Redirection
IN5445-045	2	2	0.851	100	0.035	25.056	90B10D	IN5445-045	SubCatchment 3	Impervious Runoff to Pervious
IN5445-045	3	3	1.83	0	0.035	25.056	90B10D	IN5445-045	Outlet	Pervious Area to Outlet
IN5345-001	1	1	1.412	100	0.044	21.38	40B60C	IN5345-001	Outlet	No Redirection
IN5345-001	2	2	0.422	100	0.044	21.38	40B60C	IN5345-001	SubCatchment 3	Impervious Runoff to Pervious
IN5345-001	3	3	1.051	0	0.044	21.38	40B60C	IN5345-001	Outlet	Pervious Area to Outlet
AS5345-010			0	0	0	0	No Pervious Area	AS5345-010	SubCatchment 1	Inactive
AS5345-025	1	1	1.425	100	0.009	30.896	100Percent Type D	AS5345-025	Outlet	No Redirection
AS5345-025	2	2	0.206	100	0.009	30.896	100Percent Type D	AS5345-025	SubCatchment 3	Impervious Runoff to Pervious
AS5345-025	3	3	0.395	0	0.009	30.896	100Percent Type D	AS5345-025	Outlet	Pervious Area to Outlet
AS5345-026	1	1	1.107	100	0.032	20.205	100Percent Type D	AS5345-026	Outlet	No Redirection
AS5345-026	3	3	0.234	0	0.032	20.205	100Percent Type D	AS5345-026	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5346-053	1	1	1.017	100	0.012	26.123	100Percent Type D	AS5346-053	Outlet	No Redirection
AS5346-053	3	3	0.076	0	0.012	26.123	100Percent Type D	AS5346-053	Outlet	Pervious Area to Outlet
AS5346-059	1	1	5.723	100	0.008	25.598	100Percent Type D	AS5346-059	Outlet	No Redirection
AS5346-059	2	2	0.13	100	0.008	25.598	100Percent Type D	AS5346-059	SubCatchment 3	Impervious Runoff to Pervious
AS5346-059	3	3	2.887	0	0.008	25.598	100Percent Type D	AS5346-059	Outlet	Pervious Area to Outlet
AS5446-001	1	1	1.183	100	0.01	24.512	40B60D	AS5446-001	Outlet	No Redirection
AS5446-001	2	2	0.313	100	0.01	24.512	40B60D	AS5446-001	SubCatchment 3	Impervious Runoff to Pervious
AS5446-001	3	3	0.714	0	0.01	24.512	40B60D	AS5446-001	Outlet	Pervious Area to Outlet
IN5446-026	1	1	0.806	100	0.007	32.035	100Percent Type D	IN5446-026	Outlet	No Redirection
IN5446-026	2	2	1.503	100	0.007	32.035	100Percent Type D	IN5446-026	SubCatchment 3	Impervious Runoff to Pervious
IN5446-026	3	3	2.426	0	0.007	32.035	100Percent Type D	IN5446-026	Outlet	Pervious Area to Outlet
IN5446-035	1	1	6.501	100	0.023	26.89	40B60C	IN5446-035	Outlet	No Redirection
IN5446-035	2	2	2.252	100	0.023	26.89	40B60C	IN5446-035	SubCatchment 3	Impervious Runoff to Pervious
IN5446-035	3	3	4.689	0	0.023	26.89	40B60C	IN5446-035	Outlet	Pervious Area to Outlet
AS5447-003	1	1	1.105	100	0.015	21.214	60B40D	AS5447-003	Outlet	No Redirection
AS5447-003	2	2	0.699	100	0.015	21.214	60B40D	AS5447-003	SubCatchment 3	Impervious Runoff to Pervious
AS5447-003	3	3	1.634	0	0.015	21.214	60B40D	AS5447-003	Outlet	Pervious Area to Outlet
IN5447-010	1	1	0.182	100	0.02	20.245	100Percent Type B	IN5447-010	Outlet	No Redirection
IN5447-010	2	2	0.018	100	0.02	20.245	100Percent Type B	IN5447-010	SubCatchment 3	Impervious Runoff to Pervious
IN5447-010	3	3	0.209	0	0.02	20.245	100Percent Type B	IN5447-010	Outlet	Pervious Area to Outlet
AS5347-008	1	1	1.813	100	0.01	33.07	20B80D	AS5347-008	Outlet	No Redirection
AS5347-008	2	2	0.313	100	0.01	33.07	20B80D	AS5347-008	SubCatchment 3	Impervious Runoff to Pervious
AS5347-008	3	3	1.651	0	0.01	33.07	20B80D	AS5347-008	Outlet	Pervious Area to Outlet
AS5347-011	1	1	4.166	100	0.02	28.19	30C70D	AS5347-011	Outlet	No Redirection
AS5347-011	2	2	1.573	100	0.02	28.19	30C70D	AS5347-011	SubCatchment 3	Impervious Runoff to Pervious
AS5347-011	3	3	5.758	0	0.02	28.19	30C70D	AS5347-011	Outlet	Pervious Area to Outlet
IN5347-014	1	1	0.712	100	0.006	20.019	40B60D	IN5347-014	Outlet	No Redirection
IN5347-014	2	2	0.712	100	0.006	20.019	40B60D	IN5347-014	SubCatchment 3	Impervious Runoff to Pervious
IN5347-014	3	3	3.331	0	0.006	20.019	40B60D	IN5347-014	Outlet	Pervious Area to Outlet
AS5347-023	1	1	2.244	100	0.005	18.542	100Percent Type D	AS5347-023	Outlet	No Redirection
AS5347-023	3	3	0.543	0	0.005	18.542	100Percent Type D	AS5347-023	Outlet	Pervious Area to Outlet
IN5347-034	1	1	0.023	100	0.095	4.307	100Percent Type D	IN5347-034	Outlet	No Redirection
IN5347-034	3	3	0.002	0	0.095	4.307	100Percent Type D	IN5347-034	Outlet	Pervious Area to Outlet
IN5347-035	1	1	0.504	100	0.007	19.237	100Percent Type D	IN5347-035	Outlet	No Redirection
IN5347-035	3	3	0.082	0	0.007	19.237	100Percent Type D	IN5347-035	Outlet	Pervious Area to Outlet
IN5247-016	1	1	1.353	100	0.006	33.018	100Percent Type D	IN5247-016	Outlet	No Redirection
IN5247-016	2	2	0.314	100	0.006	33.018	100Percent Type D	IN5247-016	SubCatchment 3	Impervious Runoff to Pervious
IN5247-016	3	3	0.194	0	0.006	33.018	100Percent Type D	IN5247-016	Outlet	Pervious Area to Outlet
IN5247-078	1	1	0.578	100	0.022	26.511	20C80D	IN5247-078	Outlet	No Redirection
IN5247-078	2	2	0.849	100	0.022	26.511	20C80D	IN5247-078	SubCatchment 3	Impervious Runoff to Pervious
IN5247-078	3	3	0.587	0	0.022	26.511	20C80D	IN5247-078	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5147-038	1	1	1.1	100	0.015	23.514	100Percent Type D	AS5147-038	Outlet	No Redirection
AS5147-038	2	2	0.879	100	0.015	23.514	100Percent Type D	AS5147-038	SubCatchment 3	Impervious Runoff to Pervious
AS5147-038	3	3	0.877	0	0.015	23.514	100Percent Type D	AS5147-038	Outlet	Pervious Area to Outlet
AS5147-040	1	1	0.816	100	0.022	39.277	100Percent Type D	AS5147-040	Outlet	No Redirection
AS5147-040	2	2	0.457	100	0.022	39.277	100Percent Type D	AS5147-040	SubCatchment 3	Impervious Runoff to Pervious
AS5147-040	3	3	0.436	0	0.022	39.277	100Percent Type D	AS5147-040	Outlet	Pervious Area to Outlet
AS5147-041			0	0	0	0	No Pervious Area	AS5147-041	SubCatchment 1	Inactive
AS5148-040	1	1	1.778	100	0.06	34.482	100Percent Type B	AS5148-040	Outlet	No Redirection
AS5148-040	2	2	0.313	100	0.06	34.482	100Percent Type B	AS5148-040	SubCatchment 3	Impervious Runoff to Pervious
AS5148-040	3	3	0.71	0	0.06	34.482	100Percent Type B	AS5148-040	Outlet	Pervious Area to Outlet
AS5148-046	1	1	5.138	100	0.065	17.577	70B30C	AS5148-046	Outlet	No Redirection
AS5148-046	2	2	0.276	100	0.065	17.577	70B30C	AS5148-046	SubCatchment 3	Impervious Runoff to Pervious
AS5148-046	3	3	0.908	0	0.065	17.577	70B30C	AS5148-046	Outlet	Pervious Area to Outlet
AS5248-001	1	1	1.323	100	0.006	30.979	100Percent Type D	AS5248-001	Outlet	No Redirection
AS5248-001	3	3	0.076	0	0.006	30.979	100Percent Type D	AS5248-001	Outlet	Pervious Area to Outlet
AS5248-010	1	1	1.856	100	0.008	21.306	100Percent Type D	AS5248-010	Outlet	No Redirection
AS5248-010	3	3	3.05	0	0.008	21.306	100Percent Type D	AS5248-010	Outlet	Pervious Area to Outlet
AS5248-011	1	1	1.41	100	0.008	27.485	100Percent Type D	AS5248-011	Outlet	No Redirection
AS5248-011	3	3	0.153	0	0.008	27.485	100Percent Type D	AS5248-011	Outlet	Pervious Area to Outlet
AS5248-013	1	1	1.185	100	0.008	24.241	100Percent Type D	AS5248-013	Outlet	No Redirection
AS5248-013	3	3	0.106	0	0.008	24.241	100Percent Type D	AS5248-013	Outlet	Pervious Area to Outlet
AS5248-021	1	1	0.435	100	0.002	3.965	100Percent Type D	AS5248-021	Outlet	No Redirection
AS5248-021	3	3	0.047	0	0.002	3.965	100Percent Type D	AS5248-021	Outlet	Pervious Area to Outlet
AS5248-046	1	1	2.137	100	0.043	17.519	60B40C	AS5248-046	Outlet	No Redirection
AS5248-046	2	2	0.059	100	0.043	17.519	60B40C	AS5248-046	SubCatchment 3	Impervious Runoff to Pervious
AS5248-046	3	3	0.461	0	0.043	17.519	60B40C	AS5248-046	Outlet	Pervious Area to Outlet
AS5248-048	1	1	1.816	100	0.058	14.982	20C80D	AS5248-048	Outlet	No Redirection
AS5248-048	3	3	0.311	0	0.058	14.982	20C80D	AS5248-048	Outlet	Pervious Area to Outlet
AS5248-051	1	1	0.225	100	0.058	28.084	100Percent Type B	AS5248-051	Outlet	No Redirection
AS5248-051	2	2	0.245	100	0.058	28.084	100Percent Type B	AS5248-051	SubCatchment 3	Impervious Runoff to Pervious
AS5248-051	3	3	0.186	0	0.058	28.084	100Percent Type B	AS5248-051	Outlet	Pervious Area to Outlet
AS5248-053	1	1	1.05	100	0.01	21.959	100Percent Type D	AS5248-053	Outlet	No Redirection
AS5248-053	3	3	0.189	0	0.01	21.959	100Percent Type D	AS5248-053	Outlet	Pervious Area to Outlet
IN5248-062	1	1	0.189	100	0.058	28.907	100Percent Type B	IN5248-062	Outlet	No Redirection
IN5248-062	2	2	0.005	100	0.058	28.907	100Percent Type B	IN5248-062	SubCatchment 3	Impervious Runoff to Pervious
IN5248-062	3	3	0.052	0	0.058	28.907	100Percent Type B	IN5248-062	Outlet	Pervious Area to Outlet
AS5248-066	1	1	2.018	100	0.056	22.451	60B40C	AS5248-066	Outlet	No Redirection
AS5248-066	2	2	0.583	100	0.056	22.451	60B40C	AS5248-066	SubCatchment 3	Impervious Runoff to Pervious
AS5248-066	3	3	0.949	0	0.056	22.451	60B40C	AS5248-066	Outlet	Pervious Area to Outlet
IN5248-079	1	1	0.654	100	0.053	22.38	30B70C	IN5248-079	Outlet	No Redirection
IN5248-079	2	2	0.029	100	0.053	22.38	30B70C	IN5248-079	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5248-079	3	3	0.262	0	0.053	22.38	30B70C	IN5248-079	Outlet	Pervious Area to Outlet
AS5348-016		1	0	100	0	0	No Pervious Area	AS5348-016	Outlet	Inactive
AS5348-017	1	1	3.252	100	0.009	21.125	20B80D	AS5348-017	Outlet	No Redirection
AS5348-017	2	2	0.151	100	0.009	21.125	20B80D	AS5348-017	SubCatchment 3	Impervious Runoff to Pervious
AS5348-017	3	3	0.404	0	0.009	21.125	20B80D	AS5348-017	Outlet	Pervious Area to Outlet
AS5348-030	1	1	1.256	100	0.037	24.59	40B60C	AS5348-030	Outlet	No Redirection
AS5348-030	2	2	0.394	100	0.037	24.59	40B60C	AS5348-030	SubCatchment 3	Impervious Runoff to Pervious
AS5348-030	3	3	0.588	0	0.037	24.59	40B60C	AS5348-030	Outlet	Pervious Area to Outlet
AS5349-003	1	1	0.755	100	0.022	30.177	90B10D	AS5349-003	Outlet	No Redirection
AS5349-003	2	2	0.112	100	0.022	30.177	90B10D	AS5349-003	SubCatchment 3	Impervious Runoff to Pervious
AS5349-003	3	3	0.256	0	0.022	30.177	90B10D	AS5349-003	Outlet	Pervious Area to Outlet
AS5249-001	1	1	1.782	100	0.016	17.63	70B30D	AS5249-001	Outlet	No Redirection
AS5249-001	2	2	0.05	100	0.016	17.63	70B30D	AS5249-001	SubCatchment 3	Impervious Runoff to Pervious
AS5249-001	3	3	0.617	0	0.016	17.63	70B30D	AS5249-001	Outlet	Pervious Area to Outlet
AS5249-010	1	1	0.49	100	0.011	20.253	100Percent Type D	AS5249-010	Outlet	No Redirection
AS5249-010	2	2	0.157	100	0.011	20.253	100Percent Type D	AS5249-010	SubCatchment 3	Impervious Runoff to Pervious
AS5249-010	3	3	0.074	0	0.011	20.253	100Percent Type D	AS5249-010	Outlet	Pervious Area to Outlet
AS5249-011			0	0	0	0	No Pervious Area	AS5249-011	SubCatchment 1	Inactive
AS5249-012	1	1	0.038	100	0.015	6.955	100Percent Type D	AS5249-012	Outlet	No Redirection
AS5249-012	3	3	0.004	0	0.015	6.955	100Percent Type D	AS5249-012	Outlet	Pervious Area to Outlet
AS5249-013	1	1	0.482	100	0.015	18.992	100Percent Type D	AS5249-013	Outlet	No Redirection
AS5249-013	2	2	0.016	100	0.015	18.992	100Percent Type D	AS5249-013	SubCatchment 3	Impervious Runoff to Pervious
AS5249-013	3	3	0.165	0	0.015	18.992	100Percent Type D	AS5249-013	Outlet	Pervious Area to Outlet
AS5249-014		1	0	100	0	0	No Pervious Area	AS5249-014	Outlet	Inactive
IN5249-015	1	1	1.827	100	0.053	29.349	80B20C	IN5249-015	Outlet	No Redirection
IN5249-015	2	2	1.126	100	0.053	29.349	80B20C	IN5249-015	SubCatchment 3	Impervious Runoff to Pervious
IN5249-015	3	3	0.9	0	0.053	29.349	80B20C	IN5249-015	Outlet	Pervious Area to Outlet
IN5249-016	1	1	0.11	100	0.034	12.591	100Percent Type D	IN5249-016	Outlet	No Redirection
IN5249-016	2	2	0.009	100	0.034	12.591	100Percent Type D	IN5249-016	SubCatchment 3	Impervious Runoff to Pervious
IN5249-016	3	3	0.016	0	0.034	12.591	100Percent Type D	IN5249-016	Outlet	Pervious Area to Outlet
IN5249-017	1	1	0.015	100	0.095	4.307	100Percent Type D	IN5249-017	Outlet	No Redirection
IN5249-017	3	3	0.005	0	0.095	4.307	100Percent Type D	IN5249-017	Outlet	Pervious Area to Outlet
IN5249-018	1	1	0.073	100	0.031	8.313	100Percent Type D	IN5249-018	Outlet	No Redirection
IN5249-018	3	3	0.012	0	0.031	8.313	100Percent Type D	IN5249-018	Outlet	Pervious Area to Outlet
IN5249-032	1	1	0.084	100	0.054	8.458	100Percent Type D	IN5249-032	Outlet	No Redirection
IN5249-032	3	3	0.004	0	0.054	8.458	100Percent Type D	IN5249-032	Outlet	Pervious Area to Outlet
IN5249-033	1	1	0.028	100	0.065	6.091	100Percent Type D	IN5249-033	Outlet	No Redirection
IN5249-033	3	3	0.001	0	0.065	6.091	100Percent Type D	IN5249-033	Outlet	Pervious Area to Outlet
IN5249-034	1	1	0.876	100	0.036	32.262	50C50D	IN5249-034	Outlet	No Redirection
IN5249-034	2	2	0.173	100	0.036	32.262	50C50D	IN5249-034	SubCatchment 3	Impervious Runoff to Pervious
IN5249-034	3	3	0.134	0	0.036	32.262	50C50D	IN5249-034	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5249-076	1	1	0.156	100	0.038	19.779	100Percent Type B	IN5249-076	Outlet	No Redirection
IN5249-076	3	3	0.015	0	0.038	19.779	100Percent Type B	IN5249-076	Outlet	Pervious Area to Outlet
AS5149-001	1	1	7.336	100	0.018	26.318	80B20C	AS5149-001	Outlet	No Redirection
AS5149-001	2	2	0.267	100	0.018	26.318	80B20C	AS5149-001	SubCatchment 3	Impervious Runoff to Pervious
AS5149-001	3	3	0.352	0	0.018	26.318	80B20C	AS5149-001	Outlet	Pervious Area to Outlet
AS5348-050	1	1	0.362	100	0.007	34.359	100Percent Type D	AS5348-050	Outlet	No Redirection
AS5348-050	2	2	0.222	100	0.007	34.359	100Percent Type D	AS5348-050	SubCatchment 3	Impervious Runoff to Pervious
AS5348-050	3	3	0.364	0	0.007	34.359	100Percent Type D	AS5348-050	Outlet	Pervious Area to Outlet
AS5343-046	1	1	0.36	100	0.007	20.764	100Percent Type D	AS5343-046	Outlet	No Redirection
AS5343-046	2	2	0.285	100	0.007	20.764	100Percent Type D	AS5343-046	SubCatchment 3	Impervious Runoff to Pervious
AS5343-046	3	3	0.581	0	0.007	20.764	100Percent Type D	AS5343-046	Outlet	Pervious Area to Outlet
AS5343-047	1	1	0.075	100	0.016	26.83	100Percent Type D	AS5343-047	Outlet	No Redirection
AS5343-047	2	2	0.123	100	0.016	26.83	100Percent Type D	AS5343-047	SubCatchment 3	Impervious Runoff to Pervious
AS5343-047	3	3	0.253	0	0.016	26.83	100Percent Type D	AS5343-047	Outlet	Pervious Area to Outlet
AS5343-051	1	1	0.323	100	0.013	31.933	100Percent Type D	AS5343-051	Outlet	No Redirection
AS5343-051	2	2	0.244	100	0.013	31.933	100Percent Type D	AS5343-051	SubCatchment 3	Impervious Runoff to Pervious
AS5343-051	3	3	0.334	0	0.013	31.933	100Percent Type D	AS5343-051	Outlet	Pervious Area to Outlet
AS5343-054	1	1	0.141	100	0.015	23.154	100Percent Type D	AS5343-054	Outlet	No Redirection
AS5343-054	2	2	0.121	100	0.015	23.154	100Percent Type D	AS5343-054	SubCatchment 3	Impervious Runoff to Pervious
AS5343-054	3	3	0.185	0	0.015	23.154	100Percent Type D	AS5343-054	Outlet	Pervious Area to Outlet
AS5343-055	1	1	0.172	100	0.016	24.813	100Percent Type D	AS5343-055	Outlet	No Redirection
AS5343-055	2	2	0.163	100	0.016	24.813	100Percent Type D	AS5343-055	SubCatchment 3	Impervious Runoff to Pervious
AS5343-055	3	3	0.197	0	0.016	24.813	100Percent Type D	AS5343-055	Outlet	Pervious Area to Outlet
AS5343-058	1	1	0.396	100	0.012	21.631	100Percent Type D	AS5343-058	Outlet	No Redirection
AS5343-058	2	2	0.291	100	0.012	21.631	100Percent Type D	AS5343-058	SubCatchment 3	Impervious Runoff to Pervious
AS5343-058	3	3	0.272	0	0.012	21.631	100Percent Type D	AS5343-058	Outlet	Pervious Area to Outlet
AS5343-061	1	1	0.527	100	0.009	32.728	100Percent Type D	AS5343-061	Outlet	No Redirection
AS5343-061	2	2	0.425	100	0.009	32.728	100Percent Type D	AS5343-061	SubCatchment 3	Impervious Runoff to Pervious
AS5343-061	3	3	0.671	0	0.009	32.728	100Percent Type D	AS5343-061	Outlet	Pervious Area to Outlet
AS5343-064	1	1	0.129	100	0.017	18.847	100Percent Type D	AS5343-064	Outlet	No Redirection
AS5343-064	2	2	0.106	100	0.017	18.847	100Percent Type D	AS5343-064	SubCatchment 3	Impervious Runoff to Pervious
AS5343-064	3	3	0.111	0	0.017	18.847	100Percent Type D	AS5343-064	Outlet	Pervious Area to Outlet
AS5444-049	1	1	0.427	100	0.022	19.474	100Percent Type B	AS5444-049	Outlet	No Redirection
AS5444-049	2	2	0.098	100	0.022	19.474	100Percent Type B	AS5444-049	SubCatchment 3	Impervious Runoff to Pervious
AS5444-049	3	3	0.261	0	0.022	19.474	100Percent Type B	AS5444-049	Outlet	Pervious Area to Outlet
AS5444-053	1	1	1.035	100	0.036	33.586	50C50D	AS5444-053	Outlet	No Redirection
AS5444-053	2	2	0.632	100	0.036	33.586	50C50D	AS5444-053	SubCatchment 3	Impervious Runoff to Pervious
AS5444-053	3	3	1.023	0	0.036	33.586	50C50D	AS5444-053	Outlet	Pervious Area to Outlet
AS5444-056			0	0	0	0	No Pervious Area	AS5444-056	SubCatchment 1	Inactive
AS5444-057	1	1	0.013	100	0.045	8.052	100Percent Type C	AS5444-057	Outlet	No Redirection
AS5444-057	2	2	0.01	100	0.045	8.052	100Percent Type C	AS5444-057	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5444-057	3	3	0.02	0	0.045	8.052	100Percent Type C	AS5444-057	Outlet	Pervious Area to Outlet
AS5444-060	1	1	0.637	100	0.021	23.16	90B10C	AS5444-060	Outlet	No Redirection
AS5444-060	2	2	0.049	100	0.021	23.16	90B10C	AS5444-060	SubCatchment 3	Impervious Runoff to Pervious
AS5444-060	3	3	0.258	0	0.021	23.16	90B10C	AS5444-060	Outlet	Pervious Area to Outlet
AS5348-051	1	1	0.061	100	0.014	19.964	100Percent Type D	AS5348-051	Outlet	No Redirection
AS5348-051	2	2	0.091	100	0.014	19.964	100Percent Type D	AS5348-051	SubCatchment 3	Impervious Runoff to Pervious
AS5348-051	3	3	0.285	0	0.014	19.964	100Percent Type D	AS5348-051	Outlet	Pervious Area to Outlet
AS5249-085	1	1	0.419	100	0.035	17.156	100Percent Type B	AS5249-085	Outlet	No Redirection
AS5249-085	2	2	0.007	100	0.035	17.156	100Percent Type B	AS5249-085	SubCatchment 3	Impervious Runoff to Pervious
AS5249-085	3	3	0.213	0	0.035	17.156	100Percent Type B	AS5249-085	Outlet	Pervious Area to Outlet
AS5347-058	1	1	2.081	100	0.016	29.876	100Percent Type D	AS5347-058	Outlet	No Redirection
AS5347-058	3	3	0.557	0	0.016	29.876	100Percent Type D	AS5347-058	Outlet	Pervious Area to Outlet
IN5345-055	1	1	0.697	100	0.01	31.836	100Percent Type D	IN5345-055	Outlet	No Redirection
IN5345-055	2	2	0.023	100	0.01	31.836	100Percent Type D	IN5345-055	SubCatchment 3	Impervious Runoff to Pervious
IN5345-055	3	3	0.142	0	0.01	31.836	100Percent Type D	IN5345-055	Outlet	Pervious Area to Outlet
AS5347-075	1	1	1.479	100	0.008	16.85	100Percent Type D	AS5347-075	Outlet	No Redirection
AS5347-075	3	3	0.269	0	0.008	16.85	100Percent Type D	AS5347-075	Outlet	Pervious Area to Outlet
IN5248-088	1	1	0.082	100	0.047	9.671	100Percent Type D	IN5248-088	Outlet	No Redirection
IN5248-088	2	2	0.004	100	0.047	9.671	100Percent Type D	IN5248-088	SubCatchment 3	Impervious Runoff to Pervious
IN5248-088	3	3	0.017	0	0.047	9.671	100Percent Type D	IN5248-088	Outlet	Pervious Area to Outlet
IN5248-089	1	1	1.347	100	0.008	30.856	100Percent Type D	IN5248-089	Outlet	No Redirection
IN5248-089	2	2	0.017	100	0.008	30.856	100Percent Type D	IN5248-089	SubCatchment 3	Impervious Runoff to Pervious
IN5248-089	3	3	0.136	0	0.008	30.856	100Percent Type D	IN5248-089	Outlet	Pervious Area to Outlet
IN5248-090	1	1	0.138	100	0.014	10.836	100Percent Type D	IN5248-090	Outlet	No Redirection
IN5248-090	3	3	0.018	0	0.014	10.836	100Percent Type D	IN5248-090	Outlet	Pervious Area to Outlet
IN5247-096	1	1	0.693	100	0.008	26.33	100Percent Type D	IN5247-096	Outlet	No Redirection
IN5247-096	2	2	0.489	100	0.008	26.33	100Percent Type D	IN5247-096	SubCatchment 3	Impervious Runoff to Pervious
IN5247-096	3	3	0.16	0	0.008	26.33	100Percent Type D	IN5247-096	Outlet	Pervious Area to Outlet
IN5248-091	1	1	1.893	100	0.034	18.67	50C50D	IN5248-091	Outlet	No Redirection
IN5248-091	3	3	0.155	0	0.034	18.67	50C50D	IN5248-091	Outlet	Pervious Area to Outlet
AS5247-097	1	1	0.988	100	0.009	32.174	100Percent Type D	AS5247-097	Outlet	No Redirection
AS5247-097	3	3	0.047	0	0.009	32.174	100Percent Type D	AS5247-097	Outlet	Pervious Area to Outlet
AS5247-100	1	1	0.41	100	0.012	26.171	100Percent Type D	AS5247-100	Outlet	No Redirection
AS5247-100	3	3	0.068	0	0.012	26.171	100Percent Type D	AS5247-100	Outlet	Pervious Area to Outlet
AS5247-102	1	1	0.1	100	0.006	18.043	100Percent Type D	AS5247-102	Outlet	No Redirection
AS5247-102	3	3	0.022	0	0.006	18.043	100Percent Type D	AS5247-102	Outlet	Pervious Area to Outlet
AS5247-105	1	1	1.219	100	0.015	32.371	100Percent Type D	AS5247-105	Outlet	No Redirection
AS5247-105	3	3	0.22	0	0.015	32.371	100Percent Type D	AS5247-105	Outlet	Pervious Area to Outlet
AS5247-112			0	0	0	0	No Pervious Area	AS5247-112	SubCatchment 1	Inactive
IN5247-113	1	1	1.574	100	0.005	24.663	100Percent Type D	IN5247-113	Outlet	No Redirection
IN5247-113	3	3	0.516	0	0.005	24.663	100Percent Type D	IN5247-113	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5247-114	1	1	0.384	100	0.009	30.362	100Percent Type D	IN5247-114	Outlet	No Redirection
IN5247-114	3	3	0.082	0	0.009	30.362	100Percent Type D	IN5247-114	Outlet	Pervious Area to Outlet
IN5247-115	1	1	0.067	100	0.033	6.509	100Percent Type D	IN5247-115	Outlet	No Redirection
IN5247-115	3	3	0.01	0	0.033	6.509	100Percent Type D	IN5247-115	Outlet	Pervious Area to Outlet
IN5247-117	1	1	4.959	100	0.005	31.079	100Percent Type D	IN5247-117	Outlet	No Redirection
IN5247-117	2	2	0.001	100	0.005	31.079	100Percent Type D	IN5247-117	SubCatchment 3	Impervious Runoff to Pervious
IN5247-117	3	3	2.366	0	0.005	31.079	100Percent Type D	IN5247-117	Outlet	Pervious Area to Outlet
IN5247-128	1	1	1.689	100	0.009	21.123	100Percent Type D	IN5247-128	Outlet	No Redirection
IN5247-128	3	3	0.108	0	0.009	21.123	100Percent Type D	IN5247-128	Outlet	Pervious Area to Outlet
AS5347-076	1	1	1.759	100	0.01	22.499	100Percent Type D	AS5347-076	Outlet	No Redirection
AS5347-076	3	3	0.166	0	0.01	22.499	100Percent Type D	AS5347-076	Outlet	Pervious Area to Outlet
AS5347-084		1	0	100	0	0	No Pervious Area	AS5347-084	Outlet	Inactive
AS5346-081	1	1	0.723	100	0.009	33.126	100Percent Type D	AS5346-081	Outlet	No Redirection
AS5346-081	2	2	0.066	100	0.009	33.126	100Percent Type D	AS5346-081	SubCatchment 3	Impervious Runoff to Pervious
AS5346-081	3	3	1.91	0	0.009	33.126	100Percent Type D	AS5346-081	Outlet	Pervious Area to Outlet
AS5346-086	1	1	0.174	100	0.009	29.004	100Percent Type D	AS5346-086	Outlet	No Redirection
AS5346-086	2	2	0.057	100	0.009	29.004	100Percent Type D	AS5346-086	SubCatchment 3	Impervious Runoff to Pervious
AS5346-086	3	3	0.477	0	0.009	29.004	100Percent Type D	AS5346-086	Outlet	Pervious Area to Outlet
AS5346-090			0	0	0	0	No Pervious Area	AS5346-090	SubCatchment 1	Inactive
AS5346-092	1	1	1.196	100	0.012	27.192	100Percent Type D	AS5346-092	Outlet	No Redirection
AS5346-092	3	3	0.105	0	0.012	27.192	100Percent Type D	AS5346-092	Outlet	Pervious Area to Outlet
AS5346-095	1	1	0.191	100	0.007	18.013	100Percent Type D	AS5346-095	Outlet	No Redirection
AS5346-095	2	2	0.135	100	0.007	18.013	100Percent Type D	AS5346-095	SubCatchment 3	Impervious Runoff to Pervious
AS5346-095	3	3	0.672	0	0.007	18.013	100Percent Type D	AS5346-095	Outlet	Pervious Area to Outlet
AS5346-096			0	0	0	0	No Pervious Area	AS5346-096	SubCatchment 1	Inactive
AS5346-102	1	1	0.857	100	0.008	39.161	100Percent Type D	AS5346-102	Outlet	No Redirection
AS5346-102	2	2	0.074	100	0.008	39.161	100Percent Type D	AS5346-102	SubCatchment 3	Impervious Runoff to Pervious
AS5346-102	3	3	0.767	0	0.008	39.161	100Percent Type D	AS5346-102	Outlet	Pervious Area to Outlet
AS5346-106			0	0	0	0	No Pervious Area	AS5346-106	SubCatchment 1	Inactive
AS5346-107	1	1	0.956	100	0.005	27.152	100Percent Type D	AS5346-107	Outlet	No Redirection
AS5346-107	3	3	0.071	0	0.005	27.152	100Percent Type D	AS5346-107	Outlet	Pervious Area to Outlet
AS5346-111			0	0	0	0	No Pervious Area	AS5346-111	SubCatchment 1	Inactive
AS5346-112	1	1	4.135	100	0.006	31.919	100Percent Type D	AS5346-112	Outlet	No Redirection
AS5346-112	3	3	0.362	0	0.006	31.919	100Percent Type D	AS5346-112	Outlet	Pervious Area to Outlet
AS5346-120	1	1	0.832	100	0.012	20.109	100Percent Type D	AS5346-120	Outlet	No Redirection
AS5346-120	3	3	0.097	0	0.012	20.109	100Percent Type D	AS5346-120	Outlet	Pervious Area to Outlet
IN5346-124	1	1	0.417	100	0.005	21.467	100Percent Type D	IN5346-124	Outlet	No Redirection
IN5346-124	3	3	0.28	0	0.005	21.467	100Percent Type D	IN5346-124	Outlet	Pervious Area to Outlet
AS5346-129			0	0	0	0	No Pervious Area	AS5346-129	SubCatchment 1	Inactive
IN5346-130	1	1	0.186	100	0.042	11.66	100Percent Type D	IN5346-130	Outlet	No Redirection
IN5346-130	3	3	0.035	0	0.042	11.66	100Percent Type D	IN5346-130	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5346-131	1	1	4.069	100	0.005	23.701	100Percent Type D	IN5346-131	Outlet	No Redirection
IN5346-131	3	3	0.276	0	0.005	23.701	100Percent Type D	IN5346-131	Outlet	Pervious Area to Outlet
AS5346-132			0	0	0	0	No Pervious Area	AS5346-132	SubCatchment 1	Inactive
IN5345-067	1	1	1.087	100	0.006	33.456	100Percent Type D	IN5345-067	Outlet	No Redirection
IN5345-067	2	2	0.49	100	0.006	33.456	100Percent Type D	IN5345-067	SubCatchment 3	Impervious Runoff to Pervious
IN5345-067	3	3	0.912	0	0.006	33.456	100Percent Type D	IN5345-067	Outlet	Pervious Area to Outlet
AS5345-070	1	1	0.711	100	0.009	20.219	100Percent Type D	AS5345-070	Outlet	No Redirection
AS5345-070	3	3	0.176	0	0.009	20.219	100Percent Type D	AS5345-070	Outlet	Pervious Area to Outlet
IN5345-074	1	1	0.845	100	0.01	28.606	100Percent Type D	IN5345-074	Outlet	No Redirection
IN5345-074	3	3	0.121	0	0.01	28.606	100Percent Type D	IN5345-074	Outlet	Pervious Area to Outlet
AS5445-050	1	1	0.862	100	0.01	27.103	100Percent Type D	AS5445-050	Outlet	No Redirection
AS5445-050	3	3	0.173	0	0.01	27.103	100Percent Type D	AS5445-050	Outlet	Pervious Area to Outlet
AS5445-062	1	1	0.514	100	0.011	20.981	100Percent Type D	AS5445-062	Outlet	No Redirection
AS5445-062	2	2	0.057	100	0.011	20.981	100Percent Type D	AS5445-062	SubCatchment 3	Impervious Runoff to Pervious
AS5445-062	3	3	0.32	0	0.011	20.981	100Percent Type D	AS5445-062	Outlet	Pervious Area to Outlet
AS5445-069	1	1	0.139	100	0.013	17.461	100Percent Type D	AS5445-069	Outlet	No Redirection
AS5445-069	2	2	0.024	100	0.013	17.461	100Percent Type D	AS5445-069	SubCatchment 3	Impervious Runoff to Pervious
AS5445-069	3	3	0.041	0	0.013	17.461	100Percent Type D	AS5445-069	Outlet	Pervious Area to Outlet
IN5445-070	1	1	0.314	100	0.026	23.688	100Percent Type D	IN5445-070	Outlet	No Redirection
IN5445-070	3	3	0.033	0	0.026	23.688	100Percent Type D	IN5445-070	Outlet	Pervious Area to Outlet
AS5445-072			0	0	0	0	No Pervious Area	AS5445-072	SubCatchment 1	Inactive
AS5445-080	1	1	0.408	100	0.044	14.046	100Percent Type D	AS5445-080	Outlet	No Redirection
AS5445-080	3	3	0.126	0	0.044	14.046	100Percent Type D	AS5445-080	Outlet	Pervious Area to Outlet
AS5445-092	1	1	12.835	100	0.004	29.725	100Percent Type D	AS5445-092	Outlet	No Redirection
AS5445-092	2	2	0.341	100	0.004	29.725	100Percent Type D	AS5445-092	SubCatchment 3	Impervious Runoff to Pervious
AS5445-092	3	3	1.496	0	0.004	29.725	100Percent Type D	AS5445-092	Outlet	Pervious Area to Outlet
AS5445-099	1	1	0.37	100	0.008	28.538	100Percent Type D	AS5445-099	Outlet	No Redirection
AS5445-099	3	3	0.054	0	0.008	28.538	100Percent Type D	AS5445-099	Outlet	Pervious Area to Outlet
AS5444-063			0	0	0	0	No Pervious Area	AS5444-063	SubCatchment 1	Inactive
IN5445-104	1	1	0.132	100	0.024	10.912	100Percent Type D	IN5445-104	Outlet	No Redirection
IN5445-104	3	3	0.003	0	0.024	10.912	100Percent Type D	IN5445-104	Outlet	Pervious Area to Outlet
AS5444-066	1	1	0.246	100	0.011	18.518	100Percent Type D	AS5444-066	Outlet	No Redirection
AS5444-066	2	2	0.011	100	0.011	18.518	100Percent Type D	AS5444-066	SubCatchment 3	Impervious Runoff to Pervious
AS5444-066	3	3	0.034	0	0.011	18.518	100Percent Type D	AS5444-066	Outlet	Pervious Area to Outlet
IN5444-067	1	1	0.248	100	0.015	15.026	100Percent Type D	IN5444-067	Outlet	No Redirection
IN5444-067	2	2	0.023	100	0.015	15.026	100Percent Type D	IN5444-067	SubCatchment 3	Impervious Runoff to Pervious
IN5444-067	3	3	0.011	0	0.015	15.026	100Percent Type D	IN5444-067	Outlet	Pervious Area to Outlet
AS5444-073	1	1	3.765	100	0.012	32.248	40C60D	AS5444-073	Outlet	No Redirection
AS5444-073	2	2	0.039	100	0.012	32.248	40C60D	AS5444-073	SubCatchment 3	Impervious Runoff to Pervious
AS5444-073	3	3	0.562	0	0.012	32.248	40C60D	AS5444-073	Outlet	Pervious Area to Outlet
AS5444-078	1	1	0.591	100	0.02	23.853	100Percent Type D	AS5444-078	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5444-078	3	3	0.081	0	0.02	23.853	100Percent Type D	AS5444-078	Outlet	Pervious Area to Outlet
TP5444-094	1	1	0.142	100	0.012	19.904	No Pervious Area	TP5444-094	Outlet	No Redirection
TP5444-094	2	2	0.124	100	0.012	19.904	No Pervious Area	TP5444-094	SubCatchment 3	Impervious Runoff to Pervious
TP5444-094	3	3	0.191	0	0.012	19.904	No Pervious Area	TP5444-094	Outlet	Pervious Area to Outlet
IN5444-086	1	1	0.676	100	0.019	25.488	20C80D	IN5444-086	Outlet	No Redirection
IN5444-086	3	3	0.047	0	0.019	25.488	20C80D	IN5444-086	Outlet	Pervious Area to Outlet
AS5444-087	1	1	0.278	100	0.054	29.558	10C90D	AS5444-087	Outlet	No Redirection
AS5444-087	3	3	0.068	0	0.054	29.558	10C90D	AS5444-087	Outlet	Pervious Area to Outlet
AS5247-134			0	0	0	0	No Pervious Area	AS5247-134	SubCatchment 1	Inactive
AS5247-136			0	0	0	0	No Pervious Area	AS5247-136	SubCatchment 1	Inactive
IN5247-137	1	1	1.225	100	0.014	32.158	100Percent Type D	IN5247-137	Outlet	No Redirection
IN5247-137	3	3	0.153	0	0.014	32.158	100Percent Type D	IN5247-137	Outlet	Pervious Area to Outlet
AS5346-136	1	1	0.995	100	0.018	5.713	100Percent Type D	AS5346-136	Outlet	No Redirection
AS5346-136	3	3	0.092	0	0.018	5.713	100Percent Type D	AS5346-136	Outlet	Pervious Area to Outlet
IN5443-030	1	1	0.327	100	0.037	21.539	30B70C	IN5443-030	Outlet	No Redirection
IN5443-030	2	2	0.395	100	0.037	21.539	30B70C	IN5443-030	SubCatchment 3	Impervious Runoff to Pervious
IN5443-030	3	3	0.694	0	0.037	21.539	30B70C	IN5443-030	Outlet	Pervious Area to Outlet
AE5443-031			0	0	0	0	No Pervious Area	AE5443-031	SubCatchment 1	Inactive
IN5443-032	1	1	0.022	100	0.042	7.819	70C30D	IN5443-032	Outlet	No Redirection
IN5443-032	3	3	0.014	0	0.042	7.819	70C30D	IN5443-032	Outlet	Pervious Area to Outlet
IN5443-033	1	1	0.093	100	0.031	20.265	20B80D	IN5443-033	Outlet	No Redirection
IN5443-033	3	3	0.049	0	0.031	20.265	20B80D	IN5443-033	Outlet	Pervious Area to Outlet
AS5443-034	1	1	0.053	100	0.02	13.154	100Percent Type C	AS5443-034	Outlet	No Redirection
AS5443-034	3	3	0.031	0	0.02	13.154	100Percent Type C	AS5443-034	Outlet	Pervious Area to Outlet
AS5443-036	1	1	0.292	100	0.033	17.369	100Percent Type B	AS5443-036	Outlet	No Redirection
AS5443-036	2	2	0.044	100	0.033	17.369	100Percent Type B	AS5443-036	SubCatchment 3	Impervious Runoff to Pervious
AS5443-036	3	3	0.073	0	0.033	17.369	100Percent Type B	AS5443-036	Outlet	Pervious Area to Outlet
AS5443-037			0	0	0	0	No Pervious Area	AS5443-037	SubCatchment 1	Inactive
AE5443-038			0	0	0	0	No Pervious Area	AE5443-038	SubCatchment 1	Inactive
AS5443-039	1	1	0.072	100	0.017	18.373	100Percent Type B	AS5443-039	Outlet	No Redirection
AS5443-039	3	3	0.035	0	0.017	18.373	100Percent Type B	AS5443-039	Outlet	Pervious Area to Outlet
AS5443-042	1	1	0.324	100	0.017	31.973	100Percent Type B	AS5443-042	Outlet	No Redirection
AS5443-042	2	2	0.047	100	0.017	31.973	100Percent Type B	AS5443-042	SubCatchment 3	Impervious Runoff to Pervious
AS5443-042	3	3	0.208	0	0.017	31.973	100Percent Type B	AS5443-042	Outlet	Pervious Area to Outlet
IN5347-088	1	1	0.712	100	0.012	27.2	100Percent Type D	IN5347-088	Outlet	No Redirection
IN5347-088	3	3	0.089	0	0.012	27.2	100Percent Type D	IN5347-088	Outlet	Pervious Area to Outlet
AS5348-052	1	1	0.217	100	0.017	18.847	100Percent Type D	AS5348-052	Outlet	No Redirection
AS5348-052	2	2	0.241	100	0.017	18.847	100Percent Type D	AS5348-052	SubCatchment 3	Impervious Runoff to Pervious
AS5348-052	3	3	0.081	0	0.017	18.847	100Percent Type D	AS5348-052	Outlet	Pervious Area to Outlet
IN5348-053	1	1	0.03	100	0.029	7.489	100Percent Type D	IN5348-053	Outlet	No Redirection
IN5348-053	2	2	0.001	100	0.029	7.489	100Percent Type D	IN5348-053	Outlet	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5348-058	1	1	1.19	100	0.017	27.907	50B50D	AS5348-058	Outlet	No Redirection
AS5348-058	2	2	0.023	100	0.017	27.907	50B50D	AS5348-058	SubCatchment 3	Impervious Runoff to Pervious
AS5348-058	3	3	0.098	0	0.017	27.907	50B50D	AS5348-058	Outlet	Pervious Area to Outlet
AS5443-052	1	1	0.136	100	0.014	10.836	100Percent Type D	AS5443-052	Outlet	No Redirection
AS5443-052	2	2	0.027	100	0.014	10.836	100Percent Type D	AS5443-052	SubCatchment 3	Impervious Runoff to Pervious
AS5443-052	3	3	0.031	0	0.014	10.836	100Percent Type D	AS5443-052	Outlet	Pervious Area to Outlet
AS5443-053	2	2	0.004	100	0.025	9.554	100Percent Type D	AS5443-053	SubCatchment 3	Impervious Runoff to Pervious
AS5443-053	3	3	0.046	0	0.025	9.554	100Percent Type D	AS5443-053	Outlet	Pervious Area to Outlet
IN5443-061	1	1	0.035	100	0.098	7.847	100Percent Type D	IN5443-061	Outlet	No Redirection
IN5443-061	2	2	0.031	100	0.098	7.847	100Percent Type D	IN5443-061	SubCatchment 3	Impervious Runoff to Pervious
IN5443-061	3	3	0.07	0	0.098	7.847	100Percent Type D	IN5443-061	Outlet	Pervious Area to Outlet
AS5442-014			0	0	0	0	No Pervious Area	AS5442-014	SubCatchment 1	Inactive
AS5442-015	1	1	0.328	100	0.025	33.922	100Percent Type D	AS5442-015	Outlet	No Redirection
AS5442-015	2	2	0.421	100	0.025	33.922	100Percent Type D	AS5442-015	SubCatchment 3	Impervious Runoff to Pervious
AS5442-015	3	3	0.465	0	0.025	33.922	100Percent Type D	AS5442-015	Outlet	Pervious Area to Outlet
IN5148-076	1	1	0.447	100	0.034	21.889	80C20D	IN5148-076	Outlet	No Redirection
IN5148-076	2	2	0.442	100	0.034	21.889	80C20D	IN5148-076	SubCatchment 3	Impervious Runoff to Pervious
IN5148-076	3	3	0.304	0	0.034	21.889	80C20D	IN5148-076	Outlet	Pervious Area to Outlet
IN5148-077	1	1	0.176	100	0.05	22.64	100Percent Type C	IN5148-077	Outlet	No Redirection
IN5148-077	2	2	0.103	100	0.05	22.64	100Percent Type C	IN5148-077	SubCatchment 3	Impervious Runoff to Pervious
IN5148-077	3	3	0.081	0	0.05	22.64	100Percent Type C	IN5148-077	Outlet	Pervious Area to Outlet
IN5148-078	1	1	0.056	100	0.029	22.66	100Percent Type C	IN5148-078	Outlet	No Redirection
IN5148-078	2	2	0.048	100	0.029	22.66	100Percent Type C	IN5148-078	SubCatchment 3	Impervious Runoff to Pervious
IN5148-078	3	3	0.077	0	0.029	22.66	100Percent Type C	IN5148-078	Outlet	Pervious Area to Outlet
IN5148-082	1	1	0.16	100	0.026	16.248	100Percent Type D	IN5148-082	Outlet	No Redirection
IN5148-082	2	2	0.041	100	0.026	16.248	100Percent Type D	IN5148-082	SubCatchment 3	Impervious Runoff to Pervious
IN5148-082	3	3	0.089	0	0.026	16.248	100Percent Type D	IN5148-082	Outlet	Pervious Area to Outlet
IN5147-062	1	1	1.156	100	0.012	24.759	100Percent Type D	IN5147-062	Outlet	No Redirection
IN5147-062	2	2	0.311	100	0.012	24.759	100Percent Type D	IN5147-062	SubCatchment 3	Impervious Runoff to Pervious
IN5147-062	3	3	0.367	0	0.012	24.759	100Percent Type D	IN5147-062	Outlet	Pervious Area to Outlet
AS5247-152	1	1	0.175	100	0.013	22.077	100Percent Type D	AS5247-152	Outlet	No Redirection
AS5247-152	2	2	0.125	100	0.013	22.077	100Percent Type D	AS5247-152	SubCatchment 3	Impervious Runoff to Pervious
AS5247-152	3	3	0.122	0	0.013	22.077	100Percent Type D	AS5247-152	Outlet	Pervious Area to Outlet
IN5247-153	1	1	1.65	100	0.011	57.096	100Percent Type D	IN5247-153	Outlet	No Redirection
IN5247-153	2	2	0.713	100	0.011	57.096	100Percent Type D	IN5247-153	SubCatchment 3	Impervious Runoff to Pervious
IN5247-153	3	3	0.7	0	0.011	57.096	100Percent Type D	IN5247-153	Outlet	Pervious Area to Outlet
IN5247-154	1	1	0.346	100	0.011	21.117	100Percent Type D	IN5247-154	Outlet	No Redirection
IN5247-154	2	2	0.09	100	0.011	21.117	100Percent Type D	IN5247-154	SubCatchment 3	Impervious Runoff to Pervious
IN5247-154	3	3	0.109	0	0.011	21.117	100Percent Type D	IN5247-154	Outlet	Pervious Area to Outlet
IN5247-158	1	1	0.193	100	0.008	27.015	100Percent Type D	IN5247-158	Outlet	No Redirection
IN5247-158	3	3	0.01	0	0.008	27.015	100Percent Type D	IN5247-158	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5247-159	1	1	0.893	100	0.011	26.413	100Percent Type D	AS5247-159	Outlet	No Redirection
AS5247-159	3	3	0.073	0	0.011	26.413	100Percent Type D	AS5247-159	Outlet	Pervious Area to Outlet
IN5247-165	1	1	0.842	100	0.006	17.753	100Percent Type D	IN5247-165	Outlet	No Redirection
IN5247-165	2	2	1.553	100	0.006	17.753	100Percent Type D	IN5247-165	SubCatchment 3	Impervious Runoff to Pervious
IN5247-165	3	3	0.458	0	0.006	17.753	100Percent Type D	IN5247-165	Outlet	Pervious Area to Outlet
IN5247-167	1	1	2.074	100	0.005	21.485	100Percent Type D	IN5247-167	Outlet	No Redirection
IN5247-167	2	2	0.004	100	0.005	21.485	100Percent Type D	IN5247-167	SubCatchment 3	Impervious Runoff to Pervious
IN5247-167	3	3	0.184	0	0.005	21.485	100Percent Type D	IN5247-167	Outlet	Pervious Area to Outlet
IN5247-169	1	1	0.205	100	0.083	12.572	100Percent Type D	IN5247-169	Outlet	No Redirection
IN5247-169	2	2	0.059	100	0.083	12.572	100Percent Type D	IN5247-169	SubCatchment 3	Impervious Runoff to Pervious
IN5247-169	3	3	0.047	0	0.083	12.572	100Percent Type D	IN5247-169	Outlet	Pervious Area to Outlet
AS5247-173	1	1	0.578	100	0.011	30.567	100Percent Type D	AS5247-173	Outlet	No Redirection
AS5247-173	2	2	0.315	100	0.011	30.567	100Percent Type D	AS5247-173	SubCatchment 3	Impervious Runoff to Pervious
AS5247-173	3	3	0.269	0	0.011	30.567	100Percent Type D	AS5247-173	Outlet	Pervious Area to Outlet
AS5247-176			0	0	0	0	No Pervious Area	AS5247-176	SubCatchment 1	Inactive
IN5147-064	1	1	0.373	100	0.016	34.902	50C50D	IN5147-064	Outlet	No Redirection
IN5147-064	2	2	0.115	100	0.016	34.902	50C50D	IN5147-064	SubCatchment 3	Impervious Runoff to Pervious
IN5147-064	3	3	0.125	0	0.016	34.902	50C50D	IN5147-064	Outlet	Pervious Area to Outlet
IN5147-065	1	1	0.584	100	0.01	29.645	20C80D	IN5147-065	Outlet	No Redirection
IN5147-065	2	2	0.675	100	0.01	29.645	20C80D	IN5147-065	SubCatchment 3	Impervious Runoff to Pervious
IN5147-065	3	3	0.876	0	0.01	29.645	20C80D	IN5147-065	Outlet	Pervious Area to Outlet
AS5246-090		1	0	100	0	0	No Pervious Area	AS5246-090	Outlet	Inactive
IN5246-091	1	1	0.01	100	0.018	23.182	100Percent Type D	IN5246-091	Outlet	No Redirection
IN5246-091	3	3	0.002	0	0.018	23.182	100Percent Type D	IN5246-091	Outlet	Pervious Area to Outlet
IN5246-092	1	1	0.262	100	0.009	29.868	100Percent Type D	IN5246-092	Outlet	No Redirection
IN5246-092	2	2	0.141	100	0.009	29.868	100Percent Type D	IN5246-092	SubCatchment 3	Impervious Runoff to Pervious
IN5246-092	3	3	0.334	0	0.009	29.868	100Percent Type D	IN5246-092	Outlet	Pervious Area to Outlet
IN5246-094	1	1	0.614	100	0.012	18.425	100Percent Type D	IN5246-094	Outlet	No Redirection
IN5246-094	2	2	0.056	100	0.012	18.425	100Percent Type D	IN5246-094	SubCatchment 3	Impervious Runoff to Pervious
IN5246-094	3	3	1.306	0	0.012	18.425	100Percent Type D	IN5246-094	Outlet	Pervious Area to Outlet
IN5246-098	1	1	0.55	100	0.008	18.925	100Percent Type D	IN5246-098	Outlet	No Redirection
IN5246-098	2	2	0.213	100	0.008	18.925	100Percent Type D	IN5246-098	SubCatchment 3	Impervious Runoff to Pervious
IN5246-098	3	3	0.639	0	0.008	18.925	100Percent Type D	IN5246-098	Outlet	Pervious Area to Outlet
IN5346-147	1	1	0.506	100	0.008	30.37	100Percent Type D	IN5346-147	Outlet	No Redirection
IN5346-147	2	2	0.046	100	0.008	30.37	100Percent Type D	IN5346-147	SubCatchment 3	Impervious Runoff to Pervious
IN5346-147	3	3	0.135	0	0.008	30.37	100Percent Type D	IN5346-147	Outlet	Pervious Area to Outlet
AS5346-149	1	1	0.117	100	0.054	10.486	100Percent Type D	AS5346-149	Outlet	No Redirection
AS5346-149	2	2	0.054	100	0.054	10.486	100Percent Type D	AS5346-149	SubCatchment 3	Impervious Runoff to Pervious
AS5346-149	3	3	0.08	0	0.054	10.486	100Percent Type D	AS5346-149	Outlet	Pervious Area to Outlet
IN5346-154	1	1	1.192	100	0.009	35.396	100Percent Type D	IN5346-154	Outlet	No Redirection
IN5346-154	2	2	0.104	100	0.009	35.396	100Percent Type D	IN5346-154	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5346-154	3	3	0.727	0	0.009	35.396	100Percent Type D	IN5346-154	Outlet	Pervious Area to Outlet
IN5346-156	1	1	2.329	100	0.027	39.189	20C80D	IN5346-156	Outlet	No Redirection
IN5346-156	2	2	1.822	100	0.027	39.189	20C80D	IN5346-156	SubCatchment 3	Impervious Runoff to Pervious
IN5346-156	3	3	3.673	0	0.027	39.189	20C80D	IN5346-156	Outlet	Pervious Area to Outlet
IN5346-157	1	1	0.015	100	0.016	6.179	100Percent Type D	IN5346-157	Outlet	No Redirection
CB5343-067	1	1	0.426	100	0.011	24.753	100Percent Type D	CB5343-067	Outlet	No Redirection
CB5343-067	2	2	0.285	100	0.011	24.753	100Percent Type D	CB5343-067	SubCatchment 3	Impervious Runoff to Pervious
CB5343-067	3	3	0.326	0	0.011	24.753	100Percent Type D	CB5343-067	Outlet	Pervious Area to Outlet
CB5444-096	1	1	1.599	100	0.029	34.679	50B50C	CB5444-096	Outlet	No Redirection
CB5444-096	2	2	0.698	100	0.029	34.679	50B50C	CB5444-096	SubCatchment 3	Impervious Runoff to Pervious
CB5444-096	3	3	1.665	0	0.029	34.679	50B50C	CB5444-096	Outlet	Pervious Area to Outlet
AS5444-104	1	1	0.604	100	0.015	25.924	100Percent Type B	AS5444-104	Outlet	No Redirection
AS5444-104	2	2	0.117	100	0.015	25.924	100Percent Type B	AS5444-104	SubCatchment 3	Impervious Runoff to Pervious
AS5444-104	3	3	0.371	0	0.015	25.924	100Percent Type B	AS5444-104	Outlet	Pervious Area to Outlet
AS5344-076			0	0	0	0	No Pervious Area	AS5344-076	SubCatchment 1	Inactive
CB5344-081	1	1	1.511	100	0.026	33.564	20B80C	CB5344-081	Outlet	No Redirection
CB5344-081	2	2	0.604	100	0.026	33.564	20B80C	CB5344-081	SubCatchment 3	Impervious Runoff to Pervious
CB5344-081	3	3	1.168	0	0.026	33.564	20B80C	CB5344-081	Outlet	Pervious Area to Outlet
AS5344-082	1	1	0.217	100	0.011	27.365	50B50D	AS5344-082	Outlet	No Redirection
AS5344-082	2	2	0.141	100	0.011	27.365	50B50D	AS5344-082	SubCatchment 3	Impervious Runoff to Pervious
AS5344-082	3	3	0.154	0	0.011	27.365	50B50D	AS5344-082	Outlet	Pervious Area to Outlet
AS5344-083			0	0	0	0	No Pervious Area	AS5344-083	SubCatchment 1	Inactive
AS5344-086	1	1	6.023	100	0.02	31.454	40B60C	AS5344-086	Outlet	No Redirection
AS5344-086	2	2	3.924	100	0.02	31.454	40B60C	AS5344-086	SubCatchment 3	Impervious Runoff to Pervious
AS5344-086	3	3	7.373	0	0.02	31.454	40B60C	AS5344-086	Outlet	Pervious Area to Outlet
AS5344-089	1	1	0.631	100	0.008	49.334	100Percent Type D	AS5344-089	Outlet	No Redirection
AS5344-089	2	2	0.792	100	0.008	49.334	100Percent Type D	AS5344-089	SubCatchment 3	Impervious Runoff to Pervious
AS5344-089	3	3	1.648	0	0.008	49.334	100Percent Type D	AS5344-089	Outlet	Pervious Area to Outlet
AS5343-100	1	1	0.168	100	0.049	10.089	100Percent Type D	AS5343-100	Outlet	No Redirection
AS5343-100	2	2	0.06	100	0.049	10.089	100Percent Type D	AS5343-100	SubCatchment 3	Impervious Runoff to Pervious
AS5343-100	3	3	0.093	0	0.049	10.089	100Percent Type D	AS5343-100	Outlet	Pervious Area to Outlet
AS5343-104			0	0	0	0	No Pervious Area	AS5343-104	SubCatchment 1	Inactive
AS5343-105	1	1	0.395	100	0.008	33.649	100Percent Type D	AS5343-105	Outlet	No Redirection
AS5343-105	2	2	0.292	100	0.008	33.649	100Percent Type D	AS5343-105	SubCatchment 3	Impervious Runoff to Pervious
AS5343-105	3	3	0.773	0	0.008	33.649	100Percent Type D	AS5343-105	Outlet	Pervious Area to Outlet
AS5243-006	1	1	1.543	100	0.005	39.079	30B70D	AS5243-006	Outlet	No Redirection
AS5243-006	2	2	0.762	100	0.005	39.079	30B70D	AS5243-006	SubCatchment 3	Impervious Runoff to Pervious
AS5243-006	3	3	1.639	0	0.005	39.079	30B70D	AS5243-006	Outlet	Pervious Area to Outlet
IN5434-006	1	1	2.405	100	0.015	34.042	100Percent Type B	IN5434-006	Outlet	No Redirection
IN5434-006	2	2	0.241	100	0.015	34.042	100Percent Type B	IN5434-006	SubCatchment 3	Impervious Runoff to Pervious
IN5434-006	3	3	0.845	0	0.015	34.042	100Percent Type B	IN5434-006	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
CB5249-091	1	1	0.016	100	0.044	3.443	No Pervious Area	CB5249-091	Outlet	No Redirection
IN5148-087	1	1	1.265	100	0.026	27.369	20C80D	IN5148-087	Outlet	No Redirection
IN5148-087	2	2	0.634	100	0.026	27.369	20C80D	IN5148-087	SubCatchment 3	Impervious Runoff to Pervious
IN5148-087	3	3	0.713	0	0.026	27.369	20C80D	IN5148-087	Outlet	Pervious Area to Outlet
IN5148-088	1	1	0.25	100	0.026	31.933	100Percent Type D	IN5148-088	Outlet	No Redirection
IN5148-088	2	2	0.228	100	0.026	31.933	100Percent Type D	IN5148-088	SubCatchment 3	Impervious Runoff to Pervious
IN5148-088	3	3	0.38	0	0.026	31.933	100Percent Type D	IN5148-088	Outlet	Pervious Area to Outlet
AS5148-091	1	1	1.026	100	0.043	32.7	60B40C	AS5148-091	Outlet	No Redirection
AS5148-091	2	2	0.488	100	0.043	32.7	60B40C	AS5148-091	SubCatchment 3	Impervious Runoff to Pervious
AS5148-091	3	3	0.696	0	0.043	32.7	60B40C	AS5148-091	Outlet	Pervious Area to Outlet
CB5343-111	1	1	0.422	100	0.038	27.666	50B50D	CB5343-111	Outlet	No Redirection
CB5343-111	2	2	0.177	100	0.038	27.666	50B50D	CB5343-111	SubCatchment 3	Impervious Runoff to Pervious
CB5343-111	3	3	0.467	0	0.038	27.666	50B50D	CB5343-111	Outlet	Pervious Area to Outlet
CB5348-068	1	1	1.787	100	0.027	18.232	40B60C	CB5348-068	Outlet	No Redirection
CB5348-068	2	2	1.05	100	0.027	18.232	40B60C	CB5348-068	SubCatchment 3	Impervious Runoff to Pervious
CB5348-068	3	3	1.362	0	0.027	18.232	40B60C	CB5348-068	Outlet	Pervious Area to Outlet
CB5447-043	1	1	1.979	100	0.035	18.08	100Percent Type C	CB5447-043	Outlet	No Redirection
CB5447-043	2	2	0.911	100	0.035	18.08	100Percent Type C	CB5447-043	SubCatchment 3	Impervious Runoff to Pervious
CB5447-043	3	3	2.146	0	0.035	18.08	100Percent Type C	CB5447-043	Outlet	Pervious Area to Outlet
IN5447-048	1	1	0.695	100	0.045	23.421	50B50C	IN5447-048	Outlet	No Redirection
IN5447-048	2	2	0.403	100	0.045	23.421	50B50C	IN5447-048	SubCatchment 3	Impervious Runoff to Pervious
IN5447-048	3	3	0.711	0	0.045	23.421	50B50C	IN5447-048	Outlet	Pervious Area to Outlet
AS5447-050			0	0	0	0	No Pervious Area	AS5447-050	SubCatchment 1	Inactive
CB5447-051	1	1	0.777	100	0.034	20.225	90B10C	CB5447-051	Outlet	No Redirection
CB5447-051	2	2	0.494	100	0.034	20.225	90B10C	CB5447-051	SubCatchment 3	Impervious Runoff to Pervious
CB5447-051	3	3	0.582	0	0.034	20.225	90B10C	CB5447-051	Outlet	Pervious Area to Outlet
CB5446-073	1	1	0.49	100	0.012	33.476	100Percent Type B	CB5446-073	Outlet	No Redirection
CB5446-073	2	2	0.01	100	0.012	33.476	100Percent Type B	CB5446-073	SubCatchment 3	Impervious Runoff to Pervious
CB5446-073	3	3	0.038	0	0.012	33.476	100Percent Type B	CB5446-073	Outlet	Pervious Area to Outlet
AS5537-002	1	1	0.644	100	0.004	32.367	80B20D	AS5537-002	Outlet	No Redirection
AS5537-002	2	2	0.018	100	0.004	32.367	80B20D	AS5537-002	SubCatchment 3	Impervious Runoff to Pervious
AS5537-002	3	3	19.522	0	0.004	32.367	80B20D	AS5537-002	Outlet	Pervious Area to Outlet
AS5537-003	1	1	0.207	100	0.011	15.063	No Pervious Area	AS5537-003	Outlet	No Redirection
AS5537-003	3	3	0.203	0	0.011	15.063	No Pervious Area	AS5537-003	Outlet	Pervious Area to Outlet
AS5537-005	1	1	0.261	100	0.01	16.16	No Pervious Area	AS5537-005	Outlet	No Redirection
AS5537-005	3	3	0.253	0	0.01	16.16	No Pervious Area	AS5537-005	Outlet	Pervious Area to Outlet
AS5537-006	1	1	0.117	100	0.015	7.963	No Pervious Area	AS5537-006	Outlet	No Redirection
AS5537-006	3	3	0.115	0	0.015	7.963	No Pervious Area	AS5537-006	Outlet	Pervious Area to Outlet
AS5537-007	1	1	0.391	100	0.006	20.178	20B80D	AS5537-007	Outlet	No Redirection
AS5537-007	2	2	0.082	100	0.006	20.178	20B80D	AS5537-007	SubCatchment 3	Impervious Runoff to Pervious
AS5537-007	3	3	0.175	0	0.006	20.178	20B80D	AS5537-007	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5537-011	1	1	0.508	100	0.026	22.813	No Pervious Area	AS5537-011	Outlet	No Redirection
AS5537-011	3	3	0.497	0	0.026	22.813	No Pervious Area	AS5537-011	Outlet	Pervious Area to Outlet
AS5537-025			0	0	0	0	No Pervious Area	AS5537-025	SubCatchment 1	Inactive
AS5537-026			0	0	0	0	No Pervious Area	AS5537-026	SubCatchment 1	Inactive
AS5537-027			0	0	0	0	No Pervious Area	AS5537-027	SubCatchment 1	Inactive
AS5538-001	1	1	0.916	100	0.013	30.523	100Percent Type D	AS5538-001	Outlet	No Redirection
AS5538-001	2	2	0.224	100	0.013	30.523	100Percent Type D	AS5538-001	SubCatchment 3	Impervious Runoff to Pervious
AS5538-001	3	3	0.624	0	0.013	30.523	100Percent Type D	AS5538-001	Outlet	Pervious Area to Outlet
AS5538-002	1	1	8.465	100	0.013	20.332	100Percent Type D	AS5538-002	Outlet	No Redirection
AS5538-002	2	2	0.122	100	0.013	20.332	100Percent Type D	AS5538-002	SubCatchment 3	Impervious Runoff to Pervious
AS5538-002	3	3	0.045	0	0.013	20.332	100Percent Type D	AS5538-002	Outlet	Pervious Area to Outlet
AS5538-011	1	1	4.249	100	0.012	32.291	100Percent Type D	AS5538-011	Outlet	No Redirection
AS5538-011	2	2	0.232	100	0.012	32.291	100Percent Type D	AS5538-011	SubCatchment 3	Impervious Runoff to Pervious
AS5538-011	3	3	0.207	0	0.012	32.291	100Percent Type D	AS5538-011	Outlet	Pervious Area to Outlet
AS5539-006			0	0	0	0	No Pervious Area	AS5539-006	SubCatchment 1	Inactive
IN5637-001	1	1	0.046	100	0.012	32.291	100Percent Type D	IN5637-001	Outlet	No Redirection
IN5637-001	2	2	0.138	100	0.012	32.291	100Percent Type D	IN5637-001	SubCatchment 3	Impervious Runoff to Pervious
IN5637-001	3	3	1.125	0	0.012	32.291	100Percent Type D	IN5637-001	Outlet	Pervious Area to Outlet
AS5637-002			0	0	0	0	No Pervious Area	AS5637-002	SubCatchment 1	Inactive
AS5637-006	1	1	0.257	100	0.011	14.006	100Percent Type D	AS5637-006	Outlet	No Redirection
AS5637-006	3	3	0.054	0	0.011	14.006	100Percent Type D	AS5637-006	Outlet	Pervious Area to Outlet
AS5637-007	1	1	2.763	100	0.007	26.252	100Percent Type D	AS5637-007	Outlet	No Redirection
AS5637-007	3	3	1.3	0	0.007	26.252	100Percent Type D	AS5637-007	Outlet	Pervious Area to Outlet
AS5637-012	1	1	7.249	100	0.004	31.135	100Percent Type D	AS5637-012	Outlet	No Redirection
AS5637-012	2	2	1.424	100	0.004	31.135	100Percent Type D	AS5637-012	SubCatchment 3	Impervious Runoff to Pervious
AS5637-012	3	3	3.265	0	0.004	31.135	100Percent Type D	AS5637-012	Outlet	Pervious Area to Outlet
AS5637-013	1	1	0.456	100	0.007	25.887	100Percent Type D	AS5637-013	Outlet	No Redirection
AS5637-013	3	3	0.123	0	0.007	25.887	100Percent Type D	AS5637-013	Outlet	Pervious Area to Outlet
AS5637-025			0	0	0	0	No Pervious Area	AS5637-025	SubCatchment 1	Inactive
AS5637-026	1	1	5.211	100	0.002	29.122	100Percent Type D	AS5637-026	Outlet	No Redirection
AS5637-026	3	3	1.714	0	0.002	29.122	100Percent Type D	AS5637-026	Outlet	Pervious Area to Outlet
AS5637-027	1	1	2.002	100	0.002	15.215	100Percent Type D	AS5637-027	Outlet	No Redirection
AS5637-027	3	3	0.301	0	0.002	15.215	100Percent Type D	AS5637-027	Outlet	Pervious Area to Outlet
AS5637-028	1	1	0.575	100	0.002	6.92	No Pervious Area	AS5637-028	Outlet	No Redirection
AS5637-028	2	2	0.078	100	0.002	6.92	No Pervious Area	AS5637-028	SubCatchment 3	Impervious Runoff to Pervious
AS5637-028	3	3	0.006	0	0.002	6.92	No Pervious Area	AS5637-028	Outlet	Pervious Area to Outlet
AS5638-001			0	0	0	0	No Pervious Area	AS5638-001	SubCatchment 1	Inactive
AS5638-002	1	1	1.506	100	0.008	19.374	100Percent Type D	AS5638-002	Outlet	No Redirection
AS5638-002	3	3	0.716	0	0.008	19.374	100Percent Type D	AS5638-002	Outlet	Pervious Area to Outlet
AS5638-004			0	0	0	0	No Pervious Area	AS5638-004	SubCatchment 1	Inactive
AS5638-010	1	1	0.03	100	0.047	9.671	100Percent Type D	AS5638-010	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5638-010	3	3	0.047	0	0.047	9.671	100Percent Type D	AS5638-010	Outlet	Pervious Area to Outlet
AS5638-015	1	1	0.418	100	0.019	30.904	100Percent Type D	AS5638-015	Outlet	No Redirection
AS5638-015	2	2	0.026	100	0.019	30.904	100Percent Type D	AS5638-015	SubCatchment 3	Impervious Runoff to Pervious
AS5638-015	3	3	0.771	0	0.019	30.904	100Percent Type D	AS5638-015	Outlet	Pervious Area to Outlet
AS5638-016	1	1	0.586	100	0.021	18.727	100Percent Type D	AS5638-016	Outlet	No Redirection
AS5638-016	2	2	0.062	100	0.021	18.727	100Percent Type D	AS5638-016	SubCatchment 3	Impervious Runoff to Pervious
AS5638-016	3	3	1.198	0	0.021	18.727	100Percent Type D	AS5638-016	Outlet	Pervious Area to Outlet
AS5638-017	1	1	0.158	100	0.013	28.14	100Percent Type D	AS5638-017	Outlet	No Redirection
AS5638-017	3	3	0.753	0	0.013	28.14	100Percent Type D	AS5638-017	Outlet	Pervious Area to Outlet
AS5638-024	1	1	0.176	100	0.015	26.714	100Percent Type D	AS5638-024	Outlet	No Redirection
AS5638-024	3	3	1.389	0	0.015	26.714	100Percent Type D	AS5638-024	Outlet	Pervious Area to Outlet
AS5639-002	1	1	1.878	100	0.015	27.056	100Percent Type D	AS5639-002	Outlet	No Redirection
AS5639-002	2	2	0.239	100	0.015	27.056	100Percent Type D	AS5639-002	SubCatchment 3	Impervious Runoff to Pervious
AS5639-002	3	3	1.58	0	0.015	27.056	100Percent Type D	AS5639-002	Outlet	Pervious Area to Outlet
AS5639-011	3	3	2.003	0	0.006	26.166	100Percent Type D	AS5639-011	Outlet	Pervious Area to Outlet
AS5639-012	3	3	1.505	0	0.008	21.326	100Percent Type D	AS5639-012	Outlet	Pervious Area to Outlet
AS5639-014	1	1	0.168	100	0.009	17.091	100Percent Type D	AS5639-014	Outlet	No Redirection
AS5639-014	2	2	0.073	100	0.009	17.091	100Percent Type D	AS5639-014	SubCatchment 3	Impervious Runoff to Pervious
AS5639-014	3	3	0.867	0	0.009	17.091	100Percent Type D	AS5639-014	Outlet	Pervious Area to Outlet
IN5738-003	1	1	0.287	100	0.031	26.85	100Percent Type D	IN5738-003	Outlet	No Redirection
IN5738-003	2	2	0.912	100	0.031	26.85	100Percent Type D	IN5738-003	SubCatchment 3	Impervious Runoff to Pervious
IN5738-003	3	3	4.438	0	0.031	26.85	100Percent Type D	IN5738-003	Outlet	Pervious Area to Outlet
AS5738-004	1	1	0.199	100	0.01	21.398	90B10D	AS5738-004	Outlet	No Redirection
AS5738-004	2	2	0.002	100	0.01	21.398	90B10D	AS5738-004	SubCatchment 3	Impervious Runoff to Pervious
AS5738-004	3	3	0.11	0	0.01	21.398	90B10D	AS5738-004	Outlet	Pervious Area to Outlet
IN5739-006	1	1	0.099	100	0.027	10.404	100Percent Type B	IN5739-006	Outlet	No Redirection
IN5739-006	2	2	0.027	100	0.027	10.404	100Percent Type B	IN5739-006	SubCatchment 3	Impervious Runoff to Pervious
IN5739-006	3	3	0.099	0	0.027	10.404	100Percent Type B	IN5739-006	Outlet	Pervious Area to Outlet
IN5739-007	1	1	0.093	100	0.028	10.37	100Percent Type B	IN5739-007	Outlet	No Redirection
IN5739-007	2	2	0.088	100	0.028	10.37	100Percent Type B	IN5739-007	SubCatchment 3	Impervious Runoff to Pervious
IN5739-007	3	3	0.132	0	0.028	10.37	100Percent Type B	IN5739-007	Outlet	Pervious Area to Outlet
AS5739-020	1	1	1.402	100	0.038	18.522	70B30D	AS5739-020	Outlet	No Redirection
AS5739-020	2	2	0.077	100	0.038	18.522	70B30D	AS5739-020	SubCatchment 3	Impervious Runoff to Pervious
AS5739-020	3	3	0.422	0	0.038	18.522	70B30D	AS5739-020	Outlet	Pervious Area to Outlet
AS5942-005	1	1	0.236	100	0.021	61.151	100Percent Type B	AS5942-005	Outlet	No Redirection
AS5942-005	2	2	0.12	100	0.021	61.151	100Percent Type B	AS5942-005	SubCatchment 3	Impervious Runoff to Pervious
AS5942-005	3	3	0.118	0	0.021	61.151	100Percent Type B	AS5942-005	Outlet	Pervious Area to Outlet
AS5942-012	1	1	2.351	100	0.03	126.921	20B80C	AS5942-012	Outlet	No Redirection
AS5942-012	2	2	1.581	100	0.03	126.921	20B80C	AS5942-012	SubCatchment 3	Impervious Runoff to Pervious
AS5942-012	3	3	3.31	0	0.03	126.921	20B80C	AS5942-012	Outlet	Pervious Area to Outlet
AS5942-025	1	1	1.041	100	0.02	138.212	100Percent Type C	AS5942-025	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5942-025	2	2	0.447	100	0.02	138.212	100Percent Type C	AS5942-025	SubCatchment 3	Impervious Runoff to Pervious
AS5942-025	3	3	0.867	0	0.02	138.212	100Percent Type C	AS5942-025	Outlet	Pervious Area to Outlet
AS5942-026	1	1	1.056	100	0.009	113.1	20B80C	AS5942-026	Outlet	No Redirection
AS5942-026	2	2	0.798	100	0.009	113.1	20B80C	AS5942-026	SubCatchment 3	Impervious Runoff to Pervious
AS5942-026	3	3	2.528	0	0.009	113.1	20B80C	AS5942-026	Outlet	Pervious Area to Outlet
AS5942-030	1	1	0.735	100	0.019	91.706	80B20C	AS5942-030	Outlet	No Redirection
AS5942-030	2	2	0.205	100	0.019	91.706	80B20C	AS5942-030	SubCatchment 3	Impervious Runoff to Pervious
AS5942-030	3	3	0.396	0	0.019	91.706	80B20C	AS5942-030	Outlet	Pervious Area to Outlet
AS5942-032	1	1	0.202	100	0.035	77.552	90B10C	AS5942-032	Outlet	No Redirection
AS5942-032	2	2	0.122	100	0.035	77.552	90B10C	AS5942-032	SubCatchment 3	Impervious Runoff to Pervious
AS5942-032	3	3	0.355	0	0.035	77.552	90B10C	AS5942-032	Outlet	Pervious Area to Outlet
AS5942-044	1	1	1.861	100	0.028	112.367	20B80C	AS5942-044	Outlet	No Redirection
AS5942-044	2	2	1.122	100	0.028	112.367	20B80C	AS5942-044	SubCatchment 3	Impervious Runoff to Pervious
AS5942-044	3	3	2.002	0	0.028	112.367	20B80C	AS5942-044	Outlet	Pervious Area to Outlet
AS5941-015	1	1	1.803	100	0.011	131.302	100Percent Type C	AS5941-015	Outlet	No Redirection
AS5941-015	2	2	0.482	100	0.011	131.302	100Percent Type C	AS5941-015	SubCatchment 3	Impervious Runoff to Pervious
AS5941-015	3	3	0.91	0	0.011	131.302	100Percent Type C	AS5941-015	Outlet	Pervious Area to Outlet
AS5941-019	1	1	1.274	100	0.016	110.761	10B90C	AS5941-019	Outlet	No Redirection
AS5941-019	2	2	0.098	100	0.016	110.761	10B90C	AS5941-019	SubCatchment 3	Impervious Runoff to Pervious
AS5941-019	3	3	0.231	0	0.016	110.761	10B90C	AS5941-019	Outlet	Pervious Area to Outlet
AS5841-001	1	1	0.886	100	0.015	25.342	100Percent Type B	AS5841-001	Outlet	No Redirection
AS5841-001	2	2	0.486	100	0.015	25.342	100Percent Type B	AS5841-001	SubCatchment 3	Impervious Runoff to Pervious
AS5841-001	3	3	1.022	0	0.015	25.342	100Percent Type B	AS5841-001	Outlet	Pervious Area to Outlet
AS5841-017	1	1	4.51	100	0.03	168.152	100Percent Type B	AS5841-017	Outlet	No Redirection
AS5841-017	2	2	2.861	100	0.03	168.152	100Percent Type B	AS5841-017	SubCatchment 3	Impervious Runoff to Pervious
AS5841-017	3	3	6.048	0	0.03	168.152	100Percent Type B	AS5841-017	Outlet	Pervious Area to Outlet
AS5841-027	1	1	0.582	100	0.027	58.006	100Percent Type B	AS5841-027	Outlet	No Redirection
AS5841-027	2	2	0.114	100	0.027	58.006	100Percent Type B	AS5841-027	SubCatchment 3	Impervious Runoff to Pervious
AS5841-027	3	3	0.317	0	0.027	58.006	100Percent Type B	AS5841-027	Outlet	Pervious Area to Outlet
AS5841-028	1	1	0.396	100	0.022	66.202	100Percent Type B	AS5841-028	Outlet	No Redirection
AS5841-028	2	2	0.206	100	0.022	66.202	100Percent Type B	AS5841-028	SubCatchment 3	Impervious Runoff to Pervious
AS5841-028	3	3	0.452	0	0.022	66.202	100Percent Type B	AS5841-028	Outlet	Pervious Area to Outlet
AS5842-012	1	1	5.816	100	0.01	190.564	20B80C	AS5842-012	Outlet	No Redirection
AS5842-012	2	2	1.368	100	0.01	190.564	20B80C	AS5842-012	SubCatchment 3	Impervious Runoff to Pervious
AS5842-012	3	3	2.924	0	0.01	190.564	20B80C	AS5842-012	Outlet	Pervious Area to Outlet
AS5742-026	1	1	2.05	100	0.011	245.627	100Percent Type B	AS5742-026	Outlet	No Redirection
AS5742-026	2	2	0.642	100	0.011	245.627	100Percent Type B	AS5742-026	SubCatchment 3	Impervious Runoff to Pervious
AS5742-026	3	3	0.976	0	0.011	245.627	100Percent Type B	AS5742-026	Outlet	Pervious Area to Outlet
AS5742-027	1	1	2.6	100	0.03	190.822	100Percent Type B	AS5742-027	Outlet	No Redirection
AS5742-027	2	2	0.642	100	0.03	190.822	100Percent Type B	AS5742-027	SubCatchment 3	Impervious Runoff to Pervious
AS5742-027	3	3	0.976	0	0.03	190.822	100Percent Type B	AS5742-027	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5742-029	1	1	1.523	100	0.027	124.982	100Percent Type B	AS5742-029	Outlet	No Redirection
AS5742-029	2	2	0.483	100	0.027	124.982	100Percent Type B	AS5742-029	SubCatchment 3	Impervious Runoff to Pervious
AS5742-029	3	3	1.033	0	0.027	124.982	100Percent Type B	AS5742-029	Outlet	Pervious Area to Outlet
AS5742-030	1	1	0.308	100	0.009	117.227	100Percent Type B	AS5742-030	Outlet	No Redirection
AS5742-030	2	2	0.111	100	0.009	117.227	100Percent Type B	AS5742-030	SubCatchment 3	Impervious Runoff to Pervious
AS5742-030	3	3	0.286	0	0.009	117.227	100Percent Type B	AS5742-030	Outlet	Pervious Area to Outlet
AS5742-031			0	0	0	0	No Pervious Area	AS5742-031	SubCatchment 1	Inactive
AS5742-033	1	1	0.48	100	0.017	122.611	80B20D	AS5742-033	Outlet	No Redirection
AS5742-033	2	2	0.047	100	0.017	122.611	80B20D	AS5742-033	SubCatchment 3	Impervious Runoff to Pervious
AS5742-033	3	3	0.497	0	0.017	122.611	80B20D	AS5742-033	Outlet	Pervious Area to Outlet
AS5742-034	1	1	0.573	100	0.01	104.159	20B80D	AS5742-034	Outlet	No Redirection
AS5742-034	2	2	0.09	100	0.01	104.159	20B80D	AS5742-034	SubCatchment 3	Impervious Runoff to Pervious
AS5742-034	3	3	0.796	0	0.01	104.159	20B80D	AS5742-034	Outlet	Pervious Area to Outlet
AS5742-052			0	0	0	0	No Pervious Area	AS5742-052	SubCatchment 1	Inactive
AS5742-053	1	1	0.007	100	0.018	92.297	60B40D	AS5742-053	Outlet	No Redirection
AS5742-053	2	2	0.383	100	0.018	92.297	60B40D	AS5742-053	SubCatchment 3	Impervious Runoff to Pervious
AS5742-053	3	3	0.38	0	0.018	92.297	60B40D	AS5742-053	Outlet	Pervious Area to Outlet
IN5742-057	1	1	1.274	100	0.013	145.935	80B20D	IN5742-057	Outlet	No Redirection
IN5742-057	2	2	0.179	100	0.013	145.935	80B20D	IN5742-057	SubCatchment 3	Impervious Runoff to Pervious
IN5742-057	3	3	0.393	0	0.013	145.935	80B20D	IN5742-057	Outlet	Pervious Area to Outlet
AS5742-061			0	0	0	0	No Pervious Area	AS5742-061	SubCatchment 1	Inactive
AS5740-002			0	0	0	0	No Pervious Area	AS5740-002	SubCatchment 1	Inactive
AS5640-001	1	1	1.041	100	0.011	31.696	50B50D	AS5640-001	Outlet	No Redirection
AS5640-001	2	2	0.849	100	0.011	31.696	50B50D	AS5640-001	SubCatchment 3	Impervious Runoff to Pervious
AS5640-001	3	3	1.962	0	0.011	31.696	50B50D	AS5640-001	Outlet	Pervious Area to Outlet
IN5640-002	1	1	0.933	100	0.012	31.5	100Percent Type D	IN5640-002	Outlet	No Redirection
IN5640-002	2	2	0.885	100	0.012	31.5	100Percent Type D	IN5640-002	SubCatchment 3	Impervious Runoff to Pervious
IN5640-002	3	3	1.978	0	0.012	31.5	100Percent Type D	IN5640-002	Outlet	Pervious Area to Outlet
AS5640-014	1	1	0.266	100	0.014	21.185	100Percent Type D	AS5640-014	Outlet	No Redirection
AS5640-014	2	2	0.128	100	0.014	21.185	100Percent Type D	AS5640-014	SubCatchment 3	Impervious Runoff to Pervious
AS5640-014	3	3	0.177	0	0.014	21.185	100Percent Type D	AS5640-014	Outlet	Pervious Area to Outlet
IN5640-019	1	1	0.325	100	0.006	26.682	100Percent Type D	IN5640-019	Outlet	No Redirection
IN5640-019	2	2	0.252	100	0.006	26.682	100Percent Type D	IN5640-019	SubCatchment 3	Impervious Runoff to Pervious
IN5640-019	3	3	0.498	0	0.006	26.682	100Percent Type D	IN5640-019	Outlet	Pervious Area to Outlet
AS5542-001	1	1	1.811	100	0.04	16.782	100Percent Type D	AS5542-001	Outlet	No Redirection
AS5542-001	2	2	1.166	100	0.04	16.782	100Percent Type D	AS5542-001	SubCatchment 3	Impervious Runoff to Pervious
AS5542-001	3	3	2.017	0	0.04	16.782	100Percent Type D	AS5542-001	Outlet	Pervious Area to Outlet
AS5542-002			0	0	0	0	No Pervious Area	AS5542-002	SubCatchment 1	Inactive
AS5542-003			0	0	0	0	No Pervious Area	AS5542-003	SubCatchment 1	Inactive
AS5541-013	1	1	5.15	100	0.003	41.551	100Percent Type D	AS5541-013	Outlet	No Redirection
AS5541-013	2	2	3.811	100	0.003	41.551	100Percent Type D	AS5541-013	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5541-013	3	3	3.87	0	0.003	41.551	100Percent Type D	AS5541-013	Outlet	Pervious Area to Outlet
AS5541-014	1	1	0.24	100	0.009	26.18	100Percent Type D	AS5541-014	Outlet	No Redirection
AS5541-014	3	3	0.083	0	0.009	26.18	100Percent Type D	AS5541-014	Outlet	Pervious Area to Outlet
AS5541-015			0	0	0	0	No Pervious Area	AS5541-015	SubCatchment 1	Inactive
AS5541-016	1	1	0.058	100	0.01	13.998	100Percent Type D	AS5541-016	Outlet	No Redirection
AS5541-016	2	2	0.001	100	0.01	13.998	100Percent Type D	AS5541-016	SubCatchment 3	Impervious Runoff to Pervious
AS5541-016	3	3	0.028	0	0.01	13.998	100Percent Type D	AS5541-016	Outlet	Pervious Area to Outlet
AS5541-023	1	1	0.512	100	0.003	25	100Percent Type D	AS5541-023	Outlet	No Redirection
AS5541-023	2	2	0.065	100	0.003	25	100Percent Type D	AS5541-023	SubCatchment 3	Impervious Runoff to Pervious
AS5541-023	3	3	0.285	0	0.003	25	100Percent Type D	AS5541-023	Outlet	Pervious Area to Outlet
IN5541-025	1	1	0.636	100	0.01	26.509	100Percent Type D	IN5541-025	Outlet	No Redirection
IN5541-025	3	3	0.202	0	0.01	26.509	100Percent Type D	IN5541-025	Outlet	Pervious Area to Outlet
AS5541-029			0	0	0	0	No Pervious Area	AS5541-029	SubCatchment 1	Inactive
AS5541-030			0	0	0	0	No Pervious Area	AS5541-030	SubCatchment 1	Inactive
AS5541-031			0	0	0	0	No Pervious Area	AS5541-031	SubCatchment 1	Inactive
AS5541-038	1	1	0.224	100	0.013	25.288	100Percent Type D	AS5541-038	Outlet	No Redirection
AS5541-038	2	2	0.006	100	0.013	25.288	100Percent Type D	AS5541-038	SubCatchment 3	Impervious Runoff to Pervious
AS5541-038	3	3	0.044	0	0.013	25.288	100Percent Type D	AS5541-038	Outlet	Pervious Area to Outlet
AS5540-011	1	1	4.129	100	0.009	31.31	100Percent Type D	AS5540-011	Outlet	No Redirection
AS5540-011	3	3	0.058	0	0.009	31.31	100Percent Type D	AS5540-011	Outlet	Pervious Area to Outlet
AS5540-012	1	1	10.304	100	0.003	8.263	100Percent Type D	AS5540-012	Outlet	No Redirection
AS5540-012	2	2	18.213	100	0.003	8.263	100Percent Type D	AS5540-012	SubCatchment 3	Impervious Runoff to Pervious
AS5540-012	3	3	17.14	0	0.003	8.263	100Percent Type D	AS5540-012	Outlet	Pervious Area to Outlet
IN5540-016	1	1	0.277	100	0.012	17.983	100Percent Type D	IN5540-016	Outlet	No Redirection
IN5540-016	2	2	0.137	100	0.012	17.983	100Percent Type D	IN5540-016	SubCatchment 3	Impervious Runoff to Pervious
IN5540-016	3	3	0.391	0	0.012	17.983	100Percent Type D	IN5540-016	Outlet	Pervious Area to Outlet
AS5540-018		1	0	100	0	0	No Pervious Area	AS5540-018	Outlet	Inactive
AS5540-022	1	1	0.525	100	0.011	20.591	100Percent Type D	AS5540-022	Outlet	No Redirection
AS5540-022	3	3	0.161	0	0.011	20.591	100Percent Type D	AS5540-022	Outlet	Pervious Area to Outlet
AS5643-012	1	1	0.657	100	0.02	93.221	100Percent Type C	AS5643-012	Outlet	No Redirection
AS5643-012	2	2	0.383	100	0.02	93.221	100Percent Type C	AS5643-012	SubCatchment 3	Impervious Runoff to Pervious
AS5643-012	3	3	0.628	0	0.02	93.221	100Percent Type C	AS5643-012	Outlet	Pervious Area to Outlet
AS5643-013	1	1	0.127	100	0.03	44.476	100Percent Type C	AS5643-013	Outlet	No Redirection
AS5643-013	3	3	0.089	0	0.03	44.476	100Percent Type C	AS5643-013	Outlet	Pervious Area to Outlet
AS5643-018			0	0	0	0	No Pervious Area	AS5643-018	SubCatchment 1	Inactive
AS5643-019	1	1	1.035	100	0.022	132.554	100Percent Type C	AS5643-019	Outlet	No Redirection
AS5643-019	2	2	0.293	100	0.022	132.554	100Percent Type C	AS5643-019	SubCatchment 3	Impervious Runoff to Pervious
AS5643-019	3	3	1.007	0	0.022	132.554	100Percent Type C	AS5643-019	Outlet	Pervious Area to Outlet
IN5644-001	1	1	0.111	100	0.026	22.33	100Percent Type B	IN5644-001	Outlet	No Redirection
IN5644-001	2	2	0.028	100	0.026	22.33	100Percent Type B	IN5644-001	SubCatchment 3	Impervious Runoff to Pervious
IN5644-001	3	3	0.262	0	0.026	22.33	100Percent Type B	IN5644-001	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5644-002	1	1	0.097	100	0.016	11.728	70B30D	IN5644-002	Outlet	No Redirection
IN5644-002	2	2	0.045	100	0.016	11.728	70B30D	IN5644-002	SubCatchment 3	Impervious Runoff to Pervious
IN5644-002	3	3	0.091	0	0.016	11.728	70B30D	IN5644-002	Outlet	Pervious Area to Outlet
AS5644-003			0	0	0	0	No Pervious Area	AS5644-003	SubCatchment 1	Inactive
AS5644-004			0	0	0	0	No Pervious Area	AS5644-004	SubCatchment 1	Inactive
AS5644-020			0	0	0	0	No Pervious Area	AS5644-020	SubCatchment 1	Inactive
AS5644-021	1	1	0.236	100	0.006	22.776	100Percent Type D	AS5644-021	Outlet	No Redirection
AS5644-021	2	2	0.176	100	0.006	22.776	100Percent Type D	AS5644-021	SubCatchment 3	Impervious Runoff to Pervious
AS5644-021	3	3	0.384	0	0.006	22.776	100Percent Type D	AS5644-021	Outlet	Pervious Area to Outlet
AS5645-010	1	1	3.256	100	0.007	30.318	10B90D	AS5645-010	Outlet	No Redirection
AS5645-010	2	2	2.15	100	0.007	30.318	10B90D	AS5645-010	SubCatchment 3	Impervious Runoff to Pervious
AS5645-010	3	3	4.331	0	0.007	30.318	10B90D	AS5645-010	Outlet	Pervious Area to Outlet
AS5645-013			0	0	0	0	No Pervious Area	AS5645-013	SubCatchment 1	Inactive
AS5645-014	1	1	2.067	100	0.023	25.545	60B40D	AS5645-014	Outlet	No Redirection
AS5645-014	2	2	0.879	100	0.023	25.545	60B40D	AS5645-014	SubCatchment 3	Impervious Runoff to Pervious
AS5645-014	3	3	2.149	0	0.023	25.545	60B40D	AS5645-014	Outlet	Pervious Area to Outlet
AS5645-019			0	0	0	0	No Pervious Area	AS5645-019	SubCatchment 1	Inactive
AS5645-020			0	0	0	0	No Pervious Area	AS5645-020	SubCatchment 1	Inactive
IN5544-010	1	1	0.454	100	0.019	18.566	100Percent Type D	IN5544-010	Outlet	No Redirection
IN5544-010	3	3	0.055	0	0.019	18.566	100Percent Type D	IN5544-010	Outlet	Pervious Area to Outlet
AS5544-011			0	0	0	0	No Pervious Area	AS5544-011	SubCatchment 1	Inactive
IN5544-014	1	1	0.038	100	0.021	8.196	100Percent Type D	IN5544-014	Outlet	No Redirection
IN5544-014	3	3	0.003	0	0.021	8.196	100Percent Type D	IN5544-014	Outlet	Pervious Area to Outlet
IN5544-017	1	1	0.017	100	0.064	33.467	100Percent Type D	IN5544-017	Outlet	No Redirection
IN5544-017	3	3	0.002	0	0.064	33.467	100Percent Type D	IN5544-017	Outlet	Pervious Area to Outlet
AS5544-018	1	1	1.366	100	0.016	29.586	100Percent Type D	AS5544-018	Outlet	No Redirection
AS5544-018	2	2	0.123	100	0.016	29.586	100Percent Type D	AS5544-018	SubCatchment 3	Impervious Runoff to Pervious
AS5544-018	3	3	0.257	0	0.016	29.586	100Percent Type D	AS5544-018	Outlet	Pervious Area to Outlet
IN5544-023	1	1	1.826	100	0.012	30.696	100Percent Type D	IN5544-023	Outlet	No Redirection
IN5544-023	2	2	0.159	100	0.012	30.696	100Percent Type D	IN5544-023	SubCatchment 3	Impervious Runoff to Pervious
IN5544-023	3	3	0.209	0	0.012	30.696	100Percent Type D	IN5544-023	Outlet	Pervious Area to Outlet
IN5544-024	1	1	0.014	100	0.014	12.407	100Percent Type D	IN5544-024	Outlet	No Redirection
IN5544-024	2	2	0.021	100	0.014	12.407	100Percent Type D	IN5544-024	SubCatchment 3	Impervious Runoff to Pervious
IN5544-024	3	3	0.037	0	0.014	12.407	100Percent Type D	IN5544-024	Outlet	Pervious Area to Outlet
IN5544-028	1	1	0.349	100	0.013	28.964	100Percent Type D	IN5544-028	Outlet	No Redirection
IN5544-028	2	2	0.158	100	0.013	28.964	100Percent Type D	IN5544-028	SubCatchment 3	Impervious Runoff to Pervious
IN5544-028	3	3	0.047	0	0.013	28.964	100Percent Type D	IN5544-028	Outlet	Pervious Area to Outlet
IN5544-029	1	1	0.009	100	0.041	27.16	100Percent Type D	IN5544-029	Outlet	No Redirection
IN5544-029	3	3	0.002	0	0.041	27.16	100Percent Type D	IN5544-029	Outlet	Pervious Area to Outlet
IN5544-031	1	1	0.276	100	0.012	22.387	100Percent Type D	IN5544-031	Outlet	No Redirection
IN5544-031	2	2	0.014	100	0.012	22.387	100Percent Type D	IN5544-031	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5544-031	3	3	0.016	0	0.012	22.387	100Percent Type D	IN5544-031	Outlet	Pervious Area to Outlet
IN5544-033	1	1	0.006	100	0.052	16.392	No Pervious Area	IN5544-033	Outlet	No Redirection
IN5544-034	1	1	0.217	100	0.028	18.935	50B50D	IN5544-034	Outlet	No Redirection
IN5544-034	2	2	0.002	100	0.028	18.935	50B50D	IN5544-034	SubCatchment 3	Impervious Runoff to Pervious
IN5544-034	3	3	0.023	0	0.028	18.935	50B50D	IN5544-034	Outlet	Pervious Area to Outlet
AS5544-035	1	1	0.365	100	0.062	18.048	30B70D	AS5544-035	Outlet	No Redirection
AS5544-035	2	2	0.083	100	0.062	18.048	30B70D	AS5544-035	SubCatchment 3	Impervious Runoff to Pervious
AS5544-035	3	3	1.099	0	0.062	18.048	30B70D	AS5544-035	Outlet	Pervious Area to Outlet
IN5544-037	1	1	1.099	100	0.04	17.746	100Percent Type B	IN5544-037	Outlet	No Redirection
IN5544-037	2	2	0.172	100	0.04	17.746	100Percent Type B	IN5544-037	SubCatchment 3	Impervious Runoff to Pervious
IN5544-037	3	3	0.479	0	0.04	17.746	100Percent Type B	IN5544-037	Outlet	Pervious Area to Outlet
IN5544-040	1	1	0.149	100	0.029	30.886	100Percent Type B	IN5544-040	Outlet	No Redirection
IN5544-040	2	2	0.219	100	0.029	30.886	100Percent Type B	IN5544-040	SubCatchment 3	Impervious Runoff to Pervious
IN5544-040	3	3	1.693	0	0.029	30.886	100Percent Type B	IN5544-040	Outlet	Pervious Area to Outlet
AS5543-026	1	1	0.017	100	0.068	15.822	100Percent Type D	AS5543-026	Outlet	No Redirection
AS5543-026	2	2	0.099	100	0.068	15.822	100Percent Type D	AS5543-026	SubCatchment 3	Impervious Runoff to Pervious
AS5543-026	3	3	0.108	0	0.068	15.822	100Percent Type D	AS5543-026	Outlet	Pervious Area to Outlet
AS5543-028			0	0	0	0	No Pervious Area	AS5543-028	SubCatchment 1	Inactive
AS5744-027	1	1	1.153	100	0.007	137.618	100Percent Type D	AS5744-027	Outlet	No Redirection
AS5744-027	2	2	0.985	100	0.007	137.618	100Percent Type D	AS5744-027	SubCatchment 3	Impervious Runoff to Pervious
AS5744-027	3	3	1.443	0	0.007	137.618	100Percent Type D	AS5744-027	Outlet	Pervious Area to Outlet
AS5744-035	1	1	0.88	100	0.013	101.367	100Percent Type D	AS5744-035	Outlet	No Redirection
AS5744-035	2	2	0.537	100	0.013	101.367	100Percent Type D	AS5744-035	SubCatchment 3	Impervious Runoff to Pervious
AS5744-035	3	3	1.216	0	0.013	101.367	100Percent Type D	AS5744-035	Outlet	Pervious Area to Outlet
AS5743-003	1	1	0.16	100	0.053	45.712	40B60C	AS5743-003	Outlet	No Redirection
AS5743-003	2	2	0.316	100	0.053	45.712	40B60C	AS5743-003	SubCatchment 3	Impervious Runoff to Pervious
AS5743-003	3	3	0.084	0	0.053	45.712	40B60C	AS5743-003	Outlet	Pervious Area to Outlet
AS5743-006	1	1	0.229	100	0.03	74.76	80B20D	AS5743-006	Outlet	No Redirection
AS5743-006	2	2	0.189	100	0.03	74.76	80B20D	AS5743-006	SubCatchment 3	Impervious Runoff to Pervious
AS5743-006	3	3	0.419	0	0.03	74.76	80B20D	AS5743-006	Outlet	Pervious Area to Outlet
AS5743-012		1	0	100	0.016	27.584	100Percent Type B	AS5743-012	Outlet	Inactive
AS5743-016	1	1	0.076	100	0.017	33.829	100Percent Type B	AS5743-016	Outlet	No Redirection
AS5743-016	2	2	0.005	100	0.017	33.829	100Percent Type B	AS5743-016	SubCatchment 3	Impervious Runoff to Pervious
AS5743-016	3	3	0.039	0	0.017	33.829	100Percent Type B	AS5743-016	Outlet	Pervious Area to Outlet
AS5743-042			0	0	0	0	No Pervious Area	AS5743-042	SubCatchment 1	Inactive
AS5547-001	1	1	1.103	100	0.002	4.424	No Pervious Area	AS5547-001	Outlet	No Redirection
AS5547-001	2	2	0.001	100	0.002	4.424	No Pervious Area	AS5547-001	Outlet	Impervious Runoff to Pervious
AS5637-031	1	1	4.059	100	0.006	20.212	100Percent Type D	AS5637-031	Outlet	No Redirection
AS5637-031	2	2	0.185	100	0.006	20.212	100Percent Type D	AS5637-031	SubCatchment 3	Impervious Runoff to Pervious
AS5637-031	3	3	2.161	0	0.006	20.212	100Percent Type D	AS5637-031	Outlet	Pervious Area to Outlet
IN5542-027	1	1	0.23	100	0.021	10.185	100Percent Type D	IN5542-027	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5542-027	2	2	0.005	100	0.021	10.185	100Percent Type D	IN5542-027	SubCatchment 3	Impervious Runoff to Pervious
IN5542-027	3	3	0.08	0	0.021	10.185	100Percent Type D	IN5542-027	Outlet	Pervious Area to Outlet
AS5645-033	1	1	0.515	100	0.01	32.584	100Percent Type D	AS5645-033	Outlet	No Redirection
AS5645-033	3	3	0.403	0	0.01	32.584	100Percent Type D	AS5645-033	Outlet	Pervious Area to Outlet
AS5644-034			0	0	0	0	No Pervious Area	AS5644-034	SubCatchment 1	Inactive
AS5842-040	1	1	1.38	100	0.027	105.286	100Percent Type B	AS5842-040	Outlet	No Redirection
AS5842-040	2	2	0.453	100	0.027	105.286	100Percent Type B	AS5842-040	SubCatchment 3	Impervious Runoff to Pervious
AS5842-040	3	3	0.423	0	0.027	105.286	100Percent Type B	AS5842-040	Outlet	Pervious Area to Outlet
AS5941-023	1	1	1.374	100	0.038	84.383	80B20C	AS5941-023	Outlet	No Redirection
AS5941-023	2	2	0.055	100	0.038	84.383	80B20C	AS5941-023	SubCatchment 3	Impervious Runoff to Pervious
AS5941-023	3	3	0.671	0	0.038	84.383	80B20C	AS5941-023	Outlet	Pervious Area to Outlet
AS5639-027			0	0	0	0	No Pervious Area	AS5639-027	SubCatchment 1	Inactive
AS5639-028	1	1	0.377	100	0.013	31.459	80B20D	AS5639-028	Outlet	No Redirection
AS5639-028	2	2	0.204	100	0.013	31.459	80B20D	AS5639-028	SubCatchment 3	Impervious Runoff to Pervious
AS5639-028	3	3	0.269	0	0.013	31.459	80B20D	AS5639-028	Outlet	Pervious Area to Outlet
AS5639-029			0	0	0	0	No Pervious Area	AS5639-029	SubCatchment 1	Inactive
AS5740-045	1	1	0.639	100	0.008	20.476	100Percent Type B	AS5740-045	Outlet	No Redirection
AS5740-045	2	2	0.341	100	0.008	20.476	100Percent Type B	AS5740-045	SubCatchment 3	Impervious Runoff to Pervious
AS5740-045	3	3	0.843	0	0.008	20.476	100Percent Type B	AS5740-045	Outlet	Pervious Area to Outlet
AS5740-051	1	1	0.476	100	0.012	29.819	100Percent Type B	AS5740-051	Outlet	No Redirection
AS5740-051	2	2	0.15	100	0.012	29.819	100Percent Type B	AS5740-051	SubCatchment 3	Impervious Runoff to Pervious
AS5740-051	3	3	0.171	0	0.012	29.819	100Percent Type B	AS5740-051	Outlet	Pervious Area to Outlet
AS5740-056			0	0	0	0	No Pervious Area	AS5740-056	SubCatchment 1	Inactive
IN5740-058	1	1	0.03	100	0.015	5.199	100Percent Type B	IN5740-058	Outlet	No Redirection
IN5740-058	3	3	0.007	0	0.015	5.199	100Percent Type B	IN5740-058	Outlet	Pervious Area to Outlet
AS5740-060	1	1	0.036	100	0.028	12.077	100Percent Type B	AS5740-060	Outlet	No Redirection
AS5740-060	2	2	0.002	100	0.028	12.077	100Percent Type B	AS5740-060	SubCatchment 3	Impervious Runoff to Pervious
AS5740-060	3	3	0.024	0	0.028	12.077	100Percent Type B	AS5740-060	Outlet	Pervious Area to Outlet
AS5740-061	1	1	2.596	100	0.011	27.262	100Percent Type B	AS5740-061	Outlet	No Redirection
AS5740-061	2	2	0.01	100	0.011	27.262	100Percent Type B	AS5740-061	SubCatchment 3	Impervious Runoff to Pervious
AS5740-061	3	3	0.136	0	0.011	27.262	100Percent Type B	AS5740-061	Outlet	Pervious Area to Outlet
AS5739-043			0	0	0	0	No Pervious Area	AS5739-043	SubCatchment 1	Inactive
AS5739-044			0	0	0	0	No Pervious Area	AS5739-044	SubCatchment 1	Inactive
IN5739-045	1	1	1.076	100	0.007	33.102	100Percent Type B	IN5739-045	Outlet	No Redirection
IN5739-045	2	2	0.456	100	0.007	33.102	100Percent Type B	IN5739-045	SubCatchment 3	Impervious Runoff to Pervious
IN5739-045	3	3	0.945	0	0.007	33.102	100Percent Type B	IN5739-045	Outlet	Pervious Area to Outlet
AS5739-048	1	1	0.36	100	0.01	17.256	100Percent Type B	AS5739-048	Outlet	No Redirection
AS5739-048	2	2	0.179	100	0.01	17.256	100Percent Type B	AS5739-048	SubCatchment 3	Impervious Runoff to Pervious
AS5739-048	3	3	0.326	0	0.01	17.256	100Percent Type B	AS5739-048	Outlet	Pervious Area to Outlet
AS5739-049			0	0	0	0	No Pervious Area	AS5739-049	SubCatchment 1	Inactive
AS5739-050	1	1	0.273	100	0.007	20.086	100Percent Type B	AS5739-050	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5739-050	2	2	0.324	100	0.007	20.086	100Percent Type B	AS5739-050	SubCatchment 3	Impervious Runoff to Pervious
AS5739-050	3	3	1.411	0	0.007	20.086	100Percent Type B	AS5739-050	Outlet	Pervious Area to Outlet
IN5739-051	1	1	0.105	100	0.009	10.864	100Percent Type B	IN5739-051	Outlet	No Redirection
IN5739-051	2	2	0.018	100	0.009	10.864	100Percent Type B	IN5739-051	SubCatchment 3	Impervious Runoff to Pervious
IN5739-051	3	3	0.062	0	0.009	10.864	100Percent Type B	IN5739-051	Outlet	Pervious Area to Outlet
IN5739-052	1	1	0.008	100	0.018	6.694	100Percent Type B	IN5739-052	Outlet	No Redirection
IN5739-052	2	2	0.005	100	0.018	6.694	100Percent Type B	IN5739-052	SubCatchment 3	Impervious Runoff to Pervious
IN5739-052	3	3	0.016	0	0.018	6.694	100Percent Type B	IN5739-052	Outlet	Pervious Area to Outlet
AS5739-054	1	1	2.278	100	0.007	35.139	100Percent Type B	AS5739-054	Outlet	No Redirection
AS5739-054	2	2	2.243	100	0.007	35.139	100Percent Type B	AS5739-054	SubCatchment 3	Impervious Runoff to Pervious
AS5739-054	3	3	4.531	0	0.007	35.139	100Percent Type B	AS5739-054	Outlet	Pervious Area to Outlet
AS5739-058	1	1	0.399	100	0.013	13.998	100Percent Type B	AS5739-058	Outlet	No Redirection
AS5739-058	2	2	0.168	100	0.013	13.998	100Percent Type B	AS5739-058	SubCatchment 3	Impervious Runoff to Pervious
AS5739-058	3	3	0.258	0	0.013	13.998	100Percent Type B	AS5739-058	Outlet	Pervious Area to Outlet
AS5740-072	1	1	0.351	100	0.017	18.373	100Percent Type B	AS5740-072	Outlet	No Redirection
AS5740-072	2	2	0.076	100	0.017	18.373	100Percent Type B	AS5740-072	SubCatchment 3	Impervious Runoff to Pervious
AS5740-072	3	3	0.202	0	0.017	18.373	100Percent Type B	AS5740-072	Outlet	Pervious Area to Outlet
AS5537-031	1	1	0.942	100	0.024	16.023	100Percent Type D	AS5537-031	Outlet	No Redirection
AS5537-031	2	2	0.002	100	0.024	16.023	100Percent Type D	AS5537-031	SubCatchment 3	Impervious Runoff to Pervious
AS5537-031	3	3	0.015	0	0.024	16.023	100Percent Type D	AS5537-031	Outlet	Pervious Area to Outlet
AS5537-035	1	1	2.244	100	0.005	19.308	100Percent Type D	AS5537-035	Outlet	No Redirection
AS5537-035	2	2	2.177	100	0.005	19.308	100Percent Type D	AS5537-035	SubCatchment 3	Impervious Runoff to Pervious
AS5537-035	3	3	4.182	0	0.005	19.308	100Percent Type D	AS5537-035	Outlet	Pervious Area to Outlet
AS5538-015	1	1	0.83	100	0.007	29.693	100Percent Type D	AS5538-015	Outlet	No Redirection
AS5538-015	2	2	0.938	100	0.007	29.693	100Percent Type D	AS5538-015	SubCatchment 3	Impervious Runoff to Pervious
AS5538-015	3	3	1.559	0	0.007	29.693	100Percent Type D	AS5538-015	Outlet	Pervious Area to Outlet
AE5943-038			0	0	0	0	No Pervious Area	AE5943-038	SubCatchment 1	Inactive
AS5943-039	1	1	1.894	100	0.029	191.035	80B20C	AS5943-039	Outlet	No Redirection
AS5943-039	2	2	1.223	100	0.029	191.035	80B20C	AS5943-039	SubCatchment 3	Impervious Runoff to Pervious
AS5943-039	3	3	3.063	0	0.029	191.035	80B20C	AS5943-039	Outlet	Pervious Area to Outlet
IN5640-031	1	1	0.693	100	0.009	25.002	100Percent Type D	IN5640-031	Outlet	No Redirection
IN5640-031	2	2	0.448	100	0.009	25.002	100Percent Type D	IN5640-031	SubCatchment 3	Impervious Runoff to Pervious
IN5640-031	3	3	1.143	0	0.009	25.002	100Percent Type D	IN5640-031	Outlet	Pervious Area to Outlet
IN5640-033	1	1	0.417	100	0.009	30.683	100Percent Type D	IN5640-033	Outlet	No Redirection
IN5640-033	2	2	0.193	100	0.009	30.683	100Percent Type D	IN5640-033	SubCatchment 3	Impervious Runoff to Pervious
IN5640-033	3	3	0.325	0	0.009	30.683	100Percent Type D	IN5640-033	Outlet	Pervious Area to Outlet
IN5640-034	1	1	0.533	100	0.018	32.271	100Percent Type D	IN5640-034	Outlet	No Redirection
IN5640-034	2	2	0.36	100	0.018	32.271	100Percent Type D	IN5640-034	SubCatchment 3	Impervious Runoff to Pervious
IN5640-034	3	3	0.926	0	0.018	32.271	100Percent Type D	IN5640-034	Outlet	Pervious Area to Outlet
IN5640-036	1	1	0.332	100	0.017	23.901	100Percent Type D	IN5640-036	Outlet	No Redirection
IN5640-036	2	2	0.085	100	0.017	23.901	100Percent Type D	IN5640-036	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5640-036	3	3	0.075	0	0.017	23.901	100Percent Type D	IN5640-036	Outlet	Pervious Area to Outlet
AS5640-037	1	1	2.237	100	0.013	26.763	100Percent Type D	AS5640-037	Outlet	No Redirection
AS5640-037	2	2	0.284	100	0.013	26.763	100Percent Type D	AS5640-037	SubCatchment 3	Impervious Runoff to Pervious
AS5640-037	3	3	1.87	0	0.013	26.763	100Percent Type D	AS5640-037	Outlet	Pervious Area to Outlet
AS5639-031			0	0	0	0	No Pervious Area	AS5639-031	SubCatchment 1	Inactive
IN5639-033	1	1	0.043	100	0.044	6.625	30B70D	IN5639-033	Outlet	No Redirection
IN5639-033	2	2	0.003	100	0.044	6.625	30B70D	IN5639-033	SubCatchment 3	Impervious Runoff to Pervious
IN5639-033	3	3	0.013	0	0.044	6.625	30B70D	IN5639-033	Outlet	Pervious Area to Outlet
AS5639-035			0	0	0	0	No Pervious Area	AS5639-035	SubCatchment 1	Inactive
IN5639-036	1	1	0.216	100	0.021	20.225	100Percent Type B	IN5639-036	Outlet	No Redirection
IN5639-036	2	2	0.118	100	0.021	20.225	100Percent Type B	IN5639-036	SubCatchment 3	Impervious Runoff to Pervious
IN5639-036	3	3	0.18	0	0.021	20.225	100Percent Type B	IN5639-036	Outlet	Pervious Area to Outlet
IN5639-037	1	1	0.197	100	0.011	25.794	100Percent Type B	IN5639-037	Outlet	No Redirection
IN5639-037	2	2	0.14	100	0.011	25.794	100Percent Type B	IN5639-037	SubCatchment 3	Impervious Runoff to Pervious
IN5639-037	3	3	0.281	0	0.011	25.794	100Percent Type B	IN5639-037	Outlet	Pervious Area to Outlet
IN5739-065	1	1	0.15	100	0.021	16.422	100Percent Type B	IN5739-065	Outlet	No Redirection
IN5739-065	2	2	0.127	100	0.021	16.422	100Percent Type B	IN5739-065	SubCatchment 3	Impervious Runoff to Pervious
IN5739-065	3	3	0.191	0	0.021	16.422	100Percent Type B	IN5739-065	Outlet	Pervious Area to Outlet
IN5739-066	1	1	0.13	100	0.02	12.009	100Percent Type B	IN5739-066	Outlet	No Redirection
IN5739-066	2	2	0.105	100	0.02	12.009	100Percent Type B	IN5739-066	SubCatchment 3	Impervious Runoff to Pervious
IN5739-066	3	3	0.102	0	0.02	12.009	100Percent Type B	IN5739-066	Outlet	Pervious Area to Outlet
AS5739-068	1	1	0.268	100	0.018	14.584	100Percent Type B	AS5739-068	Outlet	No Redirection
AS5739-068	2	2	0.107	100	0.018	14.584	100Percent Type B	AS5739-068	SubCatchment 3	Impervious Runoff to Pervious
AS5739-068	3	3	0.151	0	0.018	14.584	100Percent Type B	AS5739-068	Outlet	Pervious Area to Outlet
IN5739-071	1	1	0.091	100	0.04	8.391	100Percent Type B	IN5739-071	Outlet	No Redirection
IN5739-071	2	2	0.037	100	0.04	8.391	100Percent Type B	IN5739-071	SubCatchment 3	Impervious Runoff to Pervious
IN5739-071	3	3	0.064	0	0.04	8.391	100Percent Type B	IN5739-071	Outlet	Pervious Area to Outlet
IN5739-072	1	1	0.153	100	0.015	12.324	100Percent Type B	IN5739-072	Outlet	No Redirection
IN5739-072	2	2	0.082	100	0.015	12.324	100Percent Type B	IN5739-072	SubCatchment 3	Impervious Runoff to Pervious
IN5739-072	3	3	0.23	0	0.015	12.324	100Percent Type B	IN5739-072	Outlet	Pervious Area to Outlet
IN5739-073	1	1	0.574	100	0.016	20.016	100Percent Type B	IN5739-073	Outlet	No Redirection
IN5739-073	2	2	0.069	100	0.016	20.016	100Percent Type B	IN5739-073	SubCatchment 3	Impervious Runoff to Pervious
IN5739-073	3	3	0.434	0	0.016	20.016	100Percent Type B	IN5739-073	Outlet	Pervious Area to Outlet
IN5739-074	1	1	0.971	100	0.014	19.934	100Percent Type B	IN5739-074	Outlet	No Redirection
IN5739-074	2	2	0.136	100	0.014	19.934	100Percent Type B	IN5739-074	SubCatchment 3	Impervious Runoff to Pervious
IN5739-074	3	3	0.62	0	0.014	19.934	100Percent Type B	IN5739-074	Outlet	Pervious Area to Outlet
IN5738-024	1	1	0.222	100	0.012	17.403	100Percent Type B	IN5738-024	Outlet	No Redirection
IN5738-024	2	2	0.095	100	0.012	17.403	100Percent Type B	IN5738-024	SubCatchment 3	Impervious Runoff to Pervious
IN5738-024	3	3	0.161	0	0.012	17.403	100Percent Type B	IN5738-024	Outlet	Pervious Area to Outlet
AS5738-025	1	1	0.732	100	0.013	30.736	100Percent Type B	AS5738-025	Outlet	No Redirection
AS5738-025	2	2	0.714	100	0.013	30.736	100Percent Type B	AS5738-025	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5738-025	3	3	1.369	0	0.013	30.736	100Percent Type B	AS5738-025	Outlet	Pervious Area to Outlet
AS5738-028			0	0	0	0	No Pervious Area	AS5738-028	SubCatchment 1	Inactive
AS5738-029	1	1	0.214	100	0.012	22.68	100Percent Type B	AS5738-029	Outlet	No Redirection
AS5738-029	2	2	0.069	100	0.012	22.68	100Percent Type B	AS5738-029	SubCatchment 3	Impervious Runoff to Pervious
AS5738-029	3	3	0.155	0	0.012	22.68	100Percent Type B	AS5738-029	Outlet	Pervious Area to Outlet
AS5738-033	1	1	0.662	100	0.024	27.694	100Percent Type B	AS5738-033	Outlet	No Redirection
AS5738-033	2	2	0.247	100	0.024	27.694	100Percent Type B	AS5738-033	SubCatchment 3	Impervious Runoff to Pervious
AS5738-033	3	3	0.425	0	0.024	27.694	100Percent Type B	AS5738-033	Outlet	Pervious Area to Outlet
AS5738-038	1	1	0.091	100	0.02	12.125	100Percent Type B	AS5738-038	Outlet	No Redirection
AS5738-038	2	2	0.05	100	0.02	12.125	100Percent Type B	AS5738-038	SubCatchment 3	Impervious Runoff to Pervious
AS5738-038	3	3	0.034	0	0.02	12.125	100Percent Type B	AS5738-038	Outlet	Pervious Area to Outlet
IN5639-038	1	1	0.314	100	0.041	23.524	60B40D	IN5639-038	Outlet	No Redirection
IN5639-038	2	2	0.178	100	0.041	23.524	60B40D	IN5639-038	SubCatchment 3	Impervious Runoff to Pervious
IN5639-038	3	3	0.401	0	0.041	23.524	60B40D	IN5639-038	Outlet	Pervious Area to Outlet
AS5841-039	1	1	0.147	100	0.022	82.333	100Percent Type B	AS5841-039	Outlet	No Redirection
AS5841-039	2	2	0.174	100	0.022	82.333	100Percent Type B	AS5841-039	SubCatchment 3	Impervious Runoff to Pervious
AS5841-039	3	3	0.663	0	0.022	82.333	100Percent Type B	AS5841-039	Outlet	Pervious Area to Outlet
AS5738-043	1	1	0.071	100	0.018	10.651	100Percent Type D	AS5738-043	Outlet	No Redirection
AS5738-043	2	2	0.017	100	0.018	10.651	100Percent Type D	AS5738-043	SubCatchment 3	Impervious Runoff to Pervious
AS5738-043	3	3	0.058	0	0.018	10.651	100Percent Type D	AS5738-043	Outlet	Pervious Area to Outlet
IN5742-065	1	1	0.735	100	0.016	16.577	100Percent Type B	IN5742-065	Outlet	No Redirection
IN5742-065	2	2	0.091	100	0.016	16.577	100Percent Type B	IN5742-065	SubCatchment 3	Impervious Runoff to Pervious
IN5742-065	3	3	0.038	0	0.016	16.577	100Percent Type B	IN5742-065	Outlet	Pervious Area to Outlet
IN5742-067	1	1	1.22	100	0.01	12.182	100Percent Type B	IN5742-067	Outlet	No Redirection
IN5742-067	2	2	0.448	100	0.01	12.182	100Percent Type B	IN5742-067	SubCatchment 3	Impervious Runoff to Pervious
IN5742-067	3	3	1.121	0	0.01	12.182	100Percent Type B	IN5742-067	Outlet	Pervious Area to Outlet
AS5642-025			0	0	0	0	No Pervious Area	AS5642-025	SubCatchment 1	Inactive
IN5642-026	1	1	0.012	100	0.042	9.482	100Percent Type B	IN5642-026	Outlet	No Redirection
AS5642-027			0	0	0	0	No Pervious Area	AS5642-027	SubCatchment 1	Inactive
AS5841-050			0	0	0	0	No Pervious Area	AS5841-050	SubCatchment 1	Inactive
AS5841-052	1	1	0.034	100	0.034	22.6	100Percent Type B	AS5841-052	Outlet	No Redirection
AS5841-052	2	2	0.01	100	0.034	22.6	100Percent Type B	AS5841-052	SubCatchment 3	Impervious Runoff to Pervious
AS5841-052	3	3	0.029	0	0.034	22.6	100Percent Type B	AS5841-052	Outlet	Pervious Area to Outlet
AS5841-054	1	1	0.034	100	0.038	16.343	100Percent Type B	AS5841-054	Outlet	No Redirection
AS5841-054	3	3	0.016	0	0.038	16.343	100Percent Type B	AS5841-054	Outlet	Pervious Area to Outlet
AS5841-056	1	1	0.467	100	0.014	71.969	100Percent Type B	AS5841-056	Outlet	No Redirection
AS5841-056	2	2	0.139	100	0.014	71.969	100Percent Type B	AS5841-056	SubCatchment 3	Impervious Runoff to Pervious
AS5841-056	3	3	0.386	0	0.014	71.969	100Percent Type B	AS5841-056	Outlet	Pervious Area to Outlet
AS5544-060	1	1	1.901	100	0.012	26.14	100Percent Type D	AS5544-060	Outlet	No Redirection
AS5544-060	2	2	0.126	100	0.012	26.14	100Percent Type D	AS5544-060	SubCatchment 3	Impervious Runoff to Pervious
AS5544-060	3	3	0.12	0	0.012	26.14	100Percent Type D	AS5544-060	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5543-055	1	1	0.867	100	0.015	24.271	100Percent Type D	AS5543-055	Outlet	No Redirection
AS5543-055	2	2	0.473	100	0.015	24.271	100Percent Type D	AS5543-055	SubCatchment 3	Impervious Runoff to Pervious
AS5543-055	3	3	0.178	0	0.015	24.271	100Percent Type D	AS5543-055	Outlet	Pervious Area to Outlet
AS5540-036	1	1	0.867	100	0.012	22.961	100Percent Type D	AS5540-036	Outlet	No Redirection
AS5540-036	3	3	0.243	0	0.012	22.961	100Percent Type D	AS5540-036	Outlet	Pervious Area to Outlet
IN5544-063	1	1	0.72	100	0.008	26.855	30B70D	IN5544-063	Outlet	No Redirection
IN5544-063	2	2	0.775	100	0.008	26.855	30B70D	IN5544-063	SubCatchment 3	Impervious Runoff to Pervious
IN5544-063	3	3	1.289	0	0.008	26.855	30B70D	IN5544-063	Outlet	Pervious Area to Outlet
AS5642-028			0	0	0	0	No Pervious Area	AS5642-028	SubCatchment 1	Inactive
AS5642-029			0	0	0	0	No Pervious Area	AS5642-029	SubCatchment 1	Inactive
AS5642-030	1	1	0.283	100	0.018	16.228	100Percent Type C	AS5642-030	Outlet	No Redirection
AS5642-030	3	3	0.016	0	0.018	16.228	100Percent Type C	AS5642-030	Outlet	Pervious Area to Outlet
AS5643-035	1	1	0.039	100	0.097	9.642	100Percent Type C	AS5643-035	Outlet	No Redirection
AS5643-035	3	3	0.023	0	0.097	9.642	100Percent Type C	AS5643-035	Outlet	Pervious Area to Outlet
AS5643-037	1	1	0.088	100	0.022	11.738	100Percent Type C	AS5643-037	Outlet	No Redirection
AS5643-037	2	2	0.006	100	0.022	11.738	100Percent Type C	AS5643-037	SubCatchment 3	Impervious Runoff to Pervious
AS5643-037	3	3	0.012	0	0.022	11.738	100Percent Type C	AS5643-037	Outlet	Pervious Area to Outlet
AS5643-039	1	1	0.799	100	0.023	14.301	70C30D	AS5643-039	Outlet	No Redirection
AS5643-039	2	2	0.339	100	0.023	14.301	70C30D	AS5643-039	SubCatchment 3	Impervious Runoff to Pervious
AS5643-039	3	3	0.625	0	0.023	14.301	70C30D	AS5643-039	Outlet	Pervious Area to Outlet
IN5643-040			0	0	0	0	No Pervious Area	IN5643-040	SubCatchment 1	Inactive
IN5643-042			0	0	0	0	No Pervious Area	IN5643-042	SubCatchment 1	Inactive
AS5543-062			0	0	0	0	No Pervious Area	AS5543-062	SubCatchment 1	Inactive
AS5543-063			0	0	0	0	No Pervious Area	AS5543-063	SubCatchment 1	Inactive
AS5542-028	1	1	2.313	100	0.023	29.532	50C50D	AS5542-028	Outlet	No Redirection
AS5542-028	2	2	0.089	100	0.023	29.532	50C50D	AS5542-028	SubCatchment 3	Impervious Runoff to Pervious
AS5542-028	3	3	0.714	0	0.023	29.532	50C50D	AS5542-028	Outlet	Pervious Area to Outlet
AE5542-031			0	0	0	0	No Pervious Area	AE5542-031	SubCatchment 1	Inactive
AS5738-048	1	1	1.31	100	0.013	17.653	70B30D	AS5738-048	Outlet	No Redirection
AS5738-048	2	2	1.999	100	0.013	17.653	70B30D	AS5738-048	SubCatchment 3	Impervious Runoff to Pervious
AS5738-048	3	3	4.612	0	0.013	17.653	70B30D	AS5738-048	Outlet	Pervious Area to Outlet
AS5738-054	1	1	0.179	100	0.014	12.407	100Percent Type B	AS5738-054	Outlet	No Redirection
AS5738-054	2	2	0.022	100	0.014	12.407	100Percent Type B	AS5738-054	SubCatchment 3	Impervious Runoff to Pervious
AS5738-054	3	3	0.098	0	0.014	12.407	100Percent Type B	AS5738-054	Outlet	Pervious Area to Outlet
AS5738-055	1	1	4.792	100	0.01	15.006	100Percent Type B	AS5738-055	Outlet	No Redirection
AS5738-055	2	2	2.135	100	0.01	15.006	100Percent Type B	AS5738-055	SubCatchment 3	Impervious Runoff to Pervious
AS5738-055	3	3	6.225	0	0.01	15.006	100Percent Type B	AS5738-055	Outlet	Pervious Area to Outlet
AS5738-066		1	0	100	0	0	No Pervious Area	AS5738-066	Outlet	Inactive
AE5543-070			0	0	0	0	No Pervious Area	AE5543-070	SubCatchment 1	Inactive
AS5738-072	1	1	0.215	100	0.014	28.413	100Percent Type B	AS5738-072	Outlet	No Redirection
AS5738-072	2	2	0.002	100	0.014	28.413	100Percent Type B	AS5738-072	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5738-072	3	3	0.175	0	0.014	28.413	100Percent Type B	AS5738-072	Outlet	Pervious Area to Outlet
AS5739-078	1	1	0.851	100	0.009	31.899	100Percent Type B	AS5739-078	Outlet	No Redirection
AS5739-078	2	2	0.489	100	0.009	31.899	100Percent Type B	AS5739-078	SubCatchment 3	Impervious Runoff to Pervious
AS5739-078	3	3	1.193	0	0.009	31.899	100Percent Type B	AS5739-078	Outlet	Pervious Area to Outlet
AS5739-083	1	1	0.793	100	0.01	33.544	100Percent Type B	AS5739-083	Outlet	No Redirection
AS5739-083	2	2	0.469	100	0.01	33.544	100Percent Type B	AS5739-083	SubCatchment 3	Impervious Runoff to Pervious
AS5739-083	3	3	0.89	0	0.01	33.544	100Percent Type B	AS5739-083	Outlet	Pervious Area to Outlet
AS5739-088	1	1	1.065	100	0.008	21.728	100Percent Type B	AS5739-088	Outlet	No Redirection
AS5739-088	2	2	0.322	100	0.008	21.728	100Percent Type B	AS5739-088	SubCatchment 3	Impervious Runoff to Pervious
AS5739-088	3	3	0.638	0	0.008	21.728	100Percent Type B	AS5739-088	Outlet	Pervious Area to Outlet
AS5543-084	1	1	2.136	100	0.018	33.765	100Percent Type D	AS5543-084	Outlet	No Redirection
AS5543-084	2	2	0.121	100	0.018	33.765	100Percent Type D	AS5543-084	SubCatchment 3	Impervious Runoff to Pervious
AS5543-084	3	3	0.325	0	0.018	33.765	100Percent Type D	AS5543-084	Outlet	Pervious Area to Outlet
IN5543-095	1	1	0.07	100	0.025	11.35	100Percent Type D	IN5543-095	Outlet	No Redirection
IN5543-095	2	2	0.019	100	0.025	11.35	100Percent Type D	IN5543-095	SubCatchment 3	Impervious Runoff to Pervious
IN5543-095	3	3	0.014	0	0.025	11.35	100Percent Type D	IN5543-095	Outlet	Pervious Area to Outlet
SS5543-097			0	0	0	0	No Pervious Area	SS5543-097	SubCatchment 1	Inactive
AE5543-098			0	0	0	0	No Pervious Area	AE5543-098	SubCatchment 1	Inactive
AS5543-099	1	1	0.124	100	0.032	11	100Percent Type D	AS5543-099	Outlet	No Redirection
AS5543-099	2	2	0.004	100	0.032	11	100Percent Type D	AS5543-099	SubCatchment 3	Impervious Runoff to Pervious
AS5543-099	3	3	0.038	0	0.032	11	100Percent Type D	AS5543-099	Outlet	Pervious Area to Outlet
AS5543-103	1	1	0.108	100	0.026	10.583	100Percent Type D	AS5543-103	Outlet	No Redirection
AS5543-103	2	2	0.089	100	0.026	10.583	100Percent Type D	AS5543-103	SubCatchment 3	Impervious Runoff to Pervious
AS5543-103	3	3	0.084	0	0.026	10.583	100Percent Type D	AS5543-103	Outlet	Pervious Area to Outlet
AS5542-032			0	0	0	0	No Pervious Area	AS5542-032	SubCatchment 1	Inactive
AS5542-037	1	1	0.326	100	0.013	32.221	100Percent Type D	AS5542-037	Outlet	No Redirection
AS5542-037	2	2	0.005	100	0.013	32.221	100Percent Type D	AS5542-037	SubCatchment 3	Impervious Runoff to Pervious
AS5542-037	3	3	0.029	0	0.013	32.221	100Percent Type D	AS5542-037	Outlet	Pervious Area to Outlet
AS5542-046	1	1	0.489	100	0.028	27.618	100Percent Type C	AS5542-046	Outlet	No Redirection
AS5542-046	3	3	0.055	0	0.028	27.618	100Percent Type C	AS5542-046	Outlet	Pervious Area to Outlet
AS5541-043			0	0	0	0	No Pervious Area	AS5541-043	SubCatchment 1	Inactive
AS5541-044	1	1	0.681	100	0.013	31.933	100Percent Type D	AS5541-044	Outlet	No Redirection
AS5541-044	2	2	0.223	100	0.013	31.933	100Percent Type D	AS5541-044	SubCatchment 3	Impervious Runoff to Pervious
AS5541-044	3	3	0.646	0	0.013	31.933	100Percent Type D	AS5541-044	Outlet	Pervious Area to Outlet
AS5542-050	1	1	0.726	100	0.01	23.13	100Percent Type D	AS5542-050	Outlet	No Redirection
AS5542-050	2	2	0.515	100	0.01	23.13	100Percent Type D	AS5542-050	SubCatchment 3	Impervious Runoff to Pervious
AS5542-050	3	3	1.287	0	0.01	23.13	100Percent Type D	AS5542-050	Outlet	Pervious Area to Outlet
AS5542-053	1	1	0.808	100	0.013	28.867	100Percent Type D	AS5542-053	Outlet	No Redirection
AS5542-053	2	2	0.098	100	0.013	28.867	100Percent Type D	AS5542-053	SubCatchment 3	Impervious Runoff to Pervious
AS5542-053	3	3	0.296	0	0.013	28.867	100Percent Type D	AS5542-053	Outlet	Pervious Area to Outlet
AS5542-059	1	1	0.966	100	0.013	31.515	100Percent Type D	AS5542-059	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5542-059	2	2	0.019	100	0.013	31.515	100Percent Type D	AS5542-059	SubCatchment 3	Impervious Runoff to Pervious
AS5542-059	3	3	0.393	0	0.013	31.515	100Percent Type D	AS5542-059	Outlet	Pervious Area to Outlet
AS5542-067	1	1	1.591	100	0.02	31.16	50B50C	AS5542-067	Outlet	No Redirection
AS5542-067	2	2	0.944	100	0.02	31.16	50B50C	AS5542-067	SubCatchment 3	Impervious Runoff to Pervious
AS5542-067	3	3	2.505	0	0.02	31.16	50B50C	AS5542-067	Outlet	Pervious Area to Outlet
IN5542-072	1	1	0.326	100	0.045	24.367	50B50D	IN5542-072	Outlet	No Redirection
IN5542-072	2	2	0.075	100	0.045	24.367	50B50D	IN5542-072	SubCatchment 3	Impervious Runoff to Pervious
IN5542-072	3	3	0.114	0	0.045	24.367	50B50D	IN5542-072	Outlet	Pervious Area to Outlet
IN5542-076	1	1	0.649	100	0.033	27.043	90C10D	IN5542-076	Outlet	No Redirection
IN5542-076	2	2	0.087	100	0.033	27.043	90C10D	IN5542-076	SubCatchment 3	Impervious Runoff to Pervious
IN5542-076	3	3	0.072	0	0.033	27.043	90C10D	IN5542-076	Outlet	Pervious Area to Outlet
AS5642-034			0	0	0	0	No Pervious Area	AS5642-034	SubCatchment 1	Inactive
IN5642-035	1	1	0.401	100	0.013	19.11	70B30C	IN5642-035	Outlet	No Redirection
IN5642-035	2	2	0.041	100	0.013	19.11	70B30C	IN5642-035	SubCatchment 3	Impervious Runoff to Pervious
IN5642-035	3	3	0.181	0	0.013	19.11	70B30C	IN5642-035	Outlet	Pervious Area to Outlet
IN5642-036	1	1	0.718	100	0.015	20.187	10B90C	IN5642-036	Outlet	No Redirection
IN5642-036	2	2	0.081	100	0.015	20.187	10B90C	IN5642-036	SubCatchment 3	Impervious Runoff to Pervious
IN5642-036	3	3	0.269	0	0.015	20.187	10B90C	IN5642-036	Outlet	Pervious Area to Outlet
SS5641-043			0	0	0	0	No Pervious Area	SS5641-043	SubCatchment 1	Inactive
AS5641-045			0	0	0	0	No Pervious Area	AS5641-045	SubCatchment 1	Inactive
AS5641-046			0	0	0	0	No Pervious Area	AS5641-046	SubCatchment 1	Inactive
IN5641-047	1	1	0.382	100	0.018	30.081	100Percent Type B	IN5641-047	Outlet	No Redirection
IN5641-047	2	2	0.108	100	0.018	30.081	100Percent Type B	IN5641-047	SubCatchment 3	Impervious Runoff to Pervious
IN5641-047	3	3	0.199	0	0.018	30.081	100Percent Type B	IN5641-047	Outlet	Pervious Area to Outlet
IN5641-052	1	1	1.03	100	0.011	30.197	50B50D	IN5641-052	Outlet	No Redirection
IN5641-052	2	2	0.355	100	0.011	30.197	50B50D	IN5641-052	SubCatchment 3	Impervious Runoff to Pervious
IN5641-052	3	3	0.477	0	0.011	30.197	50B50D	IN5641-052	Outlet	Pervious Area to Outlet
AS5641-061	1	1	0.427	100	0.018	19.944	100Percent Type B	AS5641-061	Outlet	No Redirection
AS5641-061	2	2	0.016	100	0.018	19.944	100Percent Type B	AS5641-061	SubCatchment 3	Impervious Runoff to Pervious
AS5641-061	3	3	0.089	0	0.018	19.944	100Percent Type B	AS5641-061	Outlet	Pervious Area to Outlet
AS5641-066			0	0	0	0	No Pervious Area	AS5641-066	SubCatchment 1	Inactive
IN5641-067	1	1	0.533	100	0.014	20.637	100Percent Type B	IN5641-067	Outlet	No Redirection
IN5641-067	2	2	0.203	100	0.014	20.637	100Percent Type B	IN5641-067	SubCatchment 3	Impervious Runoff to Pervious
IN5641-067	3	3	0.237	0	0.014	20.637	100Percent Type B	IN5641-067	Outlet	Pervious Area to Outlet
IN5641-069	1	1	0.633	100	0.012	20.129	70B30C	IN5641-069	Outlet	No Redirection
IN5641-069	2	2	0.05	100	0.012	20.129	70B30C	IN5641-069	SubCatchment 3	Impervious Runoff to Pervious
IN5641-069	3	3	0.273	0	0.012	20.129	70B30C	IN5641-069	Outlet	Pervious Area to Outlet
AS5641-074	1	1	0.3	100	0.014	30.76	20B80D	AS5641-074	Outlet	No Redirection
AS5641-074	2	2	0.162	100	0.014	30.76	20B80D	AS5641-074	SubCatchment 3	Impervious Runoff to Pervious
AS5641-074	3	3	0.144	0	0.014	30.76	20B80D	AS5641-074	Outlet	Pervious Area to Outlet
AS5642-042	1	1	0.263	100	0.028	17.75	100Percent Type C	AS5642-042	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5642-042	2	2	0.003	100	0.028	17.75	100Percent Type C	AS5642-042	SubCatchment 3	Impervious Runoff to Pervious
AS5642-042	3	3	0.048	0	0.028	17.75	100Percent Type C	AS5642-042	Outlet	Pervious Area to Outlet
IN5642-044	1	1	0.156	100	0.016	16.481	100Percent Type C	IN5642-044	Outlet	No Redirection
IN5642-044	2	2	0.055	100	0.016	16.481	100Percent Type C	IN5642-044	SubCatchment 3	Impervious Runoff to Pervious
IN5642-044	3	3	0.081	0	0.016	16.481	100Percent Type C	IN5642-044	Outlet	Pervious Area to Outlet
AS5642-046			0	0	0	0	No Pervious Area	AS5642-046	SubCatchment 1	Inactive
IN5642-047	1	1	0.018	100	0.041	4.52	100Percent Type C	IN5642-047	Outlet	No Redirection
IN5642-047	2	2	0.003	100	0.041	4.52	100Percent Type C	IN5642-047	SubCatchment 3	Impervious Runoff to Pervious
IN5642-047	3	3	0.002	0	0.041	4.52	100Percent Type C	IN5642-047	Outlet	Pervious Area to Outlet
IN5642-048	1	1	0.024	100	0.026	5.665	100Percent Type C	IN5642-048	Outlet	No Redirection
IN5642-048	3	3	0.013	0	0.026	5.665	100Percent Type C	IN5642-048	Outlet	Pervious Area to Outlet
IN5642-049	1	1	0.549	100	0.028	16.388	100Percent Type C	IN5642-049	Outlet	No Redirection
IN5642-049	2	2	0.192	100	0.028	16.388	100Percent Type C	IN5642-049	SubCatchment 3	Impervious Runoff to Pervious
IN5642-049	3	3	0.307	0	0.028	16.388	100Percent Type C	IN5642-049	Outlet	Pervious Area to Outlet
IN5642-050	1	1	0.05	0	0.028	5.83	100Percent Type C	IN5642-050	Outlet	No Redirection
IN5642-050	2	2	0.003	0	0.028	5.83	100Percent Type C	IN5642-050	SubCatchment 3	Impervious Runoff to Pervious
IN5642-050	3	3	0.018	0	0.028	5.83	100Percent Type C	IN5642-050	Outlet	Pervious Area to Outlet
IN5642-052	1	1	0.052	100	0.031	14.191	100Percent Type C	IN5642-052	Outlet	No Redirection
IN5642-052	2	2	0.035	100	0.031	14.191	100Percent Type C	IN5642-052	SubCatchment 3	Impervious Runoff to Pervious
IN5642-052	3	3	0.138	0	0.031	14.191	100Percent Type C	IN5642-052	Outlet	Pervious Area to Outlet
IN5642-057	1	1	0.207	100	0.037	12.969	60B40C	IN5642-057	Outlet	No Redirection
IN5642-057	2	2	0.03	100	0.037	12.969	60B40C	IN5642-057	SubCatchment 3	Impervious Runoff to Pervious
IN5642-057	3	3	0.075	0	0.037	12.969	60B40C	IN5642-057	Outlet	Pervious Area to Outlet
IN5643-044	1	1	0.346	100	0.037	14.536	50B50C	IN5643-044	Outlet	No Redirection
IN5643-044	2	2	0.342	100	0.037	14.536	50B50C	IN5643-044	SubCatchment 3	Impervious Runoff to Pervious
IN5643-044	3	3	0.206	0	0.037	14.536	50B50C	IN5643-044	Outlet	Pervious Area to Outlet
IN5543-120	2	2	0.048	100	0.063	12.163	100Percent Type D	IN5543-120	SubCatchment 3	Impervious Runoff to Pervious
IN5543-120	3	3	0.152	0	0.063	12.163	100Percent Type D	IN5543-120	Outlet	Pervious Area to Outlet
AE5543-123			0	0	0	0	No Pervious Area	AE5543-123	SubCatchment 1	Inactive
AS5641-082			0	0	0	0	No Pervious Area	AS5641-082	SubCatchment 1	Inactive
AS5641-083	1	1	0.271	100	0.021	13.483	100Percent Type D	AS5641-083	Outlet	No Redirection
AS5641-083	2	2	0.051	100	0.021	13.483	100Percent Type D	AS5641-083	SubCatchment 3	Impervious Runoff to Pervious
AS5641-083	3	3	0.07	0	0.021	13.483	100Percent Type D	AS5641-083	Outlet	Pervious Area to Outlet
AS5643-051	1	1	0.099	100	0.039	12.853	100Percent Type C	AS5643-051	Outlet	No Redirection
AS5643-051	2	2	0.008	100	0.039	12.853	100Percent Type C	AS5643-051	SubCatchment 3	Impervious Runoff to Pervious
AS5643-051	3	3	0.037	0	0.039	12.853	100Percent Type C	AS5643-051	Outlet	Pervious Area to Outlet
AS5643-052	1	1	0.082	100	0.052	15.075	100Percent Type C	AS5643-052	Outlet	No Redirection
AS5643-052	2	2	0.023	100	0.052	15.075	100Percent Type C	AS5643-052	SubCatchment 3	Impervious Runoff to Pervious
AS5643-052	3	3	0.019	0	0.052	15.075	100Percent Type C	AS5643-052	Outlet	Pervious Area to Outlet
IN5543-128	1	1	4.275	100	0.016	33.154	100Percent Type D	IN5543-128	Outlet	No Redirection
IN5543-128	2	2	0.599	100	0.016	33.154	100Percent Type D	IN5543-128	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5543-128	3	3	0.326	0	0.016	33.154	100Percent Type D	IN5543-128	Outlet	Pervious Area to Outlet
AE5543-129			0	0	0	0	No Pervious Area	AE5543-129	SubCatchment 1	Inactive
AE5543-133			0	0	0	0	No Pervious Area	AE5543-133	SubCatchment 1	Inactive
AS5843-048	1	1	0.187	100	0.044	26.019	50B50C	AS5843-048	Outlet	No Redirection
AS5843-048	2	2	0.09	100	0.044	26.019	50B50C	AS5843-048	SubCatchment 3	Impervious Runoff to Pervious
AS5843-048	3	3	0.143	0	0.044	26.019	50B50C	AS5843-048	Outlet	Pervious Area to Outlet
AS5843-049			0	0	0	0	No Pervious Area	AS5843-049	SubCatchment 1	Inactive
IN5842-043	1	1	1.969	100	0.033	104.803	80B20C	IN5842-043	Outlet	No Redirection
IN5842-043	2	2	1.05	100	0.033	104.803	80B20C	IN5842-043	SubCatchment 3	Impervious Runoff to Pervious
IN5842-043	3	3	2.147	0	0.033	104.803	80B20C	IN5842-043	Outlet	Pervious Area to Outlet
AS5842-049	1	1	1.323	100	0.03	131.622	20B80C	AS5842-049	Outlet	No Redirection
AS5842-049	2	2	0.741	100	0.03	131.622	20B80C	AS5842-049	SubCatchment 3	Impervious Runoff to Pervious
AS5842-049	3	3	1.711	0	0.03	131.622	20B80C	AS5842-049	Outlet	Pervious Area to Outlet
IN5842-052			0	0	0	0	No Pervious Area	IN5842-052	SubCatchment 1	Inactive
AS5843-068	1	1	1.735	100	0.022	149.03	70B30C	AS5843-068	Outlet	No Redirection
AS5843-068	2	2	1.023	100	0.022	149.03	70B30C	AS5843-068	SubCatchment 3	Impervious Runoff to Pervious
AS5843-068	3	3	2.055	0	0.022	149.03	70B30C	AS5843-068	Outlet	Pervious Area to Outlet
AS5641-084	1	1	1.055	100	0.017	19.148	90B10D	AS5641-084	Outlet	No Redirection
AS5641-084	2	2	0.255	100	0.017	19.148	90B10D	AS5641-084	SubCatchment 3	Impervious Runoff to Pervious
AS5641-084	3	3	0.424	0	0.017	19.148	90B10D	AS5641-084	Outlet	Pervious Area to Outlet
AS5641-085			0	0	0	0	No Pervious Area	AS5641-085	SubCatchment 1	Inactive
AS5741-024	1	1	0.287	100	0.013	17.867	100Percent Type B	AS5741-024	Outlet	No Redirection
AS5741-024	2	2	0.098	100	0.013	17.867	100Percent Type B	AS5741-024	SubCatchment 3	Impervious Runoff to Pervious
AS5741-024	3	3	0.197	0	0.013	17.867	100Percent Type B	AS5741-024	Outlet	Pervious Area to Outlet
IN5741-025	1	1	0.069	100	0.018	8.992	100Percent Type B	IN5741-025	Outlet	No Redirection
IN5741-025	3	3	0.007	0	0.018	8.992	100Percent Type B	IN5741-025	Outlet	Pervious Area to Outlet
IN5741-026	1	1	0.17	100	0.017	19.827	100Percent Type B	IN5741-026	Outlet	No Redirection
IN5741-026	2	2	0.059	100	0.017	19.827	100Percent Type B	IN5741-026	SubCatchment 3	Impervious Runoff to Pervious
IN5741-026	3	3	0.111	0	0.017	19.827	100Percent Type B	IN5741-026	Outlet	Pervious Area to Outlet
AS5740-084	1	1	0.306	100	0.009	21.603	100Percent Type B	AS5740-084	Outlet	No Redirection
AS5740-084	2	2	0.003	100	0.009	21.603	100Percent Type B	AS5740-084	SubCatchment 3	Impervious Runoff to Pervious
AS5740-084	3	3	0.067	0	0.009	21.603	100Percent Type B	AS5740-084	Outlet	Pervious Area to Outlet
AS5740-089	1	1	0.598	100	0.011	18.14	100Percent Type B	AS5740-089	Outlet	No Redirection
AS5740-089	2	2	0.025	100	0.011	18.14	100Percent Type B	AS5740-089	SubCatchment 3	Impervious Runoff to Pervious
AS5740-089	3	3	0.199	0	0.011	18.14	100Percent Type B	AS5740-089	Outlet	Pervious Area to Outlet
AS5740-093	1	1	1.444	100	0.008	17.547	100Percent Type B	AS5740-093	Outlet	No Redirection
AS5740-093	2	2	1.383	100	0.008	17.547	100Percent Type B	AS5740-093	SubCatchment 3	Impervious Runoff to Pervious
AS5740-093	3	3	2.848	0	0.008	17.547	100Percent Type B	AS5740-093	Outlet	Pervious Area to Outlet
AS5740-094	1	1	0.42	100	0.01	30.808	100Percent Type B	AS5740-094	Outlet	No Redirection
AS5740-094	2	2	0.088	100	0.01	30.808	100Percent Type B	AS5740-094	SubCatchment 3	Impervious Runoff to Pervious
AS5740-094	3	3	0.283	0	0.01	30.808	100Percent Type B	AS5740-094	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5740-099	1	1	0.14	100	0.005	32.72	100Percent Type B	IN5740-099	Outlet	No Redirection
IN5740-099	3	3	0.054	0	0.005	32.72	100Percent Type B	IN5740-099	Outlet	Pervious Area to Outlet
AS5740-100	1	1	0.594	100	0.012	16.981	100Percent Type B	AS5740-100	Outlet	No Redirection
AS5740-100	2	2	0.067	100	0.012	16.981	100Percent Type B	AS5740-100	SubCatchment 3	Impervious Runoff to Pervious
AS5740-100	3	3	0.207	0	0.012	16.981	100Percent Type B	AS5740-100	Outlet	Pervious Area to Outlet
IN5740-102	1	1	0.325	100	0.01	24.93	100Percent Type B	IN5740-102	Outlet	No Redirection
IN5740-102	2	2	0.043	100	0.01	24.93	100Percent Type B	IN5740-102	SubCatchment 3	Impervious Runoff to Pervious
IN5740-102	3	3	0.134	0	0.01	24.93	100Percent Type B	IN5740-102	Outlet	Pervious Area to Outlet
AS5740-107	1	1	0.936	100	0.027	17.349	100Percent Type B	AS5740-107	Outlet	No Redirection
AS5740-107	3	3	0.831	0	0.027	17.349	100Percent Type B	AS5740-107	Outlet	Pervious Area to Outlet
AS5740-110	1	1	0.266	100	0.018	16.521	100Percent Type B	AS5740-110	Outlet	No Redirection
AS5740-110	2	2	0.006	100	0.018	16.521	100Percent Type B	AS5740-110	SubCatchment 3	Impervious Runoff to Pervious
AS5740-110	3	3	0.112	0	0.018	16.521	100Percent Type B	AS5740-110	Outlet	Pervious Area to Outlet
AS5740-113			0	0	0	0	No Pervious Area	AS5740-113	SubCatchment 1	Inactive
AS5740-114	1	1	7.501	100	0.022	22.529	70B30D	AS5740-114	Outlet	No Redirection
AS5740-114	2	2	0.634	100	0.022	22.529	70B30D	AS5740-114	SubCatchment 3	Impervious Runoff to Pervious
AS5740-114	3	3	3.748	0	0.022	22.529	70B30D	AS5740-114	Outlet	Pervious Area to Outlet
AS5740-115	1	1	0.228	100	0.01	14.725	100Percent Type B	AS5740-115	Outlet	No Redirection
AS5740-115	2	2	0.009	100	0.01	14.725	100Percent Type B	AS5740-115	SubCatchment 3	Impervious Runoff to Pervious
AS5740-115	3	3	0.04	0	0.01	14.725	100Percent Type B	AS5740-115	Outlet	Pervious Area to Outlet
IN5638-031	2	2	0.084	100	0.03	19.787	100Percent Type D	IN5638-031	SubCatchment 3	Impervious Runoff to Pervious
IN5638-031	3	3	0.637	0	0.03	19.787	100Percent Type D	IN5638-031	Outlet	Pervious Area to Outlet
AS5638-036			0	0	0	0	No Pervious Area	AS5638-036	SubCatchment 1	Inactive
IN5738-073	1	1	0.302	100	0.018	31.619	100Percent Type D	IN5738-073	Outlet	No Redirection
IN5738-073	2	2	1.04	100	0.018	31.619	100Percent Type D	IN5738-073	SubCatchment 3	Impervious Runoff to Pervious
IN5738-073	3	3	2.773	0	0.018	31.619	100Percent Type D	IN5738-073	Outlet	Pervious Area to Outlet
IN5738-074	1	1	0.09	100	0.045	10.767	100Percent Type D	IN5738-074	Outlet	No Redirection
IN5738-074	2	2	0.025	100	0.045	10.767	100Percent Type D	IN5738-074	SubCatchment 3	Impervious Runoff to Pervious
IN5738-074	3	3	0.057	0	0.045	10.767	100Percent Type D	IN5738-074	Outlet	Pervious Area to Outlet
AS5637-037	1	1	0.142	100	0.021	32.495	100Percent Type D	AS5637-037	Outlet	No Redirection
AS5637-037	2	2	0.082	100	0.021	32.495	100Percent Type D	AS5637-037	SubCatchment 3	Impervious Runoff to Pervious
AS5637-037	3	3	5.869	0	0.021	32.495	100Percent Type D	AS5637-037	Outlet	Pervious Area to Outlet
AS5637-039	1	1	0.029	100	0.012	21.611	100Percent Type D	AS5637-039	Outlet	No Redirection
AS5637-039	2	2	0.028	100	0.012	21.611	100Percent Type D	AS5637-039	SubCatchment 3	Impervious Runoff to Pervious
AS5637-039	3	3	0.61	0	0.012	21.611	100Percent Type D	AS5637-039	Outlet	Pervious Area to Outlet
AS5637-041			0	0	0	0	No Pervious Area	AS5637-041	SubCatchment 1	Inactive
AS5638-038	1	1	0.452	100	0.026	31.736	100Percent Type D	AS5638-038	Outlet	No Redirection
AS5638-038	3	3	1.805	0	0.026	31.736	100Percent Type D	AS5638-038	Outlet	Pervious Area to Outlet
IN5639-048	2	2	0.005	100	0.008	19.187	100Percent Type D	IN5639-048	SubCatchment 3	Impervious Runoff to Pervious
IN5639-048	3	3	1.936	0	0.008	19.187	100Percent Type D	IN5639-048	Outlet	Pervious Area to Outlet
AS5639-049	3	3	0.566	0	0.011	18.381	100Percent Type D	AS5639-049	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5640-052	1	1	0.577	100	0.024	29.305	100Percent Type D	AS5640-052	Outlet	No Redirection
AS5640-052	2	2	0.344	100	0.024	29.305	100Percent Type D	AS5640-052	SubCatchment 3	Impervious Runoff to Pervious
AS5640-052	3	3	2.804	0	0.024	29.305	100Percent Type D	AS5640-052	Outlet	Pervious Area to Outlet
AS5640-054			0	0	0	0	No Pervious Area	AS5640-054	SubCatchment 1	Inactive
AS5540-039	1	1	0.002	100	0.015	17.16	100Percent Type D	AS5540-039	Outlet	No Redirection
AS5540-039	3	3	1.01	0	0.015	17.16	100Percent Type D	AS5540-039	Outlet	Pervious Area to Outlet
AS5540-041	1	1	1.27	100	0.013	17.061	100Percent Type D	AS5540-041	Outlet	No Redirection
AS5540-041	3	3	0.498	0	0.013	17.061	100Percent Type D	AS5540-041	Outlet	Pervious Area to Outlet
IN5645-035	1	1	0.14	100	0.006	28.763	100Percent Type D	IN5645-035	Outlet	No Redirection
IN5645-035	3	3	0.038	0	0.006	28.763	100Percent Type D	IN5645-035	Outlet	Pervious Area to Outlet
AS5639-062	1	1	0.269	100	0.033	28.325	70B30D	AS5639-062	Outlet	No Redirection
AS5639-062	2	2	0.1	100	0.033	28.325	70B30D	AS5639-062	SubCatchment 3	Impervious Runoff to Pervious
AS5639-062	3	3	0.203	0	0.033	28.325	70B30D	AS5639-062	Outlet	Pervious Area to Outlet
AS5639-063	1	1	0.386	100	0.014	28.626	100Percent Type D	AS5639-063	Outlet	No Redirection
AS5639-063	2	2	0.257	100	0.014	28.626	100Percent Type D	AS5639-063	SubCatchment 3	Impervious Runoff to Pervious
AS5639-063	3	3	0.489	0	0.014	28.626	100Percent Type D	AS5639-063	Outlet	Pervious Area to Outlet
AS5639-064	1	1	0.378	100	0.014	30.217	100Percent Type D	AS5639-064	Outlet	No Redirection
AS5639-064	2	2	0.16	100	0.014	30.217	100Percent Type D	AS5639-064	SubCatchment 3	Impervious Runoff to Pervious
AS5639-064	3	3	0.958	0	0.014	30.217	100Percent Type D	AS5639-064	Outlet	Pervious Area to Outlet
AS5638-046	1	1	0.797	100	0.009	35.097	100Percent Type D	AS5638-046	Outlet	No Redirection
AS5638-046	2	2	1.342	100	0.009	35.097	100Percent Type D	AS5638-046	SubCatchment 3	Impervious Runoff to Pervious
AS5638-046	3	3	4.388	0	0.009	35.097	100Percent Type D	AS5638-046	Outlet	Pervious Area to Outlet
AS5638-049			0	0	0	0	No Pervious Area	AS5638-049	SubCatchment 1	Inactive
AS5638-051	1	1	0.202	100	0.01	9.365	100Percent Type D	AS5638-051	Outlet	No Redirection
AS5638-051	2	2	0.052	100	0.01	9.365	100Percent Type D	AS5638-051	SubCatchment 3	Impervious Runoff to Pervious
AS5638-051	3	3	0.124	0	0.01	9.365	100Percent Type D	AS5638-051	Outlet	Pervious Area to Outlet
AS5638-055	1	1	0.555	100	0.01	12.475	100Percent Type B	AS5638-055	Outlet	No Redirection
AS5638-055	2	2	0.055	100	0.01	12.475	100Percent Type B	AS5638-055	SubCatchment 3	Impervious Runoff to Pervious
AS5638-055	3	3	0.425	0	0.01	12.475	100Percent Type B	AS5638-055	Outlet	Pervious Area to Outlet
AS5638-058	1	1	0.38	100	0.02	23.785	20B80D	AS5638-058	Outlet	No Redirection
AS5638-058	2	2	0.168	100	0.02	23.785	20B80D	AS5638-058	SubCatchment 3	Impervious Runoff to Pervious
AS5638-058	3	3	0.582	0	0.02	23.785	20B80D	AS5638-058	Outlet	Pervious Area to Outlet
AS5638-062	1	1	0.398	100	0.019	17.825	100Percent Type B	AS5638-062	Outlet	No Redirection
AS5638-062	2	2	0.16	100	0.019	17.825	100Percent Type B	AS5638-062	SubCatchment 3	Impervious Runoff to Pervious
AS5638-062	3	3	0.572	0	0.019	17.825	100Percent Type B	AS5638-062	Outlet	Pervious Area to Outlet
AS5639-072	1	1	0.592	100	0.015	25.924	100Percent Type B	AS5639-072	Outlet	No Redirection
AS5639-072	2	2	0.471	100	0.015	25.924	100Percent Type B	AS5639-072	SubCatchment 3	Impervious Runoff to Pervious
AS5639-072	3	3	1.339	0	0.015	25.924	100Percent Type B	AS5639-072	Outlet	Pervious Area to Outlet
AS5639-074	1	1	0.237	100	0.016	13.415	100Percent Type B	AS5639-074	Outlet	No Redirection
AS5639-074	2	2	0.095	100	0.016	13.415	100Percent Type B	AS5639-074	SubCatchment 3	Impervious Runoff to Pervious
AS5639-074	3	3	0.162	0	0.016	13.415	100Percent Type B	AS5639-074	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5739-094			0	0	0	0	No Pervious Area	AS5739-094	SubCatchment 1	Inactive
AS5739-095			0	0	0	0	No Pervious Area	AS5739-095	SubCatchment 1	Inactive
AS5739-096			0	0	0	0	No Pervious Area	AS5739-096	SubCatchment 1	Inactive
AS5743-051	1	1	0.219	100	0.008	118.463	100Percent Type D	AS5743-051	Outlet	No Redirection
AS5743-051	2	2	0.23	100	0.008	118.463	100Percent Type D	AS5743-051	SubCatchment 3	Impervious Runoff to Pervious
AS5743-051	3	3	0.733	0	0.008	118.463	100Percent Type D	AS5743-051	Outlet	Pervious Area to Outlet
IN5743-052	1	1	0.106	100	0.013	61.16	100Percent Type D	IN5743-052	Outlet	No Redirection
IN5743-052	2	2	0.099	100	0.013	61.16	100Percent Type D	IN5743-052	SubCatchment 3	Impervious Runoff to Pervious
IN5743-052	3	3	0.125	0	0.013	61.16	100Percent Type D	IN5743-052	Outlet	Pervious Area to Outlet
AS5743-054	1	1	0.077	100	0.012	50.684	100Percent Type D	AS5743-054	Outlet	No Redirection
AS5743-054	2	2	0.052	100	0.012	50.684	100Percent Type D	AS5743-054	SubCatchment 3	Impervious Runoff to Pervious
AS5743-054	3	3	0.088	0	0.012	50.684	100Percent Type D	AS5743-054	Outlet	Pervious Area to Outlet
AS5743-057	1	1	0.516	100	0.009	87.958	100Percent Type D	AS5743-057	Outlet	No Redirection
AS5743-057	2	2	0.303	100	0.009	87.958	100Percent Type D	AS5743-057	SubCatchment 3	Impervious Runoff to Pervious
AS5743-057	3	3	0.396	0	0.009	87.958	100Percent Type D	AS5743-057	Outlet	Pervious Area to Outlet
AS5743-063	1	1	0.118	100	0.021	83.76	100Percent Type D	AS5743-063	Outlet	No Redirection
AS5743-063	2	2	0.144	100	0.021	83.76	100Percent Type D	AS5743-063	SubCatchment 3	Impervious Runoff to Pervious
AS5743-063	3	3	0.161	0	0.021	83.76	100Percent Type D	AS5743-063	Outlet	Pervious Area to Outlet
IN5743-066	1	1	0.092	100	0.027	43.482	100Percent Type D	IN5743-066	Outlet	No Redirection
IN5743-066	2	2	0.054	100	0.027	43.482	100Percent Type D	IN5743-066	SubCatchment 3	Impervious Runoff to Pervious
IN5743-066	3	3	0.094	0	0.027	43.482	100Percent Type D	IN5743-066	Outlet	Pervious Area to Outlet
AS5743-067	1	1	0.362	100	0.009	83.348	100Percent Type D	AS5743-067	Outlet	No Redirection
AS5743-067	2	2	0.153	100	0.009	83.348	100Percent Type D	AS5743-067	SubCatchment 3	Impervious Runoff to Pervious
AS5743-067	3	3	0.254	0	0.009	83.348	100Percent Type D	AS5743-067	Outlet	Pervious Area to Outlet
AS5744-057		1	0	100	0	26.909	100Percent Type D	AS5744-057	Outlet	Inactive
AS5744-058	1	1	0.097	100	0.013	40.96	100Percent Type D	AS5744-058	Outlet	No Redirection
AS5744-058	2	2	0.114	100	0.013	40.96	100Percent Type D	AS5744-058	SubCatchment 3	Impervious Runoff to Pervious
AS5744-058	3	3	0.14	0	0.013	40.96	100Percent Type D	AS5744-058	Outlet	Pervious Area to Outlet
IN5744-059	1	1	0.553	100	0.02	93.221	100Percent Type D	IN5744-059	Outlet	No Redirection
IN5744-059	2	2	0.297	100	0.02	93.221	100Percent Type D	IN5744-059	SubCatchment 3	Impervious Runoff to Pervious
IN5744-059	3	3	0.397	0	0.02	93.221	100Percent Type D	IN5744-059	Outlet	Pervious Area to Outlet
IN5744-064	1	1	0.165	100	0.017	65.087	100Percent Type D	IN5744-064	Outlet	No Redirection
IN5744-064	2	2	0.143	100	0.017	65.087	100Percent Type D	IN5744-064	SubCatchment 3	Impervious Runoff to Pervious
IN5744-064	3	3	0.201	0	0.017	65.087	100Percent Type D	IN5744-064	Outlet	Pervious Area to Outlet
AS5744-066			0	0	0	0	No Pervious Area	AS5744-066	SubCatchment 1	Inactive
IN5744-071	1	1	0.202	100	0.013	65.72	100Percent Type D	IN5744-071	Outlet	No Redirection
IN5744-071	2	2	0.137	100	0.013	65.72	100Percent Type D	IN5744-071	SubCatchment 3	Impervious Runoff to Pervious
IN5744-071	3	3	0.208	0	0.013	65.72	100Percent Type D	IN5744-071	Outlet	Pervious Area to Outlet
IN5740-136	1	1	0.146	100	0.021	25.637	100Percent Type B	IN5740-136	Outlet	No Redirection
IN5740-136	2	2	0.114	100	0.021	25.637	100Percent Type B	IN5740-136	SubCatchment 3	Impervious Runoff to Pervious
IN5740-136	3	3	0.093	0	0.021	25.637	100Percent Type B	IN5740-136	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5740-137	1	1	0.087	100	0.03	16.927	100Percent Type B	AS5740-137	Outlet	No Redirection
AS5740-137	2	2	0.083	100	0.03	16.927	100Percent Type B	AS5740-137	SubCatchment 3	Impervious Runoff to Pervious
AS5740-137	3	3	0.077	0	0.03	16.927	100Percent Type B	AS5740-137	Outlet	Pervious Area to Outlet
AS5740-139			0	0	0	0	No Pervious Area	AS5740-139	SubCatchment 1	Inactive
AS5740-140	1	1	0.062	100	0.02	8.779	100Percent Type B	AS5740-140	Outlet	No Redirection
AS5740-140	2	2	0.005	100	0.02	8.779	100Percent Type B	AS5740-140	SubCatchment 3	Impervious Runoff to Pervious
AS5740-140	3	3	0.022	0	0.02	8.779	100Percent Type B	AS5740-140	Outlet	Pervious Area to Outlet
IN5740-142	1	1	0.34	100	0.059	22.009	100Percent Type B	IN5740-142	Outlet	No Redirection
IN5740-142	2	2	0.413	100	0.059	22.009	100Percent Type B	IN5740-142	SubCatchment 3	Impervious Runoff to Pervious
IN5740-142	3	3	0.68	0	0.059	22.009	100Percent Type B	IN5740-142	Outlet	Pervious Area to Outlet
IN5741-029	1	1	0.115	100	0.04	18.032	100Percent Type B	IN5741-029	Outlet	No Redirection
IN5741-029	2	2	0.018	100	0.04	18.032	100Percent Type B	IN5741-029	SubCatchment 3	Impervious Runoff to Pervious
IN5741-029	3	3	0.052	0	0.04	18.032	100Percent Type B	IN5741-029	Outlet	Pervious Area to Outlet
AS5741-030	1	1	1.257	100	0.05	25.497	100Percent Type B	AS5741-030	Outlet	No Redirection
AS5741-030	2	2	0.459	100	0.05	25.497	100Percent Type B	AS5741-030	SubCatchment 3	Impervious Runoff to Pervious
AS5741-030	3	3	1.111	0	0.05	25.497	100Percent Type B	AS5741-030	Outlet	Pervious Area to Outlet
IN5740-143	1	1	0.025	100	0.039	4.472	100Percent Type B	IN5740-143	Outlet	No Redirection
IN5740-143	3	3	0.008	0	0.039	4.472	100Percent Type B	IN5740-143	Outlet	Pervious Area to Outlet
IN5740-144	1	1	0.081	100	0.048	21.097	100Percent Type B	IN5740-144	Outlet	No Redirection
IN5740-144	2	2	0.062	100	0.048	21.097	100Percent Type B	IN5740-144	SubCatchment 3	Impervious Runoff to Pervious
IN5740-144	3	3	0.073	0	0.048	21.097	100Percent Type B	IN5740-144	Outlet	Pervious Area to Outlet
AS5740-145	1	1	0.045	100	0.049	30.969	100Percent Type B	AS5740-145	Outlet	No Redirection
AS5740-145	3	3	0.011	0	0.049	30.969	100Percent Type B	AS5740-145	Outlet	Pervious Area to Outlet
AS5740-147			0	0	0	0	No Pervious Area	AS5740-147	SubCatchment 1	Inactive
IN5740-148	1	1	0.311	100	0.053	23.102	100Percent Type B	IN5740-148	Outlet	No Redirection
IN5740-148	2	2	0.01	100	0.053	23.102	100Percent Type B	IN5740-148	SubCatchment 3	Impervious Runoff to Pervious
IN5740-148	3	3	0.137	0	0.053	23.102	100Percent Type B	IN5740-148	Outlet	Pervious Area to Outlet
IN5740-149	1	1	0.476	100	0.04	24.243	100Percent Type B	IN5740-149	Outlet	No Redirection
IN5740-149	2	2	0.239	100	0.04	24.243	100Percent Type B	IN5740-149	SubCatchment 3	Impervious Runoff to Pervious
IN5740-149	3	3	0.682	0	0.04	24.243	100Percent Type B	IN5740-149	Outlet	Pervious Area to Outlet
IN5740-153	1	1	0.013	100	0.044	7.003	100Percent Type B	IN5740-153	Outlet	No Redirection
IN5740-153	2	2	0.011	100	0.044	7.003	100Percent Type B	IN5740-153	SubCatchment 3	Impervious Runoff to Pervious
IN5740-153	3	3	0.012	0	0.044	7.003	100Percent Type B	IN5740-153	Outlet	Pervious Area to Outlet
IN5642-061	1	1	0.545	100	0.025	11.832	10B90C	IN5642-061	Outlet	No Redirection
IN5642-061	2	2	0.317	100	0.025	11.832	10B90C	IN5642-061	SubCatchment 3	Impervious Runoff to Pervious
IN5642-061	3	3	0.588	0	0.025	11.832	10B90C	IN5642-061	Outlet	Pervious Area to Outlet
AS5642-063			0	0	0	0	No Pervious Area	AS5642-063	SubCatchment 1	Inactive
AS5642-064	1	1	1.166	100	0.013	15.108	60B40C	AS5642-064	Outlet	No Redirection
AS5642-064	2	2	1.517	100	0.013	15.108	60B40C	AS5642-064	SubCatchment 3	Impervious Runoff to Pervious
AS5642-064	3	3	3.074	0	0.013	15.108	60B40C	AS5642-064	Outlet	Pervious Area to Outlet
AS5642-067	1	1	0.375	100	0.03	9.434	70B30C	AS5642-067	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5642-067	2	2	0.167	100	0.03	9.434	70B30C	AS5642-067	SubCatchment 3	Impervious Runoff to Pervious
AS5642-067	3	3	0.231	0	0.03	9.434	70B30C	AS5642-067	Outlet	Pervious Area to Outlet
AS5642-069	1	1	0.056	100	0.009	10.457	100Percent Type B	AS5642-069	Outlet	No Redirection
AS5642-069	2	2	0.005	100	0.009	10.457	100Percent Type B	AS5642-069	SubCatchment 3	Impervious Runoff to Pervious
AS5642-069	3	3	0.018	0	0.009	10.457	100Percent Type B	AS5642-069	Outlet	Pervious Area to Outlet
AS5543-134			0	0	0	0	No Pervious Area	AS5543-134	SubCatchment 1	Inactive
CB5543-135	1	1	0.923	100	0.019	17.334	100Percent Type D	CB5543-135	Outlet	No Redirection
CB5543-135	2	2	0.436	100	0.019	17.334	100Percent Type D	CB5543-135	SubCatchment 3	Impervious Runoff to Pervious
CB5543-135	3	3	0.366	0	0.019	17.334	100Percent Type D	CB5543-135	Outlet	Pervious Area to Outlet
AS5544-067			0	0	0	0	No Pervious Area	AS5544-067	SubCatchment 1	Inactive
CB5544-068	1	1	0.442	100	0.033	31.39	100Percent Type D	CB5544-068	Outlet	No Redirection
CB5544-068	2	2	0.062	100	0.033	31.39	100Percent Type D	CB5544-068	SubCatchment 3	Impervious Runoff to Pervious
CB5544-068	3	3	0.27	0	0.033	31.39	100Percent Type D	CB5544-068	Outlet	Pervious Area to Outlet
AS5544-071	1	1	0.927	100	0.019	31.234	100Percent Type D	AS5544-071	Outlet	No Redirection
AS5544-071	2	2	0.845	100	0.019	31.234	100Percent Type D	AS5544-071	SubCatchment 3	Impervious Runoff to Pervious
AS5544-071	3	3	0.124	0	0.019	31.234	100Percent Type D	AS5544-071	Outlet	Pervious Area to Outlet
AS5544-074	1	1	0.818	100	0.012	21.873	100Percent Type D	AS5544-074	Outlet	No Redirection
AS5544-074	3	3	0.098	0	0.012	21.873	100Percent Type D	AS5544-074	Outlet	Pervious Area to Outlet
AS5544-077			0	0	0	0	No Pervious Area	AS5544-077	SubCatchment 1	Inactive
IN5546-032	1	1	0.285	100	0.037	28.353	20B80C	IN5546-032	Outlet	No Redirection
IN5546-032	2	2	0.104	100	0.037	28.353	20B80C	IN5546-032	SubCatchment 3	Impervious Runoff to Pervious
IN5546-032	3	3	0.133	0	0.037	28.353	20B80C	IN5546-032	Outlet	Pervious Area to Outlet
IN5546-034	1	1	0.754	100	0.031	33.407	10B90C	IN5546-034	Outlet	No Redirection
IN5546-034	2	2	0.341	100	0.031	33.407	10B90C	IN5546-034	SubCatchment 3	Impervious Runoff to Pervious
IN5546-034	3	3	3.429	0	0.031	33.407	10B90C	IN5546-034	Outlet	Pervious Area to Outlet
AS5546-039	1	1	0.594	100	0.021	20.836	100Percent Type B	AS5546-039	Outlet	No Redirection
AS5546-039	2	2	0.438	100	0.021	20.836	100Percent Type B	AS5546-039	SubCatchment 3	Impervious Runoff to Pervious
AS5546-039	3	3	0.658	0	0.021	20.836	100Percent Type B	AS5546-039	Outlet	Pervious Area to Outlet
IN5546-048	1	1	1.287	100	0.011	31.91	30B70C	IN5546-048	Outlet	No Redirection
IN5546-048	2	2	0.247	100	0.011	31.91	30B70C	IN5546-048	SubCatchment 3	Impervious Runoff to Pervious
IN5546-048	3	3	0.952	0	0.011	31.91	30B70C	IN5546-048	Outlet	Pervious Area to Outlet
AS5546-050			0	0	0	0	No Pervious Area	AS5546-050	SubCatchment 1	Inactive
IN5546-051	1	1	1.792	100	0.02	21.724	100Percent Type B	IN5546-051	Outlet	No Redirection
IN5546-051	2	2	0.405	100	0.02	21.724	100Percent Type B	IN5546-051	SubCatchment 3	Impervious Runoff to Pervious
IN5546-051	3	3	0.666	0	0.02	21.724	100Percent Type B	IN5546-051	Outlet	Pervious Area to Outlet
AS5645-039			0	0	0	0	No Pervious Area	AS5645-039	SubCatchment 1	Inactive
AS5645-040	1	1	0.701	100	0.015	27.961	50B50D	AS5645-040	Outlet	No Redirection
AS5645-040	2	2	0.748	100	0.015	27.961	50B50D	AS5645-040	SubCatchment 3	Impervious Runoff to Pervious
AS5645-040	3	3	1.145	0	0.015	27.961	50B50D	AS5645-040	Outlet	Pervious Area to Outlet
AS5645-042	1	1	2.283	100	0.016	29.678	50B50D	AS5645-042	Outlet	No Redirection
AS5645-042	2	2	1.661	100	0.016	29.678	50B50D	AS5645-042	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5645-042	3	3	2.31	0	0.016	29.678	50B50D	AS5645-042	Outlet	Pervious Area to Outlet
AE5547-023			0	0	0	0	No Pervious Area	AE5547-023	SubCatchment 1	Inactive
IN5544-082	1	1	1.572	100	0.008	25.83	100Percent Type D	IN5544-082	Outlet	No Redirection
IN5544-082	2	2	0.867	100	0.008	25.83	100Percent Type D	IN5544-082	SubCatchment 3	Impervious Runoff to Pervious
IN5544-082	3	3	0.846	0	0.008	25.83	100Percent Type D	IN5544-082	Outlet	Pervious Area to Outlet
AS5639-081		1	0	0	0	0	No Pervious Area	AS5639-081	Outlet	Inactive
IN5843-071	1	1	0.354	100	0.015	102.644	60C40D	IN5843-071	Outlet	No Redirection
IN5843-071	2	2	0.218	100	0.015	102.644	60C40D	IN5843-071	SubCatchment 3	Impervious Runoff to Pervious
IN5843-071	3	3	0.588	0	0.015	102.644	60C40D	IN5843-071	Outlet	Pervious Area to Outlet
AS5844-001			0	0	0	0	No Pervious Area	AS5844-001	SubCatchment 1	Inactive
AE5844-002			0	0	0	0	No Pervious Area	AE5844-002	SubCatchment 1	Inactive
IN5843-076	1	1	0.262	100	0.012	73.084	100Percent Type D	IN5843-076	Outlet	No Redirection
IN5843-076	2	2	0.15	100	0.012	73.084	100Percent Type D	IN5843-076	SubCatchment 3	Impervious Runoff to Pervious
IN5843-076	3	3	0.322	0	0.012	73.084	100Percent Type D	IN5843-076	Outlet	Pervious Area to Outlet
IN5843-077	1	1	0.117	100	0.025	31.329	100Percent Type D	IN5843-077	Outlet	No Redirection
IN5843-077	2	2	0.046	100	0.025	31.329	100Percent Type D	IN5843-077	SubCatchment 3	Impervious Runoff to Pervious
IN5843-077	3	3	0.106	0	0.025	31.329	100Percent Type D	IN5843-077	Outlet	Pervious Area to Outlet
AS5843-079	1	1	0.418	100	0.031	83.219	60C40D	AS5843-079	Outlet	No Redirection
AS5843-079	2	2	0.221	100	0.031	83.219	60C40D	AS5843-079	SubCatchment 3	Impervious Runoff to Pervious
AS5843-079	3	3	0.348	0	0.031	83.219	60C40D	AS5843-079	Outlet	Pervious Area to Outlet
CB5843-082	1	1	0.415	100	0.007	115.038	100Percent Type D	CB5843-082	Outlet	No Redirection
CB5843-082	2	2	0.412	100	0.007	115.038	100Percent Type D	CB5843-082	SubCatchment 3	Impervious Runoff to Pervious
CB5843-082	3	3	0.853	0	0.007	115.038	100Percent Type D	CB5843-082	Outlet	Pervious Area to Outlet
IN5843-083	1	1	0.592	100	0.035	114.235	80C20D	IN5843-083	Outlet	No Redirection
IN5843-083	2	2	0.378	100	0.035	114.235	80C20D	IN5843-083	SubCatchment 3	Impervious Runoff to Pervious
IN5843-083	3	3	0.544	0	0.035	114.235	80C20D	IN5843-083	Outlet	Pervious Area to Outlet
CB5843-084	1	1	0.248	100	0.013	66.735	90C10D	CB5843-084	Outlet	No Redirection
CB5843-084	2	2	0.205	100	0.013	66.735	90C10D	CB5843-084	SubCatchment 3	Impervious Runoff to Pervious
CB5843-084	3	3	0.543	0	0.013	66.735	90C10D	CB5843-084	Outlet	Pervious Area to Outlet
IN5843-089	1	1	0.066	100	0.026	29.631	100Percent Type D	IN5843-089	Outlet	No Redirection
IN5843-089	2	2	0.022	100	0.026	29.631	100Percent Type D	IN5843-089	SubCatchment 3	Impervious Runoff to Pervious
IN5843-089	3	3	0.045	0	0.026	29.631	100Percent Type D	IN5843-089	Outlet	Pervious Area to Outlet
IN5743-073	1	1	0.375	100	0.008	89.064	100Percent Type D	IN5743-073	Outlet	No Redirection
IN5743-073	2	2	0.198	100	0.008	89.064	100Percent Type D	IN5743-073	SubCatchment 3	Impervious Runoff to Pervious
IN5743-073	3	3	0.377	0	0.008	89.064	100Percent Type D	IN5743-073	Outlet	Pervious Area to Outlet
AS5743-077	1	1	0.889	100	0.007	107.133	100Percent Type D	AS5743-077	Outlet	No Redirection
AS5743-077	2	2	0.104	100	0.007	107.133	100Percent Type D	AS5743-077	SubCatchment 3	Impervious Runoff to Pervious
AS5743-077	3	3	0.265	0	0.007	107.133	100Percent Type D	AS5743-077	Outlet	Pervious Area to Outlet
CB5743-080	1	1	0.786	100	0.009	110.428	100Percent Type D	CB5743-080	Outlet	No Redirection
CB5743-080	2	2	0.097	100	0.009	110.428	100Percent Type D	CB5743-080	SubCatchment 3	Impervious Runoff to Pervious
CB5743-080	3	3	0.277	0	0.009	110.428	100Percent Type D	CB5743-080	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
CB5742-069	1	1	1.106	100	0.026	155.728	70C30D	CB5742-069	Outlet	No Redirection
CB5742-069	2	2	0.42	100	0.026	155.728	70C30D	CB5742-069	SubCatchment 3	Impervious Runoff to Pervious
CB5742-069	3	3	0.607	0	0.026	155.728	70C30D	CB5742-069	Outlet	Pervious Area to Outlet
IN5742-070	1	1	0.162	100	0.035	65.058	20B80D	IN5742-070	Outlet	No Redirection
IN5742-070	2	2	0.108	100	0.035	65.058	20B80D	IN5742-070	SubCatchment 3	Impervious Runoff to Pervious
IN5742-070	3	3	0.205	0	0.035	65.058	20B80D	IN5742-070	Outlet	Pervious Area to Outlet
IN5742-075	1	1	0.13	100	0.01	38.339	100Percent Type D	IN5742-075	Outlet	No Redirection
IN5742-075	2	2	0.279	100	0.01	38.339	100Percent Type D	IN5742-075	SubCatchment 3	Impervious Runoff to Pervious
IN5742-075	3	3	0.063	0	0.01	38.339	100Percent Type D	IN5742-075	Outlet	Pervious Area to Outlet
IN5742-076	1	1	1.214	100	0.023	198.499	40B60C	IN5742-076	Outlet	No Redirection
IN5742-076	2	2	1.008	100	0.023	198.499	40B60C	IN5742-076	SubCatchment 3	Impervious Runoff to Pervious
IN5742-076	3	3	2.242	0	0.023	198.499	40B60C	IN5742-076	Outlet	Pervious Area to Outlet
IN5742-082	1	1	0.655	100	0.007	62.446	100Percent Type D	IN5742-082	Outlet	No Redirection
IN5742-082	2	2	0.243	100	0.007	62.446	100Percent Type D	IN5742-082	SubCatchment 3	Impervious Runoff to Pervious
IN5742-082	3	3	0.019	0	0.007	62.446	100Percent Type D	IN5742-082	Outlet	Pervious Area to Outlet
IN5742-085	1	1	0.44	100	0.017	56.821	100Percent Type D	IN5742-085	Outlet	No Redirection
IN5742-085	2	2	0.003	100	0.017	56.821	100Percent Type D	IN5742-085	SubCatchment 3	Impervious Runoff to Pervious
IN5742-085	3	3	0.011	0	0.017	56.821	100Percent Type D	IN5742-085	Outlet	Pervious Area to Outlet
IN5742-087	1	1	0.119	100	0.007	47.309	100Percent Type D	IN5742-087	Outlet	No Redirection
IN5742-087	2	2	0.07	100	0.007	47.309	100Percent Type D	IN5742-087	SubCatchment 3	Impervious Runoff to Pervious
IN5742-087	3	3	0.005	0	0.007	47.309	100Percent Type D	IN5742-087	Outlet	Pervious Area to Outlet
AS5644-043	1	1	0.128	100	0.013	54.199	100Percent Type D	AS5644-043	Outlet	No Redirection
AS5644-043	2	2	0.039	100	0.013	54.199	100Percent Type D	AS5644-043	SubCatchment 3	Impervious Runoff to Pervious
AS5644-043	3	3	0.121	0	0.013	54.199	100Percent Type D	AS5644-043	Outlet	Pervious Area to Outlet
CB5644-044	1	1	0.219	100	0.01	105.948	100Percent Type D	CB5644-044	Outlet	No Redirection
CB5644-044	2	2	0.157	100	0.01	105.948	100Percent Type D	CB5644-044	SubCatchment 3	Impervious Runoff to Pervious
CB5644-044	3	3	0.338	0	0.01	105.948	100Percent Type D	CB5644-044	Outlet	Pervious Area to Outlet
AS5644-045			0	0	0	0	No Pervious Area	AS5644-045	SubCatchment 1	Inactive
IN5644-046	1	1	0.135	100	0.013	57.182	100Percent Type D	IN5644-046	Outlet	No Redirection
IN5644-046	2	2	0.082	100	0.013	57.182	100Percent Type D	IN5644-046	SubCatchment 3	Impervious Runoff to Pervious
IN5644-046	3	3	0.102	0	0.013	57.182	100Percent Type D	IN5644-046	Outlet	Pervious Area to Outlet
AE5644-048			0	0	0	0	No Pervious Area	AE5644-048	SubCatchment 1	Inactive
CB5644-049	1	1	0.098	100	0.018	60.386	100Percent Type D	CB5644-049	Outlet	No Redirection
CB5644-049	2	2	0.012	100	0.018	60.386	100Percent Type D	CB5644-049	SubCatchment 3	Impervious Runoff to Pervious
CB5644-049	3	3	0.067	0	0.018	60.386	100Percent Type D	CB5644-049	Outlet	Pervious Area to Outlet
AE5644-050			0	0	0	0	No Pervious Area	AE5644-050	SubCatchment 1	Inactive
IN5644-051	1	1	0.375	100	0.007	135.196	100Percent Type D	IN5644-051	Outlet	No Redirection
IN5644-051	2	2	0.434	100	0.007	135.196	100Percent Type D	IN5644-051	SubCatchment 3	Impervious Runoff to Pervious
IN5644-051	3	3	0.687	0	0.007	135.196	100Percent Type D	IN5644-051	Outlet	Pervious Area to Outlet
CB5744-074	1	1	0.506	100	0.015	88.44	100Percent Type D	CB5744-074	Outlet	No Redirection
CB5744-074	2	2	0.343	100	0.015	88.44	100Percent Type D	CB5744-074	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
CB5744-074	3	3	0.763	0	0.015	88.44	100Percent Type D	CB5744-074	Outlet	Pervious Area to Outlet
AE5744-075			0	0	0	0	No Pervious Area	AE5744-075	SubCatchment 1	Inactive
IN5641-090	1	1	0.191	100	0.018	28.839	100Percent Type D	IN5641-090	Outlet	No Redirection
IN5641-090	2	2	0.125	100	0.018	28.839	100Percent Type D	IN5641-090	SubCatchment 3	Impervious Runoff to Pervious
IN5641-090	3	3	0.126	0	0.018	28.839	100Percent Type D	IN5641-090	Outlet	Pervious Area to Outlet
CB5641-091	1	1	0.152	100	0.015	32.371	100Percent Type D	CB5641-091	Outlet	No Redirection
CB5641-091	2	2	0.023	100	0.015	32.371	100Percent Type D	CB5641-091	SubCatchment 3	Impervious Runoff to Pervious
CB5641-091	3	3	0.121	0	0.015	32.371	100Percent Type D	CB5641-091	Outlet	Pervious Area to Outlet
CB5641-093	1	1	1.503	100	0.013	27.843	50B50D	CB5641-093	Outlet	No Redirection
CB5641-093	2	2	0.868	100	0.013	27.843	50B50D	CB5641-093	SubCatchment 3	Impervious Runoff to Pervious
CB5641-093	3	3	2.982	0	0.013	27.843	50B50D	CB5641-093	Outlet	Pervious Area to Outlet
CB5641-102	1	1	0.746	100	0.014	21.651	90B10D	CB5641-102	Outlet	No Redirection
CB5641-102	2	2	0.468	100	0.014	21.651	90B10D	CB5641-102	SubCatchment 3	Impervious Runoff to Pervious
CB5641-102	3	3	0.698	0	0.014	21.651	90B10D	CB5641-102	Outlet	Pervious Area to Outlet
AS5644-055	1	1	6.139	100	0.006	26.621	40B60D	AS5644-055	Outlet	No Redirection
AS5644-055	2	2	1.62	100	0.006	26.621	40B60D	AS5644-055	SubCatchment 3	Impervious Runoff to Pervious
AS5644-055	3	3	5.186	0	0.006	26.621	40B60D	AS5644-055	Outlet	Pervious Area to Outlet
IN5642-073	1	1	0.524	100	0.015	11.046	100Percent Type B	IN5642-073	Outlet	No Redirection
IN5642-073	2	2	0.418	100	0.015	11.046	100Percent Type B	IN5642-073	SubCatchment 3	Impervious Runoff to Pervious
IN5642-073	3	3	0.604	0	0.015	11.046	100Percent Type B	IN5642-073	Outlet	Pervious Area to Outlet
IN5642-075	1	1	1.221	100	0.007	14.621	70B30D	IN5642-075	Outlet	No Redirection
IN5642-075	2	2	1.098	100	0.007	14.621	70B30D	IN5642-075	SubCatchment 3	Impervious Runoff to Pervious
IN5642-075	3	3	2.353	0	0.007	14.621	70B30D	IN5642-075	Outlet	Pervious Area to Outlet
AS5642-079	1	1	1	100	0.018	4.31	100Percent Type B	AS5642-079	Outlet	No Redirection
AS5642-079	2	2	0.457	100	0.018	4.31	100Percent Type B	AS5642-079	SubCatchment 3	Impervious Runoff to Pervious
AS5642-079	3	3	0.382	0	0.018	4.31	100Percent Type B	AS5642-079	Outlet	Pervious Area to Outlet
CB5741-035	1	1	0.333	100	0.017	18.771	100Percent Type B	CB5741-035	Outlet	No Redirection
CB5741-035	2	2	0.042	100	0.017	18.771	100Percent Type B	CB5741-035	SubCatchment 3	Impervious Runoff to Pervious
CB5741-035	3	3	0.121	0	0.017	18.771	100Percent Type B	CB5741-035	Outlet	Pervious Area to Outlet
AS5639-082			0	0	0	0	No Pervious Area	AS5639-082	SubCatchment 1	Inactive
AS5546-055			0	0	0	0	No Pervious Area	AS5546-055	SubCatchment 1	Inactive
AS5546-056	1	1	0.452	100	0.013	24.464	100Percent Type B	AS5546-056	Outlet	No Redirection
AS5546-056	3	3	0.004	0	0.013	24.464	100Percent Type B	AS5546-056	Outlet	Pervious Area to Outlet
AS5546-059	1	1	0.127	100	0.016	13.648	100Percent Type B	AS5546-059	Outlet	No Redirection
AS5546-059	3	3	0.019	0	0.016	13.648	100Percent Type B	AS5546-059	Outlet	Pervious Area to Outlet
AS5545-027	1	1	0.646	100	0.009	32.898	100Percent Type B	AS5545-027	Outlet	No Redirection
AS5545-027	3	3	0.011	0	0.009	32.898	100Percent Type B	AS5545-027	Outlet	Pervious Area to Outlet
AS5545-028	1	1	0.702	100	0.009	23.242	100Percent Type B	AS5545-028	Outlet	No Redirection
AS5545-028	2	2	0.021	100	0.009	23.242	100Percent Type B	AS5545-028	SubCatchment 3	Impervious Runoff to Pervious
AS5545-028	3	3	0.122	0	0.009	23.242	100Percent Type B	AS5545-028	Outlet	Pervious Area to Outlet
AS5545-032	1	1	0.485	100	0.016	29.247	100Percent Type B	AS5545-032	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5545-032	2	2	0.011	100	0.016	29.247	100Percent Type B	AS5545-032	SubCatchment 3	Impervious Runoff to Pervious
AS5545-032	3	3	0.066	0	0.016	29.247	100Percent Type B	AS5545-032	Outlet	Pervious Area to Outlet
IN5545-033	1	1	0.115	100	0.015	18.458	100Percent Type B	IN5545-033	Outlet	No Redirection
IN5545-033	3	3	0.004	0	0.015	18.458	100Percent Type B	IN5545-033	Outlet	Pervious Area to Outlet
IN5545-035	1	1	0.011	100	0.041	4.705	No Pervious Area	IN5545-035	Outlet	No Redirection
IN5545-036	1	1	0.115	100	0.035	12.455	100Percent Type B	IN5545-036	Outlet	No Redirection
IN5545-037	1	1	0.722	100	0.014	18.678	100Percent Type B	IN5545-037	Outlet	No Redirection
IN5545-037	2	2	0.147	100	0.014	18.678	100Percent Type B	IN5545-037	SubCatchment 3	Impervious Runoff to Pervious
IN5545-037	3	3	0.165	0	0.014	18.678	100Percent Type B	IN5545-037	Outlet	Pervious Area to Outlet
CB5644-057	1	1	0.042	100	0.025	4.87	100Percent Type D	CB5644-057	Outlet	No Redirection
CB5644-057	2	2	0.006	100	0.025	4.87	100Percent Type D	CB5644-057	SubCatchment 3	Impervious Runoff to Pervious
CB5644-057	3	3	0.009	0	0.025	4.87	100Percent Type D	CB5644-057	Outlet	Pervious Area to Outlet
AE5644-058			0	0	0	0	No Pervious Area	AE5644-058	SubCatchment 1	Inactive
AS5644-060	1	1	0.795	100	0.021	34.988	100Percent Type B	AS5644-060	Outlet	No Redirection
AS5644-060	2	2	0.232	100	0.021	34.988	100Percent Type B	AS5644-060	SubCatchment 3	Impervious Runoff to Pervious
AS5644-060	3	3	0.615	0	0.021	34.988	100Percent Type B	AS5644-060	Outlet	Pervious Area to Outlet
AS5644-063	1	1	0.152	100	0.014	12.873	100Percent Type B	AS5644-063	Outlet	No Redirection
AS5644-063	3	3	0.009	0	0.014	12.873	100Percent Type B	AS5644-063	Outlet	Pervious Area to Outlet
AS5644-064	1	1	1.379	100	0.021	21.175	100Percent Type B	AS5644-064	Outlet	No Redirection
AS5644-064	2	2	0.812	100	0.021	21.175	100Percent Type B	AS5644-064	SubCatchment 3	Impervious Runoff to Pervious
AS5644-064	3	3	1.442	0	0.021	21.175	100Percent Type B	AS5644-064	Outlet	Pervious Area to Outlet
IN5541-053	1	1	3.563	100	0.021	23.16	40B60D	IN5541-053	Outlet	No Redirection
IN5541-053	2	2	1.69	100	0.021	23.16	40B60D	IN5541-053	SubCatchment 3	Impervious Runoff to Pervious
IN5541-053	3	3	4.784	0	0.021	23.16	40B60D	IN5541-053	Outlet	Pervious Area to Outlet
IN5540-042	1	1	1.222	100	0.007	23.823	100Percent Type D	IN5540-042	Outlet	No Redirection
IN5540-042	2	2	0.456	100	0.007	23.823	100Percent Type D	IN5540-042	SubCatchment 3	Impervious Runoff to Pervious
IN5540-042	3	3	2.216	0	0.007	23.823	100Percent Type D	IN5540-042	Outlet	Pervious Area to Outlet
AS5638-079			0	0	0	0	No Pervious Area	AS5638-079	SubCatchment 1	Inactive
CB5638-082	1	1	0.986	100	0.012	27.475	100Percent Type D	CB5638-082	Outlet	No Redirection
CB5638-082	2	2	0.007	100	0.012	27.475	100Percent Type D	CB5638-082	SubCatchment 3	Impervious Runoff to Pervious
CB5638-082	3	3	1.478	0	0.012	27.475	100Percent Type D	CB5638-082	Outlet	Pervious Area to Outlet
AS5637-044			0	0	0	0	No Pervious Area	AS5637-044	SubCatchment 1	Inactive
CB5637-045	1	1	0.841	100	0.007	17.815	100Percent Type D	CB5637-045	Outlet	No Redirection
CB5637-045	2	2	0.049	100	0.007	17.815	100Percent Type D	CB5637-045	SubCatchment 3	Impervious Runoff to Pervious
CB5637-045	3	3	1.389	0	0.007	17.815	100Percent Type D	CB5637-045	Outlet	Pervious Area to Outlet
AS5540-047	1	1	0.623	100	0.013	19.089	100Percent Type D	AS5540-047	Outlet	No Redirection
AS5540-047	3	3	0.226	0	0.013	19.089	100Percent Type D	AS5540-047	Outlet	Pervious Area to Outlet
AS5540-048	1	1	2.024	100	0.013	20.378	100Percent Type D	AS5540-048	Outlet	No Redirection
AS5540-048	3	3	0.97	0	0.013	20.378	100Percent Type D	AS5540-048	Outlet	Pervious Area to Outlet
AS5638-085	1	1	0.78	100	0.005	33.57	100Percent Type D	AS5638-085	Outlet	No Redirection
AS5638-085	2	2	0.769	100	0.005	33.57	100Percent Type D	AS5638-085	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5638-085	3	3	0.508	0	0.005	33.57	100Percent Type D	AS5638-085	Outlet	Pervious Area to Outlet
AS5638-086			0	0	0	0	No Pervious Area	AS5638-086	SubCatchment 1	Inactive
IN5539-007	1	1	0.003	100	0.102	13.58	100Percent Type D	IN5539-007	Outlet	No Redirection
IN5539-007	3	3	0.003	0	0.102	13.58	100Percent Type D	IN5539-007	Outlet	Pervious Area to Outlet
IN5639-085	1	1	0.003	100	0.028	12.415	100Percent Type D	IN5639-085	Outlet	No Redirection
AS5639-086			0	0	0	0	No Pervious Area	AS5639-086	SubCatchment 1	Inactive
AS5637-053	1	1	4.204	100	0.016	26.581	40B60D	AS5637-053	Outlet	No Redirection
AS5637-053	2	2	2.579	100	0.016	26.581	40B60D	AS5637-053	SubCatchment 3	Impervious Runoff to Pervious
AS5637-053	3	3	7.878	0	0.016	26.581	40B60D	AS5637-053	Outlet	Pervious Area to Outlet
AS5842-002	1	1	1.046	100	0.021	156.673	60B40C	AS5842-002	Outlet	No Redirection
AS5842-002	2	2	0.241	100	0.021	156.673	60B40C	AS5842-002	SubCatchment 3	Impervious Runoff to Pervious
AS5842-002	3	3	0.566	0	0.021	156.673	60B40C	AS5842-002	Outlet	Pervious Area to Outlet
IN5843-090	1	1	0.12	100	0.013	48.254	100Percent Type D	IN5843-090	Outlet	No Redirection
IN5843-090	2	2	0.091	100	0.013	48.254	100Percent Type D	IN5843-090	SubCatchment 3	Impervious Runoff to Pervious
IN5843-090	3	3	0.111	0	0.013	48.254	100Percent Type D	IN5843-090	Outlet	Pervious Area to Outlet
AS5643-020	1	1	0.091	100	0.015	43.432	80B20C	AS5643-020	Outlet	No Redirection
AS5643-020	3	3	0.191	0	0.015	43.432	80B20C	AS5643-020	Outlet	Pervious Area to Outlet
AS5643-026			0	0	0	0	No Pervious Area	AS5643-026	SubCatchment 1	Inactive
SS5547-017	1	1	0.741	100	0.003	5.948	60B40C	SS5547-017	Outlet	No Redirection
SS5547-017	2	2	0.001	100	0.003	5.948	60B40C	SS5547-017	Outlet	Impervious Runoff to Pervious
SS5843-072			0	0	0	0	No Pervious Area	SS5843-072	SubCatchment 1	Inactive
AS5736-003	1	1	0.728	100	0.01	24.492	100Percent Type D	AS5736-003	Outlet	No Redirection
AS5736-005	1	1	0.102	100	0.027	7.702	30B70D	AS5736-005	Outlet	No Redirection
AS5736-005	3	3	0.066	0	0.027	7.702	30B70D	AS5736-005	Outlet	Pervious Area to Outlet
IN5735-031	1	1	0.903	100	0.032	25.441	100Percent Type D	IN5735-031	Outlet	No Redirection
IN5735-031	2	2	0.053	100	0.032	25.441	100Percent Type D	IN5735-031	SubCatchment 3	Impervious Runoff to Pervious
IN5735-031	3	3	0.585	0	0.032	25.441	100Percent Type D	IN5735-031	Outlet	Pervious Area to Outlet
AS5735-038	1	1	0.319	100	0.008	24.046	100Percent Type D	AS5735-038	Outlet	No Redirection
AS5735-038	3	3	0.064	0	0.008	24.046	100Percent Type D	AS5735-038	Outlet	Pervious Area to Outlet
AS5736-042	1	1	0.649	100	0.01	20.631	100Percent Type D	AS5736-042	Outlet	No Redirection
AS5736-042	3	3	0.007	0	0.01	20.631	100Percent Type D	AS5736-042	Outlet	Pervious Area to Outlet
AS5736-043	1	1	0.687	100	0.011	17.469	100Percent Type D	AS5736-043	Outlet	No Redirection
AS5736-043	3	3	0.009	0	0.011	17.469	100Percent Type D	AS5736-043	Outlet	Pervious Area to Outlet
AS5735-041	1	1	5.896	100	0.005	19.971	30B70D	AS5735-041	Outlet	No Redirection
AS5735-041	2	2	3.393	100	0.005	19.971	30B70D	AS5735-041	SubCatchment 3	Impervious Runoff to Pervious
AS5735-041	3	3	11.669	0	0.005	19.971	30B70D	AS5735-041	Outlet	Pervious Area to Outlet
AS5735-042	1	1	0.294	100	0.017	29.711	100Percent Type D	AS5735-042	Outlet	No Redirection
AS5735-043	1	1	0.536	100	0.037	32.302	No Pervious Area	AS5735-043	Outlet	No Redirection
IN5635-004	1	1	4.571	100	0.019	33.709	100Percent Type D	IN5635-004	Outlet	No Redirection
IN5635-004	2	2	0.007	100	0.019	33.709	100Percent Type D	IN5635-004	SubCatchment 3	Impervious Runoff to Pervious
IN5635-004	3	3	0.694	0	0.019	33.709	100Percent Type D	IN5635-004	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5735-044	1	1	8.457	100	0.004	29.328	100Percent Type D	AS5735-044	Outlet	No Redirection
AS5735-044	3	3	1.587	0	0.004	29.328	100Percent Type D	AS5735-044	Outlet	Pervious Area to Outlet
AS5634-009	1	1	15.845	100	0.016	30.291	100Percent Type D	AS5634-009	Outlet	No Redirection
AS5634-009	2	2	0.01	100	0.016	30.291	100Percent Type D	AS5634-009	SubCatchment 3	Impervious Runoff to Pervious
AS5634-009	3	3	5.303	0	0.016	30.291	100Percent Type D	AS5634-009	Outlet	Pervious Area to Outlet
AS5635-013	1	1	0.293	100	0.008	23.785	No Pervious Area	AS5635-013	Outlet	No Redirection
AS5635-013	2	2	0.169	100	0.008	23.785	No Pervious Area	AS5635-013	Outlet	Impervious Runoff to Pervious
AS5635-014	1	1	0.311	100	0.012	24.287	100Percent Type D	AS5635-014	Outlet	No Redirection
AS5635-014	3	3	0.694	0	0.012	24.287	100Percent Type D	AS5635-014	Outlet	Pervious Area to Outlet
AS5635-019			0	0	0	0	No Pervious Area	AS5635-019	SubCatchment 1	Inactive
AS5635-020	1	1	0.371	100	0.01	26.626	100Percent Type D	AS5635-020	Outlet	No Redirection
AS5635-020	3	3	1.09	0	0.01	26.626	100Percent Type D	AS5635-020	Outlet	Pervious Area to Outlet
AS5635-024		1	0	100	0	0	10B90D	AS5635-024	Outlet	Inactive
AS5635-032	1	1	0.06	100	0.001	7.935	100Percent Type D	AS5635-032	Outlet	No Redirection
AS5635-032	3	3	0.006	0	0.001	7.935	100Percent Type D	AS5635-032	Outlet	Pervious Area to Outlet
AS5636-001	1	1	0.26	100	0.004	131.59	10B90D	AS5636-001	Outlet	No Redirection
AS5636-001	3	3	0.96	0	0.004	139.51	10B90D	AS5636-001	Outlet	Pervious Area to Outlet
AS5536-004			0	0	0	0	No Pervious Area	AS5536-004	SubCatchment 1	Inactive
AS5536-008	1	1	5.565	100	0.011	21.26	100Percent Type D	AS5536-008	Outlet	No Redirection
AS5536-008	2	2	0.001	100	0.011	21.26	100Percent Type D	AS5536-008	SubCatchment 3	Impervious Runoff to Pervious
AS5536-008	3	3	0.945	0	0.011	21.26	100Percent Type D	AS5536-008	Outlet	Pervious Area to Outlet
AS5535-001	1	1	1.457	100	0.013	31.511	70B30D	AS5535-001	Outlet	No Redirection
AS5535-001	2	2	0.004	100	0.013	31.511	70B30D	AS5535-001	SubCatchment 3	Impervious Runoff to Pervious
AS5535-001	3	3	0.318	0	0.013	31.511	70B30D	AS5535-001	Outlet	Pervious Area to Outlet
AS5535-006	1	1	1.223	100	0.018	15.742	100Percent Type B	AS5535-006	Outlet	No Redirection
AS5535-006	2	2	0.009	100	0.018	15.742	100Percent Type B	AS5535-006	SubCatchment 3	Impervious Runoff to Pervious
AS5535-006	3	3	0.231	0	0.018	15.742	100Percent Type B	AS5535-006	Outlet	Pervious Area to Outlet
AS5535-008	1	1	7.017	100	0.019	31.361	90B10D	AS5535-008	Outlet	No Redirection
AS5535-008	2	2	0.043	100	0.019	31.361	90B10D	AS5535-008	SubCatchment 3	Impervious Runoff to Pervious
AS5535-008	3	3	1.312	0	0.019	31.361	90B10D	AS5535-008	Outlet	Pervious Area to Outlet
AS5535-013	1	1	0.434	100	0.005	18.62	10B90D	AS5535-013	Outlet	No Redirection
AS5535-013	2	2	0.139	100	0.005	18.62	10B90D	AS5535-013	SubCatchment 3	Impervious Runoff to Pervious
AS5535-013	3	3	0.187	0	0.005	18.62	10B90D	AS5535-013	Outlet	Pervious Area to Outlet
AS5535-017	1	1	1.268	100	0.02	31.222	10B90D	AS5535-017	Outlet	No Redirection
AS5535-017	2	2	0.038	100	0.02	31.222	10B90D	AS5535-017	SubCatchment 3	Impervious Runoff to Pervious
AS5535-017	3	3	0.419	0	0.02	31.222	10B90D	AS5535-017	Outlet	Pervious Area to Outlet
AS5534-010	1	1	0.828	100	0.021	33.56	20B80D	AS5534-010	Outlet	No Redirection
AS5534-010	2	2	0.061	100	0.021	33.56	20B80D	AS5534-010	SubCatchment 3	Impervious Runoff to Pervious
AS5534-010	3	3	0.427	0	0.021	33.56	20B80D	AS5534-010	Outlet	Pervious Area to Outlet
AS5534-011	1	1	3.299	100	0.018	26.75	20B80D	AS5534-011	Outlet	No Redirection
AS5534-011	2	2	0.243	100	0.018	26.75	20B80D	AS5534-011	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5534-011	3	3	1.663	0	0.018	26.75	20B80D	AS5534-011	Outlet	Pervious Area to Outlet
AS5736-048	1	1	0.79	100	0.008	27.393	100Percent Type D	AS5736-048	Outlet	No Redirection
AS5736-048	3	3	0.001	0	0.008	27.393	100Percent Type D	AS5736-048	Outlet	Pervious Area to Outlet
AS5636-004	1	1	10.751	100	0.008	32.405	100Percent Type D	AS5636-004	Outlet	No Redirection
AS5636-004	3	3	3.601	0	0.008	32.405	100Percent Type D	AS5636-004	Outlet	Pervious Area to Outlet
AS5736-045	1	1	0.823	100	0.011	25.844	100Percent Type D	AS5736-045	Outlet	No Redirection
AS5736-045	3	3	0.459	0	0.011	25.844	100Percent Type D	AS5736-045	Outlet	Pervious Area to Outlet
CB5736-052	1	1	0.599	100	0.008	32.058	100Percent Type D	CB5736-052	Outlet	No Redirection
CB5736-052	3	3	0.187	0	0.008	32.058	100Percent Type D	CB5736-052	Outlet	Pervious Area to Outlet
AS5736-054	1	1	3.239	100	0.013	14.603	30B70D	AS5736-054	Outlet	No Redirection
AS5736-054	2	2	1.139	100	0.013	14.603	30B70D	AS5736-054	SubCatchment 3	Impervious Runoff to Pervious
AS5736-054	3	3	3.893	0	0.013	14.603	30B70D	AS5736-054	Outlet	Pervious Area to Outlet
AS5636-010	1	1	1.441	100	0.007	15.286	100Percent Type D	AS5636-010	Outlet	No Redirection
AS5636-010	3	3	0.498	0	0.007	15.286	100Percent Type D	AS5636-010	Outlet	Pervious Area to Outlet
IN5735-065	1	1	1.006	100	0.032	17.196	100Percent Type D	IN5735-065	Outlet	No Redirection
IN5735-065	3	3	0.23	0	0.032	17.196	100Percent Type D	IN5735-065	Outlet	Pervious Area to Outlet
AE5442-027			0	0	0	0	No Pervious Area	AE5442-027	SubCatchment 1	Inactive
IN5147-071	1	1	0.461	100	0.014	61.897	10C90D	IN5147-071	Outlet	No Redirection
IN5147-071	2	2	0.888	100	0.014	61.897	10C90D	IN5147-071	SubCatchment 3	Impervious Runoff to Pervious
IN5147-071	3	3	0.604	0	0.014	61.897	10C90D	IN5147-071	Outlet	Pervious Area to Outlet
IN5247-190	1	1	0.048	100	0.031	5.034	100Percent Type D	IN5247-190	Outlet	No Redirection
IN5247-190	3	3	0.015	0	0.031	5.034	100Percent Type D	IN5247-190	Outlet	Pervious Area to Outlet
IN5246-120	1	1	0.385	100	0.022	30.177	50C50D	IN5246-120	Outlet	No Redirection
IN5246-120	2	2	0.164	100	0.022	30.177	50C50D	IN5246-120	SubCatchment 3	Impervious Runoff to Pervious
IN5246-120	3	3	0.266	0	0.022	30.177	50C50D	IN5246-120	Outlet	Pervious Area to Outlet
IN5246-128	1	1	0.549	100	0.045	12.877	20C80D	IN5246-128	Outlet	No Redirection
IN5246-128	2	2	0.207	100	0.045	12.877	20C80D	IN5246-128	SubCatchment 3	Impervious Runoff to Pervious
IN5246-128	3	3	0.614	0	0.045	12.877	20C80D	IN5246-128	Outlet	Pervious Area to Outlet
IN5446-096	1	1	1.855	100	0.004	19.53	100Percent Type D	IN5446-096	Outlet	No Redirection
IN5446-096	2	2	2.107	100	0.004	19.53	100Percent Type D	IN5446-096	SubCatchment 3	Impervious Runoff to Pervious
IN5446-096	3	3	2.735	0	0.004	19.53	100Percent Type D	IN5446-096	Outlet	Pervious Area to Outlet
IN5246-139	1	1	0.467	100	0.032	22.057	50C50D	IN5246-139	Outlet	No Redirection
IN5246-139	2	2	0.433	100	0.032	22.057	50C50D	IN5246-139	SubCatchment 3	Impervious Runoff to Pervious
IN5246-139	3	3	0.48	0	0.032	22.057	50C50D	IN5246-139	Outlet	Pervious Area to Outlet
IN5246-141	1	1	0.358	100	0.015	24.211	50C50D	IN5246-141	Outlet	No Redirection
IN5246-141	2	2	0.519	100	0.015	24.211	50C50D	IN5246-141	SubCatchment 3	Impervious Runoff to Pervious
IN5246-141	3	3	0.567	0	0.015	24.211	50C50D	IN5246-141	Outlet	Pervious Area to Outlet
IN5246-143	1	1	0.747	100	0.009	17.465	100Percent Type D	IN5246-143	Outlet	No Redirection
IN5246-143	2	2	0.153	100	0.009	17.465	100Percent Type D	IN5246-143	SubCatchment 3	Impervious Runoff to Pervious
IN5246-143	3	3	0.571	0	0.009	17.465	100Percent Type D	IN5246-143	Outlet	Pervious Area to Outlet
IN5246-145	1	1	0.497	100	0.013	20.729	20C80D	IN5246-145	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5246-145	2	2	0.323	100	0.013	20.729	20C80D	IN5246-145	SubCatchment 3	Impervious Runoff to Pervious
IN5246-145	3	3	0.552	0	0.013	20.729	20C80D	IN5246-145	Outlet	Pervious Area to Outlet
IN5246-147	1	1	0.211	100	0.022	11.872	100Percent Type D	IN5246-147	Outlet	No Redirection
IN5246-147	2	2	0.025	100	0.022	11.872	100Percent Type D	IN5246-147	SubCatchment 3	Impervious Runoff to Pervious
IN5246-147	3	3	0.035	0	0.022	11.872	100Percent Type D	IN5246-147	Outlet	Pervious Area to Outlet
CB5246-152	1	1	0.21	100	0.01	15.006	50C50D	CB5246-152	Outlet	No Redirection
CB5246-152	2	2	0.005	100	0.01	15.006	50C50D	CB5246-152	SubCatchment 3	Impervious Runoff to Pervious
CB5246-152	3	3	0.041	0	0.01	15.006	50C50D	CB5246-152	Outlet	Pervious Area to Outlet
IN5246-155	1	1	0.433	100	0.038	30.004	100Percent Type C	IN5246-155	Outlet	No Redirection
IN5246-155	2	2	0.147	100	0.038	30.004	100Percent Type C	IN5246-155	SubCatchment 3	Impervious Runoff to Pervious
IN5246-155	3	3	0.19	0	0.038	30.004	100Percent Type C	IN5246-155	Outlet	Pervious Area to Outlet
IN5245-030	1	1	0.046	100	0.018	10.651	100Percent Type C	IN5245-030	Outlet	No Redirection
IN5245-030	2	2	0.041	100	0.018	10.651	100Percent Type C	IN5245-030	SubCatchment 3	Impervious Runoff to Pervious
IN5245-030	3	3	0.023	0	0.018	10.651	100Percent Type C	IN5245-030	Outlet	Pervious Area to Outlet
IN5245-031	1	1	0.463	100	0.051	23.14	100Percent Type C	IN5245-031	Outlet	No Redirection
IN5245-031	2	2	0.245	100	0.051	23.14	100Percent Type C	IN5245-031	SubCatchment 3	Impervious Runoff to Pervious
IN5245-031	3	3	0.285	0	0.051	23.14	100Percent Type C	IN5245-031	Outlet	Pervious Area to Outlet
IN5245-033	1	1	0.293	100	0.067	28.385	100Percent Type C	IN5245-033	Outlet	No Redirection
IN5245-033	2	2	0.168	100	0.067	28.385	100Percent Type C	IN5245-033	SubCatchment 3	Impervious Runoff to Pervious
IN5245-033	3	3	0.14	0	0.067	28.385	100Percent Type C	IN5245-033	Outlet	Pervious Area to Outlet
IN5245-034	1	1	0.028	100	0.016	11.543	100Percent Type C	IN5245-034	Outlet	No Redirection
IN5245-034	2	2	0.054	100	0.016	11.543	100Percent Type C	IN5245-034	SubCatchment 3	Impervious Runoff to Pervious
IN5245-034	3	3	0.005	0	0.016	11.543	100Percent Type C	IN5245-034	Outlet	Pervious Area to Outlet
IN5245-035	1	1	0.107	100	0.101	15.685	100Percent Type C	IN5245-035	Outlet	No Redirection
IN5245-035	2	2	0.174	100	0.101	15.685	100Percent Type C	IN5245-035	SubCatchment 3	Impervious Runoff to Pervious
IN5245-035	3	3	0.265	0	0.101	15.685	100Percent Type C	IN5245-035	Outlet	Pervious Area to Outlet
IN5245-039	1	1	0.008	100	0.142	4.259	100Percent Type C	IN5245-039	Outlet	No Redirection
IN5245-039	3	3	0.006	0	0.142	4.259	100Percent Type C	IN5245-039	Outlet	Pervious Area to Outlet
IN5344-093	1	1	1.107	100	0.045	50.897	80B20C	IN5344-093	Outlet	No Redirection
IN5344-093	2	2	0.691	100	0.045	50.897	80B20C	IN5344-093	SubCatchment 3	Impervious Runoff to Pervious
IN5344-093	3	3	1.563	0	0.045	50.897	80B20C	IN5344-093	Outlet	Pervious Area to Outlet
IN5246-158	1	1	0.448	100	0.016	20.35	100Percent Type D	IN5246-158	Outlet	No Redirection
IN5246-158	2	2	0.072	100	0.016	20.35	100Percent Type D	IN5246-158	SubCatchment 3	Impervious Runoff to Pervious
IN5246-158	3	3	0.046	0	0.016	20.35	100Percent Type D	IN5246-158	Outlet	Pervious Area to Outlet
IN5246-159	1	1	0.086	100	0.011	14.773	100Percent Type D	IN5246-159	Outlet	No Redirection
IN5246-159	3	3	0.015	0	0.011	14.773	100Percent Type D	IN5246-159	Outlet	Pervious Area to Outlet
IN5446-054	1	1	0.68	100	0.03	31.796	40B60D	IN5446-054	Outlet	No Redirection
IN5446-054	2	2	0.158	100	0.03	31.796	40B60D	IN5446-054	SubCatchment 3	Impervious Runoff to Pervious
IN5446-054	3	3	0.161	0	0.03	31.796	40B60D	IN5446-054	Outlet	Pervious Area to Outlet
IN5446-050	1	1	1.846	100	0.021	31.376	60B40D	IN5446-050	Outlet	No Redirection
IN5446-050	2	2	0.399	100	0.021	31.376	60B40D	IN5446-050	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5446-050	3	3	1.031	0	0.021	31.376	60B40D	IN5446-050	Outlet	Pervious Area to Outlet
IN5943-053	1	1	0.635	100	0.01	70.974	100Percent Type B	IN5943-053	Outlet	No Redirection
IN5943-053	2	2	0.109	100	0.01	70.974	100Percent Type B	IN5943-053	SubCatchment 3	Impervious Runoff to Pervious
IN5943-053	3	3	0.396	0	0.01	70.974	100Percent Type B	IN5943-053	Outlet	Pervious Area to Outlet
IN5943-055	1	1	0.888	100	0.035	208.342	50B50C	IN5943-055	Outlet	No Redirection
IN5943-055	2	2	0.908	100	0.035	208.342	50B50C	IN5943-055	SubCatchment 3	Impervious Runoff to Pervious
IN5943-055	3	3	1.516	0	0.035	208.342	50B50C	IN5943-055	Outlet	Pervious Area to Outlet
IN5943-058	1	1	1.342	100	0.036	174.363	40B60C	IN5943-058	Outlet	No Redirection
IN5943-058	2	2	0.668	100	0.036	174.363	40B60C	IN5943-058	SubCatchment 3	Impervious Runoff to Pervious
IN5943-058	3	3	1.207	0	0.036	174.363	40B60C	IN5943-058	Outlet	Pervious Area to Outlet
IN5943-066	1	1	0.288	100	0.047	111.181	50B50C	IN5943-066	Outlet	No Redirection
IN5943-066	2	2	0.214	100	0.047	111.181	50B50C	IN5943-066	SubCatchment 3	Impervious Runoff to Pervious
IN5943-066	3	3	0.72	0	0.047	111.181	50B50C	IN5943-066	Outlet	Pervious Area to Outlet
IN5744-089	1	1	0.06	100	0.025	23.524	100Percent Type D	IN5744-089	Outlet	No Redirection
IN5744-089	2	2	0.013	100	0.025	23.524	100Percent Type D	IN5744-089	SubCatchment 3	Impervious Runoff to Pervious
IN5744-089	3	3	0.049	0	0.025	23.524	100Percent Type D	IN5744-089	Outlet	Pervious Area to Outlet
IN5744-090	1	1	0.531	100	0.011	90.479	100Percent Type D	IN5744-090	Outlet	No Redirection
IN5744-090	2	2	0.42	100	0.011	90.479	100Percent Type D	IN5744-090	SubCatchment 3	Impervious Runoff to Pervious
IN5744-090	3	3	0.628	0	0.011	90.479	100Percent Type D	IN5744-090	Outlet	Pervious Area to Outlet
IN5744-092	1	1	0.064	100	0.029	33.588	100Percent Type D	IN5744-092	Outlet	No Redirection
IN5744-092	2	2	0.031	100	0.029	33.588	100Percent Type D	IN5744-092	SubCatchment 3	Impervious Runoff to Pervious
IN5744-092	3	3	0.043	0	0.029	33.588	100Percent Type D	IN5744-092	Outlet	Pervious Area to Outlet
IN5744-093	1	1	0.538	100	0.012	85.898	100Percent Type D	IN5744-093	Outlet	No Redirection
IN5744-093	2	2	0.335	100	0.012	85.898	100Percent Type D	IN5744-093	SubCatchment 3	Impervious Runoff to Pervious
IN5744-093	3	3	0.473	0	0.012	85.898	100Percent Type D	IN5744-093	Outlet	Pervious Area to Outlet
IN5744-101	1	1	0.071	100	0.011	38.63	100Percent Type D	IN5744-101	Outlet	No Redirection
IN5744-101	2	2	0.029	100	0.011	38.63	100Percent Type D	IN5744-101	SubCatchment 3	Impervious Runoff to Pervious
IN5744-101	3	3	0.054	0	0.011	38.63	100Percent Type D	IN5744-101	Outlet	Pervious Area to Outlet
IN5743-084	1	1	0.261	100	0.009	138.4	100Percent Type D	IN5743-084	Outlet	No Redirection
IN5743-084	2	2	0.191	100	0.009	138.4	100Percent Type D	IN5743-084	SubCatchment 3	Impervious Runoff to Pervious
IN5743-084	3	3	0.385	0	0.009	138.4	100Percent Type D	IN5743-084	Outlet	Pervious Area to Outlet
IN5744-102	1	1	0.056	100	0.021	33.709	100Percent Type D	IN5744-102	Outlet	No Redirection
IN5738-092	1	1	0.145	100	0.01	25.842	100Percent Type D	IN5738-092	Outlet	No Redirection
IN5738-092	3	3	0.082	0	0.01	25.842	100Percent Type D	IN5738-092	Outlet	Pervious Area to Outlet
AS5738-093			0	0	0	0	No Pervious Area	AS5738-093	SubCatchment 1	Inactive
AS5738-094	1	1	0.531	100	0.014	18.363	100Percent Type D	AS5738-094	Outlet	No Redirection
AS5738-094	2	2	0.033	100	0.014	18.363	100Percent Type D	AS5738-094	SubCatchment 3	Impervious Runoff to Pervious
AS5738-094	3	3	0.354	0	0.014	18.363	100Percent Type D	AS5738-094	Outlet	Pervious Area to Outlet
IN5643-079	1	1	0.245	100	0.024	73.263	30B70C	IN5643-079	Outlet	No Redirection
IN5643-079	2	2	0.011	100	0.024	73.263	30B70C	IN5643-079	SubCatchment 3	Impervious Runoff to Pervious
IN5643-079	3	3	0.114	0	0.024	73.263	30B70C	IN5643-079	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5546-062	1	1	2.187	100	0.009	26.944	100Percent Type B	IN5546-062	Outlet	No Redirection
IN5546-062	2	2	0.628	100	0.009	26.944	100Percent Type B	IN5546-062	SubCatchment 3	Impervious Runoff to Pervious
IN5546-062	3	3	0.923	0	0.009	26.944	100Percent Type B	IN5546-062	Outlet	Pervious Area to Outlet
IN5546-063	1	1	0.286	100	0.021	20.555	100Percent Type B	IN5546-063	Outlet	No Redirection
IN5546-063	2	2	0.029	100	0.021	20.555	100Percent Type B	IN5546-063	SubCatchment 3	Impervious Runoff to Pervious
IN5546-063	3	3	0.064	0	0.021	20.555	100Percent Type B	IN5546-063	Outlet	Pervious Area to Outlet
AS5247-186			0	0	0	0	No Pervious Area	AS5247-186	SubCatchment 1	Inactive
AS5246-102	1	1	2.75	100	0.009	24.673	100Percent Type D	AS5246-102	Outlet	No Redirection
AS5246-102	2	2	1.075	100	0.009	24.673	100Percent Type D	AS5246-102	SubCatchment 3	Impervious Runoff to Pervious
AS5246-102	3	3	1.61	0	0.009	24.673	100Percent Type D	AS5246-102	Outlet	Pervious Area to Outlet
AS5246-109	1	1	2.449	100	0.033	30.693	50B50C	AS5246-109	Outlet	No Redirection
AS5246-109	2	2	0.956	100	0.033	30.693	50B50C	AS5246-109	SubCatchment 3	Impervious Runoff to Pervious
AS5246-109	3	3	2.014	0	0.033	30.693	50B50C	AS5246-109	Outlet	Pervious Area to Outlet
AS5247-127	1	1	0.434	100	0.005	20.046	100Percent Type D	AS5247-127	Outlet	No Redirection
AS5247-127	3	3	0.044	0	0.005	20.046	100Percent Type D	AS5247-127	Outlet	Pervious Area to Outlet
AS5247-124			0	0	0	0	No Pervious Area	AS5247-124	SubCatchment 1	Inactive
AS5247-123	1	1	0.234	100	0.005	27.152	100Percent Type D	AS5247-123	Outlet	No Redirection
AS5247-123	3	3	0.046	0	0.005	27.152	100Percent Type D	AS5247-123	Outlet	Pervious Area to Outlet
AS5247-200			0	0	0	0	No Pervious Area	AS5247-200	SubCatchment 1	Inactive
CB5442-017	1	1	11.251	100	0.019	28.782	100Percent Type D	CB5442-017	Outlet	No Redirection
CB5442-017	2	2	2.637	100	0.019	28.782	100Percent Type D	CB5442-017	SubCatchment 3	Impervious Runoff to Pervious
CB5442-017	3	3	16.217	0	0.019	28.782	100Percent Type D	CB5442-017	Outlet	Pervious Area to Outlet
AS5247-187	1	1	0.832	100	0.01	26.268	100Percent Type D	AS5247-187	Outlet	No Redirection
AS5247-187	3	3	0.374	0	0.01	26.268	100Percent Type D	AS5247-187	Outlet	Pervious Area to Outlet
CB5447-074	1	1	0.446	100	0.006	30.724	100Percent Type D	CB5447-074	Outlet	No Redirection
CB5447-074	2	2	0.269	100	0.006	30.724	100Percent Type D	CB5447-074	SubCatchment 3	Impervious Runoff to Pervious
CB5447-074	3	3	1.108	0	0.006	30.724	100Percent Type D	CB5447-074	Outlet	Pervious Area to Outlet
AS5246-122	1	1	0.314	100	0.008	20.233	30C70D	AS5246-122	Outlet	No Redirection
AS5246-122	2	2	0.249	100	0.008	20.233	30C70D	AS5246-122	SubCatchment 3	Impervious Runoff to Pervious
AS5246-122	3	3	0.239	0	0.008	20.233	30C70D	AS5246-122	Outlet	Pervious Area to Outlet
CB5345-099	1	1	5.062	100	0.017	28.087	80C20D	CB5345-099	Outlet	No Redirection
CB5345-099	2	2	2.923	100	0.017	28.087	80C20D	CB5345-099	SubCatchment 3	Impervious Runoff to Pervious
CB5345-099	3	3	5.777	0	0.017	28.087	80C20D	CB5345-099	Outlet	Pervious Area to Outlet
AS5147-082	1	1	1.329	100	0.032	30.645	30B70C	AS5147-082	Outlet	No Redirection
AS5147-082	2	2	0.609	100	0.032	30.645	30B70C	AS5147-082	SubCatchment 3	Impervious Runoff to Pervious
AS5147-082	3	3	0.606	0	0.032	30.645	30B70C	AS5147-082	Outlet	Pervious Area to Outlet
AS5147-083	1	1	0.381	100	0.027	28.674	100Percent Type C	AS5147-083	Outlet	No Redirection
AS5147-083	2	2	0.208	100	0.027	28.674	100Percent Type C	AS5147-083	SubCatchment 3	Impervious Runoff to Pervious
AS5147-083	3	3	0.319	0	0.027	28.674	100Percent Type C	AS5147-083	Outlet	Pervious Area to Outlet
AS5147-088	1	1	1.076	100	0.062	22.049	70B30C	AS5147-088	Outlet	No Redirection
AS5147-088	2	2	0.592	100	0.062	22.049	70B30C	AS5147-088	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5147-088	3	3	0.881	0	0.062	22.049	70B30C	AS5147-088	Outlet	Pervious Area to Outlet
AS5147-095	1	1	0.634	100	0.073	19.852	80B20C	AS5147-095	Outlet	No Redirection
AS5147-095	2	2	0.691	100	0.073	19.852	80B20C	AS5147-095	SubCatchment 3	Impervious Runoff to Pervious
AS5147-095	3	3	0.849	0	0.073	19.852	80B20C	AS5147-095	Outlet	Pervious Area to Outlet
AS5147-099	1	1	0.459	100	0.053	23.747	70B30C	AS5147-099	Outlet	No Redirection
AS5147-099	2	2	0.199	100	0.053	23.747	70B30C	AS5147-099	SubCatchment 3	Impervious Runoff to Pervious
AS5147-099	3	3	0.28	0	0.053	23.747	70B30C	AS5147-099	Outlet	Pervious Area to Outlet
AS5147-102	1	1	0.335	100	0.07	18.538	70B30C	AS5147-102	Outlet	No Redirection
AS5147-102	2	2	0.247	100	0.07	18.538	70B30C	AS5147-102	SubCatchment 3	Impervious Runoff to Pervious
AS5147-102	3	3	0.273	0	0.07	18.538	70B30C	AS5147-102	Outlet	Pervious Area to Outlet
AS5246-149	1	1	5.05	100	0.027	27.1	50B50C	AS5246-149	Outlet	No Redirection
AS5246-149	2	2	2.925	100	0.027	27.1	50B50C	AS5246-149	SubCatchment 3	Impervious Runoff to Pervious
AS5246-149	3	3	3.399	0	0.027	27.1	50B50C	AS5246-149	Outlet	Pervious Area to Outlet
AS5246-157			0	0	0	0	No Pervious Area	AS5246-157	SubCatchment 1	Inactive
AS5245-036	1	1	0.159	100	0.082	24.58	100Percent Type C	AS5245-036	Outlet	No Redirection
AS5245-036	2	2	0.076	100	0.082	24.58	100Percent Type C	AS5245-036	SubCatchment 3	Impervious Runoff to Pervious
AS5245-036	3	3	0.195	0	0.082	24.58	100Percent Type C	AS5245-036	Outlet	Pervious Area to Outlet
AS5245-040	1	1	1.152	100	0.052	25.958	90C10D	AS5245-040	Outlet	No Redirection
AS5245-040	2	2	0.714	100	0.052	25.958	90C10D	AS5245-040	SubCatchment 3	Impervious Runoff to Pervious
AS5245-040	3	3	0.911	0	0.052	25.958	90C10D	AS5245-040	Outlet	Pervious Area to Outlet
AS5444-036	1	1	0.707	100	0.082	29.353	90B10C	AS5444-036	Outlet	No Redirection
AS5444-036	2	2	0.281	100	0.082	29.353	90B10C	AS5444-036	SubCatchment 3	Impervious Runoff to Pervious
AS5444-036	3	3	0.555	0	0.082	29.353	90B10C	AS5444-036	Outlet	Pervious Area to Outlet
AS5344-029	1	1	0.854	100	0.033	23.461	10C90D	AS5344-029	Outlet	No Redirection
AS5344-029	2	2	0.371	100	0.033	23.461	10C90D	AS5344-029	SubCatchment 3	Impervious Runoff to Pervious
AS5344-029	3	3	0.749	0	0.033	23.461	10C90D	AS5344-029	Outlet	Pervious Area to Outlet
AS5346-165	1	1	0.005	100	0.024	17.557	100Percent Type D	AS5346-165	Outlet	No Redirection
AS5346-165	3	3	0.003	0	0.024	17.557	100Percent Type D	AS5346-165	Outlet	Pervious Area to Outlet
AS5346-166	1	1	2.023	100	0.007	30.252	100Percent Type D	AS5346-166	Outlet	No Redirection
AS5346-166	2	2	0.173	100	0.007	30.252	100Percent Type D	AS5346-166	SubCatchment 3	Impervious Runoff to Pervious
AS5346-166	3	3	0.071	0	0.007	30.252	100Percent Type D	AS5346-166	Outlet	Pervious Area to Outlet
AS5346-076	1	1	0.395	100	0.012	21.856	100Percent Type D	AS5346-076	Outlet	No Redirection
AS5346-076	3	3	0.043	0	0.012	21.856	100Percent Type D	AS5346-076	Outlet	Pervious Area to Outlet
AS5445-068	1	1	0.171	100	0.041	11.427	100Percent Type D	AS5445-068	Outlet	No Redirection
AS5445-068	3	3	0.105	0	0.041	11.427	100Percent Type D	AS5445-068	Outlet	Pervious Area to Outlet
AS5446-039	1	1	0.066	100	0.026	7.867	100Percent Type D	AS5446-039	Outlet	No Redirection
AS5446-039	2	2	0.007	100	0.026	7.867	100Percent Type D	AS5446-039	SubCatchment 3	Impervious Runoff to Pervious
AS5446-039	3	3	0.026	0	0.026	7.867	100Percent Type D	AS5446-039	Outlet	Pervious Area to Outlet
AS5446-040	1	1	1.404	100	0.021	21.268	40B60D	AS5446-040	Outlet	No Redirection
AS5446-040	2	2	0.518	100	0.021	21.268	40B60D	AS5446-040	SubCatchment 3	Impervious Runoff to Pervious
AS5446-040	3	3	0.614	0	0.021	21.268	40B60D	AS5446-040	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5540-056			0	0	0	0	No Pervious Area	AS5540-056	SubCatchment 1	Inactive
AS5440-008	1	1	5.375	100	0.003	32.792	20C80D	AS5440-008	Outlet	No Redirection
AS5440-008	2	2	1.637	100	0.003	32.792	20C80D	AS5440-008	SubCatchment 3	Impervious Runoff to Pervious
AS5440-008	3	3	2.95	0	0.003	32.792	20C80D	AS5440-008	Outlet	Pervious Area to Outlet
AS5440-010	1	1	1.762	100	0.027	18.037	100Percent Type D	AS5440-010	Outlet	No Redirection
AS5440-010	2	2	0.359	100	0.027	18.037	100Percent Type D	AS5440-010	SubCatchment 3	Impervious Runoff to Pervious
AS5440-010	3	3	1.394	0	0.027	18.037	100Percent Type D	AS5440-010	Outlet	Pervious Area to Outlet
AS5440-012	1	1	2.816	100	0.01	24.918	100Percent Type D	AS5440-012	Outlet	No Redirection
AS5440-012	2	2	0.303	100	0.01	24.918	100Percent Type D	AS5440-012	SubCatchment 3	Impervious Runoff to Pervious
AS5440-012	3	3	0.578	0	0.01	24.918	100Percent Type D	AS5440-012	Outlet	Pervious Area to Outlet
AS5440-016			0	0	0	0	No Pervious Area	AS5440-016	SubCatchment 1	Inactive
AS5439-012	1	1	3.642	100	0.019	27.141	10C90D	AS5439-012	Outlet	No Redirection
AS5439-012	2	2	0.121	100	0.019	27.141	10C90D	AS5439-012	SubCatchment 3	Impervious Runoff to Pervious
AS5439-012	3	3	2.553	0	0.019	27.141	10C90D	AS5439-012	Outlet	Pervious Area to Outlet
AS5439-015	1	1	6.055	100	0.016	20.717	50C50D	AS5439-015	Outlet	No Redirection
AS5439-015	2	2	0.607	100	0.016	20.717	50C50D	AS5439-015	SubCatchment 3	Impervious Runoff to Pervious
AS5439-015	3	3	0.597	0	0.016	20.717	50C50D	AS5439-015	Outlet	Pervious Area to Outlet
AS5439-020	1	1	2.151	100	0.012	26.083	100Percent Type D	AS5439-020	Outlet	No Redirection
AS5439-020	2	2	0.137	100	0.012	26.083	100Percent Type D	AS5439-020	SubCatchment 3	Impervious Runoff to Pervious
AS5439-020	3	3	0.709	0	0.012	26.083	100Percent Type D	AS5439-020	Outlet	Pervious Area to Outlet
AS5348-097		1	0	100	0	0	No Pervious Area	AS5348-097	Outlet	Inactive
AS5348-098	1	1	0.126	100	0.013	33.928	100Percent Type D	AS5348-098	Outlet	No Redirection
AS5348-098	2	2	0.198	100	0.013	33.928	100Percent Type D	AS5348-098	SubCatchment 3	Impervious Runoff to Pervious
AS5348-098	3	3	0.615	0	0.013	33.928	100Percent Type D	AS5348-098	Outlet	Pervious Area to Outlet
AS5348-100	1	1	0.75	100	0.011	4.126	10B90D	AS5348-100	Outlet	No Redirection
AS5348-100	2	2	1.059	100	0.011	4.126	10B90D	AS5348-100	SubCatchment 3	Impervious Runoff to Pervious
AS5348-100	3	3	0.296	0	0.011	4.126	10B90D	AS5348-100	Outlet	Pervious Area to Outlet
AS5348-101	1	1	0.045	100	0.012	27.413	100Percent Type D	AS5348-101	Outlet	No Redirection
AS5348-101	2	2	0.134	100	0.012	27.413	100Percent Type D	AS5348-101	SubCatchment 3	Impervious Runoff to Pervious
AS5348-101	3	3	0.236	0	0.012	27.413	100Percent Type D	AS5348-101	Outlet	Pervious Area to Outlet
AS5842-004		1	0	100	0	0	No Pervious Area	AS5842-004	Outlet	Inactive
AS5842-059	1	1	0.866	100	0.014	202.355	100Percent Type B	AS5842-059	Outlet	No Redirection
AS5842-059	2	2	0.634	100	0.014	202.355	100Percent Type B	AS5842-059	SubCatchment 3	Impervious Runoff to Pervious
AS5842-059	3	3	1.234	0	0.014	202.355	100Percent Type B	AS5842-059	Outlet	Pervious Area to Outlet
AS5842-060		1	0	100	0	0	No Pervious Area	AS5842-060	Outlet	Inactive
AS5842-058			0	0	0	0	No Pervious Area	AS5842-058	SubCatchment 1	Inactive
AS5843-093	1	1	0.133	100	0.013	67.459	100Percent Type D	AS5843-093	Outlet	No Redirection
AS5843-093	2	2	0.141	100	0.013	67.459	100Percent Type D	AS5843-093	SubCatchment 3	Impervious Runoff to Pervious
AS5843-093	3	3	0.208	0	0.013	67.459	100Percent Type D	AS5843-093	Outlet	Pervious Area to Outlet
CB5843-095	1	1	0.533	100	0.025	157.788	50C50D	CB5843-095	Outlet	No Redirection
CB5843-095	2	2	0.639	100	0.025	157.788	50C50D	CB5843-095	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
CB5843-095	3	3	1.553	0	0.025	157.788	50C50D	CB5843-095	Outlet	Pervious Area to Outlet
AS5943-054			0	0	0	0	No Pervious Area	AS5943-054	SubCatchment 1	Inactive
CB5943-057	1	1	0.036	100	0.099	19.134	100Percent Type B	CB5943-057	Outlet	No Redirection
CB5943-057	2	2	0.003	100	0.099	19.134	100Percent Type B	CB5943-057	SubCatchment 3	Impervious Runoff to Pervious
CB5943-057	3	3	0.007	0	0.099	19.134	100Percent Type B	CB5943-057	Outlet	Pervious Area to Outlet
AS5943-062	1	1	0.296	100	0.041	111.694	40B60C	AS5943-062	Outlet	No Redirection
AS5943-062	2	2	0.279	100	0.041	111.694	40B60C	AS5943-062	SubCatchment 3	Impervious Runoff to Pervious
AS5943-062	3	3	0.474	0	0.041	111.694	40B60C	AS5943-062	Outlet	Pervious Area to Outlet
AS5942-056		1	0	100	0	0	No Pervious Area	AS5942-056	Outlet	Inactive
SS5943-065		1	0	100	0	0	No Pervious Area	SS5943-065	Outlet	Inactive
AS5644-072	1	1	0.159	100	0.012	72.58	100Percent Type D	AS5644-072	Outlet	No Redirection
AS5644-072	2	2	0.125	100	0.012	72.58	100Percent Type D	AS5644-072	SubCatchment 3	Impervious Runoff to Pervious
AS5644-072	3	3	0.3	0	0.012	72.58	100Percent Type D	AS5644-072	Outlet	Pervious Area to Outlet
AS5744-088			0	0	0	0	No Pervious Area	AS5744-088	SubCatchment 1	Inactive
AS5744-096	1	1	0.205	100	0.023	50.151	100Percent Type D	AS5744-096	Outlet	No Redirection
AS5744-096	2	2	0.079	100	0.023	50.151	100Percent Type D	AS5744-096	SubCatchment 3	Impervious Runoff to Pervious
AS5744-096	3	3	0.182	0	0.023	50.151	100Percent Type D	AS5744-096	Outlet	Pervious Area to Outlet
CB5744-067	1	1	0.004	100	0.064	33.467	100Percent Type D	CB5744-067	Outlet	No Redirection
AS5744-100			0	0	0	0	No Pervious Area	AS5744-100	SubCatchment 1	Inactive
AS5643-065			0	0	0	0	No Pervious Area	AS5643-065	SubCatchment 1	Inactive
CB5643-066	1	1	0.295	100	0.029	54.49	30B70D	CB5643-066	Outlet	No Redirection
CB5643-066	2	2	0.046	100	0.029	54.49	30B70D	CB5643-066	SubCatchment 3	Impervious Runoff to Pervious
CB5643-066	3	3	0.216	0	0.029	54.49	30B70D	CB5643-066	Outlet	Pervious Area to Outlet
AS5643-069	1	1	0.124	100	0.017	34.291	10B90D	AS5643-069	Outlet	No Redirection
AS5643-069	2	2	0.045	100	0.017	34.291	10B90D	AS5643-069	SubCatchment 3	Impervious Runoff to Pervious
AS5643-069	3	3	0.066	0	0.017	34.291	10B90D	AS5643-069	Outlet	Pervious Area to Outlet
AS5643-072	1	1	0.119	100	0.02	27.913	100Percent Type D	AS5643-072	Outlet	No Redirection
AS5643-072	2	2	0.064	100	0.02	27.913	100Percent Type D	AS5643-072	SubCatchment 3	Impervious Runoff to Pervious
AS5643-072	3	3	0.062	0	0.02	27.913	100Percent Type D	AS5643-072	Outlet	Pervious Area to Outlet
AS5643-075	1	1	0.463	100	0.009	170.702	90B10D	AS5643-075	Outlet	No Redirection
AS5643-075	2	2	0.433	100	0.009	170.702	90B10D	AS5643-075	SubCatchment 3	Impervious Runoff to Pervious
AS5643-075	3	3	1.45	0	0.009	170.702	90B10D	AS5643-075	Outlet	Pervious Area to Outlet
AS5743-088	1	1	0.055	100	0.021	27.331	20B80D	AS5743-088	Outlet	No Redirection
AS5743-088	2	2	0.033	100	0.021	27.331	20B80D	AS5743-088	SubCatchment 3	Impervious Runoff to Pervious
AS5743-088	3	3	0.033	0	0.021	27.331	20B80D	AS5743-088	Outlet	Pervious Area to Outlet
AS5743-089	1	1	0.077	100	0.005	188.139	100Percent Type D	AS5743-089	Outlet	No Redirection
AS5743-089	2	2	0.025	100	0.005	188.139	100Percent Type D	AS5743-089	SubCatchment 3	Impervious Runoff to Pervious
AS5743-089	3	3	0.056	0	0.005	188.139	100Percent Type D	AS5743-089	Outlet	Pervious Area to Outlet
AS5738-084	1	1	0.08	100	0.021	10.816	100Percent Type B	AS5738-084	Outlet	No Redirection
AS5738-084	2	2	0.012	100	0.021	10.816	100Percent Type B	AS5738-084	SubCatchment 3	Impervious Runoff to Pervious
AS5738-084	3	3	0.006	0	0.021	10.816	100Percent Type B	AS5738-084	Outlet	Pervious Area to Outlet

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5737-073	1	1	0.415	100	0.026	27.546	90B10D	AS5737-073	Outlet	No Redirection
AS5737-073	2	2	0.1	100	0.026	27.546	90B10D	AS5737-073	SubCatchment 3	Impervious Runoff to Pervious
AS5737-073	3	3	0.31	0	0.026	27.546	90B10D	AS5737-073	Outlet	Pervious Area to Outlet
AS5742-095			0	0	0	0	No Pervious Area	AS5742-095	SubCatchment 1	Inactive
AS5742-028	1	1	1.35	100	0.008	185.33	100Percent Type B	AS5742-028	Outlet	No Redirection
AS5742-028	2	2	0.271	100	0.008	185.33	100Percent Type B	AS5742-028	SubCatchment 3	Impervious Runoff to Pervious
AS5742-028	3	3	0.353	0	0.008	185.33	100Percent Type B	AS5742-028	Outlet	Pervious Area to Outlet
AS5742-096	1	1	0.416	100	0.016	39.649	100Percent Type B	AS5742-096	Outlet	No Redirection
AS5742-096	2	2	0.023	100	0.016	39.649	100Percent Type B	AS5742-096	SubCatchment 3	Impervious Runoff to Pervious
AS5742-096	3	3	0.121	0	0.016	39.649	100Percent Type B	AS5742-096	Outlet	Pervious Area to Outlet
AS5742-097			0	0	0	0	No Pervious Area	AS5742-097	SubCatchment 1	Inactive
AS5742-032	1	1	0.116	100	0.016	12.89	100Percent Type B	AS5742-032	Outlet	No Redirection
AS5742-032	2	2	0.067	100	0.016	12.89	100Percent Type B	AS5742-032	SubCatchment 3	Impervious Runoff to Pervious
AS5742-032	3	3	0.069	0	0.016	12.89	100Percent Type B	AS5742-032	Outlet	Pervious Area to Outlet
AS5545-017	1	1	0.042	100	0.022	6.577	90B10D	AS5545-017	Outlet	No Redirection
AS5545-017	3	3	0.026	0	0.022	6.577	90B10D	AS5545-017	Outlet	Pervious Area to Outlet
AS5742-025	1	1	4.66	100	0.011	169.075	40B60C	AS5742-025	Outlet	No Redirection
AS5742-025	2	2	0.553	100	0.011	169.075	40B60C	AS5742-025	SubCatchment 3	Impervious Runoff to Pervious
AS5742-025	3	3	0.644	0	0.011	169.075	40B60C	AS5742-025	Outlet	Pervious Area to Outlet
AS5742-098			0	0	0	0	No Pervious Area	AS5742-098	SubCatchment 1	Inactive
CB5546-069			0	0	0	0	No Pervious Area	CB5546-069	SubCatchment 1	Inactive
AS5546-070			0	0	0	0	No Pervious Area	AS5546-070	SubCatchment 1	Inactive
AS5546-071	1	1	0.588	100	0.027	33.906	90B10C	AS5546-071	Outlet	No Redirection
AS5546-071	2	2	0.444	100	0.027	33.906	90B10C	AS5546-071	SubCatchment 3	Impervious Runoff to Pervious
AS5546-071	3	3	0.942	0	0.027	33.906	90B10C	AS5546-071	Outlet	Pervious Area to Outlet
AS5546-074	1	1	0.129	100	0.016	15.966	100Percent Type B	AS5546-074	Outlet	No Redirection
AS5546-074	2	2	0.049	100	0.016	15.966	100Percent Type B	AS5546-074	SubCatchment 3	Impervious Runoff to Pervious
AS5546-074	3	3	0.1	0	0.016	15.966	100Percent Type B	AS5546-074	Outlet	Pervious Area to Outlet
AS5546-077			0	0	0	0	No Pervious Area	AS5546-077	SubCatchment 1	Inactive
AS5546-078	1	1	1.222	100	0.022	34.974	60B40C	AS5546-078	Outlet	No Redirection
AS5546-078	2	2	0.95	100	0.022	34.974	60B40C	AS5546-078	SubCatchment 3	Impervious Runoff to Pervious
AS5546-078	3	3	1.459	0	0.022	34.974	60B40C	AS5546-078	Outlet	Pervious Area to Outlet
AS5541-066			0	0	0	0	No Pervious Area	AS5541-066	SubCatchment 1	Inactive
AS5541-067			0	0	0	0	No Pervious Area	AS5541-067	SubCatchment 1	Inactive
AS5541-068	1	1	0.722	100	0.011	19.326	100Percent Type D	AS5541-068	Outlet	No Redirection
AS5541-068	2	2	0.229	100	0.011	19.326	100Percent Type D	AS5541-068	SubCatchment 3	Impervious Runoff to Pervious
AS5541-068	3	3	0.524	0	0.011	19.326	100Percent Type D	AS5541-068	Outlet	Pervious Area to Outlet
AS5541-072	1	1	0.573	100	0.013	23.54	100Percent Type D	AS5541-072	Outlet	No Redirection
AS5541-072	3	3	0.104	0	0.013	23.54	100Percent Type D	AS5541-072	Outlet	Pervious Area to Outlet
AS5541-074	1	1	1.748	100	0.025	21.955	100Percent Type D	AS5541-074	Outlet	No Redirection
AS5541-074	2	2	0.187	100	0.025	21.955	100Percent Type D	AS5541-074	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5541-074	3	3	0.816	0	0.025	21.955	100Percent Type D	AS5541-074	Outlet	Pervious Area to Outlet
AS5541-080	1	1	0.395	100	0.029	9.466	100Percent Type D	AS5541-080	Outlet	No Redirection
AS5541-080	2	2	0.138	100	0.029	9.466	100Percent Type D	AS5541-080	SubCatchment 3	Impervious Runoff to Pervious
AS5541-080	3	3	0.381	0	0.029	9.466	100Percent Type D	AS5541-080	Outlet	Pervious Area to Outlet
AS5541-082			0	0	0	0	No Pervious Area	AS5541-082	SubCatchment 1	Inactive
AS5541-083	1	1	0.354	100	0.01	16.634	100Percent Type D	AS5541-083	Outlet	No Redirection
AS5541-083	3	3	0.206	0	0.01	16.634	100Percent Type D	AS5541-083	Outlet	Pervious Area to Outlet
AS5540-049			0	0	0	0	No Pervious Area	AS5540-049	SubCatchment 1	Inactive
AS5540-050	1	1	9.126	100	0.01	30.553	100Percent Type D	AS5540-050	Outlet	No Redirection
AS5540-050	2	2	2.954	100	0.01	30.553	100Percent Type D	AS5540-050	SubCatchment 3	Impervious Runoff to Pervious
AS5540-050	3	3	6.228	0	0.01	30.553	100Percent Type D	AS5540-050	Outlet	Pervious Area to Outlet
AS5538-022	1	1	0.456	100	0.012	22.648	100Percent Type D	AS5538-022	Outlet	No Redirection
AS5538-022	2	2	0.3	100	0.012	22.648	100Percent Type D	AS5538-022	SubCatchment 3	Impervious Runoff to Pervious
AS5538-022	3	3	0.192	0	0.012	22.648	100Percent Type D	AS5538-022	Outlet	Pervious Area to Outlet
AS5538-023	1	1	0.428	100	0.006	22.455	100Percent Type D	AS5538-023	Outlet	No Redirection
AS5538-023	2	2	0.212	100	0.006	22.455	100Percent Type D	AS5538-023	SubCatchment 3	Impervious Runoff to Pervious
AS5538-023	3	3	0.546	0	0.006	22.455	100Percent Type D	AS5538-023	Outlet	Pervious Area to Outlet
AS5743-011	1	1	1.282	100	0.016	146.234	80B20C	AS5743-011	Outlet	No Redirection
AS5743-011	2	2	0.266	100	0.016	146.234	80B20C	AS5743-011	SubCatchment 3	Impervious Runoff to Pervious
AS5743-011	3	3	1.46	0	0.016	146.234	80B20C	AS5743-011	Outlet	Pervious Area to Outlet
AS5538-026			0	0	0	0	No Pervious Area	AS5538-026	SubCatchment 1	Inactive
AS5543-140			0	0	0	0	No Pervious Area	AS5543-140	SubCatchment 1	Inactive
AS5543-141	2	2	0.554	100	0.067	14.1	50C50D	AS5543-141	SubCatchment 3	Impervious Runoff to Pervious
AS5543-141	3	3	0.125	0	0.067	14.1	50C50D	AS5543-141	Outlet	Pervious Area to Outlet
AS5543-142			0	0	0	0	No Pervious Area	AS5543-142	SubCatchment 1	Inactive
ND5736-009	1	1	2.408	100	0.009	22.62	10B90D	ND5736-009	Outlet	No Redirection
ND5736-009	3	3	0.429	0	0.009	22.62	10B90D	ND5736-009	Outlet	Pervious Area to Outlet
ST5545-026	1	1	0.005	100	0.036	24.347	No Pervious Area	ST5545-026	Outlet	No Redirection
HD5443-054			0	0	0	0	No Pervious Area	HD5443-054	SubCatchment 1	Inactive
HD5443-063			0	0	0	0	No Pervious Area	HD5443-063	SubCatchment 1	Inactive
MI5346-103			0	0	0	0	No Pervious Area	MI5346-103	SubCatchment 1	Inactive
MI5346-133	1	1	5.979	100	0.004	17.71	100Percent Type D	MI5346-133	Outlet	No Redirection
MI5346-133	2	2	0.188	100	0.004	17.71	100Percent Type D	MI5346-133	SubCatchment 3	Impervious Runoff to Pervious
MI5346-133	3	3	1.18	0	0.004	17.71	100Percent Type D	MI5346-133	Outlet	Pervious Area to Outlet
MI5345-068			0	0	0	0	No Pervious Area	MI5345-068	SubCatchment 1	Inactive
MI5445-074			0	0	0	0	No Pervious Area	MI5445-074	SubCatchment 1	Inactive
TP5247-145			0	0	0	0	No Pervious Area	TP5247-145	SubCatchment 1	Inactive
MI5248-119	1	1	1.352	100	0.012	21.125	100Percent Type D	MI5248-119	Outlet	No Redirection
MI5248-119	2	2	0.158	100	0.012	21.125	100Percent Type D	MI5248-119	SubCatchment 3	Impervious Runoff to Pervious
MI5248-119	3	3	0.186	0	0.012	21.125	100Percent Type D	MI5248-119	Outlet	Pervious Area to Outlet
TP5344-030			0	0	0	0	No Pervious Area	TP5344-030	SubCatchment 1	Inactive

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
MI5447-002	1	1	0.118	100	0.015	12.756	100Percent Type D	MI5447-002	Outlet	No Redirection
MI5447-002	3	3	0.029	0	0.015	12.756	100Percent Type D	MI5447-002	Outlet	Pervious Area to Outlet
TP5248-044			0	0	0	0	No Pervious Area	TP5248-044	SubCatchment 1	Inactive
MI5248-052	1	1	0.447	100	0.009	29.004	20B80D	MI5248-052	Outlet	No Redirection
MI5248-052	3	3	0.166	0	0.009	29.004	20B80D	MI5248-052	Outlet	Pervious Area to Outlet
TP5248-085	1	1	2.02	100	0.017	17.495	100Percent Type D	TP5248-085	Outlet	No Redirection
TP5248-085	3	3	0.715	0	0.017	17.495	100Percent Type D	TP5248-085	Outlet	Pervious Area to Outlet
MI5248-120			0	0	0	0	No Pervious Area	MI5248-120	SubCatchment 1	Inactive
MI5443-051			0	0	0	0	No Pervious Area	MI5443-051	SubCatchment 1	Inactive
MI5442-013			0	0	0	0	No Pervious Area	MI5442-013	SubCatchment 1	Inactive
MI5247-151			0	0	0	0	No Pervious Area	MI5247-151	SubCatchment 1	Inactive
MI5434-007			0	0	0	0	No Pervious Area	MI5434-007	SubCatchment 1	Inactive
MI5148-089			0	0	0	0	No Pervious Area	MI5148-089	SubCatchment 1	Inactive
MI5148-090			0	0	0	0	No Pervious Area	MI5148-090	SubCatchment 1	Inactive
TP5637-032	1	1	0.268	100	0.006	20.523	100Percent Type D	TP5637-032	Outlet	No Redirection
TP5637-032	3	3	0.063	0	0.006	20.523	100Percent Type D	TP5637-032	Outlet	Pervious Area to Outlet
MI5540-037	1	1	0.163	100	0.022	3.568	100Percent Type D	MI5540-037	Outlet	No Redirection
MI5540-037	3	3	0.033	0	0.022	3.568	100Percent Type D	MI5540-037	Outlet	Pervious Area to Outlet
TE5537-012	1	1	0.549	100	0.008	24.525	100Percent Type D	TE5537-012	Outlet	No Redirection
TE5537-012	2	2	0.262	100	0.008	24.525	100Percent Type D	TE5537-012	SubCatchment 3	Impervious Runoff to Pervious
TE5537-012	3	3	0.385	0	0.008	24.525	100Percent Type D	TE5537-012	Outlet	Pervious Area to Outlet
TE5537-013	1	1	0.418	100	0.013	18.157	No Pervious Area	TE5537-013	Outlet	No Redirection
TE5537-013	3	3	0.415	0	0.013	18.157	No Pervious Area	TE5537-013	Outlet	Pervious Area to Outlet
TP5537-029			0	0	0	0	No Pervious Area	TP5537-029	SubCatchment 1	Inactive
TP5638-003	1	1	0.545	100	0.015	17.16	100Percent Type D	TP5638-003	Outlet	No Redirection
TP5638-003	3	3	0.129	0	0.015	17.16	100Percent Type D	TP5638-003	Outlet	Pervious Area to Outlet
TP5540-028	1	1	0.113	100	0.013	13.259	100Percent Type D	TP5540-028	Outlet	No Redirection
TP5540-028	3	3	0.02	0	0.013	13.259	100Percent Type D	TP5540-028	Outlet	Pervious Area to Outlet
TP5540-029	1	1	0.708	100	0.011	31.455	100Percent Type D	TP5540-029	Outlet	No Redirection
TP5540-029	3	3	0.237	0	0.011	31.455	100Percent Type D	TP5540-029	Outlet	Pervious Area to Outlet
TP5843-046	1	1	0.958	100	0.036	150.969	90B10C	TP5843-046	Outlet	No Redirection
TP5843-046	2	2	0.723	100	0.036	150.969	90B10C	TP5843-046	SubCatchment 3	Impervious Runoff to Pervious
TP5843-046	3	3	1.317	0	0.036	150.969	90B10C	TP5843-046	Outlet	Pervious Area to Outlet
TE5638-030	3	3	0.916	0	0.015	19.575	100Percent Type D	TE5638-030	Outlet	Pervious Area to Outlet
TE5638-034	3	3	0.811	0	0.015	19.293	100Percent Type D	TE5638-034	Outlet	Pervious Area to Outlet
TE5639-055	3	3	0.848	0	0.014	18.401	100Percent Type D	TE5639-055	Outlet	Pervious Area to Outlet
TE5640-055	1	1	0.007	100	0.012	19.924	100Percent Type D	TE5640-055	Outlet	No Redirection
TE5640-055	3	3	2.039	0	0.012	19.924	100Percent Type D	TE5640-055	Outlet	Pervious Area to Outlet
MI5638-059			0	0	0	0	No Pervious Area	MI5638-059	SubCatchment 1	Inactive
MI5639-073			0	0	0	0	No Pervious Area	MI5639-073	SubCatchment 1	Inactive
MI5740-135			0	0	0	0	No Pervious Area	MI5740-135	SubCatchment 1	Inactive

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
MI5642-060			0	0	0	0	No Pervious Area	MI5642-060	SubCatchment 1	Inactive
TP5546-042	1	1	1.32	100	0.018	28.751	90B10C	TP5546-042	Outlet	No Redirection
TP5546-042	2	2	1.643	100	0.018	28.751	90B10C	TP5546-042	SubCatchment 3	Impervious Runoff to Pervious
TP5546-042	3	3	2.592	0	0.018	28.751	90B10C	TP5546-042	Outlet	Pervious Area to Outlet
MI5843-087			0	0	0	0	No Pervious Area	MI5843-087	SubCatchment 1	Inactive
PL5742-089			0	0	0	0	No Pervious Area	PL5742-089	SubCatchment 1	Inactive
MI5641-106			0	0	0	0	No Pervious Area	MI5641-106	SubCatchment 1	Inactive
MI5639-083			0	0	0	0	No Pervious Area	MI5639-083	SubCatchment 1	Inactive
TP5736-046			0	0	0	0	No Pervious Area	TP5736-046	Outlet	Inactive
TP5536-006	1	1	0.762	100	0.007	7.461	100Percent Type D	TP5536-006	Outlet	No Redirection
TP5536-006	3	3	0.94	0	0.007	7.461	100Percent Type D	TP5536-006	Outlet	Pervious Area to Outlet
TP5736-047	1	1	1.101	100	0.008	28.691	100Percent Type D	TP5736-047	Outlet	No Redirection
TP5736-047	2	2	0.011	100	0.008	28.691	100Percent Type D	TP5736-047	SubCatchment 3	Impervious Runoff to Pervious
TP5736-047	3	3	0.285	0	0.008	28.691	100Percent Type D	TP5736-047	Outlet	Pervious Area to Outlet
MI5736-056		1	0	100	0	0	No Pervious Area	MI5736-056	Outlet	Inactive
MI5735-058	1	1	0.316	100	0.012	27.771	100Percent Type D	MI5735-058	Outlet	No Redirection
MI5735-058	2	2	0.121	100	0.012	27.771	100Percent Type D	MI5735-058	SubCatchment 3	Impervious Runoff to Pervious
MI5735-058	3	3	2.325	0	0.012	27.771	100Percent Type D	MI5735-058	Outlet	Pervious Area to Outlet
AS5148-127	1	1	0.663	100	0.03	53.448	100Percent Type C	AS5148-127	Outlet	No Redirection
AS5148-127	2	2	0.425	100	0.03	53.448	100Percent Type C	AS5148-127	SubCatchment 3	Impervious Runoff to Pervious
AS5148-127	3	3	0.369	0	0.03	53.448	100Percent Type C	AS5148-127	Outlet	Pervious Area to Outlet
MI5148-130	1	1	0.529	100	0.067	40.402	90B10C	MI5148-130	Outlet	No Redirection
MI5148-130	2	2	0.079	100	0.067	40.402	90B10C	MI5148-130	SubCatchment 3	Impervious Runoff to Pervious
MI5148-130	3	3	0.298	0	0.067	40.402	90B10C	MI5148-130	Outlet	Pervious Area to Outlet
MO03B0100D			0	0	0	0	No Pervious Area	MO03B0100D	Outlet	Inactive
MO01B0112D			0	0	0	0	No Pervious Area	MO01B0112D	Outlet	Inactive
MO01D0111D			0	0	0	0	No Pervious Area	MO01D0111D	Outlet	Inactive
EJohnstonOutfall			0	0	0	0	No Pervious Area	EJohnstonOutfall	Outlet	Inactive
MO02A0106D		1	0	100	0	0	No Pervious Area	MO02A0106D	Outlet	Inactive
DunningOutfall			0	0	0	0	No Pervious Area	DunningOutfall	Outlet	Inactive
RussellOutfall			0	0	0	0	No Pervious Area	RussellOutfall	Outlet	Inactive
MO04U0089A			0	0	0	0	No Pervious Area	MO04U0089A	Outlet	Inactive
BlountOutfall			0	0	0	0	No Pervious Area	BlountOutfall	Outlet	Inactive
JeniferOutfall			0	0	0	0	No Pervious Area	JeniferOutfall	Outlet	Inactive
MI5345-100			0	0	0	0	No Pervious Area	MI5345-100	Outlet	Inactive
WashingtonOutfall			0	0	0	0	No Pervious Area	WashingtonOutfall	Outlet	Inactive
AE5543-143			0	0	0	0	No Pervious Area	AE5543-143	Outlet	Inactive
IYHRV			0	0	0	0	No Pervious Area	IYHRV	Outlet	Inactive
AS5247-125			0	0	0	0	No Pervious Area	AS5247-125	Outlet	Inactive
AS5541-029/AS5541-016			0	0	0	0	No Pervious Area	AS5541-029/AS5541-01	Outlet	Inactive
TE5246-125	1	1	0.184	100	0.01	10.305	100Percent Type D	TE5246-125	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
TE5246-125	2	2	0.083	100	0.01	10.305	100Percent Type D	TE5246-125	SubCatchment 3	Impervious Runoff to Pervious
TE5246-125	3	3	0.752	0	0.01	10.305	100Percent Type D	TE5246-125	Outlet	Pervious Area to Outlet
MI5246-153			0	0	0	0	No Pervious Area	MI5246-153	Outlet	Inactive
IN5344-077	1	1	0.201	100	0.082	14.211	10B90D	IN5344-077	Outlet	No Redirection
IN5344-077	2	2	0.03	100	0.082	14.211	10B90D	IN5344-077	SubCatchment 3	Impervious Runoff to Pervious
IN5344-077	3	3	0.159	0	0.082	14.211	10B90D	IN5344-077	Outlet	Pervious Area to Outlet
IN5347-073	1	1	0.096	100	0.009	20.122	100Percent Type D	IN5347-073	Outlet	No Redirection
IN5347-073	3	3	0.021	0	0.009	20.122	100Percent Type D	IN5347-073	Outlet	Pervious Area to Outlet
AS5843-020			0	0	0	0	No Pervious Area	AS5843-020	Outlet	Inactive
IN5739-041	1	1	0.39	100	0.014	20.657	100Percent Type B	IN5739-041	Outlet	No Redirection
IN5739-041	2	2	0.247	100	0.014	20.657	100Percent Type B	IN5739-041	SubCatchment 3	Impervious Runoff to Pervious
IN5739-041	3	3	0.406	0	0.014	20.657	100Percent Type B	IN5739-041	Outlet	Pervious Area to Outlet
IN5543-110	1	1	0.205	100	0.009	30.595	100Percent Type D	IN5543-110	Outlet	No Redirection
IN5543-110	2	2	0.012	100	0.009	30.595	100Percent Type D	IN5543-110	SubCatchment 3	Impervious Runoff to Pervious
IN5543-110	3	3	0.072	0	0.009	30.595	100Percent Type D	IN5543-110	Outlet	Pervious Area to Outlet
IN5543-113	1	1	0.897	100	0.011	20.86	10C90D	IN5543-113	Outlet	No Redirection
IN5543-113	2	2	0.558	100	0.011	20.86	10C90D	IN5543-113	SubCatchment 3	Impervious Runoff to Pervious
IN5543-113	3	3	0.373	0	0.011	20.86	10C90D	IN5543-113	Outlet	Pervious Area to Outlet
IN5542-042	1	1	0.138	100	0.025	18.305	10C90D	IN5542-042	Outlet	No Redirection
IN5542-042	3	3	0.019	0	0.025	18.305	10C90D	IN5542-042	Outlet	Pervious Area to Outlet
IN5542-044	1	1	0.501	100	0.02	23.719	100Percent Type C	IN5542-044	Outlet	No Redirection
IN5542-044	2	2	0.42	100	0.02	23.719	100Percent Type C	IN5542-044	SubCatchment 3	Impervious Runoff to Pervious
IN5542-044	3	3	0.974	0	0.02	23.719	100Percent Type C	IN5542-044	Outlet	Pervious Area to Outlet
AS5743-082			0	0	0	0	No Pervious Area	AS5743-082	Outlet	Inactive
AS5545-029			0	0	0	0	No Pervious Area	AS5545-029	Outlet	Inactive
AS5744-099			0	0	0	0	No Pervious Area	AS5744-099	Outlet	Inactive
MI5247-191			0	0	0	0	No Pervious Area	MI5247-191	Outlet	Inactive
LS_002			0	0	0	0	No Pervious Area	LS_002	Outlet	Inactive
AS5640-046	1	1	3.866	100	0.023	29.544	80B20D	AS5640-046	Outlet	No Redirection
AS5640-046	2	2	0.104	100	0.023	29.544	80B20D	AS5640-046	SubCatchment 3	Impervious Runoff to Pervious
AS5640-046	3	3	0.67	0	0.023	29.544	80B20D	AS5640-046	Outlet	Pervious Area to Outlet
IN5542-033	1	1	0.37	100	0.022	26.549	100Percent Type D	IN5542-033	Outlet	No Redirection
IN5542-033	2	2	0.052	100	0.022	26.549	100Percent Type D	IN5542-033	SubCatchment 3	Impervious Runoff to Pervious
IN5542-033	3	3	0.46	0	0.022	26.549	100Percent Type D	IN5542-033	Outlet	Pervious Area to Outlet
IN5543-107	1	1	0.128	100	0.018	22.117	100Percent Type D	IN5543-107	Outlet	No Redirection
IN5543-107	3	3	0.053	0	0.018	22.117	100Percent Type D	IN5543-107	Outlet	Pervious Area to Outlet
IN5542-041	1	1	0.057	100	0.02	18.256	10C90D	IN5542-041	Outlet	No Redirection
IN5542-041	3	3	0.013	0	0.02	18.256	10C90D	IN5542-041	Outlet	Pervious Area to Outlet
LakeMendota			0	0	0	0	No Pervious Area	LakeMendota	Outlet	Inactive
LakeMendota_1			0	0	0	0	No Pervious Area	LakeMendota_1	Outlet	Inactive
Yahara1		1	0	100	0	0	No Pervious Area	Yahara1	Outlet	Inactive

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
Yahara2	1	1	0.191	100	0.01	19.196	100Percent Type C	Yahara2	Outlet	No Redirection
Yahara2	2	2	0.135	100	0.01	19.196	100Percent Type C	Yahara2	SubCatchment 3	Impervious Runoff to Pervious
Yahara2	3	3	0.279	0	0.01	19.196	100Percent Type C	Yahara2	Outlet	Pervious Area to Outlet
Yahara3	1	1	0.681	100	0.018	26.981	100Percent Type C	Yahara3	Outlet	No Redirection
Yahara3	2	2	0.017	100	0.018	26.981	100Percent Type C	Yahara3	SubCatchment 3	Impervious Runoff to Pervious
Yahara3	3	3	0.617	0	0.018	26.981	100Percent Type C	Yahara3	Outlet	Pervious Area to Outlet
Yahara4	1	1	2.664	100	0.001	19.341	10C90D	Yahara4	Outlet	No Redirection
Yahara4	2	2	2.135	100	0.001	19.341	10C90D	Yahara4	SubCatchment 3	Impervious Runoff to Pervious
Yahara4	3	3	7.591	0	0.001	19.341	10C90D	Yahara4	Outlet	Pervious Area to Outlet
Yahara5	1	1	0.043	100	0.027	27.293	40C60D	Yahara5	Outlet	No Redirection
Yahara5	2	2	1.243	100	0.027	27.293	40C60D	Yahara5	SubCatchment 3	Impervious Runoff to Pervious
Yahara5	3	3	1.061	0	0.027	27.293	40C60D	Yahara5	Outlet	Pervious Area to Outlet
Yahara6	2	2	0.011	100	0.027	15.62	100Percent Type D	Yahara6	SubCatchment 3	Impervious Runoff to Pervious
Yahara6	3	3	0.015	0	0.027	15.62	100Percent Type D	Yahara6	Outlet	Pervious Area to Outlet
Yahara7	1	1	0.061	100	0.089	6.256	100Percent Type D	Yahara7	Outlet	No Redirection
Yahara7	2	2	0.084	100	0.089	6.256	100Percent Type D	Yahara7	SubCatchment 3	Impervious Runoff to Pervious
Yahara7	3	3	0.186	0	0.089	6.256	100Percent Type D	Yahara7	Outlet	Pervious Area to Outlet
Yahara8	1	1	0.06	100	0.089	6.359	100Percent Type D	Yahara8	Outlet	No Redirection
Yahara8	2	2	0.007	100	0.089	6.359	100Percent Type D	Yahara8	SubCatchment 3	Impervious Runoff to Pervious
Yahara8	3	3	0.002	0	0.089	6.359	100Percent Type D	Yahara8	Outlet	Pervious Area to Outlet
Yahara9	1	1	0.3	100	0.013	28.464	100Percent Type D	Yahara9	Outlet	No Redirection
Yahara9	2	2	0.693	100	0.013	28.464	100Percent Type D	Yahara9	SubCatchment 3	Impervious Runoff to Pervious
Yahara9	3	3	3.974	0	0.013	28.464	100Percent Type D	Yahara9	Outlet	Pervious Area to Outlet
Yahara10	1	1	0.169	100	0.033	19.652	100Percent Type D	Yahara10	Outlet	No Redirection
Yahara10	2	2	0.446	100	0.033	19.652	100Percent Type D	Yahara10	SubCatchment 3	Impervious Runoff to Pervious
Yahara10	3	3	2.306	0	0.033	19.652	100Percent Type D	Yahara10	Outlet	Pervious Area to Outlet
Yahara 11			0	0	0	0	No Pervious Area	Yahara 11	Outlet	Inactive
Yahara12	1	1	7.48	100	0.03	31.93	100Percent Type D	Yahara12	Outlet	No Redirection
Yahara12	2	2	3.15	100	0.03	31.93	100Percent Type D	Yahara12	SubCatchment 3	Impervious Runoff to Pervious
Yahara12	3	3	5.46	0	0.03	31.93	100Percent Type D	Yahara12	Outlet	Pervious Area to Outlet
Yahara13	1	1	0.094	100	0.03	10.218	100Percent Type D	Yahara13	Outlet	No Redirection
Yahara13	2	2	0.048	100	0.03	10.218	100Percent Type D	Yahara13	SubCatchment 3	Impervious Runoff to Pervious
Yahara13	3	3	0.001	0	0.03	10.218	100Percent Type D	Yahara13	Outlet	Pervious Area to Outlet
Yahara14	1	1	0.274	100	0.003	31.15	100Percent Type D	Yahara14	Outlet	No Redirection
Yahara14	2	2	0.286	100	0.003	31.15	100Percent Type D	Yahara14	SubCatchment 3	Impervious Runoff to Pervious
Yahara14	3	3	0.927	0	0.003	31.15	100Percent Type D	Yahara14	Outlet	Pervious Area to Outlet
Yahara15	1	1	0.042	100	0.012	33.824	100Percent Type D	Yahara15	Outlet	No Redirection
Yahara15	2	2	0.023	100	0.012	33.824	100Percent Type D	Yahara15	SubCatchment 3	Impervious Runoff to Pervious
Yahara15	3	3	0.011	0	0.012	33.824	100Percent Type D	Yahara15	Outlet	Pervious Area to Outlet
Yahara16	1	1	0.033	100	0.003	3.594	No Pervious Area	Yahara16	Outlet	No Redirection
Yahara16	2	2	0.002	100	0.003	3.594	No Pervious Area	Yahara16	Outlet	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
Yahara17	1	1	2.568	100	0.02	18.267	50C50D	Yahara17	Outlet	No Redirection
Yahara17	2	2	2.414	100	0.02	18.267	50C50D	Yahara17	SubCatchment 3	Impervious Runoff to Pervious
Yahara17	3	3	7.912	0	0.02	18.267	50C50D	Yahara17	Outlet	Pervious Area to Outlet
Yahara18	1	1	2.304	100	0.002	13.048	10B90D	Yahara18	Outlet	No Redirection
Yahara18	2	2	0.078	100	0.002	13.048	10B90D	Yahara18	SubCatchment 3	Impervious Runoff to Pervious
Yahara18	3	3	1.286	0	0.002	13.048	10B90D	Yahara18	Outlet	Pervious Area to Outlet
Yahara19	1	1	0.089	100	0.006	25.207	100Percent Type D	Yahara19	Outlet	No Redirection
Yahara19	2	2	0.031	100	0.006	25.207	100Percent Type D	Yahara19	SubCatchment 3	Impervious Runoff to Pervious
Yahara19	3	3	0.2	0	0.006	25.207	100Percent Type D	Yahara19	Outlet	Pervious Area to Outlet
Yahara20	1	1	0.01	100	0.006	15.386	40B60D	Yahara20	Outlet	No Redirection
Yahara20	2	2	0.033	100	0.006	15.386	40B60D	Yahara20	SubCatchment 3	Impervious Runoff to Pervious
Yahara20	3	3	0.019	0	0.006	15.386	40C60D	Yahara20	Outlet	Pervious Area to Outlet
Yahara21	1	1	0.789	100	0.034	17.972	30B70D	Yahara21	Outlet	No Redirection
Yahara21	2	2	0.002	100	0.034	17.972	30B70D	Yahara21	SubCatchment 3	Impervious Runoff to Pervious
Yahara21	3	3	0.112	0	0.034	17.972	30B70D	Yahara21	Outlet	Pervious Area to Outlet
Yahara22	1	1	0.366	100	0.034	4.493	100Percent Type D	Yahara22	Outlet	No Redirection
Yahara22	2	2	0.064	100	0.034	4.493	100Percent Type D	Yahara22	SubCatchment 3	Impervious Runoff to Pervious
Yahara22	3	3	2.982	0	0.034	4.493	100Percent Type D	Yahara22	Outlet	Pervious Area to Outlet
Yahara23			0	0	0	15.865	No Pervious Area	Yahara23	Outlet	Inactive
Yahara24			0	0	0	0	No Pervious Area	Yahara24	Outlet	Inactive
Yahara25	1	1	0.037	100	0.018	11.844	100Percent Type D	Yahara25	Outlet	No Redirection
Yahara25	2	2	0.024	100	0.018	11.844	100Percent Type D	Yahara25	SubCatchment 3	Impervious Runoff to Pervious
Yahara25	3	3	0.017	0	0.018	11.844	100Percent Type D	Yahara25	Outlet	Pervious Area to Outlet
Yahara26			0	0	0	0	100Percent Type D	Yahara26	Outlet	Inactive
Yahara27	1	1	2.551	100	0.013	19.954	100Percent Type D	Yahara27	Outlet	No Redirection
Yahara27	2	2	0.837	100	0.013	19.954	100Percent Type D	Yahara27	SubCatchment 3	Impervious Runoff to Pervious
Yahara27	3	3	1.416	0	0.013	19.954	100Percent Type D	Yahara27	Outlet	Pervious Area to Outlet
Lake Monona			0	0	0	0	No Pervious Area	Lake Monona	Outlet	Inactive
AS5444-063.1			0	0	0	0	No Pervious Area	AS5444-063.1	Outlet	Inactive
IN5743-065	1	1	0.313	100	0.013	5.26	100Percent Type D	IN5743-065	Outlet	No Redirection
IN5743-065	2	2	0.262	100	0.013	5.26	100Percent Type D	IN5743-065	SubCatchment 3	Impervious Runoff to Pervious
IN5743-065	3	3	0.376	0	0.013	5.26	100Percent Type D	IN5743-065	Outlet	Pervious Area to Outlet
IN5743-072			0	0	0	0	No Pervious Area	IN5743-072	Outlet	Inactive
AS5743-014a	1	1	1.131	100	0.009	27.584	100Percent Type B	AS5743-014a	Outlet	No Redirection
AS5743-014a	2	2	0.13	100	0.009	27.584	100Percent Type B	AS5743-014a	SubCatchment 3	Impervious Runoff to Pervious
AS5743-014a	3	3	0.195	0	0.009	27.584	100Percent Type B	AS5743-014a	Outlet	Pervious Area to Outlet
IN5743-013_new	1	1	0.057	100	0.009	27.482	100Percent Type B	IN5743-013_new	Outlet	No Redirection
IN5743-013_new	2	2	0.038	100	0.009	27.482	100Percent Type B	IN5743-013_new	SubCatchment 3	Impervious Runoff to Pervious
IN5743-013_new	3	3	0.03	0	0.009	27.482	100Percent Type B	IN5743-013_new	Outlet	Pervious Area to Outlet
AS5743-095_new	1	1	0.069	100	0.016	27.824	100Percent Type B	AS5743-095_new	Outlet	No Redirection
AS5743-095_new	2	2	0.037	100	0.016	27.824	100Percent Type B	AS5743-095_new	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
AS5743-095_new	3	3	0.119	0	0.016	27.824	100Percent Type B	AS5743-095_new	Outlet	Pervious Area to Outlet
PL5743-091		1	0	100	0	0	No Pervious Area	PL5743-091	Outlet	Inactive
AS5743-91a	1	1	0.933	100	0.016	10.932	20B80D	AS5743-91a	Outlet	No Redirection
AS5743-91a	2	2	0.762	100	0.016	10.932	20B80D	AS5743-91a	SubCatchment 3	Impervious Runoff to Pervious
AS5743-91a	3	3	1.186	0	0.016	10.932	20B80D	AS5743-91a	Outlet	Pervious Area to Outlet
AS5743-072e	1	1	0.936	100	0.016	27.68	100Percent Type D	AS5743-072e	Outlet	No Redirection
AS5743-072e	2	2	0.747	100	0.016	27.68	100Percent Type D	AS5743-072e	SubCatchment 3	Impervious Runoff to Pervious
AS5743-072e	3	3	1.042	0	0.016	27.68	100Percent Type D	AS5743-072e	Outlet	Pervious Area to Outlet
AS5743-072a			0	0	0	0	No Pervious Area	AS5743-072a	Outlet	Inactive
AS5743-072b			0	0	0	0	No Pervious Area	AS5743-072b	Outlet	Inactive
AS5743-018e		1	0	100	0	0	100Percent Type D	AS5743-018e	Outlet	Inactive
IN5743-018b			0	0	0	0	No Pervious Area	IN5743-018b	Outlet	Inactive
AS5743-017a	2	2	0.002	100	0.009	4.355	80B20C	AS5743-017a	SubCatchment 3	Impervious Runoff to Pervious
AS5743-017a	3	3	0.029	0	0.009	4.355	80B20C	AS5743-017a	Outlet	Pervious Area to Outlet
AS5743-028a			0	0	0	0	No Pervious Area	AS5743-028a	Outlet	Inactive
AS5743-028d			0	0	0	0	No Pervious Area	AS5743-028d	Outlet	Inactive
AS5743-028f	1	1	0.09	100	0.008	24.028	100Percent Type D	AS5743-028f	Outlet	No Redirection
AS5743-028f	2	2	0.061	100	0.008	24.028	100Percent Type D	AS5743-028f	SubCatchment 3	Impervious Runoff to Pervious
AS5743-028f	3	3	0.048	0	0.008	24.028	100Percent Type D	AS5743-028f	Outlet	Pervious Area to Outlet
AS5743-028i	1	1	0.266	100	0.008	24.028	100Percent Type D	AS5743-028i	Outlet	No Redirection
AS5743-028i	2	2	0.201	100	0.008	24.028	100Percent Type D	AS5743-028i	SubCatchment 3	Impervious Runoff to Pervious
AS5743-028i	3	3	0.497	0	0.008	24.028	100Percent Type D	AS5743-028i	Outlet	Pervious Area to Outlet
AS5743-029a	1	1	0.23	100	0.008	26.39	70C30D	AS5743-029a	Outlet	No Redirection
AS5743-029a	2	2	0.208	100	0.008	26.39	70C30D	AS5743-029a	SubCatchment 3	Impervious Runoff to Pervious
AS5743-029a	3	3	0.255	0	0.008	26.39	70C30D	AS5743-029a	Outlet	Pervious Area to Outlet
AS5742-089a	1	1	0.311	100	0.005	24.36	100Percent Type D	AS5742-089a	Outlet	No Redirection
AS5742-089a	2	2	0.229	100	0.005	24.36	100Percent Type D	AS5742-089a	SubCatchment 3	Impervious Runoff to Pervious
AS5742-089a	3	3	0.186	0	0.005	24.36	100Percent Type D	AS5742-089a	Outlet	Pervious Area to Outlet
AS5742-089e			0	0	0	0	No Pervious Area	AS5742-089e	Outlet	Inactive
AS5742-089f			0	0	0	0	No Pervious Area	AS5742-089f	Outlet	Inactive
AS5743-067a	1	1	0.091	100	0.008	33.339	100Percent Type D	AS5743-067a	Outlet	No Redirection
AS5743-067a	2	2	0.102	100	0.008	33.339	100Percent Type D	AS5743-067a	SubCatchment 3	Impervious Runoff to Pervious
AS5743-067a	3	3	0.14	0	0.008	33.339	100Percent Type D	AS5743-067a	Outlet	Pervious Area to Outlet
IN5742-041			0	0	0	0		IN5742-041	Outlet	Inactive
IN5742-038		1	0	0	0	0		IN5742-038	Outlet	Inactive
AS5742-029_New			0	0	0	0		AS5742-029_New	Outlet	Inactive
IN5742-043	1	1	0.44	100	0.01	21.057	100Percent Type B	IN5742-043	Outlet	No Redirection
IN5742-043	2	2	0.156	100	0.01	21.057	100Percent Type B	IN5742-043	SubCatchment 3	Impervious Runoff to Pervious
IN5742-043	3	3	0.25	0	0.01	21.057	100Percent Type B	IN5742-043	Outlet	Pervious Area to Outlet
IN5842-003	1	1	0.94	100	0.01	21.057	100Percent Type B	IN5842-003	Outlet	No Redirection
IN5842-003	2	2	0.298	100	0.01	21.057	100Percent Type B	IN5842-003	SubCatchment 3	Impervious Runoff to Pervious

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
IN5842-003	3	3	0.174	0	0.01	21.057	100Percent Type B	IN5842-003	Outlet	Pervious Area to Outlet
AS5742-012			0	0	0	0	No Pervious Area	AS5742-012	Outlet	Inactive
IN5742-099			0	0	0	0	No Pervious Area	IN5742-099	Outlet	Inactive
IN5742-100			0	0	0	0	No Pervious Area	IN5742-100	Outlet	Inactive
IN5742-102	1	1	0.643	100	0.018	17.489	100Percent Type B	IN5742-102	Outlet	No Redirection
IN5742-102	3	3	0.017	0	0.018	17.489	100Percent Type B	IN5742-102	Outlet	Pervious Area to Outlet
IN5742-104			0	0	0	0	No Pervious Area	IN5742-104	Outlet	Inactive
AS5742-107	1	1	1.061	100	0.021	32.495	100Percent Type B	AS5742-107	Outlet	No Redirection
AS5742-107	2	2	0.243	100	0.021	32.495	100Percent Type B	AS5742-107	SubCatchment 3	Impervious Runoff to Pervious
AS5742-107	3	3	0.644	0	0.021	32.495	100Percent Type B	AS5742-107	Outlet	Pervious Area to Outlet
AS5742-109			0	0	0	0	No Pervious Area	AS5742-109	Outlet	Inactive
CB5742-111			0	0	0	0	No Pervious Area	CB5742-111	Outlet	Inactive
AS5741-044	1	1	0.52	100	0.009	23.891	100Percent Type B	AS5741-044	Outlet	No Redirection
AS5741-044	2	2	0.016	100	0.009	23.891	100Percent Type B	AS5741-044	SubCatchment 3	Impervious Runoff to Pervious
AS5741-044	3	3	0.102	0	0.009	23.891	100Percent Type B	AS5741-044	Outlet	Pervious Area to Outlet
IN5741-049	1	1	1.135	100	0.009	28.562	100Percent Type B	IN5741-049	Outlet	No Redirection
IN5741-049	2	2	0.5	100	0.009	28.562	100Percent Type B	IN5741-049	SubCatchment 3	Impervious Runoff to Pervious
IN5741-049	3	3	1.016	0	0.009	28.562	100Percent Type B	IN5741-049	Outlet	Pervious Area to Outlet
IN5742-056	1	1	1.44	100	0.017	24.522	100Percent Type B	IN5742-056	Outlet	No Redirection
IN5742-056	3	3	0.147	0	0.017	24.522	100Percent Type B	IN5742-056	Outlet	Pervious Area to Outlet
Node1026			0	0	0	0			SubCatchment 1	Inactive
Node1027			0	0	0	0			SubCatchment 1	Inactive
Node1028			0	0	0	0			SubCatchment 1	Inactive
Node1031			0	0	0	0			SubCatchment 1	Inactive
IN5536-009a			0	0	0	0			SubCatchment 1	Inactive
IN5536-009b			0	0	0	0			SubCatchment 1	Inactive
IN5536-009d			0	0	0	0			SubCatchment 1	Inactive
IN5536-009f	1	1	2.94	100	0.004	50	10C90D	IN5536-009f	Outlet	No Redirection
IN5536-009f	3	3	8.13	0	0.004	50	10C90D	IN5536-009f	Outlet	Pervious Area to Outlet
IN5536-009g			0	0	0	0			SubCatchment 1	Inactive
IN5536-009h		1	0	0	0	0			SubCatchment 1	Inactive
IN5536-009c			0	0	0	0			SubCatchment 1	Inactive
IN5536-009e		1	0	0	0	0	10C90D	IN5536-009e	Outlet	Inactive
AS5535-013a			0	0	0	0			SubCatchment 1	Inactive
IN5536-009i			0	0	0	0			SubCatchment 1	Inactive
AS5635-019b		1	0	0	0	0	10C90D	AS5635-019b	Outlet	Inactive
AS5635-019c			0	0	0	0			SubCatchment 1	Inactive
AS5635-019d		1	0	0	0	0	10B90D	AS5635-019d	Outlet	Inactive
Hartmeyer_Development-The Victoria	1	1	0.62	100	0.04	1000	10C90D	Hartmeyer_Developmen	Outlet	No Redirection

Name	Subcatchment	Catchment Number 0	Area acres	Impervious Percentage %	Slope ft/ft	Width ft	Infiltration Reference	Runoff Redirection Drain To Node	Runoff Redirection Drain To Subcatchment Number	Runoff Redirection Type
Hartmeyer_Development-The Victoria	3	3	0.28	0	0.04	1000	10C90D	Hartmeyer_Developmen	Outlet	Pervious Area to Outlet
Hartmeyer_Development-TheView	1	1	3.58	100	0.04	1000	10C90D	Hartmeyer_Developmen	Outlet	No Redirection
Hartmeyer_Development-TheView	3	3	1.2	0	0.04	1000	10C90D	Hartmeyer_Developmen	Outlet	Pervious Area to Outlet
Hartmeyer_Development-PublicGI	1	1	1.62	100	0.04	1000	10C90D	Hartmeyer_Developmen	Outlet	No Redirection
Hartmeyer_Development-PublicGI	3	3	1.6	0	0.04	1000	10C90D	Hartmeyer_Developmen	Outlet	Pervious Area to Outlet
HartmeyerBoxCulvert_1	1	1	0.5	100	0.004	138.7	10B90D	HartmeyerBoxCulvert_1	Outlet	No Redirection
HartmeyerBoxCulvert_1	3	3	0.5	0	0.004	138.7	10B90D	HartmeyerBoxCulvert_1	Outlet	Pervious Area to Outlet
HartmeyerBoxCulvert_2	1	1	0.15	100	0.004	109.82	10B90D	HartmeyerBoxCulvert_2	Outlet	No Redirection
HartmeyerBoxCulvert_2	3	3	0.64	0	0.004	109.82	10B90D	HartmeyerBoxCulvert_2	Outlet	Pervious Area to Outlet
PondOutlet_Hartmeyer			0	0	0	0			SubCatchment 1	Inactive
AS5348-101_New	1	1	0.045	100	0.012	27.413	100Percent Type D	AS5348-101	Outlet	No Redirection
AS5348-101_New	2	2	0.134	100	0.012	27.413	100Percent Type D	AS5348-101	SubCatchment 3	Impervious Runoff to Pervious
AS5348-101_New	3	3	0.236	0	0.012	27.413	100Percent Type D	AS5348-101	Outlet	Pervious Area to Outlet
AS5348-101.1	1	1	0.045	100	0.012	27.413	100Percent Type D	AS5348-101	Outlet	No Redirection
AS5348-101.1	2	2	0.134	100	0.012	27.413	100Percent Type D	AS5348-101	SubCatchment 3	Impervious Runoff to Pervious
AS5348-101.1	3	3	0.236	0	0.012	27.413	100Percent Type D	AS5348-101	Outlet	Pervious Area to Outlet
AS5348-101.2	1	1	0.045	100	0.012	27.413	100Percent Type D	AS5348-101	Outlet	No Redirection
AS5348-101.2	2	2	0.134	100	0.012	27.413	100Percent Type D	AS5348-101	SubCatchment 3	Impervious Runoff to Pervious
AS5348-101.2	3	3	0.236	0	0.012	27.413	100Percent Type D	AS5348-101	Outlet	Pervious Area to Outlet
AS5348-052_New	1	1	0.217	100	0.017	18.847	100Percent Type D	AS5348-052	Outlet	No Redirection
AS5348-052_New	2	2	0.241	100	0.017	18.847	100Percent Type D	AS5348-052	SubCatchment 3	Impervious Runoff to Pervious
AS5348-052_New	3	3	0.081	0	0.017	18.847	100Percent Type D	AS5348-052	Outlet	Pervious Area to Outlet
AS5348-051_New	1	1	0.061	100	0.014	19.964	100Percent Type D	AS5348-051	Outlet	No Redirection
AS5348-051_New	2	2	0.091	100	0.014	19.964	100Percent Type D	AS5348-051	SubCatchment 3	Impervious Runoff to Pervious
AS5348-051_New	3	3	0.285	0	0.014	19.964	100Percent Type D	AS5348-051	Outlet	Pervious Area to Outlet
IN5347-014_New	1	1	0.712	100	0.006	20.019	40B60D	IN5347-014	Outlet	No Redirection
IN5347-014_New	2	2	0.712	100	0.006	20.019	40B60D	IN5347-014	SubCatchment 3	Impervious Runoff to Pervious
IN5347-014_New	3	3	3.331	0	0.006	20.019	40B60D	IN5347-014	Outlet	Pervious Area to Outlet
AS5347-008.1	1	1	1.813	100	0.01	33.07	20B80D	AS5347-008	Outlet	No Redirection
AS5347-008.1	2	2	0.313	100	0.01	33.07	20B80D	AS5347-008	SubCatchment 3	Impervious Runoff to Pervious
AS5347-008.1	3	3	1.651	0	0.01	33.07	20B80D	AS5347-008	Outlet	Pervious Area to Outlet
MI5447-002.1	1	1	0.118	100	0.015	12.756	100Percent Type D	MI5447-002	Outlet	No Redirection
MI5447-002.1	3	3	0.029	0	0.015	12.756	100Percent Type D	MI5447-002	Outlet	Pervious Area to Outlet

Table 2. Composite Soil Group Infiltration - XP Table Input Data

Name	Inch (Impervious Area) in	Inch (Pervious Area) in	Manning's "n" (Impervious Area)	Manning's "n" (Pervious Area)	Zero Detention (%)	Max Infiltration Rate (in/hr)	Min (Asymptotic Infiltration) in/hr	Decay Rate of Infiltration (1/sec)	Maximum Infiltration Volume mm;inch
100Percent Type B	0.05	0.15	0.016	0.2	25	2	0.5	0.001	0
100Percent Type C	0.05	0.15	0.016	0.2	25	1	0.2	0.001	0
100Percent Type D	0.05	0.15	0.016	0.2	25	0.5	0.1	0.001	0
10B90C	0.05	0.15	0.016	0.2	25	1.1	0.23	0.001	0
10B90D	0.05	0.15	0.016	0.2	25	0.65	0.14	0.001	0
10C90D	0.05	0.15	0.016	0.2	25	0.55	0.11	0.001	0
20B80C	0.05	0.15	0.016	0.2	25	0.6	0.12	0.001	0
20B80D	0.05	0.15	0.016	0.2	25	0.8	0.18	0.001	0
20C80D	0.05	0.15	0.016	0.2	25	0.6	0.12	0.001	0
30B70C	0.05	0.15	0.016	0.2	25	1.3	0.29	0.001	0
30B70D	0.05	0.15	0.016	0.2	25	0.95	0.22	0.001	0
30C70D	0.05	0.15	0.016	0.2	25	0.65	0.13	0.001	0
40B60C	0.05	0.15	0.016	0.2	25	1.4	0.32	0.001	0
40B60D	0.05	0.15	0.016	0.2	25	1.1	0.26	0.001	0
40C60D	0.05	0.15	0.016	0.2	25	0.7	0.14	0.001	0
50B50C	0.05	0.15	0.016	0.2	25	1.5	0.35	0.001	0
50B50D	0.05	0.15	0.016	0.2	25	1.25	0.3	0.001	0
50C50D	0.05	0.15	0.016	0.2	25	0.75	0.15	0.001	0
60B40C	0.05	0.15	0.016	0.2	25	1.6	0.38	0.001	0
60B40D	0.05	0.15	0.016	0.2	25	1.4	0.34	0.001	0
60C40D	0.05	0.15	0.016	0.2	25	0.8	0.16	0.001	0
70B30C	0.05	0.15	0.016	0.2	25	1.7	0.41	0.001	0
70B30D	0.05	0.15	0.016	0.2	25	1.55	0.38	0.001	0
70C30D	0.05	0.15	0.016	0.2	25	0.65	0.13	0.001	0
80B20C	0.05	0.15	0.016	0.2	25	1.031	0.44	0.001	0
80B20D	0.05	0.15	0.016	0.2	25	1.7	0.42	0.001	0
80C20D	0.05	0.15	0.016	0.2	25	0.9	0.18	0.001	0
90B10C	0.05	0.15	0.016	0.2	25	1.9	0.47	0.001	0
90B10D	0.05	0.15	0.016	0.2	25	1.85	0.46	0.001	0
90C10D	0.05	0.15	0.016	0.2	25	0.95	0.19	0.001	0
No DA to Structure	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0
No Pervious Areas	0.05	0.15	0.016	0.2	25	0.001	0.001	0.001	0

APPENDIX C: HYDRAULIC INPUT PARAMETERS

Table 1. Link XP - Table Input Data

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5443-061_LS_002	IN5443-061	LS_002	844.72	844.67	0.667	0		10.124	Circular	0.01	0.05	0.05
AS5441-003_IN5441-004	AS5441-003	IN5441-004	845.99	845.64	1.75	0		292.001	Circular	0.018	0.05	0.25
IN5441-004_IN5441-006	IN5441-004	IN5441-006	845.64	845.72	2	0		92.429	Circular	0.013	0.25	0.25
IN5441-005_IN5442-007	IN5441-005	IN5442-007	845.6	844.65	3	0		386.046	Circular	0.013	0.25	0.05
IN5441-006_IN5441-005	IN5441-006	IN5441-005	845.72	845.6	2	0		36.114	Circular	0.013	0.25	0.25
AS5442-002_MI5442-013	AS5442-002	MI5442-013	841.92	841.8	4	10		132.404	Rectangular	0.013	0.05	0.05
IN5442-007_AE5442-008	IN5442-007	AE5442-008	844.65	843.62	3	0		516.788	Circular	0.013	0.05	0.25
DummyOutfallLink_IN5442-007_AE5442-008	AE5442-008	Yahara5	843.62	843.6	3	0		10	Circular	0.013	0.25	0.25
AS5443-002_AS5443-006	AS5443-002	AS5443-006	844.38	844.61	4	5		318.641	Rectangular	0.013	0.05	0.05
AS5443-006_AS5443-013	AS5443-006	AS5443-013	844.61	844.02	4	5		264.609	Rectangular	0.013	0.05	0.05
AS5443-013_MI5443-051	AS5443-013	MI5443-051	844.02	843.6	4	5		221.561	Rectangular	0.013	0.05	0.05
AS5343-001_AS5343-005	AS5343-001	AS5343-005	846.66	846.47	2	5		136.149	Rectangular	0.013	0.05	0.05
AS5343-002_AS5343-001	AS5343-002	AS5343-001	846.73	846.66	2	5		42.012	Rectangular	0.013	0.05	0.05
AS5343-005_AS5343-046	AS5343-005	AS5343-046	846.47	846.32	2	5		112.96	Rectangular	0.013	0.25	0.5
AS5344-022_IN5344-093	AS5344-022	IN5344-093	848.1	848.14	1.5	0		238.679	Circular	0.013	0.05	0.25
AS5445-003_AS5445-004	AS5445-003	AS5445-004	846.5	846.45	1.5	0		17.149	Circular	0.013	0.25	0.5
AS5445-004_AS5445-005	AS5445-004	AS5445-005	846.45	846.52	1.5	0		12.073	Circular	0.013	0.5	0.05
AS5445-005_AS5445-008	AS5445-005	AS5445-008	846.52	846.08	1.5	0		60.719	Circular	0.013	0.05	0.05
AS5445-008_AS5445-010	AS5445-008	AS5445-010	846.08	846.05	1.5	0		138.193	Circular	0.013	0.05	0.05
AS5445-003_AS5445-009	AS5445-009	AS5445-003	846.5	845.57	1.667	0		158.523	Circular	0.013	0.05	0.25
AS5445-010_AS5445-016	AS5445-010	MI5445-074	846.05	846	1.5	0		126.812	Circular	0.013	0.05	0.05
IN5445-038_IN5445-104	IN5445-038	IN5445-104	847.01	843.41	1.88	1.167	Horizontal Ellipse	67.212	Special	0.013	0.05	0.05
IN5445-039_IN5445-038	IN5445-039	IN5445-038	847.13	847.01	1.5	0		14.087	Circular	0.01	0.05	0.05
IN5445-040_IN5445-039	IN5445-040	IN5445-039	847.24	847.13	1.88	1.167	Horizontal Ellipse	60.818	Special	0.013	0.05	0.05
IN5445-041_IN5445-040	IN5445-041	IN5445-040	847.53	1.031	1.88	1.167	Horizontal Ellipse	149.737	Special	0.013	0.05	0.05
IN5445-042_IN5445-041	IN5445-042	IN5445-041	847.73	847.53	1.88	1.167	Horizontal Ellipse	60.058	Special	0.013	0.05	0.05
IN5445-043_IN5445-042	IN5445-043	IN5445-042	847.91	847.73	1.88	1.167	Horizontal Ellipse	50.149	Special	0.013	0.05	0.05
IN5445-044_IN5445-043	IN5445-044	IN5445-043	848.56	847.91	1.5	0		49.922	Circular	0.013	0.05	0.05
IN5445-045_IN5445-044	IN5445-045	IN5445-044	848.64	848.56	1.5	0		103.393	Circular	0.013	0.05	0.05
IN5345-001_AS5445-004	IN5345-001	AS5445-004	847.04	846.45	1.75	0		76.932	Circular	0.013	0.05	0.5
AS5345-010_MI5345-068	AS5345-010	MI5345-068	844.22	845	2	0		83.506	Circular	0.013	0.05	0.05
AS5345-025_AS5345-010	AS5345-025	AS5345-010	845.86	844.22	2	0		233.945	Circular	0.013	0.5	0.05
AS5345-026_AS5345-025	AS5345-026	AS5345-025	847.16	845.86	1.5	0		88.01	Circular	0.013	0.05	0.5
AS5346-053_AS5346-111	AS5346-053	AS5346-111	845.41	844.99	1.5	0		198.022	Circular	0.013	0.05	0.05
AS5346-059_AS5346-136	AS5346-059	AS5346-136	846.1	845.43	2	0		42.721	Circular	0.013	0.05	0.05
AS5446-001_CB5447-074	AS5446-001	CB5447-074	847.7	847.5	3.137	2	Horizontal Ellipse	245.961	Special	0.013	0.05	0.05
IN5446-026_AS5446-001	IN5446-026	AS5446-001	847.7	847.7	3.137	2	Horizontal Ellipse	60.47	Special	0.013	0.5	0.05
IN5446-035_IN5446-026	IN5446-035	IN5446-026	847.8	847.7	1.5	0		20.053	Circular	0.013	0.05	0.5
AS5447-003_MI5447-002	AS5447-003	MI5447-002	847.2	847.2	3.72	2.417	Horizontal Ellipse	53.763	Special	0.013	0.5	0.05
IN5447-010_AS5447-003	IN5447-010	AS5447-003	849	847.2	1.887	1.167	Horizontal Ellipse	133.036	Special	0.013	0.05	0.5
AS5347-008_AS5347-011	AS5347-008	AS5347-011	847.2	846.6	2.5	3.5		273.125	Rectangular	0.013	0.05	0.05
AS5347-011_IN5347-014	AS5347-011	IN5347-014	846.6	846.6	1.5	3		210.923	Rectangular	0.013	0.05	0.05
IN5347-014_AS5348-051	IN5347-014	AS5348-051	846.6	846.7	1.5	3		292.314	Rectangular	0.013	0.05	0.05
AS5347-023_AS5347-058	AS5347-023	AS5347-058	846.26	846.13	2.47	1.583	Horizontal Ellipse	58.978	Special	0.013	0.05	0.05
IN5347-034_IN5347-073	IN5347-034	IN5347-073	846.87	845.14	1.5	0		119.502	Circular	0.013	0.05	0.05
IN5347-035_IN5347-034	IN5347-035	IN5347-034	846.97	846.87	1.5	0		44.171	Circular	0.013	0.05	0.05
IN5247-016_MI5247-151	IN5247-016	MI5247-151	845.75	843.1	2.47	1.583	Horizontal Ellipse	27.004	Special	0.013	0.05	0.05
IN5247-078_AS5247-176	IN5247-078	AS5247-176	846.5	845.6	2.47	1.583	Horizontal Ellipse	30.883	Special	0.013	0.05	0.5
AS5147-038_AS5147-040	AS5147-038	AS5147-040	846.56	846.05	1.5	2.3		286.689	Rectangular	0.013	0.05	0.05
AS5147-040_AS5147-041	AS5147-040	AS5147-041	846.05	845.87	1.5	2.3		100.012	Rectangular	0.013	0.05	0.05
AS5147-041_IN5147-065	AS5147-041	IN5147-065	845.87	845.5	1.5	2.3		213.088	Rectangular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5148-040_IN5248-079	AS5148-040	IN5248-079	866.41	854.62	1.667	0		264.565	Circular	0.01	0.05	0.05
AS5148-046_AS5148-040	AS5148-046	AS5148-040	878.51	866.41	1.5	0		271.059	Circular	0.01	0.05	0.05
AS5248-001_AS5348-050	AS5248-001	AS5348-050	841.45	841.15	5.5	0		223.259	Circular	0.013	0.05	0.5
AS5248-010_AS5348-097	AS5248-010	AS5348-097	843.6	842.54	4.5	6.3		356.124	Rectangular	0.013	0.05	0.5
AS5248-011_AS5248-001	AS5248-011	AS5248-001	842.8	841.45	5.5	0		132.565	Circular	0.013	0.05	0.05
BloutSt_Orifice3	AS5248-011	AS5248-010										
AS5248-013_TP5248-085	AS5248-013	TP5248-085	843.49	843.51	3.5	6.3		36.361	Rectangular	0.013	0.5	0.05
AS5248-021_AS5248-048	AS5248-021	AS5248-048	843.3	841.77	5.63	3.583	Horizontal Ellipse	252.932	Special	0.013	0.5	0.5
BloutSt_Orifice2	AS5248-021	AS5248-013										
AS5248-046_IN5247-096	AS5248-046	IN5247-096	851.55	843.81	3.137	2	Horizontal Ellipse	599.092	Special	0.013	0.05	0.25
AS5248-048_AS5248-053	AS5248-048	AS5248-053	841.77	841.77	6.3	4	Horizontal Ellipse	330.16	Special	0.013	0.5	0.5
AS5248-051_MI5248-052	AS5248-051	MI5248-052	854.9	854.06	3.137	2	Horizontal Ellipse	23.003	Special	0.013	0.05	0.05
AS5248-053_AS5248-011	AS5248-053	AS5248-011	841.77	842.8	5.5	0		217.431	Circular	0.013	0.5	0.5
IN5248-062_AS5248-051	IN5248-062	AS5248-051	856.73	854.9	2.47	1.583	Horizontal Ellipse	66.57	Special	0.013	0.05	0.05
AS5248-066_AS5248-053	AS5248-066	AS5248-053	846.35	841.77	1.887	1.167	Horizontal Ellipse	138.018	Special	0.013	0.05	0.5
IN5248-079_AS5248-046	IN5248-079	AS5248-046	854.62	851.55	1.667	0		70.104	Circular	0.01	0.05	0.05
AS5348-016_AS5348-097	AS5348-016	AS5348-097	845.05	845	5.63	3.583	Horizontal Ellipse	33.846	Special	0.013	0.5	0.5
AS5348-017_AS5349-003	AS5348-017	AS5349-003	842.48	842.07	5.5	6		261.931	Rectangular	0.013	0.5	0.05
AS5348-030_CB5348-068	AS5348-030	CB5348-068	850.5	848.93	1.5	0		137.276	Circular	0.01	0.05	0.5
AS5349-003_LKMON	AS5349-003	BlountOutfall	842.07	841.39	5.5	6		377.905	Rectangular	0.013	0.05	0.05
AS5249-001_AS5249-010	AS5249-001	AS5249-010	841.15	842.1	9.387	6	Horizontal Ellipse	232.883	Special	0.013	0.5	0.5
AS5249-001_AS5348-050	AS5249-001	AS5348-050	841.15	841.15	9.38	6	Horizontal Ellipse	537.21	Special	0.013	0.25	0.5
AS5249-010_LKMON	AS5249-010	MO04U0089A	842.1	839.32	10.05	6.417	Horizontal Ellipse	253.131	Special	0.013	0.5	0.05
AS5249-011_AS5249-010_1	AS5249-011	AS5249-010	846.4	842.1	2	0		48.588	Circular	0.01	0.5	0.5
AS5249-012_AS5249-011_2	AS5249-012	AS5249-011	846.84	846.4	2.47	1.583	Horizontal Ellipse	89.414	Special	0.013	0.5	0.5
AS5249-013_AS5249-012_1	AS5249-013	AS5249-012	847.74	846.84	2	0		67.845	Circular	0.013	0.5	0.5
AS5249-014_AS5249-013_2	AS5249-014	AS5249-013	848.65	847.74	2.47	1.583	Horizontal Ellipse	47.872	Special	0.013	0.5	0.5
IN5249-015_IN5249-016	IN5249-015	IN5249-016	850	849.29	1.5	0		66.65	Circular	0.013	0.05	0.05
IN5249-016_IN5249-017	IN5249-016	IN5249-017	849.29	849.26	1.5	0		11.564	Circular	0.013	0.05	0.05
IN5249-017_IN5249-018	IN5249-017	IN5249-018	849.26	849.22	2.47	1.583	Horizontal Ellipse	12.453	Special	0.013	0.05	0.05
IN5249-018_AS5249-014	IN5249-018	AS5249-014	849.22	848.65	2.47	1.583	Horizontal Ellipse	32.238	Special	0.013	0.5	0.5
IN5249-032_AS5249-014	IN5249-032	AS5249-014	849.54	848.65	1.5	0		56.073	Circular	0.013	0.5	0.5
IN5249-033_IN5249-032	IN5249-033	IN5249-032	849.57	849.54	1.5	0		15.313	Circular	0.013	0.05	0.05
IN5249-034_IN5249-033	IN5249-034	IN5249-033	849.6	849.57	1.5	0		14.827	Circular	0.013	0.05	0.05
IN5249-076_AS5249-085	IN5249-076	AS5249-085	874.9	872.8	1	0		54.572	Circular	0.01	0.05	0.05
AS5149-001_CB5249-091	AS5149-001	CB5249-091	882.33	881.2	1.5	0		25.676	Circular	0.01	0.05	0.05
BloutSt_Orifice4	AS5348-050	AS5348-097										
AS5343-046_AS5344-029	AS5343-046	AS5344-029	846.32	845.68	4	5		379.928	Rectangular	0.013	0.5	0.25
AS5343-047_AS5343-046	AS5343-047	AS5343-046	846.5	846.32	1.75	0		35.929	Circular	0.013	0.25	0.5
AS5343-051_AS5343-047	AS5343-051	AS5343-047	846.65	846.5	1.75	0		76.81	Circular	0.013	0.25	0.5
AS5343-054_AS5343-055	AS5343-054	AS5343-055	847.07	847	1.5	0		7.939	Circular	0.013	0.05	0.05
AS5343-055_AS5343-051	AS5343-055	AS5343-051	847	846.65	1.5	0		155.951	Circular	0.013	0.05	0.05
AS5343-058_AS5343-054	AS5343-058	AS5343-054	847.61	847.07	1.5	0		174.902	Circular	0.013	0.05	0.05
AS5343-061_AS5343-058	AS5343-061	AS5343-058	848.15	847.61	1.887	1.167	Horizontal Ellipse	216.069	Special	0.013	0.05	0.05
AS5343-064_AS5343-061	AS5343-064	AS5343-061	848.93	848.15	1.887	1.167	Horizontal Ellipse	197.431	Special	0.013	0.05	0.05
AS5444-049_AS5444-060	AS5444-049	AS5444-060	866.35	855.83	1.5	0		204.023	Circular	0.013	0.05	0.05
AS5444-053_AS5444-066	AS5444-053	AS5444-066	846.54	844.64	2.47	1.583	Horizontal Ellipse	79.82	Special	0.013	0.05	0.05
AS5444-056_AS5444-053	AS5444-056	AS5444-053	847.96	846.54	1.75	0		127.014	Circular	0.013	0.05	0.05
AS5444-057_AS5444-056	AS5444-057	AS5444-056	853.6	847.96	1.75	0		155.017	Circular	0.013	0.05	0.05
AS5444-060_AS5444-057	AS5444-060	AS5444-057	855.83	853.6	1.75	0		69.214	Circular	0.013	0.05	0.05
AS5348-051_IN5348-053	AS5348-051	IN5348-053	846.7	846.4	4.97	3.167	Horizontal Ellipse	161.371	Special	0.013	0.05	0.5
AS5249-085_IN5248-062	AS5249-085	IN5248-062	872.8	856.73	2.5	0		267.231	Circular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5347-058_IN5347-088	AS5347-058	IN5347-088	846.13	846.13	2.47	1.583	Horizontal Ellipse	274.722	Special	0.013	0.05	0.05
IN5345-055_AS5345-025	IN5345-055	AS5345-025	846.89	845.86	1.5	0		235.037	Circular	0.01	0.05	0.5
IN5347-075_AS5347-023	AS5347-075	AS5347-023	844.8	846.26	1.5	0		40.909	Circular	0.013	0.05	0.05
IN5248-088_TP5248-044	IN5248-088	TP5248-044	844.79	843.4	1.5	0		22.777	Circular	0.013	0.05	0.5
IN5248-089_IN5248-088	IN5248-089	IN5248-088	844.93	844.79	1.5	0		9.911	Circular	0.013	0.05	0.05
IN5248-090_IN5248-089	IN5248-090	IN5248-089	845.45	844.93	1.5	0		126.015	Circular	0.013	0.05	0.05
IN5247-096_TP5247-145	IN5247-096	TP5247-145	843.81	843.4	2.5	0		25.002	Circular	0.013	0.5	0.5
IN5248-091_IN5248-090	IN5248-091	IN5248-090	846.5	845.45	1.5	0		91.011	Circular	0.013	0.05	0.05
AS5247-097_AS5247-100	AS5247-097	AS5247-100	843.1	843.1	3	0		46.005	Circular	0.013	0.05	0.05
AS5247-100_AS5247-102	AS5247-100	AS5247-102	843.1	843.1	3	0		142.017	Circular	0.013	0.05	0.05
AS5247-102_AS5247-105	AS5247-102	AS5247-105	843.1	843.1	3	0		148.018	Circular	0.013	0.05	0.05
AS5247-105_AS5247-112	AS5247-105	AS5247-200	843.17	841.2	3	0		38.66	Circular	0.013	0.05	0.5
AS5247-112_AS5347-076	AS5247-112	AS5347-076	841.2	841.2	5	10		454.52	Rectangular	0.013	0.5	0.05
IN5247-113_AS5247-112	IN5247-113	AS5247-112	844.1	841.2	2	0		8.752	Circular	0.013	0.5	0.5
IN5247-114_IN5247-113	IN5247-114	IN5247-113	845.62	844.1	1.5	0		42.699	Circular	0.013	0.5	0.5
IN5247-115_IN5247-114	IN5247-115	IN5247-114	845.95	845.62	1.5	0		26.182	Circular	0.013	0.5	0.5
IN5247-117_IN5247-115	IN5247-117	IN5247-115	846.26	845.95	1.5	0		23.14	Circular	0.013	0.05	0.5
IN5247-128_AS5247-127	IN5247-128	AS5247-127	844.29	843.66	2	0		24.54	Circular	0.013	0.05	0.5
AS5347-076_AS5346-076	AS5347-076	AS5346-076	841.2	841.2	5	10		141.356	Rectangular	0.013	0.05	0.5
AS5347-084_AS5346-076	AS5347-084	AS5346-076	843.09	841.2	3	0		21	Circular	0.013	0.05	0.5
AS5346-076_AS5346-086.1	AS5346-081	AS5346-086	841.2	841.2	5	10		187.284	Rectangular	0.013	0.05	0.05
AS5346-086_AS5346-090	AS5346-086	AS5346-090	841.2	841.2	5	10		117.015	Rectangular	0.013	0.05	0.05
AS5346-090_AS5346-095	AS5346-090	AS5346-092	841.2	841.2	5	10		149.862	Rectangular	0.013	0.05	0.05
AS5346-090_AS5346-095.1	AS5346-092	AS5346-095	841.2	841.2	5	10		89.167	Rectangular	0.013	0.05	0.05
AS5346-095_AS5346-096	AS5346-095	AS5346-096	841.2	841.2	5	10		52.007	Rectangular	0.013	0.05	0.5
AS5346-096_AS5346-106	AS5346-096	AS5346-106	841.2	841.2	5	10		16.716	Rectangular	0.013	0.5	0.5
AS5346-102_AS5346-096	AS5346-102	AS5346-096	844.1	841.2	2.5	0		103.688	Circular	0.013	0.05	0.5
AS5346-106_AS5346-112	AS5346-106	AS5346-112	841.2	841.2	5	10		147.304	Rectangular	0.013	0.5	0.05
AS5346-107_AS5346-106	AS5346-107	AS5346-106	843.14	841.2	2.5	0		33.004	Circular	0.013	0.25	0.5
AS5346-111_AS5346-107	AS5346-111	AS5346-107	844.99	843.14	2	0		22.002	Circular	0.013	0.05	0.25
AS5346-112_AS5346-120	AS5346-112	AS5346-120	841.2	841.2	5	10		470.058	Rectangular	0.013	0.05	0.5
AS5346-120_AS5346-129	AS5346-120	AS5346-129	841.2	841.2	5	10		28.041	Rectangular	0.013	0.5	0.5
IN5346-124_AS5346-120	IN5346-124	AS5346-120	843.98	841.2	2	0		36.917	Circular	0.013	0.05	0.5
AS5346-129_AS5345-070	AS5346-129	AS5345-070	841.2	841.2	5	10		79.01	Rectangular	0.013	0.5	0.5
IN5346-130_AS5346-129	IN5346-130	AS5346-129	842.9	841.2	3	0		40.176	Circular	0.013	0.05	0.5
IN5346-131_IN5346-130	IN5346-131	IN5346-130	843.84	842.9	3	0		48.643	Circular	0.013	0.05	0.05
AS5346-132_IN5346-131	AS5346-132	IN5346-131	844.05	843.84	2.5	0		45.005	Circular	0.013	0.05	0.05
IN5345-067_AS5346-129	IN5345-067	AS5346-129	843.98	841.2	3.72	2.417	Horizontal Ellipse	103.269	Special	0.013	0.05	0.5
AS5345-070_AS5445-050	AS5345-070	AS5445-050	841.2	841.2	5	10		275.034	Rectangular	0.013	0.5	0.05
IN5345-074_AS5345-070	IN5345-074	AS5345-070	845.39	841.2	2	0		22.09	Circular	0.013	0.05	0.5
AS5445-050_AS5445-062	AS5445-050	AS5445-062	841.2	841.2	5	10		249.404	Rectangular	0.013	0.05	0.05
AS5445-050_AS5445-062.1	AS5445-062	AS5445-068	841.2	841.2	5	10		40.5	Rectangular	0.013	0.05	0.05
AS5445-069_AS5445-068	AS5445-069	AS5445-068	844.77	841.2	2.5	0		98.011	Circular	0.013	0.5	0.5
IN5445-070_AS5445-069	IN5445-070	AS5445-069	844.64	844.77	2	0		4.887	Circular	0.013	0.05	0.5
AS5445-080_AS5445-092	AS5445-080	AS5445-092	841.2	841.2	5	10		288.715	Rectangular	0.013	0.05	0.05
AS5445-092_AS5445-099	AS5445-092	AS5445-099	841.2	841.2	5	10		193.024	Rectangular	0.013	0.05	0.05
AS5445-099_AS5444-063	AS5445-099	AS5444-063	841.2	841.2	5	10		39.005	Rectangular	0.013	0.05	0.5
AS5444-063_AS5444-078	AS5444-063	AS5444-063.1	841.2	841.2	5	10		149.058	Rectangular	0.013	0.5	0.05
IN5445-104_AS5444-063	IN5445-104	AS5444-063	843.41	841.2	3	0		43.411	Circular	0.013	0.05	0.5
AS5444-066_IN5444-067	AS5444-066	IN5444-067	844.64	844.72	2.5	0		20.133	Circular	0.013	0.05	0.05
IN5444-067_AS5444-063	IN5444-067	AS5444-063	844.72	841.2	2.5	0		102.91	Circular	0.013	0.05	0.5
AS5444-063_AS5444-078.1.1	AS5444-073	AS5444-078	841.2	841.2	5	10		118.928	Rectangular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
TP5444-093_TP5444-094	AS5444-078	TP5444-094	841.2	841.2	5	10		173.92	Rectangular	0.013	0.05	0.5
TP5444-094_TP5544-066	TP5444-094	AS5544-060	841.2	841.2	5	10		41.86	Rectangular	0.013	0.5	0.05
IN5444-086_TP5444-094	IN5444-086	TP5444-094	844.64	841.2	2.5	0		101.36	Circular	0.014	0.5	0.5
AS5444-087_IN5444-086	AS5444-087	IN5444-086	845.07	844.64	2	0		15.002	Circular	0.013	0.5	0.5
AS5247-134_AS5247-097	AS5247-134	AS5247-097	843.1	843.1	3	0		103.496	Circular	0.013	0.5	0.05
AS5247-136_AS5247-134	AS5247-136	AS5247-134	842.9	843.1	3	0		22.43	Circular	0.013	0.5	0.5
IN5247-137_AS5247-136	IN5247-137	AS5247-136	845.1	842.9	2.5	0		93.411	Circular	0.013	0.5	0.5
AS5346-136_AS5346-053	AS5346-136	AS5346-053	845.43	845.41	1.5	0		107.011	Circular	0.013	0.05	0.05
IN5443-030_AE5443-031	IN5443-030	AE5443-031	845.78	845.56	1.5	0		35.402	Circular	0.013	0.05	0.25
DummyOutfallLink_IN5443-030_AE5443-031	AE5443-031	Yahara8	845.56	845.5	1.5	0		10	Circular	0.013	0.25	0.25
IN5443-032_AS5443-037	IN5443-032	AS5443-037	848.52	846.28	1.75	0		45.006	Circular	0.013	0.05	0.05
IN5443-033_IN5443-032	IN5443-033	IN5443-032	848.52	848.52	1.75	0		31.299	Circular	0.013	0.5	0.5
AS5443-034_IN5443-033	AS5443-034	IN5443-033	848.52	848.52	1.75	0		9.748	Circular	0.013	0.5	0.5
AS5443-036_AS5443-034	AS5443-036	AS5443-034	852.19	848.52	1.75	0		97.011	Circular	0.013	0.05	0.5
AS5443-037_AE5443-038	AS5443-037	AE5443-038	846.28	846.28	1.75	0		60.008	Circular	0.013	0.05	0.25
DummyOutfallLink_AS5443-037_AE5443-038	AE5443-038	Yahara9	846.28	846.28	1.75	0		10	Circular	0.013	0.25	0.25
AS5443-039_AS5443-036	AS5443-039	AS5443-036	853.14	852.19	1.75	0		79.523	Circular	0.013	0.05	0.05
AS5443-042_AS5443-039	AS5443-042	AS5443-039	856.55	853.14	1.5	0		120.015	Circular	0.013	0.05	0.05
IN5347-088_AS5347-084_1	IN5347-088	AS5347-084	846.13	843.09	1.5	0		20.248	Circular	0.013	0.05	0.5
AS5348-052_AS5348-101	AS5348-052	AS5348-101	846.4	845.47	2	3.5		310.125	Rectangular	0.013	0.05	0.05
IN5348-053_AS5348-052	IN5348-053	AS5348-052	846.4	846.4	5	3.167	Horizontal Ellipse	51.021	Special	0.013	0.05	0.05
AS5348-058_IN5348-053	AS5348-058	IN5348-053	843.6	843.6	2.5	0		133.955	Circular	0.013	0.05	0.5
AS5443-052_AS5443-053	AS5443-052	AS5443-053	843.3	843.01	4	5		100.011	Rectangular	0.013	0.25	0.25
AS5443-053_HD5443-054	AS5443-053	HD5443-054	843.01	842.99	4	5		33.006	Rectangular	0.013	0.25	0.25
AS5442-014_HD5443-063	AS5442-014	HD5443-063	841.41	841.32	4	10		80.01	Rectangular	0.013	0.25	0.25
AS5442-015_IYHRV	AS5442-015	MO01D0111D	845.43	845.41	3	0		90.012	Circular	0.013	0.25	0.05
IN5148-076_AS5148-127	IN5148-076	AS5148-127	841.25	841.25	2.47	1.583	Horizontal Ellipse	15.916	Special	0.013	0.05	0.05
IN5148-077_IN5148-076	IN5148-077	IN5148-076	848	847.15	2	0		130.426	Circular	0.013	0.05	0.05
IN5148-078_IN5148-077	IN5148-078	IN5148-077	852.5	848	1.75	0		119.177	Circular	0.013	0.05	0.05
IN5148-082_IN5147-062	IN5148-082	IN5147-062	846.66	845.42	2	0		207.57	Circular	0.013	0.05	0.05
IN5147-062_IN5247-153	IN5147-062	IN5247-153	845.42	844.42	2	0		192.491	Circular	0.013	0.05	0.05
AS5247-152_IN5247-158	AS5247-152	IN5247-158	843.1	843.1	4	8		27.529	Rectangular	0.013	0.5	0.5
IN5247-153_IN5247-154	IN5247-153	IN5247-154	844.42	844.01	2.25	0		183.369	Circular	0.013	0.5	0.5
IN5247-154_AS5247-152	IN5247-154	AS5247-152	844.01	843.1	2.25	0		26.138	Circular	0.013	0.5	0.5
IN5247-158_AS5247-159	IN5247-158	AS5247-159	843.1	843.1	4	8		310.11	Rectangular	0.013	0.5	0.5
AS5247-159_MI5248-119	AS5247-159	MI5248-119	843.4	843.4	3	6		184.13	Rectangular	0.013	0.5	0.5
AS5247-159_TP5247-145	AS5247-159	TP5247-145	843.4	843.4	3	6		53.386	Rectangular	0.013	0.5	0.5
IN5247-165_MI5247-191	IN5247-165	MI5247-191	845.6	845.59	1.887	1.167	Horizontal Ellipse	45.791	Special	0.013	0.05	0.05
IN5247-167_IN5247-165	IN5247-167	IN5247-165	845.6	845.6	1.887	1.167	Horizontal Ellipse	96.532	Special	0.013	0.05	0.05
IN5247-169_IN5247-167	IN5247-169	IN5247-167	846.2	845.6	1.887	1.167	Horizontal Ellipse	248.063	Special	0.013	0.05	0.05
AS5247-173_AS5247-152	AS5247-173	AS5247-152	843.1	843.1	3	6		341.342	Rectangular	0.013	0.5	0.5
AS5247-176_AS5247-173	AS5247-176	AS5247-173	843.1	843.1	1.887	1.167	Horizontal Ellipse	40.005	Special	0.013	0.5	0.05
IN5147-064_AS5247-176	IN5147-064	AS5247-176	845.6	845.6	1.887	1.167	Horizontal Ellipse	24.768	Special	0.013	0.05	0.5
IN5147-065_AS5247-176	IN5147-065	AS5247-176	845.5	845.6	1.887	1.167	Horizontal Ellipse	24.932	Special	0.013	0.05	0.5
AS5246-090_IN5246-159	AS5246-090	IN5246-159	846.6	845.46	2	0		36.548	Circular	0.013	0.5	0.05
IN5246-091_AS5246-090	IN5246-091	AS5246-090	842.75	842.75	1.75	0		19.447	Circular	0.013	0.05	0.5
IN5246-092_AS5246-090	IN5246-092	AS5246-090	845.83	845.6	2.47	1.583	Horizontal Ellipse	58.997	Special	0.013	0.05	0.5
IN5246-094_IN5246-091	IN5246-094	IN5246-091	845.63	845.6	1.5	0		128.894	Circular	0.013	0.05	0.05
IN5246-098_AS5246-090	IN5246-098	AS5246-090	846.33	845.6	1.75	0		134.892	Circular	0.013	0.05	0.5
IN5346-147_IN5246-098	IN5346-147	IN5246-098	847.21	846.33	1.5	0		201.763	Circular	0.013	0.05	0.05
AS5346-149_IN5346-157	AS5346-149	IN5346-157	846.61	846.55	1.5	0		20.03	Circular	0.013	0.5	0.05
IN5346-154_AS5346-149	IN5346-154	AS5346-149	847	846.61	1.5	0		56.215	Circular	0.013	0.05	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5346-156_AS5346-149	IN5346-156	AS5346-149	847	846.61	1.5	0		55.889	Circular	0.013	0.05	0.5
IN5346-157_MI5346-103	IN5346-157	MI5346-103	846.55	845.25	1.5	0		306.91	Circular	0.013	0.05	0.05
CB5343-067_AS5343-104	CB5343-067	AS5343-104	847.78	847.45	1.5	0		17.831	Circular	0.013	0.05	0.5
CB5444-096_AS5444-087	CB5444-096	AS5444-087	849.17	845.07	1.75	0		297.033	Circular	0.013	0.05	0.5
AS5444-104_CB5444-096	AS5444-104	CB5444-096	857.39	849.17	1.5	0		225.474	Circular	0.013	0.05	0.05
AS5344-076_AS5343-002	AS5344-076	AS5343-002	846.55	846.73	2	5		318.949	Rectangular	0.013	0.05	0.05
CB5344-081_IN5344-077	CB5344-081	IN5344-077	846.55	846.55	3.137	2	Horizontal Ellipse	40.816	Special	0.013	0.5	0.5
AS5344-082_CB5344-081	AS5344-082	CB5344-081	846.56	846.55	3.137	2	Horizontal Ellipse	23.415	Special	0.013	0.5	0.5
AS5344-083_AS5344-082	AS5344-083	AS5344-082	846.6	846.56	3.137	2	Horizontal Ellipse	77.765	Special	0.013	0.5	0.05
AS5344-086_AS5344-083	AS5344-086	AS5344-083	846.65	846.6	2	0		25.465	Circular	0.013	0.05	0.5
AS5344-089_AS5344-083	AS5344-089	AS5344-083	847.03	846.6	1.75	0		89.01	Circular	0.013	0.05	0.5
AS5343-100_AS5344-089	AS5343-100	AS5344-089	847.34	847.03	1.75	0		154.018	Circular	0.013	0.05	0.05
AS5343-104_AS5343-100	AS5343-104	AS5343-100	847.45	847.34	1.75	0		67.532	Circular	0.013	0.5	0.05
AS5343-105_AS5343-104	AS5343-105	AS5343-104	847.9	847.45	1.887	1.167	Horizontal Ellipse	76.008	Special	0.013	0.05	0.5
AS5243-006_AS5343-105	AS5243-006	AS5343-105	848.6	847.9	1.91	1.167	Horizontal Ellipse	280.575	Special	0.013	0.05	0.05
IN5434-006_MI5434-007	IN5434-006	MI5434-007	853.63	853.5	1.5	0		10.001	Circular	0.013	0.05	0.05
CB5249-091_IN5249-076	CB5249-091	IN5249-076	881.2	874.9	1.5	0		180.738	Circular	0.01	0.05	0.05
IN5148-087_MI5148-089	IN5148-087	MI5148-089	847.1	847.03	2	0		7.967	Circular	0.012	0.05	0.05
IN5148-088_IN5148-087	IN5148-088	IN5148-087	850.18	847.1	1.5	0		41.419	Circular	0.013	0.05	0.05
AS5148-091_MI5148-090	AS5148-091	MI5148-090	853.23	852.75	1.5	0		8.477	Circular	0.013	0.05	0.05
CB5343-111_AS5343-064	CB5343-111	AS5343-064	848.83	848.93	1.887	1.167	Horizontal Ellipse	55.854	Special	0.013	0.05	0.05
CB5348-068_AS5348-058	CB5348-068	AS5348-058	848.93	843.6	3.137	2	Horizontal Ellipse	142.216	Special	0.013	0.5	0.05
CB5447-043_IN5447-010	CB5447-043	IN5447-010	849.37	849	1.5	0		144.202	Circular	0.013	0.05	0.05
IN5447-048_CB5447-043	IN5447-048	CB5447-043	849.61	849.37	1.887	1.167	Horizontal Ellipse	44.823	Special	0.013	0.5	0.05
AS5447-050_IN5447-048	AS5447-050	IN5447-048	850.51	849.61	1.887	1.167	Horizontal Ellipse	179.022	Special	0.013	0.05	0.5
CB5447-051_AS5447-050	CB5447-051	AS5447-050	850.98	850.51	1.887	1.167	Horizontal Ellipse	99.587	Special	0.013	0.05	0.05
CB5446-073_IN5446-054	CB5446-073	IN5446-054	852.4	849.18	1.667	0		270.37	Circular	0.01	0.05	0.05
AS5537-002_AS5537-031	AS5537-002	AS5537-031	847.81	848.2	2.3	3		263.679	Rectangular	0.013	0.5	0.5
AS5537-003_AS5537-002	AS5537-003	AS5537-002	848.02	847.81	2.5	0		39.506	Circular	0.013	0.5	0.05
AS5537-005_AS5537-003	AS5537-005	AS5537-003	849.16	848.02	2.5	0		290.3	Circular	0.013	0.05	0.05
AS5537-006_AS5537-005	AS5537-006	AS5537-005	849.78	849.16	2.5	0		149.47	Circular	0.013	0.05	0.05
AS5537-007_AS5537-006	AS5537-007	AS5537-006	850.3	849.78	2.5	0		126.484	Circular	0.013	0.05	0.05
AS5537-011_TE5537-012	AS5537-011	TE5537-012	851.34	850.87	2	0		250.554	Circular	0.013	0.05	0.5
AS5537-025_TP5537-029	AS5537-025	TP5537-029	848.32	848.11	2.3	3		264.935	Rectangular	0.013	0.05	0.5
AS5537-026_AS5537-027	AS5537-026	AS5537-027	847.72	847.23	2.3	3		241.649	Rectangular	0.013	0.05	0.5
AS5537-027_AS5637-031	AS5537-027	AS5637-031	847.23	846.65	2.3	3		60.762	Rectangular	0.013	0.5	0.05
AS5538-001_AS5537-011	AS5538-001	AS5537-011	851.92	851.34	2	0		317.323	Circular	0.013	0.05	0.05
AS5538-002_AS5538-001	AS5538-002	AS5538-001	851.29	851	2	0		33.929	Circular	0.013	0.05	0.05
AS5538-011_AS5540-011	AS5538-011	AS5540-011	844.34	841.65	8.137	5.25	Horizontal Ellipse	2696.336	Special	0.013	0.5	0.5
AS5539-006_AS5540-048	AS5539-006	AS5540-048	844.07	843.85	4	10		201.165	Rectangular	0.013	0.05	0.05
IN5637-001_AS5637-037	IN5637-001	AS5637-037	847.97	847.44	2	0		220.357	Circular	0.01	0.05	0.05
AS5637-002_CB5638-082	AS5637-002	CB5638-082	846.75	846.41	2	0		352.212	Circular	0.013	0.5	0.05
AS5637-006_AS5637-012	AS5637-006	AS5637-012	846.9	845.86	2.3	3		272.329	Rectangular	0.013	0.05	0.5
AS5637-006_AS5637-013	AS5637-006	AS5637-013	846.9	845.75	2.3	3		65.472	Rectangular	0.013	0.05	0.5
AS5637-007_TP5637-032	AS5637-007	TP5637-032	845.85	845.78	3	8		457.597	Rectangular	0.013	0.05	0.5
AS5637-012_AS5538-011	AS5637-012	AS5538-011	845.86	844.34	6.303	4	Horizontal Ellipse	1071.094	Special	0.013	0.5	0.5
AS5637-013_AS5637-025	AS5637-013	AS5637-025	845.75	845.41	4	10		278.71	Rectangular	0.013	0.5	0.05
AS5637-025_AS5637-026	AS5637-025	AS5637-026	845.41	845.25	4	10		248.03	Rectangular	0.013	0.05	0.05
AS5637-026_AS5637-027	AS5637-026	AS5637-027	845.25	845.1	4	10		217.026	Rectangular	0.013	0.05	0.05
AS5637-027_AS5637-028	AS5637-027	AS5637-028	845.1	844.97	4	10		207.024	Rectangular	0.013	0.05	0.05
AS5637-028_TP5638-003	AS5637-028	TP5638-003	844.97	844.85	4	10		184.189	Rectangular	0.013	0.05	0.5
AS5638-001_AS5638-002	AS5638-001	AS5638-002	844.82	844.82	4	10		204.929	Rectangular	0.013	0.5	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5638-002_AS5638-010	AS5638-002	AS5638-010	844.82	844.85	4	10		177.477	Rectangular	0.013	0.05	0.5
AS5638-004_AS5538-011	AS5638-004	AS5538-011	844.09	844.34	5.637	3.583	Horizontal Ellipse	277.493	Special	0.013	0.5	0.5
AS5638-010_AS5638-086	AS5638-010	AS5638-086	844.85	844.2	4	10		199.279	Rectangular	0.013	0.5	0.05
AS5638-015_TP5638-003	AS5638-015	TP5638-003	846.2	844.85	2	0		144.834	Circular	0.013	0.25	0.5
AS5638-016_AS5638-001	AS5638-016	AS5638-001	846.47	844.82	2.5	0		230.631	Circular	0.013	0.05	0.5
AS5638-017_AS5638-016	AS5638-017	AS5638-016	847.29	846.47	2.5	0		153.329	Circular	0.01	0.5	0.05
AS5638-017_AS5638-038	AS5638-017	AS5638-038	845.8	845.03	4.387	2.833	Horizontal Ellipse	310.066	Special	0.013	0.5	0.25
AS5638-024_AS5638-079	AS5638-024	AS5638-079	847.64	847.08	1.667	0		173.208	Circular	0.01	0.05	0.05
AS5639-002_IN5539-007	AS5639-002	IN5539-007	843.98	844.12	4	10		199.548	Rectangular	0.013	0.5	0.5
AS5639-011_MI5639-083	AS5639-011	MI5639-083	844.8	844.75	2	0		150.182	Circular	0.01	0.05	0.05
AS5639-012_AS5639-011	AS5639-012	AS5639-011	845.5	844.8	1.75	0		202.023	Circular	0.01	0.05	0.05
AS5639-014_AS5639-063	AS5639-014	AS5639-063	849.4	848.26	2.5	0		322.845	Circular	0.012	0.5	0.5
IN5738-003_IN5637-001	IN5738-003	IN5637-001	848.2	847.97	2	0		244.434	Circular	0.01	0.05	0.05
AS5738-004_AS5738-043	AS5738-004	AS5738-043	848.53	848.9	2	0		24.475	Circular	0.01	0.5	0.05
IN5739-006_AS5739-094	IN5739-006	AS5739-094	851.54	850.95	1	0		29.64	Circular	0.013	0.05	0.5
IN5739-007_AS5739-094	IN5739-007	AS5739-094	851.35	850.95	1.5	0		19.104	Circular	0.013	0.5	0.5
AS5739-020_AS5639-081	AS5739-020	AS5639-081	853.9	851.98	1.667	0		188.021	Circular	0.01	0.5	0.05
AS5739-020_AS5740-045	AS5739-020	AS5740-045	853.9	853.13	1.5	0		34.126	Circular	0.013	0.5	0.5
AS5942-005_AS5942-025	AS5942-005	AS5942-025	884.71	870.62	1	0		388.738	Circular	0.01	0.05	0.5
AS5942-012_AS5942-056	AS5942-012	AS5942-056	866.54	866.06	3	0		14.136	Circular	0.013	0.25	0.25
AS5942-025_AS5942-012	AS5942-025	AS5942-012	870.62	866.54	2.5	3		306.993	Rectangular	0.013	0.5	0.25
AS5942-026_AS5942-025	AS5942-026	AS5942-025	870.83	870.62	2	3		252.239	Rectangular	0.013	0.25	0.5
AS5942-030_AS5942-032	AS5942-030	AS5942-032	878.55	871.21	1	0		196.68	Circular	0.01	0.05	0.5
AS5942-032_AS5942-026	AS5942-032	AS5942-026	871.21	870.83	2	3		189.649	Rectangular	0.013	0.5	0.25
AS5942-044_AS5942-032	AS5942-044	AS5942-032	871.49	871.21	2	3		151.862	Rectangular	0.013	0.05	0.5
AS5941-015_AS5941-019	AS5941-015	AS5941-019	878.37	872	1.25	0		654.645	Circular	0.01	0.05	0.05
AS5941-019_AS5942-044	AS5941-019	AS5942-044	872	871.49	2	0		277.306	Circular	0.01	0.5	0.05
AS5841-001_AS5842-002	AS5841-001	AS5842-002	863.61	858.83	1.5	0		278.103	Circular	0.013	0.05	0.5
AS5841-017_AS5842-060	AS5841-017	AS5842-060	862.51	861.52	1.5	0		121.004	Circular	0.01	0.05	0.05
AS5841-027_AS5841-039	AS5841-027	AS5841-039	863.61	863.61	1	0		321.903	Circular	0.013	0.25	0.05
AS5841-028_AS5841-027	AS5841-028	AS5841-027	868.3	863.61	1	0		67.81	Circular	0.013	0.25	0.25
AS5842-012_AS5842-002	AS5842-012	AS5842-002	864.63	858.83	1.5	0		258.708	Circular	0.013	0.05	0.5
AS5742-026_AS5742-027	AS5742-026	AS5742-027	852.97	854.45	1.5	0		325.29	Circular	0.01	0.5	0.05
AS5742-026_AS5742-061	AS5742-026	AS5742-061	852.97	847.75	1.667	0		271.248	Circular	0.01	0.5	0.05
AS5742-027_AS5742-028	AS5742-027	AS5742-028	854.45	853.18	1.5	0		176.667	Circular	0.01	0.05	0.05
AS5742-029_AS5742-095	AS5742-029	AS5742-095	854.39	852.59	1.5	0		83.201	Circular	0.01	0.05	0.5
AS5742-030_AS5742-031	AS5742-030	AS5742-031	855.59	855.27	1.5	0		88.198	Circular	0.013	0.05	0.05
AS5742-031_AS5742-097	AS5742-031	AS5742-097	855.27	849.35	1.5	0		220.395	Circular	0.013	0.05	0.5
AS5742-033_AS5742-034	AS5742-033	AS5742-034	847.71	845.42	2.75	0		389.857	Circular	0.013	0.05	0.5
AS5742-034_AS5743-006	AS5742-034	AS5743-006	845.42	845.22	4	0		114.551	Circular	0.013	0.5	0.05
AS5742-052_AS5742-053	AS5742-052	AS5742-053	850.13	850.35	1.5	0		56.553	Circular	0.013	0.05	0.05
AS5742-053_IN5742-082	AS5742-053	IN5742-082	850.35	849.7	1.5	0		138.552	Circular	0.01	0.05	0.5
IN5742-057_AS5742-034	IN5742-057	AS5742-034	847.64	845.42	1.667	0		29.99	Circular	0.01	0.05	0.5
AS5742-061_IN5742-057	AS5742-061	IN5742-057	847.75	847.64	1.667	0		86.17	Circular	0.01	0.05	0.05
AS5740-002_AS5739-020	AS5740-002	AS5739-020	855.18	853.9	1.667	0		335.274	Circular	0.01	0.5	0.5
AS5740-002_AS5740-056	AS5740-002	AS5740-056	855.18	854.14	1.5	0		32.043	Circular	0.013	0.5	0.5
AS5640-001_IN5640-033	AS5640-001	IN5640-033	848.21	846.35	2	0		269.538	Circular	0.013	0.05	0.05
IN5641-090_AS5640-001.1	IN5640-002	AS5640-001	847.97	847.97	2	0		47.657	Circular	0.013	0.05	0.05
AS5640-014_MI5540-037	AS5640-014	MI5540-037	844.22	843.95	4.387	2.833	Horizontal Ellipse	305.392	Special	0.013	0.5	0.05
IN5640-019_AS5640-014	IN5640-019	AS5640-014	844.31	844.22	1.5	0		6.671	Circular	0.013	0.25	0.5
AS5542-001_AS5442-015	AS5542-001	AS5442-015	845.37	845.43	3	0		486.105	Circular	0.013	0.25	0.05
AS5542-002_AS5442-002	AS5542-002	AS5442-002	842.15	841.92	4	10		241.394	Rectangular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5542-003_IYHRV	AS5542-003	MO01B0112D	840.3	840.051	8.137	5.66	Horizontal Ellipse	627.095	Special	0.013	0.05	0.25
AS5541-013_AS5541-030	AS5541-013	AS5541-030	841	840.53	8.137	5.25	Horizontal Ellipse	103.879	Special	0.013	0.25	0.05
AS5541-014_AS5541-038	AS5541-014	AS5541-038	842.63	842.55	4	10		90.174	Rectangular	0.013	0.05	0.05
AS5541-015_AS5541-023	AS5541-015	AS5541-023	842.92	842.73	4	10		253.781	Rectangular	0.013	0.05	0.5
AS5541-016_AS5541-015	AS5541-016	AS5541-015	843.09	842.92	4	10		237.328	Rectangular	0.013	0.25	0.05
AS5541-023_AS5541-014	AS5541-023	AS5541-014	842.73	842.63	4	10		101.9	Rectangular	0.013	0.5	0.05
IN5541-025_AS5541-029_AS5541-016	IN5541-025	AS5541-029/AS5541-016	843.21	843.16	1	0		5.556	Circular	0.013	0.5	0.5
AS5541-029_AS5541-016	AS5541-029	AS5541-029/AS5541-016	843.09	843.102	4	10		112.84	Rectangular	0.013	0.05	0.5
AS5541-030_AS5541-031	AS5541-030	AS5541-031	840.53	840.36	8.137	5.25	Horizontal Ellipse	156.521	Special	0.013	0.05	0.25
AS5541-031_AS5542-003	AS5541-031	AS5542-003	840.36	840.3	8.137	5.66	Horizontal Ellipse	134.766	Special	0.013	0.25	0.25
IN5541-038_IN5542-027	AS5541-038	IN5542-027	842.55	842.35	4	10		208.615	Rectangular	0.013	0.05	0.05
AS5540-011_AS5540-012	AS5540-011	AS5540-012	841.65	841.53	8.137	5.25	Horizontal Ellipse	119.823	Special	0.013	0.5	0.5
AS5540-012_AS5541-013	AS5540-012	AS5541-013	841.53	841	8.137	5.25	Horizontal Ellipse	895.978	Special	0.013	0.5	0.25
IN5540-016_TP5540-029	IN5540-016	TP5540-029	844.28	843.73	1	0		35.288	Circular	0.013	0.5	0.5
AS5540-018_TP5540-029	AS5540-018	TP5540-029	843.8	843.73	4	10		99.255	Rectangular	0.013	0.05	0.5
AS5540-022_AS5540-018	AS5540-022	AS5540-018	842.06	843.8	4	10		211.331	Rectangular	0.013	0.05	0.05
AS5643-012_AS5643-019	AS5643-012	AS5643-019	843.3	842.98	4.5	0		162.32	Circular	0.013	0.25	0.5
AS5643-013_AS5643-012	AS5643-013	AS5643-012	843.87	843.3	4.5	0		293.811	Circular	0.013	0.05	0.25
AS5643-018_AS5643-026	AS5643-018	AS5643-026	845.01	846.04	1.667	0		421.745	Circular	0.01	0.05	0.05
AS5643-019_AS5643-020	AS5643-019	AS5643-020	842.98	842.82	4.5	0		51.669	Circular	0.013	0.5	0.5
IN5644-001_IN5644-002	IN5644-001	IN5644-002	844.73	844.48	3	0		126.608	Circular	0.013	0.05	0.25
IN5644-002_IYHRV	IN5644-002	IYHRV	844.48	844.17	3	0		155.358	Circular	0.013	0.25	0.25
AS5644-003_AS5644-004	AS5644-003	AS5644-004	842.43	842.28	4.5	0		74.497	Circular	0.013	0.25	0.25
AS5644-004_IYHRV	AS5644-004	MO02A0106D	842.28	842.15	4.5	0		67.828	Circular	0.013	0.25	0.5
AS5644-020_IYHRV	AS5644-020	MO03B0100D	842.63	842.16	2.5	4		63.037	Rectangular	0.013	0.5	0.25
AS5644-021_AS5644-020	AS5644-021	AS5644-020	843.13	842.63	2	0		13.818	Circular	0.01	0.5	0.5
AS5645-010_AS5644-021	AS5645-010	AS5644-021	846.28	843.13	2	0		470.101	Circular	0.01	0.05	0.05
AS5645-013_AS5645-019	AS5645-013	AS5645-019	845.75	846.45	2.5	4		313.182	Rectangular	0.013	0.25	0.05
AS5645-014_IN5645-035	AS5645-014	IN5645-035	847.28	844.2	1.75	0		19.687	Circular	0.013	0	0.5
AS5645-019_AS5645-020	AS5645-019	AS5645-020	846.45	845.59	2.5	4		335.795	Rectangular	0.013	0.05	0.05
AS5645-020_AS5645-033	AS5645-020	AS5645-033	845.59	844.15	2.5	4		193.896	Rectangular	0.013	0.05	0.05
IN5544-010_AS5544-011	IN5544-010	AS5544-011	846.65	846.53	1.88	1.167	Horizontal Ellipse	38.07	Special	0.013	0.05	0.5
AS5544-011_AS5544-077	AS5544-011	AS5544-077	846.53	845.91	2.47	1.583	Horizontal Ellipse	21.085	Special	0.013	0.5	0.5
IN5544-014_IN5544-017	IN5544-014	IN5544-017	847.38	847.27	1.88	1.167	Horizontal Ellipse	32.165	Special	0.013	0.5	0.5
IN5544-017_AS5544-018	IN5544-017	AS5544-018	847.27	847.24	1.88	1.167	Horizontal Ellipse	8.149	Special	0.013	0.5	0.5
AS5544-018_AS5544-011	AS5544-018	AS5544-011	847.24	846.53	2.47	1.583	Horizontal Ellipse	132.929	Special	0.013	0.5	0.5
IN5544-023_IN5544-014	IN5544-023	IN5544-014	847.67	847.38	1.88	1.167	Horizontal Ellipse	91.857	Special	0.013	0.5	0.5
IN5544-024_IN5544-023	IN5544-024	IN5544-023	847.7	847.67	1.88	1.167	Horizontal Ellipse	8.257	Special	0.013	0.5	0.5
IN5544-024_IN5544-029	IN5544-024	IN5544-029	847.7	846.65	1.25	0		176.571	Circular	0.01	0.5	0.5
IN5544-028_IN5544-033	IN5544-028	IN5544-033	847.3	846.61	1	0		17.029	Circular	0.013	0.5	0.5
IN5544-029_IN5544-031	IN5544-029	IN5544-031	846.65	846.65	1	0		11.093	Circular	0.013	0.5	0.5
IN5544-031_IN5544-034	IN5544-031	IN5544-034	846.65	846.58	1.75	0		13.083	Circular	0.013	0.5	0.5
IN5544-033_IN5544-034	IN5544-033	IN5544-034	846.61	846.58	1.75	0		9.882	Circular	0.013	0.5	0.5
IN5544-034_AS5544-035	IN5544-034	AS5544-035	846.58	846.52	3.72	2.417	Horizontal Ellipse	18.111	Special	0.013	0.5	0.5
AS5544-035_IN5544-037	AS5544-035	IN5544-037	846.52	846.16	3.72	2.417	Horizontal Ellipse	206.009	Special	0.013	0.5	0.5
IN5544-037_IN5544-040	IN5544-037	IN5544-040	846.16	845.61	3	0		271.541	Circular	0.013	0.5	0.05
IN5544-040_IN5644-001	IN5544-040	IN5644-001	845.61	844.73	3	0		437.897	Circular	0.013	0.05	0.05
AS5543-026_AE5543-133	AS5543-026	AE5543-133	843.44	843.43	2.5	0		40.897	Circular	0.01	0.25	0.05
AS5543-028_AS5543-134_1	AS5543-028	AS5543-134	843.97	843.78	1.5	0		21.084	Circular	0.01	0.25	0.25
Link1052	AS5543-028	Node1027	843.97	843.96	1.25	0		10	Circular	0.01	0	0
AS5744-027_AS5744-035	AS5744-027	AS5744-035	847.16	846.61	2	0		249.797	Circular	0.01	0.5	0.05
AS5744-035_LKMON	AS5744-035	RussellOutfall	846.61	846.39	2	0		170.737	Circular	0.01	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5743-003_IN5643-079	AS5743-003	IN5643-079	844.24	844.34	4.5	0		131.039	Circular	0.013	0.05	0.05
AS5743-006_AS5743-012	AS5743-006	AS5743-012	845.22	844.93	4	0		144.413	Circular	0.013	0.05	0.5
AS5743-012_AS5743-011	AS5743-012	AS5743-011	844.93	844.64	4.5	0		161.622	Circular	0.013	0.5	0.05
AS5743-016_AS5743-012	AS5743-016	AS5743-012	845.11	844.78	1.5	0		66.451	Circular	0.013	0.25	0.5
AS5743-042_AS5744-027	AS5743-042	AS5744-027	847.72	847.16	2	0		273.798	Circular	0.01	0.5	0.5
AS5547-001_SS5547-017	AS5547-001	SS5547-017	847.97	846.81	2	0		177.89	Circular	0.01	0.05	0.05
AS5637-031_AS5637-012	AS5637-031	AS5637-012	846.65	845.86	2.3	3		128.722	Rectangular	0.013	0.05	0.05
IN5542-027_AS5542-002	IN5542-027	AS5542-002	842.35	842.15	4	10		213.189	Rectangular	0.013	0.05	0.05
AS5645-033_AS5644-020	AS5645-033	AS5644-020	844.15	842.63	2.5	4		205.732	Rectangular	0.013	0.05	0.5
AS5644-034_AS5644-003	AS5644-034	AS5644-003	842.6	842.43	4.5	0		92.97	Circular	0.013	0.25	0.25
AS5842-040_AS5742-030	AS5842-040	AS5742-030	856.06	855.59	1.5	0		98.21	Circular	0.013	0.05	0.05
AS5941-023_AS5941-019	AS5941-023	AS5941-019	872.88	872	1.5	0		284.481	Circular	0.01	0.05	0.5
AS5639-027_IN5639-033	AS5639-027	IN5639-033	852.03	851.76	2.5	0		59.777	Circular	0.013	0.5	0.5
AS5639-028_AS5639-027	AS5639-028	AS5639-027	852.12	852.03	2.25	0		22.635	Circular	0.013	0.25	0.5
AS5639-029_AS5639-028	AS5639-029	AS5639-028	852.2	852.12	2.5	0		25.794	Circular	0.013	0.25	0.25
AS5740-045_AS5639-029	AS5740-045	AS5639-029	853.13	852.2	2.5	0		239.027	Circular	0.013	0.5	0.25
AS5740-051_AS5740-045	AS5740-051	AS5740-045	853.51	853.13	2.5	0		101.201	Circular	0.013	0.05	0.5
AS5740-056_AS5740-051	AS5740-056	AS5740-051	854.14	853.51	2.5	0		231.619	Circular	0.013	0.5	0.5
IN5740-058_AS5740-056	IN5740-058	AS5740-056	854.21	854.14	2.47	1.583	Horizontal Ellipse	34.013	Special	0.013	0.5	0.5
AS5740-060_IN5740-058	AS5740-060	IN5740-058	854.25	854.21	2.47	1.583	Horizontal Ellipse	17.285	Special	0.013	0.5	0.5
AS5740-061_AS5740-056	AS5740-061	AS5740-056	854.35	854.14	2.25	0		66.99	Circular	0.013	0.05	0.5
AS5739-043_AS5739-068	AS5739-043	AS5739-068	851.57	851.88	3.137	2	Horizontal Ellipse	36.13	Special	0.013	0.5	0.5
AS5739-044_AS5739-043	AS5739-044	AS5739-043	852.59	851.57	3.137	2	Horizontal Ellipse	234.027	Special	0.013	0.5	0.05
IN5739-045_AS5739-044	IN5739-045	AS5739-044	853.54	852.59	1.5	0		37.062	Circular	0.013	0.05	0.5
AS5739-048_AS5739-044	AS5739-048	AS5739-044	852.75	852.59	1.75	0		35.827	Circular	0.013	0.5	0.5
AS5739-009_AS5739-068	AS5739-048	AS5739-068	852.75	851.88	1.5	0		273.937	Circular	0.01	0.5	0.5
AS5739-049_AS5739-048	AS5739-049	AS5739-048	853.04	852.75	1.5	0		58.007	Circular	0.013	0.05	0.5
AS5739-050_AS5739-044	AS5739-050	AS5739-044	853.88	852.59	3.137	2	Horizontal Ellipse	301.034	Special	0.013	0.05	0.5
IN5739-051_AS5739-050	IN5739-051	AS5739-050	854.48	853.88	1.5	0		18.501	Circular	0.013	0.05	0.5
AS5739-010_AS5739-009	IN5739-052	AS5739-049	854.51	853.04	1.25	0		234.314	Circular	0.01	0.05	0.05
AS5739-054_AS5739-050	AS5739-054	AS5739-050	854.06	853.88	3.137	2	Horizontal Ellipse	43.005	Special	0.013	0.05	0.5
AS5739-058_AS5739-054	AS5739-058	AS5739-054	854.38	854.06	3.137	2	Horizontal Ellipse	75.009	Special	0.013	0.05	0.05
AS5740-072_AS5740-060	AS5740-072	AS5740-060	854.47	854.25	2.47	1.583	Horizontal Ellipse	108.968	Special	0.013	0.05	0.5
AS5537-031_AS5537-025	AS5537-031	AS5537-025	848.2	848.32	2.3	3		194.776	Rectangular	0.013	0.5	0.05
AS5537-035_AS5537-031	AS5537-035	AS5537-031	849.92	848.2	1.75	0		321.437	Circular	0.013	0.05	0.5
AS5538-015_AS5538-023	AS5538-015	AS5538-023	853.1	852.44	1.5	0		187.965	Circular	0.013	0.05	0.05
AS5943-039_AE5943-038	AS5943-039	AE5943-038	848.13	845.6	3	0		82.584	Circular	0.013	0.05	0.05
IN5640-031_IN5640-019	IN5640-031	IN5640-019	844.81	844.31	1.5	0		30.074	Circular	0.013	0.5	0.25
IN5640-033_AS5640-014	IN5640-033	AS5640-014	846.35	844.22	2.47	0		76.011	Circular	0.013	0.05	0.5
IN5640-034_IN5640-031	IN5640-034	IN5640-031	846.31	844.81	1.5	0		314.904	Circular	0.013	0.05	0.5
IN5640-036_AS5640-052	IN5640-036	AS5640-052	846.51	845.92	3.137	2	Horizontal Ellipse	125.014	Special	0.013	0.05	0.5
AS5640-037_IN5640-036	AS5640-037	IN5640-036	846.75	846.51	3.137	2	Horizontal Ellipse	37.78	Special	0.013	0.05	0.05
AS5639-031_AS5639-027	AS5639-031	AS5639-027	851.1	852.03	1.75	0		23.917	Circular	0.013	0.25	0.5
IN5639-033_IN5639-038	IN5639-033	IN5639-038	851.76	850.52	2.5	0		210.511	Circular	0.013	0.5	0.05
AS5639-035_IN5639-033	AS5639-035	IN5639-033	851.76	851.76	1.75	0		11.208	Circular	0.013	0.5	0.5
AS5639-015_AS5639-014	AS5639-035	AS5639-014	851.76	849.4	1.667	0		307.159	Circular	0.01	0.5	0.5
IN5639-036_AS5639-027	IN5639-036	AS5639-027	853.03	852.03	1.5	0		184.556	Circular	0.013	0.5	0.5
IN5639-037_IN5639-036	IN5639-037	IN5639-036	853.2	853.03	1.5	0		30.018	Circular	0.013	0.5	0.5
IN5739-065_IN5739-066	IN5739-065	IN5739-066	853.24	853.08	1.5	0		30.367	Circular	0.013	0.05	0.5
IN5739-066_IN5739-041	IN5739-066	IN5739-041	853.08	852.13	1.5	0		182.79	Circular	0.013	0.5	0.5
AS5739-068_AS5739-096	AS5739-068	AS5739-096	851.88	850.99	1.75	0		86.155	Circular	0.013	0.5	0.5
AS5739-068_AS5739-094	AS5739-068	AS5739-094	851.88	850.95	1.75	0		100.277	Circular	0.013	0.5	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5739-071_IN5739-007	IN5739-071	IN5739-007	851.47	851.35	1.5	0		21.462	Circular	0.013	0.25	0.25
IN5739-072_IN5739-071	IN5739-072	IN5739-071	851.64	851.47	1.5	0		36.148	Circular	0.013	0.25	0.25
IN5739-073_IN5739-072	IN5739-073	IN5739-072	851.67	851.64	1.5	0		30.967	Circular	0.013	0.25	0.5
IN5739-074_IN5739-073	IN5739-074	IN5739-073	853.13	851.67	1.5	0		267.176	Circular	0.013	0.05	0.5
IN5738-024_AS5738-025	IN5738-024	AS5738-025	854.48	854.36	1.75	0		26.574	Circular	0.013	0.5	0.5
AS5738-025_AS5738-028	AS5738-025	AS5738-028	854.36	853.64	2	0		96.887	Circular	0.013	0.5	0.5
AS5738-028_AS5738-029	AS5738-028	AS5738-029	853.64	853.11	2	0		61.007	Circular	0.013	0.5	0.25
AS5738-029_AS5738-066	AS5738-029	AS5738-066	853.11	852.04	2	0		26.587	Circular	0.013	0.25	0.25
AS5738-033_AS5738-028	AS5738-033	AS5738-028	855.08	853.64	1.5	0		289.036	Circular	0.013	0.05	0.5
AS5738-038_AS5738-033	AS5738-038	AS5738-033	856.54	855.08	1.5	0		299.549	Circular	0.013	0.05	0.05
IN5639-038_AS5639-014	IN5639-038	AS5639-014	850.52	849.4	2.5	0		97.241	Circular	0.013	0.05	0.5
AS5841-039_AS5841-001	AS5841-039	AS5841-001	863.61	863.61	1	0		68.345	Circular	0.013	0.05	0.05
AS5738-043_IN5738-074	AS5738-043	IN5738-074	848.9	847.74	2	0		138.156	Circular	0.01	0.05	0.5
IN5742-065_AS5642-025	IN5742-065	AS5642-025	852.8	852.5	1.75	0		60.604	Circular	0.013	0.5	0.5
IN5742-067_IN5742-065	IN5742-067	IN5742-065	852.93	852.8	1.5	0		21.745	Circular	0.013	0.05	0.5
AS5642-025_IN5642-026	AS5642-025	IN5642-026	852.5	851.58	1.75	0		223.625	Circular	0.013	0.5	0.5
IN5642-026_AS5642-027	IN5642-026	AS5642-027	847.56	847.56	1.75	0		85.37	Circular	0.013	0.5	0.25
IN5642-026_AS5642-079	IN5642-026	AS5642-079	852.41	851.9	1.5	0		14.708	Circular	0.013	0.5	0.05
AS5642-027_AS5642-015	AS5642-027	AS5642-069	851.58	851.38	1.75	0		30.695	Circular	0.013	0.25	0.25
AS5841-050_AS5841-028	AS5841-050	AS5841-028	869.85	868.3	1.75	0		15.002	Circular	0.013	0.25	0.25
AS5841-052_AS5841-050	AS5841-052	AS5841-050	870.92	869.85	1.75	0		210.024	Circular	0.013	0.25	0.25
AS5841-054_AS5841-052	AS5841-054	AS5841-052	871.1	870.92	1.75	0		41.814	Circular	0.013	0.25	0.25
AS5841-056_AS5841-054	AS5841-056	AS5841-054	872.56	871.1	1.5	0		242.03	Circular	0.013	0.05	0.25
AS5544-060_AS5543-055	AS5544-060	AS5543-055	841.2	841.2	5	10		384.923	Rectangular	0.013	0.05	0.05
AS5543-055_TP5543-116	AS5543-055	AS5543-084	841.2	841.2	5	10		242.243	Rectangular	0.013	0.05	0.05
IN5540-034_TP5540-028	AS5540-036	TP5540-028	843.7	842.08	4.387	2.833	Horizontal Ellipse	129.279	Special	0.013	0.5	0.5
IN5544-063_IN5544-028	IN5544-063	IN5544-028	847.8	847.3	1.5	0		185.023	Circular	0.013	0.05	0.05
AS5642-028_AS5642-029	AS5642-028	AS5642-029	848.6	848.49	3	0		24.003	Circular	0.013	0.25	0.25
AS5642-029_AS5642-030	AS5642-029	AS5642-030	848.49	848.15	3	0		123.495	Circular	0.013	0.25	0.05
AS5642-030_AS5643-035	AS5642-030	AS5643-035	848.15	847.8	3	0		93.172	Circular	0.013	0.05	0.05
AS5643-035_AS5643-037	AS5643-035	AS5643-037	847.8	847.19	3	0		163.115	Circular	0.013	0.05	0.05
AS5643-037_AS5643-039	AS5643-037	AS5643-039	847.19	846.35	3.72	2.417	Horizontal Ellipse	239.276	Special	0.013	0.05	0.5
AS5643-039_AS5543-062	AS5643-039	AS5543-062	846.35	846.35	3.75	2.417	Horizontal Ellipse	146.449	Special	0.013	0.5	0.05
IN5643-040_AS5643-039	IN5643-040	AS5643-039	847.46	846.35	1.5	0		20.855	Circular	0.013	0.05	0.5
IN5643-042_AS5643-039	IN5643-042	AS5643-039	847.36	846.35	1.5	0		7.566	Circular	0.013	0.05	0.5
AS5543-062_AS5543-063	AS5543-062	AS5543-063	846.35	846.35	3.72	2.417	Horizontal Ellipse	40.142	Special	0.013	0.05	0.25
AS5543-063_AS5543-140	AS5543-063	AS5543-140	846.35	845.31	3.72	2.417	Horizontal Ellipse	52.139	Special	0.013	0.25	0.5
AS5542-028_AE5542-031	AS5542-028	AE5542-031	846.76	845.82	1.75	0		43.007	Circular	0.013	0.05	0.25
DummyOutfallLink_AS5542-028_AE5542-031	AE5542-031	Yahara9	845.82	845.6	1.75	0		10	Circular	0.013	0.25	0.25
AS5738-048_AS5738-004	AS5738-048	AS5738-004	848.8	848.53	2	0		46.615	Circular	0.013	0.25	0.5
AS5738-054_AS5738-048	AS5738-054	AS5738-048	850.05	848.8	2.47	1.583	Horizontal Ellipse	250.821	Special	0.013	0.05	0.25
AS5738-055_AS5738-054	AS5738-055	AS5738-054	850.21	850.05	2.47	1.583	Horizontal Ellipse	35.711	Special	0.013	0.05	0.05
AS5738-066_AS5738-055	AS5738-066	AS5738-055	852.04	850.21	2.47	1.583	Horizontal Ellipse	298.39	Special	0.013	0.25	0.05
DummyOutfallLink_AS5543-140_AE5543-070	AE5543-070	Yahara15	845.76	845.75	2	0		10	Circular	0.01	0.25	0.5
AS5738-072_IN5738-024	AS5738-072	IN5738-024	854.78	854.48	1.75	0		11.264	Circular	0.013	0.5	0.5
AS5739-078_AS5738-072	AS5739-078	AS5738-072	855.76	854.78	1.75	0		275.578	Circular	0.013	0.5	0.05
AS5739-083_AS5739-078	AS5739-083	AS5739-078	857.08	855.76	1.75	0		356.865	Circular	0.013	0.05	0.05
AS5739-088_AS5739-083	AS5739-088	AS5739-083	857.35	857.08	1.887	1.167	Horizontal Ellipse	72.566	Special	0.013	0.05	0.05
TP5543-116_IYHRV	AS5543-084	WashingtonOutfall	841.2	841.2	5	10		202.03	Rectangular	0.013	0.5	0.5
IN5543-095_SS5543-097	IN5543-095	SS5543-097	844.93	844.88	2.5	0		12.2	Circular	0.013	0.25	0.05
SS5543-097_AE5543-098	SS5543-097	AE5543-098	844.83	844.82	2.5	0		112.817	Circular	0.013	0.05	0.25
DummyOutfallLink_SS5543-097_AE5543-098	AE5543-098	Yahara13	844.82	844.5	2.5	0		10	Circular	0.013	0.25	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5543-099_IN5543-095	AS5543-099	IN5543-095	845.23	844.93	2.5	0		16.563	Circular	0.013	0.5	0.25
AS5543-103_AS5543-099	AS5543-103	AS5543-099	845.08	845.23	2.5	0		101.07	Circular	0.013	0.05	0.5
AS5542-032_AS5543-103	AS5542-032	AS5543-103	845.59	845.08	2.5	0		144.477	Circular	0.013	0.5	0.05
AS5542-037_AS5542-032	AS5542-037	AS5542-032	847.17	845.59	2	0		234.74	Circular	0.013	0.5	0.5
AS5542-046_AS5542-037	AS5542-046	AS5542-037	850.78	847.17	2	0		197.181	Circular	0.013	0.05	0.5
AS5541-043_AS5541-023	AS5541-043	AS5541-023	843.39	842.73	2.5	0		106.462	Circular	0.013	0.05	0.25
AS5541-044_AS5541-043	AS5541-044	AS5541-043	843.92	843.39	2.5	0		65.802	Circular	0.013	0.25	0.05
AS5542-050_AS5541-044	AS5542-050	AS5541-044	844.58	843.92	2.5	0		156.595	Circular	0.013	0.05	0.05
AS5542-053_AS5542-050	AS5542-053	AS5542-050	844.62	844.58	2.5	0		28.469	Circular	0.013	0.05	0.05
AS5542-059_AS5542-053	AS5542-059	AS5542-053	845.2	844.62	2.5	0		242.406	Circular	0.013	0.05	0.05
AS5542-067_AS5542-059	AS5542-067	AS5542-059	846.26	845.2	2	0		44.582	Circular	0.013	0.05	0.05
IN5542-072_AS5542-067	IN5542-072	AS5542-067	846.52	846.26	2	0		47.334	Circular	0.013	0.05	0.05
IN5542-076_IN5542-072	IN5542-076	IN5542-072	849.64	846.52	2	0		122.919	Circular	0.013	0.05	0.05
AS5642-034_AS5642-042	AS5642-034	AS5642-042	855.63	854.98	2	0		45.469	Circular	0.013	0.5	0.5
IN5642-035_AS5642-034	IN5642-035	AS5642-034	857.97	855.63	1.75	0		44.03	Circular	0.013	0.5	0.05
IN5642-036_IN5642-035	IN5642-036	IN5642-035	859.18	857.97	1.5	0		55.107	Circular	0.013	0.05	0.5
AS5641-043_AS5641-083	SS5641-043	AS5641-083	851.29	851.18	3.72	2.417	Horizontal Ellipse	20.42	Special	0.013	0.05	0.05
AS5641-045_AS5641-082	AS5641-045	AS5641-082	851.43	851.15	2.5	0		55.138	Circular	0.013	0.5	0.5
AS5641-046_AS5641-082	AS5641-046	AS5641-082	852.5	851.15	2	0		62.265	Circular	0.013	0.5	0.5
IN5641-047_AS5641-046	IN5641-047	AS5641-046	853.39	852.5	1.5	0		20.147	Circular	0.013	0.05	0.5
IN5641-052_AS5641-046	IN5641-052	AS5641-046	853.08	852.5	1.5	0		13.417	Circular	0.013	0.05	0.5
AS5641-061_AS5641-046	AS5641-061	AS5641-046	855.19	852.5	2	0		266.286	Circular	0.013	0.05	0.5
AS5641-066_AS5641-061	AS5641-066	AS5641-061	858.48	855.19	2	0		196.207	Circular	0.013	0.5	0.05
IN5641-067_AS5641-066	IN5641-067	AS5641-066	859.17	858.48	1.5	0		25.689	Circular	0.013	0.05	0.5
IN5641-069_AS5641-066	IN5641-069	AS5641-066	859.06	858.48	1.5	0		14.033	Circular	0.013	0.05	0.5
AS5641-074_AS5641-045	AS5641-074	AS5641-045	851.79	851.43	2.5	0		182.005	Circular	0.013	0.05	0.5
AS5642-042_IN5542-076	AS5642-042	IN5542-076	854.98	849.64	2	0		136.57	Circular	0.013	0.05	0.05
IN5642-044_AS5642-028	IN5642-044	AS5642-028	848.64	848.6	3	0		13.359	Circular	0.013	0.25	0.25
AS5642-046_IN5642-044	AS5642-046	IN5642-044	848.73	848.64	3	0		21.621	Circular	0.013	0.5	0.25
IN5642-047_AS5642-046	IN5642-047	AS5642-046	849.02	848.73	3	0		44.266	Circular	0.013	0.5	0.5
IN5642-048_IN5642-047	IN5642-048	IN5642-047	849.43	849.02	2	0		11.408	Circular	0.013	0.05	0.5
IN5642-049_IN5642-048	IN5642-049	IN5642-048	850.68	849.43	2	0		43.758	Circular	0.013	0.05	0.05
IN5642-050_IN5642-047	IN5642-050	IN5642-047	849.09	849.02	3	0		56.04	Circular	0.013	0.5	0.5
IN5642-052_IN5642-050	IN5642-052	IN5642-050	849.19	849.09	3	0		23.732	Circular	0.013	0.5	0.5
IN5642-057_AS5642-046	IN5642-057	AS5642-046	851.87	848.73	2.47	1.583	Horizontal Ellipse	72.035	Special	0.013	0.25	0.5
IN5643-044_IN5642-057_1	IN5643-044	IN5642-057	852.12	851.87	1.5	0		104.387	Circular	0.013	0.25	0.25
IN5543-120_AE5543-123	IN5543-120	AE5543-123	845.14	844.58	1	0		28.59	Circular	0.013	0.05	0.25
DummyOutfallLink_IN5543-120_AE5543-123	AE5543-123	Yahara14	844.58	844.38	1	0		10	Circular	0.013	0.25	0.5
AS5641-082_AS5641-043	AS5641-082	SS5641-043	851.15	851.29	3.72	2.417	Horizontal Ellipse	30.18	Special	0.013	0.5	0.05
AS5641-083_MI5641-106	AS5641-083	MI5641-106	851.18	851.15	3.72	2.417	Horizontal Ellipse	25.003	Special	0.013	0.05	0.05
AS5643-051_AS5643-052	AS5643-051	AS5643-052	859.71	856.49	2	0		90.838	Circular	0.013	0.05	0.05
AS5643-052_IN5643-044	AS5643-052	IN5643-044	856.49	852.12	2	0		132.674	Circular	0.013	0.05	0.25
IN5543-128_AE5543-129	IN5543-128	AE5543-129	846.33	846.1	1	0		79.175	Circular	0.013	0.05	0.25
DummyOutfallLink_IN5543-128_AE5543-129	AE5543-129	Yahara15	846.1	846.07	1	0		10	Circular	0.013	0.25	0.5
DummyOutfallLink_AS5543-026_AE5543-133	AE5543-133	Yahara16	843.43	843.42	2.5	0		10	Circular	0.01	0.05	0.05
TP5843-065_TP5843-066	AS5843-048	AS5843-049	846.04	845.42	3	3.5		35.004	Rectangular	0.013	0.05	0.05
TP5843-066_LKMON	AS5843-049	DunningOutfall	845.42	844.6	3	3.5		25.002	Rectangular	0.013	0.05	0.05
AS5842-049_IN5842-043	IN5842-043	AS5843-068	858.25	856.67	3	3		451.651	Rectangular	0.013	0.05	0.05
IN5842-043_AS5843-068	AS5842-049	IN5842-043	858.69	858.25	3	3		281.097	Rectangular	0.013	0.05	0.05
AS5842-002_AS5842-049.1	IN5842-052	AS5842-049	858.717	858.69	3	3		58.063	Rectangular	0.013	0.05	0.05
AS5843-068_TP5843-046	AS5843-068	TP5843-046	856.67	851.94	3	3.5		271.23	Rectangular	0.013	0.05	0.05
AS5641-084_AS5641-085	AS5641-084	AS5641-085	851.59	851.54	2.5	0		19.003	Circular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5641-085_AS5641-074	AS5641-085	AS5641-074	851.54	851.79	2.5	0		65.008	Circular	0.013	0.05	0.05
AS5741-024_AS5641-084	AS5741-024	AS5641-084	852.28	851.59	2.5	0		368.046	Circular	0.013	0.5	0.05
IN5741-025_AS5741-024	IN5741-025	AS5741-024	853.48	852.28	1.5	0		47.383	Circular	0.013	0	0.5
IN5741-026_IN5741-025	IN5741-026	IN5741-025	856.88	853.48	1.5	0		125.172	Circular	0.013	0.05	0.05
AS5740-084_AS5741-024	AS5740-084	AS5741-024	854.27	852.28	3.137	2	Horizontal Ellipse	224.028	Special	0.013	0	0.5
AS5740-089_AS5740-084	AS5740-089	AS5740-084	853.37	854.27	3.137	2	Horizontal Ellipse	355.472	Special	0.013	0.05	0.05
AS5740-093_AS5740-089	AS5740-093	AS5740-089	853.84	853.37	3.137	2	Horizontal Ellipse	228.756	Special	0.013	0.05	0.05
AS5740-094_AS5740-093	AS5740-094	AS5740-093	853.96	853.84	3.137	2	Horizontal Ellipse	34.765	Special	0.013	0.5	0.05
IN5740-099_AS5740-094	IN5740-099	AS5740-094	854.44	853.96	2.47	1.583	Horizontal Ellipse	43.387	Special	0.013	0.05	0.5
AS5740-100_IN5740-099	AS5740-100	IN5740-099	855.14	854.44	2.47	1.583	Horizontal Ellipse	27.003	Special	0.013	0.5	0.05
AS5740-100_AS5740-107	AS5740-100	AS5740-107	855.14	854.95	2.47	1.583	Horizontal Ellipse	204.55	Special	0.013	0.5	0.5
AS5740-100_AS5740-114	AS5740-100	AS5740-114	855.14	855.24	1.25	0		348.043	Circular	0.013	0.5	0.5
IN5740-102_AS5740-094	IN5740-102	AS5740-094	854.18	853.96	2.25	0		39.101	Circular	0.013	0.05	0.5
AS5740-107_AS5740-110	AS5740-107	AS5740-110	854.95	854.76	2.47	1.583	Horizontal Ellipse	37.004	Special	0.013	0.5	0.05
AS5740-110_AS5740-113	AS5740-110	AS5740-113	854.76	854.7	2.47	1.583	Horizontal Ellipse	25.003	Special	0.013	0.05	0.05
AS5740-113_AS5740-061	AS5740-113	AS5740-061	854.7	854.35	2.25	0		293.391	Circular	0.013	0.05	0.05
AS5740-114_AS5740-115	AS5740-114	AS5740-115	855.24	855.23	1.25	0		33.003	Circular	0.013	0.5	0.05
AS5740-115_AS5739-058	AS5740-115	AS5739-058	855.23	854.38	3.137	2	Horizontal Ellipse	299.495	Special	0.013	0.05	0.5
IN5638-031_TE5638-034	IN5638-031	TE5638-034	846.87	846.8	3.5	0		145.537	Circular	0.012	0.05	0.5
AS5638-036_AS5638-017	AS5638-036	AS5638-017	845.97	845.8	4.387	2.833	Horizontal Ellipse	71.174	Special	0.013	0.05	0.5
IN5738-073_IN5638-031	IN5738-073	IN5638-031	847.56	846.87	3.5	0		335.871	Circular	0.012	0.5	0.5
IN5738-074_IN5738-073	IN5738-074	IN5738-073	847.74	847.56	3.5	0		85.337	Circular	0.012	0.5	0.5
AS5637-037_AS5637-039	AS5637-037	AS5637-039	847.44	847.28	2	0		134.479	Circular	0.01	0.05	0.05
AS5637-039_AS5637-041	AS5637-039	AS5637-041	847.28	846.86	2	0		80.009	Circular	0.01	0.25	0.05
AS5637-041_AS5637-002	AS5637-041	AS5637-002	846.86	846.75	2	0		59.142	Circular	0.01	0.25	0.5
AS5638-038_AS5638-010	AS5638-038	AS5638-010	845.03	844.85	4.387	2.833	Horizontal Ellipse	71.171	Special	0.013	0.25	0.5
IN5639-048_TE5639-055	IN5639-048	TE5639-055	847.7	845.81	2.5	0		280.034	Circular	0.012	0.25	0.5
AS5639-049_AS5639-002	AS5639-049	AS5639-002	844.84	843.98	2.5	0		73.247	Circular	0.012	0.05	0.5
AS5640-052_AS5640-054	AS5640-052	AS5640-054	845.92	845.9	1.5	0		115.426	Circular	0.01	0.5	0.05
AS5640-052_TE5640-055	AS5640-052	TE5640-055	845.92	845.43	2.5	0		137.016	Circular	0.012	0.5	0.5
AS5640-054_AS5639-012	AS5640-054	AS5639-012	845.9	845.5	1.5	0		194.562	Circular	0.01	0.05	0.05
AS5540-039_AS5540-041	AS5540-039	AS5540-041	844.12	843.86	2.5	0		80.32	Circular	0.013	0.05	0.5
IN5539-007_AS5539-006.1	AS5540-041	AS5539-006	843.864	843.85	4	10		20.783	Rectangular	0.013	0.5	0.05
IN5645-035_AS5645-013	IN5645-035	AS5645-013	845.79	845.75	2.5	4		18.776	Rectangular	0.013	0.5	0.25
AS5639-062_AS5639-014	AS5639-062	AS5639-014	849.33	849.4	2.5	0		16.089	Circular	0.013	0.5	0.5
AS5639-062_AS5639-064	AS5639-062	AS5639-064	849.33	848.32	3.137	2	Horizontal Ellipse	278.741	Special	0.013	0.05	0.25
AS5639-063_AS5639-082	AS5639-063	AS5639-082	848.26	847.57	1.667	0		147.798	Circular	0.01	0.5	0.05
AS5639-063_IN5639-048	AS5639-063	IN5639-048	848.26	847.7	2.5	0		111	Circular	0.012	0.5	0.25
AS5639-064_AS5639-063	AS5639-064	AS5639-063	848.32	848.26	3.137	2	Horizontal Ellipse	44.692	Special	0.013	0.25	0.5
AS5638-046_AS5638-017	AS5638-046	AS5638-017	847.59	847.29	2.5	0		323.745	Circular	0.01	0.5	0.5
AS5638-049_AS5638-046	AS5638-049	AS5638-046	847.61	847.59	3.137	2	Horizontal Ellipse	16.027	Special	0.013	0.5	0.5
AS5638-051_AS5638-049	AS5638-051	AS5638-049	848.56	847.61	3.137	2	Horizontal Ellipse	261.88	Special	0.013	0.5	0.05
AS5638-055_AS5638-051	AS5638-055	AS5638-051	848.85	848.56	1.5	0		55.546	Circular	0.013	0.05	0.5
AS5638-058_MI5638-059	AS5638-058	MI5638-059	848.85	848.814	1.75	0		13.002	Circular	0.013	0.05	0.05
AS5638-062_AS5638-051	AS5638-062	AS5638-051	848.83	848.56	2.5	0		72.008	Circular	0.013	0.05	0.5
AS5639-072_MI5639-073	AS5639-072	MI5639-073	850.44	850.39	1.75	0		19.331	Circular	0.013	0.05	0.05
AS5639-074_AS5638-062	AS5639-074	AS5638-062	850.02	848.83	2.5	0		322.037	Circular	0.013	0.05	0.05
AS5739-094_AS5739-095	AS5739-094	AS5739-095	850.95	850.9	3.137	2	Horizontal Ellipse	16.892	Special	0.013	0.5	0.5
AS5739-095_AS5639-074	AS5739-095	AS5639-074	850.9	850.02	3.137	2	Horizontal Ellipse	241.027	Special	0.013	0.5	0.05
AS5739-096_AS5639-072	AS5739-096	AS5639-072	850.99	850.44	1.667	0		298.83	Circular	0.01	0.5	0.05
AS5739-096_AS5739-094	AS5739-096	AS5739-094	850.99	850.95	1.75	0		15.855	Circular	0.013	0.05	0.5
AS5743-051_AS5743-042	AS5743-051	AS5743-042	847.02	847.72	2	0		23.996	Circular	0.01	0.25	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5743-052_AS5743-051	IN5743-052	AS5743-051	847.03	847.02	3.137	2	Horizontal Ellipse	29.518	Special	0.013	0.25	0.25
AS5743-054_IN5743-052	AS5743-054	IN5743-052	847.06	847.03	3.137	2	Horizontal Ellipse	13.002	Special	0.013	0.5	0.25
AS5743-057_AS5743-054	AS5743-057	AS5743-054	847.33	847.06	3.137	2	Horizontal Ellipse	181.846	Special	0.013	0.25	0.5
AS5743-063_AS5743-057	AS5743-063	AS5743-057	847.56	847.33	2	38	Horizontal Ellipse	148.531	Special	0.013	0.25	0.05
IN5743-066_AS5743-063	IN5743-066	AS5743-063	847.58	847.56	2	38	Horizontal Ellipse	12.761	Special	0.013	0.25	0.25
AS5743-067_IN5743-066	AS5743-067	IN5743-066	847.61	847.58	2	38	Horizontal Ellipse	30.547	Special	0.013	0.25	0.25
AS5744-057_AS5744-066	AS5744-057	AS5744-066	846.07	846.02	3.137	2	Horizontal Ellipse	10.982	Special	0.013	0.5	0.5
AS5744-058_AS5744-057	AS5744-058	AS5744-057	847.41	846.07	1.75	0		258.172	Circular	0.013	0.5	0.5
IN5744-059_AS5744-058	IN5744-059	AS5744-058	847.59	847.41	1.5	0		34.882	Circular	0.013	0.05	0.5
IN5744-064_AS5744-057	IN5744-064	AS5744-057	846.19	846.07	1.5	0		22.414	Circular	0.013	0.05	0.5
AS5744-066_CB5744-067	AS5744-066	CB5744-067	846.02	845.95	3.137	2	Horizontal Ellipse	13.941	Special	0.013	0.5	0.5
IN5744-071_AS5744-066	IN5744-071	AS5744-066	846.1	846.02	1.5	0		16.984	Circular	0.013	0.5	0.05
IN5740-136_MI5740-135	IN5740-136	MI5740-135	855.43	854.9	2.25	0		90.853	Circular	0.013	0.5	0.05
AS5740-137_IN5740-136	AS5740-137	IN5740-136	856.005	855.43	2.25	0		73.335	Circular	0.013	0.05	0.5
AS5740-139_AS5740-137	AS5740-139	AS5740-137	857.02	856.005	2.25	0		112.616	Circular	0.013	0.05	0.05
AS5740-140_AS5740-139	AS5740-140	AS5740-139	857.02	857.02	2.25	0		143.017	Circular	0.012	0.5	0.05
IN5740-142_AS5740-140	IN5740-142	AS5740-140	857.17	857.02	2.25	0		35.899	Circular	0.013	0.5	0.5
IN5741-029_IN5740-142	IN5741-029	IN5740-142	857.55	857.17	2	0		163.364	Circular	0.013	0.05	0.5
AS5741-030_IN5741-029	AS5741-030	IN5741-029	857.61	857.55	1.5	0		52.289	Circular	0.013	0.05	0.05
IN5740-143_IN5740-142	IN5740-143	IN5740-142	859.89	857.17	1.75	0		65.692	Circular	0.013	0.25	0.5
IN5740-144_IN5740-143	IN5740-144	IN5740-143	860.15	859.89	1.75	0		48.837	Circular	0.013	0.05	0.25
AS5740-145_IN5740-144	AS5740-145	IN5740-144	860.44	860.15	1.75	0		55.088	Circular	0.013	0.05	0.05
AS5740-147_AS5740-145	AS5740-147	AS5740-145	860.61	860.44	1.75	0		31.004	Circular	0.013	0.25	0.05
IN5740-148_AS5740-147	IN5740-148	AS5740-147	860.87	860.61	1.75	0		50.089	Circular	0.013	0.25	0.25
IN5740-149_IN5740-148	IN5740-149	IN5740-148	862.18	860.87	1.5	0		31.161	Circular	0.013	0.25	0.25
IN5740-153_IN5740-149	IN5740-153	IN5740-149	862.36	862.18	1.5	0		48.006	Circular	0.013	0.05	0.25
IN5642-061_MI5642-060	IN5642-061	MI5642-060	849.2	849.17	3	0		27.346	Circular	0.013	0.05	0.05
AS5642-063_IN5642-061	AS5642-063	IN5642-061	849.86	849.2	3	0		375.046	Circular	0.013	0.05	0.05
AS5642-064_AS5642-063	AS5642-064	AS5642-063	850.51	849.86	3	0		366.861	Circular	0.013	0.05	0.05
AS5642-067_AS5642-064	AS5642-067	AS5642-064	850.56	850.51	3	0		24.73	Circular	0.013	0.5	0.05
AS5642-069_AS5642-067	AS5642-069	AS5642-067	850.6	850.56	3	0		27.636	Circular	0.013	0.25	0.5
AS5543-134_AS5543-026_1	AS5543-134	AS5543-026	843.78	843.44	1.5	0		64.787	Circular	0.01	0.25	0.25
AS5543-134_AS5543-026_2	AS5543-134	Node1026	843.78	843.45	1.25	0		55	Circular	0.01	0	0
CB5543-135_AS5543-028	CB5543-135	AS5543-028	844.09	843.97	3.13	2	Horizontal Ellipse	44.461	Special	0.013	0.05	0.05
AS5544-067_CB5543-135	AS5544-067	CB5543-135	844.65	844.09	3.13	2	Horizontal Ellipse	224.965	Special	0.013	0.05	0.05
CB5544-068_AS5544-067	CB5544-068	AS5544-067	844.83	844.65	3.13	2	Horizontal Ellipse	71.009	Special	0.013	0.05	0.05
AS5544-071_CB5544-068	AS5544-071	CB5544-068	845.09	844.83	3.13	2	Horizontal Ellipse	102.049	Special	0.013	0.05	0.05
AS5544-074_AS5544-071	AS5544-074	AS5544-071	845.31	845.09	3.13	2	Horizontal Ellipse	75.009	Special	0.013	0.05	0.05
AS5544-077_AS5544-074	AS5544-077	AS5544-074	845.91	845.31	3.13	2	Horizontal Ellipse	241.259	Special	0.013	0.5	0.5
IN5546-032_AS5547-001	IN5546-032	AS5547-001	850.04	847.97	2	0		307.697	Circular	0.01	0.5	0.05
IN5546-034_IN5546-032	IN5546-034	IN5546-032	856.18	850.04	1.5	0		24.078	Circular	0.013	0.05	0.5
AS5546-039_AS5546-050	AS5546-039	AS5546-050	853.86	853.2	1.75	0		55.007	Circular	0.013	0.05	0.5
IN5546-048_AS5546-050	IN5546-048	AS5546-050	853.52	853.2	1.75	0		30.027	Circular	0.013	0.05	0.5
AS5546-050_AS5645-039	AS5546-050	AS5645-039	853.2	847.35	2.5	0		399.049	Circular	0.013	0.05	0.05
IN5546-051_AS5546-050	IN5546-051	AS5546-050	853.62	853.2	1.75	0		53.733	Circular	0.013	0.05	0.5
AS5645-039_AS5645-040	AS5645-039	AS5645-040	847.35	846.63	2.5	0		140.113	Circular	0.013	0.05	0.05
AS5645-040_AS5645-042	AS5645-040	AS5645-042	846.63	845.99	2.5	0		126.04	Circular	0.013	0.05	0.25
AS5645-042_IN5645-035	AS5645-042	IN5645-035	845.99	845.79	2.5	0		33.068	Circular	0.013	0.25	0.5
IN5544-082_AS5544-077	IN5544-082	AS5544-077	846.42	845.91	1.5	0		13.185	Circular	0.013	0.05	0.5
AS5639-081_AS5639-031	AS5639-081	AS5639-031	851.98	851.1	1.667	0		88.328	Circular	0.01	0.05	0.25
IN5843-071_SS5843-072	IN5843-071	SS5843-072	846.8	846.8	3.137	2	Horizontal Ellipse	15.002	Special	0.013	0.05	0.05
AS5844-001_AE5844-002	AS5844-001	AE5844-002	845.1	845	2	0		5	Circular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5843-076_IN5843-071	IN5843-076	IN5843-071	846.8	846.8	3.137	2	Horizontal Ellipse	44.636	Special	0.013	0.05	0.05
IN5843-077_IN5843-076	IN5843-077	IN5843-076	847.04	846.8	3.137	2	Horizontal Ellipse	157.473	Special	0.013	0.05	0.05
AS5843-079_IN5843-077	AS5843-079	IN5843-077	847.26	847.04	3.137	2	Horizontal Ellipse	55.238	Special	0.013	0.5	0.05
CB5843-082_AS5843-079	CB5843-082	AS5843-079	847.5	847.26	1.5	0		43.519	Circular	0.013	0.05	0.5
IN5843-083_CB5843-084	IN5843-083	CB5843-084	848.27	847.55	2.47	1.583	Horizontal Ellipse	122.829	Special	0.013	0.05	0.05
CB5843-084_AS5843-079	CB5843-084	AS5843-079	847.55	847.26	2.47	1.583	Horizontal Ellipse	118.245	Special	0.013	0.05	0.5
IN5843-089_CB5843-082	IN5843-089	CB5843-082	848.17	847.5	1.5	0		225.596	Circular	0.013	0.5	0.05
IN5743-073_IN5843-089	IN5743-073	IN5843-089	848.28	848.17	1.5	0		24.94	Circular	0.013	0.05	0.5
AS5743-077_IN5843-090	AS5743-077	IN5843-090	848.35	848.05	2.47	1.583	Horizontal Ellipse	54.163	Special	0.013	0.5	0.05
CB5743-080_AS5743-077	CB5743-080	AS5743-077	848.45	848.35	2.47	1.583	Horizontal Ellipse	50.725	Special	0.013	0.05	0.5
CB5742-069_AS5743-082	CB5742-069	AS5743-082	849.73	848.92	1.75	0		193.837	Circular	0.013	0.05	0.05
IN5742-070_CB5742-069	IN5742-070	CB5742-069	850.05	849.73	1.75	0		79.795	Circular	0.013	0.05	0.05
IN5742-075_IN5742-070	IN5742-075	IN5742-070	850.22	850.05	1.75	0		37.232	Circular	0.013	0.05	0.05
IN5742-076_IN5742-075	IN5742-076	IN5742-075	851	850.22	1.5	0		156.729	Circular	0.013	0.05	0.05
IN5742-082_IN5742-085	IN5742-082	IN5742-085	849.7	849.6	1.5	0		56.477	Circular	0.013	0.5	0.05
IN5742-085_IN5742-087	IN5742-085	IN5742-087	849.6	849.5	1.5	0		64.623	Circular	0.013	0.05	0.5
IN5742-087_PL5742-089	IN5742-087	PL5742-089	849.5	848.97	1.75	0		66.009	Circular	0.013	0.05	0.5
AS5644-043_CB5644-049	AS5644-043	CB5644-049	844.38	844.11	2	0		108.66	Circular	0.013	0.05	0.5
CB5644-044_AE5644-048	CB5644-044	AE5644-048	844.23	844.1	2	0		44.006	Circular	0.013	0.5	0.05
AS5644-043_AS5644-045	AS5644-045	AS5644-043	844.45	844.38	2	0		26.099	Circular	0.013	0.05	0.5
AS5644-045_CB5644-044	AS5644-045	CB5644-044	844.45	844.23	2	0		88.631	Circular	0.013	0.5	0.5
IN5644-046_CB5644-044	IN5644-046	CB5644-044	845.39	844.73	1.5	0		22	Circular	0.013	0.05	0.5
DummyOutfallLink_CB5644-044_AE5644-048	AE5644-048	Yahara23	844.1	844	2	0		10	Circular	0.013	0.05	0.5
CB5644-049_AE5644-050	CB5644-049	AE5644-050	844.11	844.1	2	0		44	Circular	0.013	0.5	0.25
DummyOutfallLink_CB5644-049_AE5644-050	AE5644-050	Yahara24	844.1	844	2	0		10	Circular	0.013	0.25	0.5
IN5644-051_CB5644-049	IN5644-051	CB5644-049	845.27	844.61	1.5	0		17.88	Circular	0.013	0.5	0.5
CB5744-074_AE5744-075	CB5744-074	AE5744-075	845	844.6	1.5	0		48.919	Circular	0.013	0.05	0.25
DummyOutfallLink_CB5744-074_AE5744-075	AE5744-075	Yahara26	844.6	844.5	1.5	0		10	Circular	0.013	0.25	0.5
IN5641-090_AS5640-001	IN5641-090	IN5640-002	847.97	847.97	2	0		28.009	Circular	0.013	0.5	0.05
CB5641-091_IN5641-090	CB5641-091	IN5641-090	848.19	847.97	2	0		8.73	Circular	0.013	0.5	0.5
CB5641-093_CB5641-091	CB5641-093	CB5641-091	849.92	848.19	3.72	2.417	Horizontal Ellipse	316.48	Special	0.013	0.05	0.5
CB5641-102_CB5641-093	CB5641-102	CB5641-093	851.01	849.92	3.72	2.417	Horizontal Ellipse	187.382	Special	0.013	0.05	0.05
AS5644-055_IYHRV	AS5644-055	JeniferOutfall	844.25	840.84	3	0		28.717	Circular	0.013	0.5	0.25
IN5642-073_AS5642-067	IN5642-073	AS5642-067	850.97	850.56	2.25	0		57.109	Circular	0.013	0.5	0.5
IN5642-075_IN5642-073	IN5642-075	IN5642-073	851.36	850.97	1.5	0		77.504	Circular	0.013	0.05	0.05
AS5642-079_AS5642-069	AS5642-079	AS5642-069	851.9	850.6	1	0		90	Circular	0.014	0.05	0.05
CB5741-035_IN5741-026	CB5741-035	IN5741-026	857.55	856.88	1.5	0		44.107	Circular	0.013	0.05	0.05
AS5639-082_AS5638-024	AS5639-082	AS5638-024	847.57	847.64	1.667	0		236.027	Circular	0.01	0.05	0.05
AS5546-055_CB5446-073	AS5546-055	CB5446-073	852.4	852.4	1.75	0		29.003	Circular	0.013	0.5	0.05
AS5546-056_AS5546-055	AS5546-056	AS5546-055	852.71	852.4	1.75	0		21.021	Circular	0.013	0.05	0.5
AS5546-059_AS5546-055	AS5546-059	AS5546-055	854.7	852.4	1.5	0		265.261	Circular	0.013	0.05	0.5
AS5545-027_AS5546-059	AS5545-027	AS5546-059	855.35	854.7	1.5	0		77.009	Circular	0.013	0.05	0.05
AS5545-028_AS5545-027	AS5545-028	AS5545-027	856.09	855.35	1.5	0		68.009	Circular	0.013	0.05	0.05
AS5545-032_AS5545-029	AS5545-032	AS5545-029	859.25	858	1.5	0		26.003	Circular	0.013	0.25	0.25
IN5545-033_AS5545-032	IN5545-033	AS5545-032	860.13	859.25	1.5	0		76.596	Circular	0.013	0.05	0.25
IN5545-035_IN5545-033	IN5545-035	IN5545-033	860.77	860.13	1.5	0		39.117	Circular	0.013	0.25	0.05
IN5545-036_ST5545-026	IN5545-036	ST5545-026	864.5	862.5	0.667	0		8.604	Circular	0.01	0.25	0.25
IN5545-037_IN5545-036	IN5545-037	IN5545-036	862.25	864.5	1.5	0		96.594	Circular	0.013	0.05	0.25
CB5644-057_AE5644-058	CB5644-057	AE5644-058	847.05	845.32	1.75	0		53.917	Circular	0.013	0.05	0.25
DummyOutfallLink_CB5644-057_AE5644-058	AE5644-058	Yahara21	845.32	845	1.75	0		10	Circular	0.013	0.25	0.5
AS5644-060_CB5644-057	AS5644-060	CB5644-057	847.75	847.05	1.75	0		55.022	Circular	0.013	0.05	0.05
AS5644-063_AS5644-060	AS5644-063	AS5644-060	850.42	847.75	1.5	0		176.125	Circular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5644-064_AS5644-063	AS5644-064	AS5644-063	852.6	850.42	1.5	0		175.02	Circular	0.013	0.05	0.05
IN5541-053_IN5541-025	IN5541-053	IN5541-025	845.56	843.21	1.5	0		88.5	Circular	0.013	0.25	0.5
IN5540-042_IN5540-016	IN5540-042	IN5540-016	845.45	844.28	1.5	0		101.598	Circular	0.013	0.05	0.5
AS5638-079_AS5638-021	AS5638-079	AS5638-085	847.08	844.57	2	0		70.995	Circular	0.013	0.05	0.5
CB5638-082_AS5638-015	CB5638-082	AS5638-015	846.41	846.2	2	0		237.614	Circular	0.013	0.05	0.25
AS5637-044_AS5637-002	AS5637-044	AS5637-002	847.54	846.75	1.5	0		69.008	Circular	0.013	0.05	0.5
CB5637-045_AS5637-044	CB5637-045	AS5637-044	848.69	847.54	1.5	0		233.086	Circular	0.013	0.05	0.05
AS5540-047_TP5540-028	AS5540-047	TP5540-028	842.09	842.08	4	10		62.904	Rectangular	0.013	0.05	0.5
AS5540-048_AS5540-047	AS5540-048	AS5540-047	844.07	842.09	4	10		195.306	Rectangular	0.013	0.05	0.05
AS5638-085_AS5639-086	AS5638-085	AS5639-086	844.57	844.6	4	10		109.075	Rectangular	0.013	0.5	0.05
AS5638-086_AS5638-085	AS5638-086	AS5638-085	844.2	844.57	4	10		94.104	Rectangular	0.013	0.05	0.5
IN5539-007_AS5539-006	IN5539-007	AS5540-041	844.12	843.864	4	10		384.524	Rectangular	0.013	0.5	0.05
IN5639-085_AS5639-002	IN5639-085	AS5639-002	844.37	843.98	4	10		192.782	Rectangular	0.013	0.05	0.5
AS5639-086_IN5639-085	AS5639-086	IN5639-085	844.6	844.37	4	10		204.214	Rectangular	0.013	0.05	0.05
AS5637-053_AS5637-007	AS5637-053	AS5637-007	845.88	845.85	3	8		179.292	Rectangular	0.013	0.05	0.05
AS5842-002_AS5842-049	AS5842-002	IN5842-052	858.83	858.717	3	3		239.213	Rectangular	0.013	0.5	0.05
IN5843-090_AS5843-093	IN5843-090	AS5843-093	848.05	847.84	2.47	1.583	Horizontal Ellipse	146.512	Special	0.013	0.05	0.05
AS5643-020_AS5644-034	AS5643-020	AS5644-034	842.82	842.6	4.5	0		120.244	Circular	0.013	0.5	0.25
AS5643-026_AS5643-065	AS5643-026	AS5643-065	846.04	843.72	1.75	0		29.358	Circular	0.013	0.05	0.5
SS5547-017_AE5547-023	SS5547-017	AE5547-023	846.81	844.13	2	0		45.888	Circular	0.013	0.05	0.05
SS5843-072_AS5844-001	SS5843-072	AS5844-001	845.6	845.1	3.137	2	Horizontal Ellipse	95.952	Special	0.013	0.05	0.05
AS5736-003_TP5736-046	AS5736-003	TP5736-046	847.81	847.08	1.5	0		102.195	Circular	0.01	0.05	0.5
AS5736-005_AS5736-043	AS5736-005	AS5736-043	847.75	847.1	1.5	0		183.69	Circular	0.013	0.05	0.5
IN5735-031_IN5735-065	IN5735-031	IN5735-065	849.84	849.84	1.5	0		41.101	Circular	0.013	0.05	0.25
AS5735-038_AS5735-044	AS5735-038	AS5735-044	849.08	849	1.5	0		157.512	Circular	0.01	0.5	0.5
AS5736-042_AS5736-043	AS5736-042	AS5736-043	847.1	847.1	3	8		149.481	Rectangular	0.013	0.05	0.5
AS5736-043_AS5736-048	AS5736-043	AS5736-048	847.1	846.9	3	8		185.18	Rectangular	0.013	0.5	0.5
AS5735-041_AS5735-042	AS5735-041	AS5735-042	847.42	846.12	2	0		118.985	Circular	0.01	0.05	0.05
AS5735-042_AS5735-043	AS5735-042	AS5735-043	846.12	846.93	2	0		73.569	Circular	0.013	0.05	0.05
AS5735-043_AS5736-045	AS5735-043	AS5736-045	846.93	847.05	2	0		118.467	Circular	0.013	0.05	0.5
IN5635-004_AS5735-041	IN5635-004	AS5735-041	847.6	847.42	2	0		46.178	Circular	0.01	0.05	0.05
IN5635-004_AS5736-045	IN5635-004	AS5736-045	847.6	847.05	4.97	3.167	Horizontal Ellipse	358.392	Special	0.013	0.05	0.5
AS5735-044_AS5635-032_1	AS5735-044	AS5635-032	849	847.93	2	0		143.282	Circular	0.013	0.5	0.25
AS5634-009_AS5635-020	AS5634-009	AS5635-020	851.08	850.75	1.5	0		221.417	Circular	0.013	0.05	0.05
AS5635-013_IN5536-009i	AS5635-013	IN5536-009i	849.86	849.75	1.75	0		56	Circular	0.013	0.05	0.05
AS5635-014_AS5635-013	AS5635-014	AS5635-013	850.55	850.09	1.75	0		62	Circular	0.013	0.05	0.5
AS5635-020_AS5635-014	AS5635-020	AS5635-014	850.75	850.55	1.5	0		145.291	Circular	0.013	0.05	0.05
AS5635-032_IN5635-004	AS5635-032	IN5635-004	847.93	847.6	2	0		111.778	Circular	0.01	0.25	0.05
AS5636-001_AS5536-004	AS5636-001	AS5536-004	847.96	847.2	2.5	0		381.045	Circular	0.013	0.05	0.05
AS5536-004_TP5536-006	AS5536-004	TP5536-006	847.2	847.18	2.5	0		97.924	Circular	0.013	0.05	0.05
AS5536-008_TP5537-029	AS5536-008	TP5537-029	847.51	847.22	4.417	0	Horizontal Ellipse	72	Special	0.013	0.05	0.05
AS5535-001_AS5535-006	AS5535-001	AS5535-006	852.92	852.54	2.25	0		143.987	Circular	0.013	0.05	0.05
AS5535-006_AS5535-008	AS5535-006	AS5535-008	852.54	851.8	2.25	0		426.674	Circular	0.013	0.05	0.05
AS5535-008_AS5535-013	AS5535-008	AS5535-013	851.8	850.25	2.25	0		358.918	Circular	0.013	0.05	0.5
AS5535-013_AS5635-013	AS5535-013	AS5535-013a	850.25	849.8	2.25	0		270	Circular	0.013	0.5	0.5
AS5535-017_AS5535-013	AS5535-017	AS5535-013	850.35	850.25	1.5	0		67.939	Circular	0.013	0.05	0.5
AS5534-010_AS5535-017	AS5534-010	AS5535-017	850.7	850.35	1.5	0		180.775	Circular	0.013	0.05	0.05
AS5534-011_AS5534-010	AS5534-011	AS5534-010	852.55	850.7	1.5	0		281.839	Circular	0.013	0.05	0.05
AS5736-048_AS5636-010	AS5736-048	AS5636-010	846.9	846.9	3	8		189.491	Rectangular	0.013	0.05	0.05
AS5636-004_TP5637-032	AS5636-004	TP5637-032	848.1	845.78	2.47	1.583	Horizontal Ellipse	54.005	Special	0.013	0.05	0.5
AS5736-045_TP5736-046	AS5736-045	TP5736-046	847.05	847.08	3	8		64.493	Rectangular	0.013	0.5	0.5
CB5736-052_AS5736-048	CB5736-052	AS5736-048	846.82	846.9	1.5	0		206.571	Circular	0.013	0.05	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5736-054_MI5736-056	AS5736-054	MI5736-056	848.09	848.2	1.5	0		79.009	Circular	0.013	0.05	0.05
AS5636-010_TP5736-047	AS5636-010	TP5736-047	846.9	846.9	3	8		23.076	Rectangular	0.013	0.5	0.05
IN5735-065_AS5735-038	IN5735-065	AS5735-038	849.72	849.08	1.5	0		182.886	Circular	0.013	0.25	0.5
DummyOutfallLink_CB5442-017_AE5442-027	AE5442-027	Yahara5	844.56	844.5	1.75	0		10	Circular	0.013	0.5	0.5
IN5147-071_AS5147-038	IN5147-071	AS5147-038	847.33	846.56	2.47	1.583	Horizontal Ellipse	41.879	Special	0.013	0.05	0.25
IN5247-190_AS5247-187	IN5247-190	AS5247-187	845.58	841.87	1.887	1.167	Horizontal Ellipse	36.644	Special	0.013	0.05	0.5
IN5246-120_AS5246-122	IN5246-120	AS5246-122	847.18	847.13	1.5	0		19.559	Circular	0.013	0.05	0.05
IN5246-128_IN5246-092	IN5246-128	IN5246-092	846.91	845.83	1.5	0		248.774	Circular	0.01	0.05	0.05
IN5446-096_AS5446-040	IN5446-096	AS5446-040	849.49	847.94	3.13	2	Horizontal Ellipse	550.291	Special	0.013	0.5	0.05
IN5246-139_AS5246-109	IN5246-139	AS5246-109	842.72	842.51	3	0		98.547	Circular	0.013	0.05	0.5
IN5246-141_IN5246-139	IN5246-141	IN5246-139	844.1	842.72	3	0		148.304	Circular	0.013	0.05	0.05
IN5246-143_IN5246-141	IN5246-143	IN5246-141	844.18	844.1	3	0		91.203	Circular	0.013	0.05	0.05
IN5246-145_IN5246-143	IN5246-145	IN5246-143	844.26	844.18	3	0		83.569	Circular	0.013	0.05	0.05
IN5246-147_IN5246-145	IN5246-147	IN5246-145	844.4	844.26	3	0		143.207	Circular	0.013	0.25	0.05
CB5246-152_MI5246-153	CB5246-152	MI5246-153	847	846.98	1.5	0		15	Circular	0.013	0.05	0.05
IN5246-155_AS5246-149	IN5246-155	AS5246-149	844.64	844.48	2.47	1.583	Horizontal Ellipse	58.477	Special	0.013	0.05	0.5
IN5245-030_AS5246-157	IN5245-030	AS5246-157	847.49	846.08	1.75	0		45.19	Circular	0.013	0.05	0.05
IN5245-031_IN5245-030	IN5245-031	IN5245-030	848.69	847.49	1.75	0		50.201	Circular	0.013	0.05	0.05
IN5245-033_IN5245-031	IN5245-033	IN5245-031	849.98	848.69	1.75	0		71.363	Circular	0.013	0.05	0.05
IN5245-034_IN5245-033	IN5245-034	IN5245-033	850.71	849.98	1.75	0		76.096	Circular	0.013	0.05	0.05
IN5245-035_IN5245-034	IN5245-035	IN5245-034	851.19	850.71	1.75	0		48.867	Circular	0.013	0.05	0.05
IN5245-039_AS5245-036	IN5245-039	AS5245-036	852.98	852.6	1.75	0		37.941	Circular	0.013	0.25	0.05
IN5344-093_TP5344-030	IN5344-093	TP5344-030	848.14	845	2	0		133.765	Circular	0.013	0.25	0.5
IN5246-158_AS5346-165	IN5246-158	AS5346-165	845.31	844.93	2	0		159.136	Circular	0.013	0.05	0.05
IN5246-159_IN5246-158	IN5246-159	IN5246-158	845.6	845.31	2	0		64.733	Circular	0.013	0.05	0.05
IN5446-054_IN5446-096	IN5446-054	IN5446-096	849.18	849.49	1.25	0		59.694	Circular	0.013	0.05	0.5
IN5446-050_IN5446-096	IN5446-050	IN5446-096	849.12	849.49	3.13	2	Horizontal Ellipse	94.4	Special	0.013	0.05	0.5
IN5943-053_AS5943-054	IN5943-053	AS5943-054	869.31	860.21	1.5	0		183.007	Circular	0.013	0.05	0.05
IN5943-055_CB5943-057	IN5943-055	CB5943-057	859.62	858	1.5	0		27.001	Circular	0.013	0.05	0.5
IN5943-058_CB5943-057	IN5943-058	CB5943-057	861.44	858	1.25	0		45.002	Circular	0.013	0.05	0.5
IN5943-066_AS5943-039	IN5943-066	AS5943-039	849.16	848.13	3	0		23.075	Circular	0.013	0.05	0.05
IN5744-089_AS5744-088	IN5744-089	AS5744-088	844.52	844.52	1.5	0		5.475	Circular	0.013	0.25	0.5
IN5744-090_IN5744-089	IN5744-090	IN5744-089	844.52	844.52	1.5	0		37.967	Circular	0.013	0.05	0.25
IN5744-092_AS5744-088	IN5744-092	AS5744-088	844.87	844.52	1.5	0		20.354	Circular	0.013	0.5	0.5
IN5744-093_IN5744-092	IN5744-093	IN5744-092	844.94	844.87	1.5	0		15.168	Circular	0.013	0.05	0.5
IN5744-101_AS5744-100	IN5744-101	AS5744-100	845.82	845.55	1.5	0		6.647	Circular	0.013	0.25	0.5
IN5743-084_IN5744-101	IN5743-084	IN5744-101	845.97	845.82	1.5	0		30.677	Circular	0.013	0.05	0.25
IN5744-102_AS5744-100	IN5744-102	AS5744-100	845.75	845.55	3.137	2	Horizontal Ellipse	20.98	Special	0.013	0.25	0.5
IN5738-092_AS5738-004	IN5738-092	AS5738-004	848.26	848.53	1.5	0		30.352	Circular	0.013	0.05	0.5
AS5738-093_IN5738-092	AS5738-093	IN5738-092	848.41	848.26	1.5	0		42.196	Circular	0.013	0.25	0.05
AS5738-094_AS5738-093	AS5738-094	AS5738-093	850.08	848.41	1.167	0		396.015	Circular	0.013	0.05	0.25
IN5643-079_AS5643-013	IN5643-079	AS5643-013	844.34	843.87	4.5	0		49.968	Circular	0.013	0.05	0.05
AS5546-009_IN5546-063	IN5546-062	IN5546-063	853.53	853.18	1.75	0		136.944	Circular	0.01	0.05	0.05
IN5546-063_AS5546-056	IN5546-063	AS5546-056	853.18	852.71	1.75	0		128.075	Circular	0.01	0.05	0.05
AS5247-186_AS5247-127	AS5247-186	AS5247-127	843.66	841.62	3.72	2.417	Horizontal Ellipse	21.517	Special	0.013	0.5	0.5
AS5247-186_AS5247-200	AS5247-186	AS5247-200	841.62	841.42	4.5	0		100.796	Circular	0.013	0.5	0.5
AS5246-102_AS5247-187	AS5246-102	AS5247-187	842.2	841.87	4.5	0		329.013	Circular	0.013	0.05	0.5
AS5246-109_AS5246-102	AS5246-109	AS5246-102	842.51	842.2	4.5	0		334.013	Circular	0.013	0.5	0.05
AS5247-127_AS5247-125	AS5247-127	AS5247-125	843.66	843.23	3.72	2.417	Horizontal Ellipse	34.474	Special	0.013	0.5	0.5
AS5247-124_AS5247-123	AS5247-124	AS5247-123	843.2	842.98	3	0		10.548	Circular	0.013	0.5	0.5
AS5247-123_AS5247-112	AS5247-123	AS5247-112	842.98	841.2	3	0		29.924	Circular	0.013	0.05	0.5
AS5247-200_AS5247-112	AS5247-200	AS5247-112	841.42	841.2	4.5	0		54.982	Circular	0.013	0.5	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
CB5442-017_AE5442-027	CB5442-017	AE5442-027	844.64	844.56	1.75	0		15.045	Circular	0.013	0.05	0.5
AS5247-187_AS5247-186	AS5247-187	AS5247-186	841.87	841.62	4.5	0		342.013	Circular	0.013	0.5	0.5
CB5447-074_AS5447-003	CB5447-074	AS5447-003	847.5	847.2	3.72	2.417	Horizontal Ellipse	350.655	Special	0.013	0.05	0.5
AS5246-122_TE5246-125	AS5246-122	TE5246-125	847.13	847	1.5	0		33.001	Circular	0.013	0.05	0.5
CB5345-099_MI5345-100	CB5345-099	MI5345-100	847.43	847.33	1.5	0		17.001	Circular	0.013	0.05	0.05
AS5147-082_AS5147-088	AS5147-082	AS5147-095	847.78	846.727	3	0		216.973	Circular	0.013	0.05	0.05
AS5147-083_AS5147-082	AS5147-083	AS5147-082	849.3	847.78	1.5	0		91.488	Circular	0.013	0.05	0.05
AS5147-088_AS5246-109	AS5147-088	AS5246-109	844.6	842.51	4	0		641.791	Circular	0.013	0.05	0.5
AS5147-082_AS5147-088.1	AS5147-095	AS5147-099	848.13	847.97	3	0		177.447	Circular	0.013	0.05	0.05
AS5147-082_AS5147-088.2	AS5147-099	AS5147-102	847.97	845.206	3	0		125.188	Circular	0.013	0.05	0.05
AS5147-082_AS5147-088.1.1.1.1.1.1.1.1	AS5147-102	AS5147-088	845.206	844.6	3	0		124.93	Circular	0.013	0.05	0.05
AS5246-149_IN5246-147	AS5246-149	IN5246-147	844.48	844.4	3	0		84.212	Circular	0.013	0.5	0.25
AS5246-149_CB5246-152	AS5246-149	CB5246-152	847	844.48	1.5	0		52.712	Circular	0.013	0.5	0.05
AS5246-157_IN5246-155	AS5246-157	IN5246-155	846.08	844.64	1.75	0		53.354	Circular	0.013	0.05	0.05
AS5245-036_IN5245-035	AS5245-036	IN5245-035	852.6	851.19	1.75	0		195.007	Circular	0.013	0.05	0.05
AS5245-040_IN5245-039	AS5245-040	IN5245-039	853.76	852.98	1.75	0		21.377	Circular	0.013	0.05	0.25
AS5444-036_AS5443-002	AS5444-036	AS5443-002	844.46	844.38	4	5		306.117	Rectangular	0.013	0.05	0.05
AS5344-029_TP5344-030	AS5344-029	TP5344-030	845.68	845	4	5		54.022	Rectangular	0.013	0.25	0.5
AS5346-165_AS5346-166	AS5346-165	AS5346-166	844.93	844.16	2	0		80.144	Circular	0.013	0.05	0.05
AS5346-166_AS5346-076	AS5346-166	AS5346-076	844.16	841.2	2	0		102.394	Circular	0.013	0.05	0.5
AS5346-076_AS5346-086	AS5346-076	AS5346-081	841.2	841.2	5	10		61.747	Rectangular	0.013	0.5	0.05
AS5445-068_AS5445-080	AS5445-068	AS5445-080	841.2	841.2	5	10		149.018	Rectangular	0.013	0.5	0.05
AS5446-039_IN5446-026	AS5446-039	IN5446-026	847.76	847.7	3.13	2	Horizontal Ellipse	32.358	Special	0.013	0.05	0.5
AS5446-040_AS5446-039	AS5446-040	AS5446-039	847.94	847.76	3.13	2	Horizontal Ellipse	90.689	Special	0.013	0.05	0.05
AS5540-056_AS5540-050	AS5540-056	AS5540-050	846.56	846.44	4.387	2.833	Horizontal Ellipse	124.215	Special	0.013	0.05	0.05
AS5440-008_AS5540-056	AS5440-008	AS5540-056	846.72	846.56	4.387	2.833	Horizontal Ellipse	172.005	Special	0.013	0.05	0.05
AS5440-010_AS5440-008	AS5440-010	AS5440-008	847.02	846.72	4.387	2.833	Horizontal Ellipse	300.687	Special	0.013	0.05	0.05
AS5440-012_AS5440-010	AS5440-012	AS5440-010	847.07	847.02	2	0		28.092	Circular	0.013	0.05	0.05
AS5440-016_AS5440-012	AS5440-016	AS5440-012	847.51	847.07	2	0		223.494	Circular	0.013	0.05	0.05
AS5439-012_AS5440-016	AS5439-012	AS5440-016	847.91	847.51	2	0		203.711	Circular	0.013	0.05	0.05
AS5439-015_AS5439-012	AS5439-015	AS5439-012	848.45	847.91	2	0		275.742	Circular	0.013	0.05	0.05
AS5439-020_AS5439-015	AS5439-020	AS5439-015	849.64	848.45	1.5	0		90.379	Circular	0.013	0.05	0.05
AS5348-097_AS5348-017	AS5348-097	AS5348-017	842.54	842.48	6.3	0		25.663	Circular	0.013	0.05	0.5
AS5348-098_AS5348-016	AS5348-098	AS5348-016	845.44	845.05	5.667	3.583	Horizontal Ellipse	285.998	Special	0.013	0.25	0.5
AS5348-100_AS5348-017	AS5348-100	AS5348-017	845.49	842.48	2	3.5		173.361	Rectangular	0.013	0.5	0.5
AS5348-101_AS5348-098	AS5348-101	AS5348-098	845.47	845.44	5.667	3.583	Horizontal Ellipse	32.038	Special	0.013	0.25	0.05
AS5842-004_AS5842-058	AS5842-004	AS5842-058	859.08	859.6	1.25	0		38.001	Circular	0.01	0.25	0.25
AS5842-059_AS5842-004	AS5842-059	AS5842-004	859.6	859.08	1.5	0		22.166	Circular	0.01	0.25	0.25
AS5842-060_AS5842-059	AS5842-060	AS5842-059	861.52	859.6	1.5	0		65.864	Circular	0.01	0.05	0.25
AS5842-058_AS5842-002	AS5842-058	AS5842-002	859.6	858.83	1.25	0		21.146	Circular	0.013	0.25	0.5
AS5843-093_CB5843-095	AS5843-093	CB5843-095	847.84	847.7	2.47	1.583	Horizontal Ellipse	95.004	Special	0.013	0.05	0.5
CB5843-095_MI5843-087	CB5843-095	MI5843-087	847.7	848.3	2.47	1.583	Horizontal Ellipse	19.889	Special	0.013	0.5	0.05
AS5943-054_IN5943-055	AS5943-054	IN5943-055	860.21	859.62	1.5	0		121.422	Circular	0.013	0.05	0.05
CB5943-057_SS5943-065	CB5943-057	SS5943-065	858	854.2	3	0		27.255	Circular	0.013	0.5	0.05
AS5943-062_CB5943-057	AS5943-062	CB5943-057	858.79	858	3	0		46.002	Circular	0.013	0.05	0.5
AS5942-056_AS5943-062	AS5942-056	AS5943-062	866.06	858.79	3	0		187.007	Circular	0.013	0.05	0.25
SS5943-065_IN5943-066	SS5943-065	IN5943-066	854.2	849.16	3	0		226.852	Circular	0.013	0.05	0.05
PL5644-053_AS5644-045	AS5644-072	AS5644-045	844.48	844.6	3.137	2	Horizontal Ellipse	24.003	Special	0.013	0.25	0.5
AS5744-088_AS5644-072	AS5744-088	AS5644-072	844.52	844.48	3.137	2	Horizontal Ellipse	216.008	Special	0.013	0.5	0.05
AS5744-096_AS5744-088	AS5744-096	AS5744-088	844.8	844.52	3.137	2	Horizontal Ellipse	79.003	Special	0.013	0.05	0.5
CB5744-067_IN5744-102	CB5744-067	IN5744-102	845.95	845.95	3.137	2	Horizontal Ellipse	8.77	Special	0.013	0.5	0.25
AS5744-100_AS5744-099	AS5744-100	AS5744-099	845.55	845.2	3.137	2	Horizontal Ellipse	94.003	Special	0.013	0.5	0.25

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5643-065_AS5643-020	AS5643-065	AS5643-020	843.72	842.82	2.25	0		65.999	Circular	0.013	0.5	0.5
CB5643-066_AS5643-065	CB5643-066	AS5643-065	844.44	843.72	1.75	0		148.031	Circular	0.013	0.5	0.5
AS5643-069_CB5643-066	AS5643-069	CB5643-066	844.68	844.44	1.75	0		48.806	Circular	0.013	0.05	0.5
AS5643-072_AS5643-069	AS5643-072	AS5643-069	845.14	844.68	1.75	0		92.629	Circular	0.013	0.05	0.05
AS5643-075_AS5643-072	AS5643-075	AS5643-072	845.78	845.14	1.75	0		128.005	Circular	0.013	0.05	0.05
AS5743-088_AS5643-075	AS5743-088	AS5643-075	845.97	845.78	1.75	0		76.003	Circular	0.013	0.05	0.05
AS5743-089_AS5743-088	AS5743-089	AS5743-088	846.38	845.97	1.75	0		45.002	Circular	0.013	0.05	0.05
AS5738-084_AS5738-038	AS5738-084	AS5738-038	856.55	856.54	1.5	0		65.399	Circular	0.013	0.05	0.05
AS5737-073_AS5738-094	AS5737-073	AS5738-094	851.57	850.08	1.887	1.167	Horizontal Ellipse	251.424	Special	0.013	0.05	0.05
AS5742-095_AS5742-096	AS5742-095	AS5742-096	852.59	850.54	2	0		113.004	Circular	0.013	0.5	0.25
AS5742-028_AS5742-095	AS5742-028	AS5742-095	853.18	852.59	2	0		33.001	Circular	0.013	0.05	0.5
AS5742-096_AS5742-097	AS5742-096	AS5742-097	850.54	849.35	2	0		61.597	Circular	0.013	0.25	0.5
AS5742-097_AS5742-032	AS5742-097	AS5742-032	849.35	847.85	2.75	0		82.995	Circular	0.013	0.5	0.5
AS5742-032_AS5742-033	AS5742-032	AS5742-033	847.85	847.71	2.75	0		146.651	Circular	0.013	0.05	0.05
AS5545-017_IN5446-050	AS5545-017	IN5446-050	850.59	849.12	1.5	0		491.318	Circular	0.013	0.05	0.05
AS5742-025_AS5742-098	AS5742-025	AS5742-098	855.84	853.53	1.5	0		33.021	Circular	0.01	0.05	0.5
AS5742-098_AS5742-026	AS5742-098	AS5742-026	853.53	852.97	1.5	0		222.649	Circular	0.013	0.5	0.5
CB5546-069_IN5546-032	CB5546-069	IN5546-032	850.69	850.04	2	0		73.207	Circular	0.013	0.25	0.25
AS5546-070_CB5546-069	AS5546-070	CB5546-069	852.74	850.69	2.47	1.583	Horizontal Ellipse	36.388	Special	0.013	0.25	0.25
AS5546-071_AS5546-070	AS5546-071	AS5546-070	853.69	852.74	2.47	1.583	Horizontal Ellipse	131.029	Special	0.013	0.05	0.25
AS5546-074_AS5546-071	AS5546-074	AS5546-071	854.39	853.69	2.47	1.583	Horizontal Ellipse	96.111	Special	0.013	0.25	0.05
AS5546-077_AS5546-074	AS5546-077	AS5546-074	854.55	854.39	2.47	1.583	Horizontal Ellipse	35.554	Special	0.013	0.25	0.25
AS5546-078_AS5546-077	AS5546-078	AS5546-077	854.72	854.55	2.47	1.583	Horizontal Ellipse	35.011	Special	0.013	0.05	0.25
AS5541-066_AS5542-001	AS5541-066	AS5542-001	845.34	845.37	3	0		160.997	Circular	0.01	0.25	0.25
AS5541-067_AS5541-066	AS5541-067	AS5541-066	845.39	845.34	4.387	2.833	Horizontal Ellipse	57.637	Special	0.013	0.25	0.25
AS5541-068_AS5541-067	AS5541-068	AS5541-067	845.49	845.39	4.387	2.833	Horizontal Ellipse	133.12	Special	0.013	0.05	0.25
AS5541-072_AS5541-068	AS5541-072	AS5541-068	845.55	845.49	4.387	2.833	Horizontal Ellipse	68.833	Special	0.013	0.05	0.05
AS5541-074_AS5541-072	AS5541-074	AS5541-072	845.81	845.55	4.387	2.833	Horizontal Ellipse	295.62	Special	0.013	0.05	0.05
AS5541-080_AS5541-074	AS5541-080	AS5541-074	845.91	845.81	4.387	2.833	Horizontal Ellipse	108.779	Special	0.013	0.05	0.05
AS5541-082_AS5541-080	AS5541-082	AS5541-080	846.02	845.91	4.387	2.833	Horizontal Ellipse	131.9	Special	0.013	0.05	0.05
AS5541-083_AS5541-082	AS5541-083	AS5541-082	846.11	846.02	4.387	2.833	Horizontal Ellipse	107.922	Special	0.013	0.05	0.05
AS5540-049_AS5541-083	AS5540-049	AS5541-083	846.19	846.11	4.387	2.833	Horizontal Ellipse	87.194	Special	0.013	0.05	0.05
AS5540-050_AS5540-049	AS5540-050	AS5540-049	846.44	846.19	4.387	2.833	Horizontal Ellipse	265.172	Special	0.013	0.05	0.05
AS5538-022_AS5538-026	AS5538-022	AS5538-026	852.36	851.44	1.5	0		245.53	Circular	0.013	0.5	0.05
AS5538-023_AS5538-022	AS5538-023	AS5538-022	852.44	852.36	1.5	0		20.269	Circular	0.013	0.05	0.5
AS5743-011_AS5743-003	AS5743-011	AS5743-003	844.64	844.24	4.5	0		196.663	Circular	0.013	0.05	0.05
AS5538-026_AS5538-002	AS5538-026	AS5538-002	851.44	851.29	1.5	0		43.855	Circular	0.013	0.05	0.05
AS5543-140_AE5543-070	AS5543-140	AE5543-070	845.31	845.76	2	0		19.36	Circular	0.01	0.5	0.25
AS5543-140_AS5543-141	AS5543-140	AS5543-141	845.31	845.12	2.5	0		47.657	Circular	0.013	0.5	0.5
AS5543-141_AS5543-142	AS5543-141	AS5543-142	845.12	845.04	3	0		12.001	Circular	0.013	0.5	0.05
AS5543-142_AE5543-143	AS5543-142	AE5543-143	845.04	845.01	2	0		5.597	Circular	0.013	0.05	0.25
ND5736-009_CB5736-052	ND5736-009	CB5736-052	847.46	846.82	1.5	0		115.997	Circular	0.013	0.05	0.05
ST5545-026_IN5545-035	ST5545-026	IN5545-035	862.5	860.77	0.667	0		9.215	Circular	0.01	0.25	0.25
DummyOutfallLink_AS5443-053_HD5443-054	HD5443-054	Yahara7	842.99	842.99	4	5		10	Rectangular	0.013	0.25	0.25
DummyOutfallLink_AS5442-014_HD5443-063	HD5443-063	Yahara8	841.32	841.31	4	10		10	Rectangular	0.013	0.25	0.25
MI5346-103_AS5346-102	MI5346-103	AS5346-102	845.25	844.1	1.5	0		13.334	Circular	0.013	0.05	0.05
MI5346-133_AS5346-132	MI5346-133	AS5346-132	844.28	844.05	2.5	0		48.105	Circular	0.013	0.05	0.05
MI5345-068_IN5345-067	MI5345-068	IN5345-067	845	843.98	2	0		17.001	Circular	0.013	0.05	0.05
MI5445-074_AS5445-069	MI5445-074	AS5445-069	846	844.77	1.5	0		10.001	Circular	0.013	0.05	0.5
TP5247-145_TP5248-044	TP5247-145	TP5248-044	843.4	843.4	3	6		89.83	Rectangular	0.013	0.5	0.5
MI5248-119_AS5248-013	MI5248-119	AS5248-013	843.4	843.49	3	5.5		319.602	Rectangular	0.013	0.05	0.05
BloutSt_Orifice1	MI5248-119	MI5248-120										

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
TP5344-030_AS5444-036	TP5344-030	AS5444-036	845	844.46	4	5		50.674	Rectangular	0.013	0.5	0.05
MI5447-002_AS5347-008	MI5447-002	AS5347-008	847.2	847.2	2.5	3.5		336.05	Rectangular	0.013	0.05	0.05
TP5248-044_MI5248-120	TP5248-044	MI5248-120	843.4	843.4	3	6		46.003	Rectangular	0.013	0.05	0.05
MI5248-052_AS5248-048	MI5248-052	AS5248-048	854.06	841.77	1.7	2.3		340.261	Rectangular	0.013	0.05	0.5
TP5248-085_AS5248-010	TP5248-085	AS5248-010	843.51	843.6	3.5	6.3		290.382	Rectangular	0.013	0.5	0.5
MI5248-120_AS5248-021	MI5248-120	AS5248-021	843.4	843.3	5.63	3.583	Horizontal Ellipse	320	Special	0.013	0.05	0.05
MI5443-051_AS5443-052	MI5443-051	AS5443-052	843.6	843.3	4	5		65.008	Rectangular	0.013	0.05	0.25
MI5442-013_AS5442-014	MI5442-013	AS5442-014	841.8	841.41	4	10		84.223	Rectangular	0.013	0.05	0.25
MI5247-151_AS5247-152	MI5247-151	AS5247-152	843.1	843.1	2.47	1.583	Horizontal Ellipse	12.001	Special	0.013	0.5	0.5
MI5434-007_AS5535-001	MI5434-007	AS5535-001	853.5	852.92	2.25	0		49.925	Circular	0.013	0.05	0.05
MI5148-089_IN5147-071	MI5148-089	IN5147-071	847.03	847.33	2	0		288.299	Circular	0.012	0.25	0.05
MI5148-090_IN5148-078	MI5148-090	IN5148-078	852.75	852.5	1.5	0		20.003	Circular	0.013	0.05	0.05
TP5637-032_AS5637-013	TP5637-032	AS5637-013	845.78	845.75	3	8		14.108	Rectangular	0.013	0.5	0.5
MI5540-037_AS5540-036	MI5540-037	AS5540-036	843.95	843.7	4.387	2.833	Horizontal Ellipse	11.001	Special	0.013	0.05	0.5
TE5537-012_TE5537-013	TE5537-012	TE5537-013	850.87	850.84	2	0		25.033	Circular	0.013	0.5	0.5
TE5537-013_AS5537-007	TE5537-013	AS5537-007	850.84	850.3	2	0		22.003	Circular	0.013	0.5	0.05
TP5537-029_AS5537-026	TP5537-029	AS5537-026	848.11	847.72	2.3	3		117.348	Rectangular	0.013	0.5	0.05
TP5638-003_AS5638-001	TP5638-003	AS5638-001	844.85	844.82	4	10		14.38	Rectangular	0.013	0.5	0.5
TP5638-003_AS5638-004_1	TP5638-003	AS5638-004	844.85	844.09	3.137	2	Horizontal Ellipse	70.281	Special	0.013	0.5	0.5
TP5540-028_AS5540-022	TP5540-028	AS5540-022	842.08	842.06	4	10		135.515	Rectangular	0.013	0.5	0.05
TP5540-029_AS5541-029	TP5540-029	AS5541-029	843.73	843.53	4	10		248.29	Rectangular	0.013	0.5	0.05
TP5843-046_AS5843-020	TP5843-046	AS5843-020	851.94	850.46	3	3.5		26.451	Rectangular	0.013	0.05	0.05
TE5638-030_AS5638-036	TE5638-030	AS5638-036	846.38	845.97	3.5	0		204.977	Circular	0.012	0.5	0.05
TE5638-034_TE5638-030	TE5638-034	TE5638-030	846.8	846.38	3.5	0		137.016	Circular	0.012	0.5	0.5
TE5639-055_AS5639-049	TE5639-055	AS5639-049	845.81	844.84	2.5	0		95.011	Circular	0.012	0.5	0.05
TE5640-055_AS5540-039	TE5640-055	AS5540-039	845.43	844.12	2.5	0		393.406	Circular	0.012	0.5	0.05
MI5638-059_AS5638-046	MI5638-059	AS5638-046	848.814	847.59	1.667	0		284.279	Circular	0.01	0.05	0.5
MI5639-073_AS5638-058	MI5639-073	AS5638-058	850.39	848.85	1.667	0		310.865	Circular	0.01	0.05	0.05
MI5740-135_IN5740-102	MI5740-135	IN5740-102	854.9	854.18	2.25	0		52.905	Circular	0.013	0.05	0.05
MI5642-060_IN5642-052	MI5642-060	IN5642-052	849.17	849.19	3	0		17.253	Circular	0.013	0.05	0.5
TP5546-042_AS5546-039	TP5546-042	AS5546-039	855.25	853.86	1.5	0		245.03	Circular	0.013	0.05	0.05
MI5843-087_IN5843-083	MI5843-087	IN5843-083	848.3	848.27	2.47	1.583	Horizontal Ellipse	10	Special	0.013	0.05	0.05
PL5742-089_AS5742-089f	PL5742-089	AS5742-089f	848.97	848.97	1.75	0		37.157	Circular	0.013	0.05	0.05
MI5641-106_CB5641-102	MI5641-106	CB5641-102	851.15	851.01	3.72	2.417	Horizontal Ellipse	110.373	Special	0.013	0.05	0.05
MI5639-083_IN5539-007	MI5639-083	IN5539-007	844.75	844.12	2	0		77.679	Circular	0.013	0.5	0.5
TP5736-046_AS5736-042	TP5736-046	AS5736-042	847.08	847.1	3	8		207.983	Rectangular	0.013	0.5	0.05
TP5536-006_AS5537-027	TP5536-006	AS5537-027	847.18	847.23	2.5	0		55.603	Circular	0.013	0.05	0.5
TP5736-047_AS5637-053	TP5736-047	AS5637-053	846.9	845.88	3	8		63.242	Rectangular	0.013	0.05	0.05
MI5736-056_AS5736-003	MI5736-056	AS5736-003	848.2	847.81	1.5	0		131.524	Circular	0.01	0.05	0.05
MI5735-058_AS5735-038	MI5735-058	AS5735-038	849.4	849.08	1.5	0		92.012	Circular	0.013	0.05	0.5
AS5148-127_IN5148-082	AS5148-127	IN5148-082	841.25	841.25	2.47	1.583	Horizontal Ellipse	60.001	Special	0.013	0.05	0.05
MI5148-130_AS5148-091	MI5148-130	AS5148-091	853.52	853.23	1.5	0		57.007	Circular	0.013	0.05	0.05
DummyOutfallLink_AS5644-020_IYHRV	MO03B0100D	Yahara25	842.16	842.08	2.5	4		10	Rectangular	0.013	0.25	0.5
DummyOutfallLink_AS5542-003_IYHRV	MO01B0112D	Yahara7	840.05	840.05	8.137	5.25	Horizontal Ellipse	10	Special	0.013	0.25	0.25
DummyOutfallLink_AS5442-015_IYHRV	MO01D0111D	Yahara7	845.41	845.41	3	0		10	Circular	0.013	0.25	0.25
DummyOutfallLink_LS_002_IYHRV	EJohnstonOutfall	Yahara8	844.65	844.63	0.667	0		5	Circular	0.01	0.25	0.25
DummyOutfallLink_AS5644-004_IYHRV	MO02A0106D	Yahara21	842.15	842.13	4.5	0		10	Circular	0.013	0.5	0.5
DummyOutfallLink_AS5644-055_IYHRV	JeniferOutfall	Yahara23	840.84	839.65	3	0		10	Circular	0.013	0.25	0.5
MI5345-100_IN5345-055	MI5345-100	IN5345-055	847.33	846.89	1.5	0		83.824	Circular	0.01	0.05	0.05
DummyOutfallLink_TP5543-116_IYHRV	WashingtonOutfall	Yahara14	841.2	841.2	5	10		10	Rectangular	0.013	0.5	0.5
DummyOutfallLink_AS5543-142_AE5543-143	AE5543-143	Yahara15	845.01	845	2	0		5	Circular	0.013	0.25	0.5
DummyOutfallLink_IN5644-002_IYHRV	IYHRV	Yahara19	844.17	844.15	3	0		10	Circular	0.013	0.25	0.5

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
AS5247-125_AS5247-124	AS5247-125	AS5247-124	843.23	843.2	3	0		39.589	Circular	0.013	0.5	0.5
AS5541-029_AS5541-016.1	AS5541-029/AS5541-016	AS5541-016	843.102	843.09	4	10		22.815	Rectangular	0.013	0.05	0.25
TE5246-125_IN5246-128	TE5246-125	IN5246-128	847	846.91	1.5	0		24.001	Circular	0.013	0.5	0.05
MI5246-153_IN5246-120	MI5246-153	IN5246-120	846.98	847.18	1.5	0		241.474	Circular	0.01	0.05	0.05
IN5344-077_AS5344-076	IN5344-077	AS5344-076	846.55	846.55	3.137	2	Horizontal Ellipse	9.79	Special	0.013	0.5	0.5
IN5347-073_AS5347-075	IN5347-073	AS5347-075	845.14	844.8	1.5	0		16.883	Circular	0.013	0.05	0.05
AS5843-020_TP5843-065	AS5843-020	AS5843-048	850.46	846.04	3	3.5		167.743	Rectangular	0.013	0.05	0.05
IN5739-041_AS5739-068	IN5739-041	AS5739-068	852.13	851.88	1.5	0		33.479	Circular	0.013	0.5	0.5
IN5543-110_IN5543-107	IN5543-110	IN5543-107	846.66	847.22	1.75	0		20.441	Circular	0.013	0.25	0.25
IN5543-113_IN5543-110	IN5543-113	IN5543-110	847.04	846.66	1.75	0		44.097	Circular	0.013	0.05	0.25
IN5542-042_IN5542-041	IN5542-042	IN5542-041	847.99	847.73	1.5	0		13.884	Circular	0.013	0.25	0.25
IN5542-044_IN5542-042	IN5542-044	IN5542-042	848.75	847.99	1.5	0		65.846	Circular	0.013	0.05	0.25
AS5743-082_CB5743-080	AS5743-082	CB5743-080	848.92	848.45	1.75	0		108.269	Circular	0.013	0.05	0.05
AS5545-029_AS5545-028	AS5545-029	AS5545-028	858	856.09	1.5	0		213.026	Circular	0.013	0.25	0.05
AS5744-099_AS5744-096	AS5744-099	AS5744-096	845.2	844.8	3.137	2	Horizontal Ellipse	110.663	Special	0.013	0.25	0.05
MI5247-191_IN5247-190	MI5247-191	IN5247-190	845.59	845.58	1.887	1.167	Horizontal Ellipse	51.001	Special	0.013	0.05	0.05
LS_002_IYHRV	LS_002	EJohnstonOutfall	844.67	844.65	0.667	0		6.425	Circular	0.01	0.05	0.25
AS5640-046_AS5640-037	AS5640-046	AS5640-037	847.88	846.75	3.137	2	Horizontal Ellipse	55.385	Special	0.013	0.05	0.05
IN5542-033_AS5542-032	IN5542-033	AS5542-032	846.24	845.59	1.75	0		15.627	Circular	0.013	0.05	0.5
IN5543-107_AS5542-032	IN5543-107	AS5542-032	847.22	845.59	1.75	0		27.214	Circular	0.013	0.25	0.5
IN5542-041_AS5542-037	IN5542-041	AS5542-037	847.73	847.17	1.5	0		25.086	Circular	0.013	0.25	0.5
LakeMendota_LakeMendota1	LakeMendota	LakeMendota_1	840.11	840.11	0	0		49	Natural	0.03	0	0
LakeMendota_1_Yahara1	LakeMendota_1	Yahara1	840.11	839.814	0	0		49	Natural	0.03	0	0
Yahara1_Yahara2	Yahara1	Yahara2	839.814	837.04	0	0		100	Natural	0.03	0	0
Yahara2_Yahara3	Yahara2	Yahara3	837.04	837.937	0.05	0		10	Natural	0.014	0	0
Yahara3_Yahara4	Yahara3	Yahara4	837.937	841.75	0	0		309.7	Natural	0.03	0	0
Yahara4_Yahara5	Yahara4	Yahara5	841.75	841.787	0	0		244.32	Natural	0.03	0	0
Yahara5_Yahara6	Yahara5	Yahara6	841.787	841.553	0	0		372.76	Natural	0.03	0	0
Yahara6_Yahara7	Yahara6	Yahara7	841.553	841.84	0	0		385.71	Natural	0.03	0	0
Yahara7_Yahara8	Yahara7	Yahara8	840.05	841.31	0	0		33	Natural	0.03	0	0
Yahara8_Yahara9	Yahara8	Yahara9	842.516	841.793	0	0		322.93	Natural	0.03	0	0
Yahara9_Yahara10	Yahara9	Yahara10	841.793	841.002	0	0		33	Natural	0.03	0	0
Yahara10_Yahara11	Yahara10	Yahara 11	841.002	841.328	0	0		13.037	Natural	0.03	0	0
Yahara11_Yahara12	Yahara 11	Yahara12	841.328	839.437	0	0		33	Natural	0.03	0	0
Yahara12_Yahara13	Yahara12	Yahara13	839.437	842.236	0	0		204.33	Natural	0.03	0	0
Yahara13_Yahara14	Yahara13	Yahara14	842.236	841.165	0	0		33	Natural	0.03	0	0
Yahara14_Yahara15	Yahara14	Yahara15	841.165	842.446	0	0		179.73	Natural	0.03	0	0
Yahara15_Yahara16	Yahara15	Yahara16	842.446	841.713	0	0		33	Natural	0.03	0	0
Yahara16_Yahara17	Yahara16	Yahara17	841.713	841.431	0	0		113.27	Natural	0.03	0	0
Yahara17_Yahara18	Yahara17	Yahara18	841.431	839.854	0	0		33	Natural	0.03	0	0
Yahara18_Yahara19	Yahara18	Yahara19	839.854	841.86	0	0		207.05	Natural	0.03	0	0
Yahara19_Yahara20	Yahara19	Yahara20	841.86	841.379	0	0		155.32	Natural	0.03	0	0
Yahara20_Yahara21	Yahara20	Yahara21	841.379	839.93	0	0		33	Natural	0.03	0	0
Yahara21_Yahara22	Yahara21	Yahara22	839.93	840.797	0	0		238.57	Natural	0.03	0	0
Yahara22_Yahara23	Yahara22	Yahara23	840.797	841.443	0	0		129.96	Natural	0.03	0	0
Yahara23_Yahara24	Yahara23	Yahara24	839.65	841.579	0.05	0		10	Natural	0.014	0	0
Yahara24_Yahara25	Yahara24	Yahara25	841.579	841.464	0	0		199.67	Natural	0.03	0	0
Yahara25_Yahara26	Yahara25	Yahara26	841.464	841.136	0	0		281.68	Natural	0.03	0	0
Yahara26_Yahara27	Yahara26	Yahara27	841.136	840.914	0	0		33	Natural	0.03	0	0
Yahara27_Lake Monona	Yahara27	Lake Monona	840.914	830.2	0	0		222.3	Natural	0.03	0	0
AS5444-063_AS5444-078.1	AS5444-063.1	AS5444-073	841.2	841.2	5	10		3.7	Rectangular	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5743-065_AS5743-067	IN5743-065	AS5743-067	847.75	847.52	1.5	0		49.08	Circular	0.014	0.05	0.05
IN5743-072_AS5744-057	IN5743-072	AS5744-057	847.26	846.07	1	0		39.19	Circular	0.013	0.05	0.25
AS5743-014a_IN5743-013_new	AS5743-014a	IN5743-013_new	848.02	847.68	1.5	0		27.67	Circular	0.013	0.05	0.5
IN5743-013_new_AS5743-095_new	IN5743-013_new	AS5743-095_new	847.18	846.87	2	0		21.09	Circular	0.013	0.5	0.25
AS5743-095_new_AS5743-012	AS5743-095_new	AS5743-012	846.77	846.29	2	0		32.125	Circular	0.013	0.25	0.5
PL5743-091_AS5743-089	PL5743-091	AS5743-089	846.44	846.38	1.5	0		10	Circular	0.013	0.05	0.05
AS5743-91a_PL5743-091	AS5743-91a	PL5743-091	846.63	846.44	1.5	0		39.167	Circular	0.013	0.05	0.05
AS5743-072e_IN5743-072b	AS5743-072e	AS5743-072b	847.88	847.06	1.5	0		161.114	Circular	0.014	0.05	0.05
AS5743-072a_IN5743-072	AS5743-072a	IN5743-072	846.6	846.44	1.75	0		37.572	Circular	0.014	0.05	0.05
AS5743-072b_IN5743-072a	AS5743-072b	AS5743-072a	846.81	846.6	1.75	0		36.142	Circular	0.014	0.05	0.05
AS5743-018e_AS5743-017a	AS5743-018e	AS5743-017a	846.99	845.39	2	0		112.341	Circular	0.013	0.5	0.05
IN5743-018b_IN5743-018e	IN5743-018b	AS5743-018e	847.19	846.99	2	0		34.8	Circular	0.013	0.05	0.5
AS5743-017a_AS5743-016	AS5743-017a	AS5743-016	845.39	845.11	2	0		57.24	Circular	0.013	0.05	0.5
AS5743-028a_IN5743-018b	AS5743-028a	IN5743-018b	848.09	847.36	2	0		219.069	Circular	0.013	0.05	0.05
AS5743-028a_AS5743-028d	AS5743-028d	AS5743-028a	848.25	848.09	2	0		16.347	Circular	0.013	0.05	0.5
AS5743-028f_AS5743-028d	AS5743-028f	AS5743-028d	847.91	847.84	2.5	30	Horizontal Ellipse	16.338	Special	0.013	0.05	0.05
AS5743-028i_AS5743-028f	AS5743-028i	AS5743-028f	848.2	847.91	2.5	30	Horizontal Ellipse	73.913	Special	0.013	0.05	0.05
AS5743-029a_AS5743-028d	AS5743-029a	AS5743-028d	847.84	847.81	3.167	38	Horizontal Ellipse	27.403	Special	0.013	0.25	0.25
AS5743-029a_AS5743-067a	AS5743-029a	AS5743-067a	847.81	847.58	3.167	38	Horizontal Ellipse	232.412	Special	0.013	0.25	0.25
AS5742-089a_AS5743-028i	AS5742-089a	AS5743-028i	848.79	848.2	2.5	30	Horizontal Ellipse	174.214	Special	0.013	0.05	0.25
AS5742-089e_AS5742-089a	AS5742-089e	AS5742-089a	848.88	848.79	1.75	0		31.3	Circular	0.013	0.25	0.25
AS5742-089f_AS5742-089e	AS5742-089f	AS5742-089e	848.97	848.88	1.75	0		29.517	Circular	0.013	0.25	0.05
AS5743-067a_AS5743-067	AS5743-067a	AS5743-067	847.58	847.52	3.167	38	Horizontal Ellipse	74.369	Special	0.013	0.25	0.5
IN5742-041_AS5742-030	IN5742-041	AS5742-030	857.87	855.59	1.25	0		28	Circular	0.014	0.05	0.25
IN5742-038_AS5742-029	IN5742-038	AS5742-029	855.48	854.39	1	0		56	Circular	0.013	0.05	0.25
AS5742-029_AS5742-029-New	AS5742-029_New	AS5742-029	855.48	854.39	1	0		55	Circular	0.013	0.05	0.05
IN5742-043_AS5842-040	IN5742-043	AS5842-040	856.225	856.06	1	0		50	Circular	0.013	0.05	0.25
IN5842-003_AS5842-040	IN5842-003	AS5842-040	856.225	856.06	1	0		50	Circular	0.013	0.05	0.25
AS5742-012_AS5742-098	AS5742-012	AS5742-098	854	853.53	1.5	0		62	Circular	0.014	0.5	0.5
AS5742-012_AS5742-098_2	AS5742-012	Node1028	856	854.53	1.25	0		52	Circular	0.014	0	0
IN5742-099_AS5742-012	IN5742-099	AS5742-012	855.21	854	1.5	0	Horizontal Ellipse	99	Circular	0.014	0.05	0.5
IN5742-099_AS5742-012_2	IN5742-099	Node1031	855.21	854.5	1.25	0		89	Circular	0.014	0	0
IN5742-100_IN5742-099	IN5742-100	IN5742-099	855.92	855.28	3.75	3.75	Horizontal Ellipse	62	Special	0.013	0.05	0.05
IN5742-102_IN5742-100	IN5742-102	IN5742-100	856.28	855.93	3.75	3.75	Horizontal Ellipse	113	Special	0.013	0.05	0.05
IN5742-104_IN5742-102	IN5742-104	IN5742-102	856.59	856.34	3.75	3.75	Horizontal Ellipse	90	Special	0.013	0.05	0.05
AS5742-107_IN5742-104	AS5742-107	IN5742-104	856.9	856.65	3.167	3.167	Horizontal Ellipse	61	Special	0.013	0.05	0.05
AS5742-109_AS5742-107	AS5742-109	AS5742-107	857.03	856.91	3.167	3.167	Horizontal Ellipse	53	Special	0.013	0.05	0.05
CB5742-111_AS5742-109	CB5742-111	AS5742-109	857.29	857.06	3.167	3.167	Horizontal Ellipse	67	Special	0.013	0.05	0.05
AS5741-044_CB5742-111	AS5741-044	CB5742-111	858.38	857.32	3.167	3.167	Horizontal Ellipse	205	Special	0.013	0.05	0.05
IN5741-049_AS5741-044	IN5741-049	AS5741-044	858.92	858.4	2	0		123	Circular	0.013	0.05	0.05
IN5742-056_AS5742-033	IN5742-056	AS5742-033	847.79	847.71	1	0		25	Circular	0.013	0	0
Link1051	Node1026	AS5543-026	843.45	843.44	1.25	0		10	Circular	0.01	0	0
AS5543-028_AS5543-134_2	Node1027	AS5543-134	843.96	843.78	1.25	0		20	Circular	0.01	0	0
Link1054	Node1028	AS5742-098	854.53	853.53	1.25	0		10	Circular	0.014	0	0
IN5742-099_AS5742-012_3	Node1031	AS5742-012	854.5	854	1.25	0		10	Circular	0.014	0	0
IN5536-009a_AS5536-008	IN5536-009a	AS5536-008	847.89	847.51	4.417	0	Horizontal Ellipse	246	Special	0.013	0.05	0.05
IN5536-009b_IN5536-009a	IN5536-009b	IN5536-009a	848.19	847.89	4.417	0	Horizontal Ellipse	213	Special	0.013	0.05	0.05
IN5536-009d_IN5536-009c	IN5536-009d	IN5536-009c	848.53	848.33	4.417	0	Horizontal Ellipse	132	Special	0.013	0.05	0.05
IN5536-009f_IN5536-009e	IN5536-009f	IN5536-009e	849.14	848.53	4.417	0	Horizontal Ellipse	179	Special	0.013	0.05	0.05
IN5536-009g_IN5536-009f	IN5536-009g	IN5536-009f	849.42	849.14	4.417	0	Horizontal Ellipse	184	Special	0.013	0.05	0.05
IN5536-009h_IN5536-009g	IN5536-009h	IN5536-009g	849.75	849.42	4.417	0	Horizontal Ellipse	204	Special	0.013	0.05	0.05
IN5536-009c_IN5536-009b	IN5536-009c	IN5536-009b	848.33	848.19	4.417	0	Horizontal Ellipse	61	Special	0.013	0.05	0.05

Name	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Diameter (Height) ft	Bottom Width ft	Special Conduit Shape	Length ft	Shape	Roughness	Entrance Loss	Exit Loss
IN5536-009e_IN5536-009d	IN5536-009e	IN5536-009d	848.8	848.53	4.417	0	Horizontal Ellipse	179	Special	0.013	0.05	0.05
AS5535-013a_IN5536-009h	AS5535-013a	IN5536-009h	849.8	849.75	2.25	0		27	Circular	0.013	0.05	0.05
IN5536-009i_IN5536-009h	IN5536-009i	IN5536-009h	850.09	849.86	1.75	0		63	Circular	0.013	0.05	0.05
AS5635-019b_AS5635-019c	AS5635-019b	AS5635-019c	849.7	849.59	2.5	0	Horizontal Ellipse	72	Special	0.013	0.05	0.05
AS5635-019c_AS5635-019d	AS5635-019c	AS5635-019d	849.59	849.32	2	0		206	Circular	0.013	0.05	0.05
As5635-019d_IN5536-009f	AS5635-019d	IN5536-009f	849.32	849.14	2.5	0		114	Circular	0.013	0.05	0.05
TheVictoria_GI_Outlet	Hartmeyer_Development-The Victoria	IN5536-009h										
TheView_GI_Outlet	Hartmeyer_Development-TheView	AS5636-001										
HartmeyerPublic_GI_Outlet	Hartmeyer_Development-PublicGI	IN5536-009f										
HartmeyerBoxCulvert	HartmeyerBoxCulvert_1	HartmeyerBoxCulvert_2	849.9	849.56	3	8		157	Rectangular	0.013	0.5	1
PondOutletPipe	PondOutlet_Hartmeyer	AS5636-001	848.21	848.04	2.5	0		62	Circular	0.011	0	0

Table 2. Node XP - Table Input Data

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5441-003	849.44	845.99	3.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5441-004	849.18	845.64	3.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5441-005	851.68	845.60	6.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5441-006	851.69	845.72	5.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5442-002	852.81	841.92	10.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5442-007	853.46	844.65	8.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5442-008	850.00	843.60	6.40	0	0	Type2, Fixed Backwater	Link Spill Crest to 2D
AS5443-002	853.07	844.38	8.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-006	850.47	844.61	5.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-013	848.97	842.25	6.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-001	851.24	846.66	4.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-002	851.46	846.73	4.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-005	851.45	846.47	4.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-022	851.96	848.10	3.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-003	850.81	845.57	5.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-004	850.92	846.45	4.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-005	850.57	846.52	4.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-008	850.21	846.08	4.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-009	851.00	845.57	5.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-010	850.43	845.37	5.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-038	849.43	847.01	2.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-039	849.39	847.13	2.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-040	849.64	847.24	2.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-041	849.73	847.53	2.20	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-042	849.95	847.73	2.22	1.031	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-043	849.92	847.91	2.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-044	850.48	848.56	1.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-045	852.37	848.64	3.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5345-001	850.58	847.04	3.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5345-010	850.35	844.22	6.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5345-025	850.91	845.86	5.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5345-026	851.27	847.16	4.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-053	850.05	845.41	4.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-059	850.63	846.10	4.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5446-001	851.29	847.70	3.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5446-026	850.60	847.70	2.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5446-035	850.27	847.80	2.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5447-003	851.85	847.20	4.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5447-010	852.03	849.00	3.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5347-008	850.98	847.20	3.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5347-011	851.59	846.60	4.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5347-014	850.23	846.60	3.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5347-023	850.14	846.26	3.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5347-034	850.37	846.87	3.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5347-035	850.17	846.97	3.20	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-016	848.23	845.75	2.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-078	849.15	846.50	2.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-038	850.28	846.56	3.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-040	849.87	846.05	3.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-041	850.39	845.87	4.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5148-040	869.41	866.41	3.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5148-046	883.53	878.51	5.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-001	852.01	841.45	10.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-010	850.20	843.60	6.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-011	850.22	842.80	7.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-013	849.45	843.49	5.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-021	849.20	843.30	5.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-046	856.88	851.55	5.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5248-048	851.38	841.77	9.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-051	858.24	854.90	3.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-053	851.73	841.77	9.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5248-062	861.95	856.73	5.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5248-066	853.68	846.35	7.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5248-079	859.39	854.62	4.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-016	851.36	845.05	6.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-017	850.52	842.48	8.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-030	853.28	850.50	2.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5349-003	857.57	842.07	15.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-001	852.67	841.15	11.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-010	851.95	842.10	9.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-011	852.75	846.40	6.35	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-012	852.93	846.84	6.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-013	853.10	847.74	5.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-014	852.88	848.65	4.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-015	853.42	850.00	3.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-016	853.15	849.29	3.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-017	852.85	849.26	3.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-018	852.86	849.22	3.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-032	852.59	849.54	3.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-033	852.45	849.57	2.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-034	852.68	849.60	3.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5249-076	879.77	874.90	4.87	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5149-001	887.92	882.33	5.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-050	851.75	841.15	10.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-046	850.55	846.32	4.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-047	850.27	846.50	3.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-051	850.10	846.65	3.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-054	850.23	847.07	3.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5343-055	850.32	847.00	3.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-058	850.49	847.61	2.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-061	850.75	848.15	2.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-064	851.34	848.93	2.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-049	872.09	866.35	5.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-053	849.71	846.54	3.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-056	851.51	847.96	3.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-057	856.94	853.60	3.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-060	859.77	855.83	3.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-051	850.45	846.70	3.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5249-085	878.15	872.80	5.35	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5347-058	849.66	846.13	3.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5345-055	850.60	846.89	3.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5347-075	850.07	844.80	5.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5248-088	849.00	844.79	4.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5248-089	849.09	844.93	4.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5248-090	849.87	845.45	4.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-096	848.93	843.81	5.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5248-091	850.38	846.50	3.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-097	849.78	843.10	6.68	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-100	850.00	843.10	6.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-102	849.91	843.10	6.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-105	849.26	843.10	6.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-112	848.96	841.20	7.76	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-113	848.85	844.10	4.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-114	848.58	845.62	2.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-115	848.48	845.95	2.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-117	848.65	846.26	2.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-128	848.37	844.29	4.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5347-076	849.37	841.20	8.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5347-084	848.88	843.09	5.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-081	849.62	841.20	8.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-086	850.21	841.20	9.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-090	849.83	841.20	8.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-092	849.38	841.20	8.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-095	849.65	841.20	8.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-096	849.74	841.20	8.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-102	849.23	844.10	5.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-106	849.70	841.20	8.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-107	849.10	843.14	5.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-111	849.03	844.99	4.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-112	849.18	841.20	7.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-120	849.34	841.20	8.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-124	849.17	843.98	5.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-129	849.48	841.20	8.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-130	848.51	842.90	5.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-131	848.91	843.84	5.07	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-132	849.35	844.05	5.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5345-067	848.58	843.98	4.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5345-070	849.57	841.20	8.37	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5345-074	849.72	845.39	4.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-050	850.49	841.20	9.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-062	850.47	841.20	9.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-069	849.79	844.77	5.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5445-070	849.75	844.64	5.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-072	850.90	844.77	6.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-080	849.74	841.20	8.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-092	849.02	841.20	7.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-099	849.68	841.20	8.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-063	849.61	841.20	8.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5445-104	849.23	843.41	5.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-066	849.25	844.64	4.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5444-067	849.10	844.72	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-073	849.09	841.20	7.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-078	850.17	841.20	8.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5444-094	852.95	841.20	11.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5444-086	851.38	844.64	6.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-087	851.42	845.07	6.35	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-134	849.19	842.93	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-136	849.49	842.90	6.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-137	849.05	845.10	3.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-136	850.24	845.43	4.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5443-030	848.78	845.78	3.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5443-031	850.00	845.50	4.50	0	0	Type2, Fixed Backwater	Allowed
IN5443-032	852.83	848.52	4.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5443-033	853.41	848.52	4.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-034	853.61	848.52	5.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-036	856.33	852.19	4.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-037	852.68	846.28	6.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5443-038	850.00	846.28	3.72	0	1	Type2, Fixed Backwater	Allowed
AS5443-039	858.55	853.14	5.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-042	861.77	856.55	5.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5347-088	848.63	846.13	2.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-052	851.13	843.60	7.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5348-053	850.96	843.60	7.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-058	850.90	843.60	7.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-052	851.95	843.30	8.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5443-053	848.57	843.01	5.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5443-061	847.05	844.72	2.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5442-014	854.64	841.41	13.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5442-015	855.09	845.43	9.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5148-076	850.97	838.25	12.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5148-077	853.94	848.00	5.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5148-078	858.06	852.50	5.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5148-082	850.97	838.25	12.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5147-062	850.15	845.42	4.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-152	848.65	835.00	13.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-153	848.87	844.42	4.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-154	848.15	835.00	13.15	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-158	848.65	843.10	5.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-159	848.56	843.10	5.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-165	848.01	845.60	2.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-167	848.34	845.60	2.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-169	848.74	846.20	2.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-173	849.15	835.48	13.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-176	849.12	843.10	6.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5147-064	848.68	845.60	3.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5147-065	848.54	845.50	3.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5246-090	850.08	839.75	10.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-091	849.84	842.75	7.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-092	849.78	845.83	3.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-094	849.00	845.63	3.37	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-098	849.63	846.33	3.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-147	850.18	847.21	2.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-149	850.82	846.61	4.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-154	850.57	847.00	3.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-156	849.95	847.00	2.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5346-157	850.56	846.55	4.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5343-067	851.16	847.78	3.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5444-096	854.64	849.17	5.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5444-104	861.63	857.39	4.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-076	851.13	846.55	4.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5344-081	850.86	843.55	7.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-082	850.59	846.56	4.03	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-083	850.77	846.60	4.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-086	850.44	846.65	3.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-089	850.32	847.03	3.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-100	850.68	847.34	3.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-104	851.33	847.45	3.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5343-105	850.99	847.90	3.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5243-006	851.63	848.60	3.03	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5434-006	856.69	853.63	3.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5249-091	887.04	881.20	5.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5148-087	853.10	847.10	6.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5148-088	853.57	850.18	3.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5148-091	859.23	853.23	6.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5343-111	851.56	848.83	2.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5348-068	853.03	848.93	4.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5447-043	852.62	849.37	3.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5447-048	852.52	849.61	2.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5447-050	853.37	850.51	2.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5447-051	853.36	850.98	2.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5446-073	859.92	852.40	7.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-002	854.50	847.81	6.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-003	855.09	848.02	7.07	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-005	854.75	849.16	5.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-006	854.95	849.78	5.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-007	854.63	850.30	4.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-011	855.92	851.34	4.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-025	858.90	848.32	10.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5537-026	854.34	847.72	6.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-027	852.92	847.23	5.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-001	855.96	851.00	4.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-002	856.00	851.29	4.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-011	851.86	844.34	7.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5539-006	851.43	843.85	7.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5637-001	855.54	847.97	7.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-002	854.40	846.75	7.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-006	852.38	846.90	5.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-007	851.10	845.85	5.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-012	852.10	845.86	6.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-013	851.41	845.75	5.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-025	851.31	845.41	5.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-026	851.47	845.25	6.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-027	851.36	845.10	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-028	851.96	844.97	6.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-001	851.52	844.82	6.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-002	851.43	844.82	6.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-004	852.10	844.09	8.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-010	850.90	844.85	6.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-015	851.61	846.20	5.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-016	850.68	846.47	4.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-017	851.30	845.80	5.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-024	852.93	847.64	5.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-002	851.30	843.98	7.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-011	853.93	844.80	9.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-012	854.59	845.50	9.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-014	855.19	849.40	5.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5738-003	853.77	848.20	5.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-004	853.19	848.53	4.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5739-006	856.04	851.54	4.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-007	855.95	851.35	4.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-020	858.23	853.90	4.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-005	890.36	884.71	5.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-012	872.97	866.54	6.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-025	877.89	870.62	7.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-026	875.55	870.83	4.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-030	884.35	878.55	5.80	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-032	878.13	871.21	6.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-044	877.46	871.49	5.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5941-015	884.18	878.37	5.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5941-019	877.83	872.00	5.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-001	868.73	863.61	5.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-017	872.99	862.51	10.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-027	870.44	863.61	6.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-028	873.80	868.30	5.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-012	870.65	864.63	6.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-026	858.74	852.97	5.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-027	858.36	854.45	3.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-029	858.35	854.39	3.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-030	861.73	855.59	6.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-031	861.23	855.27	5.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-033	854.75	847.71	7.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-034	852.79	845.42	7.37	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-052	855.31	850.13	5.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-053	853.47	850.35	3.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-057	853.82	847.64	6.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-061	853.53	847.75	5.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-002	859.74	855.18	4.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5640-001	851.59	847.97	3.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5640-002	851.68	847.97	3.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5640-014	849.55	844.22	5.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5640-019	849.80	844.31	5.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-001	853.81	845.37	8.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-002	854.25	842.15	12.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-003	853.16	840.30	12.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-013	850.03	841.00	9.03	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-014	850.82	842.63	8.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-015	851.08	842.92	8.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-016	851.11	843.09	8.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-023	850.20	842.73	7.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5541-025	850.72	843.21	7.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-029	851.41	843.09	8.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-030	851.33	840.53	10.80	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-031	852.87	840.36	12.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-038	850.83	842.55	8.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-011	850.43	841.65	8.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-012	849.66	841.53	8.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5540-016	851.42	844.28	7.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-018	851.84	843.80	8.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-022	851.98	842.06	9.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-012	859.39	843.30	16.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-013	859.19	843.87	15.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-018	851.51	845.01	6.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-019	856.41	842.98	13.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5644-001	853.18	844.73	8.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5644-002	855.01	844.48	10.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-003	855.08	842.43	12.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-004	852.17	842.28	9.89	0	0	Type 1, Free Outfall	Allowed
AS5644-020	848.93	842.63	6.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5644-021	848.70	843.13	5.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-010	850.65	846.28	4.37	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-013	850.79	845.75	5.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-014	850.11	847.28	2.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-019	851.64	846.45	5.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-020	850.85	845.59	5.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-010	848.71	846.65	2.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-011	849.31	846.53	2.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-014	849.08	847.38	1.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-017	849.25	847.27	1.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-018	849.69	847.24	2.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-023	850.94	847.67	3.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-024	850.97	847.70	3.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-028	850.56	847.30	3.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-029	850.81	846.65	4.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-031	850.67	846.65	4.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-033	850.72	846.61	4.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-034	850.90	846.58	4.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-035	851.19	846.52	4.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-037	854.82	846.16	8.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-040	853.58	845.61	7.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-026	848.87	843.44	5.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-028	848.69	843.97	4.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-027	850.92	847.16	3.76	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-035	850.07	846.61	3.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-003	858.30	844.24	14.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-006	852.80	845.22	7.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-012	854.36	839.91	14.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-016	854.22	845.11	9.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-042	851.26	847.72	3.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5547-001	869.54	847.97	21.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-031	852.44	846.65	5.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-027	853.13	842.35	10.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-033	850.70	844.15	6.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-034	856.44	842.60	13.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-040	862.12	856.06	6.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5941-023	878.11	872.88	5.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-027	856.88	852.03	4.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-028	856.83	852.12	4.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-029	856.82	852.20	4.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-045	858.16	853.13	5.03	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-051	858.03	853.51	4.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-056	859.42	854.14	5.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-058	858.82	854.21	4.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-060	858.91	854.25	4.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-061	859.80	854.35	5.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-043	856.04	851.57	4.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-044	858.40	852.59	5.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-045	859.50	853.54	5.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-048	858.11	852.75	5.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-049	858.79	853.04	5.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-050	857.99	853.88	4.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-051	858.13	854.48	3.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-052	858.62	854.51	4.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-054	858.27	854.06	4.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-058	858.13	854.38	3.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-072	858.06	854.47	3.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-031	855.20	848.20	7.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5537-035	853.76	849.92	3.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-015	856.35	853.10	3.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AE5943-038	849.75	845.60	4.15	846	1	Type2, Fixed Backwater	None
AS5943-039	855.54	848.13	7.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5640-031	849.29	844.81	4.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5640-033	849.42	846.35	3.07	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5640-034	850.37	846.31	4.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5640-036	850.20	846.51	3.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5640-037	850.56	846.75	3.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-031	857.19	851.10	6.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5639-033	856.67	851.76	4.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-035	857.25	851.76	5.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5639-036	856.63	853.03	3.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5639-037	856.64	853.20	3.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-065	856.64	853.24	3.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-066	856.50	853.08	3.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-068	857.06	851.88	5.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-071	855.87	851.47	4.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-072	855.70	851.64	4.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-073	855.60	851.67	3.93	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-074	856.71	853.13	3.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5738-024	858.23	854.48	3.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-025	858.01	854.36	3.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-028	858.32	853.64	4.68	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-029	858.48	853.11	5.37	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-033	859.35	855.08	4.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-038	860.36	856.54	3.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5639-038	855.04	850.52	4.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-039	869.26	860.18	9.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-043	853.32	848.90	4.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-065	856.09	852.80	3.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-067	855.97	852.93	3.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5642-025	857.78	852.25	5.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-026	858.53	845.10	13.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-027	856.73	845.10	11.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-050	875.16	869.85	5.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-052	877.18	870.92	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-054	877.04	871.10	5.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5841-056	876.26	872.56	3.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-060	853.68	841.20	12.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-055	851.60	841.20	10.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-036	849.31	843.70	5.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5544-063	850.75	847.80	2.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-028	858.54	848.60	9.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-029	858.40	848.49	9.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-030	859.40	848.15	11.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-035	857.73	847.80	9.93	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-037	853.86	847.19	6.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-039	850.13	846.35	3.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5643-040	849.71	847.46	2.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5643-042	849.90	847.36	2.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-062	851.15	846.35	4.80	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-063	852.32	846.35	5.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-028	851.36	846.76	4.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5542-031	850.00	845.60	4.40	0	0	Type2, Fixed Backwater	Allowed
AS5738-048	853.18	848.80	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-054	853.21	850.05	3.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-055	853.34	850.21	3.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-066	858.59	852.04	6.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5543-070	849.00	845.00	4.00	0	0	Type2, Fixed Backwater	Allowed
AS5738-072	858.49	854.78	3.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-078	860.90	855.76	5.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5739-083	860.89	857.08	3.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-088	860.57	857.35	3.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-084	854.85	841.20	13.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5543-095	856.26	844.93	11.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
SS5543-097	857.12	844.83	12.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5543-098	849.23	844.82	4.41	0	0	Type2, Fixed Backwater	Allowed
AS5543-099	856.56	845.23	11.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-103	853.30	845.08	8.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-032	851.29	845.59	5.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-037	852.75	847.17	5.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-046	856.45	850.78	5.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-043	849.44	843.39	6.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-044	849.04	843.92	5.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-050	849.46	844.58	4.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-053	849.59	844.62	4.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-059	850.19	845.20	4.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5542-067	850.41	846.26	4.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-072	851.44	846.52	4.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-076	856.14	849.64	6.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-034	862.79	855.63	7.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-035	864.15	857.97	6.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-036	864.46	859.18	5.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
SS5641-043	857.82	851.29	6.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-045	858.19	851.43	6.76	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-046	858.10	852.50	5.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5641-047	857.65	853.39	4.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5641-052	858.07	853.08	4.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-061	860.83	855.19	5.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-066	864.01	858.48	5.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5641-067	863.55	859.17	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5641-069	863.79	859.06	4.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-074	859.56	851.79	7.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-042	861.14	854.98	6.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-044	857.93	848.64	9.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-046	857.78	848.73	9.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-047	857.70	849.02	8.68	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-048	857.73	849.43	8.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-049	858.00	850.68	7.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-050	857.51	849.09	8.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-052	857.51	849.19	8.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-057	857.38	851.87	5.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5643-044	858.10	852.12	5.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5543-120	848.48	845.14	3.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5543-123	850.00	844.38	5.62	0	1	Type2, Fixed Backwater	Allowed
AS5641-082	858.34	851.15	7.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-083	857.67	851.18	6.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-051	865.89	859.71	6.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-052	862.21	856.49	5.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5543-128	849.05	846.33	2.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5543-129	850.00	846.07	3.93	0	1	Type2, Fixed Backwater	Allowed
AE5543-133	850.00	843.43	6.57	0	0	Type2, Fixed Backwater	Allowed
AS5843-048	853.18	846.04	7.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5843-049	851.40	845.42	5.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5842-043	867.20	858.25	8.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-049	865.91	858.69	7.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5842-052	865.42	858.72	6.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5843-068	862.56	856.67	5.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-084	860.42	851.59	8.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5641-085	860.16	851.54	8.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5741-024	864.69	852.28	12.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5741-025	863.38	853.48	9.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5741-026	861.55	856.88	4.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-084	862.79	854.27	8.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-089	859.62	853.37	6.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-093	858.29	853.84	4.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-094	858.32	853.96	4.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-099	858.52	854.44	4.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-100	858.33	855.14	3.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-102	858.56	854.18	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-107	859.56	854.95	4.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-110	859.10	854.76	4.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-113	859.29	854.70	4.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-114	859.65	855.24	4.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-115	859.13	855.23	3.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5638-031	855.28	846.87	8.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-036	853.64	845.97	7.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5738-073	852.36	847.56	4.80	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5738-074	852.75	847.74	5.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-037	858.48	847.44	11.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-039	858.88	847.28	11.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-041	854.09	846.86	7.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-038	851.66	845.03	6.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5639-048	854.72	847.70	7.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-049	853.88	844.84	9.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5640-052	852.51	845.92	6.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5640-054	854.19	845.90	8.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-039	854.66	844.12	10.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-041	851.49	843.86	7.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5645-035	850.46	844.20	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-062	854.96	849.33	5.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5639-063	852.51	848.26	4.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-064	851.74	848.32	3.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-046	851.01	847.59	3.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-049	851.04	847.61	3.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-051	852.89	848.56	4.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-055	852.91	848.85	4.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-058	853.00	848.85	4.15	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-062	853.10	848.83	4.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-072	856.11	850.44	5.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-074	856.52	850.02	6.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-094	857.21	850.95	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-095	856.62	850.90	5.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5739-096	857.10	850.99	6.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-051	850.77	847.02	3.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-052	850.59	847.03	3.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-054	850.75	847.06	3.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-057	851.21	847.33	3.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-063	851.16	847.56	3.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-066	850.82	847.58	3.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-067	851.62	847.52	4.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-057	849.81	846.07	3.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-058	851.20	847.41	3.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-059	850.92	847.59	3.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-064	849.65	846.19	3.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-066	850.07	846.02	4.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-071	849.55	846.10	3.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-136	859.55	855.43	4.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-137	860.59	853.50	7.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-139	862.94	853.50	9.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-140	864.66	853.50	11.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5740-142	864.19	857.17	7.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5741-029	864.50	857.55	6.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5741-030	865.22	857.61	7.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-143	864.71	859.89	4.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-144	864.77	860.15	4.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-145	865.25	860.44	4.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5740-147	865.39	860.61	4.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-148	866.14	860.87	5.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-149	866.30	862.18	4.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5740-153	864.40	862.36	2.03	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-061	858.44	849.20	9.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-063	858.90	849.86	9.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-064	855.50	850.51	4.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-067	855.63	850.56	5.07	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-069	855.99	850.60	5.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-134	848.95	843.78	5.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5543-135	848.48	844.09	4.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-067	848.94	844.65	4.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5544-068	849.04	844.83	4.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-071	849.36	845.09	4.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-074	849.24	845.31	3.93	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5544-077	849.01	845.91	3.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5546-032	860.43	850.04	10.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5546-034	860.52	856.18	4.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-039	857.92	853.86	4.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5546-048	858.04	853.52	4.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-050	857.84	853.20	4.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5546-051	857.72	853.62	4.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-039	851.23	847.35	3.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5645-040	850.55	846.63	3.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5645-042	850.18	845.99	4.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5547-023	849.00	844.13	4.87	846	1	Type2, Fixed Backwater	None
IN5544-082	848.36	846.42	1.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-081	857.90	851.98	5.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5843-071	850.21	846.80	3.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5844-001	849.15	842.60	6.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5844-002	848.82	845.00	3.82	846	1	Type2, Fixed Backwater	None
IN5843-076	850.29	846.80	3.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5843-077	850.49	847.04	3.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5843-079	851.25	847.26	3.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5843-082	850.75	847.50	3.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5843-083	851.04	848.27	2.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5843-084	850.38	847.55	2.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5843-089	851.03	848.17	2.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-073	851.15	848.28	2.87	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-077	851.80	848.35	3.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5743-080	851.40	848.45	2.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5742-069	852.82	849.73	3.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-070	853.09	850.05	3.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-075	853.33	850.22	3.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-076	854.26	851.00	3.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-082	852.76	849.70	3.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-085	852.94	849.60	3.34	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-087	852.59	849.50	3.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-043	848.96	844.38	4.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5644-044	848.76	843.58	5.18	0	0	Type 1, Free Outfall	Allowed
AS5644-045	849.09	844.45	4.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5644-046	848.76	845.34	3.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5644-048	850.00	843.92	6.08	0	1	Type2, Fixed Backwater	Allowed
CB5644-049	848.52	844.11	4.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AE5644-050	848.16	843.43	4.73	0	1	Type2, Fixed Backwater	Allowed
IN5644-051	848.54	845.27	3.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5744-074	848.71	844.18	4.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5744-075	848.03	844.45	3.58	0	1	Type2, Fixed Backwater	Allowed
IN5641-090	851.95	847.97	3.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5641-091	851.78	848.19	3.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5641-093	855.86	849.92	5.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5641-102	856.85	851.01	5.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-055	851.10	844.25	6.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-073	855.11	850.97	4.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5642-075	856.27	851.36	4.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5642-079	858.72	851.90	6.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5741-035	861.68	857.55	4.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-082	853.54	847.57	5.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-055	860.39	852.40	7.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-056	860.29	852.71	7.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-059	862.55	854.70	7.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5545-027	863.21	855.35	7.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5545-028	863.60	856.09	7.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5545-032	864.94	859.25	5.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5545-033	865.77	860.13	5.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5545-035	865.82	860.77	5.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5545-036	866.05	864.50	1.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5545-037	867.22	862.25	4.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5644-057	853.69	847.05	6.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5644-058	850.00	844.54	5.46	0	1	Type2, Fixed Backwater	Allowed
AS5644-060	853.49	847.75	5.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-063	854.20	850.42	3.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-064	856.31	852.60	3.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5541-053	850.34	845.56	4.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5540-042	851.94	845.45	6.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-079	852.20	847.08	5.12	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5638-082	853.06	846.41	6.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-044	854.48	847.54	6.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5637-045	853.24	848.69	4.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-047	851.64	842.09	9.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-048	851.69	843.85	7.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-085	851.13	844.57	6.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5638-086	851.45	844.20	7.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5539-007	851.54	844.12	7.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5639-085	851.70	844.37	7.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5639-086	851.45	844.60	6.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5637-053	851.59	845.88	5.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-002	866.28	858.83	7.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5843-090	851.67	848.05	3.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-020	853.22	842.82	10.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-026	851.86	846.04	5.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
SS5547-017	852.71	846.81	5.90	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
SS5843-072	850.84	842.60	8.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-003	854.35	847.81	6.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-005	854.11	847.75	6.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5735-031	854.35	849.84	4.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5735-038	854.39	849.08	5.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-042	855.25	847.10	8.15	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-043	854.30	847.10	7.20	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5735-041	852.97	847.42	5.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5735-042	852.65	846.12	6.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5735-043	854.55	846.93	7.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5635-004	852.82	847.60	5.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5735-044	852.83	849.00	3.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5634-009	853.96	851.08	2.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-013	853.91	849.71	4.20	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-014	854.18	850.55	3.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-019	855.22	849.43	5.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-020	854.74	850.75	3.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-024	852.52	848.69	3.83	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-032	853.36	847.93	5.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5636-001	852.56	847.96	4.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5536-004	852.27	847.20	5.07	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5536-008	853.77	847.51	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5535-001	857.20	852.92	4.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5535-006	856.97	852.54	4.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5535-008	855.75	851.80	3.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5535-013	854.21	850.25	3.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5535-017	854.32	850.35	3.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5534-010	853.88	850.70	3.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5534-011	854.05	852.55	1.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-048	853.70	846.90	6.80	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5636-004	851.76	848.10	3.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-045	856.24	847.05	9.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5736-052	854.22	846.82	7.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5736-054	855.41	848.09	7.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5636-010	853.48	846.90	6.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5735-065	853.41	849.72	3.68	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AE5442-027	850.00	844.50	5.50	0	0	Type2, Fixed Backwater	Allowed
IN5147-071	849.79	847.33	2.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5247-190	848.32	845.58	2.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-120	849.87	847.18	2.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-128	849.62	846.91	2.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5446-096	852.34	849.49	2.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
IN5246-139	849.34	842.72	6.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-141	849.29	844.10	5.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-143	849.46	844.18	5.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-145	849.49	844.26	5.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-147	850.10	844.40	5.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5246-152	850.27	844.48	5.79	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-155	850.93	844.64	6.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5245-030	851.98	847.49	4.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5245-031	853.26	848.69	4.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5245-033	854.92	849.98	4.94	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5245-034	856.66	850.71	5.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5245-035	857.80	851.19	6.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5245-039	859.42	852.98	6.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5344-093	853.15	848.14	5.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-158	849.47	845.31	4.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5246-159	849.62	845.46	4.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5446-054	852.43	849.18	3.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5446-050	851.84	849.12	2.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5943-053	873.62	869.31	4.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5943-055	863.21	859.62	3.59	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5943-058	865.28	861.44	3.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5943-066	855.51	849.16	6.35	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-089	848.96	844.52	4.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-090	848.90	844.52	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-092	848.84	844.87	3.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-093	848.80	844.94	3.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-101	849.51	845.82	3.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-084	849.35	845.97	3.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5744-102	849.20	845.75	3.45	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5738-092	852.66	848.26	4.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5738-093	852.94	848.41	4.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-094	853.04	850.08	2.96	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5643-079	859.00	844.34	14.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5546-062	858.42	853.53	4.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5546-063	859.88	853.18	6.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-186	848.72	841.62	7.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5246-102	849.60	842.20	7.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5246-109	850.12	842.51	7.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-127	848.54	841.62	6.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-124	849.31	843.20	6.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-123	849.16	842.98	6.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-200	849.19	841.20	7.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5442-017	849.39	844.64	4.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5247-187	848.75	841.87	6.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5447-074	851.64	847.50	4.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5246-122	850.12	847.13	2.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5345-099	849.93	847.43	2.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-082	852.62	847.78	4.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-083	852.99	849.30	3.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-088	854.02	844.60	9.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-095	853.07	846.73	6.35	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-099	853.54	845.87	7.68	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5147-102	853.82	845.21	8.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5246-149	850.71	844.48	6.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5246-157	851.51	846.08	5.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5245-036	859.35	852.60	6.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5245-040	860.28	853.76	6.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5444-036	854.23	844.46	9.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5344-029	852.74	845.68	7.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-165	849.14	844.93	4.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5346-166	848.97	844.16	4.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5346-076	849.43	841.20	8.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5445-068	850.39	841.20	9.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5446-039	851.09	847.76	3.33	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5446-040	851.16	847.94	3.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-056	852.09	846.56	5.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5440-008	851.90	846.72	5.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5440-010	852.04	847.02	5.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5440-012	852.16	847.07	5.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5440-016	852.20	847.51	4.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5439-012	851.73	847.91	3.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5439-015	853.02	848.45	4.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5439-020	853.37	849.64	3.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-097	851.45	842.54	8.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-098	851.43	845.44	5.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-100	852.59	845.49	7.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5348-101	851.24	845.47	5.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-004	866.38	859.08	7.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-059	866.91	859.60	7.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-060	869.83	861.52	8.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5842-058	866.17	859.60	6.57	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5843-093	851.37	847.84	3.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5843-095	851.23	847.70	3.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5943-054	864.34	860.21	4.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5943-057	863.41	858.00	5.41	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5943-062	865.26	858.79	6.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5942-056	873.03	866.06	6.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
SS5943-065	862.47	854.20	8.27	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5644-072	848.78	844.48	4.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-088	848.92	844.52	4.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5744-096	849.40	844.80	4.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5744-067	850.05	845.95	4.10	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-100	849.58	845.55	4.03	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-065	852.46	843.72	8.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5643-066	850.35	844.44	5.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-069	850.12	844.68	5.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-072	850.37	845.14	5.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5643-075	850.41	845.78	4.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-088	850.49	845.97	4.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-089	850.54	846.38	4.15	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5738-084	860.63	856.55	4.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5737-073	855.12	851.57	3.55	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-095	857.91	852.59	5.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-028	857.96	853.18	4.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-096	857.24	850.54	6.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-097	858.19	849.35	8.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-032	856.48	847.85	8.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5545-017	853.76	850.59	3.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-025	860.15	855.84	4.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-098	859.82	853.53	6.29	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5546-069	859.39	850.69	8.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-070	859.55	852.74	6.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-071	858.87	853.69	5.18	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-074	858.13	854.39	3.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-077	858.36	854.55	3.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5546-078	858.57	854.72	3.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-066	852.57	845.34	7.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-067	852.30	845.39	6.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-068	851.88	845.49	6.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-072	852.06	845.55	6.51	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5541-074	851.45	845.81	5.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-080	851.91	845.91	6.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-082	852.01	846.02	5.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-083	851.50	846.11	5.39	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-049	851.88	846.19	5.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5540-050	851.35	846.44	4.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-022	856.33	852.36	3.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-023	856.08	852.44	3.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-011	856.64	844.64	12.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5538-026	856.31	851.44	4.87	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-140	854.95	845.31	9.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-141	851.04	845.12	5.92	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5543-142	850.57	845.04	5.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
ND5736-009	852.77	847.46	5.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
ST5545-026	866.26	857.64	8.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
HD5443-054	850.00	842.99	7.01	0	0	Type2, Fixed Backwater	Allowed
HD5443-063	850.00	841.31	8.69	0	1	Type2, Fixed Backwater	Allowed
MI5346-103	849.03	845.25	3.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5346-133	849.88	844.28	5.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5345-068	848.66	845.00	3.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5445-074	849.75	846.00	3.75	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5247-145	849.31	843.40	5.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5248-119	848.61	843.40	5.21	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5344-030	854.19	845.00	9.19	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5447-002	851.67	847.20	4.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5248-044	848.87	843.40	5.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5248-052	857.22	854.06	3.16	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5248-085	849.40	843.51	5.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5248-120	849.64	843.40	6.24	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5443-051	849.21	843.60	5.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
MI5442-013	853.34	841.80	11.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5247-151	848.63	838.00	10.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5434-007	857.20	853.50	3.70	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5148-089	853.64	847.03	6.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5148-090	858.98	852.75	6.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5637-032	851.67	845.78	5.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5540-037	849.18	843.95	5.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5537-012	854.82	850.87	3.95	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5537-013	854.73	850.84	3.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5537-029	857.22	847.22	10.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5638-003	851.62	844.85	6.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5540-028	852.25	842.08	10.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5540-029	851.58	843.73	7.85	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5843-046	857.22	851.94	5.28	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5638-030	857.26	846.38	10.88	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5638-034	855.81	846.80	9.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5639-055	854.82	845.81	9.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5640-055	855.08	845.43	9.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5638-059	853.07	848.81	4.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5639-073	856.41	850.39	6.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5740-135	858.89	854.90	3.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5642-060	857.82	849.17	8.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5546-042	858.74	855.25	3.49	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5843-087	851.08	848.30	2.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
PL5742-089	852.49	848.97	3.52	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5641-106	857.51	851.15	6.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5639-083	852.56	844.75	7.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5736-046	856.74	847.08	9.66	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5536-006	852.83	847.18	5.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TP5736-047	851.48	846.90	4.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
MI5736-056	855.09	848.20	6.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5735-058	855.16	849.40	5.76	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5148-127	851.30	841.25	10.05	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5148-130	860.63	853.52	7.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MO03B0100D	850.00	842.08	7.92	0	1	Type2, Fixed Backwater	Allowed
MO01B0112D	850.00	840.05	9.95	0	0	Type2, Fixed Backwater	Allowed
MO01D0111D	848.41	845.41	3.00	0	0	Type2, Fixed Backwater	Allowed
EJohnstonOutfall	850.00	844.63	5.37	0	0	Type2, Fixed Backwater	Allowed
MO02A0106D	850.00	842.13	7.87	0	1	Type2, Fixed Backwater	Allowed
DunningOutfall	849.75	844.22	5.53	846	1	Type2, Fixed Backwater	None
RussellOutfall	849.75	844.16	5.59	846	1	Type2, Fixed Backwater	None
MO04U0089A	849.75	839.32	10.43	846	1	Type2, Fixed Backwater	None
BlountOutfall	849.75	841.39	8.36	846	1	Type2, Fixed Backwater	None
JeniferOutfall	850.00	839.65	10.35	0	1	Type2, Fixed Backwater	Allowed
MI5345-100	850.50	847.33	3.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
WashingtonOutfall	850.00	841.20	8.80	0	0	Type2, Fixed Backwater	Allowed
AE5543-143	850.00	844.94	5.06	846	1	Type2, Fixed Backwater	Allowed
IYHRV	850.00	844.15	5.85	846	1	Type2, Fixed Backwater	Allowed
AS5247-125	849.09	243.23	605.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5541-029/AS5541-016	850.72	843.10	7.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
TE5246-125	850.23	847.00	3.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5246-153	850.54	846.98	3.56	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5344-077	850.61	846.55	4.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5347-073	849.86	845.14	4.72	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5843-020	856.82	850.46	6.36	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5739-041	855.91	852.13	3.78	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5543-110	851.56	846.66	4.89	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5543-113	850.81	847.04	3.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-042	853.03	847.99	5.04	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-044	853.35	848.75	4.60	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5743-082	852.09	848.92	3.17	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5545-029	865.09	858.00	7.09	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5744-099	849.83	845.20	4.63	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
MI5247-191	848.20	845.59	2.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
LS_002	847.64	844.67	2.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5640-046	851.75	847.88	3.87	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-033	850.93	846.24	4.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5543-107	851.68	847.22	4.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5542-041	853.16	847.73	5.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
LakeMendota	872.76	840.11	32.65	0	0	Type 1, Free Outfall	None
LakeMendota_1	872.76	840.11	32.65	0	0	Type 1, Free Outfall	None
Yahara1	869.68	839.81	29.87	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara2	869.68	837.04	32.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara3	870.58	837.94	32.64	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara4	871.56	841.75	29.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara5	862.53	841.79	20.74	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara6	861.16	841.55	19.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara7	861.45	840.05	21.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara8	868.08	841.31	26.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara9	875.40	841.79	33.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara10	875.40	841.00	34.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara 11	875.73	841.33	34.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara12	860.87	839.44	21.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara13	863.72	842.24	21.48	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara14	868.27	841.17	27.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara15	869.55	842.45	27.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara16	863.77	841.71	22.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara17	863.49	841.43	22.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara18	863.66	839.85	23.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara19	869.06	841.86	27.20	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
Yahara20	872.84	841.38	31.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara21	871.39	839.93	31.46	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara22	869.41	840.80	28.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara23	865.87	839.65	26.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara24	855.27	841.58	13.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara25	853.17	841.46	11.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara26	853.20	841.14	12.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Yahara27	857.22	840.91	16.31	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Lake Monona	849.75	830.20	19.55	846	1	Type2, Fixed Backwater	None
AS5444-063.1	849.02	841.20	7.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-065	851.61	847.75	3.86	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-072	850.06	846.44	3.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-014a	852.02	848.02	4.00	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-013_new	851.78	846.87	4.91	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-095_new	852.02	840.00	12.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
PL5743-091	850.52	846.44	4.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-91a	850.52	846.44	4.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-072e	851.02	847.88	3.14	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-072a	850.03	846.60	3.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-072b	850.23	846.81	3.42	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-018e	851.37	846.99	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5743-018b	851.56	847.19	4.37	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-017a	853.04	845.39	7.65	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-028a	852.10	848.09	4.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-028d	851.52	847.81	3.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-028f	851.61	847.84	3.77	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-028i	851.82	848.20	3.62	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-029a	851.21	847.81	3.40	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-089a	852.29	848.79	3.50	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-089e	852.69	848.88	3.81	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5742-089f	852.70	848.97	3.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5743-067a	851.05	847.58	3.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-041	862.25	857.87	4.38	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-038	858.17	855.48	2.69	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-029_New	858.61	855.48	3.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-043	860.25	856.23	4.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5842-003	860.25	856.23	4.02	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-012	859.30	854.00	5.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-099	860.19	855.21	4.98	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-100	859.98	855.92	4.06	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-102	860.71	856.28	4.43	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-104	861.06	856.59	4.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-107	860.63	856.90	3.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5742-109	861.14	857.03	4.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
CB5742-111	861.44	857.29	4.15	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5741-044	862.63	858.38	4.25	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5741-049	863.93	858.92	5.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5742-056	851.90	847.79	4.11	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Node1026	848.87	843.40	5.47	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Node1027	848.69	843.96	4.73	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Node1028	859.82	853.50	6.32	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Node1031	859.30	853.00	6.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009a	853.77	847.51	6.26	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009b	852.20	848.19	4.01	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009d	854.20	848.53	5.67	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009f	854.96	849.14	5.82	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009g	853.95	849.42	4.53	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009h	854.19	849.75	4.44	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009c	852.87	848.33	4.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009e	854.76	848.53	6.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D

Name	Ground Elevation (Spill Crest) ft	Invert Elevation ft	Depth ft	Outlet Control Backwater ft	Outfall Flag	Type of Outlet Control	Ponding Type
AS5535-013a	854.51	849.80	4.71	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
IN5536-009i	854.83	849.75	5.08	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-019b	856.31	849.70	6.61	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-019c	855.13	849.59	5.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
AS5635-019d	854.29	849.32	4.97	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Proposed_EMain	850.58	839.00	11.58	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Proposed_Williamson	854.84	839.00	15.84	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Proposed_Jenifer	875.23	839.00	36.23	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Proposed_StaightSt	869.13	839.00	30.13	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
ProposedPaterson_Outfall	845.22	839.00	6.22	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Proposed_EMain.1	853.54	839.00	14.54	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Hartmeyer_Development-The Victoria	853.80	853.50	0.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Hartmeyer_Development-TheView	854.50	850.51	3.99	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
Hartmeyer_Development-PublicGI	853.80	852.50	1.30	0	0	Type 1, Free Outfall	Link Spill Crest to 2D
HartmeyerBoxCulvert_1	852.90	849.90	3.00	0	0	Type 1, Free Outfall	Link Invert to 2D

APPENDIX D: FLOOD POINTS – DEPTH AND DURATION

Flood Depth (feet) - Existing Conditions

Recurrence Duration		Elevation (feet-NAVD88)	Scenario 1				Scenario 2				Scenario 3				Scenario 4			
			10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr
	Point 1	847.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 2	850.21	0.74	0.84	0.98	1.54	0.74	0.84	1.09	1.55	0.76	0.86	1.19	1.68	0.80	0.98	1.02	1.57
	Point 3	849.66	0.05	0.06	0.34	0.92	0.05	0.06	0.45	0.94	0.05	0.12	0.56	1.07	0.11	0.36	0.37	0.95
	Point 4	848.77	1.03	1.28	1.59	2.18	1.04	1.27	1.70	2.20	0.94	1.37	1.82	2.34	1.36	1.62	1.62	2.22
	Point 5	849.66	1.00	1.17	1.38	1.86	1.00	1.16	1.44	1.88	0.95	1.18	1.52	2.00	1.11	1.32	1.39	1.90
	Point 6	847.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.51	0.51	0.51	0.51
	Point 7	847.85	0.00	0.50	1.00	1.27	0.20	0.68	1.08	1.27	0.77	0.99	1.18	1.35	0.69	0.78	0.68	0.89
	Point 8	853.35	0.42	0.52	0.62	0.72	0.42	0.52	0.63	0.72	0.43	0.53	0.62	0.72	0.43	0.53	0.62	0.72
	Point 9	848.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03
	Point 10	849.83	0.00	0.00	0.86	1.88	0.00	0.03	1.02	1.88	0.00	0.26	1.15	2.03	0.06	0.45	0.98	1.96
	Point 11	848.58	0.00	0.00	1.27	2.15	0.00	0.00	1.56	2.16	0.00	0.00	1.80	2.43	0.67	1.46	1.38	2.20
	Point 12	849.72	1.13	1.48	1.85	2.21	1.24	1.55	1.92	2.21	1.41	1.67	2.00	2.32	1.59	1.80	1.85	2.22
	Point 13	858.32	0.00	0.09	0.34	0.46	0.00	0.09	0.34	0.46	0.00	0.09	0.34	0.46	0.00	0.09	0.34	0.46
	Point 14	858.13	0.00	0.18	0.62	0.73	0.00	0.20	0.62	0.73	0.00	0.20	0.62	0.74	0.00	0.20	0.62	0.73
	Point 15	849.79	1.04	1.29	1.39	1.47	1.04	1.29	1.39	1.47	1.03	1.29	1.39	1.47	1.07	1.30	1.39	1.47
	Point 16	854.04	0.62	0.67	0.78	0.89	0.62	0.67	0.78	0.89	0.62	0.68	0.78	0.89	0.62	0.68	0.78	0.89
	Point 17	850.04	0.00	0.16	0.38	0.85	0.00	0.15	0.42	0.88	0.00	0.15	0.50	0.99	0.09	0.31	0.39	0.89
	Point 18	850.25	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.33
	Point 19	849.80	0.00	0.01	0.76	1.21	0.00	0.32	0.81	1.21	0.15	0.53	0.89	1.29	0.41	0.67	0.76	1.21
	Point 20	849.92	0.00	1.64	2.01	2.37	0.00	1.72	2.06	2.37	1.44	1.83	2.12	2.43	1.67	1.91	2.01	2.37
	Point 21	848.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 22	848.61	0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.99	0.00	0.00	0.00	1.34	0.00	0.00	0.00	1.00
	Point 23	852.44	1.16	1.87	2.56	2.89	1.25	2.04	2.56	2.89	1.34	2.07	2.56	2.90	1.41	2.08	2.56	2.89
	Point 24	856.00	0.18	0.78	1.33	1.80	0.19	0.79	1.33	1.80	0.23	0.80	1.33	1.80	0.23	0.80	1.33	1.80
	Point 25	850.70	0.24	0.54	0.89	1.13	0.30	0.55	0.91	1.13	0.43	0.63	0.95	1.14	0.48	0.71	0.89	1.13
	Point 26	851.45	0.00	0.00	0.49	1.01	0.00	0.00	0.50	1.01	0.00	0.13	0.54	1.05	0.00	0.43	0.49	1.01
	Point 27	850.87	0.39	0.58	0.69	0.90	0.43	0.59	0.71	0.90	0.47	0.60	0.75	0.95	0.50	0.63	0.69	0.90
	Point 28	849.90	0.00	0.00	0.39	0.77	0.00	0.00	0.46	0.77	0.00	0.24	0.52	1.03	0.31	0.45	0.40	0.81
	Point 29	849.96	0.20	0.52	0.84	1.19	0.35	0.57	0.91	1.19	0.52	0.69	0.97	1.45	0.73	0.87	0.85	1.22
	Point 30	855.63	0.00	0.00	0.01	1.02	0.00	0.00	0.02	1.02	0.00	0.00	0.12	1.06	0.00	0.00	0.01	1.03
	Point 31	850.68	1.43	1.71	2.02	2.33	1.50	1.75	2.06	2.33	1.56	1.82	2.11	2.37	1.63	1.89	2.02	2.34
	Point 32	849.38	0.46	0.64	0.85	1.31	0.47	0.63	0.90	1.33	0.42	0.65	0.97	1.44	0.57	0.77	0.85	1.34
	Point 33	851.25	0.94	1.38	1.72	1.90	1.04	1.41	1.72	1.90	1.15	1.46	1.74	1.91	1.21	1.49	1.72	1.90
	Point 34	853.23	0.00	0.03	0.21	0.82	0.00	0.03	0.22	0.82	0.00	0.03	0.23	0.82	0.00	0.03	0.21	0.82
	Point 35	858.20	0.00	0.00	0.02	0.46	0.00	0.00	0.02	0.46	0.00	0.00	0.02	0.46	0.00	0.00	0.02	0.46
	Point 36	858.31	0.00	0.39	1.05	1.36	0.00	0.40	1.05	1.36	0.00	0.41	1.05	1.36	0.00	0.41	1.05	1.36
	Point 37	852.79	0.66	1.00	1.67	2.27	0.72	0.76	1.72	2.27	0.78	0.86	1.79	2.28	0.82	0.93	1.68	2.27
	Point 38	850.32	0.22	0.51	0.86	1.13	0.24	0.54	0.86	1.13	0.28	0.57	0.88	1.13	0.36	0.61	0.86	1.13
	Point 39	849.68	0.73	0.95	1.20	1.67	0.73	0.91	1.17	1.73	0.67	0.87	1.27	1.82	0.83	1.06	1.22	1.74
	Point 40	849.67	0.36	0.42	0.46	0.86	0.35	0.38	0.49	0.92	0.24	0.34	0.64	1.14	0.47	0.69	0.47	0.98
	Point 41	851.25	0.16	0.33	0.55	0.78	0.16	0.33	0.55	0.78	0.21	0.33	0.55	0.78	0.27	0.39	0.55	0.78
	Point 42	850.42	0.00	0.00	0.00	0.44	0.00	0.00	0.00	0.44	0.00	0.00	0.05	0.53	0.00	0.00	0.00	0.44
	Point 43	850.51	0.00	0.00	0.69	1.35	0.00	0.00	0.73	1.36	0.00	0.19	0.94	1.46	0.06	0.67	0.69	1.36
	Point 44	851.25	0.68	0.77	0.92	1.06	0.71	0.77	0.92	1.06	0.71	0.77	0.92	1.06	0.70	0.80	0.92	1.06
	Point 45	853.95	0.19	0.31	0.38	0.47	0.19	0.31	0.38	0.47	0.20	0.31	0.38	0.47	0.20	0.31	0.38	0.47
	Point 46	854.36	0.27	0.31	0.43	0.58	0.27	0.31	0.43	0.58	0.28	0.31	0.43	0.58	0.28	0.31	0.43	0.58
	Point 47	851.76	0.27	0.31	0.43	0.58	0.27	0.31	0.43	0.58	0.28	0.31	0.43	0.58	0.28	0.31	0.43	0.58
	Point 48	849.68	1.02	1.22	1.47	1.92	1.02	1.19	1.47	1.98	0.96	1.18	1.56	2.07	1.12	1.35	1.49	1.99
	Point 49	851.73	1.47	1.60	1.73	1.88	1.47	1.60	1.73	1.88	1.48	1.61	1.73	1.89	1.49	1.61	1.73	1.88
	Point 50	849.68	0.91	1.07	1.30	1.76	0.91	1.06	1.33	1.81	0.87	1.07	1.41	1.91	1.02	1.22	1.31	1.82

Flood Duration (hrs) - Existing Conditions

Elevation (feet-NAVD88)		Scenario 1				Scenario 2				Scenario 3				Scenario 4			
		10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr
Point 1	847.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Point 2	850.21	11.08	11.17	11.25	11.42	11.08	11.17	11.25	11.42	11.08	11.17	11.33	11.50	11.17	11.25	11.25	11.42
Point 3	849.66	0.00	0.25	1.50	3.08	0.00	0.33	1.58	3.08	0.08	0.92	2.17	3.58	0.92	1.75	1.50	3.08
Point 4	848.77	3.75	4.33	5.08	6.33	3.92	4.42	5.33	6.33	3.50	4.17	5.17	6.58	3.33	4.00	5.08	6.33
Point 5	849.66	2.67	3.33	4.08	5.33	2.83	3.42	4.33	5.33	2.83	3.50	4.50	5.83	4.00	5.00	4.00	5.33
Point 6	847.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.67	17.67	17.67	17.67
Point 7	847.85	0.00	10.92	11.08	11.17	10.83	11.00	11.17	11.17	11.08	11.25	11.33	11.50	17.67	17.67	17.67	17.67
Point 8	853.35	1.08	1.58	2.58	4.17	1.08	1.58	2.58	4.17	1.25	1.75	2.75	4.25	1.25	1.75	2.58	4.17
Point 9	848.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Point 10	849.83	0.00	0.00	3.92	7.00	0.00	0.00	4.58	7.00	0.00	2.00	5.33	8.50	0.50	3.58	4.25	7.42
Point 11	848.58	0.00	0.00	8.08	10.50	0.00	0.00	9.75	10.50	0.00	0.00	10.33	10.83	10.17	10.50	9.42	10.50
Point 12	849.72	1.58	2.33	4.33	6.25	1.83	2.58	4.58	6.25	2.17	3.00	4.33	6.17	3.08	3.83	4.33	6.25
Point 13	858.32	0.00	0.08	0.83	1.00	0.00	0.08	0.83	1.00	0.00	0.08	0.83	1.00	0.00	0.08	0.83	1.00
Point 14	858.13	0.00	0.33	0.83	1.08	0.00	0.42	0.83	1.08	0.00	0.42	0.83	1.08	0.00	0.42	0.83	1.08
Point 15	849.79	10.92	11.00	11.17	11.33	10.92	11.00	11.17	11.33	10.92	11.00	11.17	11.33	10.92	11.08	11.17	11.33
Point 16	854.04	11.08	11.17	11.33	11.50	11.08	11.17	11.33	11.50	11.08	11.17	11.33	11.50	11.08	11.17	11.33	11.50
Point 17	850.04	0.00	1.17	2.08	3.33	0.00	1.08	2.17	3.42	0.00	0.92	2.17	3.67	0.50	1.58	2.17	3.42
Point 18	850.25	0.00	0.00	0.00	1.67	0.00	0.00	0.00	1.75	0.00	0.00	0.00	2.25	0.00	0.00	0.00	1.75
Point 19	849.80	0.00	0.00	1.17	1.75	0.00	0.67	1.33	1.75	0.25	1.00	1.58	2.00	0.92	1.33	1.17	1.75
Point 20	849.92	0.00	10.67	10.92	11.08	0.00	10.75	10.92	11.08	10.67	10.83	11.00	11.08	10.75	10.92	10.92	11.08
Point 21	848.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Point 22	848.61	0.00	0.00	0.00	10.42	0.00	0.00	0.00	10.42	0.00	0.00	0.00	10.50	0.00	0.00	0.00	10.42
Point 23	852.44	0.75	1.33	1.83	2.25	0.92	1.42	1.92	2.25	1.00	1.50	2.00	2.42	1.17	1.67	1.83	2.25
Point 24	856.00	10.83	11.00	11.08	11.25	10.83	11.00	11.08	11.25	10.83	11.00	11.08	11.25	10.83	11.00	11.08	11.25
Point 25	850.70	0.50	1.08	1.75	2.58	0.58	1.17	1.92	2.58	0.83	1.33	2.00	2.92	1.17	1.67	1.75	2.58
Point 26	851.45	0.00	0.00	11.00	11.08	0.00	0.00	11.00	11.08	0.00	10.75	11.00	11.17	0.00	10.92	11.00	11.08
Point 27	850.87	10.67	10.83	10.92	11.08	10.67	10.83	10.92	11.08	10.67	10.83	11.00	11.08	10.75	10.83	10.92	11.08
Point 28	849.90	0.00	0.00	2.83	11.00	0.00	0.00	2.00	11.00	0.00	0.92	11.00	11.08	1.58	2.08	1.42	11.00
Point 29	849.96	0.25	2.42	4.17	11.33	1.50	2.50	3.92	11.33	2.00	2.75	11.33	11.50	2.42	3.25	4.00	11.33
Point 30	855.63	0.00	0.00	0.00	1.17	0.00	0.00	0.00	1.17	0.00	0.00	0.33	1.25	0.00	0.00	0.00	1.17
Point 31	850.68	10.92	11.00	11.17	11.33	10.92	11.08	11.17	11.33	11.08	11.17	11.25	11.50	11.17	11.25	11.17	11.33
Point 32	849.38	10.83	10.92	11.00	11.17	10.83	10.92	11.08	11.17	10.83	11.00	11.08	11.25	10.92	11.00	11.00	11.17
Point 33	851.25	0.00	10.92	11.08	11.25	0.00	11.00	11.08	11.25	10.83	11.00	11.17	11.25	10.92	11.00	11.08	11.25
Point 34	853.23	0.00	0.00	0.58	1.75	0.00	0.00	0.58	1.75	0.00	0.00	0.58	1.75	0.00	0.00	0.58	1.75
Point 35	858.20	0.00	0.00	0.00	1.42	0.00	0.00	0.00	1.42	0.00	0.00	0.00	1.42	0.00	0.00	0.00	1.42
Point 36	858.31	0.00	0.50	1.42	2.08	0.00	0.50	1.42	2.08	0.00	0.50	1.42	2.08	0.00	0.50	1.42	2.08
Point 37	852.79	10.92	11.08	11.25	11.33	11.00	11.08	11.25	11.33	11.00	11.08	11.25	11.33	11.00	11.17	11.25	11.33
Point 38	850.32	10.58	10.83	11.00	11.08	10.67	10.83	11.00	11.08	10.67	10.83	11.00	11.17	10.75	10.92	11.00	11.08
Point 39	849.68	3.00	3.75	5.08	6.75	3.17	3.00	5.08	6.75	3.42	3.00	5.33	7.00	3.00	3.75	5.08	6.67
Point 40	849.67	11.00	1.58	2.17	3.33	11.00	2.33	3.17	3.58	11.08	2.58	4.08	5.33	11.17	11.25	2.42	3.75
Point 41	851.25	0.33	0.75	1.08	1.50	0.33	0.75	1.08	1.50	0.42	0.75	1.08	1.58	0.67	1.00	1.08	1.50
Point 42	850.42	0.00	0.00	0.00	1.08	0.00	0.00	0.00	1.08	0.00	0.00	0.00	1.25	0.00	0.00	0.00	1.08
Point 43	850.51	0.00	0.00	1.00	1.83	0.00	0.00	0.92	1.83	0.00	0.58	1.25	2.17	0.08	0.92	1.00	1.83
Point 44	851.25	3.50	4.33	5.58	7.17	3.75	4.33	5.58	7.17	3.83	4.50	5.83	7.33	4.08	5.42	5.58	7.17
Point 45	853.95	0.67	1.00	1.58	2.42	0.67	1.00	1.58	2.42	0.67	1.08	1.58	2.42	0.67	1.08	1.58	2.42
Point 46	854.36	4.17	4.83	6.00	11.00	4.25	4.92	6.00	11.00	4.25	5.00	6.08	11.58	4.42	5.25	6.00	11.00
Point 47	851.76	0.92	1.17	1.42	1.92	0.92	1.17	1.42	1.92	0.92	1.17	1.42	1.92	0.92	1.17	1.42	1.92
Point 48	849.68	11.17	11.25	11.25	11.50	11.25	11.25	11.42	11.50	11.25	11.33	11.50	11.67	11.58	11.75	11.25	11.50
Point 49	851.73	11.08	11.17	11.33	11.50	11.08	11.17	11.33	11.50	11.17	11.25	11.42	11.58	11.17	11.25	11.33	11.50
Point 50	849.68	2.33	3.00	3.83	5.00	2.50	3.17	4.08	5.08	2.58	3.25	4.33	5.58	3.50	4.33	3.83	5.08

Flood Depth (feet) - PFC Conditions

Recurrence Duration		Elevation (feet-NAVD88)	Scenario 1				Scenario 2				Scenario 3				Scenario 4			
			10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr
	Point 1	847.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 2	850.21	0.00	0.00	0.67	1.02	0.00	0.00	0.67	1.02	0.00	0.00	0.85	1.08	0.00	0.73	0.92	1.27
	Point 3	849.66	0.02	0.05	0.07	0.08	0.03	0.05	0.07	0.08	0.05	0.06	0.07	0.38	0.05	0.06	0.22	0.62
	Point 4	848.77	0.00	0.49	0.97	1.19	0.00	0.51	0.98	1.20	0.32	0.50	0.95	1.62	0.71	0.99	1.46	1.88
	Point 5	849.66	0.00	0.35	0.84	1.14	0.00	0.36	0.84	1.14	0.36	0.60	0.94	1.33	0.61	0.83	1.16	1.55
	Point 6	847.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.06	0.51	0.51	0.51	0.51
	Point 7	847.85	0.00	0.00	0.00	0.85	0.00	0.00	0.51	1.02	0.55	0.66	0.95	1.16	0.61	0.71	0.87	1.03
	Point 8	853.35	0.00	0.00	0.46	0.59	0.00	0.04	0.47	0.59	0.00	0.24	0.47	0.60	0.00	0.27	0.46	0.60
	Point 9	848.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03
	Point 10	849.83	0.00	0.00	0.07	0.51	0.00	0.00	0.17	0.54	0.00	0.00	0.28	0.56	0.00	0.05	0.38	0.83
	Point 11	848.58	0.00	0.00	0.00	0.70	0.00	0.00	0.00	1.50	0.00	0.00	0.00	1.88	0.00	0.00	1.62	2.15
	Point 12	849.72	0.00	0.23	0.88	1.64	0.00	0.32	0.91	1.73	0.12	0.47	0.99	1.87	0.32	0.57	1.64	2.03
	Point 13	858.32	0.00	0.00	0.01	0.16	0.00	0.00	0.01	0.16	0.00	0.00	0.01	0.18	0.00	0.00	0.02	0.19
	Point 14	858.13	0.00	0.00	0.03	0.49	0.00	0.00	0.03	0.49	0.00	0.00	0.03	0.50	0.00	0.00	0.03	0.50
	Point 15	849.79	0.00	0.00	1.11	1.41	0.00	0.00	1.12	1.41	0.00	0.51	1.17	1.42	0.00	0.77	1.27	1.43
	Point 16	854.04	0.31	0.57	0.70	0.84	0.32	0.57	0.70	0.84	0.38	0.57	0.70	0.84	0.41	0.58	0.70	0.84
	Point 17	850.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.47
	Point 18	850.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 19	849.80	0.00	0.00	0.03	0.87	0.00	0.00	0.28	0.93	0.00	0.00	0.59	1.06	0.03	0.32	0.72	1.12
	Point 20	849.92	0.00	0.00	0.00	1.63	0.00	0.00	0.00	1.77	0.00	0.00	0.00	1.92	0.00	0.00	1.61	2.08
	Point 21	848.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 22	848.61	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.59	0.00	0.00	0.00	0.94
	Point 23	852.44	0.00	0.25	1.54	2.31	0.00	0.52	1.60	2.32	0.00	0.74	1.67	2.33	0.06	0.98	1.77	2.34
	Point 24	856.00	0.00	0.00	0.74	1.48	0.00	0.00	0.75	1.49	0.00	0.00	0.76	1.49	0.00	0.00	0.78	1.50
	Point 25	850.70	0.00	0.03	0.62	1.02	0.00	0.16	0.66	1.05	0.00	0.39	0.77	1.06	0.11	0.47	0.80	1.07
	Point 26	851.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 27	850.87	0.00	0.00	0.09	0.69	0.00	0.00	0.15	0.70	0.00	0.00	0.15	0.75	0.00	0.00	0.45	0.79
	Point 28	849.90	0.00	0.00	0.04	0.50	0.00	0.00	0.00	0.55	0.00	0.00	0.18	0.60	0.00	0.00	0.46	0.81
	Point 29	849.96	0.00	0.16	0.67	0.97	0.00	0.27	0.69	1.02	0.19	0.50	0.72	1.06	0.44	0.60	0.89	1.21
	Point 30	855.63	0.00	0.00	0.05	1.07	0.00	0.00	0.07	1.08	0.00	0.00	0.19	1.11	0.00	0.00	0.26	1.14
	Point 31	850.68	0.00	0.00	1.36	1.87	0.00	0.01	1.38	1.93	0.00	0.39	1.42	2.01	0.00	0.52	1.68	2.10
	Point 32	849.38	0.00	0.04	0.51	0.79	0.00	0.04	0.51	0.79	0.00	0.33	0.56	0.89	0.25	0.38	0.69	1.04
	Point 33	851.25	0.00	0.00	0.11	1.64	0.00	0.00	0.11	1.65	0.00	0.00	0.27	1.68	0.00	0.00	1.21	1.70
	Point 34	853.23	0.00	0.00	0.20	0.47	0.00	0.00	0.23	0.50	0.00	0.00	0.28	0.51	0.00	0.00	0.16	0.53
	Point 35	858.20	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.31
	Point 36	858.31	0.00	0.00	0.46	1.13	0.00	0.00	0.46	1.13	0.00	0.00	0.48	1.10	0.00	0.00	0.48	1.13
	Point 37	852.79	0.00	0.00	0.50	1.43	0.00	0.00	0.60	1.51	0.00	0.00	0.71	1.65	0.00	0.00	0.84	1.72
	Point 38	850.32	0.00	0.00	0.19	0.66	0.00	0.00	0.20	0.66	0.00	0.00	0.21	0.68	0.00	0.00	0.38	0.76
	Point 39	849.68	0.00	0.00	0.37	0.86	0.00	0.00	0.38	0.83	0.00	0.17	0.55	1.07	0.27	0.54	0.93	1.43
	Point 40	849.67	0.00	0.00	0.28	0.73	0.00	0.00	0.32	0.67	0.00	0.06	0.42	0.87	0.17	0.41	0.79	1.28
	Point 41	851.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 42	850.42	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.42
	Point 43	850.51	0.00	0.00	0.00	0.83	0.00	0.00	0.27	0.96	0.00	0.00	0.59	1.09	0.00	0.05	0.59	1.24
	Point 44	851.25	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.54	0.00	0.00	0.00	0.55
	Point 45	853.95	0.00	0.00	0.26	0.44	0.00	0.00	0.26	0.44	0.00	0.00	0.27	0.44	0.00	0.00	0.34	0.44
	Point 46	854.36	0.00	0.00	0.01	0.33	0.00	0.00	0.01	0.33	0.00	0.00	0.01	0.33	0.00	0.00	0.08	0.34
	Point 47	851.76	0.00	0.00	0.01	0.33	0.00	0.00	0.01	0.33	0.00	0.00	0.01	0.33	0.00	0.00	0.08	0.34
	Point 48	849.68	0.00	0.00	0.75	1.04	0.00	0.00	0.75	1.05	0.00	0.50	0.85	1.30	0.63	0.84	1.15	1.67
	Point 49	851.73	0.00	0.00	1.07	1.66	0.00	0.00	1.07	1.66	0.00	0.00	1.09	1.67	0.00	0.00	1.20	1.69
	Point 50	849.68	0.00	0.00	0.32	0.60	0.00	0.00	0.30	0.60	0.00	0.18	0.46	0.95	0.28	0.50	0.86	1.38

Flood Duration (hrs) - PFC Conditions

	Elevation (feet-NAVD88)		Scenario 1				Scenario 2				Scenario 3				Scenario 4			
			10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr	10-yr	25-yr	100-yr	500-yr
	Point 1	847.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 2	850.21	0.00	0.00	**10.83**	**11.00**	0.00	0.00	**10.83**	**11.00**	0.00	0.00	**11.00**	**11.17**	0.00	**10.92**	**11.08**	**11.25**
	Point 3	849.66	0.00	**0.17**	**0.58**	**0.92**	0.00	**0.17**	**0.58**	**0.92**	0.00	**0.33**	**0.67**	**1.17**	0.00	**0.33**	**1.00**	**1.67**
	Point 4	848.77	0.00	**1.33**	**2.17**	**2.83**	0.00	**1.50**	**2.25**	**2.92**	**1.00**	**1.75**	**1.92**	**2.50**	**1.42**	**1.75**	**2.33**	**3.00**
	Point 5	849.66	0.00	**0.67**	**1.42**	**2.00**	0.00	**0.67**	**1.42**	**2.00**	**0.67**	**1.00**	**1.67**	**2.17**	**1.50**	**1.83**	**2.33**	**3.00**
	Point 6	847.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**17.67**	**17.67**	**17.67**	**17.67**
	Point 7	847.85	0.00	0.00	0.00	**10.92**	0.00	0.00	**10.75**	**11.00**	**10.92**	**11.00**	**11.17**	**11.25**	**17.67**	**17.67**	**17.67**	**17.67**
	Point 8	853.35	0.00	0.00	**1.50**	**2.25**	0.00	0.00	**1.50**	**2.17**	0.00	**0.83**	**1.50**	**1.92**	0.00	**0.92**	**1.75**	**2.00**
	Point 9	848.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 10	849.83	0.00	0.00	**0.25**	**1.92**	0.00	0.00	**0.83**	**2.50**	0.00	0.00	**1.17**	**2.83**	0.00	0.00	**2.08**	**3.83**
	Point 11	848.58	0.00	0.00	0.00	**10.25**	0.00	0.00	0.00	**10.75**	0.00	0.00	0.00	**10.83**	0.00	0.00	**10.58**	**10.92**
	Point 12	849.72	0.00	**0.33**	**1.00**	**3.33**	0.00	**0.50**	**1.00**	**3.92**	**0.25**	**0.58**	**1.17**	**4.50**	**0.50**	**0.83**	**4.67**	**6.08**
	Point 13	858.32	0.00	0.00	0.00	**0.50**	0.00	0.00	0.00	**0.50**	0.00	0.00	0.00	**0.50**	0.00	0.00	0.00	**0.50**
	Point 14	858.13	0.00	0.00	0.00	**0.58**	0.00	0.00	0.00	**0.58**	0.00	0.00	0.00	**0.58**	0.00	0.00	0.00	**0.67**
	Point 15	849.79	0.00	0.00	**10.92**	**11.08**	0.00	0.00	**10.92**	**11.08**	0.00	**10.75**	**11.00**	**11.17**	0.00	**10.83**	**11.00**	**11.17**
	Point 16	854.04	**10.83**	**10.92**	**11.08**	**11.25**	**10.83**	**10.92**	**11.08**	**11.25**	**10.83**	**10.92**	**11.08**	**11.25**	**10.83**	**10.92**	**11.17**	**11.25**
	Point 17	850.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.50**	0.00	0.00	0.00	**1.17**
	Point 18	850.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 19	849.80	0.00	0.00	0.00	**1.00**	0.00	0.00	**0.42**	**1.08**	0.00	0.00	**0.75**	**1.25**	0.00	**0.67**	**1.08**	**1.58**
	Point 20	849.92	0.00	0.00	0.00	**10.75**	0.00	0.00	0.00	**10.75**	0.00	0.00	0.00	**10.83**	0.00	0.00	**10.58**	**10.92**
	Point 21	848.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 22	848.61	0.00	0.00	0.00	**10.00**	0.00	0.00	0.00	**10.08**	0.00	0.00	0.00	**10.33**	0.00	0.00	0.00	**10.42**
	Point 23	852.44	0.00	**0.17**	**0.58**	**1.17**	0.00	**0.17**	**0.67**	**1.17**	0.00	**0.33**	**0.75**	**1.25**	**0.08**	**0.33**	**0.83**	**1.25**
	Point 24	856.00	0.00	0.00	**11.00**	**11.17**	0.00	0.00	**11.00**	**11.17**	0.00	0.00	**11.00**	**11.17**	0.00	0.00	**11.00**	**11.17**
	Point 25	850.70	0.00	0.00	**1.00**	**1.75**	0.00	**0.33**	**1.08**	**1.83**	0.00	**0.67**	**1.25**	**2.00**	**0.25**	**0.83**	**1.50**	**2.17**
	Point 26	851.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 27	850.87	0.00	0.00	**10.33**	**10.83**	0.00	0.00	**10.42**	**10.83**	0.00	0.00	**10.50**	**10.92**	0.00	0.00	**10.58**	**10.92**
	Point 28	849.90	0.00	0.00	0.00	**1.33**	0.00	0.00	0.00	**1.75**	0.00	0.00	**0.42**	**2.25**	0.00	0.00	**1.58**	**3.25**
	Point 29	849.96	0.00	**0.17**	**1.00**	**3.00**	0.00	**0.33**	**1.00**	**3.08**	**0.25**	**0.75**	**1.25**	**2.83**	**0.67**	**1.00**	**2.83**	**3.92**
	Point 30	855.63	0.00	0.00	**0.17**	**1.25**	0.00	0.00	**0.17**	**1.33**	0.00	0.00	**0.33**	**1.33**	0.00	0.00	**0.42**	**1.42**
	Point 31	850.68	0.00	0.00	**10.83**	**11.00**	0.00	0.00	**10.83**	**11.00**	0.00	**10.58**	**10.92**	**11.00**	0.00	**10.67**	**10.92**	**11.08**
	Point 32	849.38	0.00	0.00	**10.92**	**11.08**	0.00	0.00	**10.92**	**11.08**	0.00	**10.83**	**11.00**	**11.17**	**10.83**	**10.92**	**11.08**	**11.25**
	Point 33	851.25	0.00	0.00	**11.08**	**11.25**	0.00	0.00	**11.08**	**11.25**	0.00	0.00	**11.17**	**11.25**	0.00	0.00	**11.17**	**11.25**
	Point 34	853.23	0.00	0.00	**0.58**	**0.83**	0.00	0.00	**0.83**	**1.00**	0.00	0.00	**1.08**	**1.00**	0.00	0.00	**0.50**	**1.00**
	Point 35	858.20	0.00	0.00	0.00	**0.83**	0.00	0.00	0.00	**0.83**	0.00	0.00	0.00	**0.83**	0.00	0.00	0.00	**0.83**
	Point 36	858.31	0.00	0.00	**0.50**	**1.42**	0.00	0.00	**0.50**	**1.42**	0.00	0.00	**0.50**	**1.42**	0.00	0.00	**0.50**	**1.42**
	Point 37	852.79	0.00	0.00	**10.92**	**11.08**	0.00	0.00	**10.92**	**11.08**	0.00	0.00	**11.00**	**11.17**	0.00	0.00	**11.00**	**11.17**
	Point 38	850.32	0.00	0.00	**10.67**	**10.92**	0.00	0.00	**10.67**	**10.92**	0.00	0.00	**10.67**	**10.92**	0.00	0.00	**10.83**	**11.00**
	Point 39	849.68	0.00	0.00	**0.50**	**1.08**	0.00	0.00	**0.58**	**1.17**	0.00	**0.17**	**0.83**	**1.42**	**0.58**	**1.00**	**1.67**	**2.17**
	Point 40	849.67	0.00	0.00	**10.92**	**11.08**	0.00	0.00	**10.92**	**11.08**	0.00	**10.75**	**11.00**	**11.17**	**10.92**	**11.08**	**11.17**	**11.33**
	Point 41	851.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Point 42	850.42	0.00	0.00	0.00	**0.58**	0.00	0.00	0.00	**0.67**	0.00	0.00	0.00	**0.83**	0.00	0.00	0.00	**1.08**
	Point 43	850.51	0.00	0.00	0.00	**1.17**	0.00	0.00	**0.17**	**1.25**	0.00	0.00	**0.83**	**1.42**	0.00	0.00	**1.00**	**1.75**
	Point 44	851.25	0.00	0.00	0.00	**0.83**	0.00	0.00	0.00	**0.83**	0.00	0.00	0.00	**1.08**	0.00	0.00	0.00	**1.17**
	Point 45	853.95	0.00	0.00	**0.75**	**1.67**	0.00	0.00	**0.75**	**1.67**	0.00	0.00	**0.75**	**1.67**	0.00	0.00	**1.00**	**1.67**
	Point 46	854.36	**2.92**	**3.58**	**4.42**	**5.67**	**2.92**	**3.58**	**4.42**	**5.67**	**2.92**	**3.58**	**4.42**	**5.75**	**2.92**	**3.58**	**4.58**	**5.83**
	Point 47	851.76	0.00	0.00	0.00	**0.42**	0.00	0.00	0.00	**0.42**	0.00	0.00	0.00	**0.42**	0.00	0.00	**0.17**	**0.58**
	Point 48	849.68	0.00	0.00	**11.00**	**11.17**	0.00	0.00	**11.00**	**11.17**	0.00	**11.00**	**11.17**	**11.25**	**11.08**	**11.25**	**11.33**	**11.50**
	Point 49	851.73	0.00	0.00	**10.83**	**11.00**	0.00	0.00	**10.83**	**11.00**	0.00	0.00	**10.92**	**11.08**	0.00	0.00	**10.92**	**11.08**
	Point 50	849.68	0.00	0.00	**0.50**	**1.00**	0.00	0.00	**0.50**	**1.08**	0.00	**0.50**	**0.83**	**1.42**	**0.67**	**1.08**	**1.67**	**2.25**

APPENDIX E: YAHARA TAILWATER ANALYSIS MEMO

TETRA TECH

MEMO

To:	Joanna O'Brien, Caroline Burger, Janet Schmidt, Greg Fries, Ken Potter
From:	Justin Voss, Dan Christian
Date:	February 15, 2021
Subject:	Task 3 – Existing Conditions Yahara River Tailwater Elevations

1.0 INTRODUCTION

The Yahara River bisects the isthmus between Lake Mendota and Lake Monona and, therefore, the water surface elevations (WSE) along the river are important to understanding flooding in the portion of the City's stormwater collection system that drains to it, which is commonly called the Isthmus watershed. The water surface elevations along the Yahara River between Lakes Mendota and Monona are controlled primarily by the water surface of Lake Monona, the flow rate over Tenney Dam from Lake Mendota, and drainage from Madison's stormwater collection system. Tetra Tech understands from conversations with City and University of Wisconsin staff that the level of Lake Monona appears to have the most influence on the magnitude of flooding in the Isthmus Watershed because the discharge of the Yahara River is actively managed during and after rainfall events when the lakes are high.

The purpose of Task 3 is to narrow the wide range of possible tailwater and flow conditions into a set of up to four boundary conditions for hydraulic modeling of the Isthmus Watershed as part of Task 6. This document summarizes the approach and the results of the analysis.

2.0 AVAILABLE DATA

The lake levels are regulated, and there is a large amount of data available. Critical reports and data sets that were reviewed for the analysis include:

- *Dane County Lake Level Management Guide for the Yahara Chain of Lakes* by Dane County Land and Water Resources Department (October 13, 2010). This report describes the lake level management.
- *Dane County Flood Insurance Study* revised June 16, 2016, prepared by the Federal Emergency Management Agency (FEMA).
- United States Geological Survey (USGS) gauging stations on the Yahara River, Lake Mendota, and Lake Monona.
- *2018 Yahara Chain of Lakes Flooding Technical Workgroup Report* (February 1, 2019).
- HEC-RAS model used for the Yahara River Tenney Dam breach analysis completed by Montgomery Associates and Resource Solutions, LLC in April 2009.

3.0 LAKE LEVEL MANAGEMENT

Water surface elevations on Lakes Mendota and Monona are controlled by dams. In 1979, the predecessor agency to the State of Wisconsin Department of Natural Resources (DNR) established the most recent regulations defining acceptable water levels on the Yahara Chain of Lakes, which balance competing interests including navigation, flood control, fisheries, and wildlife. The water level regulations do not define how the dams

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are operated but only specify minimum and maximum water levels at each lake and minimum flows in the river system.[1]

The regulations establish winter and summer season lake levels. The lake levels during the summer season, which lasts from the first spring runoff event after March 1 to October 31,[2] are higher and, therefore, are more critical to understanding the flooding in the Isthmus Watershed. Lake levels regularly exceed the regulatory maximum level during and following watershed scale rain events. According to City staff, the flooding risk in the Isthmus Watershed noticeably increases when the level of Lake Monona is more than one foot above its regulatory summer maximum level. The regulatory lake levels for Lakes Mendota and Monona are summarized in ***Table 3-1***.

Table 3-1. Regulatory Lake Levels

	Lake Mendota	Lake Monona
Ordinary High Water Mark	850.50	845.62
Target Maximum	849.9	845.0
Target Summer Minimum	849.4	844.5
Target Winter Minimum	848.0	842.0

Source: *Dane County Lake Level Management Guide for the Yahara Chain of Lakes*, page 5, Table 1. All elevations have been converted from NGVD29 to NAVD88.

According to City staff, the flow from Lake Mendota through the Yahara River is actively managed during heavy rainfall, especially when Lake Monona's level is already high. Prior to and during heavy rainfall, the tainter gates at Tenney Dam are closed more to reduce flows through the Yahara River to a moderate level. After the rainfall is over, the tainter gates are opened more to release water rapidly from Lake Mendota. The largest recorded discharges on the Yahara River are thought to occur when water is intentionally released from Tenney Dam at a high rate.

4.0 FEMA FLOOD INSURANCE STUDY

The FEMA Flood Insurance Study for Dane County (FIS 55025C revised June 16, 2016) was not used directly in the Task 3 analysis but is provided for reference. The FEMA Flood Insurance Study includes the 100-year water surface elevations in ***Table 4-1***. FEMA does not have published flood discharges on the Yahara River between Lakes Mendota and Monona.

Table 4-1. FEMA Flood Insurance Study 100-year Water Surface Elevations

Lake Mendota	Yahara River at Tenney Dam	Lake Monona
853.0	848.0	848.0

Note: All elevations are in NAVD88.

[1] *Dane County Lake Level Management Guide for the Yahara Chain of Lakes*, page 5.
[2] *Dane County Lake Level Management Guide for the Yahara Chain of Lakes*, page 5.

5.0 USGS GAUGING STATIONS

The United States Geological Survey maintains gauging stations on the Yahara River and Lakes Mendota and Monona that were used to estimate the frequency of specific combinations of lake levels and flood discharges using HEC-SSP. The USGS gauging stations datums are set to NGVD29, so the analysis of the gauging station data was converted to NAVD88 by subtracting 0.20 feet.

- 05428000 Lake Mendota at Madison measures daily lake levels. The gauging station has data from January 1, 1916 to the present (see Figure 5-1). The total drainage area to Lake Mendota is estimated to be 233 square miles, of which, 196 square miles are considered contributing. The maximum recorded level of Lake Mendota is 852.53 feet occurring June 5 – 6, 2000.
- 05428500 Yahara River at East Main Street measures flow rates and river stage. The gauging station has data from November 8, 2003 to the present (see Figure 5-2). The total and contributing drainage areas are estimated to be 235 and 198 square miles, respectively. The maximum recorded Yahara River flood discharge is 728 cubic feet per second (cfs) occurring August 25, 2018.
- 0542900 Lake Monona at Madison also measures daily lake levels. The gauging station has data from September 1915 to the present (see Figure 5-3). The total drainage area to Lake Monona is estimated to be 279 square miles, of which, 242 square miles are considered contributing. The maximum recorded level of Lake Monona is 848.31 feet occurring September 6, 2018, 12 days after the recorded peak discharge of the Yahara River. Lake Monona's water surface elevation often peaks several days after large discharges through the Yahara River as water is released from Lake Mendota following rainfall.

Figure 5-1. Lake Mendota Water Levels for Period of Record

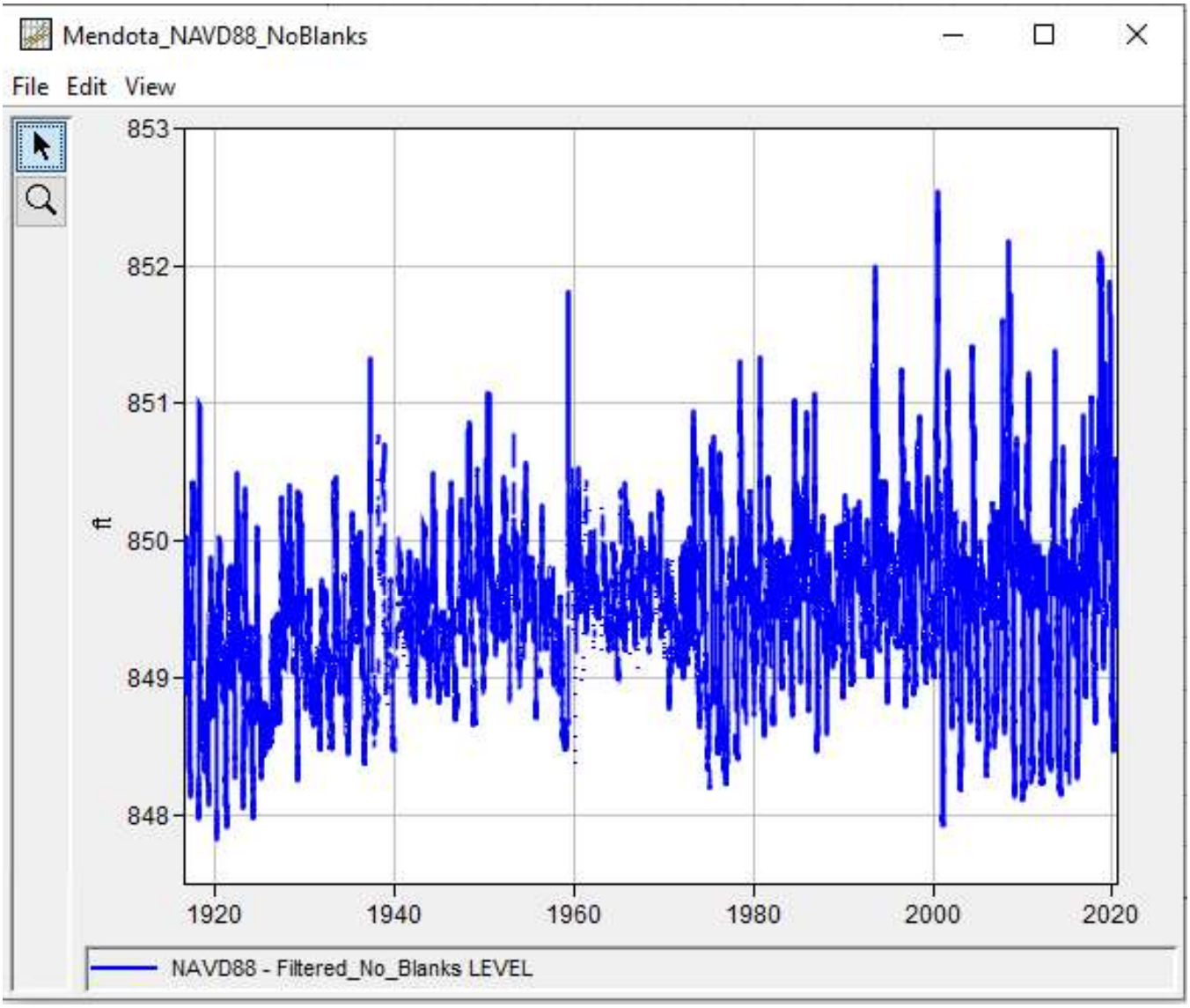


Figure 5-2. Yahara River Discharge at E. Main Street for Period of Record

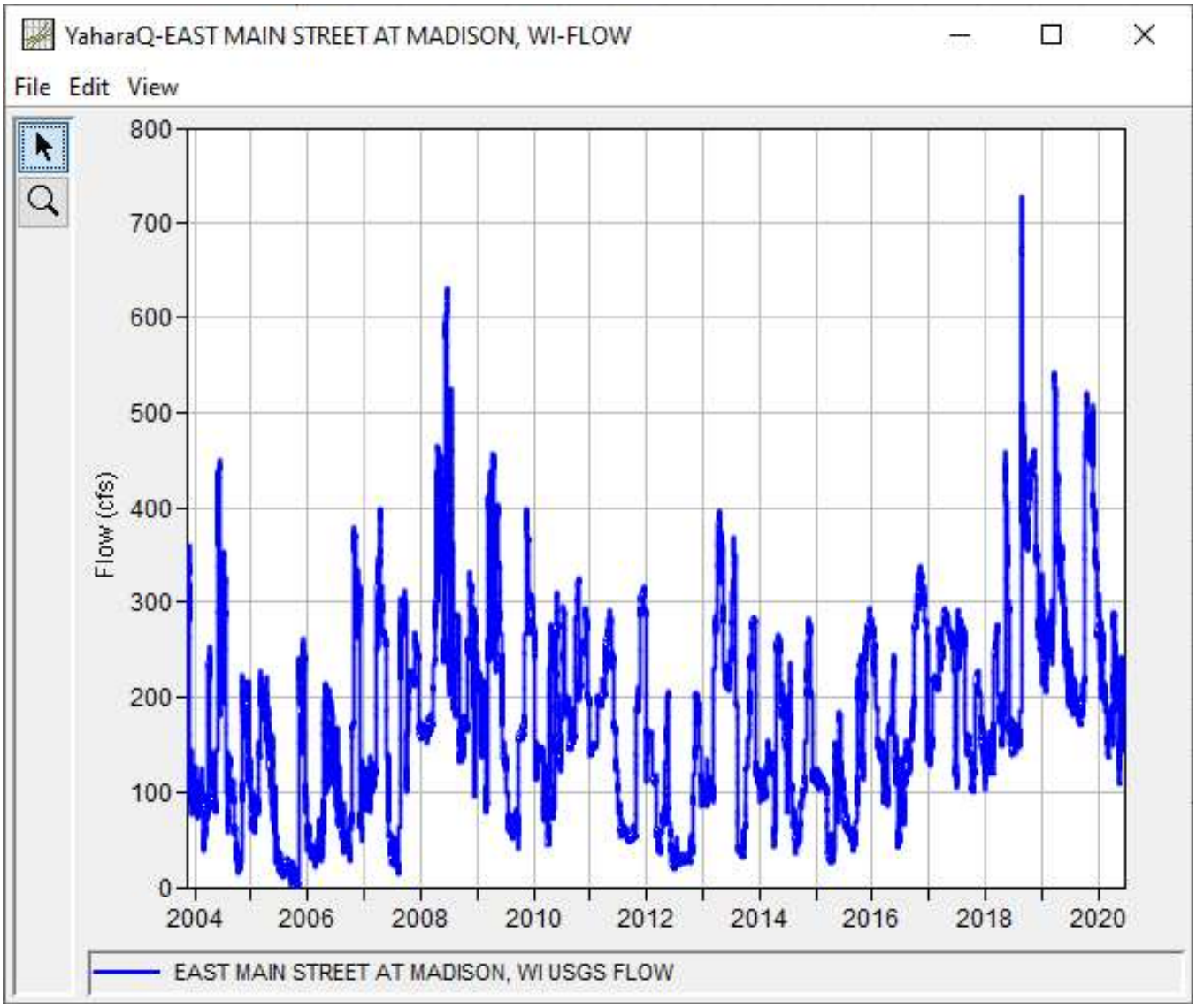
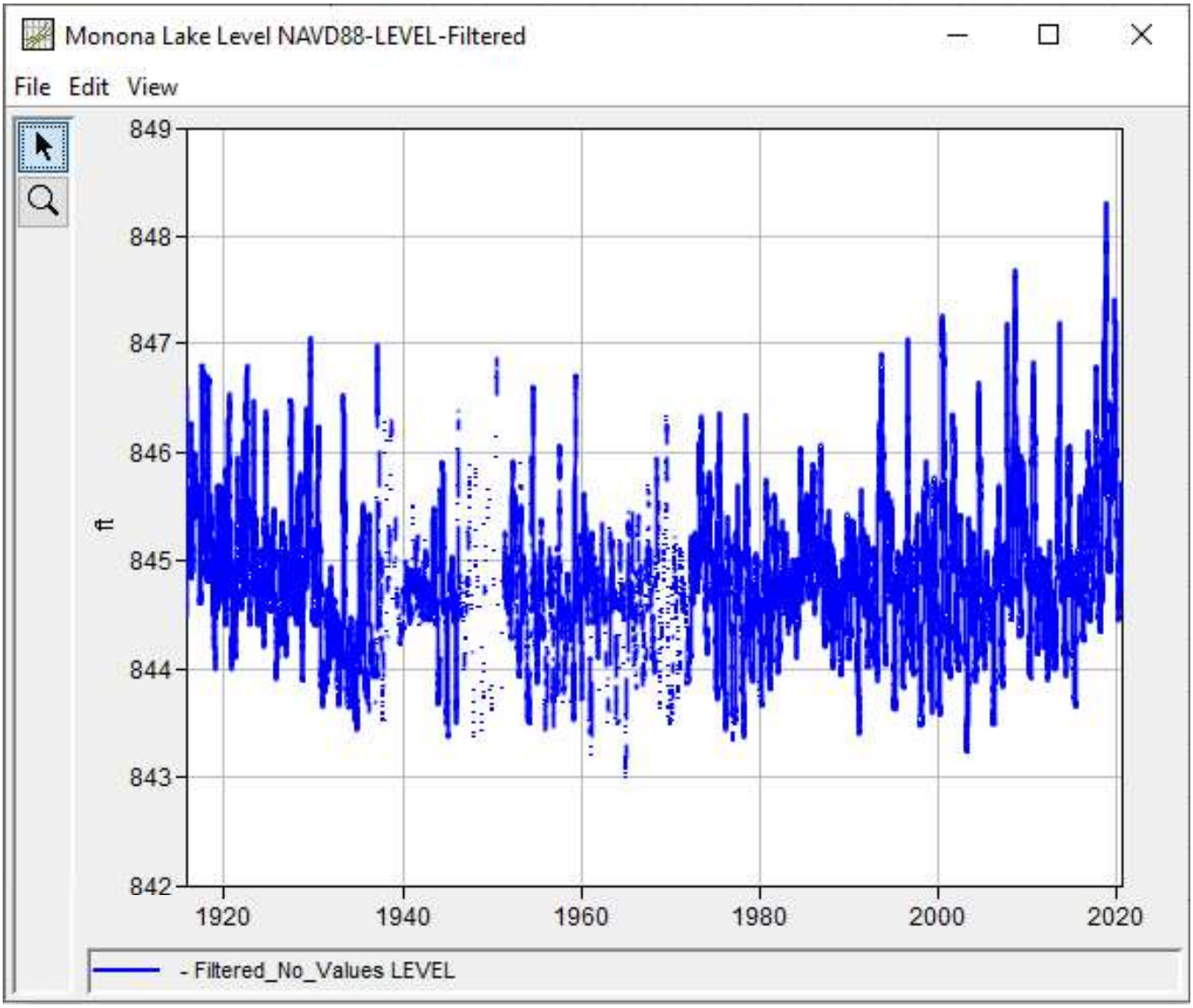


Figure 5-3. Lake Monona Water Levels for Period of Record



6.0 YAHARA RIVER HEC-RAS MODEL

The City of Madison provided a HEC-RAS model of the Yahara River from the downstream end of Lake Monona to the upstream end of Lake Mendota. The provided model is setup for a dam failure analysis of Tenney Dam, although it also includes a non-failure simulation as well, so it is an unsteady state model that simulates several days of time. The model only includes a hydrograph for the 100-year flood discharge.

For the tailwater analysis, the model was assumed to be accurate for the current conditions, except where specific modifications were made, including:

- Converting the model from unsteady state to steady state, which simplified the inputs for the upstream flow from Lake Mendota and the downstream boundary condition at Lake Monona.
- Updating flow rates in the Yahara River and the level of Lake Monona to match the range of design conditions identified in this memorandum (refer to Section 7.3).
- Updating the bathymetry of the Yahara River using the 2020 survey.

7.0 SELECTION OF DESIGN BOUNDARY CONDITIONS

"Flash flooding" in the Isthmus Watershed may be impacted by either the level of Lake Monona or the flow through the Yahara River from Lake Mendota or both. Therefore, for hydraulic modeling of the collection system in later tasks, boundary conditions representing the level of Lake Monona and the water flowing over the dam from the Lake Mendota through the Yahara River are estimated.

The likelihood of the Lake Monona water surface reaching specific elevations can be estimated using a frequency analysis. From the frequency analysis, design boundary conditions are recommended for evaluation in the HEC-RAS and collection system models.

The discharge rate from Lake Mendota through the Yahara River is actively managed during rainfall and not entirely a function of natural events, so a frequency analysis was not performed. Therefore, to establish design flow rates for evaluation, the measured flow rates in the days prior to the five largest recorded summer discharge rates were reviewed to understand the managed release during the rainfall. The records appear to show a pattern of stable flows, likely representing the dry weather flow, followed by a day where the flows increase substantially, which likely represents the rainy day and runoff from the Isthmus Watershed. The discharge rates continue to gradually increase likely representing the opening of the tainter gates at Tenney Dam. The values prior the day with the increase in flow discharge can be used to recommend the design discharge from Lake Mendota in future modeling tasks.

7.1 LAKE MONONA LEVEL FREQUENCY ANALYSIS

The frequency of flood discharges and lake levels was calculated using the United States Army Corps of Engineers, Hydrologic Engineering Center's, Statistical Software Package (HEC-SSP) version 2.2, which is intended to perform statistical analyses of hydrologic data. For the purposes of this analysis, HEC-SSP's distribution fitting analysis was used which calculates the annual exceedance probability (frequency) from the data set.

The entire data set was not used for the frequency analysis because many variables have changed since 1915 when lake level measurement began. Specifically, there are different summer and winter lake levels, the lake level management has changed over time, and there have been changes to land use. Following consultation with City and University of Wisconsin staff, only lake level records within the last 30 years are likely to be useful for the current conditions.

The frequency analysis was based on the following data set:

- Missing data was removed from the data set.
- Only data from 1990 through 2020 was included because of changes to lake management strategy and the urbanization of the watershed in that time.
- Only May through September data were included because lake levels are intentionally managed to be higher during the summer months. Although March, April, and October are part of the regulatory summer months, data during these months was excluded because in practice those months include transition periods between the summer and winter lake levels.[3]

The Lake Monona level data frequency analysis was completed using a Generalized Extreme Value distribution. The median annual frequency of exceedance and upper (5 percent) and lower (95 percent) confidence limits are in ***Table 7-1***. The annual frequency of exceedance is the probability that a particular lake water surface elevation would occur in any given year. The return interval is the average length of time between events. The lower confidence limit represents a 95 percent probability that the lake level for a particular recurrence interval exceeds the confidence limit, and the upper confidence limit represents a 5 percent probability that the lake level for a particular recurrence interval exceeds the confidence limit (or a 95 percent probability that is does not exceed the value). All elevations are reported relative to NAVD88. FEMA's 100-year water surface elevation is 0.5 feet higher than the median 100-year water surface elevation in this analysis but is within the confidence limits.

Table 7-1. Lake Monona Water Surface Elevation Annual Frequency of Exceedance for Summer Months.

Frequency of Exceedance, %	Return Interval	Lower 95% Confidence Limit Lake Water Surface Elevation, feet	Median Lake Water Surface Elevation, feet	Upper 5% Confidence Limit Lake Water Surface Elevation, feet
0.2	500-year	846.80	848.29	849.85
0.5	200-year	846.67	847.84	849.04
1.0	100-year	846.56	847.49	848.38
2.0	50-year	846.41	847.13	847.81
5.0	20-year	846.13	846.65	847.21
10.0	10-year	845.90	846.27	846.75
20.0	5-year	845.61	845.87	846.20
50.0	2-year	845.08	845.25	845.45
80.0	15-month	844.62	844.79	844.96
90.0	13-month	844.38	844.59	844.75

7.2 YAHARA RIVER DISCHARGE ANALYSIS

The Yahara River discharge analysis looks at summer months (May 1 through September 30) for the entire period of record of the gauge (installed November 2003). Two types of events were reviewed. The first type of event includes the largest recorded peak flow rates in the Yahara River presumably occurring after a rainfall during high lake levels when the Tenney Dam tainter gates are opened to reduce the Lake Mendota level. This type of event

[3] *Dane County Lake Level Management Guide for the Yahara Chain of Lakes*, page 15.

represents how the discharge through the Yahara River is managed during the highest lake levels. The second type of event describes the Yahara River discharge during the largest recorded rainfalls at the Madison Dane County Regional Airport. These largest rainfalls may not have occurred when the lake level is high and describes how the Yahara River discharge is managed during the largest rainfalls.

The flow rates leading up to the five largest recorded summer discharges are in ***Table 7-2***. Major rain events preceding the peak discharge are shaded yellow in the table (as recorded at the Madison Dane County Regional Airport) and likely include the impacts of local runoff from the Isthmus Watershed into the Yahara River. The green shaded cells represent the discharge immediately prior to the rainfall. Based on discussions with City staff, these represent the likely maximum discharge over Tenney Dam at high lake levels during the rainfall as the tainter gates are closed to reduce flow through the Yahara River when the lakes are high. The opening of the tainter gates and Tenney Dam after the rainfall event is represented by the increasing discharge rate over several days, shaded in light red in the table. One common factor leading to the largest discharges in the Yahara River are multiple heavy rainfall events occurring close together or several consecutive days of rainfall.

Table 7-2. Summary of Five Largest Recorded Yahara River Discharges.

Event	Date	Discharge, cfs Rainfall†, inches Lake Monona Water Surface Elevation, feet									
		Day 0	Day -1	Day -2	Day -3	Day -4	Day -5	Day -6	Day -7	Day -8	Day -9
1	8/25/2018	728 0.00 847.90	669 0.03 847.77	485 0.00 847.57	348 0.00 847.34	234 0.14 847.09	186 3.78 846.57	184 0.00 846.45	185 0.00 846.44	164 1.52 846.36	156 1.30 846.18
2	6/16/2008	632 0.00 847.68	602 0.02 847.69	579 0.19 847.62	594 0.02 847.50	451 2.57 847.13	336 0.01 846.98	326 0.00 846.88	392 0.02 846.71	333 4.11 846.00	280 2.23 845.61
3	5/15/2018	458 0.00 846.12	429 0.93 846.01	439 0.13 845.73	444 0.55 845.55	411 0.93 845.43	386 0.04 845.28	323 1.51 845.19	293 0.00 845.12	291 0.00 845.12	227 0.03 845.13
4	6/8/2004 ††	451 0.00 846.52	443 0.00 846.52	439 0.01 846.52	417 0.00 846.52	402 0.00 846.52	392 0.00 846.52	397 0.10 846.54	376 0.00 846.54	361 0.34 846.51	438 1.42 846.46
5	9/18/2007 †††	314 0.00 846.46	280 0.00 846.50	282 0.00 846.53	281 0.00 846.56	281 0.00 846.61	281 0.00 846.68	289 0.00 846.72	292 0.00 846.77	288 0.87 846.78	288 0.00 846.78

† Rainfall is from the Madison Dane County Regional Airport. Since this is one location, it is not necessarily indicative of the rainfall over the entire Yahara River watershed and is presented to describe the time frame in which rainfall was occurring.
†† 9.07 inches of rainfall was recorded between May 21 and May 29, 2004 (Day -10).
††† 10.42 inches of rainfall was recorded between August 18 and August 27, 2007 (Day -22).

The flow rates during the largest summer rainfall events (assuming a minimum six-hour period of dry weather between events) are in ***Table 7-3***. Three of the events (May 21, 2004, June 7, 2008, and August 20, 2018) preceded the one of the five largest recorded discharges in the Yahara River. The Yahara River discharge during the largest rain events is generally less than some smaller rainfalls that occur when the lake level is higher, especially for the shorter duration events.

Table 7-3. Yahara River Discharge during Largest Rainfall Events.

Rainfall Start Date	Duration, hours	Rainfall, inches	Average Intensity, inches per hour	Peak 1-hour Rainfall Intensity, inches per hour	Yahara River Discharge, cfs		Lake Monona WSE, feet	
					One Day Prior to Rainfall	During Rainfall	One Day Prior to Rainfall	During Rainfall
5/17/2000	34	6.68	0.20	0.96	Not available	Not available	844.93	845.98
6/7/2008	39	6.36	0.16	1.31	258	333	845.52	846.00
5/30/2000	40	5.08	0.13	1.31	Not available	Not available	845.30	845.57
8/18/2007	28	5.07	0.18	1.49	40	89	845.19	845.71
8/1/2001	17	4.98	0.29	1.35	Not available	Not available	845.20	845.94
5/21/2004	16	4.74	0.30	0.79	79	132	844.99	845.65
8/20/2018	16	3.92	0.25	0.94	186	234	846.45	847.09
7/16/1999	15	3.67	0.24	0.80	Not available	Not available	845.31	845.55
9/22/2009	7	3.63	0.52	1.70	54	40	845.07	845.23
7/22/2010	15	3.61	0.24	1.42	288	285	846.07	846.20
9/13/2003	32	3.60	0.11	0.51	Not available	Not available	844.40	844.84

7.3 RECOMMENDATIONS FOR HEC-RAS SIMULATIONS

It is not efficient to analyze a large number of flow and tailwater conditions in the later phases of the project with the collection system model due to the expected runtime of the model. However, HEC-RAS can be used to efficiently run a wide range of flow and tailwater conditions. Since many of the combinations of flow and tailwater are likely to produce a similar water surface elevation in the Yahara River, doing this analysis in HEC-RAS can narrow the possible combinations to a distinct number of boundary conditions for the collection system model.

Discussions with City staff indicate that flooding is most prevalent when Lake Monona is high, at least one foot above the summer maximum level, so a range of lake levels above the summer maximum are recommended.

During large rainfalls, flow rates from Lake Mendota are actively managed to reduce flow rates from Lake Mendota that are less likely to cause flooding and allow water entering the river from the Isthmus Watershed to be conveyed downstream preferentially. At the highest lake levels, as denoted in ***Table 7-2***, the managed flow rates from Lake Mendota during rainfall were in the 180 to 360 cfs range based on the discharge the day prior to the rainfall, which excludes the impacts of local runoff into the Yahara River. During the largest rainfall events, which did not all occur at the highest lake levels, the Yahara River discharges were generally lower, ranging from 40 to 290 cfs on the day prior to the rainfall.

Following rainfalls, the flow rates in the Yahara River are higher as the tainter gates are opened. Flooding could occur without additional rainfall if the tainter gates are opened too far too quickly due to restrictions created by bridges and other energy losses along the river, but presumably, the operators would reduce the opening again in this case thus reducing the flow through the Yahara River and limiting the potential for flooding in the Isthmus Watershed. Even so, some simulations are recommended with high Yahara River flow rates and high lake levels to understand a worst-case scenario.

Table 7-4 summarizes the flow and tailwater conditions that were simulated using HEC-RAS. Lower and higher values for the post-rainfall managed discharge than those discussed above were added to bound the likely range of discharges.

Table 7-4. Selected Simulations for Yahara River Water Surface Elevation Analysis.

ID	Yahara River Discharge, cfs	Lake Monona Level, feet	Notes
1	250	846.0	Represents post-rainfall managed discharge. Lake level 1 foot above summer maximum. Flows during higher lake levels are assumed to be managed at a lower rate.
2	500		
3	600		
4	700		
5	100	846.5	Represents managed discharge during rainfall. Lake levels vary.
6	250		
7	400		
8	700		
9	100	847.0	
10	250		
11	400		
12	700		
13	100	847.5	
14	250		
15	400		
16	700		
17	100	848.0	
18	250		
19	400		
20	700		
21	100	848.5	Represents lake level 0.2 feet above maximum recorded level.
22	250		
23	400		
24	700		

8.0 HEC-RAS RESULTS

After the HEC-RAS model was updated with the new channel bathymetry data from the 2020 survey, HEC-RAS was used to predict water surface elevations for the selected combinations of discharge and lake level. For all simulated events, the water surface profiles had an average slope of 2.1 feet per mile or less. Only the simulations with discharges greater than 400 cfs had an average water surface slope of more than 1 foot per mile.

The combination of lake levels and flows through the Yahara River that were simulated produce a range of water surface elevations at the downstream face of Tenney Dam of 2.75 feet (the range in downstream lake levels set in the model is 2.50 feet).

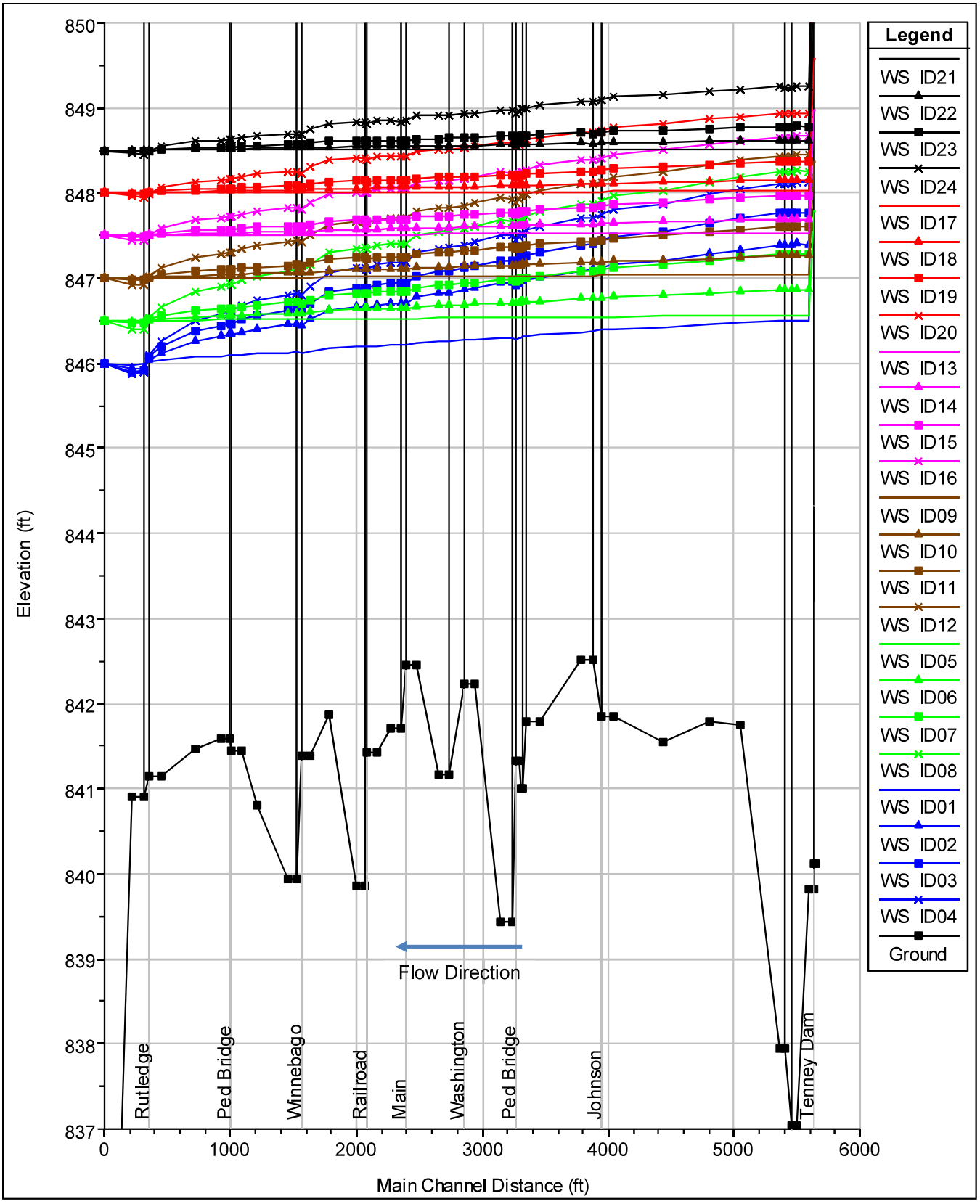
Since the Yahara River is approximately one mile in length, all the water surface elevations at the downstream face of Tenney Dam were projected to be within 2.1 feet of the level of Lake Mendota. ***Table 8-1*** shows the modeled water surface elevations ordered from the highest projected water surface elevation at Tenney Dam to the smallest.

Figure 8-1 shows the modeled water surface profiles.

Table 8-1. Projected Yahara River Water Surface Elevations.

ID	Yahara River Discharge, cfs	Lake Monona Elevation, feet	WSE at Downstream Face of Tenney Dam, feet	Change in Water Surface Elevation, feet	Average Water Surface Slope, feet per mile
24	700	848.50	849.25	0.75	0.7
20	700	848.00	848.94	0.94	0.9
23	400	848.50	848.78	0.28	0.3
16	700	847.50	848.67	1.17	1.2
22	250	848.50	848.62	0.12	0.1
21	100	848.50	848.52	0.02	0.0
12	700	847.00	848.44	1.44	1.4
19	400	848.00	848.36	0.36	0.4
8	700	846.50	848.26	1.76	1.7
18	250	848.00	848.15	0.15	0.1
4	700	846.00	848.12	2.12	2.1
17	100	848.00	848.02	0.02	0.0
15	400	847.50	847.97	0.47	0.5
3	600	846.00	847.76	1.76	1.7
14	250	847.50	847.69	0.19	0.2
11	400	847.00	847.60	0.60	0.6
13	100	847.50	847.53	0.03	0.0
2	500	846.00	847.39	1.39	1.4
7	400	846.50	847.28	0.78	0.8
10	250	847.00	847.26	0.26	0.3
9	100	847.00	847.04	0.04	0.0
6	250	846.50	846.86	0.36	0.4
5	100	846.50	846.56	0.06	0.1
1	250	846.00	846.50	0.50	0.5

Figure 8-1. Projected Yahara River Water Surface Profiles



9.0 STORMWATER COLLECTION SYSTEM MODEL BOUNDARY CONDITIONS

The stormwater collection system model of the Isthmus Watershed is expected to include the Yahara River, so inputs for flow entering the river from Lake Mendota and the tailwater at Lake Monona need to be supplied in that model. The recommended combination of flow rate and tailwater elevations are based on two factors:

- The City's desired level of service of its stormwater system.
- Defining distinct sets of water surface elevations from the HEC-RAS modeling results.

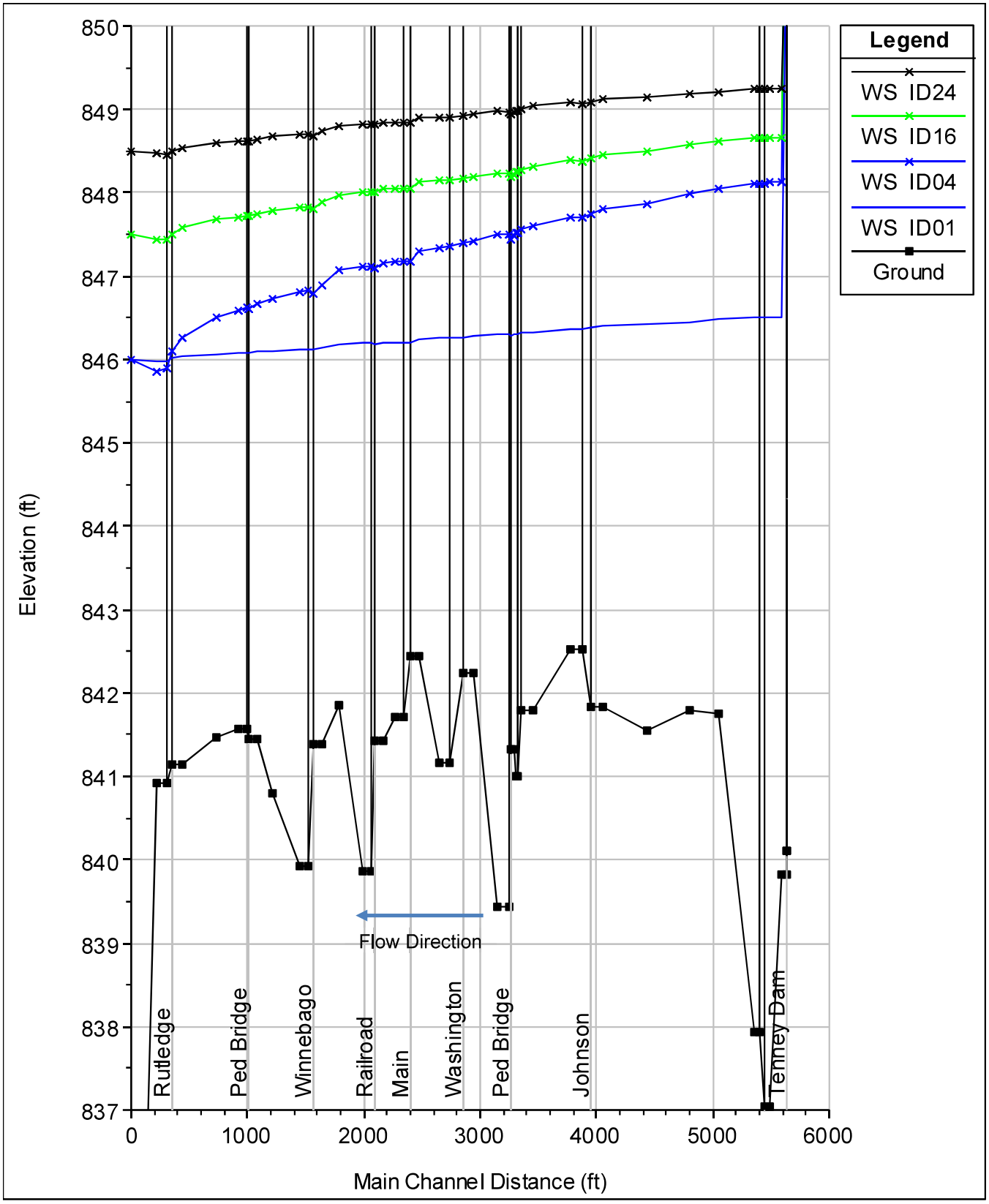
The City is most concerned with what may happen during extreme events that happen rarely because they have experience and observations from smaller events. The boundary condition 1, which has the lowest projected water surface elevation along the Yahara River also was selected to help distinguish between flooding caused by storm sewers versus flooding caused by lake levels. ***Table 9-1*** shows the boundary conditions selected in coordination with the City staff.

Table 9-1. Recommended Boundary Conditions for Collection System Model.

ID	Yahara River Discharge, cfs	Lake Monona Elevation, feet	WSE at Downstream Face of Tenney Dam, feet	WSE above Minimum Simulated Elevation, feet
1	250	846.00	846.50	0.00
4	700	846.00	848.12	1.62
16	700	847.50	848.67	2.17
24	700	848.50	849.25	2.75

Each of these boundary conditions can be simulated with any selected rainfall in the collection system model because, in general, rainfall events (i.e. relatively short duration, high intensity rainfall) that are most likely to cause flooding in the local Isthmus Watershed are independent of the longer-term weather patterns and larger watershed-scale hydrology that lead to high lake levels and the management of flows from Lake Mendota.

Figure 9-1. Hydraulic Profiles for Boundary Conditions Recommended for use in Collection System Model



APPENDIX F: BUILDINGS PREDICTED TO FLOOD

Buildings Predicted to Flood Summary (100-year, 24-hour Storm)

Building ID	Existing Peak Flooding (in)	PFC Peak Flooding (in)
65	1	0
111	1	0
150	0.2	0
193	0.05	0
195	5	0
201	0	0
209	9	2
211	4	0
213	3	0
228	3	0
230	1	0
241	2	0
242	2	0
244	2	0
269	2	0
275	0	0
398	3	0
411	6	0
413	0	0
416	0	0
457	1	0
483	1	0
502	1	0
529	7	0
553	0	0
561	3	0
579	2	0
586	0	0
587	0	0
596	0	0
599	1	1
610	0	0
614	0	0
637	2	0
671	4	1
693	0	0
715	0	0
735	7	0
758	1	0
781	2	0
801	0	0
824	3	0
873	3	0
875	12	0
879	0	0
890	4	0
907	1	0
915	1	0
920	0	0
933	9	1
955	6	0
970	5	0
971	2	1
973	11	0
974	9	4
976	4	0
977	5	4
979	12	3
984	0	0
985	1	0
986	6	0
987	4	0
988	17	11
989	6	0
990	0	0
991	11	0
992	8	2
995	0	0
996	3	0
999	4	0
1001	11	5
1003	1	0
1010	5	0
1013	2	0
1014	5	0
1015	1	0
1021	1	0
1027	6	0
1032	0	0
1033	5	0
1046	11	4
1054	0	0
1056	1	1
1059	1	0
1062	0	0
1071	2	0
1075	2	0
1086	2	0
1088	6	2
1096	5	2
1117	0	0
1140	1	0
1167	1	0
1185	5	0
1191	5	3
1215	4	0
1281	5	0
1282	10	3
1326	10	4
1327	12	5
1342	4	0
1347	11	0
1377	5	0
1380	1	0
1382	7	0
1384	5	0
1385	14	3
1537	2	0
1561	1	0
1694	0	0
1730	1	0
1799	0	0
1867	5	0
1902	2	0
2016	0	0
2070	19	19
2073	0	0
2083	6	0
2091	13	2
2094	10	0
2095	9	0
2101	0	0
2105	11	0
2120	1	0
2147	6	0
2165	6	0
2167	0	0
2188	3	0
2191	2	0
2234	2	0
2307	3	0
2322	5	0
2330	0	0
2343	2	0
2349	5	0
2351	7	0
2352	3	0
2360	8	5
2384	10	0
2385	1	0
2399	3	0
2424	7	0
2428	12	3
2429	3	0
2432	2	0
2433	11	2
2439	0	0
2442	0	0
2451	0	0
2456	4	0
2457	2	0
2460	0	0
2461	1	0

Buildings Predicted to Flood Summary (100-year, 24-hour Storm)

Building ID	Existing Peak Flooding (in)	PFC Peak Flooding (in)
2463	6	0
2464	1	0
2475	3	0
2485	17	0
2494	12	2
2497	0	0
2498	0	0
2503	0	0
2539	1	0
2562	9	1
2568	2	0
2571	1	0
2631	1	0
2673	2	0
2678	2	0
2686	5	0
2902	2	0
2909	4	0
2911	5	0
2957	0	0
2981	1	0
3047	4	0
3112	2	0
3142	1	0
3206	31	0
3218	0	0
3228	2	0
3263	0	0
3278	5	0
3356	8	0
3357	9	0
3367	1	0
3472	15	0
3486	2	0
3500	1	0
3502	1	0
3518	11	0
3544	19	0
3559	18	0
3580	7	0
3582	10	0
3600	3	0
3601	4	0
3617	6	0
3639	2	0
3715	2	0
3773	1	0
3790	0	0
3887	2	0
3909	2	0
3911	13	0
3934	4	0
4020	5	0
4038	5	0
4054	8	0
4064	10	1
4101	1	0
4137	2	0
4232	6	0
4241	1	0
4265	7	0
4278	7	2
4309	2	0
4312	1	0
4325	9	0
4350	2	0
4363	4	0
4374	4	0
4390	1	0
4403	1	0
4432	0	0
4433	1	0
4475	1	0
4488	0	0
4511	17	1
4524	6	0
4555	2	1
4602	0	0
4633	3	0
4770	0	0
4772	6	0
4781	6	0
4846	0	0
4866	5	0
4997	5	0
5001	1	0
5016	9	0
5030	4	0
5072	1	0
5653	9	0
5658	9	0
5673	0	0
5689	6	1
5696	1	0
5933	1	0
6043	5	0
6164	3	3
6212	1	0
6231	8	0
6232	7	0
6242	20	12
6244	9	4
6245	1	1
6249	2	0
6250	1	0
6253	4	0
6261	5	0
6263	0	0
6270	2	1
6273	1	0
6276	7	0
6277	10	0
6280	20	0
6283	11	0
6296	11	0
6298	7	0
6304	5	0
6311	1	0
6314	15	0
6320	4	2
6326	3	0
6327	0	0
6328	14	0
6329	0	0
6331	1	0
6334	20	0
6335	4	4
6336	6	0
6338	0	0
6339	1	0
6340	2	0
6348	2	0
6367	9	0
6376	4	0
6387	26	0
6408	1	0
6414	1	0
6417	11	1
6418	6	0
6421	4	0
6424	2	0
6429	12	2
6434	8	0
6435	1	0
6442	14	0
6446	4	0
6451	5	4
6465	11	0
6469	1	0
6478	3	0
6481	3	0
6488	0	0
6506	3	0

Buildings Predicted to Flood Summary (100-year, 24-hour Storm)

Building ID	Existing Peak Flooding (in)	PFC Peak Flooding (in)
6509	28	0
6512	9	0
6515	1	0
6521	1	0
6524	10	0
6526	1	0
6531	2	0
6550	11	0
6558	1	0
6563	1	0
6568	9	0
6592	4	0
6594	11	0
6652	2	0
6686	11	0
6687	0	0
6691	6	3
6731	9	0
6737	4	0
6746	7	0
6814	27	0
6880	3	0
6917	5	0
6919	2	0
6930	5	0
6931	5	0
6932	1	0
6934	2	0
6938	17	0
6950	4	0
6994	0	0
7010	1	0
7026	1	0
7058	1	0
7105	7	0
7106	7	0
7107	3	0
7109	7	0
7290	1	0
7338	39	26
7343	2	1
7354	0	0
7356	0	0
7366	1	0
7369	6	0
7370	1	0
7374	7	0
7408	7	0

Summary

Buildings with	Existing Peak Flooding (in)	PFC Peak Flooding (in)
Flooding < 6"	254	56
Flooding > 6"	100	4

APPENDIX G: WINSLAMM GROUND COVER INFORMATION

SOURCE AREA TYPE AND PARAMETER GUIDE

FLAT ROOFS

Roofs 1:
- Flat roof
- Connected

Roofs 2:
- Flat roof
- Disconnected
- Sandy soil

Roofs 3:
- Flat roof
- Disconnected
- Silty soil

Roofs 4:
- Flat roof
- Disconnected
- Clayey soil
- Low source area density

Roofs 5:
- Flat roof
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Roofs 6:
- Flat roof
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

PITCHED ROOFS

Roofs 7:
- Pitched roof
- Connected

Roofs 8:
- PItched roof
- Disconnected
- Sandy soil

Roofs 9:
- Pitched roof
- Disconnected
- Silty soil

Roofs 10:
- Pitched roof
- Disconnected
- Clayey soil
- Low source area density

Roofs 11:
- Pitched roof
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Roofs 12:
- Pitched roof
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

PARKING

Paved Parking 1:
- Connected

Paved Parking 2:
- Disconnected
- Sandy soil

Paved Parking 3:
- Disconnected
- Silty soil

Paved Parking 4:
- Disconnected
- Clayey soil
- Low source area density

Paved Parking 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Paved Parking 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

SOURCE AREA TYPE AND PARAMETER GUIDE

UNPAVED PARKING

Unpaved Parking 1:
- Connected

Unpaved Parking 2:
- Disconnected
- Sandy soil

Unpaved Parking 3:
- Disconnected
- Silty soil

Unpaved Parking 4:
- Disconnected
- Clayey soil
- Low source area density

Unpaved Parking 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Unpaved Parking 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

DRIVEWAYS

Driveways 1:
- Connected

Driveways 2:
- Disconnected
- Sandy soil

Driveways 3:
- Disconnected
- Silty soil

Driveways 4:
- Disconnected
- Clayey soil
- Low source area density

Driveways 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Driveways 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

SIDEWALKS

Sidewalks 1:
- Connected

Sidewalks 2:
- Disconnected
- Sandy soil

Sidewalks 3:
- Disconnected
- Silty soil

Sidewalks 4:
- Disconnected
- Clayey soil
- Low source area density

Sidewalks 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Sidewalks 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

LANDSCAPED AREAS

Large Landscaped Areas 1:
- Disconnected
- Sandy soil

Large Landscaped Areas 2:
- Disconnected
- Silty soil

Large Landscaped Areas 3 (*Residential Only*):
- Disconnected
- Clayey soil

SOURCE AREA TYPE AND PARAMETER GUIDE

Large Landscaped Areas 4:
- Disconnected
- Clayey soil
- Low

Large Landscaped Areas 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Large Landscaped Areas 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

Small Landscaped Areas 1:
- Disconnected
- Sandy soil

Small Landscaped Areas 2:
- Disconnected
- Silty soil

Small Landscaped Areas 3 (*Residential Only*):
- Disconnected
- Clayey soil

Small Landscaped Areas 4:
- Disconnected
- Clayey soil
- Low source area density

Small Landscaped Areas 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Small Landscaped Areas 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

UNDEVELOPED AREAS

Undeveloped Areas 1:
- Disconnected
- Sandy soil

Undeveloped Areas 2:
- Disconnected
- Silty soil

Undeveloped Areas 3 (*Residential Only*):
- Disconnected
- Clayey soil

Undeveloped Areas 4:
- Disconnected
- Clayey soil
- Low source area density

Undeveloped Areas 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Undeveloped Areas 6:
- Disconnected
- Clayey soil
- Medium/High source area density
- No alley present

OTHER AREAS

Paved Playground 1:
- Connected

Paved Playground 2:
- Disconnected
- Sandy soil

Paved Playground 3:
- Disconnected
- Silty soil

Paved Playground 4:
- Disconnected
- Clayey soil
- Low source area density

Paved Playground 5:
- Disconnected
- Clayey soil
- Medium/High source area density
- Alley present

Paved Playground 6:
- Disconnected
- Clayey soil
- Medium/High source area density

SOURCE AREA TYPE AND PARAMETER GUIDE

No alley present

Other Pervious Areas 1:
Disconnected
Sandy soil

Other Pervious Areas 2:
Disconnected
Silty soil

Other Pervious Areas 3 (*Residential Only*):
Disconnected
Clayey soil

Other Pervious Areas 4:
Disconnected
Clayey soil
Low source area density

Other Pervious Areas 5:
Disconnected
Clayey soil
Medium/High source area density
Alley present

Other Pervious Areas 6:
Disconnected
Clayey soil
Medium/High source area density
No alley present

Other Part Con Imp Areas 1:
Disconnected
Sandy soil

Other Part Con Imp Areas 2:
Disconnected
Silty soil

Other Part Con Imp Areas 3:
Disconnected
Clayey soil
Low source area density

Other Part Con Imp Areas 4:
Disconnected
Clayey soil
Medium/High source area density
Alley present

Other Part Con Imp Areas 5:
Disconnected
Clayey soil
Medium/High source area density

No alley present

Isolated Areas

Water Body Areas

Other Direct Con Imp Areas

STREETS

Streets 1

Streets 2

Streets 3

Streets 4

Streets 5

Streets 6

Streets 7

Streets 8

APPENDIX H: SEDIMENT SURVEY OBSERVATIONS

Storm Structure	Depth of Sediment (in)	Sediment Observations	Pipe Observations
AS5443-002	0	(None)	Sits with 33 inches of water. There is a monitoring device in the structure and didn't want to ruin the data so did not clean.
AS5345-025	0	Structure is in a construction zone so can not get to it.	(None)
AS5343-051	0	Minimal debris-not measurable	Pipes clean
AS5444-056	**3**	3 inches of sand and muck	Pipes clear
AS5247-102	**0.5**	Minimal muck on the bottom	Sits with 30 inches of water in it.
AS5346-090	**2**	2 inches of sand	Sits with water in it
AS5445-050	**4**	Can't clean-3-5 inches of muck on the bottom	Sits with 61 inches of water in it.
AS5637-012	**0.5**	Minimal sand	Pipes clear
AS5638-002	**14**	14 inches of sand and muck	Sits with 19 inches of water in it. Could only get debris directly under CB lids. Looks like the whole pipe has around 7 inches of debris in it.
AS5541-082	**10**	10 inches of sand and muck	Sits with 5 inches of water in it. No debris
AS5843-079	**10**	10 inches of muck	7 inches of water sits in it. No debris
IN5246-128	**12**	12 inches of sand and muck	Out going pipe has very little debris in it about half inch.
AS5736-042	**2.5**	2.5 inches of sand/rocks	Flow through pipe has 2-3 inches of sand and rocks in it.
AS5636-001	0	No debris	Structure has a rough channel. Connecting pipes are clear.
IN5246-139	**4**	Leaves and muck-4 inches	Sits with 25 inches of water in it. No debris
AS5544-067	**6**	6 inches of leaves and muck	Sits with 26 inches of water in it. No debris
AS5544-060	**8**	8 inches of sand and muck-Could not clean-water is too deep	Sits with 61 inches of water
IN5642-061	0	No debris	Pipes look clean
AS5743-003	0	Minimal sand	Pipes look all clean.
IN5544-037	**6**	6 inches of sand, muck, and rocks	Pipes looked clear. Couldn't get out one large rock.
AS5541-029	**6**	6 inches of sand and large rocks	Sits with 35 inches of water in it. Large rocks are still in it.
IN5248-009	**6**	6 inches of leaves and muck	No debris in pipe but it has 33 inches of water in it.

APPENDIX I: EAST ISTHMUS CALIBRATION REVIEW MEMO (MARCH 10, 2023)

TETRA TECH

Memo

To:	Jojo O'Brien, Alaina Baker (City of Madison)
From:	Dan Christian; Justin Voss (Tetra Tech)
Date:	March 10, 2023
Subject:	East Isthmus Calibration Review

Flow monitoring within the East Isthmus and Yahara River watershed was conducted in 2020 and 2021. The flow monitoring included three level sensors and two depth-velocity meters. Tetra Tech completed the model calibration in 2021 after the end of flow monitoring. Since the model was calibrated, several changes have been made to the model, including:

- Upgrading XPSWMM to version 2021.3 to avoid a bug in the software that prevented batch simulations.
- Simulating manhole entrance and exit losses in the conduit factors dialog.
- Making changes along the Yahara River to reduce model instability.

The purpose of this memorandum is to summarize the impacts of the changes on the original model calibration.

While the precise peak flow rates, volumes, and levels changed somewhat from the initial calibration, the calibration overall is very similar to what it was previously. Additional calibration details will be presented in the Watershed Study Existing Conditions Report.

Given the limited data set for calibration, an upper and lower bound of 25 percent was identified as a calibration tolerance. At least two of the three events had to fall within this calibration tolerance.

Tetra Tech
3497 Coolidge Road, East Lansing, Michigan 48823
Tel +1.517.316.3940 | tetratech.com

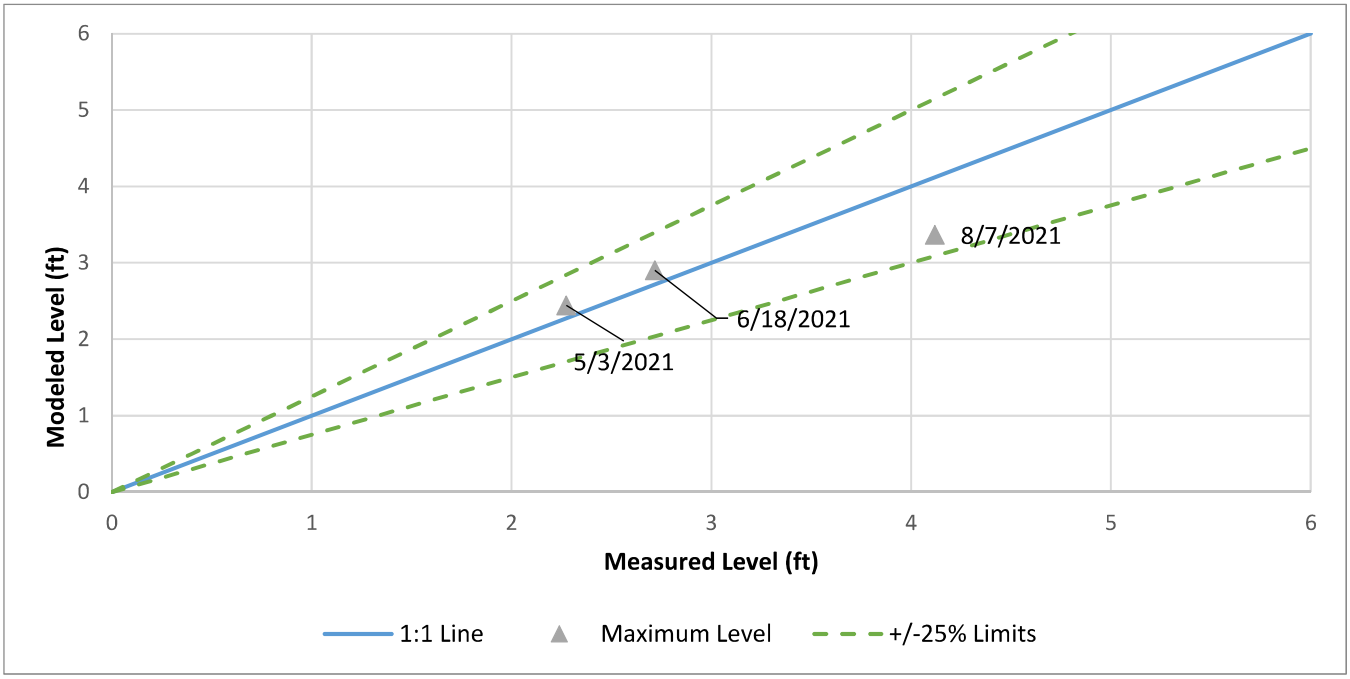
1.0 BLOUNT STREET LEVEL SENSOR

The changes to the model, likely primarily the additional entrance and exit losses, moved the model from slightly underestimating the measured levels to slightly overestimating the levels, on average. The model calibration is within the acceptable tolerances. Table 1-1 and Figure 1-1 summarize the model calibration results.

Table 1-1. Blount Street Level Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Peak Level (feet)	2.27	2.72	4.12
Modeled Peak Level (feet)	2.44	2.90	3.37
Difference	+7%	+7%	-18%

Figure 1-1: Blount Street Level Calibration Plot



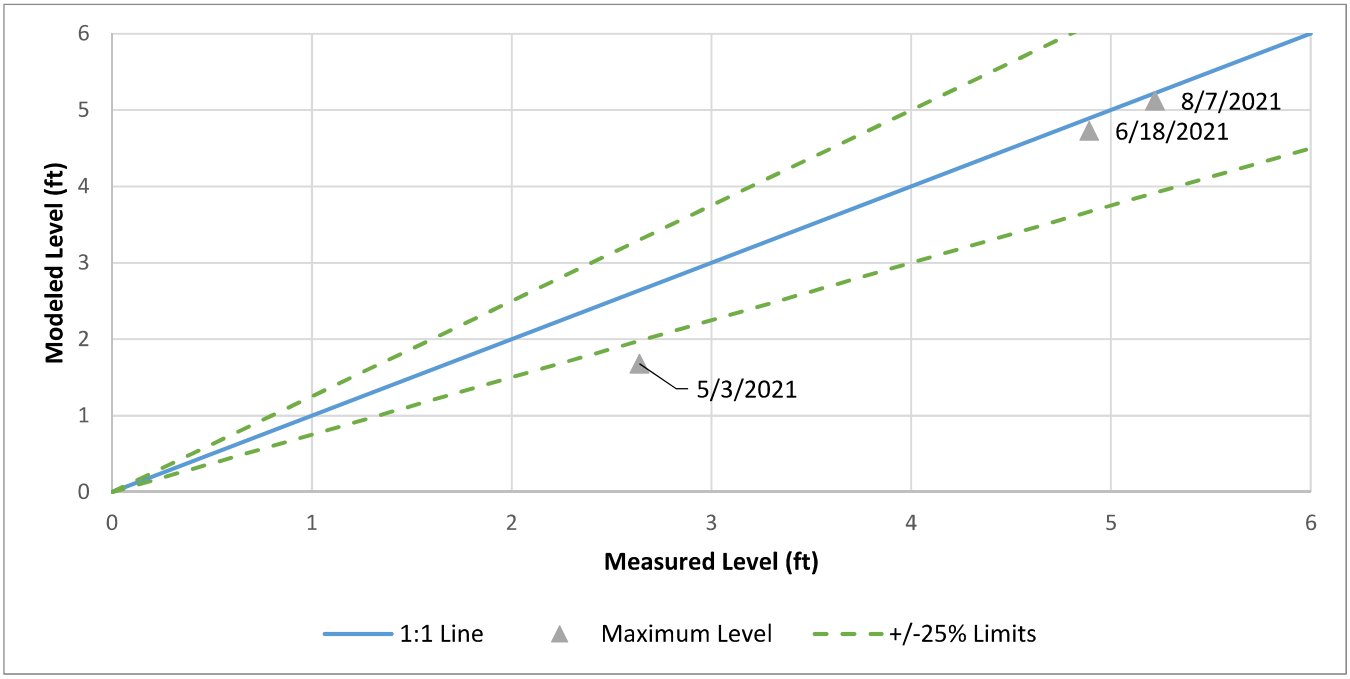
2.0 BREARLY STREET LEVEL SENSOR

The changes to the model did not substantially impact the June 18 or August 7 model results, but the modeled level decreased for the May 3 event. The model calibration is within the acceptable tolerances. Table 2-1 and Figure 2-1 summarize the model calibration results.

Table 2-1. Brearly Street Level Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Peak Level (feet)	2.64	4.89	5.22
Modeled Peak Level (feet)	1.68	4.73	5.12
Difference	-36%	-3%	-2%

Figure 2-1: Brearly Street Level Calibration Plot



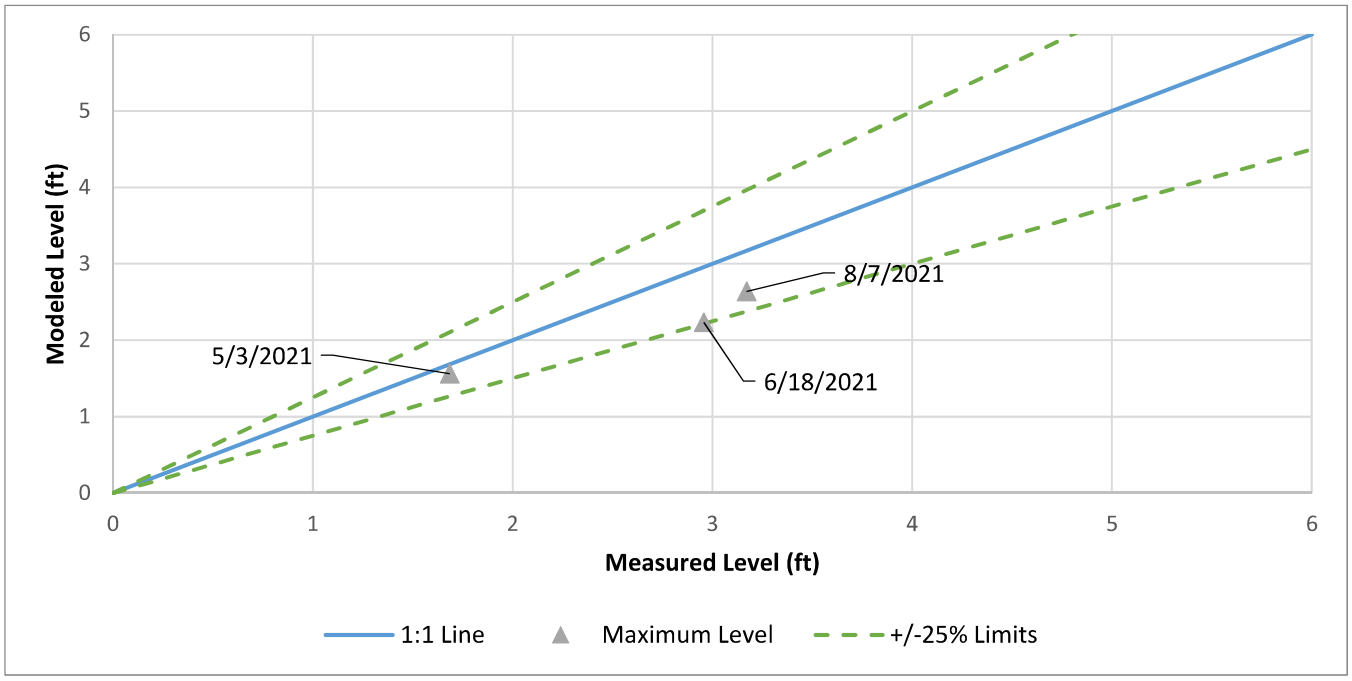
3.0 JOHNSON STREET LEVEL SENSOR

The model underestimates depth at the Johnston Street monitoring location, which is the same as before. The modeled levels are lower than before but still within the acceptable tolerances. Table 3-1 and Figure 3-1 summarize the model calibration results.

Table 3-1. Johnson Street Level Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Peak Level (feet)	1.68	2.96	3.17
Modeled Peak Level (feet)	1.56	2.24	2.64
Difference	-7%	-24%	-17%

Figure 3-1: Johnson Street Level Calibration Plot



4.0 E. MAIN STREET FLOW METER

Previously, the model generally overestimated the measured peak flow rate and volume at the E. Main Street flow meter and matched the level closely. The model now predicts a more neutral volume and peak flow rate relative to the measure data (i.e. points are more evenly over and underestimating the calibration parameters), but the points are generally outside the 25 percent tolerance. Given that the model overestimates some calibration points and underestimates others, the peak flow rate and volume calibration is more balanced than before, but there is still limited confidence in the calibration, in part due to the limitations of the monitoring data, particularly the peak flow and volume data. The level was not impacted by the changes to the model. Table 4-1 summarizes the model calibration results. Figure 4-1, Figure 4-2, and Figure 4-3 show the measured and modeled volume, peak flow rate, and level.

Table 4-1. E. Main Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Volume (cubic feet)	54,700	42,000	5,700
Modeled Volume (cubic feet)	27,500	58,400	41,000
Difference	-50%	+39%	+619%
Measured Peak Flow Rate (cfs)	10.97	9.48	4.44
Modeled Peak Flow Rate (cfs)	6.70	8.79	13.61
Difference	-39%	-7%	+206%
Measured Peak Level (feet)	1.52	1.93	2.05
Modeled Peak Level (feet)	1.08	2.08	2.08
Difference	-29%	8%	2%

Figure 4-1: E. Main Street Volume Calibration Plot

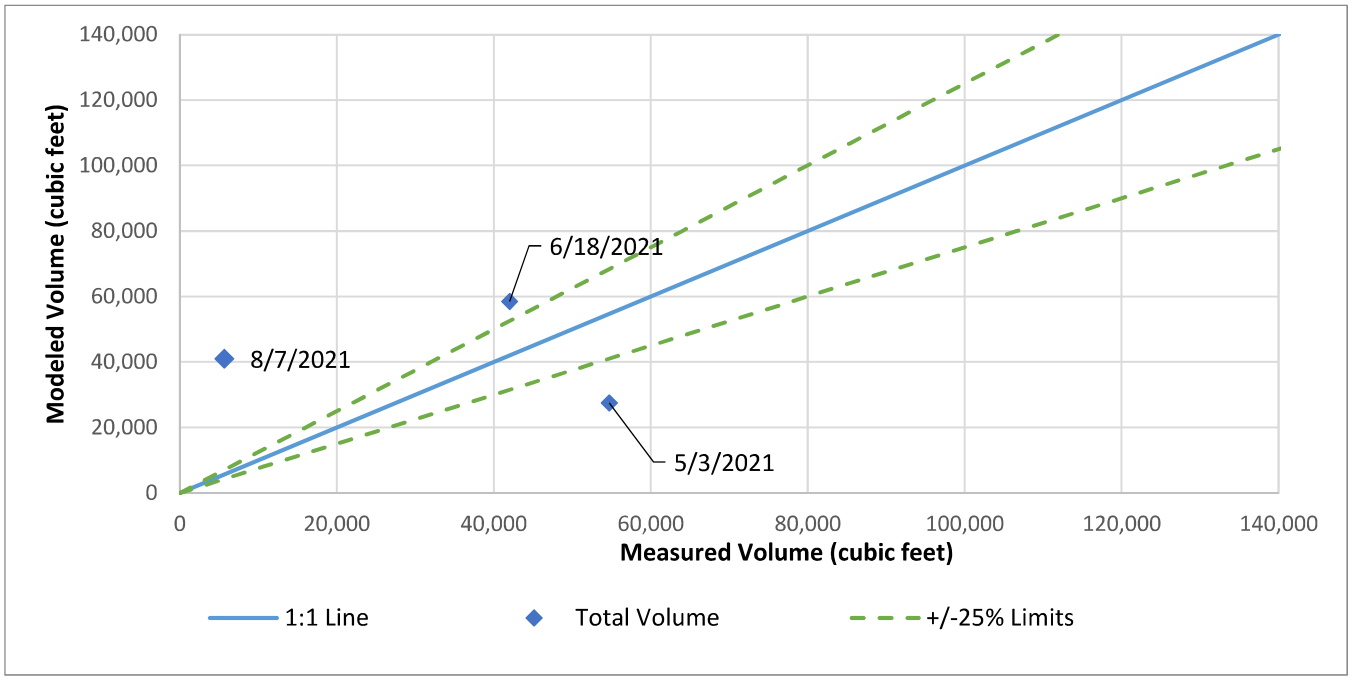


Figure 4-2: E. Main Street Peak Flow Rate Calibration Plot

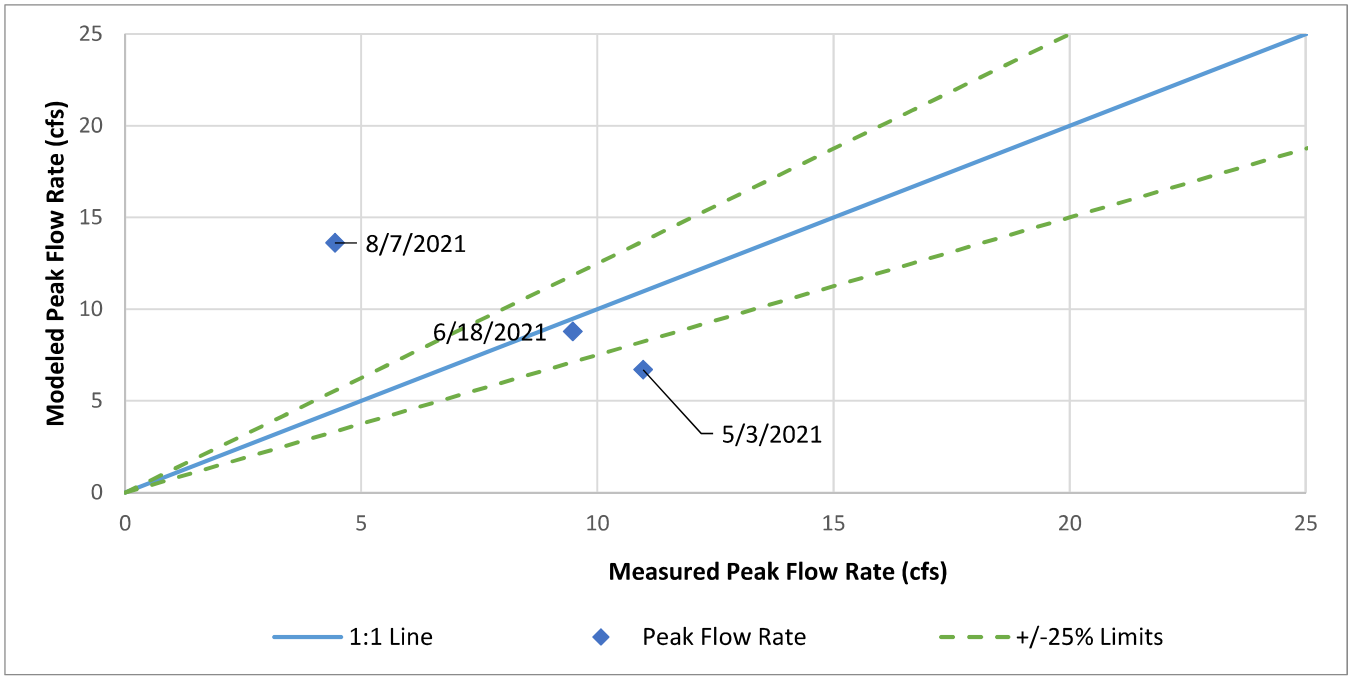
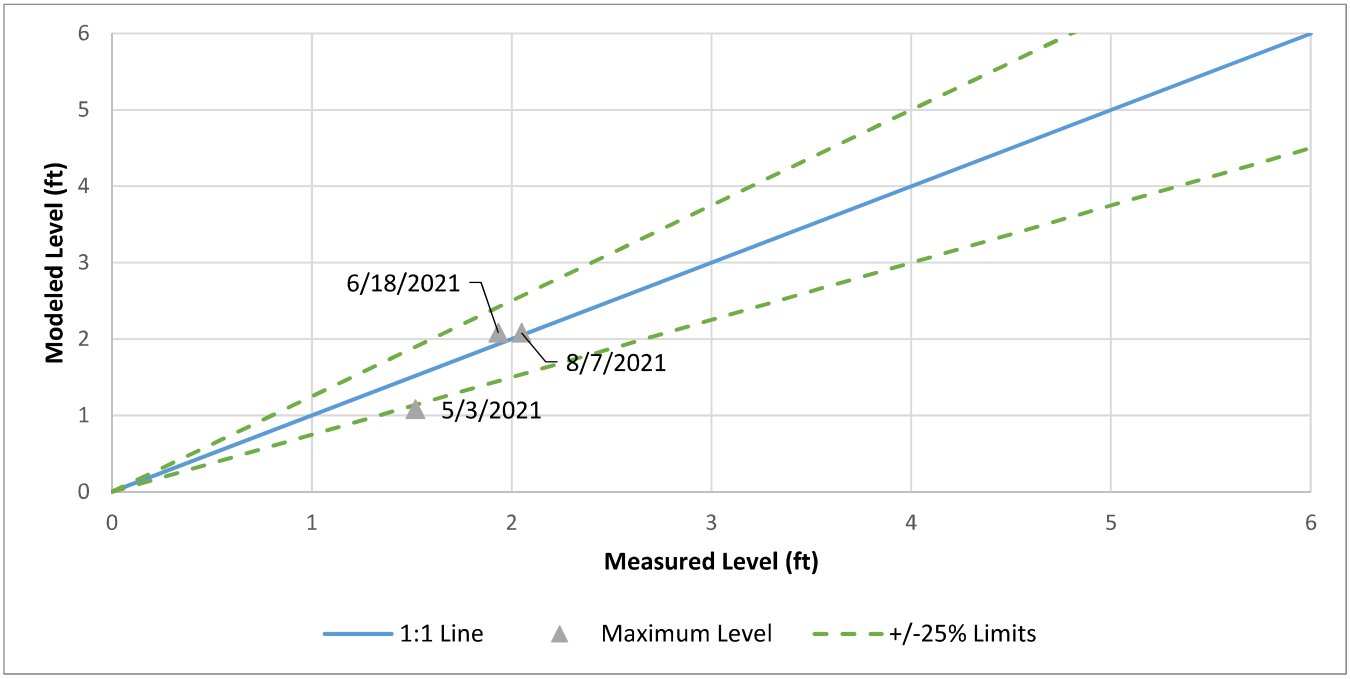


Figure 4-3: E. Main Street Level Calibration Plot



5.0 N. SIXTH STREET FLOW METER

The N. Sixth Street flow meter dropped out immediately after the peak of the storm during the events, so the volume calibration was only evaluated up to the peak of the event and there is limited confidence in the tail event. Since there are no detention practices expected to evaluated in the East Isthmus and Yahara River watershed, the volume in the tail of the hydrology likely will not impact the flood evaluations or flooding mitigation solutions.

The changes to the model improved the volume calibration and brought them within the calibration tolerances but created more spread in the peak flow calibration. Even though there is more spread in the peak flow calibration the model predictions are approximately evenly over and underestimated the measured data for the three events. The modeled level is approximately the same as it was previously. Table 5-1 summarizes the model calibration results. Figure 5-1, Figure 5-2, and Figure 5-3 show the measured and modeled volume, peak flow rate, and level.

Table 5-1. N. Sixth Street Calibration Results

	May 3, 2021	June 18, 2021	August 7, 2021
Measured Volume (cubic feet)†	5,700.00	13,700.00	37,300.00
Modeled Volume (cubic feet)†	4,200.00	13,800.00	31,800.00
Difference	-26%	+1%	-15%
Measured Peak Flow Rate (cfs)	10.26	13.28	20.23
Modeled Peak Flow Rate (cfs)	6.19	19.30	19.55
Difference	-40%	+45%	-3%
Measured Peak Level (feet)	1.48	3.54	2.24
Modeled Peak Level (feet)	1.42	2.16	2.20
Difference	-4%	-39%	-2%

† Comparison is only made up to the peak of the event.

Figure 5-1: N. Sixth Street Volume Calibration Plot

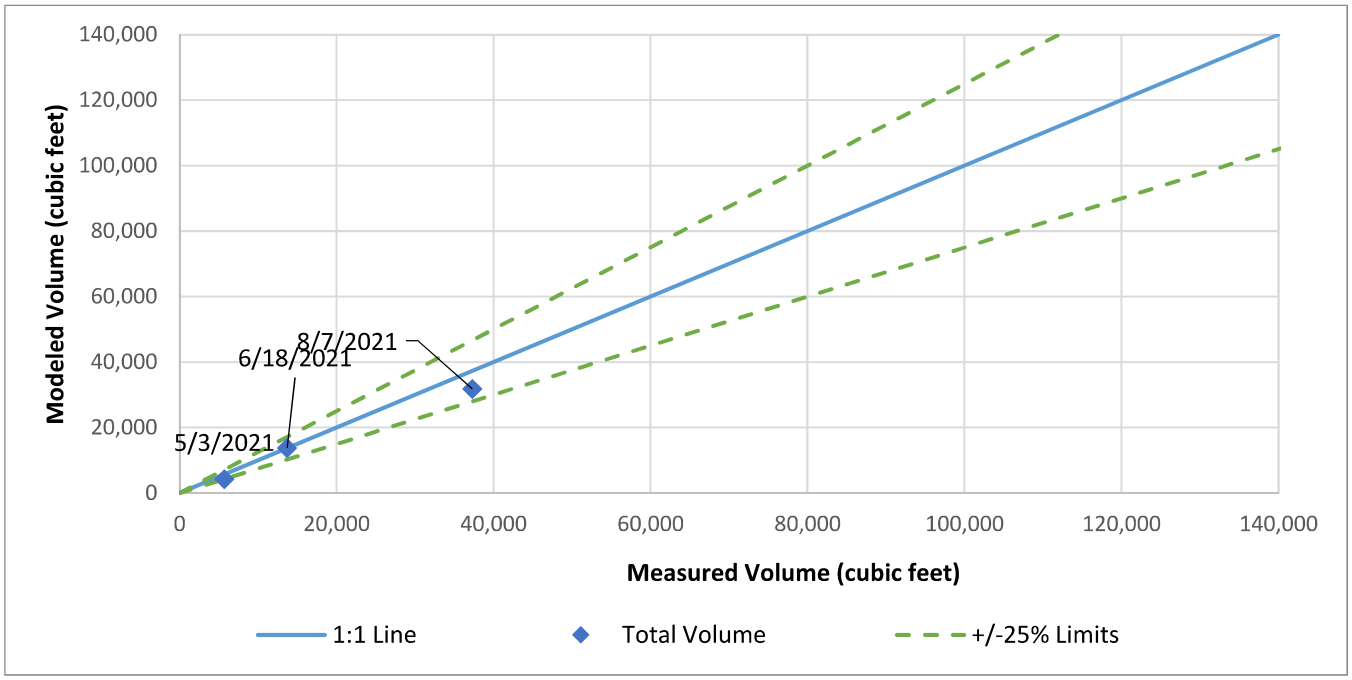


Figure 5-2: N. Sixth Street Peak Flow Rate Calibration Plot

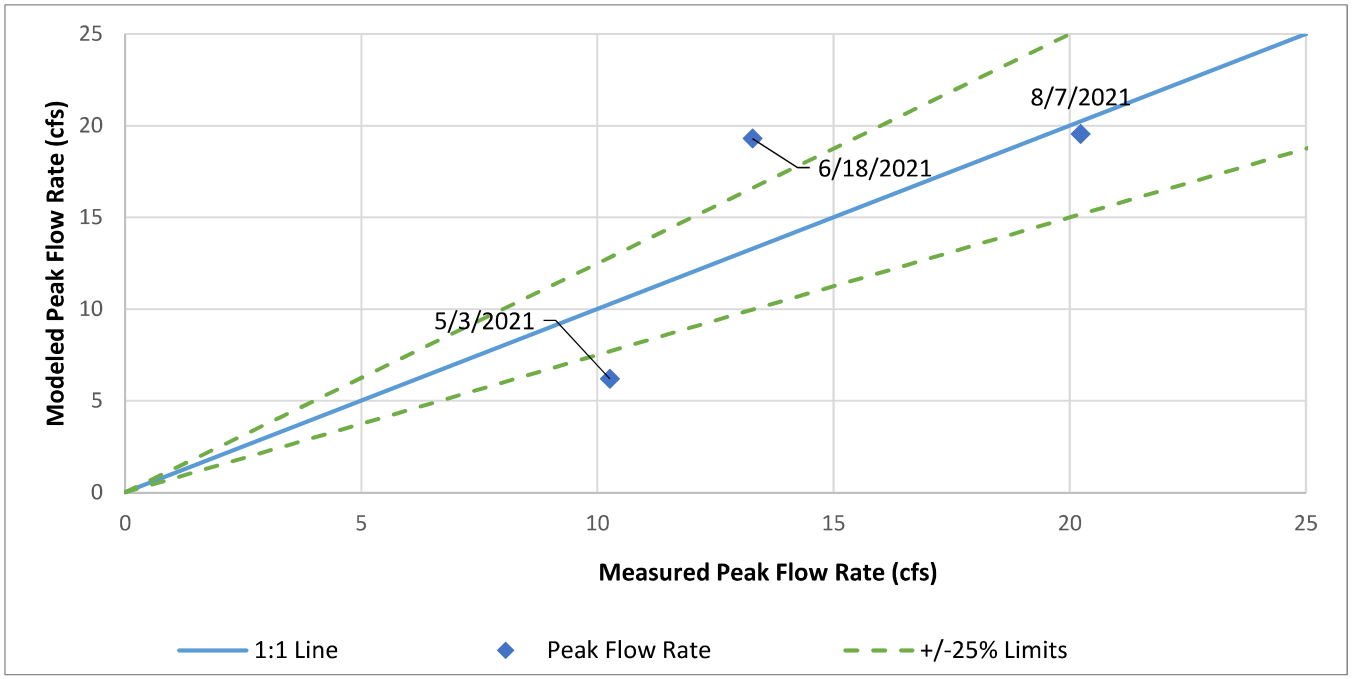
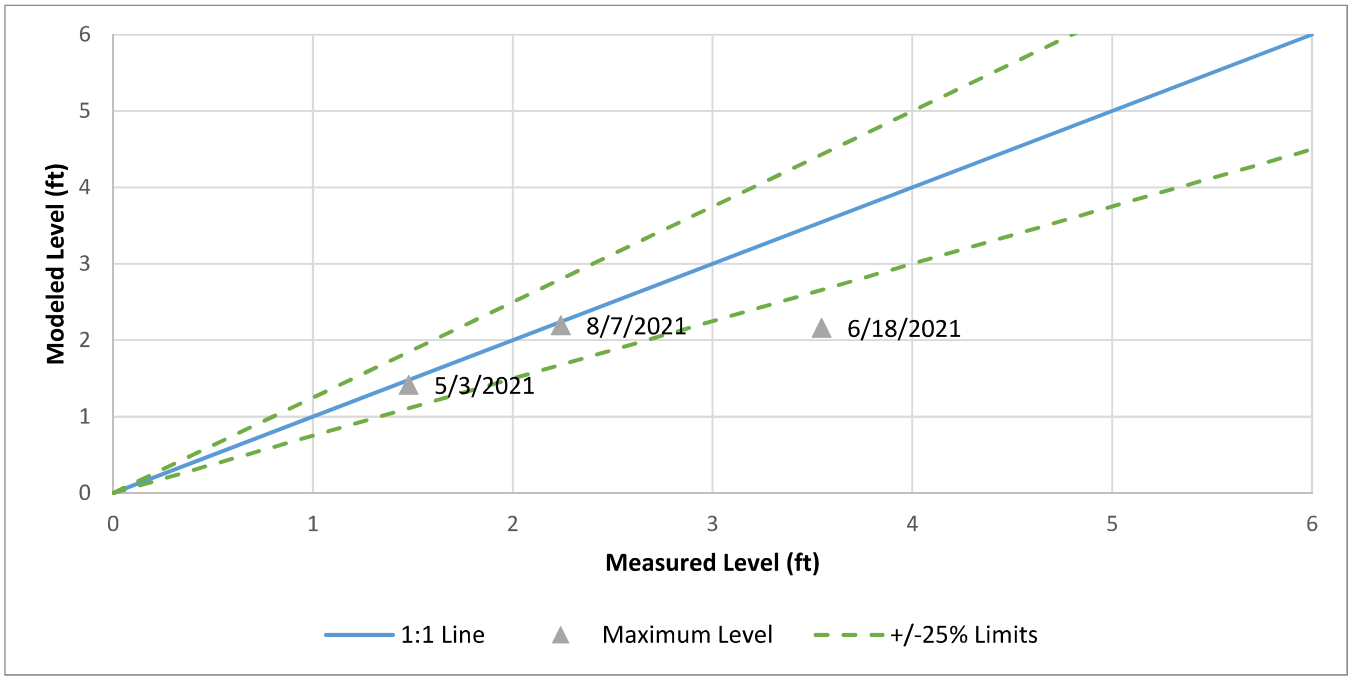


Figure 5-3: N. Sixth Street Level Calibration Plot



Appendix J - Public Comments on Draft Final Report

Q1 Contact Information

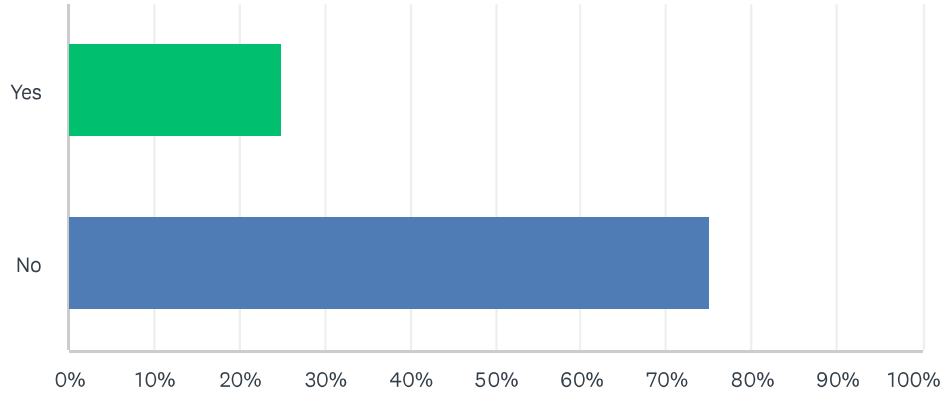
Answered: 4 Skipped: 0

ANSWER CHOICES	RESPONSES	
Name	100.00%	4
Company	0.00%	0
Address	100.00%	4
Address 2	0.00%	0
City/Town	100.00%	4
State/Province	100.00%	4
ZIP/Postal Code	100.00%	4
Country	0.00%	0
Email Address	100.00%	4
Phone Number	75.00%	3

Individual contact information removed in report

Q2 Is your residence in the East Isthmus and Yahara Watershed? If you are unsure you can verify on this interactive map: https://cityofmadison.maps.arcgis.com/apps/webappviewer/index.html?id=939cd73b0b594a0aa2d926a6b0e41f40

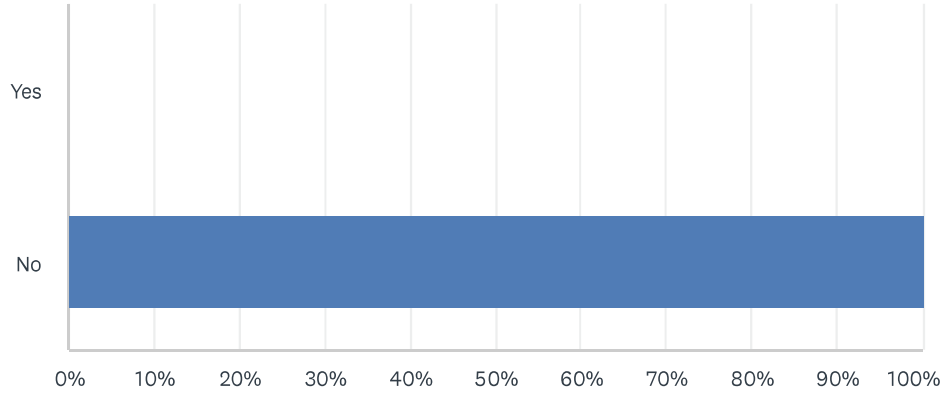
Answered: 4 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	25.00%	1
No	75.00%	3
TOTAL		4

Q3 Has your residence flooded in the past?

Answered: 4 Skipped: 0

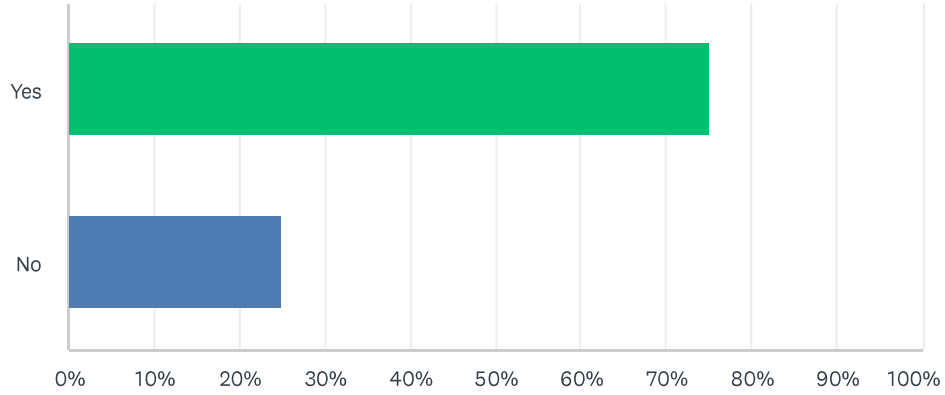


ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	100.00%	4
TOTAL		4

#	IF YOU ANSWERED YES, PLEASE PROVIDE THE DATE OF THE EVENT(S) IF YOU ARE ABLE.	DATE
	There are no responses.	

Q4 Have you witnessed other flooding within the watershed?

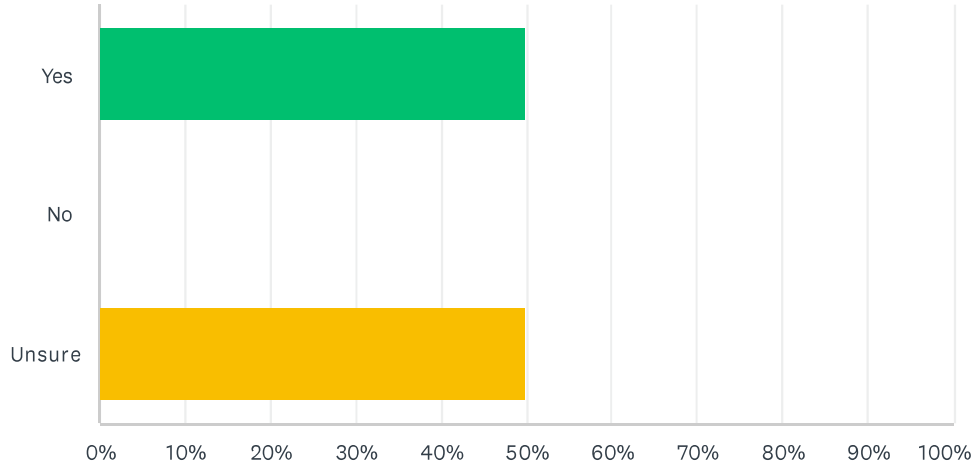
Answered: 4 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	75.00%	3
No	25.00%	1
TOTAL		4

Q5 Do you feel the flood mapping developed in this study match with your observations, as best you can tell?

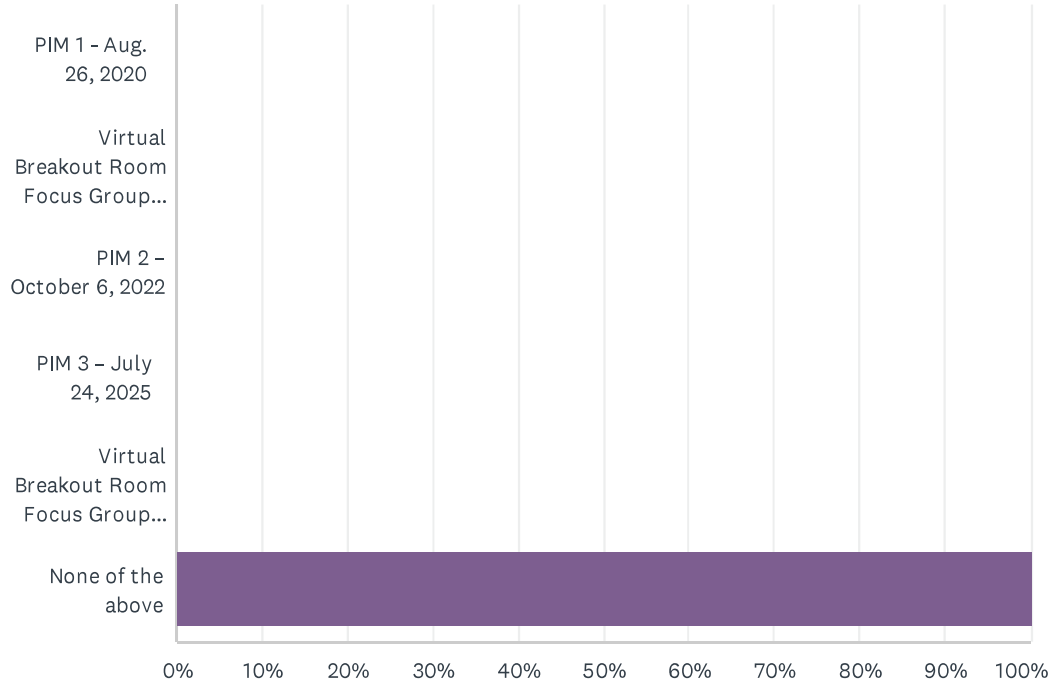
Answered: 4 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	50.00%	2
No	0.00%	0
Unsure	50.00%	2
TOTAL		4

Q6 Did you attend any of the East Isthmus and Yahara Watershed Study Public Information Meetings (PIM) or Virtual Breakout Rooms (select all that apply).

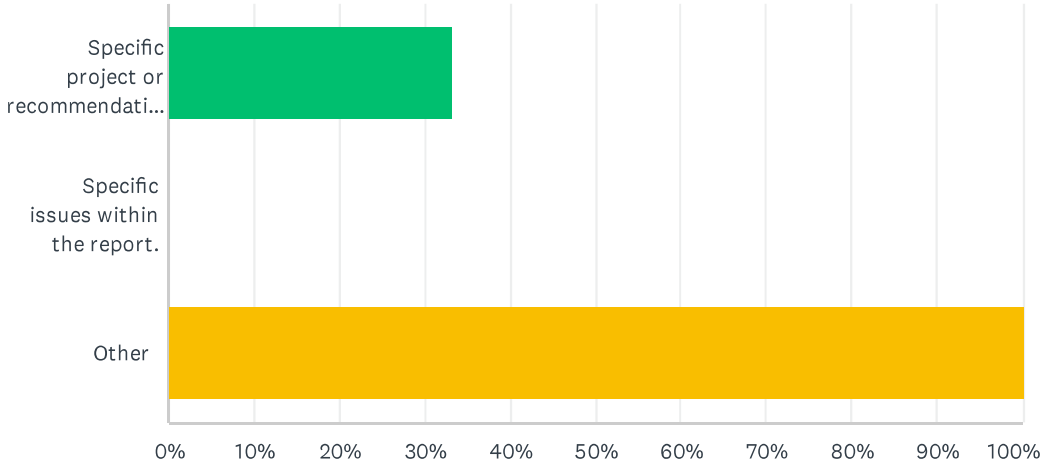
Answered: 4 Skipped: 0



ANSWER CHOICES	RESPONSES	
PIM 1 - Aug. 26, 2020	0.00%	0
Virtual Breakout Room Focus Group Following PIM 1 - August 26, 2020	0.00%	0
PIM 2 – October 6, 2022	0.00%	0
PIM 3 – July 24, 2025	0.00%	0
Virtual Breakout Room Focus Group Following PIM 3 - July 24, 2025	0.00%	0
None of the above	100.00%	4
Total Respondents: 4		

Q7 What would you like to provide feedback about? Check all that apply.

Answered: 3 Skipped: 1



ANSWER CHOICES	RESPONSES	
Specific project or recommendations.	33.33%	1
Specific issues within the report.	0.00%	0
Other	100.00%	3
Total Respondents: 3		

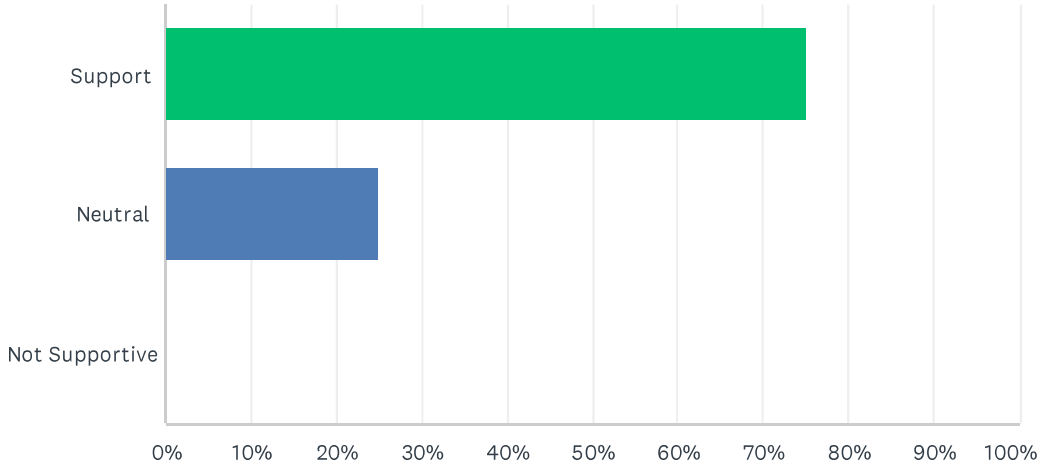
Q8 Please provide your comments on the report or solutions in the text box below. If you would like to comment on a specific section of the report, please indicate that section or page number in the response.

Answered: 3 Skipped: 1

#	RESPONSES	DATE
1	Opposed to the QTS data center and the negative affects it will have to the watershed	1/13/2026 3:19 PM
2	As a former Madison resident and now a resident of the Village of DeForest, my concern is the possibility of a data center being built and how it will affect Madison. The village board seems to disagree with the residents and want to push it through. They are not looking at the big picture and the effect it will have on surrounding communities. (I grew up on the west side, and have lived in central Madison, the east side and the north side. I traveled up and down E. Washington daily for work, rode my bike around Lake Monona and Willy Street)	1/11/2026 5:09 PM
3	I support investing proactively in the watershed infrastructure, as a stitch in time to save nine. The price tag is high in absolute terms but relative to the potential losses, public works seem like a clear decision.	12/2/2025 6:05 PM

Q9 How do you feel about the overall flood mitigation efforts and projects described in the East Isthmus and Yahara Watershed Study Report?

Answered: 4 Skipped: 0



ANSWER CHOICES	RESPONSES	
Support	75.00%	3
Neutral	25.00%	1
Not Supportive	0.00%	0
TOTAL		4

Q10 If you do not support the project recommendations and current flood mitigation efforts, what considerations or additional information would the city need to provide to you to gain support? (or what would make you willing to support the recommendations in the report?)

Answered: 0 Skipped: 4

#	RESPONSES	DATE
	There are no responses.	

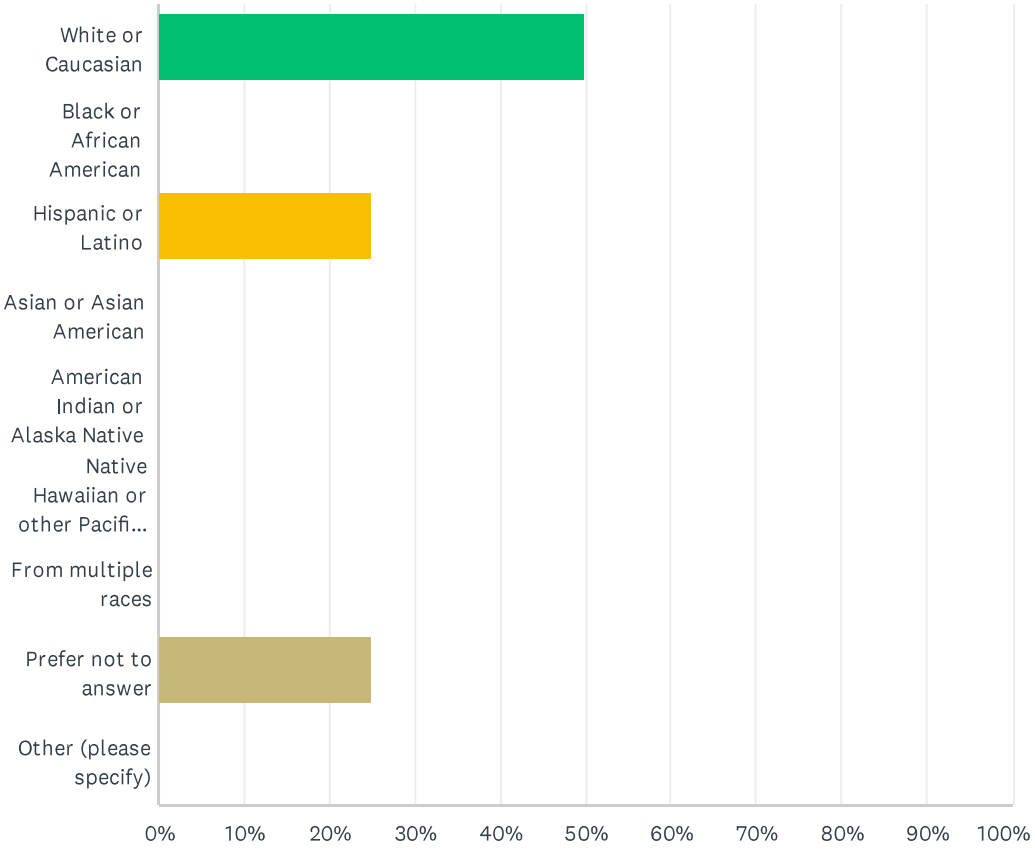
Q11 Please provide any other input you would like to provide regarding the watershed study or stormwater flooding within the City.

Answered: 3 Skipped: 1

#	RESPONSES	DATE
1	Oppose the QTS data center	1/13/2026 3:20 PM
2	Concerned about the potential impact on the watershed of the proposed data center in Deforest	1/12/2026 8:40 AM
3	The friends of Cherokee Marsh and their board of directors sent them a letter as well voicing their concerns.	1/11/2026 5:15 PM

Q12 How do you identify your race/ethnicity?

Answered: 4 Skipped: 0

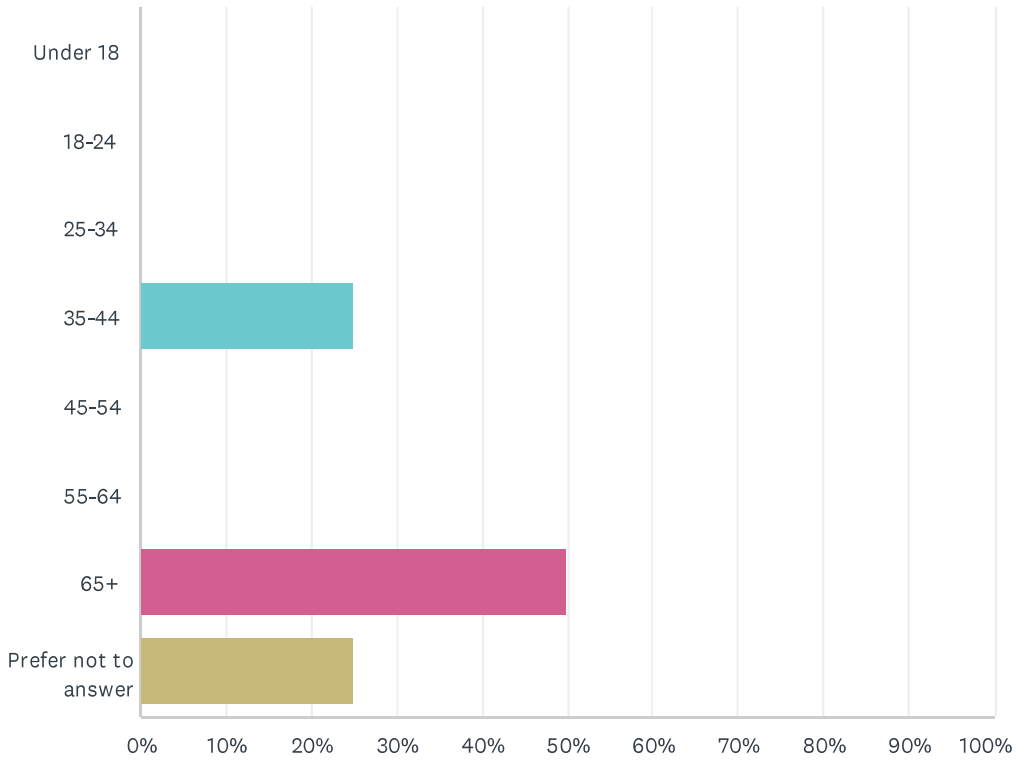


ANSWER CHOICES	RESPONSES	
White or Caucasian	50.00%	2
Black or African American	0.00%	0
Hispanic or Latino	25.00%	1
Asian or Asian American	0.00%	0
American Indian or Alaska Native	0.00%	0
Native Hawaiian or other Pacific Islander	0.00%	0
From multiple races	0.00%	0
Prefer not to answer	25.00%	1
Other (please specify)	0.00%	0
TOTAL		4

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q13 What is your age?

Answered: 4 Skipped: 0



ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-24	0.00%	0
25-34	0.00%	0
35-44	25.00%	1
45-54	0.00%	0
55-64	0.00%	0
65+	50.00%	2
Prefer not to answer	25.00%	1
TOTAL		4