Kirkland Crossing

City of Muskego, Wisconsin

Preliminary

Storm Water Management Plan

Prepared by:

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July 6, 2021
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Introduction

"Kirkland Crossing" is a proposed 139-lot residential subdivision comprised of minimum 20,000 sf (0.46 acre) lots. The proposed site encompasses 112.5 acres of land and is located south of College Avenue, north of Martin Drive, and east of Park Arthur, in the City of Muskego, Waukesha County, Wisconsin. The proposed subdivision design integrates with the existing topography, preserving trees and wetlands to the maximum extent practicable, and situates ponds where runoff naturally flows, but with controlled outlets that reduce runoff rates and redirects runoff to adequate discharge points. This design approach minimizes site grading and maximizes the existing trees and wetlands that can be retained on the site.

This report documents the design computations for existing and proposed conditions and presents a plan for stormwater management that meets the requirements of the City of Muskego, the Milwaukee Metropolitan Sewerage District (MMSD), and the Wisconsin Department of Natural Resources (WDNR).

Owner/ Developer

The owner, developer, and responsible entity for installation and maintenance of the stormwater management practices is:

Kirkland Crossing, LLC
P.O. Box 486
Mukwonago, Wisconsin 53149
Contact: Ryan Jansen
Phone: (414) 736-3066
Email: ryan@ryansbuying.com

Design Requirements

The following design standards have been used to develop the stormwater management plan for the "Kirkland Crossing" project:

- City of Muskego Stormwater Management Ordinance Chapter 309 Stormwater Management
- Milwaukee Metropolitan Sewerage District (MMSD) Chapter 13 Rules on Surface Water and Storm Water Runoff Management
- Wisconsin Department of Natural Resources (WDNR) Technical Standards, NR151, and NR216

- Summary of design requirements:
    - Peak Discharge:
        - City of Muskego: The City Ordinance requires developments that add more than 0.5 acres of impervious surface area to follow MMSD Chapter 13 Rules to determine the volume of detention required.
        - MMSD – MMSD Chapter 13 rules apply to proposed developments which will result in a net increase in impervious surface by more than 0.5 acres. Chapter 13 rules allow two methods for determination of the volume of detention required. The *Allowable Runoff Release Rate* method requires post-development peak release rates to be no more than 0.5 cfs per acre for the 100-year storm event and 0.15 cfs per acre for the 2-year event. The *Allowable Runoff Volume* method requires post-development runoff volume to be control to no greater than the pre-development runoff volume for both the 100-year and 2-year storm events during the critical time duration, as determined by MMSD for the applicable watershed.
    - Water Quality (Total Suspended Solids): Reduce to the maximum extent practicable the total suspended solids load by 40% for redevelopment sites and 80% for new development sites, based on an average annual rainfall, as compared to no runoff management controls.
    - Infiltration: Moderate impervious developments shall meet the following:
        - Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall.
        - No more than one percent of the project site is required as an effective infiltration area.

Analysis Overview

The Stormwater Management Plan for the "Kirkland Crossing" subdivision has been designed in accordance with the City of Muskego Chapter 309, MMSD Chapter 13, and all applicable state requirements. Existing and proposed stormwater runoff conditions for the site were analyzed for**:** runoff volume, peak volume, discharge, detention basin storage capacity required, outlet structure and storm sewer system requirements. The software package used for modeling and analysis was HydroCAD Version 10.10 software by HydroCAD Software Solutions. HydroCAD uses NRCS methods to generate runoff and pond routing hydrographs. The model's capabilities include modeling simple drainage basins, combining hydrographs to determine runoff and storage requirements, and detention basin and outlet structure sizing.

MSE3 rainfall distributions were used for modeling the 1, 2, 10 and 100-year, 24-hour storm events. The corresponding rainfall data used for modeling was taken from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation Frequency Tables for Wisconsin Counties and is shown in the following table.

TABLE 1
Design Rainfall Values

Storm Recurrence Interval	24-hour Rainfall Depths
1-year	2.40 inches
2-year	2.70 inches
10-year	3.81 inches
100-year	6.18 inches

Soil types for the site were determined from the NRCS Soil Survey Maps for Waukesha County. The Soil Survey identifies the soils at the site as mostly Type C soils (Ozaukee, Mequon, and Theresa silt loams, and Fox sandy loam) with limited areas of Type C/D soils (Ashkum silty clay and Blount silt loam), Type B/D soils (Lamartine silt loam), and Type D soils (Hochheim loam). Based on this, a hydrologic soil group Type C was used to determine runoff curve numbers for the site.

Pre-Development Watershed Description

The existing site encompasses 7 existing parcels with a total acreage of approximately 112.5 acres and is located south of College Avenue, north of Martin Drive, and east of Park Arthur. The existing site is comprised of a mix of horse pastures, cultivated land, woodlands, wetlands, two farmsteads, one residence, and the former Reynolds Machine Company site (also known as the former Nike Missile Control Base).

Surface drainage for the site is generally towards a series of the wetlands located within the center of the property that slope from north to south, towards a 36" culvert located at the intersection of Martin Drive and East Drive. Flow from the 36" culvert discharges to an unnamed creek located within the Marlan Meadows subdivision, approximately 700 feet southwest of the project site. A small portion of the site also slopes west/northwest, towards an existing wetland that drains to a 36" culvert located on the Park Arthur property. Flow from this culvert discharges to another series of wetlands located within Park Arthur and eventually to the park's wet detention pond. All surface runoff from the entire project site eventually discharges to Little Muskego Lake, which is located within the Fox River watershed.

Figure 1, Pre-Development Conditions, shows the location of the project site, land cover types, drainage subareas and flow paths. The following table summarizes the results of the stormwater model for pre-development conditions. Detailed hydrological computations are included in Appendix A.

TABLE 2
Pre-Development Site Conditions

Subarea or Junction	Description	Total Area (acres)	Impervious Area (acres)	Time of Conc. (min.)	Peak Flow Rate (cfs)			
					1-year	2-year	10-year	100-year
1	Subarea – drains northwest	18.39	2.41	19	11.12	14.99	31.35	71.74
2	Subarea – drains south	148.76	5.62	84	32.66	44.40	95.76	226.57
2D	Wetland Depression	-	-	-	31.71	39.60	56.26	147.27
3	Subarea – drains southwest	7.08	0.30	18	4.00	5.46	11.71	27.34
99	**Total Outflow**	**174.23**	**8.33**	**-**	**34.11**	**42.28**	**59.41**	**153.69**

Post-Development Site Drainage Description

The proposed post-development conditions include a 139-lot residential subdivision in the City of Muskego. Stormwater management for proposed conditions will be provided by five wet detention ponds. The proposed development plan will disturb approximately 93 acres of area and will result in a net increase in impervious area of approximately 22.33 acres.

Figure 2, Post-Development Conditions, shows the proposed land cover, grading, drainage subarea boundaries, flow paths, and proposed stormwater management improvements. The following table summarizes the results of the hydrologic analysis for post-development conditions. Appendix B contains detailed hydrological computations.

TABLE 3
Post-Development Site Conditions

Subarea, Junction or Pond	Description	Total Area (acres)	Impervious Area (acres)	Time of Conc. (min.)	Peak Flow Rate (cfs)			
					1-year	2-year	10-year	100-year
1	Subarea	5.55	1.60	23	4.94	6.25	11.47	23.61
1P	Pond	-	-	-	2.96	3.92	7.40	12.36
2	Subarea	9.25	2.64	21	8.49	10.77	19.77	40.51
2L	Northwest Outflow	-	-	-	10.20	13.25	25.31	50.39
3	Subarea	31.59	6.53	44	15.00	19.53	38.36	83.58
3P	Pond	-	-	-	9.15	12.53	24.07	31.16
4	Subarea	23.06	5.56	14	24.67	31.37	58.74	121.81
5	Subarea	44.84	1.95	56	13.03	17.77	38.34	90.85
5P	Pond	-	-	-	16.21	22.40	41.43	53.82
6	Subarea	2.19	0.42	18	1.92	2.47	4.73	10.03
6D	Wetland Depression	-	-	-	1.51	1.89	2.84	4.23
7	Subarea	9.31	0.56	40	3.08	4.26	9.46	22.82
7D	Wetland Depression	-	-	-	2.90	4.11	9.18	21.95
8	Subarea	16.35	3.60	18	15.23	19.40	36.39	75.77
8P	Pond	-	-	-	3.33	3.99	12.69	17.89
9	Subarea	3.67	0.25	25	1.76	2.41	5.20	12.20
9D	Wetland Depression	-	-	-	5.82	8.42	22.48	39.06
10	Subarea	5.54	1.04	29	3.41	4.44	8.69	18.85
11	Subarea	14.23	4.65	14	18.31	22.71	40.18	79.27
11P	Pond	-	-	-	0.52	0.58	4.05	16.43
12	Subarea	3.55	0.92	20	3.10	3.96	7.40	15.42
13	Subarea	5.10	0.94	14	4.67	6.05	11.73	25.35
99	**Total Outflow**	**174.23**	**30.66**	**-**	**20.47**	**26.64**	**52.14**	**130.43**

Stormwater Detention Basin Design & Summary

The Stormwater Management Plan proposes five (5) wet detention ponds as the primary means of stormwater management for the site. The following table summarizes the detention system routing analysis for post-development conditions:

TABLE 4
Post-Development Site Conditions

Pond 1P

System Details:
Bottom elevation = 838.6
Normal water elevation = 843.6
Top of berm elevation = 847.6

Outlet Control:
18-inch culvert pipe at I.E. 843.6
10-foot spillway at elevation = 846.6

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	4.94	6.25	11.47	23.61
Peak Outflow (cfs)	2.96	3.92	7.40	12.36
Max Water Surface Elev.	844.41	844.56	845.11	846.46
Max Storage Volume (ac-ft)	0.11	0.13	0.22	0.49

Pond 3P

System Details:
Bottom elevation = 837.6
Normal water elevation = 842.6
Top of berm elevation = 849.6

Primary Outlet Control:
27-inch culvert pipe at I.E. 842.6
10-foot spillway at elevation = 848.6

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	15.00	19.53	38.36	83.58
Peak Outflow (cfs)	9.15	12.53	24.07	31.16
Max Water Surface Elev.	843.89	844.16	845.31	848.60
Max Storage Volume (ac-ft)	0.52	0.64	1.18	3.44

Pond 5P

System Details:
Bottom elevation = 833.8
Normal water elevation = 838.8
Top of berm elevation = 846.0

Primary Outlet Control (drains to Wetland 9D):
30-inch outlet pipe at I.E. 838.8
Secondary Outlet Control (drains to Pond 8P):
21-inch outlet pipe at I.E. 838.8
10-foot spillway at elevation = 845.0

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	26.11	34.30	69.86	159.00
Peak Outflow (cfs)	16.21	22.40	41.43	53.82
Max Water Surface Elev.	840.14	840.44	841.82	845.00
Max Storage Volume (ac-ft)	1.64	2.06	4.15	11.25

Wetland Depression 6D

System Details:
Bottom elevation = 839.0
Top of berm elevation = 846.0

Outlet Control:
12-inch culvert pipe at I.E. 839.0
10-foot spillway at elevation = 845.0

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	1.92	2.47	4.73	10.03
Peak Outflow (cfs)	1.51	1.89	2.84	4.23
Max Water Surface Elev.	839.89	840.04	840.64	841.67
Max Storage Volume (ac-ft)	0.02	0.03	0.06	0.18

Wetland Depression 7D

System Details:
Bottom elevation = 844.0
Top of berm elevation = 846.0

Outlet Control:
26-inch horizontal grate at rim elevation 844.25
15-foot spillway at elevation = 844.50

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	3.08	4.26	9.46	22.82
Peak Outflow (cfs)	2.90	4.11	9.18	21.95
Max Water Surface Elev.	844.51	844.55	844.68	844.89
Max Storage Volume (ac-ft)	0.03	0.04	0.07	0.15

TABLE 4
Post-Development Site Conditions

Pond 8P

System Details:
Bottom elevation = 831.0
Normal water elevation = 836.0
Top of berm elevation = 841.5

Primary Outlet Control (drains to Wetland 9D:
5.5-inch orifice at I.E. 836.0
Secondary Outlet Control (drains to ditch):
10-inch orifice at I.E. 836.0
36-inch horizontal grate at rim elevation 838.0
18-inch outlet pipe at I.E. 836.0
10-foot spillway at elevation = 840.5

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	16.48	21.64	44.04	95.05
Peak Outflow (cfs)	3.33	3.99	12.69	17.89
Max Water Surface Elev.	837.49	837.95	838.55	840.50
Max Storage Volume (ac-ft)	1.58	2.11	2.83	5.50

Wetland Depression 9D

System Details:
Bottom elevation = 836.0
Top of berm elevation = 839.8

Outlet Control:
36-inch culvert pipe at I.E. 836.0
10-foot spillway at elevation = 838.8

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	11.42	15.93	33.55	49.93
Peak Outflow (cfs)	5.82	8.42	22.48	39.06
Max Water Surface Elev.	836.90	837.10	837.92	838.80
Max Storage Volume (ac-ft)	1.45	1.84	3.53	5.56

Pond 11P

System Details:
Bottom elevation = 830.5
Normal water elevation = 835.5
Top of berm elevation = 840.0

Outlet Control:
4-inch orifice at I.E. 835.5
36-inch horizontal grate at rim elevation 838.25
18-inch outlet pipe at I.E. 835.5
10-foot spillway at elevation = 841.0

	1-year Storm	2-year Storm	10-year Storm	100-year Storm
Peak Inflow (cfs)	18.31	22.71	40.18	79.27
Peak Outflow (cfs)	0.52	0.58	4.05	16.43
Max Water Surface Elev.	837.19	837.57	838.48	839.98
Max Storage Volume (ac-ft)	0.83	1.04	1.60	2.66

Runoff Reduction Summary

The Stormwater Management Plan has been designed to maintain the post-development runoff volume to no greater than the pre-development runoff volume for both the 2 and 100-year storm events during the critical time duration, as determined by MMD for the applicable watershed. This is in accordance with the City of Muskego and MMSD stormwater discharge criteria. The following table compares the results of the analysis from a volumetric standpoint, which is based upon MMSD's Fox River critical time period of 12 hours (hour 11.75 to 23.75).

TABLE 5
Comparison of Volume

	Pre-Development		Post-Development
2-year	10.443 ac-ft	>	9.980 ac-ft
100-year	47.377 ac-ft	>	47.203 ac-ft

Water Quality

The City of Muskego's Chapter 309 requires redevelopment sites to be designed to remove 40 percent of TSS from stormwater runoff and new development sites to remove 80 percent of TSS, based on an average annual rainfall as compared to no runoff management controls. The following table shows a breakdown in the types of land development for the proposed project site and the weighted TSS removal rate that was calculated as the minimum treatment percentage for the proposed development plan.

TABLE 6
Percent TSS Removal Criteria

Type of Development	Acreage	TSS removal criteria
Redevelopment		
Horse Farm (development only)	5.38	40%
Farmstead (development only)	3.21	40%
Former Reynolds Site and Residence (development only)	3.41	40%
New Development	100.50	80%
Total Area	**112.50**	**76% (weighted)**

Stormwater quality was analyzed using SLAMM Version 10.4.1 software, developed by Robert Pitt and John Voorhees. The results of the SLAMM analysis indicate that approximately 76.4 percent of TSS will be removed from stormwater as a result of the proposed wet detention ponds. Detailed computations are included in the Appendix C.

Infiltration

The City of Muskego's Chapter 309 requires medium density developments to infiltrate sufficient runoff volume so that the post-development infiltration volume be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall.

In conformance with Steps A and B of the WDNR Conservation Practice Standard 1002, Site Evaluation for Stormwater Infiltration, the site was initially screened to determine eligibility for infiltration. Based on the soil boring and test pit logs provided by CGC Inc., this site is exempt from meeting infiltration performance standards due to the clay content of the in-situ soils and shallow groundwater identified at the test pit locations. Refer to the logs provided in Appendix D.

Conclusion

The proposed development will maintain compliance with the City of Muskego, MMSD, and the WDNR's requirements for control of stormwater quantity, quality, and infiltration.

Prepared by:

SOUND STORMWATER DESIGN LLC

Jayme Sisel, P.E.

FIGURES

COLLEGE AVENUE

EXISTING WETLAND

36" CULVERT

SUBAREA 1

SUBAREA 2

EXISTING WETLAND

EXISTING WETLAND

EXISTING WETLAND
DEPRESSION 2D

36" CULVERT

MARTIN DRIVE

EAST DRIVE

LANNON DRIVE

0 100' 200' 400'

SCALE: 1" = 200'

LEGEND

- DRAINAGE BOUNDARY
- Tc LINE
- GRASS
- GRASSLANDS
- WOODLANDS
- WOODLAND/GRASSLAND COMB.
- CROPLAND
- IMPERVIOUS
- GRAVEL/DIRT
- 0.5AC RESIDENTIAL

SOUND STORMWATER DESIGN

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CLIENT:

PROJECT TITLE:

KIRKLAND CROSSING

MUSKEGO, WISCONSIN

DATE: 07-06-21

JOB NO: 2021-010

SHEET TITLE:

PRE-DEVELOPMENT CONDITIONS PLAN

FIGURE:

1

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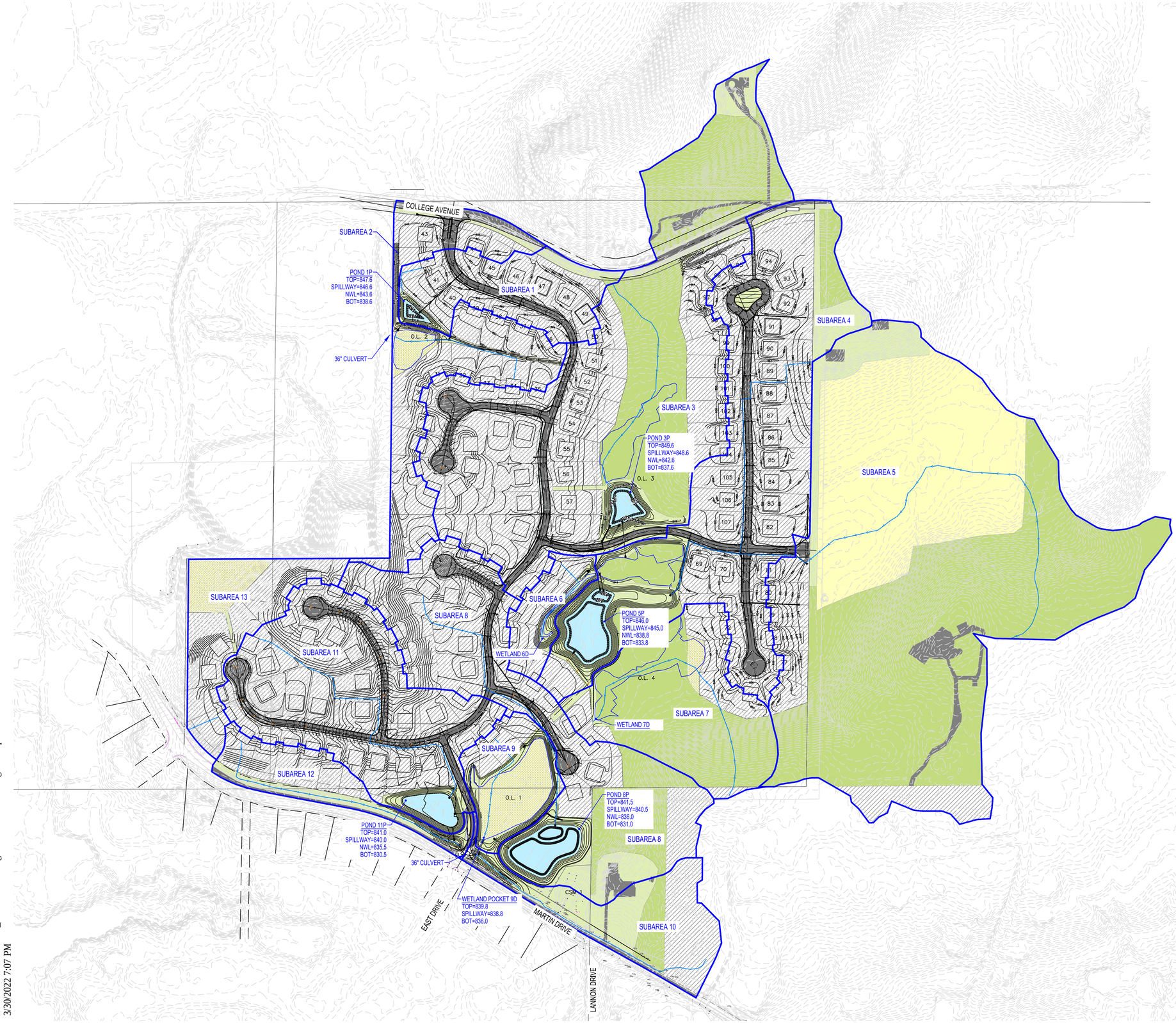

0 100' 200' 400'
SCALE: 1" = 200'

LEGEND

- DRAINAGE BOUNDARY
- Tc LINE
- GRASS
- GRASSLANDS
- WOODLANDS
- WOODLAND/GRASSLAND COMB.
- CROPLAND
- IMPERVIOUS
- GRAVEL/DIRT
- 0.5AC RESIDENTIAL
- WATER

SOUND STORMWATER DESIGN

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KIRKLAND CROSSING

MUSKEGO, WISCONSIN

DATE: 07-06-21

JOB NO: 2021-010

SHEET TITLE:

POST-DEVELOPMENT CONDITIONS PLAN

FIGURE:

2

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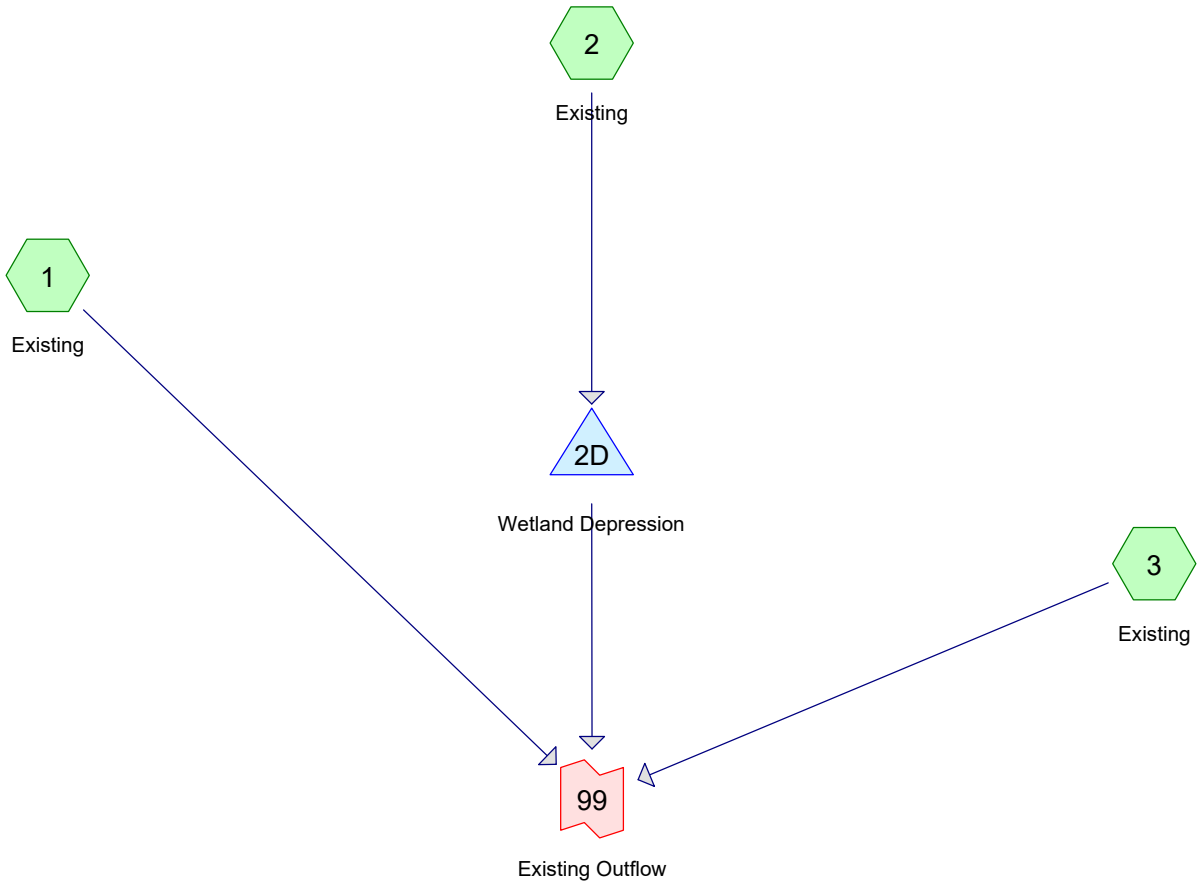
APPENDIX A

Pre-Development Hydrologic Analysis



Subcat Reach Pond Link

Routing Diagram for Existing_2021-010
Prepared by HP Inc., Printed 3/30/2022

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 yr	MSE 24-hr	3	Default	24.00	1	2.40	2
2	2 yr	MSE 24-hr	3	Default	24.00	1	2.70	2
3	10 yr	MSE 24-hr	3	Default	24.00	1	3.81	2
4	100 yr	MSE 24-hr	3	Default	24.00	1	6.18	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.880	80	1/2 acre lots (2)
60.580	77	cropland (per City Chapter 309) (1, 2, 3)
1.620	96	dirt/gavel (per WDNR Guidance) (1, 2)
8.900	74	grass (1, 2)
20.200	71	grassland (per NR151.123) (1, 2, 3)
5.490	98	impervious (1, 2, 3)
57.020	70	woodland (per NR 151.123) (1, 2)
2.670	71	woodland/grassland (3)
12.870	71	woodland/grassland comb. (2)
174.230	**74**	**TOTAL AREA**

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Runoff Area=18.390 ac 4.79% Impervious Runoff Depth>0.59"
Flow Length=875' Tc=19.3 min CN=75 Runoff=11.12 cfs 0.905 af

Subcatchment2: Existing Runoff Area=148.760 ac 2.90% Impervious Runoff Depth>0.54"
Flow Length=4,165' Tc=84.4 min CN=74 Runoff=32.66 cfs 6.746 af

Subcatchment3: Existing Runoff Area=7.080 ac 4.24% Impervious Runoff Depth>0.55"
Flow Length=500' Tc=18.5 min CN=74 Runoff=4.00 cfs 0.325 af

Pond 2D: Wetland Depression Peak Elev=835.13' Storage=0.190 af Inflow=32.66 cfs 6.746 af
Outflow=31.71 cfs 6.746 af

Link 99: Existing Outflow Inflow=34.11 cfs 7.976 af
Primary=34.11 cfs 7.976 af

Total Runoff Area = 174.230 ac Runoff Volume = 7.977 af Average Runoff Depth = 0.55"
96.85% Pervious = 168.740 ac 3.15% Impervious = 5.490 ac

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Runoff Area=18.390 ac 4.79% Impervious Runoff Depth>0.77"
Flow Length=875' Tc=19.3 min CN=75 Runoff=14.99 cfs 1.176 af

Subcatchment2: Existing Runoff Area=148.760 ac 2.90% Impervious Runoff Depth>0.71"
Flow Length=4,165' Tc=84.4 min CN=74 Runoff=44.40 cfs 8.842 af

Subcatchment3: Existing Runoff Area=7.080 ac 4.24% Impervious Runoff Depth>0.72"
Flow Length=500' Tc=18.5 min CN=74 Runoff=5.46 cfs 0.426 af

Pond 2D: Wetland Depression Peak Elev=835.58' Storage=0.463 af Inflow=44.40 cfs 8.842 af
Outflow=39.60 cfs 8.842 af

Link 99: Existing Outflow Inflow=42.28 cfs 10.444 af
Primary=42.28 cfs 10.444 af

Total Runoff Area = 174.230 ac Runoff Volume = 10.444 af Average Runoff Depth = 0.72"
96.85% Pervious = 168.740 ac 3.15% Impervious = 5.490 ac

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Runoff Area=18.390 ac 4.79% Impervious Runoff Depth>1.52"
Flow Length=875' Tc=19.3 min CN=75 Runoff=31.35 cfs 2.331 af

Subcatchment2: Existing Runoff Area=148.760 ac 2.90% Impervious Runoff Depth>1.44"
Flow Length=4,165' Tc=84.4 min CN=74 Runoff=95.76 cfs 17.854 af

Subcatchment3: Existing Runoff Area=7.080 ac 4.24% Impervious Runoff Depth>1.45"
Flow Length=500' Tc=18.5 min CN=74 Runoff=11.71 cfs 0.858 af

Pond 2D: Wetland Depression Peak Elev=836.83' Storage=3.461 af Inflow=95.76 cfs 17.854 af
Outflow=56.26 cfs 17.852 af

Link 99: Existing Outflow Inflow=59.41 cfs 21.041 af
Primary=59.41 cfs 21.041 af

Total Runoff Area = 174.230 ac Runoff Volume = 21.043 af Average Runoff Depth = 1.45"
96.85% Pervious = 168.740 ac 3.15% Impervious = 5.490 ac

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Existing Runoff Area=18.390 ac 4.79% Impervious Runoff Depth>3.43"
Flow Length=875' Tc=19.3 min CN=75 Runoff=71.74 cfs 5.252 af

Subcatchment2: Existing Runoff Area=148.760 ac 2.90% Impervious Runoff Depth>3.30"
Flow Length=4,165' Tc=84.4 min CN=74 Runoff=226.57 cfs 40.935 af

Subcatchment3: Existing Runoff Area=7.080 ac 4.24% Impervious Runoff Depth>3.33"
Flow Length=500' Tc=18.5 min CN=74 Runoff=27.34 cfs 1.964 af

Pond 2D: Wetland Depression Peak Elev=838.36' Storage=12.255 af Inflow=226.57 cfs 40.935 af
Outflow=147.27 cfs 40.930 af

Link 99: Existing Outflow Inflow=153.69 cfs 48.146 af
Primary=153.69 cfs 48.146 af

Total Runoff Area = 174.230 ac Runoff Volume = 48.152 af Average Runoff Depth = 3.32"
96.85% Pervious = 168.740 ac 3.15% Impervious = 5.490 ac

Summary for Subcatchment 1: Existing

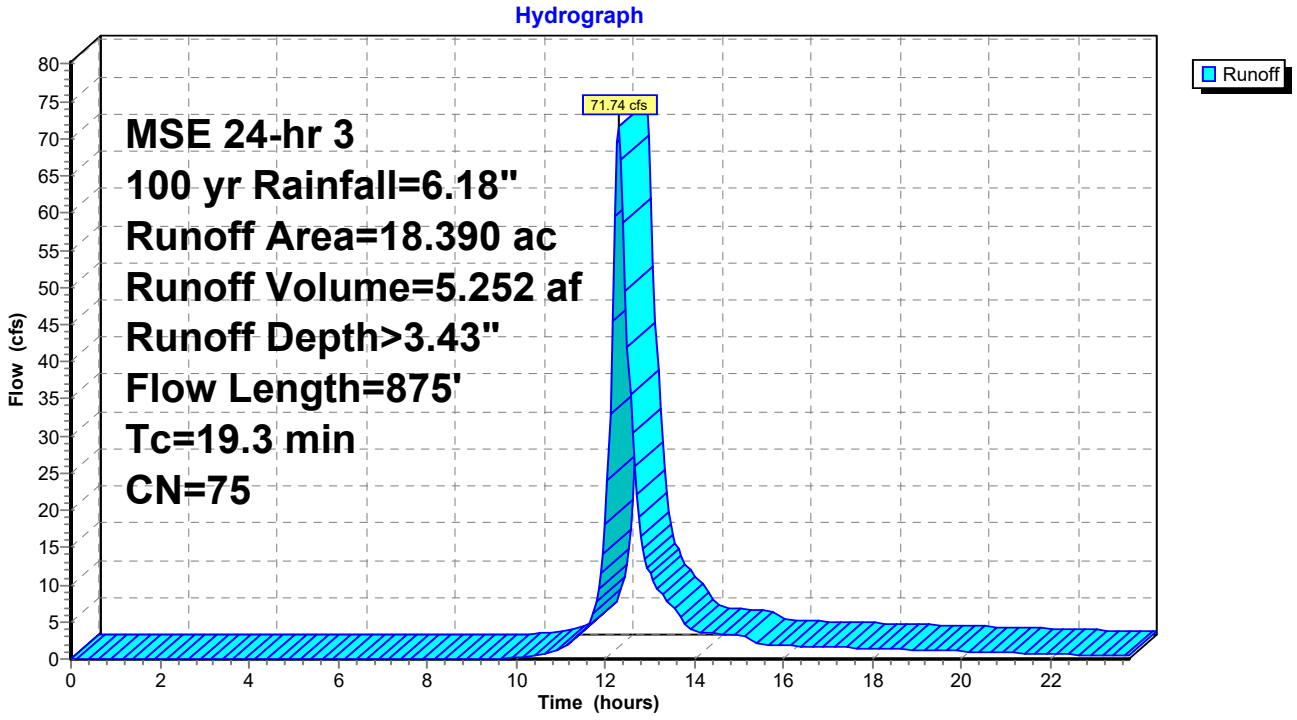
Runoff = 71.74 cfs @ 12.29 hrs, Volume= 5.252 af, Depth> 3.43"
Routed to Link 99 : Existing Outflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.950	74	grass
*	0.880	98	impervious
*	1.530	96	dirt/gavel (per WDNR Guidance)
*	0.140	70	woodland (per NR 151.123)
*	0.960	77	cropland (per City Chapter 309)
*	12.930	71	grassland (per NR151.123)
	18.390	75	Weighted Average
	17.510		95.21% Pervious Area
	0.880		4.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	300	0.0500	0.31		**Sheet Flow,** Range n= 0.130 P2= 2.70"
3.4	575	0.0300	2.79		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
19.3	875	Total			

Subcatchment 1: Existing



Summary for Subcatchment 2: Existing

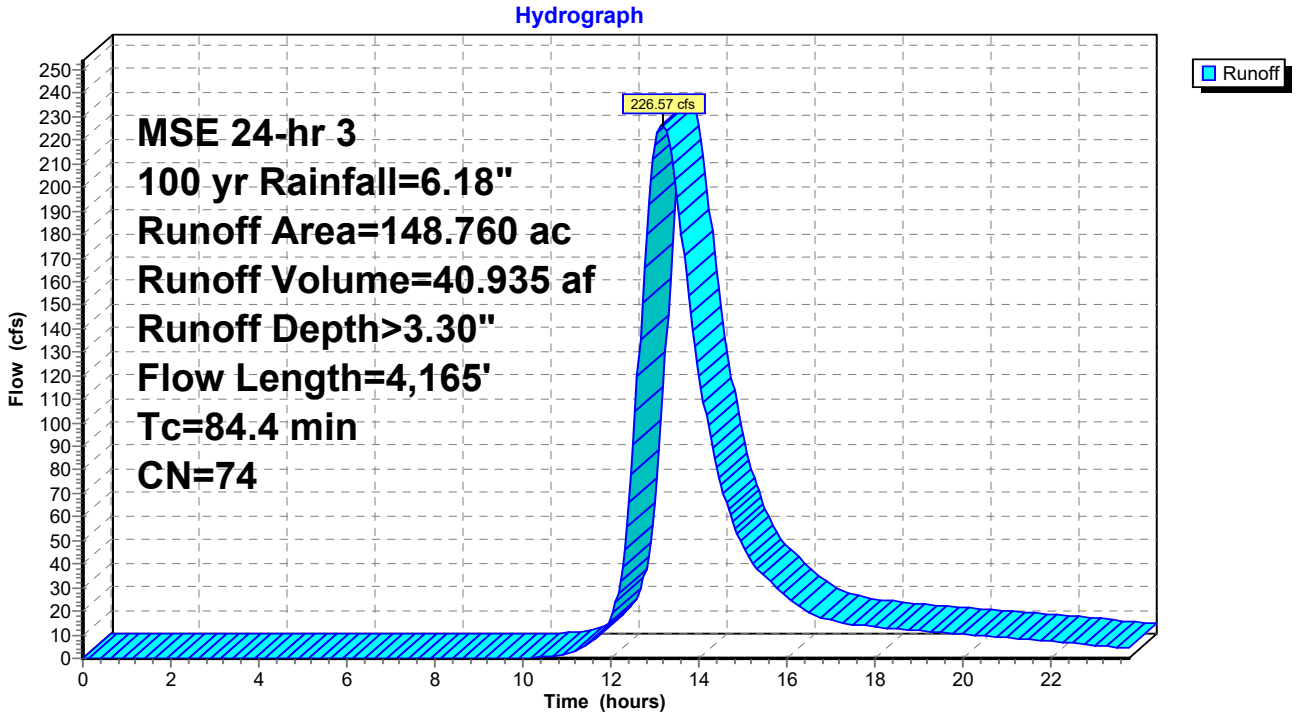
Runoff = 226.57 cfs @ 13.17 hrs, Volume= 40.935 af, Depth> 3.30"
Routed to Pond 2D : Wetland Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	6.950	74	grass
*	4.310	98	impervious
*	0.090	96	dirt/gavel (per WDNR Guidance)
*	56.880	70	woodland (per NR 151.123)
*	56.930	77	cropland (per City Chapter 309)
*	5.850	71	grassland (per NR151.123)
*	12.870	71	woodland/grassland comb.
	4.880	80	1/2 acre lots
	148.760	74	Weighted Average
	144.450		97.10% Pervious Area
	4.310		2.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.0	300	0.0500	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.0	280	0.0900	4.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
44.4	3,585	0.0070	1.35		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
84.4	4,165	Total			

Subcatchment 2: Existing



Summary for Subcatchment 3: Existing

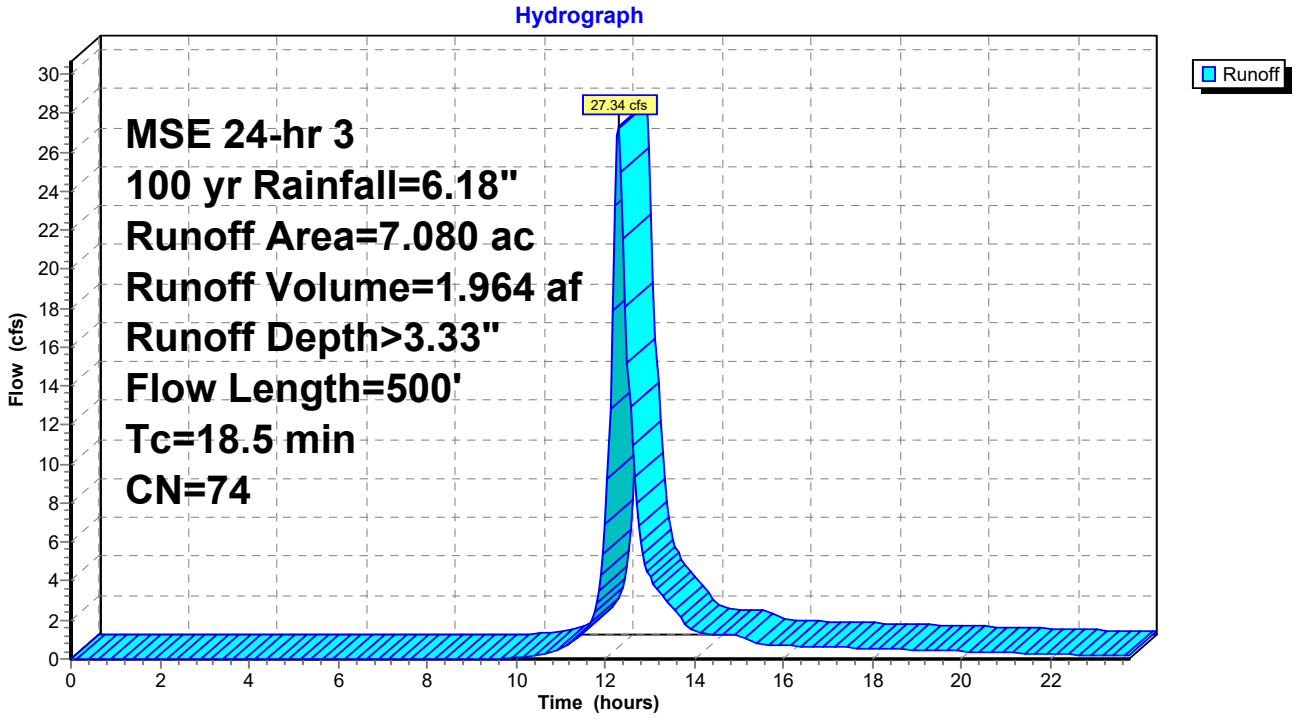
Runoff = 27.34 cfs @ 12.28 hrs, Volume= 1.964 af, Depth> 3.33"
Routed to Link 99 : Existing Outflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.300	98	impervious
*	2.670	71	woodland/grassland
*	2.690	77	cropland (per City Chapter 309)
*	1.420	71	grassland (per NR151.123)
	7.080	74	Weighted Average
	6.780		95.76% Pervious Area
	0.300		4.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	125	0.0200	0.18		**Sheet Flow,** Range n= 0.130 P2= 2.70"
6.6	175	0.1500	0.44		**Sheet Flow,** Range n= 0.130 P2= 2.70"
0.5	200	0.1500	6.24		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
18.5	500	Total			

Subcatchment 3: Existing



Summary for Pond 2D: Wetland Depression

Inflow Area = 148.760 ac, 2.90% Impervious, Inflow Depth > 3.30" for 100 yr event
Inflow = 226.57 cfs @ 13.17 hrs, Volume= 40.935 af
Outflow = 147.27 cfs @ 13.80 hrs, Volume= 40.930 af, Atten= 35%, Lag= 37.6 min
Primary = 147.27 cfs @ 13.80 hrs, Volume= 40.930 af
Routed to Link 99 : Existing Outflow

Routing by Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 838.36' @ 13.80 hrs Surf.Area= 6.778 ac Storage= 12.255 af

Plug-Flow detention time= 59.0 min calculated for 40.844 af (100% of inflow)
Center-of-Mass det. time= 58.8 min (928.9 - 870.1)

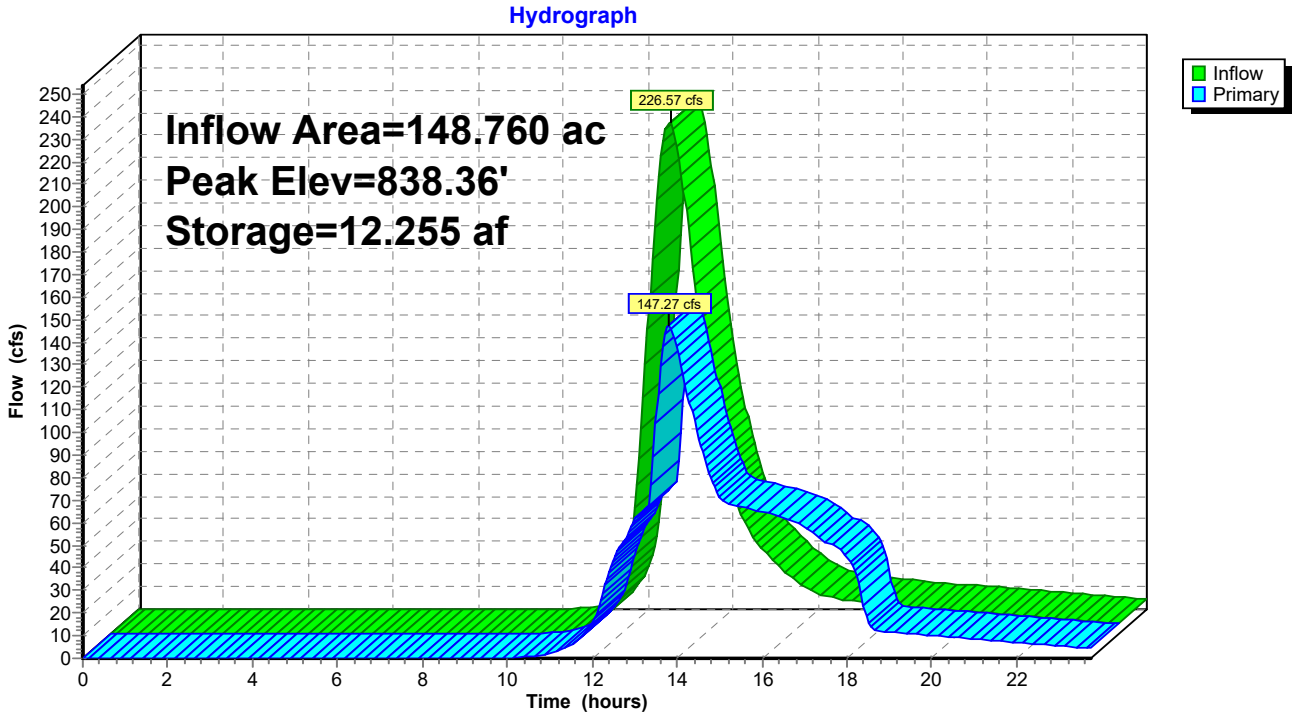
Volume	Invert	Avail.Storage	Storage Description
#1	832.49'	23.539 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
832.49	0.000	0.000	0.000	0.000
835.00	0.190	0.159	0.159	0.190
836.00	1.880	0.889	1.048	1.880
837.00	4.590	3.136	4.184	4.590
838.00	6.730	5.626	9.810	6.731
840.00	7.000	13.729	23.539	7.015

Device	Routing	Invert	Outlet Devices
#1	Primary	832.49'	**36.0" Round Culvert** L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 832.49' / 832.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Primary	838.00'	**100.0' long + 100.0 '/' SideZ x 22.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=146.88 cfs @ 13.80 hrs HW=838.36' (Free Discharge)
1=Culvert (Inlet Controls 71.16 cfs @ 10.07 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 75.71 cfs @ 1.54 fps)

Pond 2D: Wetland Depression

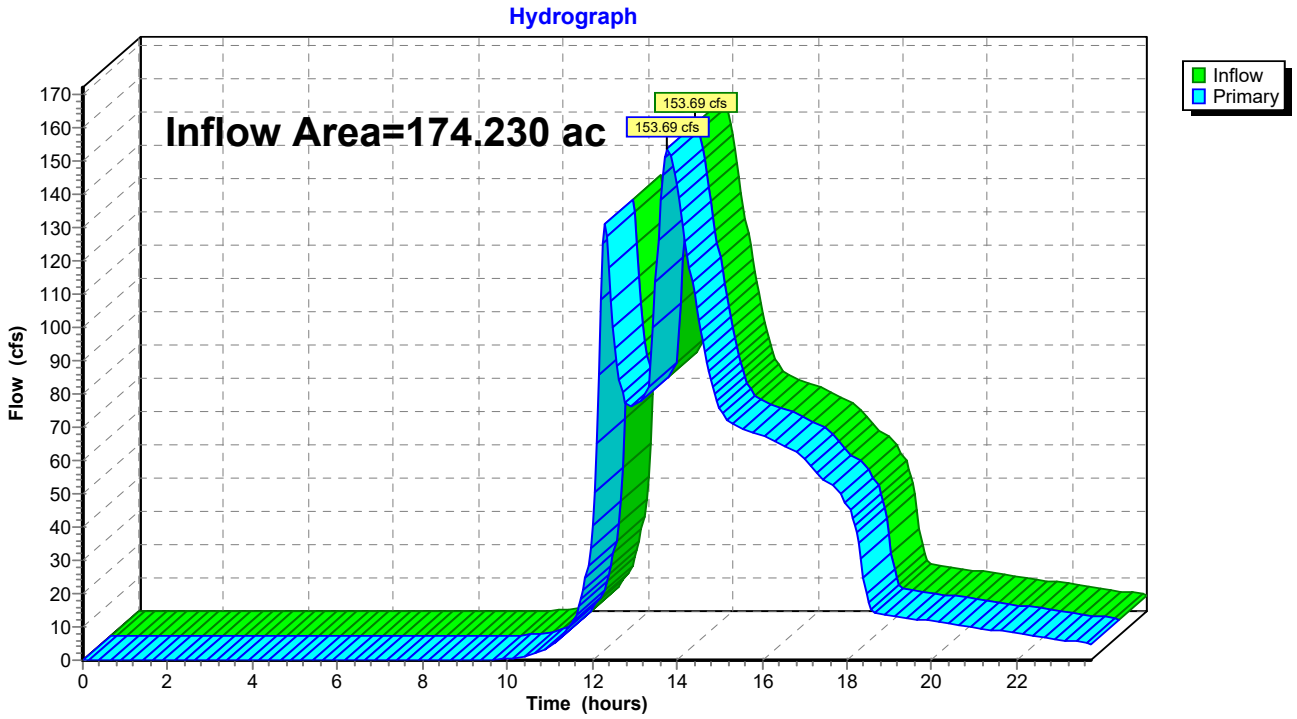


Summary for Link 99: Existing Outflow

Inflow Area = 174.230 ac, 3.15% Impervious, Inflow Depth > 3.32" for 100 yr event
Inflow = 153.69 cfs @ 13.78 hrs, Volume= 48.146 af
Primary = 153.69 cfs @ 13.78 hrs, Volume= 48.146 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs

Link 99: Existing Outflow



Events for Subcatchment 1: Existing

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	11.12	0.905	0.59
2 yr	2.70	14.99	1.176	0.77
10 yr	3.81	31.35	2.331	1.52
100 yr	**6.18**	**71.74**	**5.252**	**3.43**

Events for Subcatchment 2: Existing

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	32.66	6.746	0.54
2 yr	2.70	44.40	8.842	0.71
10 yr	3.81	95.76	17.854	1.44
100 yr	**6.18**	**226.57**	**40.935**	**3.30**

Events for Subcatchment 3: Existing

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	4.00	0.325	0.55
2 yr	2.70	5.46	0.426	0.72
10 yr	3.81	11.71	0.858	1.45
100 yr	**6.18**	**27.34**	**1.964**	**3.33**

Events for Pond 2D: Wetland Depression

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	32.66	31.71	835.13	0.190
2 yr	44.40	39.60	835.58	0.463
10 yr	95.76	56.26	836.83	3.461
100 yr	**226.57**	**147.27**	**838.36**	**12.255**

Events for Link 99: Existing Outflow

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1 yr	34.11	34.11	**0.00**
2 yr	42.28	42.28	0.00
10 yr	59.41	59.41	0.00
100 yr	**153.69**	**153.69**	0.00

Hydrograph for Link 99: Existing Outflow

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
0.00	0.000	2.60	0.000	5.20	0.000	7.80	0.000
0.05	0.000	2.65	0.000	5.25	0.000	7.85	0.000
0.10	0.000	2.70	0.000	5.30	0.000	7.90	0.000
0.15	0.000	2.75	0.000	5.35	0.000	7.95	0.000
0.20	0.000	2.80	0.000	5.40	0.000	8.00	0.000
0.25	0.000	2.85	0.000	5.45	0.000	8.05	0.000
0.30	0.000	2.90	0.000	5.50	0.000	8.10	0.000
0.35	0.000	2.95	0.000	5.55	0.000	8.15	0.000
0.40	0.000	3.00	0.000	5.60	0.000	8.20	0.000
0.45	0.000	3.05	0.000	5.65	0.000	8.25	0.000
0.50	0.000	3.10	0.000	5.70	0.000	8.30	0.000
0.55	0.000	3.15	0.000	5.75	0.000	8.35	0.000
0.60	0.000	3.20	0.000	5.80	0.000	8.40	0.000
0.65	0.000	3.25	0.000	5.85	0.000	8.45	0.000
0.70	0.000	3.30	0.000	5.90	0.000	8.50	0.000
0.75	0.000	3.35	0.000	5.95	0.000	8.55	0.000
0.80	0.000	3.40	0.000	6.00	0.000	8.60	0.000
0.85	0.000	3.45	0.000	6.05	0.000	8.65	0.000
0.90	0.000	3.50	0.000	6.10	0.000	8.70	0.000
0.95	0.000	3.55	0.000	6.15	0.000	8.75	0.000
1.00	0.000	3.60	0.000	6.20	0.000	8.80	0.000
1.05	0.000	3.65	0.000	6.25	0.000	8.85	0.000
1.10	0.000	3.70	0.000	6.30	0.000	8.90	0.000
1.15	0.000	3.75	0.000	6.35	0.000	8.95	0.000
1.20	0.000	3.80	0.000	6.40	0.000	9.00	0.000
1.25	0.000	3.85	0.000	6.45	0.000	9.05	0.000
1.30	0.000	3.90	0.000	6.50	0.000	9.10	0.000
1.35	0.000	3.95	0.000	6.55	0.000	9.15	0.000
1.40	0.000	4.00	0.000	6.60	0.000	9.20	0.000
1.45	0.000	4.05	0.000	6.65	0.000	9.25	0.000
1.50	0.000	4.10	0.000	6.70	0.000	9.30	0.000
1.55	0.000	4.15	0.000	6.75	0.000	9.35	0.000
1.60	0.000	4.20	0.000	6.80	0.000	9.40	0.000
1.65	0.000	4.25	0.000	6.85	0.000	9.45	0.000
1.70	0.000	4.30	0.000	6.90	0.000	9.50	0.000
1.75	0.000	4.35	0.000	6.95	0.000	9.55	0.000
1.80	0.000	4.40	0.000	7.00	0.000	9.60	0.000
1.85	0.000	4.45	0.000	7.05	0.000	9.65	0.000
1.90	0.000	4.50	0.000	7.10	0.000	9.70	0.000
1.95	0.000	4.55	0.000	7.15	0.000	9.75	0.000
2.00	0.000	4.60	0.000	7.20	0.000	9.80	0.000
2.05	0.000	4.65	0.000	7.25	0.000	9.85	0.000
2.10	0.000	4.70	0.000	7.30	0.000	9.90	0.000
2.15	0.000	4.75	0.000	7.35	0.000	9.95	0.000
2.20	0.000	4.80	0.000	7.40	0.000	10.00	0.000
2.25	0.000	4.85	0.000	7.45	0.000	10.05	0.000
2.30	0.000	4.90	0.000	7.50	0.000	10.10	0.000
2.35	0.000	4.95	0.000	7.55	0.000	10.15	0.000
2.40	0.000	5.00	0.000	7.60	0.000	10.20	0.000
2.45	0.000	5.05	0.000	7.65	0.000	10.25	0.000
2.50	0.000	5.10	0.000	7.70	0.000	10.30	0.000
2.55	0.000	5.15	0.000	7.75	0.000	10.35	0.000

Hydrograph for Link 99: Existing Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
10.40	0.000	13.00	1.966	15.60	7.772	18.20	9.079
10.45	0.000	13.05	2.123	15.65	7.812	18.25	9.097
10.50	0.000	13.10	2.284	15.70	7.851	18.30	9.115
10.55	0.000	13.15	2.449	15.75	7.890	18.35	9.133
10.60	0.000	13.20	2.616	15.80	7.927	18.40	9.151
10.65	0.000	13.25	2.785	15.85	7.963	18.45	9.169
10.70	0.000	13.30	2.956	15.90	7.999	18.50	9.186
10.75	0.000	13.35	3.129	15.95	8.033	18.55	9.204
10.80	0.000	13.40	3.303	16.00	8.067	18.60	9.221
10.85	0.000	13.45	3.477	16.05	8.100	18.65	9.239
10.90	0.000	13.50	3.652	16.10	8.132	18.70	9.256
10.95	0.000	13.55	3.827	16.15	8.163	18.75	9.273
11.00	0.000	13.60	4.001	16.20	8.193	18.80	9.290
11.05	0.000	13.65	4.174	16.25	8.223	18.85	9.307
11.10	0.000	13.70	4.345	16.30	8.252	18.90	9.324
11.15	0.000	13.75	4.514	16.35	8.280	18.95	9.341
11.20	0.000	13.80	4.681	16.40	8.308	19.00	9.357
11.25	0.000	13.85	4.845	16.45	8.335	19.05	9.374
11.30	0.000	13.90	5.006	16.50	8.361	19.10	9.390
11.35	0.000	13.95	5.164	16.55	8.387	19.15	9.406
11.40	0.000	14.00	5.318	16.60	8.412	19.20	9.422
11.45	0.000	14.05	5.467	16.65	8.437	19.25	9.438
11.50	0.000	14.10	5.612	16.70	8.461	19.30	9.454
11.55	0.000	14.15	5.750	16.75	8.485	19.35	9.470
11.60	0.000	14.20	5.880	16.80	8.509	19.40	9.486
11.65	0.000	14.25	6.001	16.85	8.532	19.45	9.502
11.70	0.000	14.30	6.114	16.90	8.555	19.50	9.517
11.75	0.001	14.35	6.219	16.95	8.578	19.55	9.533
11.80	0.002	14.40	6.318	17.00	8.600	19.60	9.548
11.85	0.004	14.45	6.411	17.05	8.622	19.65	9.563
11.90	0.008	14.50	6.499	17.10	8.644	19.70	9.578
11.95	0.014	14.55	6.583	17.15	8.665	19.75	9.593
12.00	0.024	14.60	6.663	17.20	8.687	19.80	9.608
12.05	0.040	14.65	6.740	17.25	8.708	19.85	9.623
12.10	0.068	14.70	6.813	17.30	8.729	19.90	9.638
12.15	0.114	14.75	6.883	17.35	8.749	19.95	9.652
12.20	0.181	14.80	6.951	17.40	8.770	20.00	9.667
12.25	0.267	14.85	7.016	17.45	8.790	20.05	9.681
12.30	0.364	14.90	7.078	17.50	8.811	20.10	9.695
12.35	0.462	14.95	7.139	17.55	8.831	20.15	9.710
12.40	0.559	15.00	7.197	17.60	8.851	20.20	9.724
12.45	0.653	15.05	7.253	17.65	8.870	20.25	9.738
12.50	0.747	15.10	7.308	17.70	8.890	20.30	9.752
12.55	0.842	15.15	7.361	17.75	8.909	20.35	9.765
12.60	0.940	15.20	7.412	17.80	8.929	20.40	9.779
12.65	1.042	15.25	7.462	17.85	8.948	20.45	9.792
12.70	1.151	15.30	7.510	17.90	8.967	20.50	9.806
12.75	1.267	15.35	7.556	17.95	8.986	20.55	9.819
12.80	1.392	15.40	7.601	18.00	9.005	20.60	9.832
12.85	1.524	15.45	7.646	18.05	9.023	20.65	9.846
12.90	1.665	15.50	7.689	18.10	9.042	20.70	9.859
12.95	1.813	15.55	7.731	18.15	9.060	20.75	9.871

Hydrograph for Link 99: Existing Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)
20.80	9.884
20.85	9.897
20.90	9.909
20.95	9.922
21.00	9.934
21.05	9.946
21.10	9.959
21.15	9.971
21.20	9.983
21.25	9.994
21.30	10.006
21.35	10.018
21.40	10.029
21.45	10.041
21.50	10.052
21.55	10.063
21.60	10.074
21.65	10.085
21.70	10.096
21.75	10.106
21.80	10.117
21.85	10.128
21.90	10.138
21.95	10.148
22.00	10.158
22.05	10.168
22.10	10.178
22.15	10.188
22.20	10.198
22.25	10.208
22.30	10.217
22.35	10.226
22.40	10.236
22.45	10.245
22.50	10.254
22.55	10.263
22.60	10.272
22.65	10.280
22.70	10.289
22.75	10.298
22.80	10.306
22.85	10.314
22.90	10.322
22.95	10.330
23.00	10.338
23.05	10.346
23.10	10.354
23.15	10.361
23.20	10.369
23.25	10.376
23.30	10.383
23.35	10.391
23.40	10.398
23.45	10.405
23.50	10.411
23.55	10.418
23.60	10.425
23.65	10.431
23.70	10.437
23.75	**10.444**

Hydrograph for Link 99: Existing Outflow

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
0.00	0.000	2.60	0.000	5.20	0.000	7.80	0.000
0.05	0.000	2.65	0.000	5.25	0.000	7.85	0.000
0.10	0.000	2.70	0.000	5.30	0.000	7.90	0.000
0.15	0.000	2.75	0.000	5.35	0.000	7.95	0.000
0.20	0.000	2.80	0.000	5.40	0.000	8.00	0.000
0.25	0.000	2.85	0.000	5.45	0.000	8.05	0.000
0.30	0.000	2.90	0.000	5.50	0.000	8.10	0.000
0.35	0.000	2.95	0.000	5.55	0.000	8.15	0.000
0.40	0.000	3.00	0.000	5.60	0.000	8.20	0.000
0.45	0.000	3.05	0.000	5.65	0.000	8.25	0.000
0.50	0.000	3.10	0.000	5.70	0.000	8.30	0.000
0.55	0.000	3.15	0.000	5.75	0.000	8.35	0.000
0.60	0.000	3.20	0.000	5.80	0.000	8.40	0.000
0.65	0.000	3.25	0.000	5.85	0.000	8.45	0.000
0.70	0.000	3.30	0.000	5.90	0.000	8.50	0.000
0.75	0.000	3.35	0.000	5.95	0.000	8.55	0.000
0.80	0.000	3.40	0.000	6.00	0.000	8.60	0.000
0.85	0.000	3.45	0.000	6.05	0.000	8.65	0.000
0.90	0.000	3.50	0.000	6.10	0.000	8.70	0.000
0.95	0.000	3.55	0.000	6.15	0.000	8.75	0.000
1.00	0.000	3.60	0.000	6.20	0.000	8.80	0.000
1.05	0.000	3.65	0.000	6.25	0.000	8.85	0.000
1.10	0.000	3.70	0.000	6.30	0.000	8.90	0.000
1.15	0.000	3.75	0.000	6.35	0.000	8.95	0.000
1.20	0.000	3.80	0.000	6.40	0.000	9.00	0.000
1.25	0.000	3.85	0.000	6.45	0.000	9.05	0.000
1.30	0.000	3.90	0.000	6.50	0.000	9.10	0.000
1.35	0.000	3.95	0.000	6.55	0.000	9.15	0.000
1.40	0.000	4.00	0.000	6.60	0.000	9.20	0.000
1.45	0.000	4.05	0.000	6.65	0.000	9.25	0.000
1.50	0.000	4.10	0.000	6.70	0.000	9.30	0.000
1.55	0.000	4.15	0.000	6.75	0.000	9.35	0.000
1.60	0.000	4.20	0.000	6.80	0.000	9.40	0.000
1.65	0.000	4.25	0.000	6.85	0.000	9.45	0.000
1.70	0.000	4.30	0.000	6.90	0.000	9.50	0.000
1.75	0.000	4.35	0.000	6.95	0.000	9.55	0.001
1.80	0.000	4.40	0.000	7.00	0.000	9.60	0.001
1.85	0.000	4.45	0.000	7.05	0.000	9.65	0.002
1.90	0.000	4.50	0.000	7.10	0.000	9.70	0.002
1.95	0.000	4.55	0.000	7.15	0.000	9.75	0.003
2.00	0.000	4.60	0.000	7.20	0.000	9.80	0.004
2.05	0.000	4.65	0.000	7.25	0.000	9.85	0.005
2.10	0.000	4.70	0.000	7.30	0.000	9.90	0.006
2.15	0.000	4.75	0.000	7.35	0.000	9.95	0.008
2.20	0.000	4.80	0.000	7.40	0.000	10.00	0.009
2.25	0.000	4.85	0.000	7.45	0.000	10.05	0.011
2.30	0.000	4.90	0.000	7.50	0.000	10.10	0.014
2.35	0.000	4.95	0.000	7.55	0.000	10.15	0.016
2.40	0.000	5.00	0.000	7.60	0.000	10.20	0.019
2.45	0.000	5.05	0.000	7.65	0.000	10.25	0.022
2.50	0.000	5.10	0.000	7.70	0.000	10.30	0.026
2.55	0.000	5.15	0.000	7.75	0.000	10.35	0.030

Hydrograph for Link 99: Existing Outflow (continued)

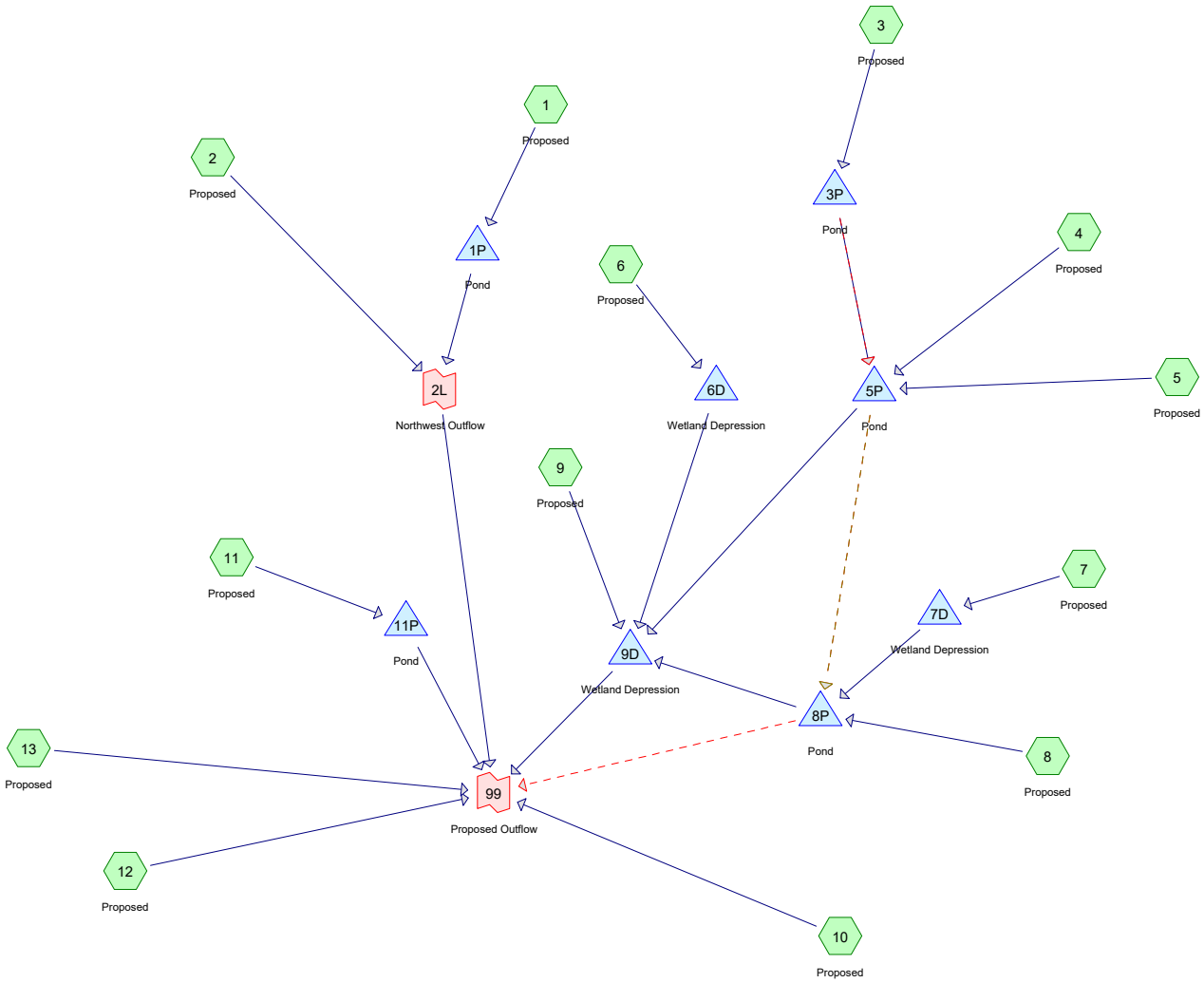
Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
10.40	0.034	13.00	8.933	15.60	30.546	18.20	43.269
10.45	0.039	13.05	9.252	15.65	30.831	18.25	43.428
10.50	0.045	13.10	9.572	15.70	31.116	18.30	43.575
10.55	0.051	13.15	9.894	15.75	31.400	18.35	43.702
10.60	0.058	13.20	10.218	15.80	31.683	18.40	43.805
10.65	0.065	13.25	10.543	15.85	31.964	18.45	43.888
10.70	0.074	13.30	10.870	15.90	32.245	18.50	43.959
10.75	0.084	13.35	11.198	15.95	32.525	18.55	44.023
10.80	0.095	13.40	11.559	16.00	32.804	18.60	44.084
10.85	0.107	13.45	11.971	16.05	33.081	18.65	44.143
10.90	0.121	13.50	12.441	16.10	33.358	18.70	44.202
10.95	0.137	13.55	12.964	16.15	33.633	18.75	44.259
11.00	0.154	13.60	13.535	16.20	33.907	18.80	44.316
11.05	0.173	13.65	14.138	16.25	34.180	18.85	44.373
11.10	0.194	13.70	14.761	16.30	34.452	18.90	44.430
11.15	0.217	13.75	15.395	16.35	34.723	18.95	44.486
11.20	0.243	13.80	16.030	16.40	34.992	19.00	44.541
11.25	0.272	13.85	16.659	16.45	35.260	19.05	44.597
11.30	0.303	13.90	17.277	16.50	35.527	19.10	44.651
11.35	0.337	13.95	17.882	16.55	35.792	19.15	44.706
11.40	0.375	14.00	18.473	16.60	36.056	19.20	44.760
11.45	0.417	14.05	19.048	16.65	36.318	19.25	44.814
11.50	0.462	14.10	19.606	16.70	36.579	19.30	44.867
11.55	0.511	14.15	20.145	16.75	36.839	19.35	44.920
11.60	0.565	14.20	20.666	16.80	37.097	19.40	44.973
11.65	0.625	14.25	21.168	16.85	37.353	19.45	45.025
11.70	0.693	14.30	21.655	16.90	37.608	19.50	45.077
11.75	0.769	14.35	22.126	16.95	37.860	19.55	45.129
11.80	0.857	14.40	22.580	17.00	38.110	19.60	45.180
11.85	0.959	14.45	23.018	17.05	38.357	19.65	45.231
11.90	1.077	14.50	23.439	17.10	38.602	19.70	45.281
11.95	1.216	14.55	23.848	17.15	38.844	19.75	45.331
12.00	1.385	14.60	24.243	17.20	39.083	19.80	45.381
12.05	1.595	14.65	24.627	17.25	39.320	19.85	45.430
12.10	1.866	14.70	24.997	17.30	39.553	19.90	45.479
12.15	2.220	14.75	25.355	17.35	39.784	19.95	45.528
12.20	2.668	14.80	25.704	17.40	40.011	20.00	45.576
12.25	3.186	14.85	26.044	17.45	40.236	20.05	45.624
12.30	3.728	14.90	26.375	17.50	40.457	20.10	45.672
12.35	4.254	14.95	26.698	17.55	40.676	20.15	45.719
12.40	4.742	15.00	27.012	17.60	40.895	20.20	45.766
12.45	5.188	15.05	27.321	17.65	41.112	20.25	45.812
12.50	5.601	15.10	27.625	17.70	41.327	20.30	45.858
12.55	5.988	15.15	27.924	17.75	41.540	20.35	45.904
12.60	6.354	15.20	28.222	17.80	41.749	20.40	45.950
12.65	6.701	15.25	28.517	17.85	41.956	20.45	45.994
12.70	7.034	15.30	28.811	17.90	42.159	20.50	46.039
12.75	7.353	15.35	29.103	17.95	42.358	20.55	46.083
12.80	7.669	15.40	29.394	18.00	42.552	20.60	46.127
12.85	7.983	15.45	29.683	18.05	42.741	20.65	46.171
12.90	8.298	15.50	29.972	18.10	42.924	20.70	46.214
12.95	8.615	15.55	30.259	18.15	43.101	20.75	46.257

Hydrograph for Link 99: Existing Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)
20.80	46.299
20.85	46.341
20.90	46.383
20.95	46.424
21.00	46.465
21.05	46.506
21.10	46.546
21.15	46.586
21.20	46.625
21.25	46.664
21.30	46.703
21.35	46.742
21.40	46.780
21.45	46.817
21.50	46.854
21.55	46.891
21.60	46.928
21.65	46.964
21.70	47.000
21.75	47.035
21.80	47.070
21.85	47.105
21.90	47.139
21.95	47.173
22.00	47.207
22.05	47.240
22.10	47.273
22.15	47.305
22.20	47.337
22.25	47.369
22.30	47.400
22.35	47.431
22.40	47.462
22.45	47.492
22.50	47.522
22.55	47.551
22.60	47.580
22.65	47.609
22.70	47.637
22.75	47.665
22.80	47.693
22.85	47.720
22.90	47.747
22.95	47.773
23.00	47.800
23.05	47.825
23.10	47.851
23.15	47.876
23.20	47.900
23.25	47.924
23.30	47.948
23.35	47.972
23.40	47.995
23.45	48.018
23.50	48.040
23.55	48.062
23.60	48.084
23.65	48.105
23.70	48.126
23.75	**48.146**

APPENDIX B

Post-Development Hydrologic Analysis



Subcat Reach Pond Link

Routing Diagram for Proposed_2021-010
Prepared by HP Inc., Printed 3/30/2022
HydroCAD® 10.10-6a s/n 11025 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 yr	MSE 24-hr	3	Default	24.00	1	2.40	2
2	2 yr	MSE 24-hr	3	Default	24.00	1	2.70	2
3	10 yr	MSE 24-hr	3	Default	24.00	1	3.81	2
4	100 yr	MSE 24-hr	3	Default	24.00	1	6.18	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
78.890	80	1/2 acre lots (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)
15.270	77	cropland (per City Chapter 309) (5)
15.790	74	grass (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)
4.030	71	grassland (per NR 151.123) (2, 7, 9, 13)
10.940	98	impervious (1, 2, 3, 4, 5, 8, 10, 11, 12)
2.930	98	water (1, 3, 4, 8, 11)
43.490	70	woodland (per NR 151.123) (1, 3, 4, 5, 7, 10)
2.890	71	woodland/grassland comb. (8)
174.230	**78**	**TOTAL AREA**

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Proposed Runoff Area=5.550 ac 11.53% Impervious Runoff Depth>0.87"
Flow Length=165' Tc=22.5 min CN=81 Runoff=4.94 cfs 0.402 af

Subcatchment2: Proposed Runoff Area=9.250 ac 8.76% Impervious Runoff Depth>0.87"
Flow Length=605' Tc=21.1 min CN=81 Runoff=8.49 cfs 0.670 af

Subcatchment3: Proposed Runoff Area=31.590 ac 9.43% Impervious Runoff Depth>0.72"
Flow Length=995' Tc=44.1 min CN=78 Runoff=15.00 cfs 1.893 af

Subcatchment4: Proposed Runoff Area=23.060 ac 13.05% Impervious Runoff Depth>0.82"
Flow Length=1,520' Tc=13.5 min CN=80 Runoff=24.67 cfs 1.573 af

Subcatchment5: Proposed Runoff Area=44.840 ac 2.27% Impervious Runoff Depth>0.55"
Flow Length=2,545' Tc=55.9 min CN=74 Runoff=13.03 cfs 2.046 af

Subcatchment6: Proposed Runoff Area=2.190 ac 0.00% Impervious Runoff Depth>0.77"
Flow Length=390' Tc=17.5 min CN=79 Runoff=1.92 cfs 0.140 af

Subcatchment7: Proposed Runoff Area=9.310 ac 0.00% Impervious Runoff Depth>0.51"
Flow Length=1,140' Tc=39.6 min CN=73 Runoff=3.08 cfs 0.396 af

Subcatchment8: Proposed Runoff Area=16.350 ac 13.88% Impervious Runoff Depth>0.82"
Flow Length=1,265' Slope=0.0400 '/' Tc=17.9 min CN=80 Runoff=15.23 cfs 1.114 af

Subcatchment9: Proposed Runoff Area=3.670 ac 0.00% Impervious Runoff Depth>0.55"
Flow Length=495' Tc=24.7 min CN=74 Runoff=1.76 cfs 0.168 af

Subcatchment10: Proposed Runoff Area=5.540 ac 9.03% Impervious Runoff Depth>0.72"
Flow Length=1,130' Tc=29.1 min CN=78 Runoff=3.41 cfs 0.333 af

Subcatchment11: Proposed Runoff Area=14.230 ac 15.74% Impervious Runoff Depth>0.98"
Flow Length=1,340' Tc=13.9 min CN=83 Runoff=18.31 cfs 1.160 af

Subcatchment12: Proposed Runoff Area=3.550 ac 11.27% Impervious Runoff Depth>0.82"
Flow Length=1,125' Tc=20.4 min CN=80 Runoff=3.10 cfs 0.242 af

Subcatchment13: Proposed Runoff Area=5.100 ac 0.00% Impervious Runoff Depth>0.72"
Flow Length=140' Tc=13.8 min CN=78 Runoff=4.67 cfs 0.307 af

Pond 1P: Pond Peak Elev=844.41' Storage=0.106 af Inflow=4.94 cfs 0.402 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0120 '/' Outflow=2.96 cfs 0.389 af

Pond 3P: Pond Peak Elev=843.89' Storage=0.520 af Inflow=15.00 cfs 1.893 af
27.0" Round Culvert n=0.013 L=290.0' S=0.0131 '/' Outflow=9.15 cfs 1.807 af

Pond 5P: Pond Peak Elev=840.14' Storage=1.644 af Inflow=26.11 cfs 5.425 af
Primary=10.24 cfs 3.192 af Secondary=5.97 cfs 1.828 af Outflow=16.21 cfs 5.020 af

Pond 6D: Wetland Depression Peak Elev=839.89' Storage=0.019 af Inflow=1.92 cfs 0.140 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0024 '/' Outflow=1.51 cfs 0.139 af

Pond 7D: Wetland Depression Peak Elev=844.51' Storage=0.027 af Inflow=3.08 cfs 0.396 af
Outflow=2.90 cfs 0.392 af

Pond 8P: Pond Peak Elev=837.49' Storage=1.581 af Inflow=16.48 cfs 3.335 af
Primary=0.61 cfs 0.514 af Secondary=2.72 cfs 2.077 af Outflow=3.33 cfs 2.591 af

Pond 9D: Wetland Depression Peak Elev=836.90' Storage=1.448 af Inflow=11.42 cfs 4.013 af
36.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=5.82 cfs 3.276 af

Pond 11P: Pond Peak Elev=837.19' Storage=0.827 af Inflow=18.31 cfs 1.160 af
Outflow=0.52 cfs 0.478 af

Link 2L: Northwest Outflow Inflow=10.20 cfs 1.059 af
Primary=10.20 cfs 1.059 af

Link 99: Proposed Outflow Inflow=20.47 cfs 7.772 af
Primary=20.47 cfs 7.772 af

Total Runoff Area = 174.230 ac Runoff Volume = 10.443 af Average Runoff Depth = 0.72"
92.04% Pervious = 160.360 ac 7.96% Impervious = 13.870 ac

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Proposed Runoff Area=5.550 ac 11.53% Impervious Runoff Depth>1.08"
Flow Length=165' Tc=22.5 min CN=81 Runoff=6.25 cfs 0.501 af

Subcatchment2: Proposed Runoff Area=9.250 ac 8.76% Impervious Runoff Depth>1.08"
Flow Length=605' Tc=21.1 min CN=81 Runoff=10.77 cfs 0.836 af

Subcatchment3: Proposed Runoff Area=31.590 ac 9.43% Impervious Runoff Depth>0.91"
Flow Length=995' Tc=44.1 min CN=78 Runoff=19.53 cfs 2.407 af

Subcatchment4: Proposed Runoff Area=23.060 ac 13.05% Impervious Runoff Depth>1.03"
Flow Length=1,520' Tc=13.5 min CN=80 Runoff=31.37 cfs 1.974 af

Subcatchment5: Proposed Runoff Area=44.840 ac 2.27% Impervious Runoff Depth>0.72"
Flow Length=2,545' Tc=55.9 min CN=74 Runoff=17.77 cfs 2.680 af

Subcatchment6: Proposed Runoff Area=2.190 ac 0.00% Impervious Runoff Depth>0.97"
Flow Length=390' Tc=17.5 min CN=79 Runoff=2.47 cfs 0.177 af

Subcatchment7: Proposed Runoff Area=9.310 ac 0.00% Impervious Runoff Depth>0.67"
Flow Length=1,140' Tc=39.6 min CN=73 Runoff=4.26 cfs 0.523 af

Subcatchment8: Proposed Runoff Area=16.350 ac 13.88% Impervious Runoff Depth>1.03"
Flow Length=1,265' Slope=0.0400 '/' Tc=17.9 min CN=80 Runoff=19.40 cfs 1.399 af

Subcatchment9: Proposed Runoff Area=3.670 ac 0.00% Impervious Runoff Depth>0.72"
Flow Length=495' Tc=24.7 min CN=74 Runoff=2.41 cfs 0.220 af

Subcatchment10: Proposed Runoff Area=5.540 ac 9.03% Impervious Runoff Depth>0.92"
Flow Length=1,130' Tc=29.1 min CN=78 Runoff=4.44 cfs 0.423 af

Subcatchment11: Proposed Runoff Area=14.230 ac 15.74% Impervious Runoff Depth>1.21"
Flow Length=1,340' Tc=13.9 min CN=83 Runoff=22.71 cfs 1.430 af

Subcatchment12: Proposed Runoff Area=3.550 ac 11.27% Impervious Runoff Depth>1.03"
Flow Length=1,125' Tc=20.4 min CN=80 Runoff=3.96 cfs 0.304 af

Subcatchment13: Proposed Runoff Area=5.100 ac 0.00% Impervious Runoff Depth>0.92"
Flow Length=140' Tc=13.8 min CN=78 Runoff=6.05 cfs 0.390 af

Pond 1P: Pond Peak Elev=844.56' Storage=0.128 af Inflow=6.25 cfs 0.501 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0120 '/' Outflow=3.92 cfs 0.488 af

Pond 3P: Pond Peak Elev=844.16' Storage=0.638 af Inflow=19.53 cfs 2.407 af
27.0" Round Culvert n=0.013 L=290.0' S=0.0131 '/' Outflow=12.53 cfs 2.315 af

Pond 5P: Pond Peak Elev=840.44' Storage=2.063 af Inflow=34.30 cfs 6.969 af
Primary=14.49 cfs 4.247 af Secondary=7.93 cfs 2.275 af Outflow=22.40 cfs 6.523 af

Pond 6D: Wetland Depression Peak Elev=840.04' Storage=0.025 af Inflow=2.47 cfs 0.177 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0024 '/' Outflow=1.89 cfs 0.176 af

Pond 7D: Wetland Depression Peak Elev=844.55' Storage=0.035 af Inflow=4.26 cfs 0.523 af
Outflow=4.11 cfs 0.519 af

Pond 8P: Pond Peak Elev=837.95' Storage=2.107 af Inflow=21.64 cfs 4.194 af
Primary=0.75 cfs 0.639 af Secondary=3.25 cfs 2.560 af Outflow=3.99 cfs 3.199 af

Pond 9D: Wetland Depression Peak Elev=837.10' Storage=1.837 af Inflow=15.93 cfs 5.283 af
36.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=8.42 cfs 4.458 af

Pond 11P: Pond Peak Elev=837.57' Storage=1.042 af Inflow=22.71 cfs 1.430 af
Outflow=0.58 cfs 0.541 af

Link 2L: Northwest Outflow Inflow=13.25 cfs 1.324 af
Primary=13.25 cfs 1.324 af

Link 99: Proposed Outflow Inflow=26.64 cfs 10.000 af
Primary=26.64 cfs 10.000 af

Total Runoff Area = 174.230 ac Runoff Volume = 13.266 af Average Runoff Depth = 0.91"
92.04% Pervious = 160.360 ac 7.96% Impervious = 13.870 ac

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Proposed Runoff Area=5.550 ac 11.53% Impervious Runoff Depth>1.96"
Flow Length=165' Tc=22.5 min CN=81 Runoff=11.47 cfs 0.905 af

Subcatchment2: Proposed Runoff Area=9.250 ac 8.76% Impervious Runoff Depth>1.96"
Flow Length=605' Tc=21.1 min CN=81 Runoff=19.77 cfs 1.509 af

Subcatchment3: Proposed Runoff Area=31.590 ac 9.43% Impervious Runoff Depth>1.73"
Flow Length=995' Tc=44.1 min CN=78 Runoff=38.36 cfs 4.546 af

Subcatchment4: Proposed Runoff Area=23.060 ac 13.05% Impervious Runoff Depth>1.88"
Flow Length=1,520' Tc=13.5 min CN=80 Runoff=58.74 cfs 3.616 af

Subcatchment5: Proposed Runoff Area=44.840 ac 2.27% Impervious Runoff Depth>1.45"
Flow Length=2,545' Tc=55.9 min CN=74 Runoff=38.34 cfs 5.407 af

Subcatchment6: Proposed Runoff Area=2.190 ac 0.00% Impervious Runoff Depth>1.81"
Flow Length=390' Tc=17.5 min CN=79 Runoff=4.73 cfs 0.330 af

Subcatchment7: Proposed Runoff Area=9.310 ac 0.00% Impervious Runoff Depth>1.38"
Flow Length=1,140' Tc=39.6 min CN=73 Runoff=9.46 cfs 1.074 af

Subcatchment8: Proposed Runoff Area=16.350 ac 13.88% Impervious Runoff Depth>1.88"
Flow Length=1,265' Slope=0.0400 '/' Tc=17.9 min CN=80 Runoff=36.39 cfs 2.563 af

Subcatchment9: Proposed Runoff Area=3.670 ac 0.00% Impervious Runoff Depth>1.45"
Flow Length=495' Tc=24.7 min CN=74 Runoff=5.20 cfs 0.444 af

Subcatchment10: Proposed Runoff Area=5.540 ac 9.03% Impervious Runoff Depth>1.73"
Flow Length=1,130' Tc=29.1 min CN=78 Runoff=8.69 cfs 0.799 af

Subcatchment11: Proposed Runoff Area=14.230 ac 15.74% Impervious Runoff Depth>2.12"
Flow Length=1,340' Tc=13.9 min CN=83 Runoff=40.18 cfs 2.511 af

Subcatchment12: Proposed Runoff Area=3.550 ac 11.27% Impervious Runoff Depth>1.88"
Flow Length=1,125' Tc=20.4 min CN=80 Runoff=7.40 cfs 0.556 af

Subcatchment13: Proposed Runoff Area=5.100 ac 0.00% Impervious Runoff Depth>1.73"
Flow Length=140' Tc=13.8 min CN=78 Runoff=11.73 cfs 0.736 af

Pond 1P: Pond Peak Elev=845.11' Storage=0.218 af Inflow=11.47 cfs 0.905 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0120 '/' Outflow=7.40 cfs 0.889 af

Pond 3P: Pond Peak Elev=845.31' Storage=1.184 af Inflow=38.36 cfs 4.546 af
27.0" Round Culvert n=0.013 L=290.0' S=0.0131 '/' Outflow=24.07 cfs 4.431 af

Pond 5P: Pond Peak Elev=841.82' Storage=4.148 af Inflow=69.86 cfs 13.453 af
Primary=31.42 cfs 9.068 af Secondary=10.39 cfs 3.818 af Outflow=41.43 cfs 12.886 af

Pond 6D: Wetland Depression Peak Elev=840.64' Storage=0.060 af Inflow=4.73 cfs 0.330 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0024 '/' Outflow=2.84 cfs 0.328 af

Pond 7D: Wetland Depression Peak Elev=844.68' Storage=0.066 af Inflow=9.46 cfs 1.074 af
Outflow=9.18 cfs 1.070 af

Pond 8P: Pond Peak Elev=838.55' Storage=2.831 af Inflow=44.04 cfs 7.451 af
Primary=0.91 cfs 0.695 af Secondary=11.97 cfs 5.333 af Outflow=12.69 cfs 6.027 af

Pond 9D: Wetland Depression Peak Elev=837.92' Storage=3.533 af Inflow=33.55 cfs 10.535 af
36.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=22.48 cfs 9.507 af

Pond 11P: Pond Peak Elev=838.48' Storage=1.597 af Inflow=40.18 cfs 2.511 af
Outflow=4.05 cfs 1.167 af

Link 2L: Northwest Outflow Inflow=25.31 cfs 2.397 af
Primary=25.31 cfs 2.397 af

Link 99: Proposed Outflow Inflow=52.14 cfs 20.496 af
Primary=52.14 cfs 20.496 af

Total Runoff Area = 174.230 ac Runoff Volume = 24.997 af Average Runoff Depth = 1.72"
92.04% Pervious = 160.360 ac 7.96% Impervious = 13.870 ac

Time span=0.00-23.75 hrs, dt=0.05 hrs, 476 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1: Proposed Runoff Area=5.550 ac 11.53% Impervious Runoff Depth>4.04"
Flow Length=165' Tc=22.5 min CN=81 Runoff=23.61 cfs 1.867 af

Subcatchment2: Proposed Runoff Area=9.250 ac 8.76% Impervious Runoff Depth>4.04"
Flow Length=605' Tc=21.1 min CN=81 Runoff=40.51 cfs 3.113 af

Subcatchment3: Proposed Runoff Area=31.590 ac 9.43% Impervious Runoff Depth>3.72"
Flow Length=995' Tc=44.1 min CN=78 Runoff=83.58 cfs 9.794 af

Subcatchment4: Proposed Runoff Area=23.060 ac 13.05% Impervious Runoff Depth>3.94"
Flow Length=1,520' Tc=13.5 min CN=80 Runoff=121.81 cfs 7.565 af

Subcatchment5: Proposed Runoff Area=44.840 ac 2.27% Impervious Runoff Depth>3.32"
Flow Length=2,545' Tc=55.9 min CN=74 Runoff=90.85 cfs 12.388 af

Subcatchment6: Proposed Runoff Area=2.190 ac 0.00% Impervious Runoff Depth>3.83"
Flow Length=390' Tc=17.5 min CN=79 Runoff=10.03 cfs 0.699 af

Subcatchment7: Proposed Runoff Area=9.310 ac 0.00% Impervious Runoff Depth>3.22"
Flow Length=1,140' Tc=39.6 min CN=73 Runoff=22.82 cfs 2.501 af

Subcatchment8: Proposed Runoff Area=16.350 ac 13.88% Impervious Runoff Depth>3.94"
Flow Length=1,265' Slope=0.0400 '/' Tc=17.9 min CN=80 Runoff=75.77 cfs 5.362 af

Subcatchment9: Proposed Runoff Area=3.670 ac 0.00% Impervious Runoff Depth>3.33"
Flow Length=495' Tc=24.7 min CN=74 Runoff=12.20 cfs 1.017 af

Subcatchment10: Proposed Runoff Area=5.540 ac 9.03% Impervious Runoff Depth>3.73"
Flow Length=1,130' Tc=29.1 min CN=78 Runoff=18.85 cfs 1.720 af

Subcatchment11: Proposed Runoff Area=14.230 ac 15.74% Impervious Runoff Depth>4.25"
Flow Length=1,340' Tc=13.9 min CN=83 Runoff=79.27 cfs 5.041 af

Subcatchment12: Proposed Runoff Area=3.550 ac 11.27% Impervious Runoff Depth>3.93"
Flow Length=1,125' Tc=20.4 min CN=80 Runoff=15.42 cfs 1.164 af

Subcatchment13: Proposed Runoff Area=5.100 ac 0.00% Impervious Runoff Depth>3.73"
Flow Length=140' Tc=13.8 min CN=78 Runoff=25.35 cfs 1.586 af

Pond 1P: Pond Peak Elev=846.46' Storage=0.491 af Inflow=23.61 cfs 1.867 af
18.0" Round Culvert n=0.013 L=50.0' S=0.0120 '/' Outflow=12.36 cfs 1.846 af

Pond 3P: Pond Peak Elev=848.60' Storage=3.441 af Inflow=83.58 cfs 9.794 af
27.0" Round Culvert n=0.013 L=290.0' S=0.0131 '/' Outflow=31.16 cfs 9.640 af

Pond 5P: Pond Peak Elev=845.00' Storage=11.254 af Inflow=159.00 cfs 29.593 af
Primary=42.21 cfs 21.989 af Secondary=11.62 cfs 6.810 af Outflow=53.82 cfs 28.798 af

Pond 6D: Wetland Depression Peak Elev=841.67' Storage=0.179 af Inflow=10.03 cfs 0.699 af
12.0" Round Culvert n=0.013 L=85.0' S=0.0024 '/' Outflow=4.23 cfs 0.698 af

Pond 7D: Wetland Depression Peak Elev=844.89' Storage=0.150 af Inflow=22.82 cfs 2.501 af
Outflow=21.95 cfs 2.495 af

Pond 8P: Pond Peak Elev=840.50' Storage=5.500 af Inflow=95.05 cfs 14.667 af
Primary=1.24 cfs 0.902 af Secondary=16.75 cfs 11.745 af Outflow=17.89 cfs 12.647 af

Pond 9D: Wetland Depression Peak Elev=838.80' Storage=5.555 af Inflow=49.93 cfs 24.605 af
36.0" Round Culvert n=0.013 L=50.0' S=0.0200 '/' Outflow=39.06 cfs 23.093 af

Pond 11P: Pond Peak Elev=839.98' Storage=2.661 af Inflow=79.27 cfs 5.041 af
Outflow=16.43 cfs 3.618 af

Link 2L: Northwest Outflow Inflow=50.39 cfs 4.959 af
Primary=50.39 cfs 4.959 af

Link 99: Proposed Outflow Inflow=130.43 cfs 47.885 af
Primary=130.43 cfs 47.885 af

Total Runoff Area = 174.230 ac Runoff Volume = 53.817 af Average Runoff Depth = 3.71"
92.04% Pervious = 160.360 ac 7.96% Impervious = 13.870 ac

Summary for Subcatchment 1: Proposed

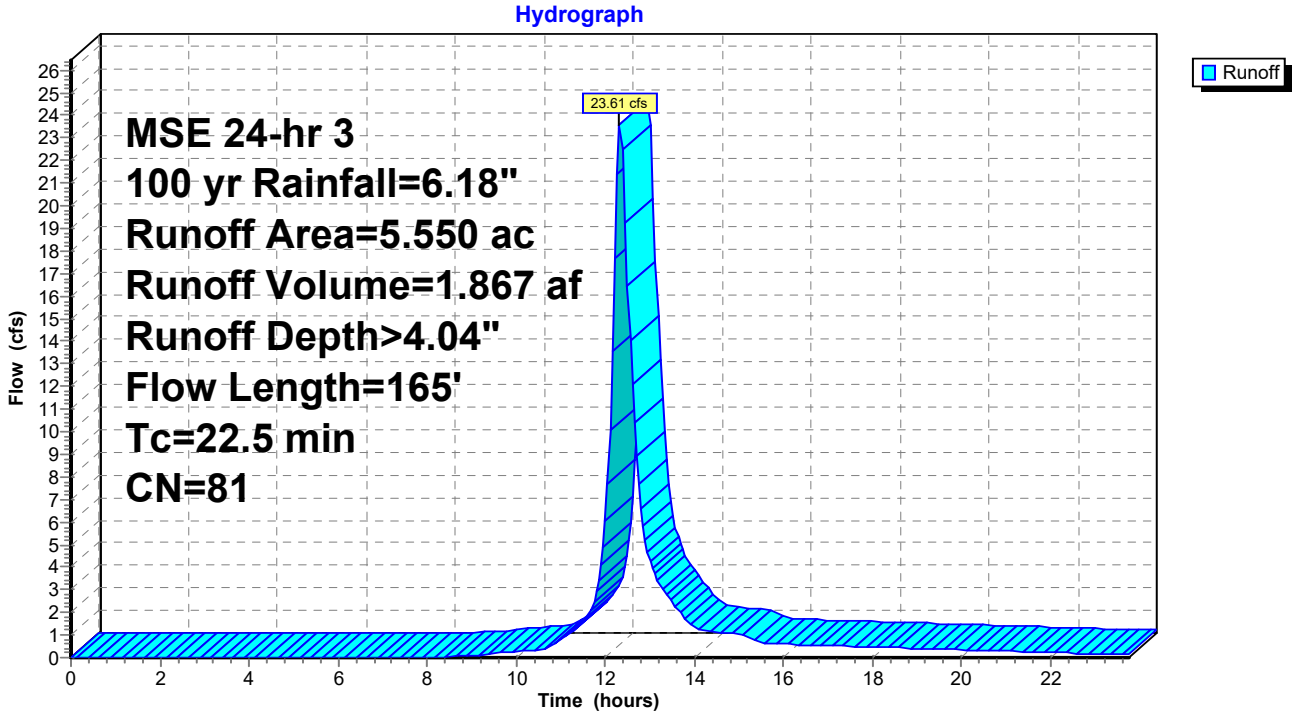
Runoff = 23.61 cfs @ 12.32 hrs, Volume= 1.867 af, Depth> 4.04"
Routed to Pond 1P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.540	74	grass
*	0.520	98	impervious
*	0.040	70	woodland (per NR 151.123)
	4.330	80	1/2 acre lots
*	0.120	98	water
	5.550	81	Weighted Average
	4.910		88.47% Pervious Area
	0.640		11.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	110	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
0.4	55	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
22.5	165	Total			

Subcatchment 1: Proposed



Summary for Subcatchment 2: Proposed

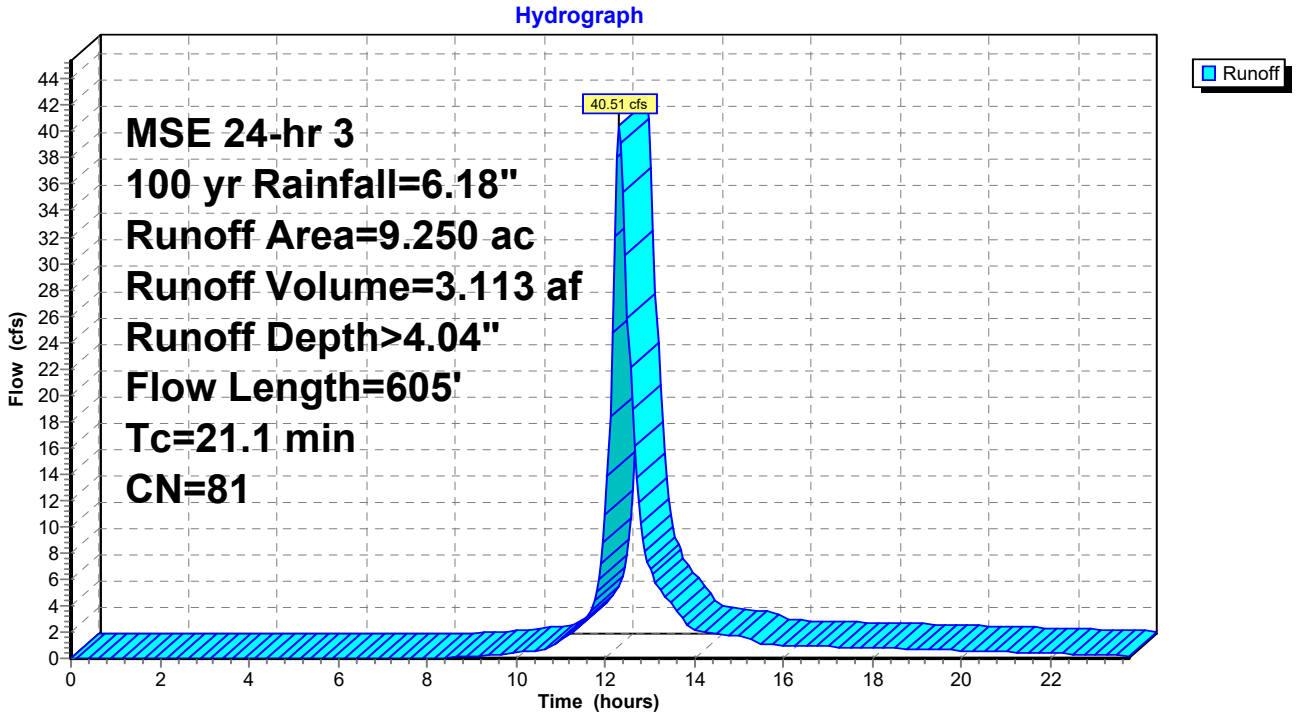
Runoff = 40.51 cfs @ 12.31 hrs, Volume= 3.113 af, Depth> 4.04"
Routed to Link 2L : Northwest Outflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.340	74	grass
*	0.810	98	impervious
*	0.760	71	grassland (per NR 151.123)
	7.340	80	1/2 acre lots
	9.250	81	Weighted Average
	8.440		91.24% Pervious Area
	0.810		8.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	85	0.0100	0.08		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.2	165	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	175		5.00		**Direct Entry,**
1.3	180	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
21.1	605	Total			

Subcatchment 2: Proposed



Summary for Subcatchment 3: Proposed

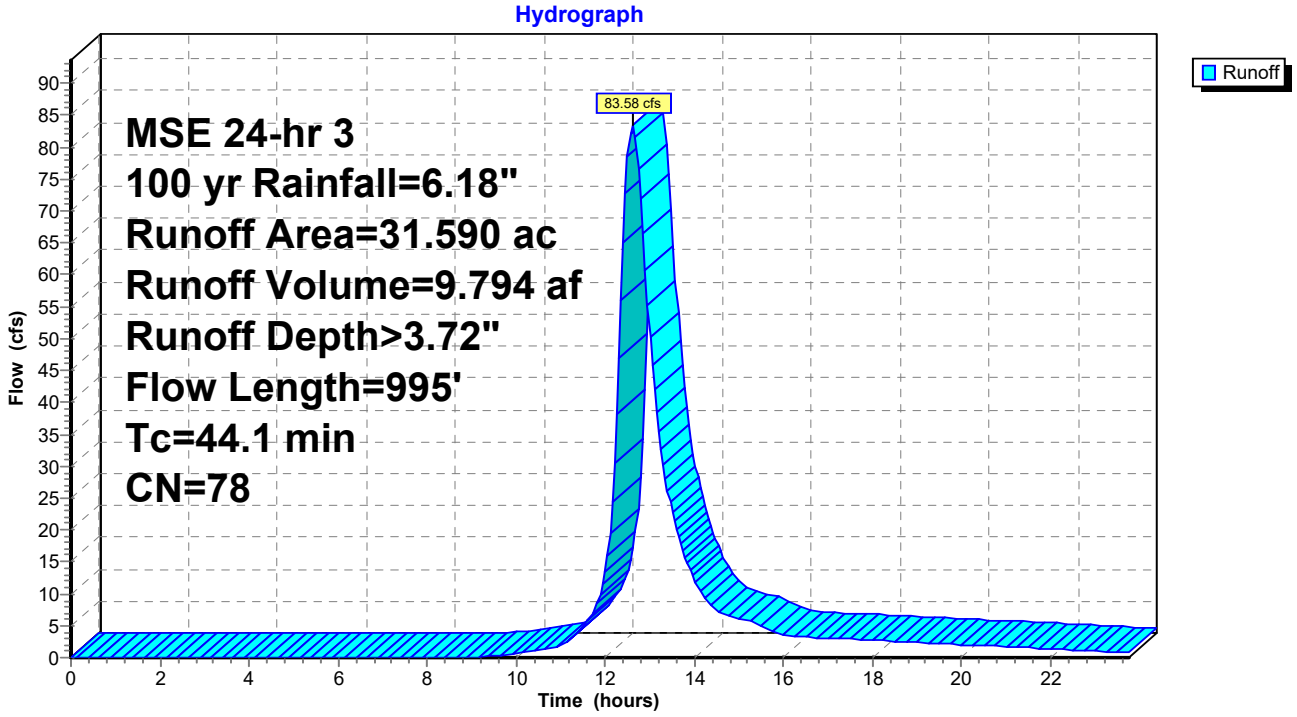
Runoff = 83.58 cfs @ 12.61 hrs, Volume= 9.794 af, Depth> 3.72"
Routed to Pond 3P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	2.060	74	grass
*	2.610	98	impervious
*	10.880	70	woodland (per NR 151.123)
	15.670	80	1/2 acre lots
*	0.370	98	water
	31.590	78	Weighted Average
	28.610		90.57% Pervious Area
	2.980		9.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.0	300	0.0500	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
5.1	695	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
44.1	995	Total			

Subcatchment 3: Proposed



Summary for Subcatchment 4: Proposed

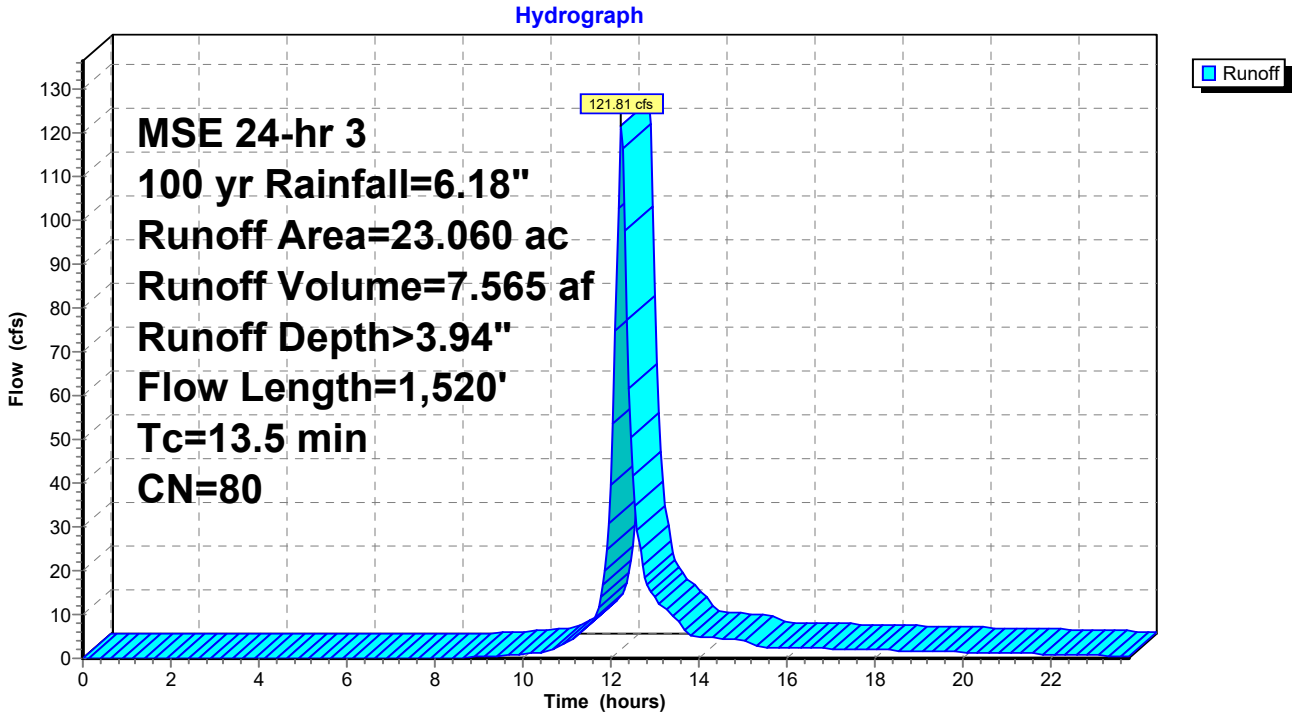
Runoff = 121.81 cfs @ 12.22 hrs, Volume= 7.565 af, Depth> 3.94"
Routed to Pond 5P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	3.390	74	grass
*	2.010	98	impervious
*	2.450	70	woodland (per NR 151.123)
	14.210	80	1/2 acre lots
*	1.000	98	water
	23.060	80	Weighted Average
	20.050		86.95% Pervious Area
	3.010		13.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	110	0.1800	0.26		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.2	215	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.5	65	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	1,130		5.00		**Direct Entry,**
13.5	1,520	Total			

Subcatchment 4: Proposed



Summary for Subcatchment 5: Proposed

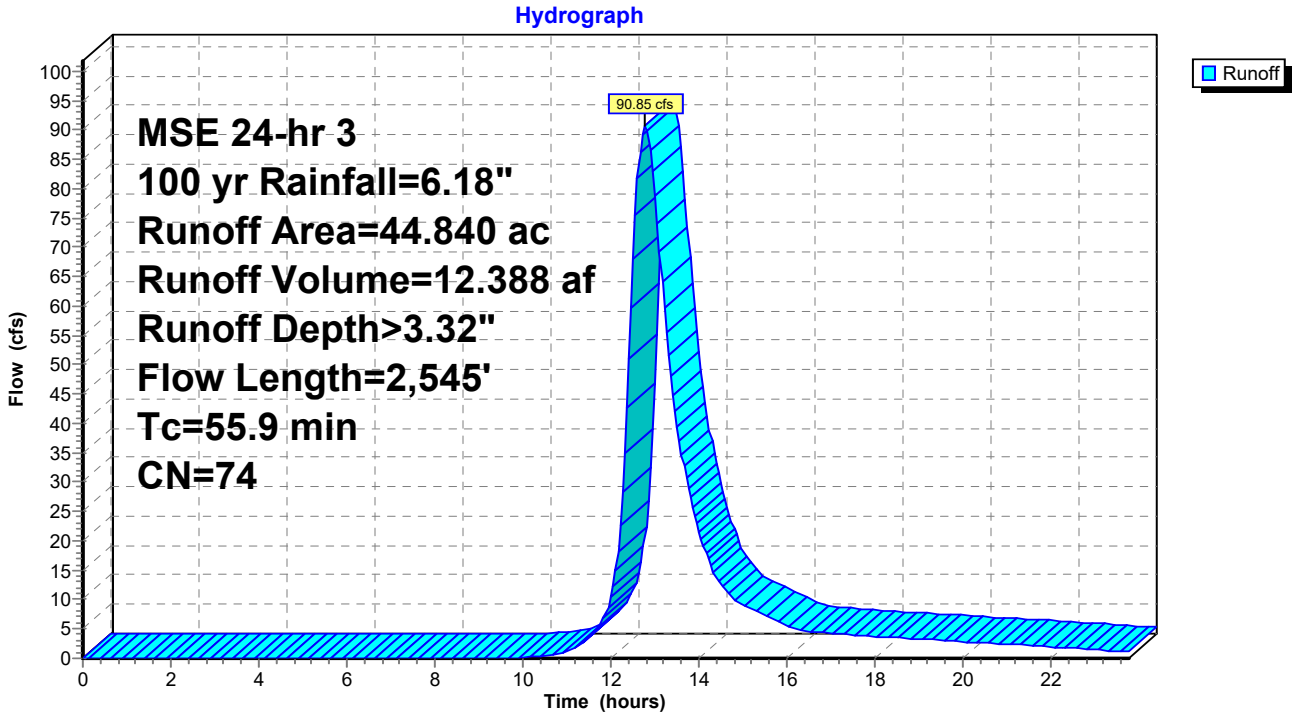
Runoff = 90.85 cfs @ 12.77 hrs, Volume= 12.388 af, Depth> 3.32"
Routed to Pond 5P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	2.050	74	grass
*	1.020	98	impervious
*	22.770	70	woodland (per NR 151.123)
*	15.270	77	cropland (per City Chapter 309)
	3.730	80	1/2 acre lots
	44.840	74	Weighted Average
	43.820		97.73% Pervious Area
	1.020		2.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.0	300	0.0500	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
1.0	280	0.0900	4.83		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
13.4	1,225	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.5	740		5.00		**Direct Entry,**
55.9	2,545	Total			

Subcatchment 5: Proposed



Summary for Subcatchment 6: Proposed

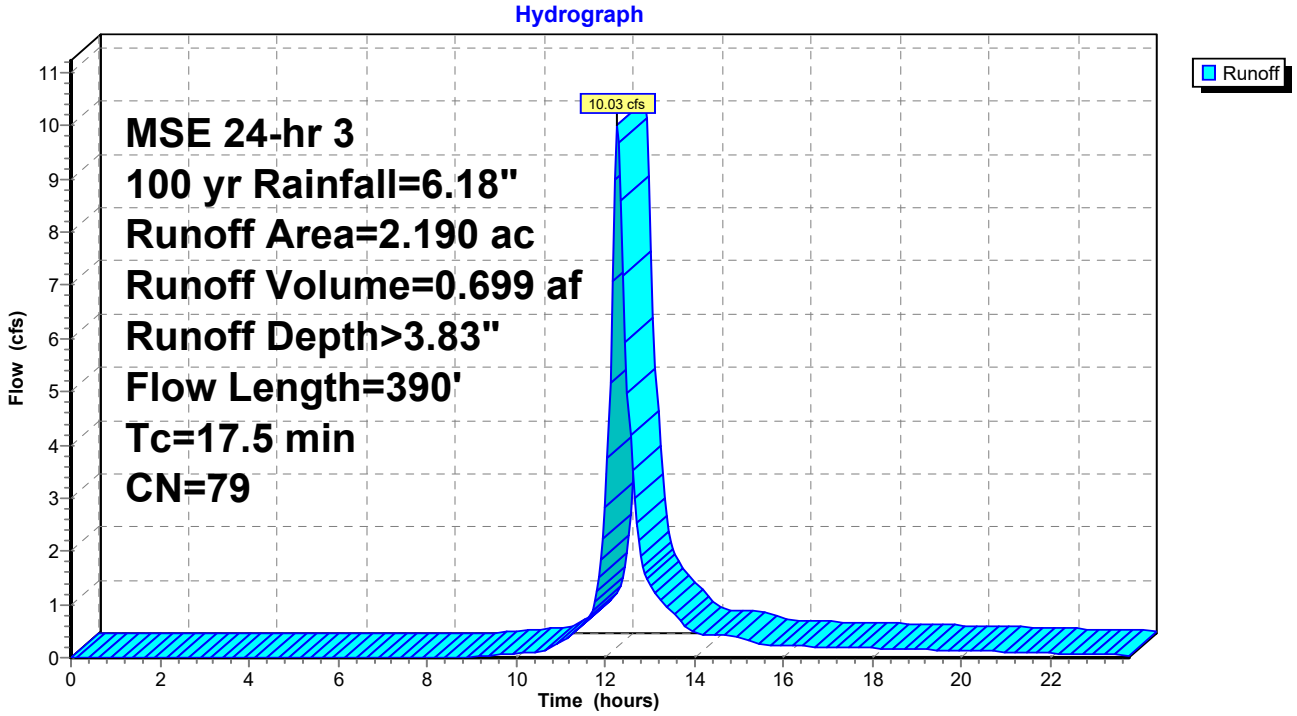
Runoff = 10.03 cfs @ 12.26 hrs, Volume= 0.699 af, Depth> 3.83"
Routed to Pond 6D : Wetland Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.510	74	grass
	1.680	80	1/2 acre lots
	2.190	79	Weighted Average
	2.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	90	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.5	20	0.0800	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.9	280	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.5	390	Total			

Subcatchment 6: Proposed



Summary for Subcatchment 7: Proposed

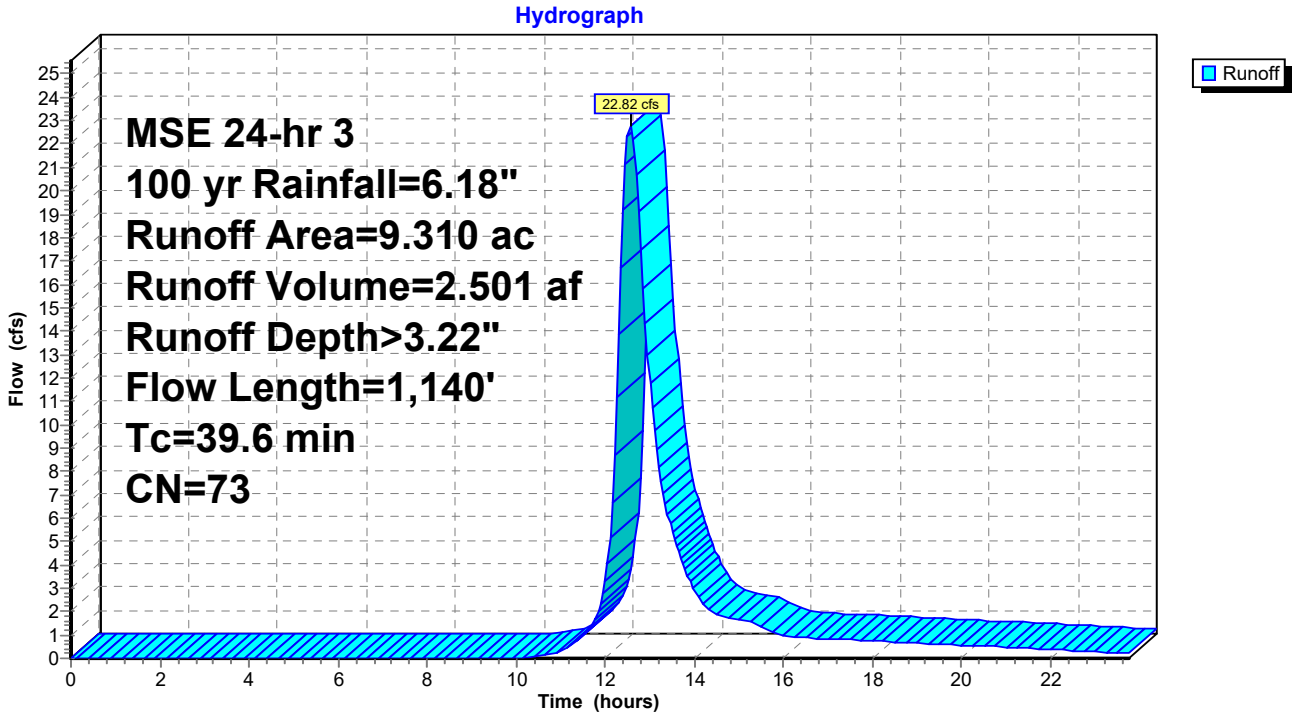
Runoff = 22.82 cfs @ 12.56 hrs, Volume= 2.501 af, Depth> 3.22"
Routed to Pond 7D : Wetland Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.230	74	grass
*	6.560	70	woodland (per NR 151.123)
	2.230	80	1/2 acre lots
*	0.290	71	grassland (per NR 151.123)
	9.310	73	Weighted Average
	9.310		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.5	300	0.1200	0.18		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.70"
0.1	20	0.1200	5.58		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.3	255	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.7	565	0.0030	0.88		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
39.6	1,140	Total			

Subcatchment 7: Proposed



Summary for Subcatchment 8: Proposed

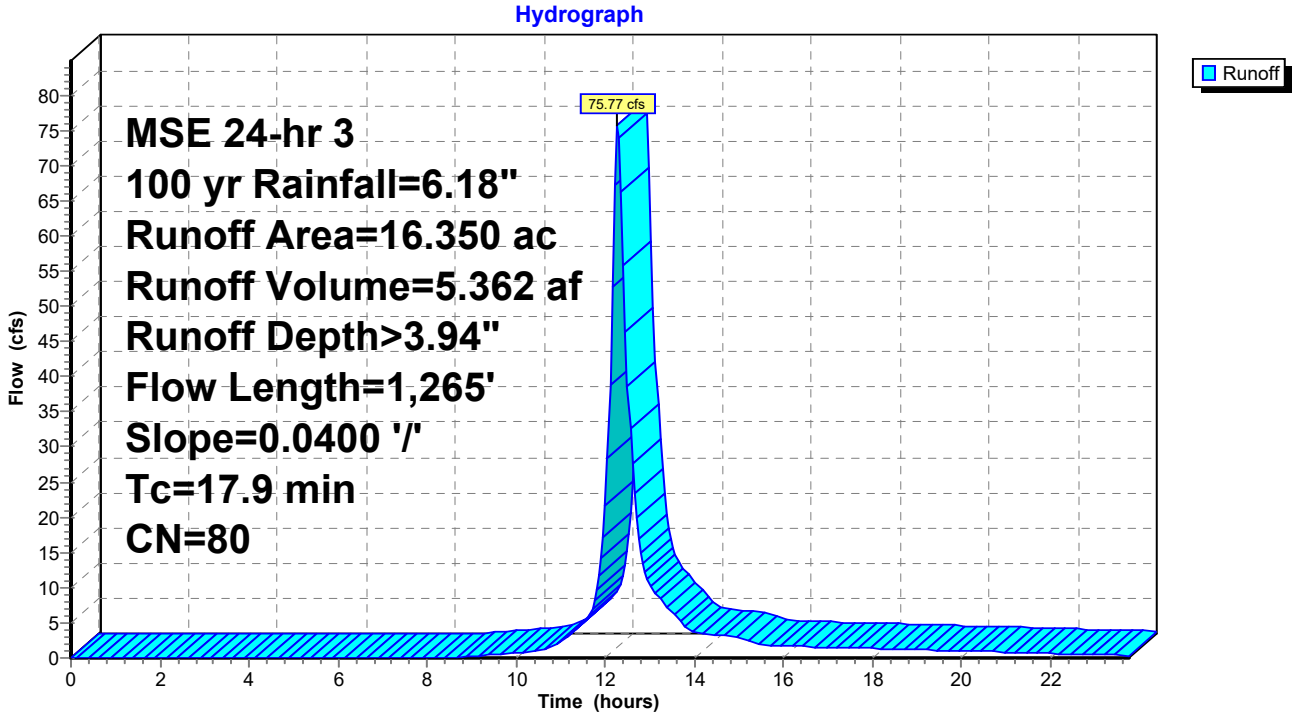
Runoff = 75.77 cfs @ 12.27 hrs, Volume= 5.362 af, Depth> 3.94"
Routed to Pond 8P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.870	74	grass
*	1.270	98	impervious
	9.320	80	1/2 acre lots
*	2.890	71	woodland/grassland comb.
*	1.000	98	water
	16.350	80	Weighted Average
	14.080		86.12% Pervious Area
	2.270		13.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	125	0.0400	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
3.8	1,140		5.00		**Direct Entry,**
17.9	1,265	Total			

Subcatchment 8: Proposed



Summary for Subcatchment 9: Proposed

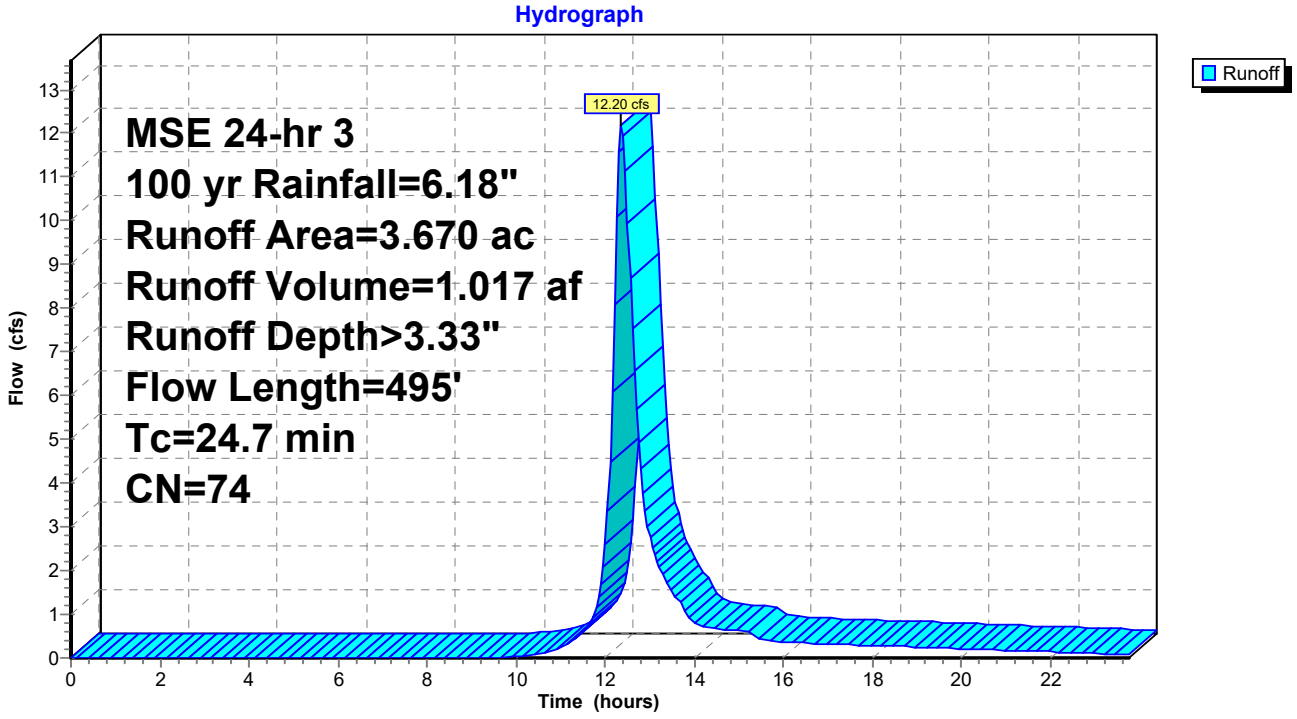
Runoff = 12.20 cfs @ 12.36 hrs, Volume= 1.017 af, Depth> 3.33"
Routed to Pond 9D : Wetland Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.000	74	grass
*	1.680	71	grassland (per NR 151.123)
	0.990	80	1/2 acre lots
	3.670	74	Weighted Average
	3.670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	105	0.0200	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
1.4	15	0.1700	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
7.1	375	0.0030	0.88		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
24.7	495	Total			

Subcatchment 9: Proposed



Summary for Subcatchment 10: Proposed

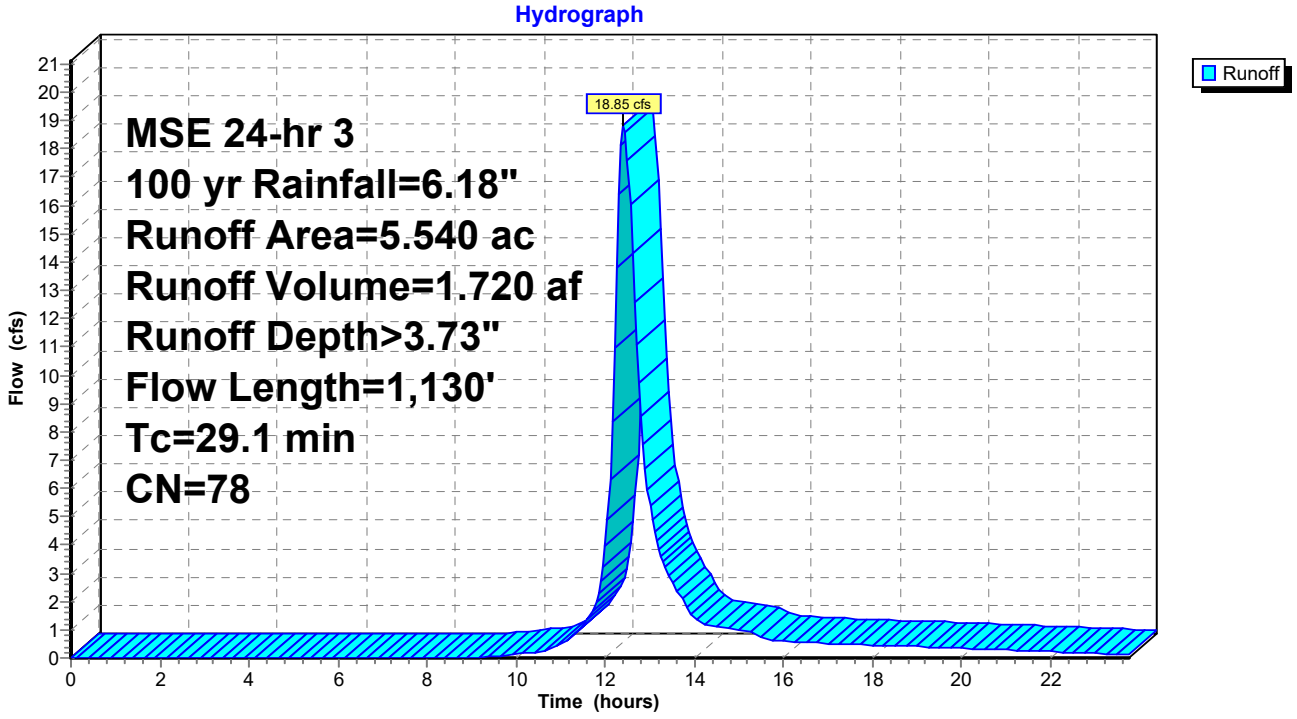
Runoff = 18.85 cfs @ 12.41 hrs, Volume= 1.720 af, Depth> 3.73"
Routed to Link 99 : Proposed Outflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	2.090	74	grass
*	0.790	70	woodland (per NR 151.123)
*	0.500	98	impervious
*	2.160	80	1/2 acre lots
	5.540	78	Weighted Average
	5.040		90.97% Pervious Area
	0.500		9.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.4	215	0.0300	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
4.7	915	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
29.1	1,130	Total			

Subcatchment 10: Proposed



Summary for Subcatchment 11: Proposed

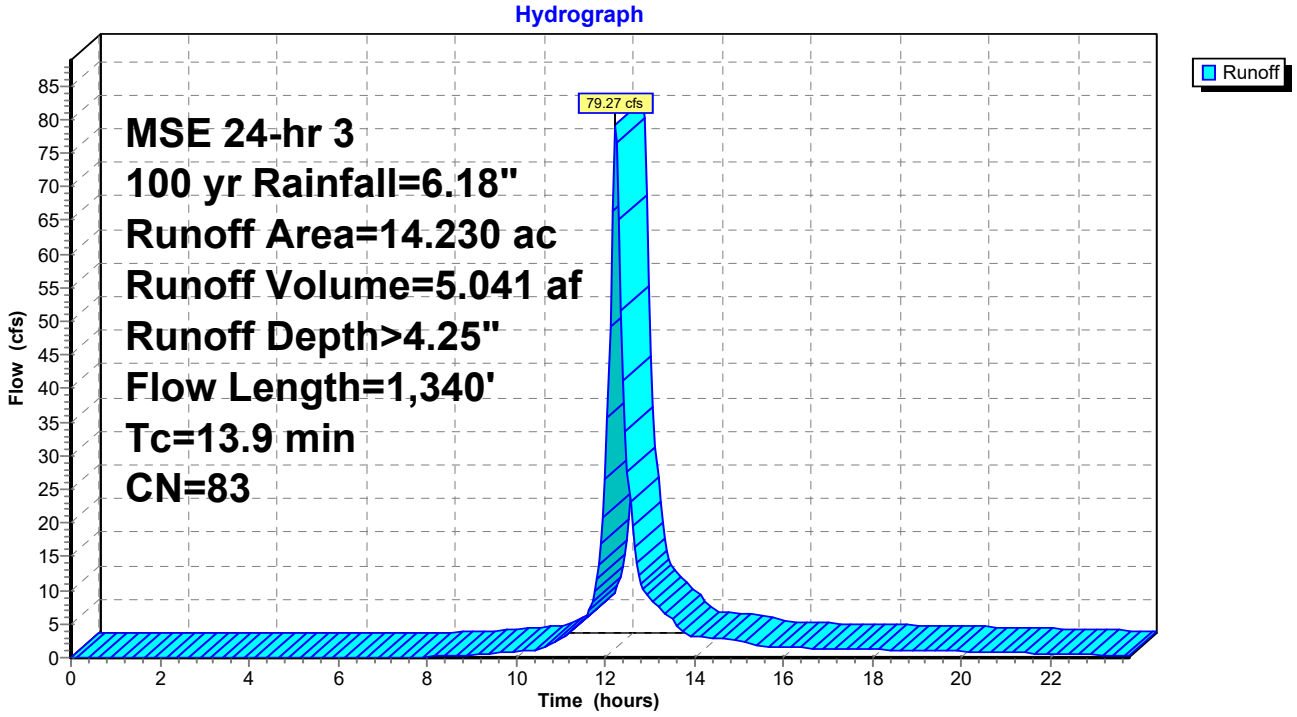
Runoff = 79.27 cfs @ 12.22 hrs, Volume= 5.041 af, Depth> 4.25"
Routed to Pond 11P : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.570	74	grass
*	0.440	98	water
	11.420	80	1/2 acre lots
*	1.800	98	impervious
	14.230	83	Weighted Average
	11.990		84.26% Pervious Area
	2.240		15.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	50	0.0200	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
2.0	385	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
3.0	905		5.00		**Direct Entry,**
13.9	1,340	Total			

Subcatchment 11: Proposed



Summary for Subcatchment 12: Proposed

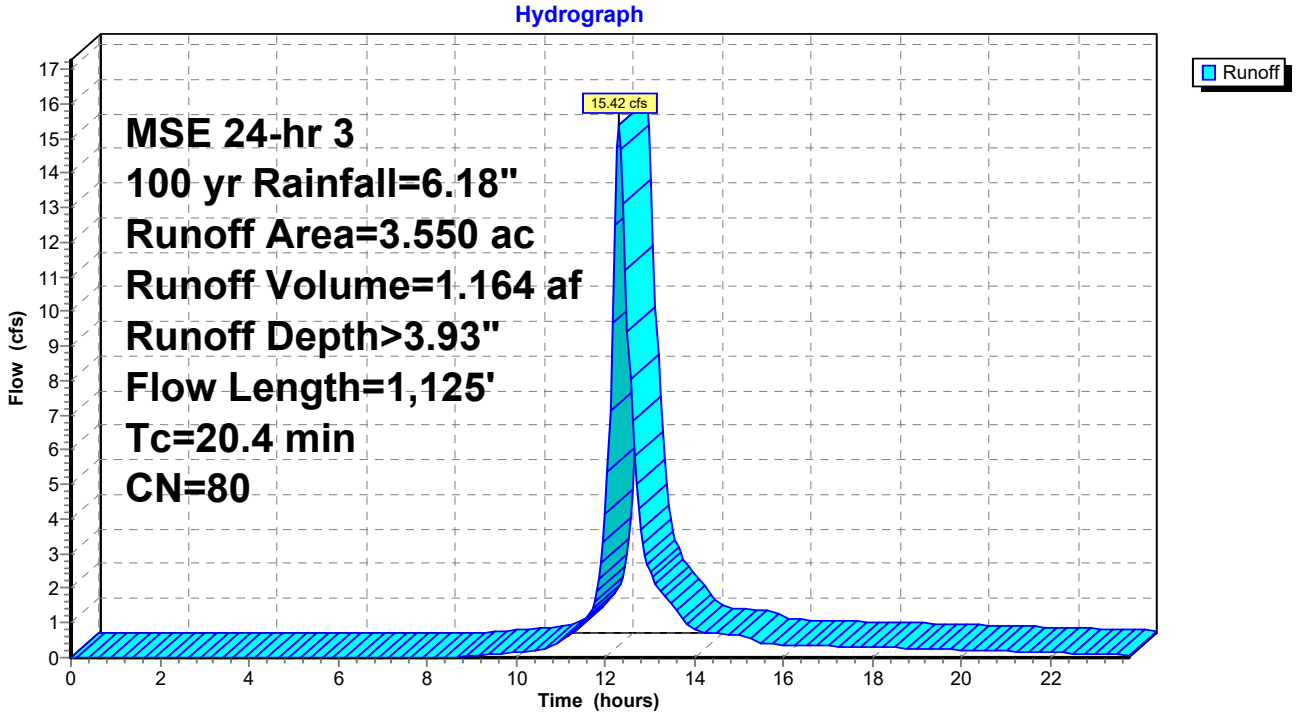
Runoff = 15.42 cfs @ 12.30 hrs, Volume= 1.164 af, Depth> 3.93"
Routed to Link 99 : Proposed Outflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	1.080	74	grass
	2.070	80	1/2 acre lots
*	0.400	98	impervious
	3.550	80	Weighted Average
	3.150		88.73% Pervious Area
	0.400		11.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	60	0.0600	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
6.6	90	0.1400	0.23		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
7.1	975	0.0200	2.28		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
20.4	1,125	Total			

Subcatchment 12: Proposed



Summary for Subcatchment 13: Proposed

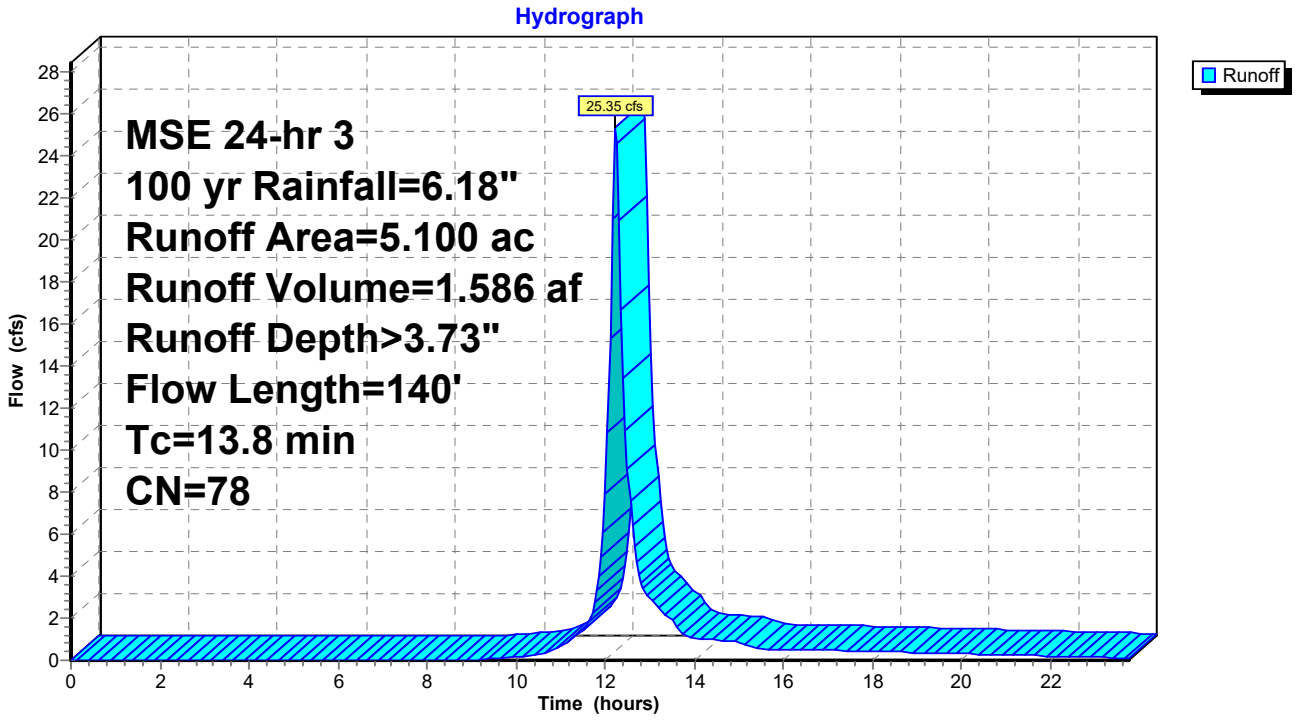
Runoff = 25.35 cfs @ 12.22 hrs, Volume= 1.586 af, Depth> 3.73"
Routed to Link 99 : Proposed Outflow

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
MSE 24-hr 3 100 yr Rainfall=6.18"

	Area (ac)	CN	Description
*	0.060	74	grass
*	1.300	71	grassland (per NR 151.123)
	3.740	80	1/2 acre lots
	5.100	78	Weighted Average
	5.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	85	0.0400	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
3.5	55	0.2500	0.26		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.70"
13.8	140	Total			

Subcatchment 13: Proposed



Summary for Pond 1P: Pond

Inflow Area = 5.550 ac, 11.53% Impervious, Inflow Depth > 4.04" for 100 yr event
Inflow = 23.61 cfs @ 12.32 hrs, Volume= 1.867 af
Outflow = 12.36 cfs @ 12.59 hrs, Volume= 1.846 af, Atten= 48%, Lag= 16.3 min
Primary = 12.36 cfs @ 12.59 hrs, Volume= 1.846 af
Routed to Link 2L : Northwest Outflow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 846.46' @ 12.59 hrs Surf.Area= 0.232 ac Storage= 0.491 af

Plug-Flow detention time= 32.1 min calculated for 1.846 af (99% of inflow)
Center-of-Mass det. time= 25.6 min (830.8 - 805.2)

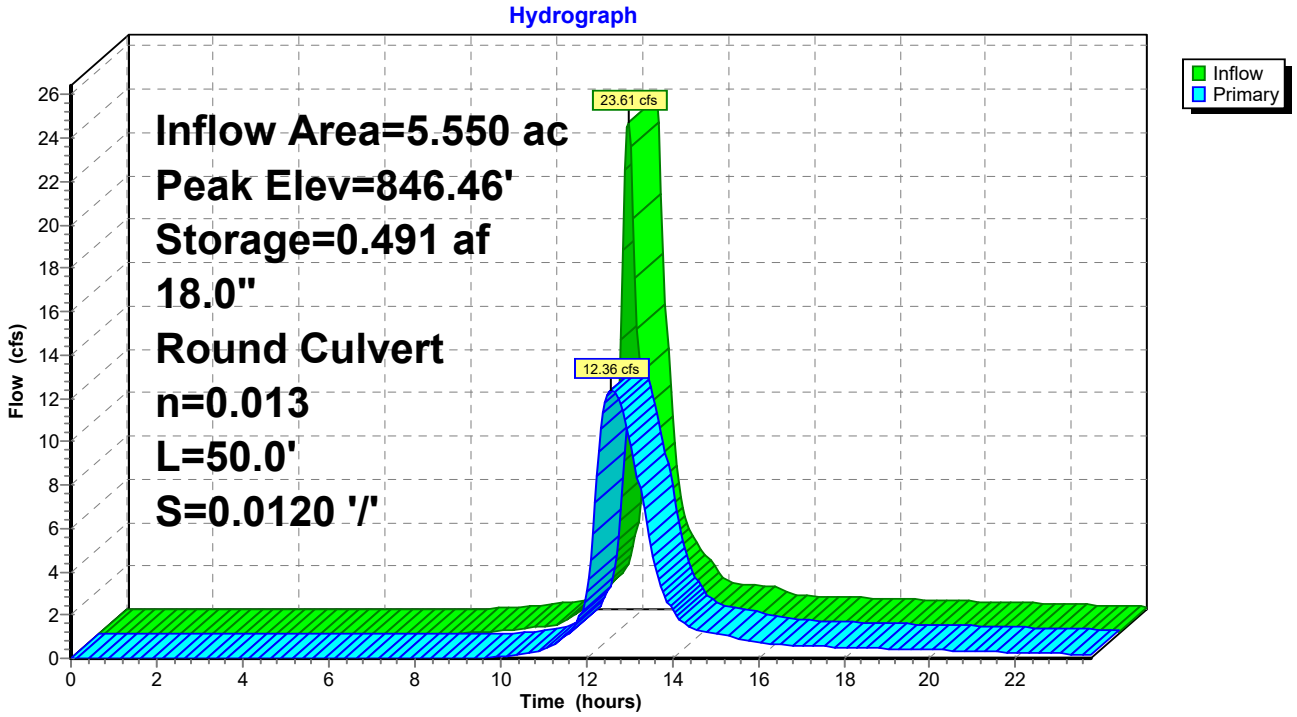
Volume	Invert	Avail.Storage	Storage Description
#1	843.60'	0.792 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
843.60	0.120	0.000	0.000	0.120
844.00	0.130	0.050	0.050	0.130
845.00	0.170	0.150	0.200	0.171
846.00	0.210	0.190	0.389	0.211
847.00	0.260	0.235	0.624	0.262
847.60	0.300	0.168	0.792	0.303

Device	Routing	Invert	Outlet Devices
#1	Primary	843.60'	**18.0" Round Culvert** L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 843.60' / 843.00' S= 0.0120 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=12.35 cfs @ 12.59 hrs HW=846.46' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 12.35 cfs @ 6.99 fps)

Pond 1P: Pond


Hydrograph
Inflow
Primary
23.61 cfs
12.36 cfs
Inflow Area=5.550 ac
Peak Elev=846.46'
Storage=0.491 af
18.0"
Round Culvert
n=0.013
L=50.0'
S=0.0120 '/'
Flow (cfs)
Time (hours)
0
2
4
6
8
10
12
14
16
18
20
22
24
26

Summary for Pond 3P: Pond

Inflow Area = 31.590 ac, 9.43% Impervious, Inflow Depth > 3.72" for 100 yr event
Inflow = 83.58 cfs @ 12.61 hrs, Volume= 9.794 af
Outflow = 31.16 cfs @ 12.88 hrs, Volume= 9.640 af, Atten= 63%, Lag= 16.3 min
Primary = 31.16 cfs @ 12.88 hrs, Volume= 9.640 af
Routed to Pond 5P : Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 848.60' @ 13.31 hrs Surf.Area= 1.334 ac Storage= 3.441 af

Plug-Flow detention time= 68.5 min calculated for 9.640 af (98% of inflow)
Center-of-Mass det. time= 59.9 min (889.1 - 829.1)

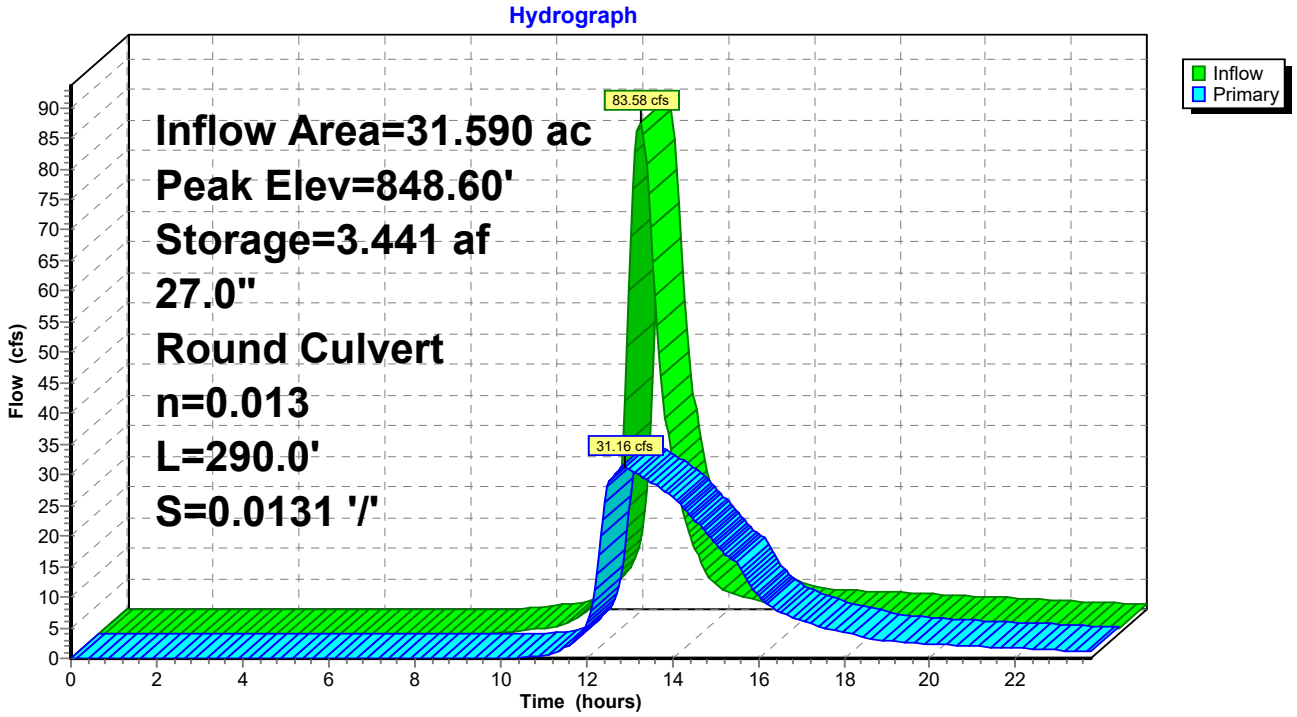
Volume	Invert	Avail.Storage	Storage Description
#1	842.60'	4.065 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
842.60	0.370	0.000	0.000	0.370
843.00	0.390	0.152	0.152	0.390
844.00	0.440	0.415	0.567	0.442
845.00	0.490	0.465	1.032	0.493
846.00	0.550	0.520	1.551	0.554
847.00	0.630	0.590	2.141	0.635
848.00	0.740	0.684	2.825	0.746
849.00	1.820	1.240	4.065	1.826

Device	Routing	Invert	Outlet Devices
#1	Primary	842.60'	**27.0" Round Culvert** L= 290.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 842.60' / 838.80' S= 0.0131 '/' Cc= 0.900 n= 0.013, Flow Area= 3.98 sf

Primary OutFlow Max=30.64 cfs @ 12.88 hrs HW=848.17' TW=843.94' (Dynamic Tailwater)
1=Culvert (Outlet Controls 30.64 cfs @ 7.71 fps)

Pond 3P: Pond


Hydrograph
Inflow Area=31.590 ac
Peak Elev=848.60'
Storage=3.441 af
27.0"
Round Culvert
n=0.013
L=290.0'
S=0.0131 '/'
83.58 cfs
31.16 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
0
2
4
6
8
10
12
14
16
18
20
22

Summary for Pond 5P: Pond

Inflow Area = 99.490 ac, 7.05% Impervious, Inflow Depth > 3.57" for 100 yr event
Inflow = 159.00 cfs @ 12.24 hrs, Volume= 29.593 af
Outflow = 53.82 cfs @ 13.95 hrs, Volume= 28.798 af, Atten= 66%, Lag= 102.4 min
Primary = 42.21 cfs @ 13.97 hrs, Volume= 21.989 af
Routed to Pond 9D : Wetland Depression
Secondary = 11.62 cfs @ 13.84 hrs, Volume= 6.810 af
Routed to Pond 8P : Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 845.00' @ 13.97 hrs Surf.Area= 3.171 ac Storage= 11.254 af

Plug-Flow detention time= 116.0 min calculated for 28.798 af (97% of inflow)
Center-of-Mass det. time= 102.4 min (950.4 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	838.80'	14.502 af	**Custom Stage Data (Conic)** Listed below (Recalc)

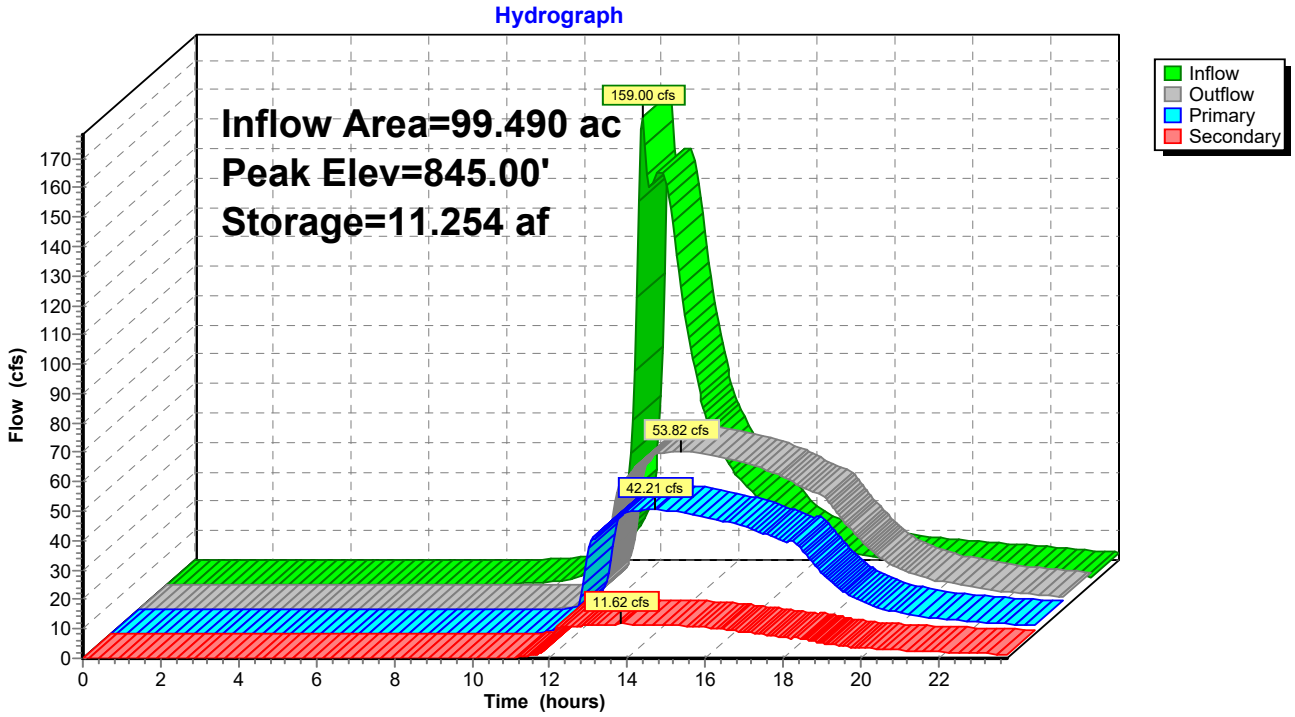
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
838.80	1.000	0.000	0.000	1.000
839.00	1.130	0.213	0.213	1.130
840.00	1.350	1.238	1.451	1.351
841.00	1.500	1.424	2.876	1.502
842.00	1.640	1.569	4.445	1.644
843.00	1.790	1.714	6.160	1.795
844.00	2.620	2.192	8.351	2.626
845.00	3.170	2.891	11.242	3.177
846.00	3.350	3.260	14.502	3.359

Device	Routing	Invert	Outlet Devices
#1	Primary	838.80'	**30.0" Round Culvert** L= 450.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.80' / 836.00' S= 0.0062 '/' Cc= 0.900 n= 0.013, Flow Area= 4.91 sf
#2	Secondary	838.80'	**21.0" Round Culvert** L= 735.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 838.80' / 836.00' S= 0.0038 '/' Cc= 0.900 n= 0.013, Flow Area= 2.41 sf

Primary OutFlow Max=42.21 cfs @ 13.97 hrs HW=845.00' TW=838.44' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 42.21 cfs @ 8.60 fps)

Secondary OutFlow Max=11.61 cfs @ 13.84 hrs HW=845.00' TW=840.49' (Dynamic Tailwater)
↑—**2=Culvert** (Outlet Controls 11.61 cfs @ 4.83 fps)

Pond 5P: Pond


Hydrograph
Inflow Area=99.490 ac
Peak Elev=845.00'
Storage=11.254 af
159.00 cfs
53.82 cfs
42.21 cfs
11.62 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
0
2
4
6
8
10
12
14
16
18
20
22

Summary for Pond 6D: Wetland Depression

Inflow Area = 2.190 ac, 0.00% Impervious, Inflow Depth > 3.83" for 100 yr event
Inflow = 10.03 cfs @ 12.26 hrs, Volume= 0.699 af
Outflow = 4.23 cfs @ 12.55 hrs, Volume= 0.698 af, Atten= 58%, Lag= 17.2 min
Primary = 4.23 cfs @ 12.55 hrs, Volume= 0.698 af
Routed to Pond 9D : Wetland Depression

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 841.67' @ 12.55 hrs Surf.Area= 0.164 ac Storage= 0.179 af

Plug-Flow detention time= 19.1 min calculated for 0.698 af (100% of inflow)
Center-of-Mass det. time= 17.6 min (821.9 - 804.3)

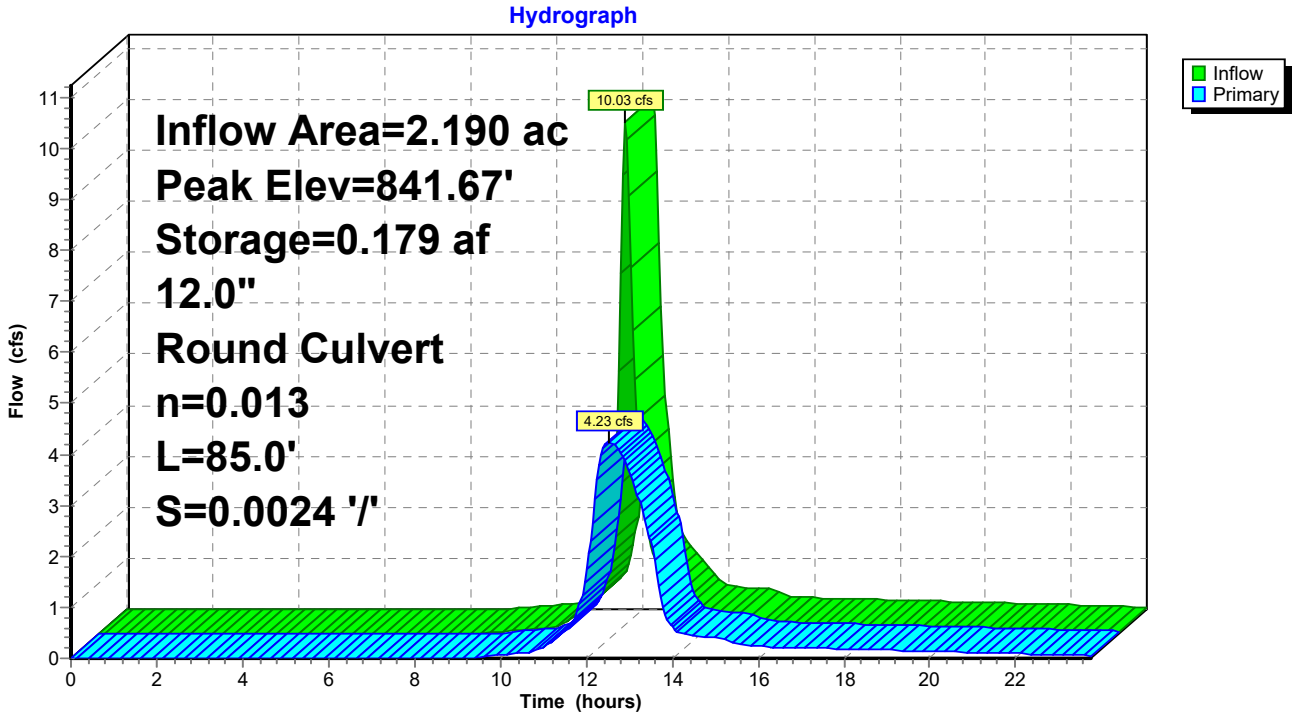
Volume	Invert	Avail.Storage	Storage Description
#1	839.00'	0.865 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
839.00	0.010	0.000	0.000	0.010
840.00	0.040	0.023	0.023	0.040
841.00	0.100	0.068	0.091	0.100
842.00	0.200	0.147	0.238	0.200
843.00	0.320	0.258	0.496	0.321
844.00	0.420	0.369	0.865	0.421

Device	Routing	Invert	Outlet Devices
#1	Primary	839.00'	**12.0" Round Culvert** L= 85.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 839.00' / 838.80' S= 0.0024 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=4.23 cfs @ 12.55 hrs HW=841.67' TW=837.12' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.23 cfs @ 5.38 fps)

Pond 6D: Wetland Depression



Summary for Pond 7D: Wetland Depression

Inflow Area = 9.310 ac, 0.00% Impervious, Inflow Depth > 3.22" for 100 yr event
Inflow = 22.82 cfs @ 12.56 hrs, Volume= 2.501 af
Outflow = 21.95 cfs @ 12.65 hrs, Volume= 2.495 af, Atten= 4%, Lag= 5.2 min
Primary = 21.95 cfs @ 12.65 hrs, Volume= 2.495 af
Routed to Pond 8P : Pond

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 844.89' @ 12.65 hrs Surf.Area= 0.503 ac Storage= 0.150 af

Plug-Flow detention time= 6.2 min calculated for 2.490 af (100% of inflow)
Center-of-Mass det. time= 5.0 min (838.4 - 833.4)

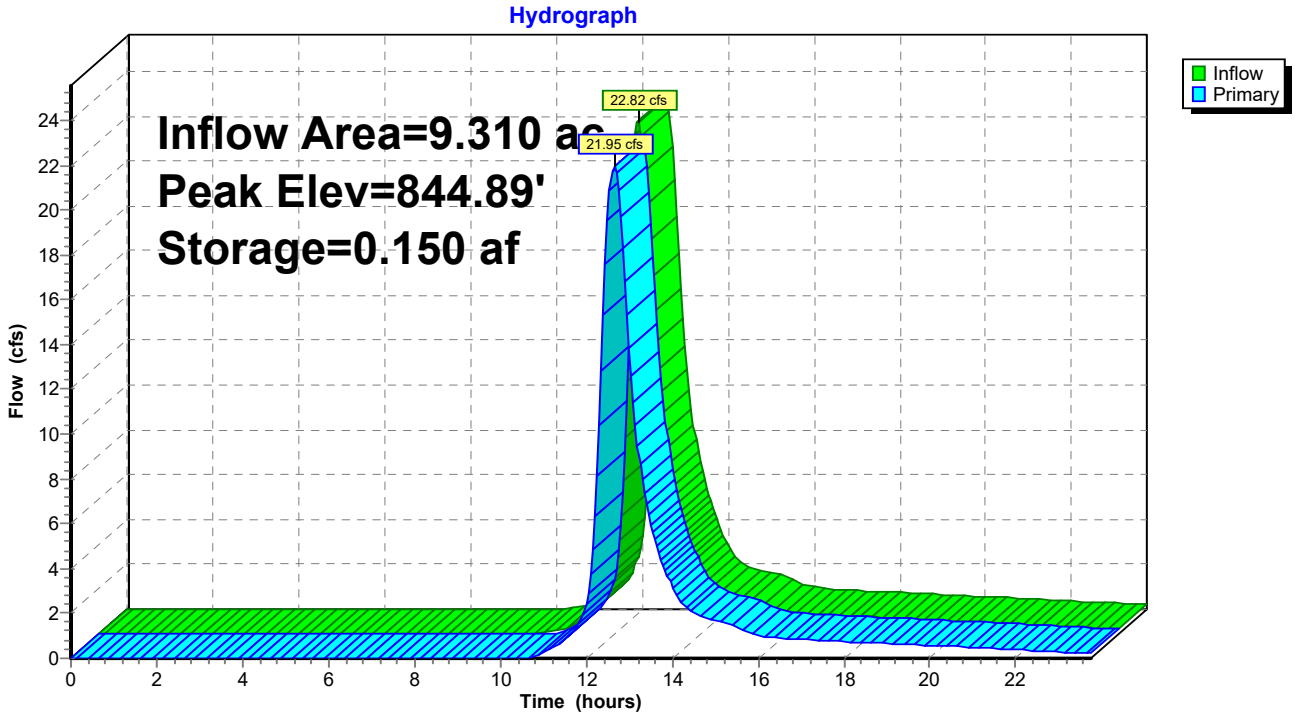
Volume	Invert	Avail.Storage	Storage Description
#1	844.00'	0.686 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
844.00	0.000	0.000	0.000	0.000
845.00	0.630	0.210	0.210	0.630
845.60	0.970	0.476	0.686	0.970

Device	Routing	Invert	Outlet Devices
#1	Primary	844.25'	**26.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	844.50'	**15.0' long + 5.0 '/' SideZ x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=21.93 cfs @ 12.65 hrs HW=844.89' TW=839.51' (Dynamic Tailwater)
1=Orifice/Grate (Weir Controls 11.48 cfs @ 2.62 fps)
2=Broad-Crested Rectangular Weir (Weir Controls 10.45 cfs @ 1.57 fps)

Pond 7D: Wetland Depression



Summary for Pond 8P: Pond

Inflow Area = 25.660 ac, 8.85% Impervious, Inflow Depth > 6.86" for 100 yr event
Inflow = 95.05 cfs @ 12.28 hrs, Volume= 14.667 af
Outflow = 17.89 cfs @ 13.92 hrs, Volume= 12.647 af, Atten= 81%, Lag= 98.3 min
Primary = 1.24 cfs @ 12.95 hrs, Volume= 0.902 af
Routed to Pond 9D : Wetland Depression
Secondary = 16.75 cfs @ 14.11 hrs, Volume= 11.745 af
Routed to Link 99 : Proposed Outflow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 840.50' @ 14.11 hrs Surf.Area= 1.519 ac Storage= 5.500 af

Plug-Flow detention time= 183.2 min calculated for 12.620 af (86% of inflow)
Center-of-Mass det. time= 129.5 min (1,012.4 - 882.8)

Volume	Invert	Avail.Storage	Storage Description
#1	836.00'	7.107 af	**Custom Stage Data (Conic)** Listed below (Recalc)

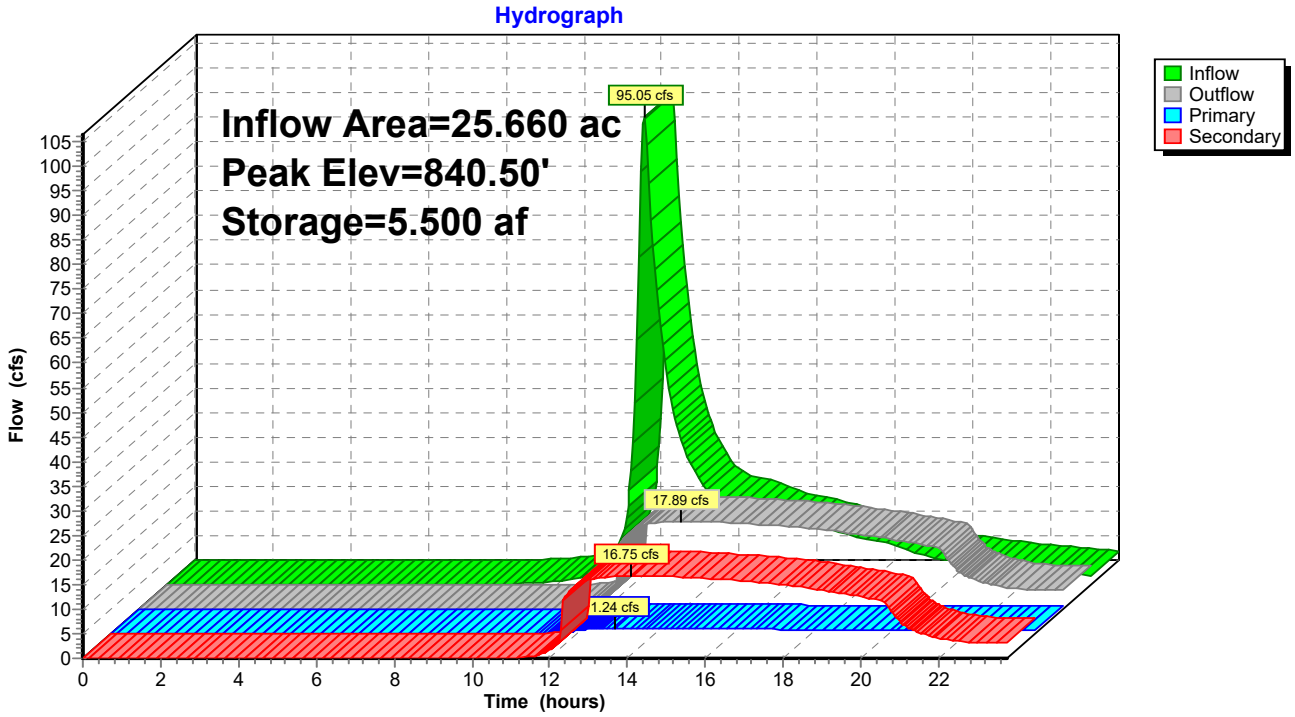
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
836.00	1.000	0.000	0.000	1.000
837.00	1.080	1.040	1.040	1.082
838.00	1.180	1.130	2.169	1.183
839.00	1.290	1.235	3.404	1.295
840.00	1.420	1.354	4.758	1.427
841.00	1.620	1.519	6.277	1.628
841.50	1.700	0.830	7.107	1.708

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**12.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0133 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	836.00'	**5.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	835.50'	**18.0" Round Culvert** L= 75.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 835.50' / 835.00' S= 0.0067 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#4	Device 3	836.00'	**10.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 3	838.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.22 cfs @ 12.95 hrs HW=840.04' TW=837.67' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.22 cfs of 4.94 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 1.22 cfs @ 7.42 fps)

Secondary OutFlow Max=16.75 cfs @ 14.11 hrs HW=840.50' TW=0.00' (Dynamic Tailwater)
└─**3=Culvert** (Barrel Controls 16.75 cfs @ 9.48 fps)
├─**4=Orifice/Grate** (Passes < 5.31 cfs potential flow)
└─**5=Orifice/Grate** (Passes < 53.86 cfs potential flow)

Pond 8P: Pond


Hydrograph
Inflow Area=25.660 ac
Peak Elev=840.50'
Storage=5.500 af
95.05 cfs
17.89 cfs
16.75 cfs
1.24 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
0
2
4
6
8
10
12
14
16
18
20
22

Summary for Pond 9D: Wetland Depression

Inflow Area = 131.010 ac, 7.08% Impervious, Inflow Depth > 2.25" for 100 yr event
Inflow = 49.93 cfs @ 12.40 hrs, Volume= 24.605 af
Outflow = 39.06 cfs @ 16.01 hrs, Volume= 23.093 af, Atten= 22%, Lag= 216.6 min
Primary = 39.06 cfs @ 16.01 hrs, Volume= 23.093 af
Routed to Link 99 : Proposed Outflow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 838.80' @ 16.01 hrs Surf.Area= 2.449 ac Storage= 5.555 af

Plug-Flow detention time= 104.6 min calculated for 23.045 af (94% of inflow)
Center-of-Mass det. time= 80.7 min (1,021.8 - 941.1)

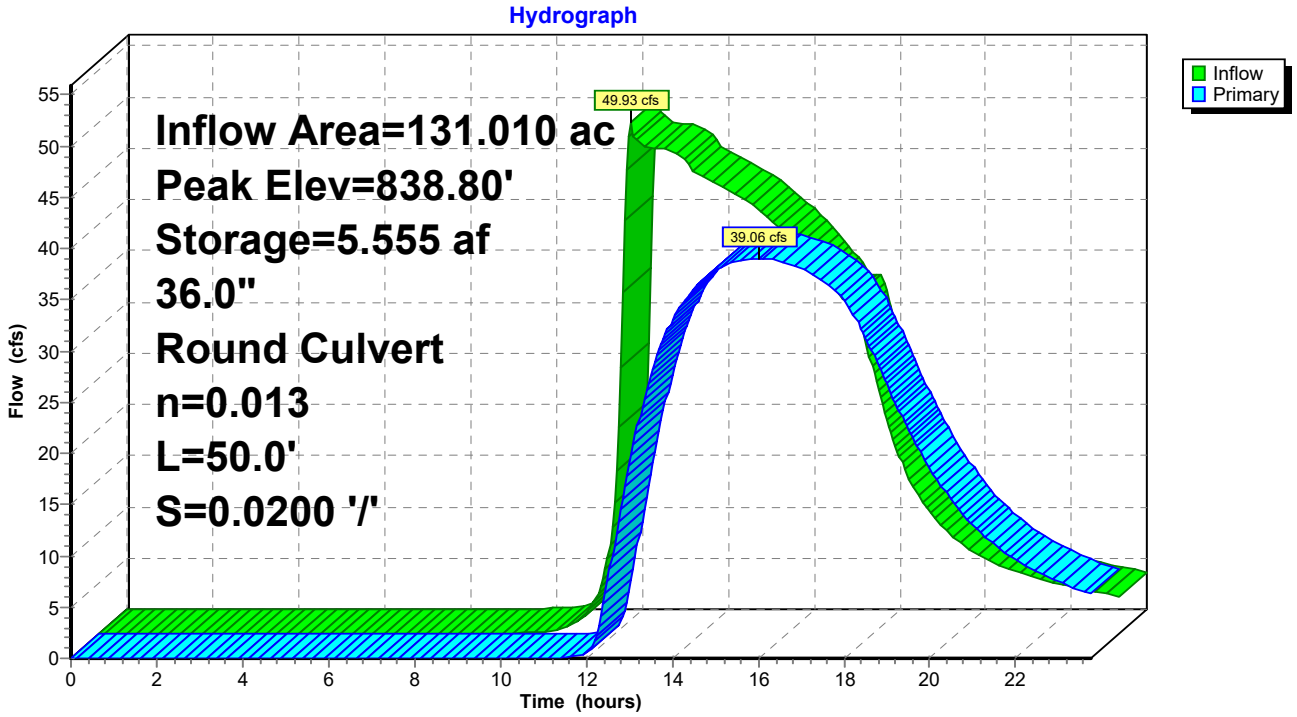
Volume	Invert	Avail.Storage	Storage Description
#1	836.00'	8.685 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
836.00	1.310	0.000	0.000	1.310
837.00	1.980	1.634	1.634	1.980
838.00	2.180	2.079	3.713	2.182
839.00	2.520	2.348	6.061	2.523
840.00	2.730	2.624	8.685	2.735

Device	Routing	Invert	Outlet Devices
#1	Primary	836.00'	**36.0" Round Culvert** L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 836.00' / 835.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf

Primary OutFlow Max=39.06 cfs @ 16.01 hrs HW=838.80' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 39.06 cfs @ 5.69 fps)

Pond 9D: Wetland Depression



Summary for Pond 11P: Pond

Inflow Area = 14.230 ac, 15.74% Impervious, Inflow Depth > 4.25" for 100 yr event
Inflow = 79.27 cfs @ 12.22 hrs, Volume= 5.041 af
Outflow = 16.43 cfs @ 12.65 hrs, Volume= 3.618 af, Atten= 79%, Lag= 26.0 min
Primary = 16.43 cfs @ 12.65 hrs, Volume= 3.618 af
Routed to Link 99 : Proposed Outflow

Routing by Dyn-Stor-Ind method, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs
Peak Elev= 839.98' @ 12.65 hrs Surf.Area= 0.768 ac Storage= 2.661 af

Plug-Flow detention time= 144.0 min calculated for 3.618 af (72% of inflow)
Center-of-Mass det. time= 76.2 min (870.1 - 794.0)

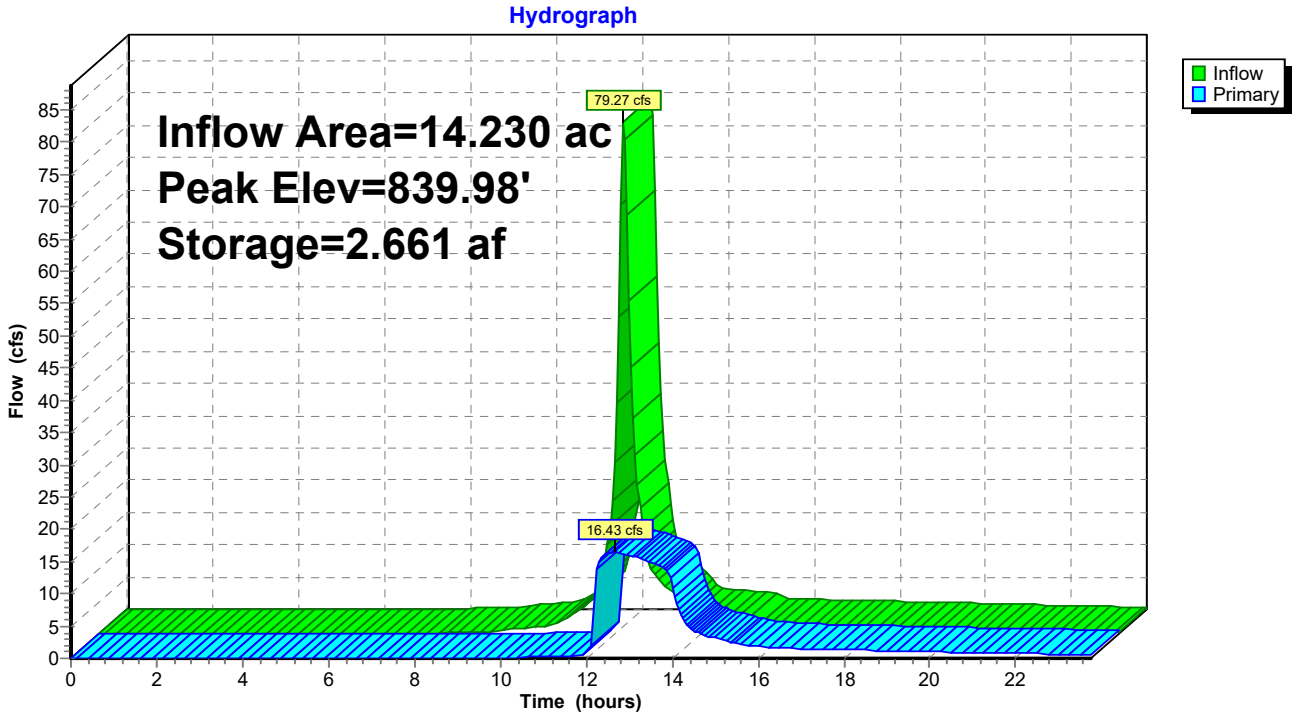
Volume	Invert	Avail.Storage	Storage Description
#1	835.50'	3.481 af	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
835.50	0.440	0.000	0.000	0.440
836.00	0.470	0.227	0.227	0.471
837.00	0.530	0.500	0.727	0.532
838.00	0.610	0.570	1.297	0.613
839.00	0.690	0.650	1.946	0.694
840.00	0.770	0.730	2.676	0.775
841.00	0.840	0.805	3.481	0.847

Device	Routing	Invert	Outlet Devices
#1	Primary	835.50'	**18.0" Round Culvert** L= 50.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 835.50' / 835.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	835.50'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	838.25'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.43 cfs @ 12.65 hrs HW=839.98' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 16.43 cfs @ 9.30 fps)
  ├─**2=Orifice/Grate** (Passes < 0.87 cfs potential flow)
  └─**3=Orifice/Grate** (Passes < 44.77 cfs potential flow)

Pond 11P: Pond

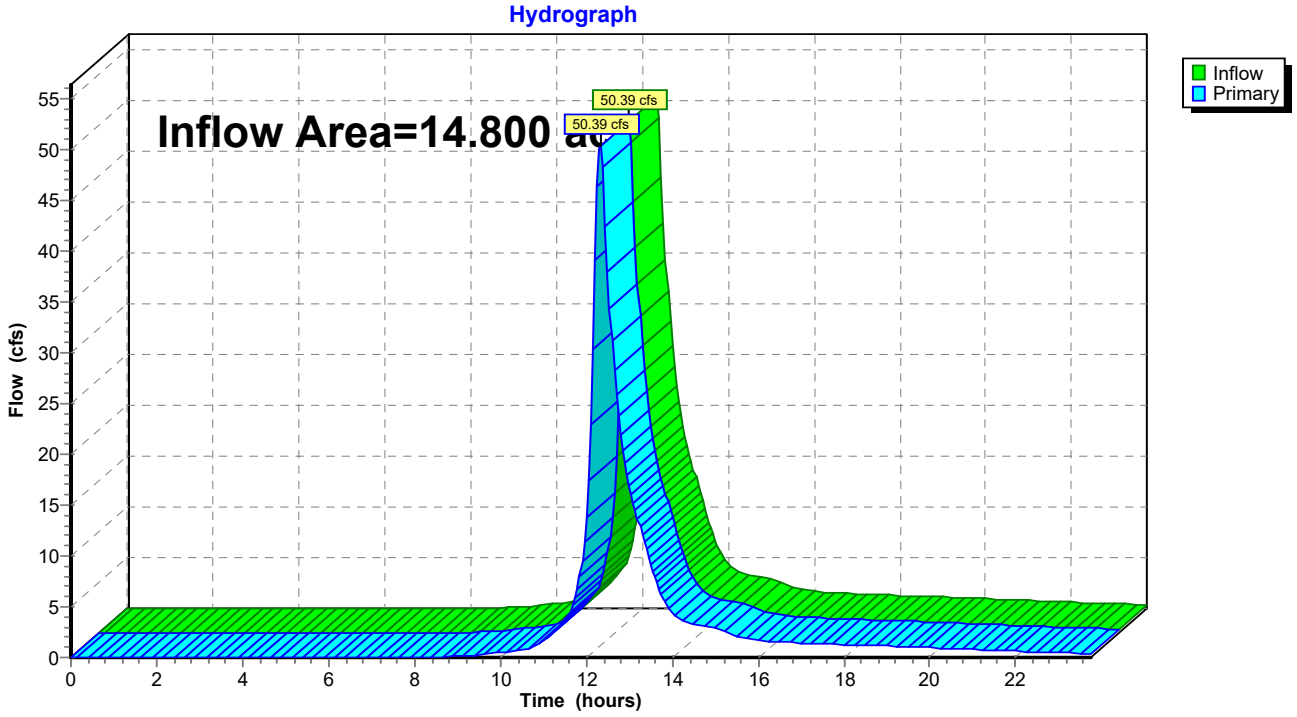


Summary for Link 2L: Northwest Outflow

Inflow Area = 14.800 ac, 9.80% Impervious, Inflow Depth > 4.02" for 100 yr event
Inflow = 50.39 cfs @ 12.32 hrs, Volume= 4.959 af
Primary = 50.39 cfs @ 12.32 hrs, Volume= 4.959 af, Atten= 0%, Lag= 0.0 min
Routed to Link 99 : Proposed Outflow

Primary outflow = Inflow, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs

Link 2L: Northwest Outflow

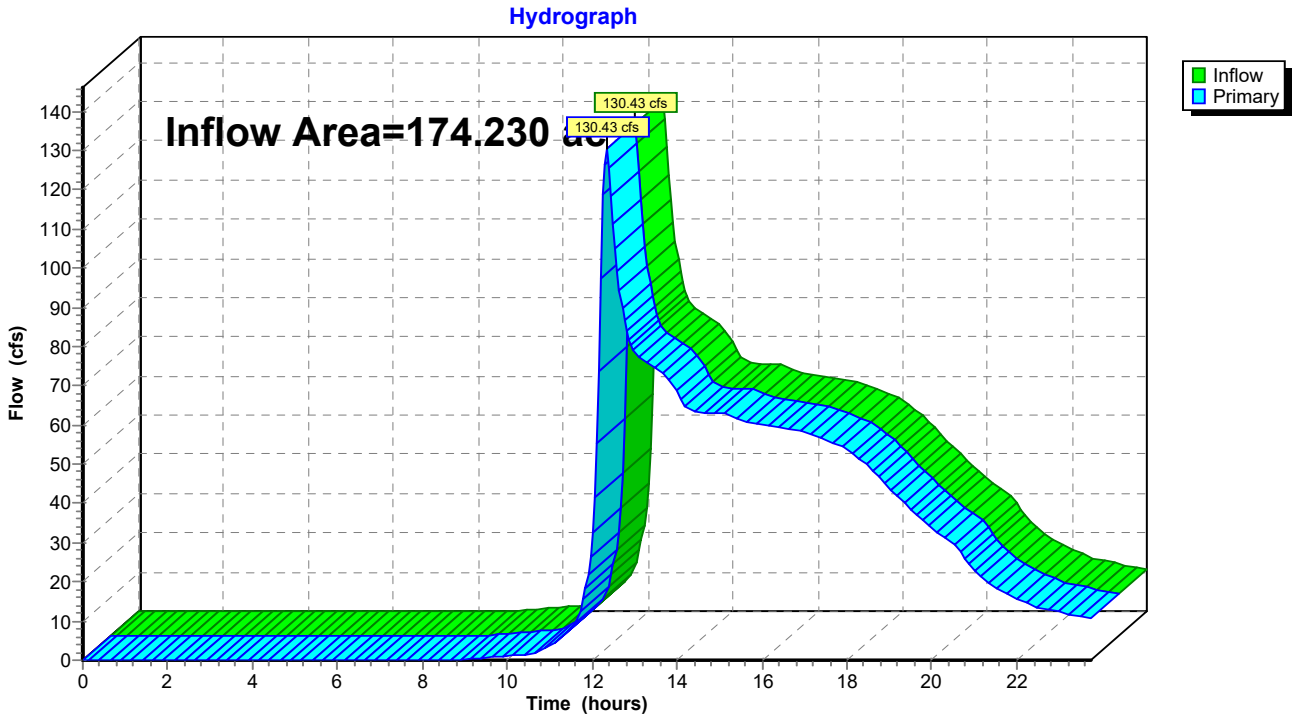


Summary for Link 99: Proposed Outflow

Inflow Area = 174.230 ac, 7.96% Impervious, Inflow Depth > 3.30" for 100 yr event
Inflow = 130.43 cfs @ 12.35 hrs, Volume= 47.885 af
Primary = 130.43 cfs @ 12.35 hrs, Volume= 47.885 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-23.75 hrs, dt= 0.05 hrs

Link 99: Proposed Outflow



Events for Subcatchment 1: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	4.94	0.402	0.87
2 yr	2.70	6.25	0.501	1.08
10 yr	3.81	11.47	0.905	1.96
100 yr	**6.18**	**23.61**	**1.867**	**4.04**

Events for Subcatchment 2: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	8.49	0.670	0.87
2 yr	2.70	10.77	0.836	1.08
10 yr	3.81	19.77	1.509	1.96
100 yr	**6.18**	**40.51**	**3.113**	**4.04**

Events for Subcatchment 3: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	15.00	1.893	0.72
2 yr	2.70	19.53	2.407	0.91
10 yr	3.81	38.36	4.546	1.73
100 yr	**6.18**	**83.58**	**9.794**	**3.72**

Events for Subcatchment 4: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	24.67	1.573	0.82
2 yr	2.70	31.37	1.974	1.03
10 yr	3.81	58.74	3.616	1.88
100 yr	**6.18**	**121.81**	**7.565**	**3.94**

Events for Subcatchment 5: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	13.03	2.046	0.55
2 yr	2.70	17.77	2.680	0.72
10 yr	3.81	38.34	5.407	1.45
100 yr	**6.18**	**90.85**	**12.388**	**3.32**

Events for Subcatchment 6: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	1.92	0.140	0.77
2 yr	2.70	2.47	0.177	0.97
10 yr	3.81	4.73	0.330	1.81
100 yr	**6.18**	**10.03**	**0.699**	**3.83**

Events for Subcatchment 7: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	3.08	0.396	0.51
2 yr	2.70	4.26	0.523	0.67
10 yr	3.81	9.46	1.074	1.38
100 yr	**6.18**	**22.82**	**2.501**	**3.22**

Events for Subcatchment 8: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	15.23	1.114	0.82
2 yr	2.70	19.40	1.399	1.03
10 yr	3.81	36.39	2.563	1.88
100 yr	**6.18**	**75.77**	**5.362**	**3.94**

Events for Subcatchment 9: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	1.76	0.168	0.55
2 yr	2.70	2.41	0.220	0.72
10 yr	3.81	5.20	0.444	1.45
100 yr	**6.18**	**12.20**	**1.017**	**3.33**

Events for Subcatchment 10: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	3.41	0.333	0.72
2 yr	2.70	4.44	0.423	0.92
10 yr	3.81	8.69	0.799	1.73
100 yr	**6.18**	**18.85**	**1.720**	**3.73**

Events for Subcatchment 11: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	18.31	1.160	0.98
2 yr	2.70	22.71	1.430	1.21
10 yr	3.81	40.18	2.511	2.12
100 yr	**6.18**	**79.27**	**5.041**	**4.25**

Events for Subcatchment 12: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	3.10	0.242	0.82
2 yr	2.70	3.96	0.304	1.03
10 yr	3.81	7.40	0.556	1.88
100 yr	**6.18**	**15.42**	**1.164**	**3.93**

Events for Subcatchment 13: Proposed

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1 yr	2.40	4.67	0.307	0.72
2 yr	2.70	6.05	0.390	0.92
10 yr	3.81	11.73	0.736	1.73
100 yr	**6.18**	**25.35**	**1.586**	**3.73**

Events for Pond 1P: Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	4.94	2.96	844.41	0.106
2 yr	6.25	3.92	844.56	0.128
10 yr	11.47	7.40	845.11	0.218
100 yr	**23.61**	**12.36**	**846.46**	**0.491**

Events for Pond 3P: Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	15.00	9.15	843.89	0.520
2 yr	19.53	12.53	844.16	0.638
10 yr	38.36	24.07	845.31	1.184
100 yr	**83.58**	**31.16**	**848.60**	**3.441**

Events for Pond 5P: Pond

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	26.11	16.21	10.24	5.97	840.14	1.644
2 yr	34.30	22.40	14.49	7.93	840.44	2.063
10 yr	69.86	41.43	31.42	10.39	841.82	4.148
100 yr	**159.00**	**53.82**	**42.21**	**11.62**	**845.00**	**11.254**

Events for Pond 6D: Wetland Depression

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	1.92	1.51	839.89	0.019
2 yr	2.47	1.89	840.04	0.025
10 yr	4.73	2.84	840.64	0.060
100 yr	**10.03**	**4.23**	**841.67**	**0.179**

Events for Pond 7D: Wetland Depression

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	3.08	2.90	844.51	0.027
2 yr	4.26	4.11	844.55	0.035
10 yr	9.46	9.18	844.68	0.066
100 yr	**22.82**	**21.95**	**844.89**	**0.150**

Events for Pond 8P: Pond

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	16.48	3.33	0.61	2.72	837.49	1.581
2 yr	21.64	3.99	0.75	3.25	837.95	2.107
10 yr	44.04	12.69	0.91	11.97	838.55	2.831
100 yr	**95.05**	**17.89**	**1.24**	**16.75**	**840.50**	**5.500**

Events for Pond 9D: Wetland Depression

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	11.42	5.82	836.90	1.448
2 yr	15.93	8.42	837.10	1.837
10 yr	33.55	22.48	837.92	3.533
100 yr	**49.93**	**39.06**	**838.80**	**5.555**

Events for Pond 11P: Pond

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
1 yr	18.31	0.52	837.19	0.827
2 yr	22.71	0.58	837.57	1.042
10 yr	40.18	4.05	838.48	1.597
100 yr	**79.27**	**16.43**	**839.98**	**2.661**

Events for Link 2L: Northwest Outflow

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1 yr	10.20	10.20	**0.00**
2 yr	13.25	13.25	0.00
10 yr	25.31	25.31	0.00
100 yr	**50.39**	**50.39**	0.00

Events for Link 99: Proposed Outflow

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1 yr	20.47	20.47	**0.00**
2 yr	26.64	26.64	0.00
10 yr	52.14	52.14	0.00
100 yr	**130.43**	**130.43**	0.00

Hydrograph for Link 99: Proposed Outflow

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
0.00	0.000	2.60	0.000	5.20	0.000	7.80	0.000
0.05	0.000	2.65	0.000	5.25	0.000	7.85	0.000
0.10	0.000	2.70	0.000	5.30	0.000	7.90	0.000
0.15	0.000	2.75	0.000	5.35	0.000	7.95	0.000
0.20	0.000	2.80	0.000	5.40	0.000	8.00	0.000
0.25	0.000	2.85	0.000	5.45	0.000	8.05	0.000
0.30	0.000	2.90	0.000	5.50	0.000	8.10	0.000
0.35	0.000	2.95	0.000	5.55	0.000	8.15	0.000
0.40	0.000	3.00	0.000	5.60	0.000	8.20	0.000
0.45	0.000	3.05	0.000	5.65	0.000	8.25	0.000
0.50	0.000	3.10	0.000	5.70	0.000	8.30	0.000
0.55	0.000	3.15	0.000	5.75	0.000	8.35	0.000
0.60	0.000	3.20	0.000	5.80	0.000	8.40	0.000
0.65	0.000	3.25	0.000	5.85	0.000	8.45	0.000
0.70	0.000	3.30	0.000	5.90	0.000	8.50	0.000
0.75	0.000	3.35	0.000	5.95	0.000	8.55	0.000
0.80	0.000	3.40	0.000	6.00	0.000	8.60	0.000
0.85	0.000	3.45	0.000	6.05	0.000	8.65	0.000
0.90	0.000	3.50	0.000	6.10	0.000	8.70	0.000
0.95	0.000	3.55	0.000	6.15	0.000	8.75	0.000
1.00	0.000	3.60	0.000	6.20	0.000	8.80	0.000
1.05	0.000	3.65	0.000	6.25	0.000	8.85	0.000
1.10	0.000	3.70	0.000	6.30	0.000	8.90	0.000
1.15	0.000	3.75	0.000	6.35	0.000	8.95	0.000
1.20	0.000	3.80	0.000	6.40	0.000	9.00	0.000
1.25	0.000	3.85	0.000	6.45	0.000	9.05	0.000
1.30	0.000	3.90	0.000	6.50	0.000	9.10	0.000
1.35	0.000	3.95	0.000	6.55	0.000	9.15	0.000
1.40	0.000	4.00	0.000	6.60	0.000	9.20	0.000
1.45	0.000	4.05	0.000	6.65	0.000	9.25	0.000
1.50	0.000	4.10	0.000	6.70	0.000	9.30	0.000
1.55	0.000	4.15	0.000	6.75	0.000	9.35	0.000
1.60	0.000	4.20	0.000	6.80	0.000	9.40	0.000
1.65	0.000	4.25	0.000	6.85	0.000	9.45	0.000
1.70	0.000	4.30	0.000	6.90	0.000	9.50	0.000
1.75	0.000	4.35	0.000	6.95	0.000	9.55	0.000
1.80	0.000	4.40	0.000	7.00	0.000	9.60	0.000
1.85	0.000	4.45	0.000	7.05	0.000	9.65	0.000
1.90	0.000	4.50	0.000	7.10	0.000	9.70	0.000
1.95	0.000	4.55	0.000	7.15	0.000	9.75	0.000
2.00	0.000	4.60	0.000	7.20	0.000	9.80	0.000
2.05	0.000	4.65	0.000	7.25	0.000	9.85	0.000
2.10	0.000	4.70	0.000	7.30	0.000	9.90	0.000
2.15	0.000	4.75	0.000	7.35	0.000	9.95	0.000
2.20	0.000	4.80	0.000	7.40	0.000	10.00	0.000
2.25	0.000	4.85	0.000	7.45	0.000	10.05	0.000
2.30	0.000	4.90	0.000	7.50	0.000	10.10	0.000
2.35	0.000	4.95	0.000	7.55	0.000	10.15	0.000
2.40	0.000	5.00	0.000	7.60	0.000	10.20	0.000
2.45	0.000	5.05	0.000	7.65	0.000	10.25	0.000
2.50	0.000	5.10	0.000	7.70	0.000	10.30	0.000
2.55	0.000	5.15	0.000	7.75	0.000	10.35	0.000

Hydrograph for Link 99: Proposed Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
10.40	0.000	13.00	1.540	15.60	4.319	18.20	6.760
10.45	0.000	13.05	1.588	15.65	4.373	18.25	6.800
10.50	0.000	13.10	1.636	15.70	4.427	18.30	6.839
10.55	0.000	13.15	1.683	15.75	4.481	18.35	6.878
10.60	0.000	13.20	1.730	15.80	4.534	18.40	6.917
10.65	0.000	13.25	1.777	15.85	4.588	18.45	6.955
10.70	0.000	13.30	1.824	15.90	4.641	18.50	6.994
10.75	0.000	13.35	1.872	15.95	4.693	18.55	7.032
10.80	0.000	13.40	1.920	16.00	4.746	18.60	7.070
10.85	0.000	13.45	1.968	16.05	4.798	18.65	7.107
10.90	0.000	13.50	2.016	16.10	4.850	18.70	7.145
10.95	0.000	13.55	2.065	16.15	4.901	18.75	7.182
11.00	0.000	13.60	2.115	16.20	4.953	18.80	7.219
11.05	0.000	13.65	2.164	16.25	5.003	18.85	7.256
11.10	0.000	13.70	2.214	16.30	5.054	18.90	7.292
11.15	0.000	13.75	2.264	16.35	5.105	18.95	7.329
11.20	0.001	13.80	2.314	16.40	5.155	19.00	7.365
11.25	0.001	13.85	2.365	16.45	5.204	19.05	7.400
11.30	0.002	13.90	2.415	16.50	5.254	19.10	7.436
11.35	0.002	13.95	2.467	16.55	5.303	19.15	7.472
11.40	0.003	14.00	2.519	16.60	5.352	19.20	7.507
11.45	0.004	14.05	2.571	16.65	5.400	19.25	7.542
11.50	0.006	14.10	2.624	16.70	5.449	19.30	7.577
11.55	0.007	14.15	2.677	16.75	5.496	19.35	7.611
11.60	0.009	14.20	2.731	16.80	5.544	19.40	7.646
11.65	0.012	14.25	2.786	16.85	5.591	19.45	7.680
11.70	0.016	14.30	2.841	16.90	5.638	19.50	7.714
11.75	0.020	14.35	2.896	16.95	5.685	19.55	7.748
11.80	0.026	14.40	2.952	17.00	5.732	19.60	7.782
11.85	0.033	14.45	3.008	17.05	5.778	19.65	7.815
11.90	0.043	14.50	3.065	17.10	5.823	19.70	7.848
11.95	0.057	14.55	3.122	17.15	5.869	19.75	7.881
12.00	0.076	14.60	3.179	17.20	5.914	19.80	7.914
12.05	0.103	14.65	3.236	17.25	5.959	19.85	7.947
12.10	0.143	14.70	3.294	17.30	6.004	19.90	7.979
12.15	0.203	14.75	3.351	17.35	6.048	19.95	8.012
12.20	0.286	14.80	3.409	17.40	6.092	20.00	8.044
12.25	0.385	14.85	3.467	17.45	6.136	20.05	8.076
12.30	0.494	14.90	3.525	17.50	6.180	20.10	8.108
12.35	0.604	14.95	3.583	17.55	6.223	20.15	8.139
12.40	0.711	15.00	3.641	17.60	6.266	20.20	8.171
12.45	0.811	15.05	3.699	17.65	6.308	20.25	8.202
12.50	0.905	15.10	3.757	17.70	6.351	20.30	8.233
12.55	0.991	15.15	3.815	17.75	6.393	20.35	8.264
12.60	1.071	15.20	3.873	17.80	6.435	20.40	8.295
12.65	1.144	15.25	3.930	17.85	6.476	20.45	8.325
12.70	1.212	15.30	3.986	17.90	6.518	20.50	8.356
12.75	1.274	15.35	4.042	17.95	6.559	20.55	8.386
12.80	1.333	15.40	4.098	18.00	6.600	20.60	8.416
12.85	1.388	15.45	4.154	18.05	6.640	20.65	8.446
12.90	1.440	15.50	4.209	18.10	6.680	20.70	8.476
12.95	1.491	15.55	4.264	18.15	6.720	20.75	8.505

Hydrograph for Link 99: Proposed Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)
20.80	8.534
20.85	8.564
20.90	8.593
20.95	8.622
21.00	8.650
21.05	8.679
21.10	8.707
21.15	8.736
21.20	8.764
21.25	8.792
21.30	8.819
21.35	8.847
21.40	8.875
21.45	8.902
21.50	8.929
21.55	8.956
21.60	8.983
21.65	9.010
21.70	9.036
21.75	9.063
21.80	9.089
21.85	9.115
21.90	9.141
21.95	9.167
22.00	9.192
22.05	9.218
22.10	9.243
22.15	9.268
22.20	9.294
22.25	9.318
22.30	9.343
22.35	9.368
22.40	9.392
22.45	9.417
22.50	9.441
22.55	9.465
22.60	9.489
22.65	9.513
22.70	9.536
22.75	9.560
22.80	9.583
22.85	9.606
22.90	9.629
22.95	9.652
23.00	9.675
23.05	9.698
23.10	9.720
23.15	9.742
23.20	9.765
23.25	9.787
23.30	9.809
23.35	9.830
23.40	9.852
23.45	9.874
23.50	9.895
23.55	9.916
23.60	9.937
23.65	9.958
23.70	9.979
23.75	**10.000**

Hydrograph for Link 99: Proposed Outflow

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
0.00	0.000	2.60	0.000	5.20	0.000	7.80	0.000
0.05	0.000	2.65	0.000	5.25	0.000	7.85	0.000
0.10	0.000	2.70	0.000	5.30	0.000	7.90	0.000
0.15	0.000	2.75	0.000	5.35	0.000	7.95	0.000
0.20	0.000	2.80	0.000	5.40	0.000	8.00	0.000
0.25	0.000	2.85	0.000	5.45	0.000	8.05	0.000
0.30	0.000	2.90	0.000	5.50	0.000	8.10	0.000
0.35	0.000	2.95	0.000	5.55	0.000	8.15	0.000
0.40	0.000	3.00	0.000	5.60	0.000	8.20	0.001
0.45	0.000	3.05	0.000	5.65	0.000	8.25	0.001
0.50	0.000	3.10	0.000	5.70	0.000	8.30	0.001
0.55	0.000	3.15	0.000	5.75	0.000	8.35	0.001
0.60	0.000	3.20	0.000	5.80	0.000	8.40	0.001
0.65	0.000	3.25	0.000	5.85	0.000	8.45	0.002
0.70	0.000	3.30	0.000	5.90	0.000	8.50	0.002
0.75	0.000	3.35	0.000	5.95	0.000	8.55	0.002
0.80	0.000	3.40	0.000	6.00	0.000	8.60	0.003
0.85	0.000	3.45	0.000	6.05	0.000	8.65	0.003
0.90	0.000	3.50	0.000	6.10	0.000	8.70	0.004
0.95	0.000	3.55	0.000	6.15	0.000	8.75	0.004
1.00	0.000	3.60	0.000	6.20	0.000	8.80	0.005
1.05	0.000	3.65	0.000	6.25	0.000	8.85	0.005
1.10	0.000	3.70	0.000	6.30	0.000	8.90	0.006
1.15	0.000	3.75	0.000	6.35	0.000	8.95	0.007
1.20	0.000	3.80	0.000	6.40	0.000	9.00	0.007
1.25	0.000	3.85	0.000	6.45	0.000	9.05	0.008
1.30	0.000	3.90	0.000	6.50	0.000	9.10	0.009
1.35	0.000	3.95	0.000	6.55	0.000	9.15	0.010
1.40	0.000	4.00	0.000	6.60	0.000	9.20	0.011
1.45	0.000	4.05	0.000	6.65	0.000	9.25	0.013
1.50	0.000	4.10	0.000	6.70	0.000	9.30	0.014
1.55	0.000	4.15	0.000	6.75	0.000	9.35	0.016
1.60	0.000	4.20	0.000	6.80	0.000	9.40	0.018
1.65	0.000	4.25	0.000	6.85	0.000	9.45	0.020
1.70	0.000	4.30	0.000	6.90	0.000	9.50	0.022
1.75	0.000	4.35	0.000	6.95	0.000	9.55	0.025
1.80	0.000	4.40	0.000	7.00	0.000	9.60	0.028
1.85	0.000	4.45	0.000	7.05	0.000	9.65	0.031
1.90	0.000	4.50	0.000	7.10	0.000	9.70	0.034
1.95	0.000	4.55	0.000	7.15	0.000	9.75	0.037
2.00	0.000	4.60	0.000	7.20	0.000	9.80	0.040
2.05	0.000	4.65	0.000	7.25	0.000	9.85	0.044
2.10	0.000	4.70	0.000	7.30	0.000	9.90	0.048
2.15	0.000	4.75	0.000	7.35	0.000	9.95	0.052
2.20	0.000	4.80	0.000	7.40	0.000	10.00	0.056
2.25	0.000	4.85	0.000	7.45	0.000	10.05	0.061
2.30	0.000	4.90	0.000	7.50	0.000	10.10	0.066
2.35	0.000	4.95	0.000	7.55	0.000	10.15	0.071
2.40	0.000	5.00	0.000	7.60	0.000	10.20	0.076
2.45	0.000	5.05	0.000	7.65	0.000	10.25	0.081
2.50	0.000	5.10	0.000	7.70	0.000	10.30	0.087
2.55	0.000	5.15	0.000	7.75	0.000	10.35	0.093

Hydrograph for Link 99: Proposed Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)	Time (hours)	Primary-Volume (acre-feet)
10.40	0.099	13.00	8.913	15.60	23.373	18.20	35.777
10.45	0.106	13.05	9.235	15.65	23.625	18.25	35.991
10.50	0.112	13.10	9.554	15.70	23.876	18.30	36.202
10.55	0.119	13.15	9.872	15.75	24.127	18.35	36.412
10.60	0.127	13.20	10.189	15.80	24.378	18.40	36.620
10.65	0.135	13.25	10.504	15.85	24.628	18.45	36.826
10.70	0.143	13.30	10.818	15.90	24.878	18.50	37.030
10.75	0.153	13.35	11.130	15.95	25.128	18.55	37.232
10.80	0.163	13.40	11.441	16.00	25.377	18.60	37.431
10.85	0.175	13.45	11.750	16.05	25.626	18.65	37.628
10.90	0.187	13.50	12.057	16.10	25.875	18.70	37.824
10.95	0.201	13.55	12.363	16.15	26.123	18.75	38.017
11.00	0.217	13.60	12.667	16.20	26.371	18.80	38.207
11.05	0.234	13.65	12.969	16.25	26.619	18.85	38.396
11.10	0.252	13.70	13.269	16.30	26.866	18.90	38.582
11.15	0.272	13.75	13.567	16.35	27.113	18.95	38.766
11.20	0.293	13.80	13.863	16.40	27.359	19.00	38.947
11.25	0.316	13.85	14.157	16.45	27.605	19.05	39.127
11.30	0.341	13.90	14.451	16.50	27.850	19.10	39.304
11.35	0.368	13.95	14.739	16.55	28.095	19.15	39.479
11.40	0.397	14.00	15.021	16.60	28.340	19.20	39.651
11.45	0.428	14.05	15.297	16.65	28.584	19.25	39.822
11.50	0.461	14.10	15.569	16.70	28.827	19.30	39.990
11.55	0.497	14.15	15.838	16.75	29.070	19.35	40.156
11.60	0.536	14.20	16.105	16.80	29.313	19.40	40.320
11.65	0.579	14.25	16.370	16.85	29.555	19.45	40.482
11.70	0.627	14.30	16.634	16.90	29.796	19.50	40.641
11.75	0.682	14.35	16.897	16.95	30.036	19.55	40.799
11.80	0.745	14.40	17.159	17.00	30.276	19.60	40.954
11.85	0.821	14.45	17.421	17.05	30.515	19.65	41.107
11.90	0.910	14.50	17.682	17.10	30.754	19.70	41.259
11.95	1.019	14.55	17.943	17.15	30.992	19.75	41.408
12.00	1.153	14.60	18.204	17.20	31.229	19.80	41.556
12.05	1.325	14.65	18.465	17.25	31.465	19.85	41.701
12.10	1.553	14.70	18.726	17.30	31.700	19.90	41.845
12.15	1.858	14.75	18.987	17.35	31.935	19.95	41.987
12.20	2.261	14.80	19.247	17.40	32.169	20.00	42.127
12.25	2.752	14.85	19.508	17.45	32.402	20.05	42.265
12.30	3.274	14.90	19.769	17.50	32.634	20.10	42.401
12.35	3.813	14.95	20.030	17.55	32.866	20.15	42.536
12.40	4.331	15.00	20.291	17.60	33.096	20.20	42.669
12.45	4.821	15.05	20.553	17.65	33.326	20.25	42.800
12.50	5.281	15.10	20.814	17.70	33.555	20.30	42.929
12.55	5.714	15.15	21.074	17.75	33.783	20.35	43.057
12.60	6.124	15.20	21.333	17.80	34.010	20.40	43.184
12.65	6.514	15.25	21.592	17.85	34.236	20.45	43.308
12.70	6.886	15.30	21.849	17.90	34.460	20.50	43.432
12.75	7.244	15.35	22.105	17.95	34.684	20.55	43.553
12.80	7.590	15.40	22.360	18.00	34.906	20.60	43.673
12.85	7.929	15.45	22.614	18.05	35.126	20.65	43.790
12.90	8.261	15.50	22.867	18.10	35.345	20.70	43.903
12.95	8.589	15.55	23.120	18.15	35.562	20.75	44.012

Hydrograph for Link 99: Proposed Outflow (continued)

Time (hours)	Primary-Volume (acre-feet)
20.80	44.118
20.85	44.221
20.90	44.321
20.95	44.418
21.00	44.512
21.05	44.605
21.10	44.695
21.15	44.783
21.20	44.869
21.25	44.954
21.30	45.036
21.35	45.117
21.40	45.197
21.45	45.275
21.50	45.351
21.55	45.426
21.60	45.500
21.65	45.572
21.70	45.643
21.75	45.713
21.80	45.782
21.85	45.850
21.90	45.917
21.95	45.982
22.00	46.047
22.05	46.111
22.10	46.173
22.15	46.235
22.20	46.296
22.25	46.356
22.30	46.416
22.35	46.474
22.40	46.532
22.45	46.589
22.50	46.645
22.55	46.701
22.60	46.755
22.65	46.810
22.70	46.863
22.75	46.917
22.80	46.969
22.85	47.021
22.90	47.073
22.95	47.124
23.00	47.175
23.05	47.225
23.10	47.275
23.15	47.325
23.20	47.374
23.25	47.422
23.30	47.470
23.35	47.518
23.40	47.565
23.45	47.612
23.50	47.659
23.55	47.705
23.60	47.750
23.65	47.796
23.70	47.840
23.75	**47.885**

APPENDIX C

Treatment Analysis

Treatment Analysis Results

Connected Model:

Total Loading (lbs) = 21,277 lbs (from WinSLAMM)

Disconnected Model:

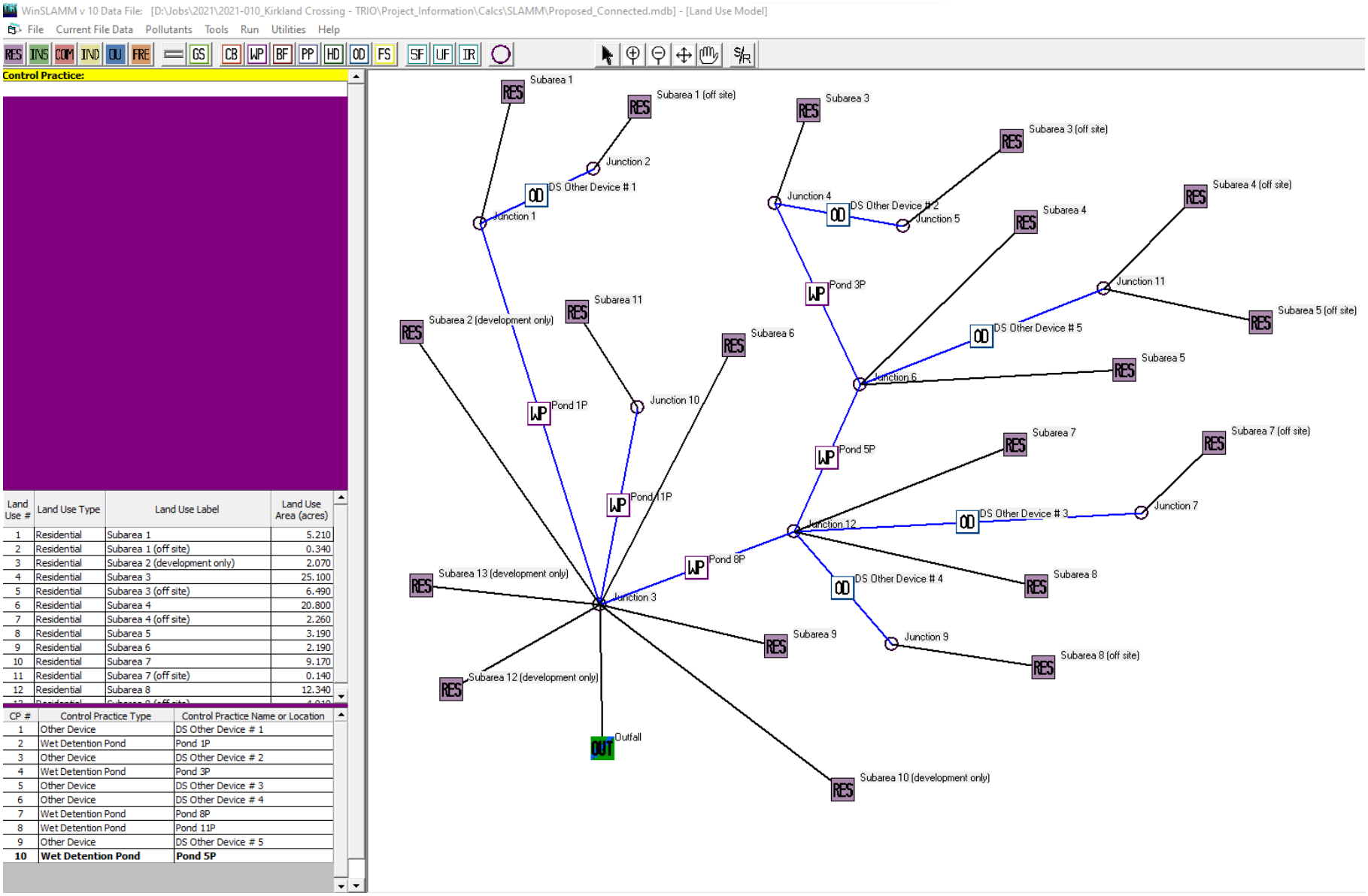
Total Loading after BMPs (lbs) = 5,019 lbs (from WinSLAMM)

Percent Particulate Solids Reduction:

Total lbs Removed = Total Loading - Total Loading after BMPs = 16,258 lbs

% TSS Removed = (Total lbs Removed / Total Loading) x 100 = **76.4%**

Treatment Analysis - Connected Model Run



Land Use #	Land Use Type	Land Use Label	Land Use Area (acres)
1	Residential	Subarea 1	5.210
2	Residential	Subarea 1 (off site)	0.340
3	Residential	Subarea 2 (development only)	2.070
4	Residential	Subarea 3	25.100
5	Residential	Subarea 3 (off site)	6.490
6	Residential	Subarea 4	20.800
7	Residential	Subarea 4 (off site)	2.260
8	Residential	Subarea 5	3.190
9	Residential	Subarea 6	2.190
10	Residential	Subarea 7	9.170
11	Residential	Subarea 7 (off site)	0.140
12	Residential	Subarea 8	12.340

CP #	Control Practice Type	Control Practice Name or Location
1	Other Device	DS Other Device # 1
2	Wet Detention Pond	Pond 1P
3	Other Device	DS Other Device # 2
4	Wet Detention Pond	Pond 3P
5	Other Device	DS Other Device # 3
6	Other Device	DS Other Device # 4
7	Wet Detention Pond	Pond 8P
8	Wet Detention Pond	Pond 11P
9	Other Device	DS Other Device # 5
10	**Wet Detention Pond**	**Pond 5P**

SLAMM for Windows Version 10.4.1

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Connected.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 03-30-2022 Time of run: 16:22:57
Total Area Modeled (acres): 154.520
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	3.407E+06	-	100.0	21277	-
Outfall Total with Controls:	3.408E+06	-0.03%	31.55	6713	68.45%
Annualized Total After Outfall Controls:	3.455E+06			6807	

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Connected.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 03-30-2022 Time: 16:23:07
Site information:

LU# 1 - Residential: Subarea 1 Total area (ac): 5.210
  1 - Roofs 1: 0.560 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  25 - Driveways 1: 0.390 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  31 - Sidewalks 1: 0.130 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  37 - Streets 1: 0.480 ac. Smooth Street Length = 0.273 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01099 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 3.250 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  52 - Small Landscaped Areas 2: 0.240 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  57 - Undeveloped Areas 1: 0.040 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.120 ac. Source Area PSD File:

```
LU# 2 - Residential:  Subarea 1 (off site)     Total area (ac):  0.340
     37 - Streets 1:  0.040 ac.    Smooth    Street Length = 0.023 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.69565 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.300 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 3 - Residential:  Subarea 2 (development only)     Total area (ac):  2.070
     1 - Roofs 1:  0.950 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  0.140 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.220 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.520 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     33 - Sidewalks 3:  0.080 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  0.160 ac.    Smooth    Street Length = 0.091 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.01099 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 4 - Residential:  Subarea 3     Total area (ac):  25.100
     1 - Roofs 1:  1.020 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  1.020 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  1.410 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.240 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.230 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.820 ac.    Smooth    Street Length = 1.036 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.98649 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  11.750 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  1.000 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  6.240 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     70 - Water Body Areas:  0.370 ac.    Source Area PSD File:
LU# 5 - Residential:  Subarea 3 (off site)     Total area (ac):  6.490
     13 - Paved Parking 1:  0.480 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  0.310 ac.    Smooth    Street Length = 0.205 curb-mi    Street Width (assuming two curb-
mi per street mile) = 24.95122 ft
```

Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.410 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 4.640 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Residential: Subarea 4 Total area (ac): 20.800
1 - Roofs 1: 0.930 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.920 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.280 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.210 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.210 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.070 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 1.790 ac. Smooth Street Length = 1.018 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01277 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 10.660 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 2.080 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 1.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.000 ac. Source Area PSD File:
LU# 7 - Residential: Subarea 4 (off site) Total area (ac): 2.260
25 - Driveways 1: 0.150 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.310 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 0.800 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 8 - Residential: Subarea 5 Total area (ac): 3.190
1 - Roofs 1: 0.280 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.260 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.060 ac. Smooth Street Length = 0.034 curb-mi Street Width (assuming two curb-mi per street mile) = 29.11765 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

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     51 - Small Landscaped Areas 1:  1.640 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.950 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 9 - Residential:  Subarea 6     Total area (ac):  2.190
     1 - Roofs 1:  0.220 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.200 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  1.260 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.510 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 10 - Residential:  Subarea 7     Total area (ac):  9.170
     1 - Roofs 1:  0.270 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.250 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  1.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.230 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.290 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     58 - Undeveloped Areas 2:  6.560 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 11 - Residential:  Subarea 7 (off site)     Total area (ac):  0.140
     25 - Driveways 1:  0.040 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.100 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 12 - Residential:  Subarea 8     Total area (ac):  12.340
     1 - Roofs 1:  0.540 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  0.540 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  0.740 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.130 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.120 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.070 ac.    Smooth    Street Length = 0.609 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.99015 ft
          Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  6.220 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  1.230 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
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     57 - Undeveloped Areas 1:  0.750 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     69 - Isolated Areas:  1.000 ac.    Source Area PSD File:
LU# 13 - Residential:  Subarea 8 (off site)     Total area (ac):  4.010
     25 - Driveways 1:  0.460 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.770 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.640 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  2.140 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 14 - Residential:  Subarea 9     Total area (ac):  3.670
     1 - Roofs 1:  0.130 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.120 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.740 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  1.000 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  1.680 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 15 - Residential:  Subarea 10 (development only)     Total area (ac):  0.110
     37 - Streets 1:  0.110 ac.    Smooth    Street Length = 0.063 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.80952 ft
          Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 16 - Residential:  Subarea 11     Total area (ac):  14.230
     1 - Roofs 1:  0.740 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  0.740 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  1.030 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.170 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.170 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.800 ac.    Smooth    Street Length = 1.024 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.0039 ft
          Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  8.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.440 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
```

LU# 17 - Residential: Subarea 12 (development only)   Total area (ac): 0.610
     1 - Roofs 1: 0.270 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.250 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 0.090 ac.   Smooth   Street Length = 0.051 curb-mi   Street Width (assuming two curb-mi per street mile) = 29.11765 ft
            Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 18 - Residential: Subarea 13 (development only)   Total area (ac): 0.940
     1 - Roofs 1: 0.490 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.450 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 19 - Residential: Subarea 5 (off site)   Total area (ac): 41.650
     25 - Driveways 1: 0.960 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     26 - Driveways 2: 0.390 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 1.160 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 2.050 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 21.820 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     58 - Undeveloped Areas 2: 15.270 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

      Control Practice 1: Other Device CP# 1 (DS) - DS Other Device # 1
         Fraction of drainage area served by device (ac) = 1.00
         Particulate Concentration reduction fraction = 1.00
         Filterable Concentration reduction fraction = 1.00
         Runoff volume reduction fraction = 0

      Control Practice 2: Wet Detention Pond CP# 1 (DS) - Pond 1P
         Particle Size Distribution file name: Not needed - calculated by program
         Initial stage elevation (ft):   5
         Peak to Average Flow Ratio: 3.8
         Maximum flow allowed into pond (cfs): No maximum value entered
         Outlet Characteristics:
              Outlet type: Orifice 1
                     1. Orifice diameter (ft):   1.5

2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0200	0.00	0.00
2	4.00	0.0500	0.00	0.00
3	5.00	0.1200	0.00	0.00
4	5.40	0.1300	0.00	0.00
5	6.40	0.1700	0.00	0.00
6	7.40	0.2100	0.00	0.00
7	8.40	0.2600	0.00	0.00
8	9.00	0.3000	0.00	0.00

Control Practice 3: Other Device CP# 2 (DS) - DS Other Device # 2
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 4: Wet Detention Pond CP# 2 (DS) - Pond 3P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:

Outlet type: Orifice 1
1. Orifice diameter (ft): 2.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10

3. Height from datum to bottom of weir opening: 11

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.1800	0.00	0.00
2	4.00	0.2600	0.00	0.00
3	5.00	0.3700	0.00	0.00
4	5.40	0.3900	0.00	0.00
5	6.40	0.4400	0.00	0.00
6	7.40	0.4900	0.00	0.00
7	8.40	0.5500	0.00	0.00
8	9.40	0.6300	0.00	0.00
9	10.40	0.7400	0.00	0.00
10	11.40	1.8200	0.00	0.00

Control Practice 5: Other Device CP# 3 (DS) - DS Other Device # 3
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 6: Other Device CP# 4 (DS) - DS Other Device # 4
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 7: Wet Detention Pond CP# 3 (DS) - Pond 8P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.46
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Orifice 2
1. Orifice diameter (ft): 0.83
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 9.5
Outlet type: Vertical Stand Pipe
1. Stand pipe diameter (ft): 3
2. Stand pipe height above datum (ft): 7

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.5800	0.00	0.00
2	4.00	0.7700	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	6.00	1.0800	0.00	0.00
5	7.00	1.1800	0.00	0.00
6	8.00	1.2900	0.00	0.00
7	9.00	1.4200	0.00	0.00
8	10.00	1.6200	0.00	0.00
9	10.50	1.7000	0.00	0.00

Control Practice 8: Wet Detention Pond CP# 4 (DS) - Pond 11P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10

3. Height from datum to bottom of weir opening: 9.5

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 3

2. Stand pipe height above datum (ft): 7.75

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.2000	0.00	0.00
2	4.00	0.3000	0.00	0.00
3	5.00	0.4400	0.00	0.00
4	5.50	0.4700	0.00	0.00
5	6.50	0.5300	0.00	0.00
6	7.50	0.6100	0.00	0.00
7	8.50	0.6900	0.00	0.00
8	9.50	0.7700	0.00	0.00
9	10.50	0.8400	0.00	0.00

Control Practice 9: Other Device CP# 5 (DS) - DS Other Device # 5

Fraction of drainage area served by device (ac) = 1.00

Particulate Concentration reduction fraction = 1.00

Filterable Concentration reduction fraction = 1.00

Runoff volume reduction fraction = 0

Control Practice 10: Wet Detention Pond CP# 5 (DS) - Pond 5P

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 1.75

2. Number of orifices: 1

3. Invert elevation above datum (ft): 5

Outlet type: Orifice 2

1. Orifice diameter (ft): 2.5

2. Number of orifices: 1

3. Invert elevation above datum (ft): 5

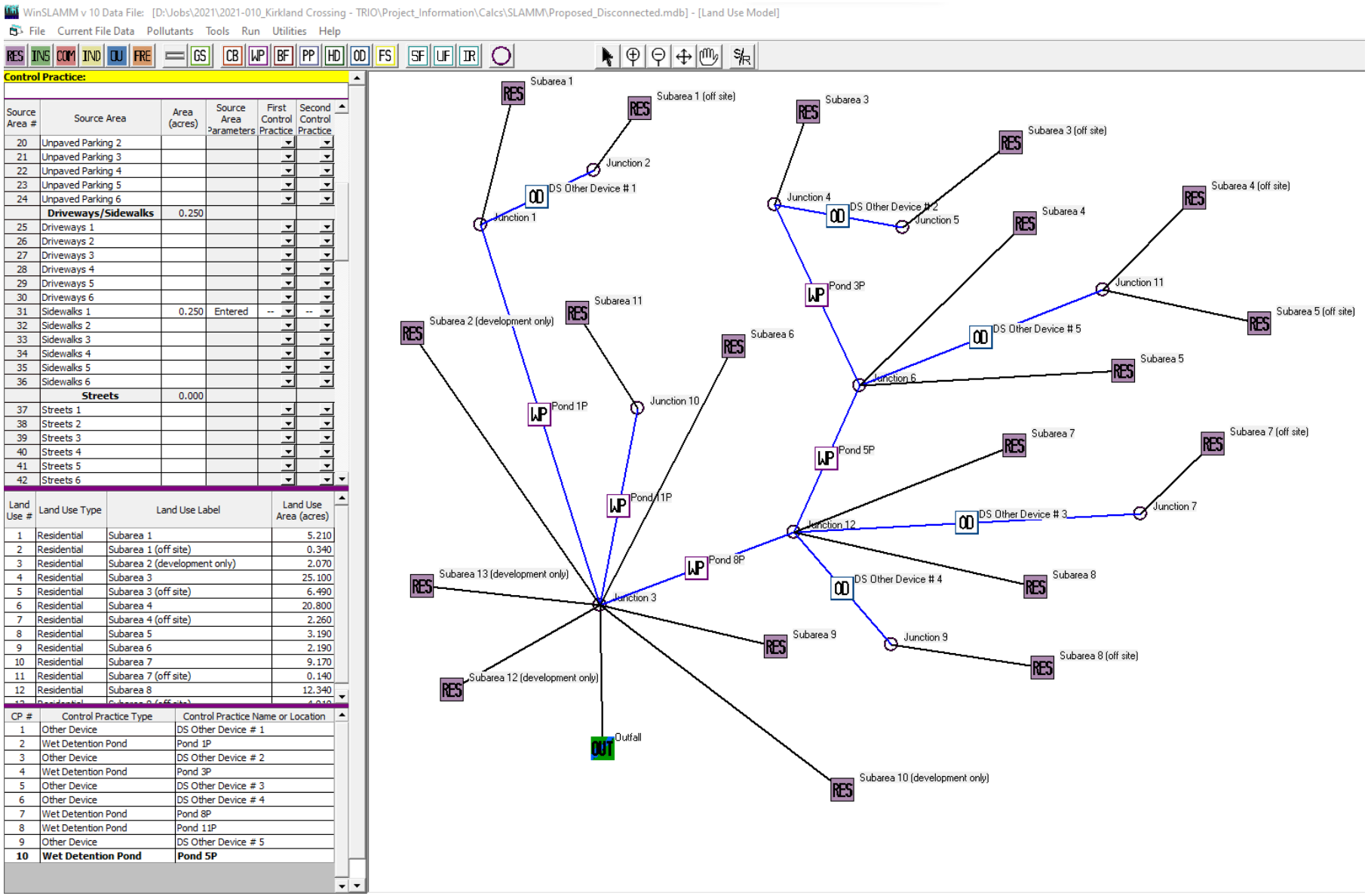
Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 11.2

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.6300	0.00	0.00
2	4.00	0.7800	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	5.20	1.1300	0.00	0.00
5	6.20	1.3500	0.00	0.00
6	7.20	1.5000	0.00	0.00
7	8.20	1.6400	0.00	0.00
8	9.20	1.7900	0.00	0.00
9	10.20	1.9500	0.00	0.00
10	11.20	2.1400	0.00	0.00
11	11.80	2.2100	0.00	0.00

Treatment Analysis - Disconnected Model Run



SLAMM for Windows Version 10.4.1

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Disconnected.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 03-30-2022 Time of run: 16:25:57
Total Area Modeled (acres): 154.520
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	2.667E+06	-	113.5	18898	-
Outfall Total with Controls:	2.669E+06	-0.07%	30.13	5019	73.44%
Annualized Total After Outfall Controls:	2.706E+06			5089	

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Disconnected.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 03-30-2022 Time: 16:26:06
Site information:

LU# 1 - Residential: Subarea 1 Total area (ac): 5.210
  1 - Roofs 1: 0.560 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  25 - Driveways 1: 0.390 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  31 - Sidewalks 1: 0.130 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  37 - Streets 1: 0.480 ac. Smooth Street Length = 0.273 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01099 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 3.250 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  52 - Small Landscaped Areas 2: 0.240 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  57 - Undeveloped Areas 1: 0.040 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.120 ac. Source Area PSD File:

LU# 2 - Residential: Subarea 1 (off site)   Total area (ac): 0.340
     37 - Streets 1: 0.040 ac.   Smooth   Street Length = 0.023 curb-mi   Street Width (assuming two curb-mi per street mile) = 28.69565 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.300 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 3 - Residential: Subarea 2 (development only)   Total area (ac): 2.070
     1 - Roofs 1: 0.950 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.140 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.220 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2: 0.520 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     33 - Sidewalks 3: 0.080 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 0.160 ac.   Smooth   Street Length = 0.091 curb-mi   Street Width (assuming two curb-mi per street mile) = 29.01099 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 4 - Residential: Subarea 3   Total area (ac): 25.100
     1 - Roofs 1: 1.020 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2: 1.020 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 1.410 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.240 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2: 0.230 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 1.820 ac.   Smooth   Street Length = 1.036 curb-mi   Street Width (assuming two curb-mi per street mile) = 28.98649 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 11.750 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 1.000 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 6.240 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

70 - Water Body Areas: 0.370 ac. Source Area PSD File:
LU# 5 - Residential: Subarea 3 (off site) Total area (ac): 6.490
13 - Paved Parking 1: 0.480 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.310 ac. Smooth Street Length = 0.205 curb-mi Street Width (assuming two curb-mi per street mile) = 24.95122 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.410 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 4.640 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Residential: Subarea 4 Total area (ac): 20.800
1 - Roofs 1: 0.930 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.920 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.280 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.210 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.210 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.070 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 1.790 ac. Smooth Street Length = 1.018 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01277 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 10.660 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 2.080 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 1.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.000 ac. Source Area PSD File:
LU# 7 - Residential: Subarea 4 (off site) Total area (ac): 2.260
25 - Driveways 1: 0.150 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.310 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

57 - Undeveloped Areas 1: 0.800 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 8 - Residential: Subarea 5 Total area (ac): 3.190
1 - Roofs 1: 0.280 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.260 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.060 ac. Smooth Street Length = 0.034 curb-mi Street Width (assuming two curb-mi per street mile) = 29.11765 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.640 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 0.950 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 9 - Residential: Subarea 6 Total area (ac): 2.190
1 - Roofs 1: 0.220 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.200 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.260 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.510 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 10 - Residential: Subarea 7 Total area (ac): 9.170
1 - Roofs 1: 0.270 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.250 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.570 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.230 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 0.290 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
58 - Undeveloped Areas 2: 6.560 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 11 - Residential: Subarea 7 (off site) Total area (ac): 0.140
25 - Driveways 1: 0.040 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.100 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 12 - Residential: Subarea 8   Total area (ac): 12.340
     1 - Roofs 1: 0.540 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2: 0.540 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.740 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.130 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2: 0.120 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 1.070 ac.   Smooth   Street Length = 0.609 curb-mi   Street Width (assuming two curb-mi per street mile) = 28.99015 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 6.220 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 1.230 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 0.750 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     69 - Isolated Areas: 1.000 ac.   Source Area PSD File:
LU# 13 - Residential: Subarea 8 (off site)   Total area (ac): 4.010
     25 - Driveways 1: 0.460 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.770 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 0.640 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 2.140 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 14 - Residential: Subarea 9   Total area (ac): 3.670
     1 - Roofs 1: 0.130 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.120 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.740 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 1.000 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 1.680 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 15 - Residential: Subarea 10 (development only)   Total area (ac): 0.110

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     37 - Streets 1:  0.110 ac.    Smooth    Street Length = 0.063 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.80952 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 16 - Residential:  Subarea 11     Total area (ac):  14.230
     1 - Roofs 1:  0.740 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  0.740 ac.    Pitched    Disconnected    Normal Clayey    Low Density    Source Area PSD
File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  1.030 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.170 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.170 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.800 ac.    Smooth    Street Length = 1.024 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.0039 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  8.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.440 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 17 - Residential:  Subarea 12 (development only)     Total area (ac):  0.610
     1 - Roofs 1:  0.270 ac.    Pitched    Disconnected    Normal Clayey    Low Density    Source Area PSD
File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.250 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  0.090 ac.    Smooth    Street Length = 0.051 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.11765 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 18 - Residential:  Subarea 13 (development only)     Total area (ac):  0.940
     1 - Roofs 1:  0.490 ac.    Pitched    Disconnected    Normal Clayey    Low Density    Source Area PSD
File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  0.450 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
LU# 19 - Residential:  Subarea 5 (off site)     Total area (ac):  41.650
     25 - Driveways 1:  0.960 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
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26 - Driveways 2: 0.390 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.160 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 2.050 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 21.820 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
58 - Undeveloped Areas 2: 15.270 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Other Device CP# 1 (DS) - DS Other Device # 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 2: Wet Detention Pond CP# 1 (DS) - Pond 1P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0200	0.00	0.00
2	4.00	0.0500	0.00	0.00
3	5.00	0.1200	0.00	0.00

4	5.40	0.1300	0.00	0.00
5	6.40	0.1700	0.00	0.00
6	7.40	0.2100	0.00	0.00
7	8.40	0.2600	0.00	0.00
8	9.00	0.3000	0.00	0.00

Control Practice 3: Other Device CP# 2 (DS) - DS Other Device # 2
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 4: Wet Detention Pond CP# 2 (DS) - Pond 3P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 2.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 11
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.1800	0.00	0.00
2	4.00	0.2600	0.00	0.00
3	5.00	0.3700	0.00	0.00
4	5.40	0.3900	0.00	0.00
5	6.40	0.4400	0.00	0.00
6	7.40	0.4900	0.00	0.00
7	8.40	0.5500	0.00	0.00
8	9.40	0.6300	0.00	0.00

9	10.40	0.7400	0.00	0.00
10	11.40	1.8200	0.00	0.00

Control Practice 5: Other Device CP# 3 (DS) - DS Other Device # 3
   Fraction of drainage area served by device (ac) = 1.00
   Particulate Concentration reduction fraction = 1.00
   Filterable Concentration reduction fraction = 1.00
   Runoff volume reduction fraction = 0

Control Practice 6: Other Device CP# 4 (DS) - DS Other Device # 4
   Fraction of drainage area served by device (ac) = 1.00
   Particulate Concentration reduction fraction = 1.00
   Filterable Concentration reduction fraction = 1.00
   Runoff volume reduction fraction = 0

Control Practice 7: Wet Detention Pond CP# 3 (DS) - Pond 8P
   Particle Size Distribution file name: Not needed - calculated by program
   Initial stage elevation (ft):   5
   Peak to Average Flow Ratio: 3.8
   Maximum flow allowed into pond (cfs): No maximum value entered
   Outlet Characteristics:
        Outlet type: Orifice 1
               1. Orifice diameter (ft):   0.46
               2. Number of orifices: 1
               3. Invert elevation above datum (ft):   5
        Outlet type: Orifice 2
               1. Orifice diameter (ft):   0.83
               2. Number of orifices: 1
               3. Invert elevation above datum (ft):   5
        Outlet type: Broad Crested Weir
               1. Weir crest length (ft):   10
               2. Weir crest width (ft):   10
               3. Height from datum to bottom of weir opening: 9.5
        Outlet type: Vertical Stand Pipe
               1. Stand pipe diameter (ft):   3
               2. Stand pipe height above datum (ft):   7
   Pond stage and surface area

Entry	Stage	Pond Area	Natural Seepage	Other Outflow

Number	(ft)	(acres)	(in/hr)	(cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.5800	0.00	0.00
2	4.00	0.7700	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	6.00	1.0800	0.00	0.00
5	7.00	1.1800	0.00	0.00
6	8.00	1.2900	0.00	0.00
7	9.00	1.4200	0.00	0.00
8	10.00	1.6200	0.00	0.00
9	10.50	1.7000	0.00	0.00

Control Practice 8: Wet Detention Pond CP# 4 (DS) - Pond 11P

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 9.5

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 3
2. Stand pipe height above datum (ft): 7.75

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.2000	0.00	0.00
2	4.00	0.3000	0.00	0.00
3	5.00	0.4400	0.00	0.00
4	5.50	0.4700	0.00	0.00
5	6.50	0.5300	0.00	0.00

6	7.50	0.6100	0.00	0.00
7	8.50	0.6900	0.00	0.00
8	9.50	0.7700	0.00	0.00
9	10.50	0.8400	0.00	0.00

Control Practice 9: Other Device CP# 5 (DS) - DS Other Device # 5
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 10: Wet Detention Pond CP# 5 (DS) - Pond 5P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1.75
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Orifice 2
1. Orifice diameter (ft): 2.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 11.2
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.6300	0.00	0.00
2	4.00	0.7800	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	5.20	1.1300	0.00	0.00
5	6.20	1.3500	0.00	0.00

6	7.20	1.5000	0.00	0.00
7	8.20	1.6400	0.00	0.00
8	9.20	1.7900	0.00	0.00
9	10.20	1.9500	0.00	0.00
10	11.20	2.1400	0.00	0.00
11	11.80	2.2100	0.00	0.00

Treatment Analysis Results

Connected Model:

Total Loading (lbs) = 21,277 lbs (from WinSLAMM)

Disconnected Model:

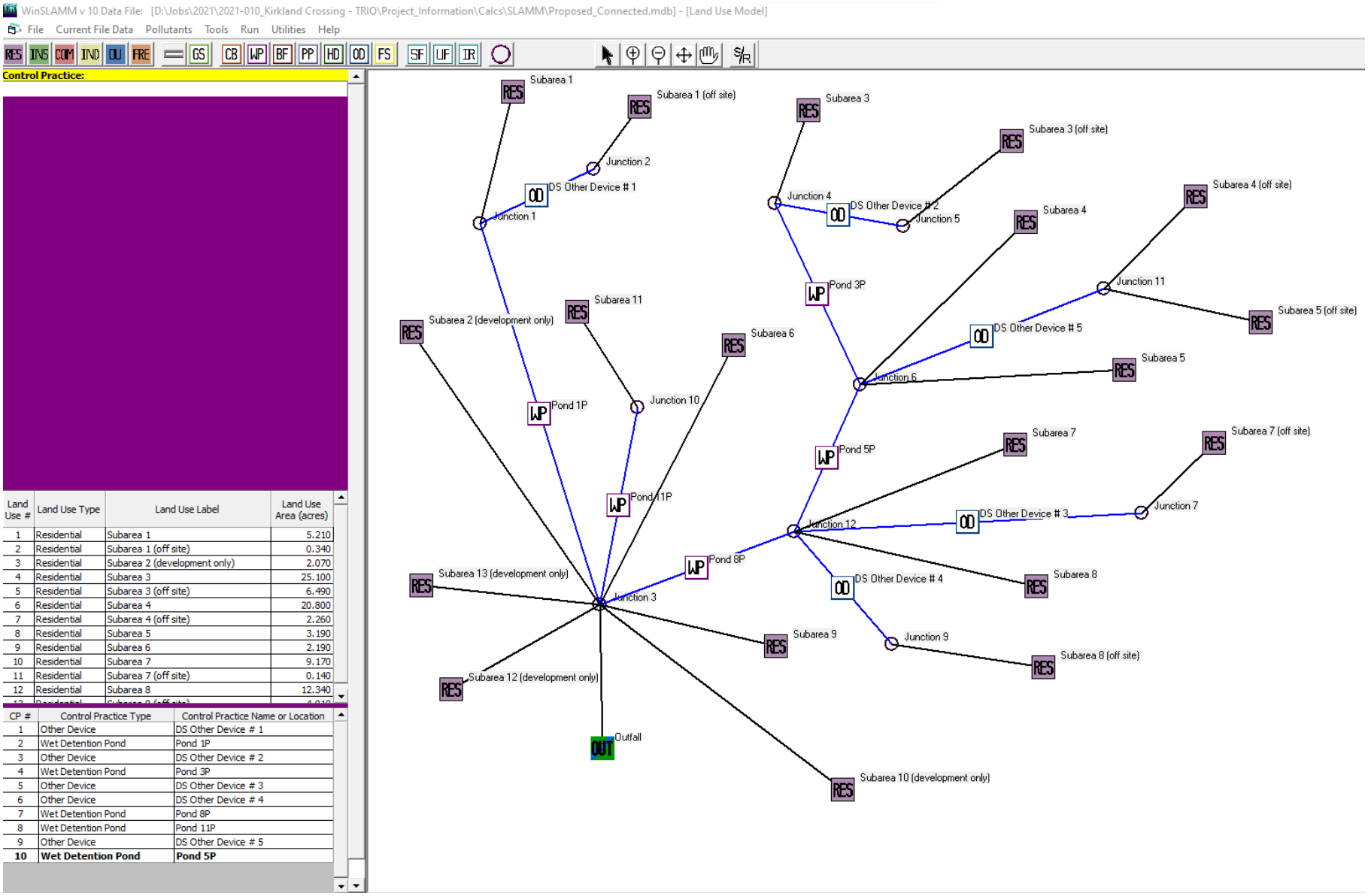
Total Loading after BMPs (lbs) = 5,019 lbs (from WinSLAMM)

Percent Particulate Solids Reduction:

Total lbs Removed = Total Loading - Total Loading after BMPs = 16,258 lbs

% TSS Removed = (Total lbs Removed / Total Loading) x 100 = **76.4%**

Treatment Analysis - Connected Model Run



Land Use #	Land Use Type	Land Use Label	Land Use Area (acres)
1	Residential	Subarea 1	5.210
2	Residential	Subarea 1 (off site)	0.340
3	Residential	Subarea 2 (development only)	2.070
4	Residential	Subarea 3	25.100
5	Residential	Subarea 3 (off site)	6.490
6	Residential	Subarea 4	20.800
7	Residential	Subarea 4 (off site)	2.260
8	Residential	Subarea 5	3.190
9	Residential	Subarea 6	2.190
10	Residential	Subarea 7	9.170
11	Residential	Subarea 7 (off site)	0.140
12	Residential	Subarea 8	12.340

CP #	Control Practice Type	Control Practice Name or Location
1	Other Device	DS Other Device # 1
2	Wet Detention Pond	Pond 1P
3	Other Device	DS Other Device # 2
4	Wet Detention Pond	Pond 3P
5	Other Device	DS Other Device # 3
6	Other Device	DS Other Device # 4
7	Wet Detention Pond	Pond 8P
8	Wet Detention Pond	Pond 11P
9	Other Device	DS Other Device # 5
10	**Wet Detention Pond**	**Pond 5P**

SLAMM for Windows Version 10.4.1

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Connected.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 03-30-2022 Time of run: 16:22:57
Total Area Modeled (acres): 154.520
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	3.407E+06	-	100.0	21277	-
Outfall Total with Controls:	3.408E+06	-0.03%	31.55	6713	68.45%
Annualized Total After Outfall Controls:	3.455E+06			6807	

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Connected.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 03-30-2022 Time: 16:23:07
Site information:

LU# 1 - Residential: Subarea 1 Total area (ac): 5.210
  1 - Roofs 1: 0.560 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  25 - Driveways 1: 0.390 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  31 - Sidewalks 1: 0.130 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  37 - Streets 1: 0.480 ac. Smooth Street Length = 0.273 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01099 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 3.250 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  52 - Small Landscaped Areas 2: 0.240 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  57 - Undeveloped Areas 1: 0.040 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.120 ac. Source Area PSD File:

```
LU# 2 - Residential:  Subarea 1 (off site)     Total area (ac):  0.340
     37 - Streets 1:  0.040 ac.    Smooth    Street Length = 0.023 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.69565 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.300 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 3 - Residential:  Subarea 2 (development only)     Total area (ac):  2.070
     1 - Roofs 1:  0.950 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  0.140 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.220 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.520 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     33 - Sidewalks 3:  0.080 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  0.160 ac.    Smooth    Street Length = 0.091 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.01099 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 4 - Residential:  Subarea 3     Total area (ac):  25.100
     1 - Roofs 1:  1.020 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  1.020 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  1.410 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.240 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.230 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.820 ac.    Smooth    Street Length = 1.036 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.98649 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  11.750 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  1.000 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  6.240 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     70 - Water Body Areas:  0.370 ac.    Source Area PSD File:
LU# 5 - Residential:  Subarea 3 (off site)     Total area (ac):  6.490
     13 - Paved Parking 1:  0.480 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  0.310 ac.    Smooth    Street Length = 0.205 curb-mi    Street Width (assuming two curb-
mi per street mile) = 24.95122 ft
```

Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.410 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 4.640 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Residential: Subarea 4 Total area (ac): 20.800
1 - Roofs 1: 0.930 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.920 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.280 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.210 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.210 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.070 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 1.790 ac. Smooth Street Length = 1.018 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01277 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 10.660 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 2.080 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 1.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.000 ac. Source Area PSD File:
LU# 7 - Residential: Subarea 4 (off site) Total area (ac): 2.260
25 - Driveways 1: 0.150 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.310 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 0.800 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 8 - Residential: Subarea 5 Total area (ac): 3.190
1 - Roofs 1: 0.280 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.260 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.060 ac. Smooth Street Length = 0.034 curb-mi Street Width (assuming two curb-mi per street mile) = 29.11765 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

```
     51 - Small Landscaped Areas 1:  1.640 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.950 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 9 - Residential:  Subarea 6     Total area (ac):  2.190
     1 - Roofs 1:  0.220 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.200 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  1.260 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.510 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 10 - Residential:  Subarea 7     Total area (ac):  9.170
     1 - Roofs 1:  0.270 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.250 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  1.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.230 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.290 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     58 - Undeveloped Areas 2:  6.560 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 11 - Residential:  Subarea 7 (off site)     Total area (ac):  0.140
     25 - Driveways 1:  0.040 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.100 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 12 - Residential:  Subarea 8     Total area (ac):  12.340
     1 - Roofs 1:  0.540 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  0.540 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  0.740 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.130 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.120 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.070 ac.    Smooth    Street Length = 0.609 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.99015 ft
          Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  6.220 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  1.230 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
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     57 - Undeveloped Areas 1:  0.750 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     69 - Isolated Areas:  1.000 ac.    Source Area PSD File:
LU# 13 - Residential:  Subarea 8 (off site)     Total area (ac):  4.010
     25 - Driveways 1:  0.460 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.770 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.640 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  2.140 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 14 - Residential:  Subarea 9     Total area (ac):  3.670
     1 - Roofs 1:  0.130 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.120 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1:  0.740 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  1.000 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  1.680 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 15 - Residential:  Subarea 10 (development only)     Total area (ac):  0.110
     37 - Streets 1:  0.110 ac.    Smooth    Street Length = 0.063 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.80952 ft
          Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 16 - Residential:  Subarea 11     Total area (ac):  14.230
     1 - Roofs 1:  0.740 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  0.740 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  1.030 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.170 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.170 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.800 ac.    Smooth    Street Length = 1.024 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.0039 ft
          Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  8.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.440 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
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LU# 17 - Residential: Subarea 12 (development only)   Total area (ac): 0.610
     1 - Roofs 1: 0.270 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.250 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 0.090 ac.   Smooth   Street Length = 0.051 curb-mi   Street Width (assuming two curb-mi per street mile) = 29.11765 ft
            Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 18 - Residential: Subarea 13 (development only)   Total area (ac): 0.940
     1 - Roofs 1: 0.490 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.450 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 19 - Residential: Subarea 5 (off site)   Total area (ac): 41.650
     25 - Driveways 1: 0.960 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     26 - Driveways 2: 0.390 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 1.160 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 2.050 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 21.820 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     58 - Undeveloped Areas 2: 15.270 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

      Control Practice 1: Other Device CP# 1 (DS) - DS Other Device # 1
         Fraction of drainage area served by device (ac) = 1.00
         Particulate Concentration reduction fraction = 1.00
         Filterable Concentration reduction fraction = 1.00
         Runoff volume reduction fraction = 0

      Control Practice 2: Wet Detention Pond CP# 1 (DS) - Pond 1P
         Particle Size Distribution file name: Not needed - calculated by program
         Initial stage elevation (ft):   5
         Peak to Average Flow Ratio: 3.8
         Maximum flow allowed into pond (cfs): No maximum value entered
         Outlet Characteristics:
              Outlet type: Orifice 1
                     1. Orifice diameter (ft):   1.5

2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0200	0.00	0.00
2	4.00	0.0500	0.00	0.00
3	5.00	0.1200	0.00	0.00
4	5.40	0.1300	0.00	0.00
5	6.40	0.1700	0.00	0.00
6	7.40	0.2100	0.00	0.00
7	8.40	0.2600	0.00	0.00
8	9.00	0.3000	0.00	0.00

Control Practice 3: Other Device CP# 2 (DS) - DS Other Device # 2
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 4: Wet Detention Pond CP# 2 (DS) - Pond 3P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:

Outlet type: Orifice 1
1. Orifice diameter (ft): 2.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10

3. Height from datum to bottom of weir opening: 11

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.1800	0.00	0.00
2	4.00	0.2600	0.00	0.00
3	5.00	0.3700	0.00	0.00
4	5.40	0.3900	0.00	0.00
5	6.40	0.4400	0.00	0.00
6	7.40	0.4900	0.00	0.00
7	8.40	0.5500	0.00	0.00
8	9.40	0.6300	0.00	0.00
9	10.40	0.7400	0.00	0.00
10	11.40	1.8200	0.00	0.00

Control Practice 5: Other Device CP# 3 (DS) - DS Other Device # 3
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 6: Other Device CP# 4 (DS) - DS Other Device # 4
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 7: Wet Detention Pond CP# 3 (DS) - Pond 8P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.46
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Orifice 2
1. Orifice diameter (ft): 0.83
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 9.5
Outlet type: Vertical Stand Pipe
1. Stand pipe diameter (ft): 3
2. Stand pipe height above datum (ft): 7

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.5800	0.00	0.00
2	4.00	0.7700	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	6.00	1.0800	0.00	0.00
5	7.00	1.1800	0.00	0.00
6	8.00	1.2900	0.00	0.00
7	9.00	1.4200	0.00	0.00
8	10.00	1.6200	0.00	0.00
9	10.50	1.7000	0.00	0.00

Control Practice 8: Wet Detention Pond CP# 4 (DS) - Pond 11P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10

3. Height from datum to bottom of weir opening: 9.5

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 3

2. Stand pipe height above datum (ft): 7.75

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.2000	0.00	0.00
2	4.00	0.3000	0.00	0.00
3	5.00	0.4400	0.00	0.00
4	5.50	0.4700	0.00	0.00
5	6.50	0.5300	0.00	0.00
6	7.50	0.6100	0.00	0.00
7	8.50	0.6900	0.00	0.00
8	9.50	0.7700	0.00	0.00
9	10.50	0.8400	0.00	0.00

Control Practice 9: Other Device CP# 5 (DS) - DS Other Device # 5

Fraction of drainage area served by device (ac) = 1.00

Particulate Concentration reduction fraction = 1.00

Filterable Concentration reduction fraction = 1.00

Runoff volume reduction fraction = 0

Control Practice 10: Wet Detention Pond CP# 5 (DS) - Pond 5P

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 1.75

2. Number of orifices: 1

3. Invert elevation above datum (ft): 5

Outlet type: Orifice 2

1. Orifice diameter (ft): 2.5

2. Number of orifices: 1

3. Invert elevation above datum (ft): 5

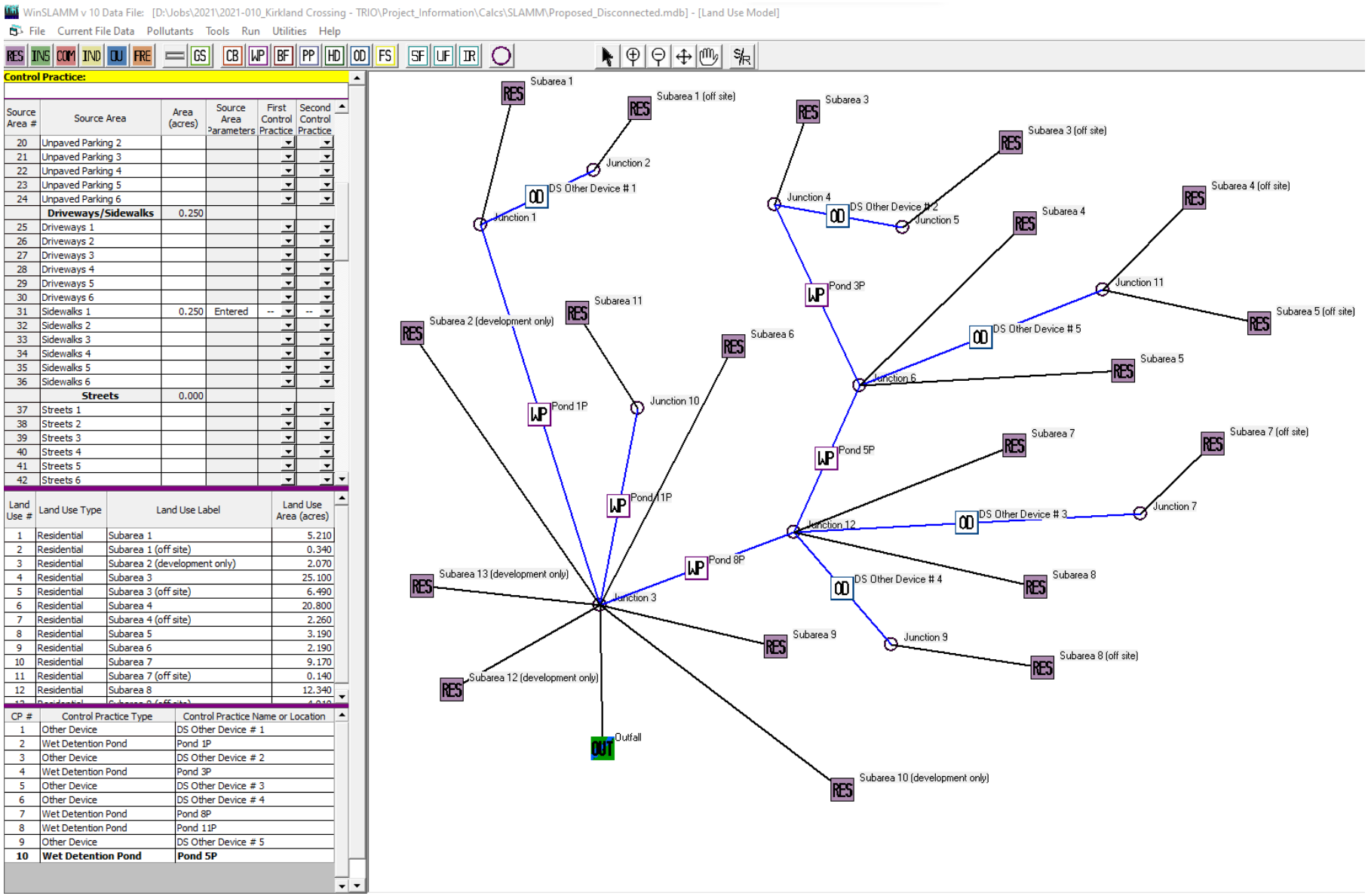
Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 11.2

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.6300	0.00	0.00
2	4.00	0.7800	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	5.20	1.1300	0.00	0.00
5	6.20	1.3500	0.00	0.00
6	7.20	1.5000	0.00	0.00
7	8.20	1.6400	0.00	0.00
8	9.20	1.7900	0.00	0.00
9	10.20	1.9500	0.00	0.00
10	11.20	2.1400	0.00	0.00
11	11.80	2.2100	0.00	0.00

Treatment Analysis - Disconnected Model Run



SLAMM for Windows Version 10.4.1

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Disconnected.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 03-30-2022 Time of run: 16:25:57
Total Area Modeled (acres): 154.520
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	2.667E+06	-	113.5	18898	-
Outfall Total with Controls:	2.669E+06	-0.07%	30.13	5019	73.44%
Annualized Total After Outfall Controls:	2.706E+06			5089	

Data file name: D:\Jobs\2021\2021-010_Kirkland Crossing - TRIO\Project_Information\Calcs\SLAMM\Proposed_Disconnected.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 03-30-2022 Time: 16:26:06
Site information:

LU# 1 - Residential: Subarea 1 Total area (ac): 5.210
  1 - Roofs 1: 0.560 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  25 - Driveways 1: 0.390 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  31 - Sidewalks 1: 0.130 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  37 - Streets 1: 0.480 ac. Smooth Street Length = 0.273 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01099 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  51 - Small Landscaped Areas 1: 3.250 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  52 - Small Landscaped Areas 2: 0.240 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  57 - Undeveloped Areas 1: 0.040 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  70 - Water Body Areas: 0.120 ac. Source Area PSD File:

LU# 2 - Residential: Subarea 1 (off site)   Total area (ac): 0.340
     37 - Streets 1: 0.040 ac.   Smooth   Street Length = 0.023 curb-mi   Street Width (assuming two curb-mi per street mile) = 28.69565 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.300 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 3 - Residential: Subarea 2 (development only)   Total area (ac): 2.070
     1 - Roofs 1: 0.950 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.140 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.220 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2: 0.520 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     33 - Sidewalks 3: 0.080 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 0.160 ac.   Smooth   Street Length = 0.091 curb-mi   Street Width (assuming two curb-mi per street mile) = 29.01099 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 4 - Residential: Subarea 3   Total area (ac): 25.100
     1 - Roofs 1: 1.020 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2: 1.020 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 1.410 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.240 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2: 0.230 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 1.820 ac.   Smooth   Street Length = 1.036 curb-mi   Street Width (assuming two curb-mi per street mile) = 28.98649 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 11.750 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 1.000 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 6.240 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

70 - Water Body Areas: 0.370 ac. Source Area PSD File:
LU# 5 - Residential: Subarea 3 (off site) Total area (ac): 6.490
13 - Paved Parking 1: 0.480 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.310 ac. Smooth Street Length = 0.205 curb-mi Street Width (assuming two curb-mi per street mile) = 24.95122 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.410 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 4.640 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Residential: Subarea 4 Total area (ac): 20.800
1 - Roofs 1: 0.930 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2 - Roofs 2: 0.920 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.280 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.210 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
32 - Sidewalks 2: 0.210 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
33 - Sidewalks 3: 0.070 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 1.790 ac. Smooth Street Length = 1.018 curb-mi Street Width (assuming two curb-mi per street mile) = 29.01277 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 10.660 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 2.080 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 1.650 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.000 ac. Source Area PSD File:
LU# 7 - Residential: Subarea 4 (off site) Total area (ac): 2.260
25 - Driveways 1: 0.150 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.310 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

57 - Undeveloped Areas 1: 0.800 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 8 - Residential: Subarea 5 Total area (ac): 3.190
1 - Roofs 1: 0.280 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.260 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 0.060 ac. Smooth Street Length = 0.034 curb-mi Street Width (assuming two curb-mi per street mile) = 29.11765 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.640 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 0.950 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 9 - Residential: Subarea 6 Total area (ac): 2.190
1 - Roofs 1: 0.220 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.200 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.260 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.510 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 10 - Residential: Subarea 7 Total area (ac): 9.170
1 - Roofs 1: 0.270 ac. Pitched Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.250 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.570 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 0.230 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 0.290 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
58 - Undeveloped Areas 2: 6.560 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 11 - Residential: Subarea 7 (off site) Total area (ac): 0.140
25 - Driveways 1: 0.040 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.100 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 12 - Residential: Subarea 8   Total area (ac): 12.340
     1 - Roofs 1: 0.540 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2: 0.540 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.740 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.130 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2: 0.120 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 1.070 ac.   Smooth   Street Length = 0.609 curb-mi   Street Width (assuming two curb-mi per street mile) = 28.99015 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 6.220 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 1.230 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 0.750 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     69 - Isolated Areas: 1.000 ac.   Source Area PSD File:
LU# 13 - Residential: Subarea 8 (off site)   Total area (ac): 4.010
     25 - Driveways 1: 0.460 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.770 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 0.640 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 2.140 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 14 - Residential: Subarea 9   Total area (ac): 3.670
     1 - Roofs 1: 0.130 ac.   Pitched   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1: 0.120 ac.   Disconnected   Normal Clayey   Low Density   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     51 - Small Landscaped Areas 1: 0.740 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     52 - Small Landscaped Areas 2: 1.000 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 1.680 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 15 - Residential: Subarea 10 (development only)   Total area (ac): 0.110

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     37 - Streets 1:  0.110 ac.    Smooth    Street Length = 0.063 curb-mi    Street Width (assuming two curb-
mi per street mile) = 28.80952 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 16 - Residential:  Subarea 11     Total area (ac):  14.230
     1 - Roofs 1:  0.740 ac.    Pitched    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     2 - Roofs 2:  0.740 ac.    Pitched    Disconnected    Normal Clayey    Low Density    Source Area PSD
File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  1.030 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.170 ac.    Connected    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     32 - Sidewalks 2:  0.170 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  1.800 ac.    Smooth    Street Length = 1.024 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.0039 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     51 - Small Landscaped Areas 1:  8.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     52 - Small Landscaped Areas 2:  0.570 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
     57 - Undeveloped Areas 1:  0.440 ac.    Normal Clayey    Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 17 - Residential:  Subarea 12 (development only)     Total area (ac):  0.610
     1 - Roofs 1:  0.270 ac.    Pitched    Disconnected    Normal Clayey    Low Density    Source Area PSD
File: C:\WinSLAMM Files\NURP.cpz
     31 - Sidewalks 1:  0.250 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1:  0.090 ac.    Smooth    Street Length = 0.051 curb-mi    Street Width (assuming two curb-
mi per street mile) = 29.11765 ft
           Default St. Dirt Accum.    Annual Winter Load = 2500 lbs    Source Area PSD File: C:\WinSLAMM
Files\NURP.cpz
LU# 18 - Residential:  Subarea 13 (development only)     Total area (ac):  0.940
     1 - Roofs 1:  0.490 ac.    Pitched    Disconnected    Normal Clayey    Low Density    Source Area PSD
File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1:  0.450 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
LU# 19 - Residential:  Subarea 5 (off site)     Total area (ac):  41.650
     25 - Driveways 1:  0.960 ac.    Disconnected    Normal Clayey    Low Density    Source Area PSD File:
C:\WinSLAMM Files\NURP.cpz
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26 - Driveways 2: 0.390 ac. Disconnected Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 1.160 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
52 - Small Landscaped Areas 2: 2.050 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 21.820 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
58 - Undeveloped Areas 2: 15.270 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Other Device CP# 1 (DS) - DS Other Device # 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 2: Wet Detention Pond CP# 1 (DS) - Pond 1P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0200	0.00	0.00
2	4.00	0.0500	0.00	0.00
3	5.00	0.1200	0.00	0.00

4	5.40	0.1300	0.00	0.00
5	6.40	0.1700	0.00	0.00
6	7.40	0.2100	0.00	0.00
7	8.40	0.2600	0.00	0.00
8	9.00	0.3000	0.00	0.00

Control Practice 3: Other Device CP# 2 (DS) - DS Other Device # 2
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

Control Practice 4: Wet Detention Pond CP# 2 (DS) - Pond 3P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 2.25
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 11
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.1800	0.00	0.00
2	4.00	0.2600	0.00	0.00
3	5.00	0.3700	0.00	0.00
4	5.40	0.3900	0.00	0.00
5	6.40	0.4400	0.00	0.00
6	7.40	0.4900	0.00	0.00
7	8.40	0.5500	0.00	0.00
8	9.40	0.6300	0.00	0.00

9	10.40	0.7400	0.00	0.00
10	11.40	1.8200	0.00	0.00

Control Practice 5: Other Device CP# 3 (DS) - DS Other Device # 3
   Fraction of drainage area served by device (ac) = 1.00
   Particulate Concentration reduction fraction = 1.00
   Filterable Concentration reduction fraction = 1.00
   Runoff volume reduction fraction = 0

Control Practice 6: Other Device CP# 4 (DS) - DS Other Device # 4
   Fraction of drainage area served by device (ac) = 1.00
   Particulate Concentration reduction fraction = 1.00
   Filterable Concentration reduction fraction = 1.00
   Runoff volume reduction fraction = 0

Control Practice 7: Wet Detention Pond CP# 3 (DS) - Pond 8P
   Particle Size Distribution file name: Not needed - calculated by program
   Initial stage elevation (ft):   5
   Peak to Average Flow Ratio: 3.8
   Maximum flow allowed into pond (cfs): No maximum value entered
   Outlet Characteristics:
        Outlet type: Orifice 1
               1. Orifice diameter (ft):   0.46
               2. Number of orifices: 1
               3. Invert elevation above datum (ft):   5
        Outlet type: Orifice 2
               1. Orifice diameter (ft):   0.83
               2. Number of orifices: 1
               3. Invert elevation above datum (ft):   5
        Outlet type: Broad Crested Weir
               1. Weir crest length (ft):   10
               2. Weir crest width (ft):   10
               3. Height from datum to bottom of weir opening: 9.5
        Outlet type: Vertical Stand Pipe
               1. Stand pipe diameter (ft):   3
               2. Stand pipe height above datum (ft):   7
   Pond stage and surface area

Entry	Stage	Pond Area	Natural Seepage	Other Outflow

Number	(ft)	(acres)	(in/hr)	(cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.5800	0.00	0.00
2	4.00	0.7700	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	6.00	1.0800	0.00	0.00
5	7.00	1.1800	0.00	0.00
6	8.00	1.2900	0.00	0.00
7	9.00	1.4200	0.00	0.00
8	10.00	1.6200	0.00	0.00
9	10.50	1.7000	0.00	0.00

Control Practice 8: Wet Detention Pond CP# 4 (DS) - Pond 11P

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 5

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 9.5

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 3
2. Stand pipe height above datum (ft): 7.75

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.2000	0.00	0.00
2	4.00	0.3000	0.00	0.00
3	5.00	0.4400	0.00	0.00
4	5.50	0.4700	0.00	0.00
5	6.50	0.5300	0.00	0.00

6	7.50	0.6100	0.00	0.00
7	8.50	0.6900	0.00	0.00
8	9.50	0.7700	0.00	0.00
9	10.50	0.8400	0.00	0.00

Control Practice 9: Other Device CP# 5 (DS) - DS Other Device # 5
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 1.00
Runoff volume reduction fraction = 0

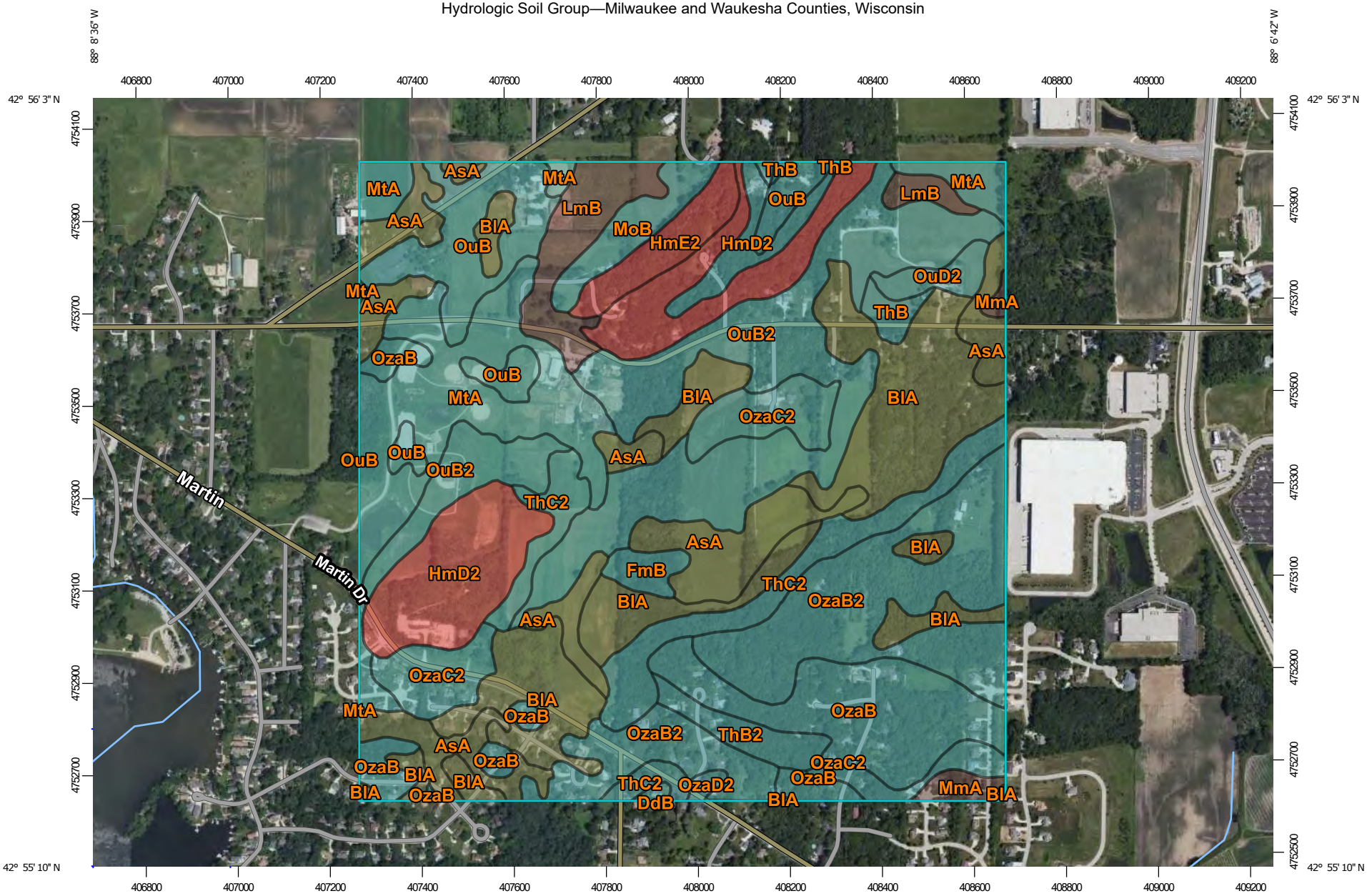
Control Practice 10: Wet Detention Pond CP# 5 (DS) - Pond 5P
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1.75
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Orifice 2
1. Orifice diameter (ft): 2.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 11.2
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.6300	0.00	0.00
2	4.00	0.7800	0.00	0.00
3	5.00	1.0000	0.00	0.00
4	5.20	1.1300	0.00	0.00
5	6.20	1.3500	0.00	0.00

6	7.20	1.5000	0.00	0.00
7	8.20	1.6400	0.00	0.00
8	9.20	1.7900	0.00	0.00
9	10.20	1.9500	0.00	0.00
10	11.20	2.1400	0.00	0.00
11	11.80	2.2100	0.00	0.00

APPENDIX D

Soil Survey
And
Soil Boring & Test Pit Logs



Map Scale: 1:11,700 if printed on A landscape (11" x 8.5") sheet.

N

0 150 300 600 900 Meters

0 500 1000 2000 3000 Feet

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

Soil Survey Area: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 16, Jun 8, 2020

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

Date(s) aerial images were photographed: May 20, 2020—Aug 20, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AsA	Ashkum silty clay loam, 0 to 2 percent slopes	C/D	39.8	8.2%
BlA	Blount silt loam, 1 to 3 percent slopes	C/D	68.1	14.1%
DdB	Dodge silt loam, 2 to 6 percent slopes	C	0.5	0.1%
FmB	Fox sandy loam, 2 to 6 percent slopes	C	3.4	0.7%
HmD2	Hochheim loam, 12 to 20 percent slopes, eroded	D	38.4	8.0%
HmE2	Hochheim loam, 20 to 30 percent slopes	D	8.6	1.8%
LmB	Lamartine silt loam, 0 to 3 percent slopes	B/D	15.4	3.2%
MmA	Matherton silt loam, 1 to 3 percent slopes	B/D	3.1	0.7%
MoB	Mayville silt loam, 2 to 6 percent slopes	C	8.0	1.7%
MtA	Mequon silt loam, 1 to 3 percent slopes	C	43.7	9.1%
OuB	Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes	C	24.7	5.1%
OuB2	Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes, eroded	C	70.7	14.7%
OuC2	Ozaukee silt loam, high carbonate substratum, 6 to 12 percent slopes, eroded	C	0.3	0.1%
OuD2	Ozaukee silt loam, high carbonate substratum, 12 to 20 percent slopes, eroded	C	4.0	0.8%
OzaB	Ozaukee silt loam, 2 to 6 percent slopes	C	37.4	7.7%
OzaB2	Ozaukee silt loam, 2 to 6 percent slopes, eroded	C	54.8	11.4%
OzaC2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	C	21.5	4.5%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
OzaD2	Ozaukee silt loam, 12 to 20 percent slopes, eroded	C	0.9	0.2%
ThB	Theresa silt loam, 2 to 6 percent slopes	C	2.9	0.6%
ThB2	Theresa silt loam, 2 to 6 percent slopes, eroded	C	6.0	1.2%
ThC2	Theresa silt loam, 6 to 12 percent slopes, eroded	C	30.2	6.3%
Totals for Area of Interest			**482.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

SOIL SYMBOL AND NAME:		HYDROLOGIC GROUP:
- AsA	Ashkum Silty Clay	AsA: C/D
- BlA	Blount Silt Loam	BlA: C/D
- HmD2	Hocheim Loam, Eroded	HmD2: D
- FmB	Sandy Loam	FmB: C
- LmB	Lamartine Silt Loam	LmB: B/D
- MtA	Mequon Silt Loam	MtA: C
- OzaB	Ozaukee Silt Loam	OzaB: C
- OzaB2	Ozaukee Silt Loam, Eroded (2-6% slope)	OzaB2: C
- OzaC2	Ozaukee Silt Loam, Eroded (12-20% slope)	OzaC2: C
- OuB	Ozaukee Silt Loam	OuB: C
- OuB2	Ozaukee Silt Loam, Eroded	OuB2: C
- ThC2	Theresa Silt Loam, Eroded	ThC2: C

PARK ARTHUR

B-1 837.2
B-2 839.1
B-3 840.0
B-4 845.5
B-5 841.9
B-6 836.9
B-7 841.5
B-8 848.7
B-9 860.8
B-10 843.1
B-11 843.6
B-12 843.7
B-13 854.5
B-14 877.2
B-15 870.5
B-16 854.1
B-18 851.0
B-19 856.3
B-20 859.3
B-21 845.8
B-22 862.5
B-23 850.7
B-24 844.6
B-25 855.6
B-26 847.2
B-27 847.4
B-28 847.9
B-29 849.4
B-30 846.3
B-31 853.0
B-32 855.6
B-33 873.4
B-34 854.8
B-35 857.1
B-36 862.3
B-37 862.7
B-38 871.8

MARTIN DRIVE
STREET "A"
STREET "B"
STREET "C"
COURT "B"
COURT "E"
COURT "F"
COURT "G"
SHEET "A"
COLLEGE AVE
CTH "HH"

BlA
OzaB2
AsA
ThC2
HmD2
OuB2
MtA
LmB
FmB
OzaB
OzaC2
OuB

WETLAND
POND
SECONDARY ENVIRONMENTAL CORRIDOR (PER SEWRPC)

SOIL TESTING NOTES

- Wetlands shown within the project limits were delineated by SEH for South half and Heartland Ecological for North half.
- B-10 788.9 - Indicates geotechnical soil test location (Point number and ex. ground elevation)
- Tests shall be conducted as per WDNR Tech Std 1002.
- Borings shall extend to minimum 20' depth or until rock refusal.

Soil Boring Location Map

Ryan Janssen
(Kirkland Crossing LLC)
City of Muskego, Wisconsin

Scale: 1" = 200'
0 100 200

Date: JUNE 3, 2021

TRIO
4100 N. CALHOUN ROAD, SUITE 300
BROOKFIELD, WI 53005
PHONE: (262) 790-1480
FAX: (262) 790-1481
EMAIL: jpudelko@trioeng.com

X:\2021\21-029-1124 KIRKLAND MUSKEGO\DRAWINGS\EXHIBITS\SOIL BORING EXHIBIT.DWG

CGC Inc.

LOG OF TEST BORING

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Boring No. **B14**
Surface Elevation (ft) **877.2**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	qu (qa) (tsf)	W	LL	PL	P200
					12" Brown Sandy/Silty TOPSOIL					
1		8	M	11	Very Stiff to Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.5)				
2		18	M	20		(3.5-4.5+)				
3		16	M	23	Medium Dense to Very Dense, Tan Silty Fine to Medium SAND; Some Fine to Coarse Gravel (SM)	(3.0)				
4		18	M	30						
5		16	M	100						
6		8	M/W	100	Very Dense, Tan Silty Fine to Coarse SAND & GRAVEL (SM/GM)					
					End of Boring at 20 ft Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS

While Drilling ▽ **18.0'** Upon Completion of Drilling **-**
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/27/21** End **7/27/21**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **NIS**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Boring No. **B16**
Surface Elevation (ft) **853.7**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	P200
						12" Brown Sandy/Silty TOPSOIL					
1		18	M	17		Medium Dense, Brown Sandy/Clayey SILT; Trace Gravel (ML/CL-ML)					
2		0	M	29	5						
3		12	M	27		Hard, Brown Silty CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				
4		18	M	21	10		(4.5)				
5		18	M	15		Very Stiff, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.5)				
6		18	M	8	15	Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(2.5)				
					20	End of Boring at 20 ft Backfilled with Bentonite Chips					
					25						
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **NW** Upon Completion of Drilling **-**
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/27/21** End **7/27/21**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **NIS**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Boring No. **B22**
Surface Elevation (ft) **862.4**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	P200
						12" Brown Clayey/Silty TOPSOIL					
1		16	M	18		Very Stiff to Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5)				
2		16	M	73	5		(4.0)				
3		2	M	35			(4.5)				
						Less mottling with depth					
4		18	M	25	10		(4.5)				
5		12	M	23			(2.5)				
					15	Stiff to Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)					
6		18	M	14			(2.5)				
					20						
7		8	M	7			(2.0)				
					25	End of Boring at 25 ft Backfilled with Bentonite Chips					
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **NW**	Upon Completion of Drilling **-**			
Time After Drilling				
Depth to Water				▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/27/21** End **7/27/21**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **NIS**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Boring No. **B33**
Surface Elevation (ft) **873.2**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	P200
						12" Tan Sandy/Silty TOPSOIL					
1		12	M	16		Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5)				
2		18	M	27			(4.5)				
					5						
3		18	M	30			(4.5)				
4		18	M	48		Dense to Very Dense, Tan Silty Fine to Medium SAND; Some Fine to Coarse Gravel (SM)					
					10						
5		2	M	61							
					15						
6		18	M	52							
					20						
7		8	M	100		Very Dense, Tan Fine to Coarse SAND & GRAVEL (SP/GP)					
					25	End of Boring at 25 ft Backfilled with Bentonite Chips					
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **NW** Upon Completion of Drilling **-**
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/27/21** End **7/27/21**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **NIS**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Boring No. **B4**
Surface Elevation (ft) **843.5**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	qu (qa) (tsf)	W	LL	PL	P200
					12" Brown Silty/Sandy TOPSOIL					
1		18	M	12	Medium Dense, Brown Fine SAND; Little Silt, Trace Gravel (SP-SM)					
2		18	M	15	Very Stiff/Medium Dense, Brown to Gray Mottled Sandy/Clayey SILT to Silty CLAY (Laminated Layers) (ML/CL-ML)	(3.5)				
3		18	M	5	Stiff to Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(1.75-2.0)				
4		18	M/W	30	▽	(2.0)				
					Medium Dense to Dense, Gray Silty Fine to Medium SAND; Trace to Little Gravel, Few Fine to Coarse Sand and Gravel Seams and Layers (SM)					
5		18	W	14						
					Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)					
6		18	M/W	13		(2.75-3.25)				
					End of Boring at 20 ft Backfilled with Bentonite Chips Note: Boring offset 50'W due to dense woods.					

WATER LEVEL OBSERVATIONS

While Drilling ▽ **9.5'** Upon Completion of Drilling **-**
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/27/21** End **7/27/21**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **NIS**
Drill Method **2.25" HSA**

CGC Inc.

LOG OF TEST BORING

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Boring No. **B9**
Surface Elevation (ft) **860.6**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd, West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	P200
						12" Brown Sandy/Clayey TOPSOIL					
1		16	M	10		Very Stiff to Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.0-4.5+)				
2		18	M	27		Note: Less mottling with depth	(4.5)				
					5						
3		18	M	25			(4.5)				
4		8	M	25			(4.5)				
					10						
5		18	M	16			(3.5-4.5)				
					15	Very Stiff, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)					
6		16	M	17			(3.5)				
					20						
7		10	M	21			(3.75)				
						End of Boring at 22.5 ft Backfilled with Bentonite Chips					
					25						
					30						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **NW** Upon Completion of Drilling **-**
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/27/21** End **7/27/21**
Driller **GeoServe** Chief **Eddie** Rig **7822**
Logger **Eddie** Editor **NIS**
Drill Method **2.25" HSA**

LOG OF TEST PIT

CGC Inc.

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **1**
Surface Elevation (ft) **837.3**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			10"-11" Brown Loamy Sandy TOPSOIL					
						8" Hard, Brown Sandy CLAY (CL)	(3.5-4.5)				
			M			0"-8" Tan/Brown Fine to Coarse SAND & GRAVEL (SP/GP)					
			M			Hard, Brown Carbonated Lean CLAY (CL) (Excavates in little blocky pieces)	(4.5)				0-1
					5	Gravelly sand seam (rust colored) at 4 to 4.5 ft	(4.5)				0-1
			M			Hard, Brown Silty CLAY; Little Fine Sand, Trace Gravel, Some Tan Silt Seams (Peaty) (CL-ML)					0-1
			M			Gray SILT; Little Thin Clay Seams (ML)					
			M		10	Hard, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				
						End of Excavation at 10.5 ft					
					15						
					20						
					25						

H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **2**
Surface Elevation (ft) **839.0**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
					0	12" Brown Loamy TOPSOIL					
1						Very Stiff, Dark Brown to Brown Lean CLAY; Trace Sand and Gravel (CL)	(3.75)				
			M/VM			Brown Fine to Coarse SAND; with Fine to Coarse Gravel, Trace Silt (SP)					1-5 0-1
2			M		5	Brown Silty Fine to Coarse SAND; Some Fine to Coarse Gravel, Little Clay (SM)					1-2
3			M W			Very Stiff to Hard, Brown Sandy/Silty CLAY; Few Very Moist to Wet Sand Seams (CL)	(3.5-4.5)				
4					10	Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(2.75)				
						End of Excavation at 12 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **8.0'** Upon Completion of Drilling **6.0'/8.0'**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **3**
Surface Elevation (ft) **839.8**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			14" Brown Loamy TOPSOIL					
1			M			Brown Fine to Medium SAND; Trace Gravel, Little Silt (SP-SM)					6-7 4-6
			M								8
2			VM		5	Brown Mottled Silty Fine to Medium SAND; Trace Gravel (SM) Very moist below 5 ft, rust staining starts at 4.3 ft					
3			W			Brown Fine to Coarse SAND, Some Fine to Coarse Gravel Layers, Mixed with Fine to Medium Sand Seams and Layers (SP/SP-SM)					
			W		10						
			W								
						Hard, Gray Silty CLAY; Little Sand and Gravel (CL)	(4.5+)				
					15	End of Excavation at 15 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **8.0'** Upon Completion of Drilling **8.0'**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **5**
Surface Elevation (ft) **841.9**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						12" Brown Sandy TOPSOIL					
			M			Brown/Tan Fine to Medium SAND; Trace Gravel, Little Silt (SM)					3-5
			VM								6-8
			W			Brown Mottled Silty Fine to Medium SAND; Trace Gravel (Rust Staining) (Very Moist/Loose) (SM)					8-12
					5						
						Gray Silty Fine to Medium SAND; Trace Gravel (SM)					
1						Very Soft to Very Stiff, Gray Sandy Clayey SILT to Silty CLAY; Few to Many Wet Fine Sand Seams, Laminated Layers (CL-ML/CL)	(0.5-0.25) (1.25-3.0)				
					10						
			W			Very wet/steady sidewall seepage in 3 areas at 14 to 14.5 ft					
					15	End of Excavation at 14.5 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **4.0'** Upon Completion of Drilling _____
Time After Excavating _____
Depth to Water _____ ▼
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller _____ Chief _____
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **6**
Surface Elevation (ft) **836.7**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	SAMPLE TYPE	SAMPLE Rec (in.)	SAMPLE Moist	SAMPLE N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			12" Dark Brown Clayey TOPSOIL					
			M			Very Stiff to Hard, Brown Mottled Lean/Silty CLAY; White Gravel Seam in the Clay (CL)	(3.5-4.5)				1-2
											1-2
						Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				0-1
			M		5		(4.5+)				0-1
			M			Very Stiff, Brown Silty CLAY; Little Fine Sand, Trace Gravel (CL-ML)	(3.5)				
						Hard, Grayish Brown Lean CLAY; Some Gray Silt Seams (CL)	(4.5+)				
			M			Hard, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				
					10	End of Excavation at 10 ft					
					15						
					20						
					25						

H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **7**
Surface Elevation (ft) **841.5**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			24" Brown to Dark Brown Clayey TOPSOIL					
			M			Very Stiff to Hard, Dark Brown to Brown Lean CLAY (CL)	(3.25-4.5+)				1-3
			M		5	Very Stiff to Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel, Few Gravel/Sand Pockets at 3.5 to 4 ft (CL)	(4.5+)				0-1
							(4.5+)				0-1
			M				(4.5+)				
							(4.5+)				
			M		10		(3.25-3.75)				
			M			Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)					
						End of Excavation at 12.3 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **8**
Surface Elevation (ft) **848.7**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			8" Brown Clayey/Lean TOPSOIL					
						Hard, Brown Lean CLAY; Trace Sand and Gravel (CL)	(4.5+)				
			M				(4.5+)				
			M			Thin Tan Silty SAND; with Gravel Seam (0-2") (SM)					
						Hard, Brown Mottled CLAY; Little Fine Sand, Trace Gavel, Less Mottling with Depth (CL)	(4.5+)				0-2
							(4.5+)				0-2
					5						
			M				(4.5+)				
			M				(4.5+)				
					10						
			M			Very Stiff to Hard, Grayish Brown to Gray Lean CLAY (CL)	(4.5+)				
			M				(3.75-4.25)				
						End of Excavation at 14 ft					
					15						
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **10**
Surface Elevation (ft) **842.9**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			24" Dark Brown to Black TOPSOIL					
			M			Very Stiff, Dark Brown Lean CLAY; Little Fine Sand, Trace Gravel, Few Sand/Gravel Seams/Pockets (CL)	(3.0-3.5)				2-3
1			M								2-3
					5	Very Stiff to Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.75-4.5)				1-2
							(2.75-3.25)				
			M		10	End of Excavation at 10.5 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					15						
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **11**
Surface Elevation (ft) **843.6**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						10" Brown Sandy TOPSOIL					
A						Tan/Brown Fine to Medium SAND; Little to Some Silt, Trace Gravel (SP/SM)					4-6 6-8 8-10
			VM/W		5	Tan/Brown/Gray Mottled Fine to Medium SAND; Little Silt, Trace Gravel (SP-SM)					
B			W			Gray Silty SAND; Trace Gravel (SM)					
					10	Very Stiff to Hard, Gray CLAY; Little to Some Sand (CL)	(3.0-4.5+)				
					15	Steady sidewall seepage					
						End of Excavation at 15.5 ft					
					20	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **6.0'** Upon Completion of Drilling **6.0'**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **12**
Surface Elevation (ft) **843.7**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						8" - 10" Light Brown Sandy/Silty Loam TOPSOIL (OL)					
1			M			Tan/Brown Fine to Medium SAND; Little Silt, Trace Gravel (SP-SM)					
2			M			Brown Sandy CLAY to Clayey SAND (SC/CL)					
3			M		5	Brown Mottled Silty SAND (Rust Stained) (SM)					
			W								
			W			Gray Silty/Clayey SAND; Little Gravel (SM/SC)					
						Very Stiff, Gray Silty/Lean CLAY; Little Fine Sand (CL)	(2.5-3.0)				
4			M		10						
					15	End of Excavation at 15 ft					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **5.0'** Upon Completion of Drilling **5.0'**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **13**
Surface Elevation (ft) **854.4**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			6"-8" Brown Clayey TOPSOIL					
1			M			Hard, Dark Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5)				0-1
						Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace to Little Gravel, Few Sand/Silt Seams @ 2.5 to 3 ft (CL)	(4.5+)				0-1
							(4.5+)				0-1
2			M				(4.5+)				0-1
					5						
						very faint mottling below 5.5 ft					
			M				(4.5+)				
			M				(4.5+)				
					10						
			M			Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(2.75-3.25)				
							(3.25-3.5)				
			M		15						
						End of Excavation at 16 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **15**
Surface Elevation (ft) **870.3**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			6"-8" TOPSOIL					
			M			Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.0-4.5)				0-1 1-2
			M		5	Hard, Brown Slightly Mottled Lean CLAY (CL)					0-1 0-1
			M		10	Yellowish Brown (Tan) Silty Fine to Medium SAND; Little to Some Fine to Coarse Gravel, Scattered Cobbles (SM)					
					15	End of Excavation at 15 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **18**
Surface Elevation (ft) **850.8**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			12" Dark Brown to Black Clay TOPSOIL					
			M			Hard, Brown Lean CLAY (CL)	(4.5+)				0-1
			M			Hard, Brown Sandy CLAY Seam/Layer, Some Gravel (CL)	(4.5)				0
			M		5	Hard, Brown Mottled/Carbonated CLAY; Some Silt Seams (CL)	(4.5) (4.5)				0-1
			M		10	Very Stiff, Gray to Grayish Brown Lean CLAY (CL)	(4.5) (4.5) (2.5-3.5)				
			M		15		(2.5)				
					20	End of Excavation at 17 ft					
					25						

H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.

WATER LEVEL OBSERVATIONS

While Excavating ▽	**NW**	Upon Completion of Drilling		**NW**
Time After Excavating				**6 hrs**
Depth to Water				**NW** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief .
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

LOG OF TEST PIT

CGC Inc.

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **19**
Surface Elevation (ft) **855.9**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	SAMPLE TYPE	SAMPLE Rec (in.)	SAMPLE Moist	SAMPLE N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			12" Brown Clayey TOPSOIL					
			D/M			Hard, Brown Silty/Lean CLAY (CL/CL-ML)	(4.5+)				0-1
							(4.5+)				0-1
							(4.5+)				0
			M			Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (Less Mottling with Depth) (CL)	(4.5+)				0 0
					5						
			M			Hard, Brown Lean CLAY; Slightly Carbonated Faint Mottling, Few Scattered Boulders (CL)	(4.5)				
			M								
					10		(4.5+)				
			M			Very Stiff, Grayish Brown Lean CLAY (CL)	(3.0)				
					15						
						End of Excavation at 15.5 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating **6.5 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **20**
Surface Elevation (ft) **858.9**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			4" Brown Clayey TOPSOIL					
			M			Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				0-1
1							(4.5+)				0-1
			M				(4.5+)				0-1
2			M		5	Yellowish Brown Silty Fine to Coarse SAND; Some Gravel (SM)					
3			M		10						
						End of Excavation at 12 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating **6 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **21**
Surface Elevation (ft) **845.6**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						12" Brown Silty TOPSOIL					
1			VM			Hard,Brown Silty CLAY (CL/CL-ML)	(4.5+)				
						Very Stiff, Brown Lean CLAY; Some Sand/Sandy Clay Seams and Layers (CL)	(2.5-3.75)				
					5	Medium Stiff to Stiff, Brown Silty CLAY to Clayey/Sandy SILT; Mottled Very Moist (CL-ML/ML)	(0.75-1.25)				8-10
			M/VM								8-10
2					▽	Very Stiff, Brown Mottled Lean CLAY; Many Wet/Rust Stained Sand and Sandy Silt Seams and Layers, Scattered Cobbles (CL)	(2.5-3.5)				
			VM/W								
3			M		▼ 10	Hard, Gray Silty/Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				
						End of Excavation at 11.5 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **6.5'/7.0'** Upon Completion of Drilling _____
Time After Excavating _____ _____ _____ **7 hrs**
Depth to Water _____ _____ _____ **9.5'** ▼
Depth to Cave in _____ _____ _____ _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller _____ Chief _____
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **23**
Surface Elevation (ft) **850.4**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	SAMPLE TYPE	SAMPLE Rec (in.)	SAMPLE Moist	SAMPLE N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			D/M		0	FILL: 2" Topsoil - Gravelly Sandy Loam					
						FILL: Brown Sand and Gravel with Brick Rubble, Few 1 to 2 ft Size Concrete Fragments, Trace Asphalt					1 0-1
						10" Brown Clayey/Silty SAND (SM/SC)					1-2
					5	Very Stiff, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(2.75-3.5)				
			M			Very Stiff to Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.5-4.5)				
						Cobble/gravel (1' thick) layer at 7 to 8 ft	(4.5+)				
						Less mottling but still mottled with depth					
					10	Some hard silt seams and pockets					
						End of Excavation at 10.5 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW**			Upon Completion of Drilling	**NW**
Time After Excavating				**8 hrs**
Depth to Water				**8.0'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

LOG OF TEST PIT

CGC Inc.

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **24**
Surface Elevation (ft) **844.4**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						2" Brown Lean Clayey TOPSOIL					
A			M			FILL: 18" Brown Sandy Clay, Little Gravel, Scattered Topsoil					
B			M			Very Dense, Brown SILT (ML)					
						Brown Silty Fine to Medium SAND; Some Clay, Trace to Little Gravel (SM)					
C			M		5	Hard, Brown Mottled Lean CLAY; Few Sand and Silt Seams and Layers (Fairly Thick Seams) (CL)	(4.5+)				
D			M			▽					
						very difficult to excavate					
E			M		10	Very Stiff to Hard, Grayish Brown Lean CLAY; Little Fine to Coarse Gravel (CL)	(3.5-4.5)				
						▼					
						very difficult to excavate					
						End of Excavation at 12 ft					
						-- Drain tile (dry) with No. 2 stone in east wall line					
					15						
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **7.0'** Upon Completion of Drilling _____
Time After Excavating **(seepage)** _____ _____ **7 hrs**
Depth to Water _____ _____ _____ **11.0'** ▼
Depth to Cave in _____ _____ _____ _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller _____ Chief _____
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **25**
Surface Elevation (ft) **855.3**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						FILL: Brown Clay, Scattered Concrete Rubble, Brick, Trace Asphalt	(4.5+)				
			M				(4.5+)				
							(4.5+)				
					5	FILL: Gray Sandy Clay, Little Organics, Some to Many Large Concrete Slab Fragments, Some Brown Clay Layers	(3.0-3.5)				
			M								
A						Dark Brown to Black Loamy TOPSOIL (OL)					
					10						
B			VM			Dark Greenish Gray Mottled CLAY/Silty CLAY (CL/CL-ML)					
					▽						
C			VM/W			Brown to Gray Silty Fine SAND; Some Clay (SM)					
D			VM/W			Brown Silty Fine to Coarse SAND; Little Fine to Coarse Gravel (SM)					
					▼ 15						
						Hard, Brown Mottled Lean CLAY; Little Silt Seams (CL)	(4.5+)				
						End of Excavation at 16.5 ft					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **12.0'** Upon Completion of Drilling **12.0'**
Time After Excavating **9 hrs**
Depth to Water **15.0'** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/21/21** End **7/21/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **26**
Surface Elevation (ft) **847.1**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						8" Loamy TOPSOIL					
1			M			Very Stiff to Hard, Brown Mottled CLAY; Little Fine Sand, Trace Gravel, Few Scattered Cobbles and Boulders, Less Mottling with Depth (CL)	(3.5) (2.75) (2.5)				1-3 2-3
2			M		5		(4.5)				1-2
							(4.5+)				
3			M		10		(4.5)				
			M			Hard, Grayish Brown Slightly Mottled CLAY (CL)	(4.5+)				
			M		15	Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel, Few Cobbles (CL)	(2.5-3.25) (2.5-3.0)				
						End of Excavation at 17 ft					
					20	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **27**
Surface Elevation (ft) **847 ±**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						16"-18" TOPSOIL					
			M			Very Stiff to Hard, Brown Heavily Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.75)				
							(4.5)				
							(4.5)				1-2
					5						
			M			Very Stiff to Hard, Brown Slightly Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)					
							(3.5)				
							(4.5+)				
					10						
			M			Very Stiff to Hard, Gray to Grayish Brown Lean CLAY; Trace Gravel (CL)	(3.75-4.5)				
						End of Excavation at 12 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					15						
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating **2 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **28**
Surface Elevation (ft) **847.9**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			13" Dark Brown Loamy Clayey TOPSOIL					
1			M			Very Stiff, Dark Brown Lean CLAY; Little Sand, Trace Gravel (CL)	(2.5-3.5)				
2			M			Brown/Tan (Rust Stained) Mottled Silty Fine to Medium SAND; Trace Gravel (SM)					2-3 2-3
3			M		5	Stiff to Very Stiff, Gray Mottled Lean CLAY; Some Sand, Trace Gravel (Brown/Rust Stained) (CL)	(1.25-2.25)				6-8 6-8
			M		10	Very Stiff to Hard, Gray Lean CLAY; Laminated with Thin Silt Seams (CL)	(2.5-4.5+)				
			M/W			wet sand seam at 12.5 ft					
					15	End of Excavation at 14.5 ft					
						H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **12.6'** Upon Completion of Drilling **12.5'**
Time After Excavating **(seepage)** **2.5 hrs**
Depth to Water **12.5'** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **29**
Surface Elevation (ft) **850.0±**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						13" Brown Loamy TOPSOIL					
						Very Stiff to Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.5-4.5+)				0-2
											6-12
1			M			Brown/Tan Fine to Medium Silty AND; with Rust Stains (SM)					8
			M		5						8-10
						Stiff to Very Stiff, Gray Silty CLAY; Little Sand, Trace Gravel (CL)	(1.5-2.0)				
2			M								
						Very Stiff to Hard, Gray Lean CLAY; with Laminated Silty Seams (CL/CL-ML)	(4.5)				
3			M		10 ▼		(3.0)				
						End of Excavation at 13 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling _____
Time After Excavating _____ _____ _____ **3 hrs**
Depth to Water _____ _____ _____ **10.0'** ▼
Depth to Cave in _____ _____ _____ _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller _____ Chief _____
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **30**
Surface Elevation (ft) **846.3**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						24" Black to Dark Brown Clayey Loam TOPSOIL					
			VM			Dark Brown Mottled Clayey SAND; Little to Some White Gravel (SC)					4-8
			VM		5	Tan/Brown/Gray Heavily Mottled Silty Fine to Medium SAND; Trace Gravel (SM)					6
			VM		10	Graty Lean CLAY; Laminated with Silt Seams (CL) Wet sand/gravelly @ 10 ft and 10.5 ft					
					15	End of Excavation at 11 ft					
					20	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **4.0'** Upon Completion of Drilling **4.0'**
Time After Excavating **3 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **31**
Surface Elevation (ft) **852.8**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			10"-12" Brown Clayey TOPSOIL					
			M			Very Stiff to Hard, Brown to Dark Brown Lean CLAY (CL)	(3.75-4.5)				
			M			Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel, Very Dense/Hard Digging (CL)	(4.5+)				
					5		(4.5+)				
							(4.5+)				
			M		10		(4.5+)				
			M				(4.5)				
			M			Very Stiff to Hard, Gray Lean CLAY; Trace Gravel (CL)	(3.5-4.5+)				
					15						
						End of Excavation at 16 ft					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating **2 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **32**
Surface Elevation (ft) **855.5**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	SAMPLE TYPE	SAMPLE Rec (in.)	SAMPLE Moist	SAMPLE N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						8" Brown Clayey TOPSOIL					
			M			Hard, Brown Mottled Lean CLAY; Few Thin Silt Seams and Pockets, Scattered Cobbles (CL)	(4.5+)				
			M								
					5						
			M			Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5+)				
							(4.5+)				
			M		10		(4.5+)				
			M			Very Stiff, Gray/Grayish Brown Lean CLAY; Some Thin Silt Seams, Little Sand, Trace Gravel (CL)	(3.25-3.5)				
					15	End of Excavation at 15 ft					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW**			Upon Completion of Drilling	**NW**
Time After Excavating				**3 hrs**
Depth to Water				**NW** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief .
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

LOG OF TEST PIT

CGC Inc.

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **34**
Surface Elevation (ft) **854.7**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						12" Gray/Brown Clayey TOPSOIL					
1			M			Very Stiff to Hard, Brown Slightly Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.75-4.5)				
							(4.5)				
2			M		5	Brown Fine to Medium SAND; Little Silt and Fine to Coarse Gravel (SP/SM)					2-4
3			M			Hard, Grayish Brown Mottled Silty CLAY; Some Fine Sand, Little Fine to Coarse Gravel (CL/CL-ML)	(4.5)				
4			M		10	Hard, Gray Lean CLAY; Little to Some Fine Sand, Little Fine to Caorse Gravel (CL)	(4.5)				
						End of Excavation at 12 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating **2.5 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **35**
Surface Elevation (ft) **857.3**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	SAMPLE TYPE	SAMPLE Rec (in.)	SAMPLE Moist	SAMPLE N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						10" Brown Clayey TOPSOIL					
			M			Very Stiff to Hard, Grayish Brown Lean CLAY (CL)	(3.75-4.25)				1-2
						Hard, Brown Mottled Lean CLAY; Few 3" - 4" Seams of Sand and Gravel, Little Fine Sand, Trace Gravel, Few Scattered Cobbles and Boulders (CL)	(4.5+)				0-1
			M								
					5		(4.5)				0-1
			M			no mottling below 6 ft					
							(4.5)				
			M		10	Hard, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5)				
						End of Excavation at 10 ft					
					15						
					20						
					25						

H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **NW**
Time After Excavating **1.5 hrs**
Depth to Water **NW** ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

CGC Inc.

LOG OF TEST PIT

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **36**
Surface Elevation (ft) **862.3**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			12" to 18" TOPSOIL					
			M			Very Stiff to Hard, Grayish Brown Lean CLAY (CL)	(3.5-4.5)				
			M				(4.5)				
			M			Very Stiff to Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5)				0-4
					5	Hard, Brown Mottled Lean CLAY; Few to Some Tan Silt Seams and Pockets, Little Fine Sand, Trace Gravel (CL)					
1			VM			Tan Sandy/Clayey SILT; Trace Gravel (ML/CL-ML)					
2			M		10	Gray Clayey SILT; Little Sand, Trace Gravel (ML)					
						End of Excavation at 10.5 ft					
					15	H.P.'s = denotes penetration depth with a 5/8-in. diameter steel hand probe under full body weight.					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW**			Upon Completion of Drilling	**NW**
Time After Excavating				**1 hr**
Depth to Water				**8.8'** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

LOG OF TEST PIT

CGC Inc.

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **37**
Surface Elevation (ft) **862.5**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
						10" - 12" Grayish Brown Loamy TOPSOIL					
1			M			Very Stiff to Hard, Brown Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.5-4.5)				
2			VM			Medium Stiff to Stiff, Brown Mottled Silty CLAY; with Very Moist Silt Seams (CL-ML)	(0.75-1.5)				
					5	Very Stiff to Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel, Few Very Moist to West Silt and Sand Seams and Layers (CL)	(2.75-3.5)				
			M				(3.5-4.5)				
3			VM/M				(4.5)				
					10		(4.5)				
			M			Very Stiff, Gray Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(3.5)				
						End of Excavation at 12.5 ft					
					15						
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW** Upon Completion of Drilling **8.0'**
Time After Excavating
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller Chief
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

LOG OF TEST PIT

CGC Inc.

Project **Kirkland Crossing**
West College Avenue
Location **Muskego, Wisconsin**

Pit No. **38**
Surface Elevation (ft) **871.8**
Job No. **CM21166**
Sheet **1** of **1**

336 S. Curtis Rd., West Allis, WI 53214 (414) 443-2000, FAX (414) 443-2099

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	H.P.s (in.)
			M			12" TOPSOIL					
			M			Hard, Grayish Brown Lean CLAY (CL)					
						Hard, Brown Mottled Lean CLAY; Little Fine Sand, Trace Gravel (CL)	(4.5)				
			M				(4.5)				
						Hard, Brown Carbonated Silty/Lean CLAY (CL/CL-ML)					
			M		5		(4.5)				
							(4.5)				
			M			Very Stiff to Hard, Gray Silty CLAY; Little Fine Sand, Trace Gravel (CL-ML)	(4.5)				
					10		(4.5)				
			M								
			M				(3.5)				
					15	End of Excavation at 15.5 ft					
					20						
					25						

WATER LEVEL OBSERVATIONS

While Excavating ▽ **NW**			Upon Completion of Drilling	**NW**
Time After Excavating				**20 min.**
Depth to Water				**NW** ▼
Depth to Cave in				

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **7/22/21** End **7/22/21**
Driller . Chief .
Logger **NIS** Editor **NIS**
Equip. Used: **R&W Trucking Link Belt 210**

Wisconsin Department of Commerce
Division of Safety and Buildings

SOIL AND SITE EVALUATION - STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and BM referenced to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s.15.04 (1) (m)).

County: Waukesha

Parcel I.D.: MSKC2173997 & 8 and MSKC2170991

Review by: **Date:**

Client
Ryan's Buying, LLC

Mailing Address
P.O. Box 486

City: Mukwonago **State:** WI **Zip Code:** 53149 **Phone Number:**

Property Location

Govt. Lot: E 1/2 NE 1/4 S4 & W1/2 NW 1/4 S3 T 5 N R 20 E

Lot #: **Block #:** **Subd. Name or CSM#:**

[X] City [ ] Village [ ] Town — Muskego

Nearest Road: W. College Avenue

Drainage area: 90+ [ ] sq. ft. [X] acres

Test Site Suitable for (check all that apply) [ ] Site not suitable
[ ] Bioretention [ ] Subsurface Dispersal System
[ ] Reuse [ ] Irrigation [ ] Other _____

Hydraulic Application Test Method
[X] Morphological Evaluation
[ ] Double-Ring Infiltrometer
[ ] Other (Specify)_____

Soil Moisture
Date of soil borings: July 21, 22 & 27, 2021
USDA-NRCS WETS Value:
[X] Dry = 1
[ ] Normal = 2
[ ] Wet = 3

1 **Obs. #** [ ] Boring [X] Pit **Ground Surface Elev.** 837.3 ft **Elevation of limiting factor** 830.8 ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-11	10YR4/4	None	SL	1fsbk	mfr	cw	<5	<60	0.50
2	11-19	10YR3/3	None	SC	2fsbk	mefi	cw	<5	<5	0.04
3	19-27	10YR6/4	None	XGRS	0sg	mlo	cw	35-<60	<10	3.60
4	27-54	10YR5/4	c2d 10YR7/1	SIL	2fsbk	mefi	cw	<5	>70	0.07
5	54-78	10YR5/3	None	SICL	1fsbk	mvfi	cw	<5	>70	0.04
6	78-108	10YR6/1	None	SIL	1fsbk	mvfi	cw	<5	>70	0.13
7	108-126	10YR6/1	None	SIC	2fsbk	mefi	-	<5	>70	0.07

Comments: Gray soils encountered at 6.5 ft (EL 830.8 ft).

3 **Obs. #** [ ] Boring [X] Pit **Ground Surface Elev.** 839.8 ft **Elevation of limiting factor** 835.5 ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-14	2.5Y4/3	None	L	1fsbk	mfr	cw	<5	>50	0.24
2	14-48	2.5Y5/4	None	FS	0sg	mlo	cw	<5	<15	0.50
3	48-96	2.5Y5/6	c2d 2.5Y6/2	FLS	0ma	mlo	cw	<5	<30	0.50
4	96-168	10YR5/6	None	FS	0ma	mlo	cw	<15	<40	0.50
5	168-180	10YR5/1	None	SIC	2fsbk	mcfi	-	<15	>60	0.07

Comments: Rust/oxidation staining at 4.3 ft (EL 835.5 ft). Groundwater encountered at 8 ft (EL 831.8 ft).

CST/PSS Name (Please Print): Nathan I. Springstead, CST

Signature: Nathan Springstead

CST Number: SP-040900024

Address: 336 S. Curtis Road, West Allis, WI 53214

Date Evaluation Conducted: 7/21/2021 - 7/27/2021

Telephone Number: (414) 443-2000

SBD-10793 (R.01/17)

4 **Obs. #** [X] **Boring** [ ] **Pit** **Ground Surface Elev.** 843.5 ft **Elevation of limiting factor** 840.0 ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-12	10YR4/3	None	SIL	1fsbk	mfr	cw	<5	>50	0.13
2	12-42	10YR5/4	None	FS	0sg	mlo	cw	<10	<25	0.50
3	42-60	10YR5/3	f1f 10YR6/1	SIL	1fsbk	mfi	cw	<5	>50	0.13
4	60-114	10YR5/1	None	SIC	2fsbk	mvfi	cw	<5	>75	0.07
5	114-194	10YR5/2	None	FSL	0ma	mlo	cw	<15	<25	0.50
6	194-240	10YR5/1	None	SIL	2fsbk	mvfi	-	<5	>75	0.07

Comments: Mottled soils encountered at 3.5 ft (EL 840 ft). Groundwater encountered at 9.5 ft (EL 834 ft) while drilling.

5 **Obs. #** [ ] **Boring** [X] **Pit** **Ground Surface Elev.** 841.9 ft **Elevation of limiting factor** 838.9 ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-12	10YR4/3	None	SL	1fsbk	mfr	cw	<5	<50	0.50
2	12-36	10YR5/6	None	FLS	0ma	mlo	cw	<5	<20	0.50
3	36-66	10YR5/4	f1f 10YR6/1	FSL	0ma	mlo	cw	<5	<25	0.50
4	66-90	10YR5/2	None	FSL	0ma	mlo	cw	<5	<25	0.50
5	90-174	10YR5/1	None	SICL	1fsbk	mfi	-	<5	>50	0.04

Comments: Mottled soils observed at 3 ft (EL 838.9 ft) and groundwater encountered at 4 ft (EL 837.9 ft).

11 **Obs. #** [ ] **Boring** [X] **Pit** **Ground Surface Elev.** 843.6 ft **Elevation of limiting factor** 839.1 ft

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-10	10YR4/3	None	SL	1fsbk	mfr	cw	<5	<50	0.50
2	10-54	10YR6/4	None	FLS	0sg	mlo	cw	<5	<15	0.50
3	54-90	10YR5/4	c2d 10YR6/1 & 7/6	FLS	0sg	mlo	cw	<5	<15	0.50
4	90-108	10YR6/2	None	SL	0sg	mlo	cw	<5	<15	0.50
5	108-186	10YR6/1	None	SIL	2fsbk	mvfi	-	<5	>75	0.07

Comments: Mottled soils encountered at 4.5 ft (EL 839.1 ft) and groundwater encountered at 6 ft (EL 837.6 ft).

Property Owner Ryan's Buying, LLC **Parcel ID#** MSKC2173997 & 8 and MSKC2170991 **Page** 3 **of** 3

12 **Obs. #** ☐ **Boring** ☒ **Pit** **Ground Surface Elev.** 843.7 **ft** **Elevation of limiting factor** 839.2 **ft**

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-10	10YR6/4	None	SIL	1fsbk	mfr	cw	<5	>50	0.13
2	10-24	10YR6/4	None	LFS	0sg	mlo	cw	<5	<30	0.50
3	24-54	10YR5/4	None	SC	1fsbk	mvfi	cw	<5	<60	0.04\
4	54-78	10YR5/3	f1f 10YR6/1	SL	0sg	mlo	cw	<5	<25	0.50
5	78-106	10YR5/1	None	SC	1fsbk	mvfi	cw	<15	<30	0.04
6	106-180	10YR5/1	None	SIC	2fsbk	mvfi	-	<5	>75	0.07

Comments:

24 **Obs. #** ☐ **Boring** ☒ **Pit** **Ground Surface Elev.** 844.4 **ft** **Elevation of limiting factor** 840.4 **ft**

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-2	10YR3/4	None	FILL: SIL	1fsbk	mfr	cw	<5	>70	0.07
2	2-20	10YR4/4	None	FILL: SC	1fsbk	mvfi	cw	<5	>70	0.04
3	20-28	10YR5/4	None	SIL	1fsbk	mfi	cw	<5	>70	0.13
4	28-48	10YR6/4	None	FSL	0sg	mlo	cw	<15	<35	0.50
5	48-114	10YR5/4	c2d 10YR6/1	SIC	2fsbk	mefi	cw	<5	>70	0.07
6	114-144	10YR5/2	None	SIC	2fsbk	mefi	-	<15	>70	0.07

Comments: Mottled soils encountered at 4 ft (EL 840.4 ft) and groundwater encountered at 7 ft (EL 837.4 ft).

27 **Obs. #** ☐ **Boring** ☒ **Pit** **Ground Surface Elev.** 847± **ft** **Elevation of limiting factor** 836.5 **ft**

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.	% Fines	Hydraulic App. Rate Inches/Hr
1	0-18	10YR2/2	None	SICL	1fsbk	mfr	cw	<5	>50	0.04
2	18-66	10YR4/4	g2d 10YR6/1	SIC	2fsbk	mefi	cw	<5	>70	0.07
3	66-126	10YR5/3	f1f 10YR6/2	SIC	2fsbk	mefi	cw	<5	>70	0.07
4	126-144	10YR6/2	None	SIC	2fsbk	mefi	-	<5	>70	0.07

Comments:

Preliminary

CM21166

Table 1
Groundwater Level Per Lot Summary
Kirkland Crossing
Muskego, Wisconsin

Test Pit/ Boring No.	Ground Surface Elevation (ft)	GWL Depth (ft)	GWL Elevation (ft)	NRCS Soil Survey		Estimated Elevation of Seasonal High Water Table (ft)	Lowest Recommended Basement Elevation (ft)
				Soil Survey Designation	Seasonal High Water Table (ft)		
1	837.3	NW	--	BlA	0.5 to 2	833.3	835.3
2	839.0	6.0	833	BlA	0.5 to 2	833.0	835.0
3	839.8	8.0	831.8	ThC2	>6.7	835.5	837.5
4	843.5	9.5	834	ThC2	>6.7	840.0	842.0
5	841.9	4.0	837.9	BlA	0.5 to 2	838.9	840.9
6	836.7	NW	--	BlA/AsA	0 to 2	829.2	831.2
7	841.5	NW	--	OuB2	2 to 3.5	830.5	832.5
8	848.7	NW	--	OuB2	2 to 3.5	838.7	840.7
9	860.6	NW	--	ThC2	>6.7	<838.1	<840.1
10	842.9	NW	--	OuB2	2 to 3.5	838.9	840.9
11	843.6	6.0	837.6	BlA	0.5 to 2	838.6	840.6
12	843.7	5.0	838.7	FmB	>6.7	839.2	841.2
13	854.4	NW	--	ThC2	>6.7	841.9	843.9
14	877.2	18.0	859.2	HmD2	>6.7	859.2	861.2
15	870.3	NW	--	ThC2	>6.7	<855.3	<857.3
16	853.7	NW	--	MtA	1 to 3	835.2	837.2
17	Boring Not Completed / Numbering Skipped During Layout						
18	8508.0	NW	--	AsA	0 to 1	837.8	839.8
19	855.9	NW	--	MtA	1 to 3	843.9	845.9
20	858.9	NW	--	OuB2	2 to 3.5	<846.9	<848.9
21	845.6	6.5	839.1	MtA	1 to 3	839.6	841.6
22	862.4	NW	--	OuB2	2 to 3.5	848.4	850.4
23	850.4	8.0	842.4	MtA	1 to 3	844.4	846.4
24	844.4	7.0	837.4	OuB	2 to 3.5	837.4	839.4
25	855.3	12.0	843.3	MtA	1 to 3	845.3	847.3
26	847.1	NW	--	OuB2	2 to 3.5	836.1	838.1
27	847.0	NW	--	AsA/OuB2	0 to 3.5	847	849.0
28	847.9	12.5	835.4	AsA	0 to 1	845.7	847.7
29	850.0	10.0	840.0	BlA	0.5 to 2	848	850.0
30	846.3	4.0	842.3	AsA	0 to 1	846.3	848.3
31	852.8	NW	--	OuB	2 to 3.5	839.8	841.8
32	855.5	NW	--	OuB2	2 to 3.5	842	844.0
33	873.2	NW	--	OuB2	2 to 3.5	<848.2	<850.2
34	854.7	NW	--	OuB2	2 to 3.5	848.7	850.7
35	857.3	NW	--	OzaC2	2 to 3.5	847.5	849.5

Test Pit/ Boring No.	Ground Surface Elevation (ft)	GWL Depth (ft)	GWL Elevation (ft)	NRCS Soil Survey		Estimated Elevation of Seasonal High Water Table (ft)	Lowest Recommended Basement Elevation (ft)
				Soil Survey Designation	Seasonal High Water Table (ft)		
36	862.3	8.8	853.5	OzaC2	2 to 3.5	854.8	856.8
37	862.5	8.0	854.5	BlA	0.5 to 2	854.5	856.5
38	871.8	NW	--	OuB2	2 to 3.5	863.8	865.8

CGC, Inc.

LOG OF TEST BORING

General Notes

DESCRIPTIVE SOIL CLASSIFICATION

Grain Size Terminology

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse	¾" to 3"	¾" to 3"
Fine	4.76 mm to ¾"	#4 to ¾"
Sand: Coarse	2.00 mm to 4.76 mm	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm	#200 to #40
Silt	0.005 mm to 0.074 mm	Smaller than #200
Clay	Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

General Terminology

Physical Characteristics
Color, moisture, grain shape, fineness, etc.
Major Constituents
Clay, silt, sand, gravel
Structure
Laminated, varved, fibrous, stratified, cemented, fissured, etc.
Geologic Origin
Glacial, alluvial, eolian, residual, etc.

Relative Density

Term	"N" Value
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

Relative Proportions Of Cohesionless Soils

Proportional Term	Defining Range by Percentage of Weight
Trace	0% - 5%
Little	5% - 12%
Some	12% - 35%
And	35% - 50%

Consistency

Term	q_u-tons/sq. ft
Very Soft	0.0 to 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.0
Stiff	1.0 to 2.0
Very Stiff	2.0 to 4.0
Hard	Over 4.0

Organic Content by Combustion Method

Soil Description	Loss on Ignition
Non Organic	Less than 4%
Organic Silt/Clay	4 – 12%
Sedimentary Peat	12% - 50%
Fibrous and Woody Peat	More than 50%

Plasticity

Term	Plastic Index
None to Slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

Drilling and Sampling

CS – Continuous Sampling
RC – Rock Coring: Size AW, BW, NW, 2"W
RQD – Rock Quality Designation
RB – Rock Bit/Roller Bit
FT – Fish Tail
DC – Drove Casing
C – Casing: Size 2 ½", NW, 4", HW
CW – Clear Water
DM – Drilling Mud
HSA – Hollow Stem Auger
FA – Flight Auger
HA – Hand Auger
COA – Clean-Out Auger
SS - 2" Dia. Split-Barrel Sample
2ST – 2" Dia. Thin-Walled Tube Sample
3ST – 3" Dia. Thin-Walled Tube Sample
PT – 3" Dia. Piston Tube Sample
AS – Auger Sample
WS – Wash Sample
PTS – Peat Sample
PS – Pitcher Sample
NR – No Recovery
S – Sounding
PMT – Borehole Pressuremeter Test
VS – Vane Shear Test
WPT – Water Pressure Test

Laboratory Tests

q_a – Penetrometer Reading, tons/sq ft
q_a – Unconfined Strength, tons/sq ft
W – Moisture Content, %
LL – Liquid Limit, %
PL – Plastic Limit, %
SL – Shrinkage Limit, %
LI – Loss on Ignition
D – Dry Unit Weight, lbs/cu ft
pH – Measure of Soil Alkalinity or Acidity
FS – Free Swell, %

Water Level Measurement

▽ - Water Level at Time Shown
NW – No Water Encountered
WD – While Drilling
BCR – Before Casing Removal
ACR – After Casing Removal
CW – Cave and Wet
CM – Caved and Moist

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

CGC, Inc.

Madison - Milwaukee

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART