MCINTOSH SUBDIVISION

PRELIMINARY TECHNICAL INFORMATION REPORT

Prepared for:
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06/24/2022

DATE: 06/24/22
JOB #: 2140

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Tables

Technical Appendix

SECTION A - Project Overview

The McIntosh Subdivision proposes to develop parcel 127449000 approximately 9.93 acres total, Into a 28-lot subdivision. The site is located at 3210 NW McIntosh Road, Camas, WA 98607. There is an existing driveway along the center of the site and one small building to be demolished.

The existing vegetation on site consists of flat field. An existing house to remain is located just to the south of site and will have access from the south of site to a 20' access easement. Typical slopes are between 5-8% on the majority of the site except for the southeast corner where there is a slope of approximately 26%. A large portion of the existing runoff from the site flows to the northwest corner of the site. Runoff is collected on NW McIntosh Road by an existing ditch inlet and routed to an unnamed creek to the west, and eventually discharged to the Columbia River. The eastern portion of the site is collected by an existing catch basin on the eastern border of the site. Runoff is routed from this catch basin to an unnamed stream to the east. This stream also discharges to the Columbia River. A small basin at the southern tip of the site discharges to the existing single-family residences to the south of the property. An additional minor basin discharges to the stubbed NW 5th Court.

Storm design for this site will consist of Contech Filterra treatment systems, rear yard roof infiltration systems, and two detention ponds that will treat, infiltrate, detain and release flows below predeveloped conditions. All facilities will release to the existing drainage points on site to the maximum extent feasible.

This project will consist of site grading, constructing roads, and utilities necessary to develop the site. Stormwater control will conform to the requirements of the City of Camas Design Standards Manual and the 2019 Stormwater Management Manual for Western Washington. Stormwater will be managed on the site using Contech Filterra and two detention pond systems. The proposed systems will be privately owned and maintained by the HOA> There are currently no stormwater facilities on site.

SECTION B – Minimum Requirements

According to Table A below and Figure 1.2 from Chapter 1 of the Camas Stormwater Design Standards Manual, all Minimum Requirements (1-9) apply.

Table A. – Surface Area Breakdown Onsite

Existing Impervious Surface	**0.20 Acres**
New Impervious Surface	**4.08 Acres**
Replaced Impervious Surface	**0.00 Acres**
Native Vegetation Converted to Lawn or Landscaping	**5.90 Acres**
Native Vegetation Converted to Pasture	**0.00 Acres**
Total Land-disturbing Activity	**9.98 Acres**

Since Minimum Requirements #1-9 apply to this project, the following requirements must be met by each
TDA listed:

- All TDA's will not increase the 100-year flood frequency.
- All TDA's must meet the runoff treatment requirements listed in Minimum Requirement #6.
- All TDA's must meet flow control requirements listed in Minimum Requirement #7.
- No wetlands exist on site. Minimum Requirement #8 does not apply.

Minimum Requirement 1. – Preparation of Stormwater Site Plans*:*
This report is part of the Preliminary Stormwater Plan. Reference the preliminary engineering plans for preliminary drawings detailing the stormwater design.

Minimum Requirement 2. – Construction Stormwater Pollution Prevention*:*
A Construction Stormwater Pollution Prevention Plan (SWPPP) is required and will be prepared with final engineering. The contractor will comply with construction SWPPP requirements including elements 1-13.

Minimum Requirement 3. – Source Control of Pollution*:*
All development activities shall consult Camas Design Standard Manual. The BMPs that may apply to land disturbance could be **BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots, BMPs for Landscaping and Lawn/Vegetation Management, BMPs for Maintenance of Stormwater Drainage and Treatment Systems, BMPs for Urban Streets.** Refer to Section D of this report.

Minimum Requirement 4. – Preservation of Natural Drainage Systems and Outfalls*:*
Existing drainage patterns shall be maintained, and discharges from the project site shall occur as is, to the maximum extent practicable. The site currently has four releases, as described in Section A. The preliminary stormwater plan proposes to release runoff to all four discharge locations as close to predeveloped flow rates as feasible.

Minimum Requirement 5. – Onsite Stormwater Management*:*
The BMPs that may apply to Onsite Stormwater Management for this project could include T5.13 - Post-Construction Soil Quality and Depth and T5.21 - Better Site Design. Onsite Stormwater Management is a means to implement inexpensive practices on individual properties to reduce the amount of disruption of the natural hydrology. Refer to Section E of this Report.

Minimum Requirement #6. – Runoff Treatment:
Since the thresholds for impervious area added exceeds the limits, basic runoff treatment is required. The stormwater system discharges to multiple unnamed, non-fish bearing streams, and ultimately discharges to the Columbia River, which requires basic treatment. Basic treatment is proposed in the form of Contech Filterra technologies that will meet or exceed the required treatment parameters. An approved equivalent treatment system like Contech Stormfilter catch basins or bioretention areas may be proposed during final engineering. Refer to Section F of this

report.

Minimum Requirement #7. – Runoff Flow Control:
This project's storm plan consists of a combination of facilities including trenches and storm ponds for the main source of flow control. The trenches and ponds will utilize low-level infiltration while also detaining and releasing runoff below predeveloped rates. Rear yard runoff and roof water will be piped to infiltration trenches to the detention ponds. See Appendix B of this report for additional soil information.

Minimum Requirement #8. – Wetlands Protection:
No wetlands exist onsite or around the site.

Minimum Requirement #9. – Operation and Maintenance:
The storm systems will be privately owned and maintained by a Homeowners Association. See Contech's website for maintenance on Filtera Bioretention Systems.

SECTION C – Soils Evaluation

Refer to the Final Geotechnical Report by Earth Engineering, Inc. dated March 4, 2022. for the full soils evaluation in Appendix D. Infiltration tests onsite yielded rates of 1 inch per hour (iph). Infiltration will be utilized to the maximum extent feasible onsite in combination with detention facilities.

The Soil Survey of Clark County, Washington, November 1972 identifies the onsite soils as, Powell (PoB, PoD). The hydrologic soil group for these soils is "C" and WWHM3 Soil Groups (SG) 3.

SECTION D – Source Control

All development activities shall consult City of Camas Design Standard Manual and Camas Stormwater Design Standards Manual. The BMPs that may apply to land disturbance could be 'BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots,' 'BMPs for Landscaping and Lawn/Vegetation Management,' 'BMPs for Maintenance of Stormwater Drainage and Treatment Systems' and 'BMPs for Urban Streets'.

SECTION E - Onsite Stormwater Management BMPs

1. The following are a list of onsite stormwater management BMPs:

    T5.13 – Post-Construction Soil Quality and Depth

2. Refer to Section C above for geotechnical information

3./4. **T5.13 – Post-Construction Soil Quality and Depth (Volume V, SMMWW)**

Since the majority of the site has been or will be stripped of topsoil and/or organic material for grading purposes, the remaining open spaces, yards, and landscaping areas shall be restored with the appropriate soil quality and depths.

T5.21 – Better Site Design (Volume V, SMMWW)

An attempt to provide better site design has been considered to the extent practical. Sensitive areas with wetlands and significant trees have been left out of the development.

5./6./7. Contech Filterras are proposed on this project. See Appendix C for the water quality analysis.

8. N/A; no pervious pavement is proposed.

9. N/A; no reversed slope sidewalks are proposed.

SECTION F - Runoff Treatment Analysis and Design

1. Based on the proposed site conditions and use, basic treatment is proposed.

2. Since the thresholds for impervious area added exceeds the limits, basic runoff treatment is required. The stormwater system will meet or exceed the required treatment parameters as described in the Washington State Department of Ecology Stormwater Management Manual for Western Washington (SWMM), Appendix III-C.

3. See Section C for Geotechnical information.

4. The following are the BMPs used in the design.

   Contech Filterra – See Appendix C for Contech Filterra design

5. In accordance with the Camas Stormwater Design Standards Manual and Volume V of the SMMWW, the water quality treatment system designs comply with these sections and provide basic treatment (see plans and details).

6. See Water Quality Basin Map in Appendix C for pollution generating areas summary.

SECTION G - Flow Control Analysis and Design

As previously mentioned in Sections A and B of this report, the proposed detention facilites are designed to detain and release flows below predeveloped conditions. The detention ponds will also utilize the low-level infiltration rates measured onsite. Rear yard roof infiltration trenches will overflow to the detention ponds onsite. See Appendix C for Flow Control modeling details.

The site was evaluated using the continuous model using the WWHM2012 software. Electronic copies of the WWHM files will be submitted upon request.

SECTION H – Wetlands Protection

There are no wetlands in or around the site.

SECTION I - Other Permits

NPDES Construction Stormwater General Permit Required.

SECTION J - Conveyance Systems Analysis and Design

See maps, exhibits, and calculations in Appendices A-C for design parameters, methodology and computations.

Surface runoff will be collected from the street via catch basins and directed through a Contech Filterra treatment system to the on-site Chamber detention system. "Worst Case" scenario conveyance modeling for a 12" will be completed with final engineering.

SECTION K – Offsite Analysis

Offsite analysis was performed during multiple trips throughout 2022 to evaluate the downstream systems. The current proposed detention facility will release to existing systems that discharge to the Northwest and East of the site to unnamed creeks that eventually flow to the Columbia River. The downstream systems for both the East and West basins appear to be functioning as designed without any maintenance or erosions issues.

SECTION L - Approval Conditions Summary

To be completed with Final Engineering

SECTION M - Special Reports and Studies

See Geotechnical Report (Appendix D)

SECTION N - Maintenance and Operations Manual

The storm systems will be privately owned and maintained by a Homeowners Association. See ADS and Contech websites for latest Maintenance and Operations Manuals.

References

United States Department of Agriculture, Soil Conservation Service. "Soil Survey of Clark County Washington," Washington, D.C., 1972.

United States Department of Agriculture, Soil Conservation Service, Engineering Division, "Technical Release 55: Urban Hydrology for Small Watersheds, 2nd Ed.," Washington, D.C., 1986.

United States Department of Transportation, Federal Highway Administration, "Hydraulic Engineering Circular No. 12: Drainage of Highway Pavements," Springfield, VA, 1984.

United States Department of Transportation, Federal Highway Administration, "Hydraulic Engineering Circular No. 15: Design of Roadside Channels with Flexible Linings," Springfield, VA, 1984.

Washington State Department of Ecology, "Stormwater Management Manual for Western Washington, Volume I-V," Olympia, WA, February 2005.

Washington State Department of Transportation, "Hydraulic Manual," Olympia, WA, 1989.

City of Camas, "Camas Stormwater Design Standards Manual," Camas, WA, 2016

Clark County Department of Assessment and GIS, "2000 Clark County Road Atlas," Vancouver, WA, 2000.

A p p e n d i x A

General Location

Account: 127449000
Owner: ROBERTSON RICHARD T
Address: PO BOX 208
C/S/Z: WASHOUGAL, WA 98671

Location of Subject Property(s)

Printed on: August 09, 2021

Geographic Information System

0 1,000 2,000 Feet

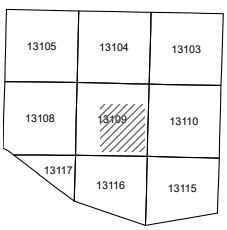
Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.

Elevation Contours

Account: 127449000
Owner: ROBERTSON RICHARD T
Address: PO BOX 208
C/S/Z: WASHOUGAL, WA 98671

Printed on: August 09, 2021

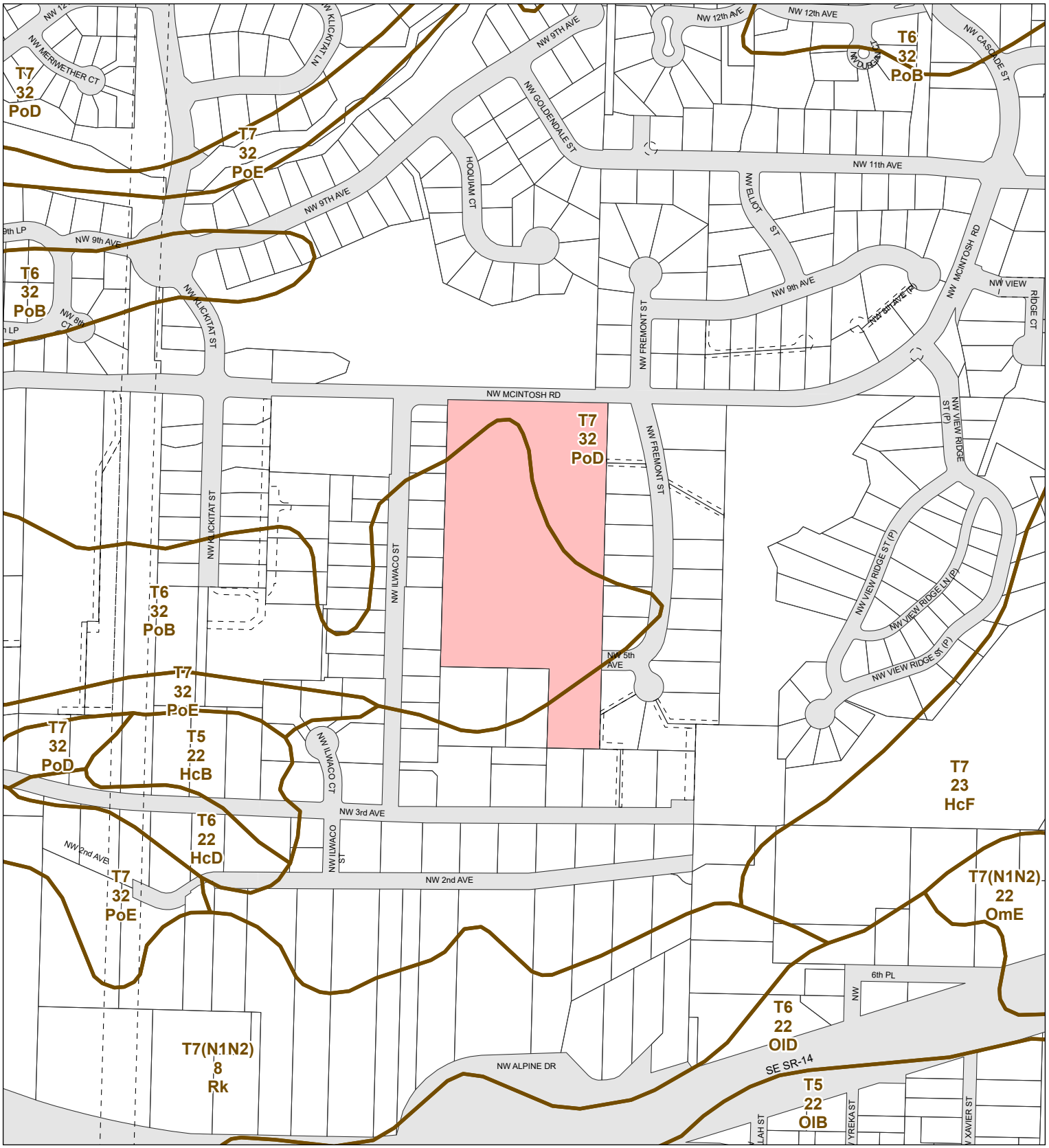
Subject Property(s)
Public Road
Transportation or Major Utility Easement
10' Elevation Contours
2' Elevation Contours



Clark County, Washington
Geographic Information System

0 200 400 Feet

Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.



CLARK COUNTY, WASHINGTON

Geographic Information System

0 200 400 Feet

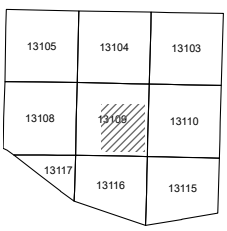
Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.

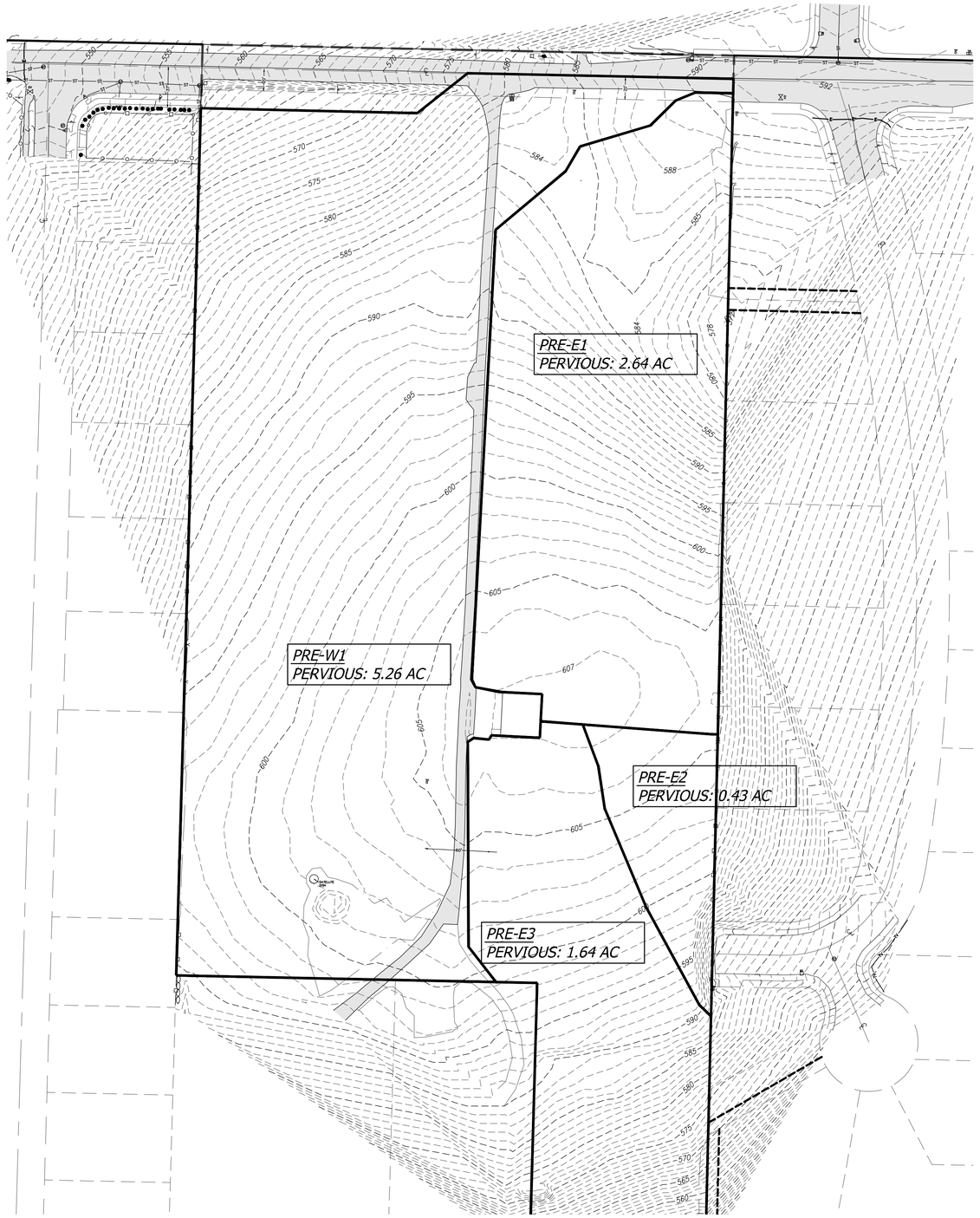
Soil Types

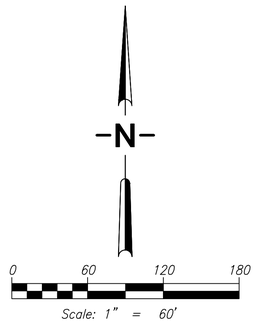
Account: 127449000
Owner: ROBERTSON RICHARD T
Address: PO BOX 208
C/S/Z: WASHOUGAL, WA 98671

- Subject Property(s)
- Public Road
- Transportation or Major Utility Easement
- Soil Type Boundary

Printed on: August 09, 2021







SCA ENGINEERING & DESIGN
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PRELIMINARY NOT FOR CONSTRUCTION
JOHN A. IVERSON
STATE OF WASHINGTON
21605
REGISTERED
PROFESSIONAL ENGINEER

PREDEVELOPED BASIN MAP

MCINTOSH SUBDIVISION

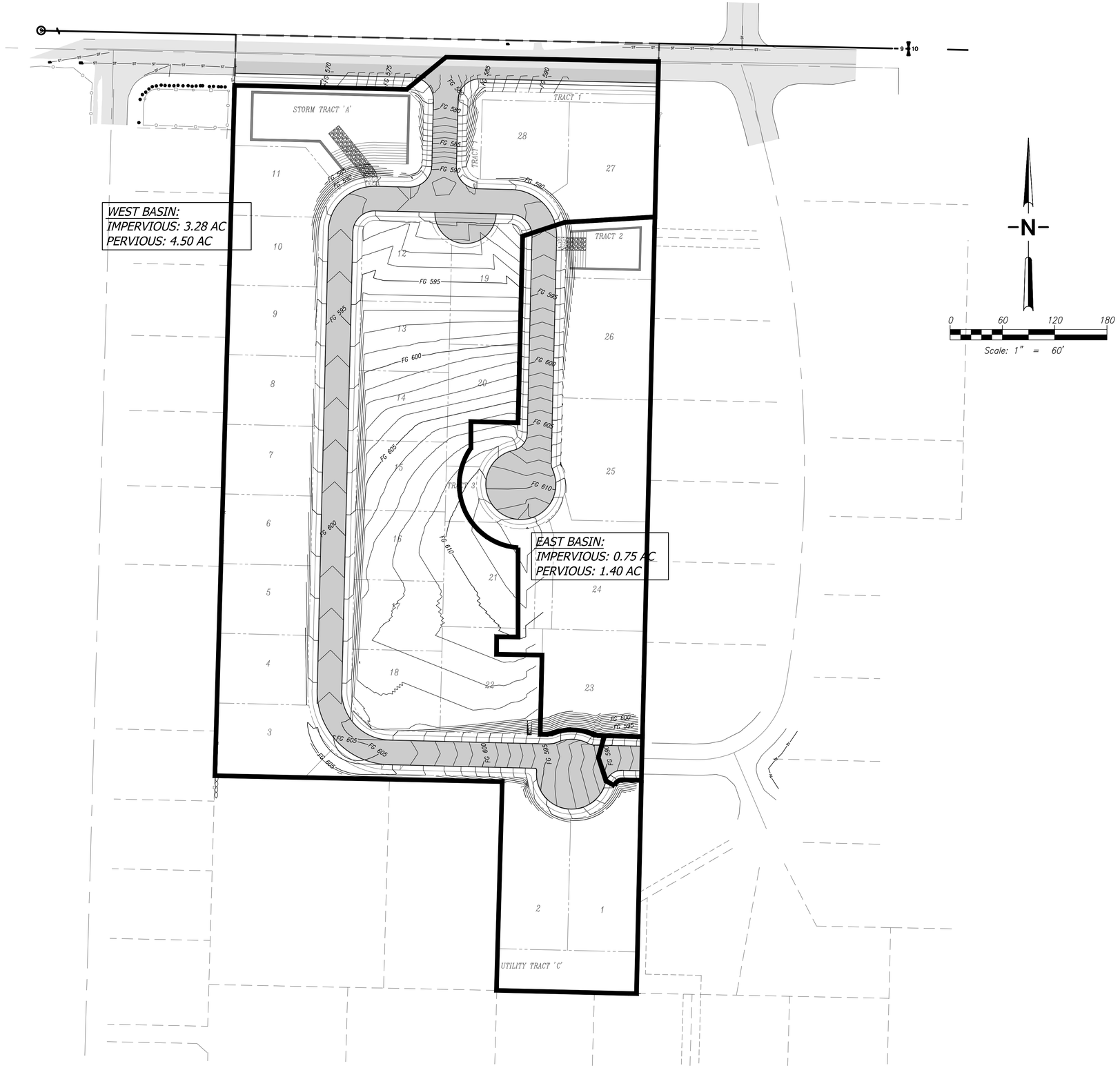
CITY OF CAMAS WA

PRELIMINARY

REVISIONS

DESIGNED BY:	JAI
DRAWN BY:	JAI
CHECKED BY:	JTM
SCALE:	1" = 60'

JOB NUMBER	SHEET
2140	PRE



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VANCOUVER, WA 98663
PHONE (360)993-0911
FAX (360)993-0912

DEVELOPED BASIN MAP

MCINTOSH SUBDIVISION

CITY OF CAMAS

WA

PRELIMINARY

REVISIONS

DESIGNED BY:	JAI
DRAWN BY:	JAI
CHECKED BY:	JTM
SCALE:	1" = 60'

JOB NUMBER	SHEET
2140	DEV

Design Criteria Appendix B

WWHM Soil Groups

Memorandum

otak

700 Washington Street
Suite 401.
Vancouver, WA 98660
Phone (360) 737-9613
Fax (360) 737-9651

To: Rod Swanson, Clark County Environmental Services

From: Tim Kraft

Copies: File

Date: December 21, 2010

Subject: Clark County WWHM Soil Groupings

The Clark County version of the Western Washington Hydrology Model (WWHM) includes five soils groups to represent the many soil types found within the county limits. Although there are over 110 different soil types throughout Clark County, similarities between the soils allows them to be grouped into categories for modeling purposes.

Clark County soils are grouped into five categories largely based on their permeability and runoff potential. These categories include:

- Soil Group (SG) 1 – Excessively drained soils (hydrologic soil groups A & B)
- Soil Group (SG) 2 – Well drained soils (mostly hydrologic soil group B)
- Soil Group (SG) 3 – Moderately drained soils (hydrologic soil groups B & C)
- Soil Group (SG) 4 – Poorly drained soils (slowly infiltrating C soils, as well as D soils)
- Soil Group (SG) 5 – Wetland soils (mucks).

Soil Groups 1 and 2 are those most suitable for traditional infiltration facilities such as trenches and drywells, while Soil Group 3 may only be suitable for slower infiltrating facilities such as rain gardens and other Low Impact Development (LID) measures. Soil Groups 4 and 5 are those which are typically not suitable for infiltration.

For additional information on the classification of soils for use in the Clark County WWHM model, please see the report titled "Development of the Clark County Version of the Western Washington Hydrology Model", which can be found on the county's community development web site.

The following table lists the WWHM soil group for each NCRS soil type in Clark County.

Map Symbol	Soil Name	HSG
HoB	HILLSBORO	B
	Soils Group (SG) 3 (continued)	
HoC	HILLSBORO	B
HoD	HILLSBORO	B
HoE	HILLSBORO	B
HoG	HILLSBORO	B
HsB	HILLSBORO	B
McB	McBEE	C
MeA	McBEE	C
MIA	McBEE	C
OeD	OLEQUA	B
OeE	OLEQUA	B
OeF	OLEQUA	B
OlB	OLYMPIC	B
OID	OLYMPIC	B
OlE	OLYMPIC	B
OIF	OLYMPIC	B
OmE	OLYMPIC	B
OmF	OLYMPIC	B
OpC	OLYMPIC VARIANT	C
OpE	OLYMPIC VARIANT	C
OpG	OLYMPIC VARIANT	C
OrC	OLYMPIC VARIANT	C
PoB	POWELL	C
PoD	POWELL	C
PoE	POWELL	C
SmA	SAUVIE	B
SmB	SAUVIE	B
SnA	SAUVIE	D
SpB	SAUVIE	B

Soils Group (SG) 4

CvA	COVE	D
CwA	COVE	D
GeB	GEE	C

Hydraulic Calculations Appendix C

Water Quality Schematic

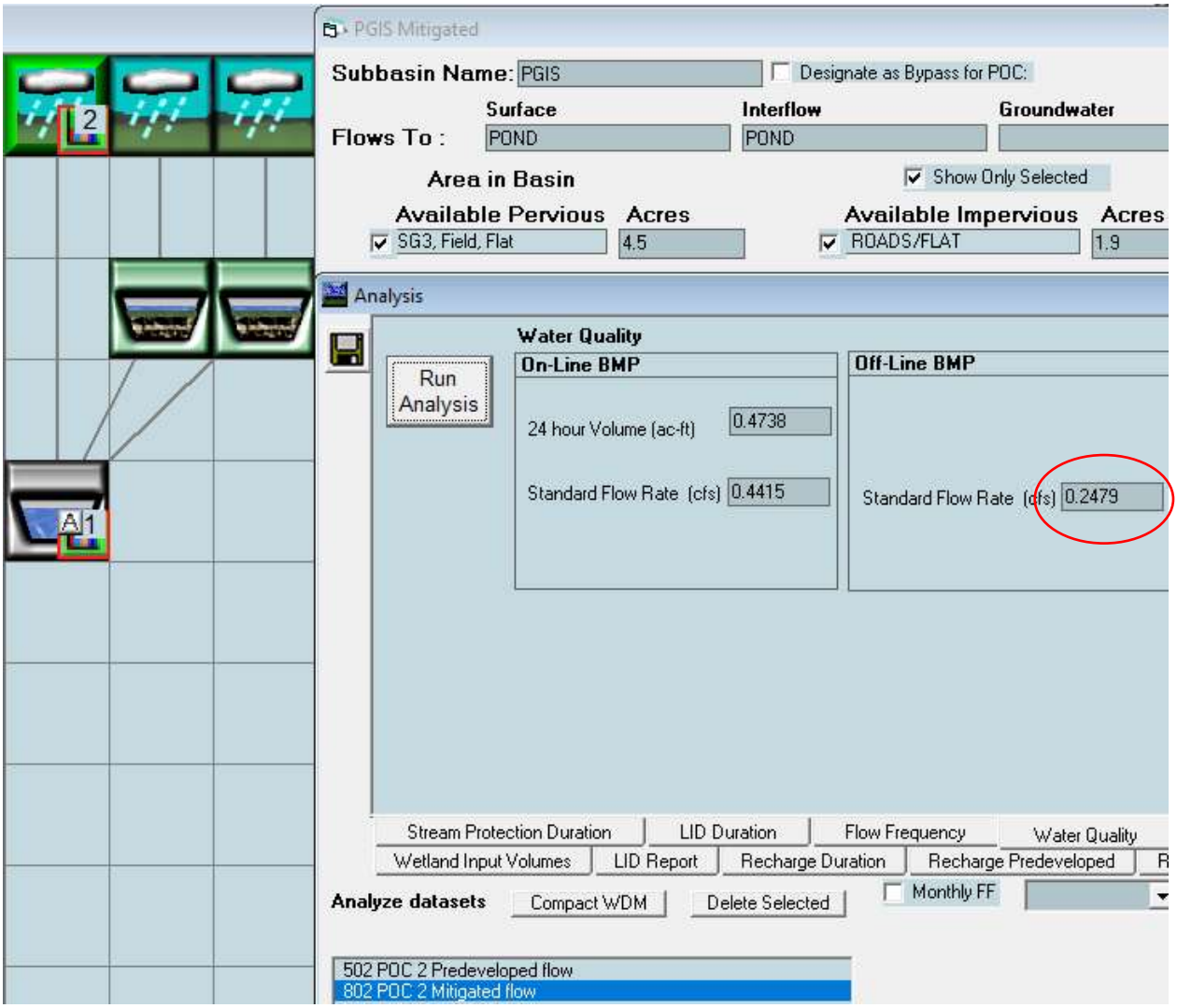
Filterra Sizing Calculations

Flow Control

WWHM Report

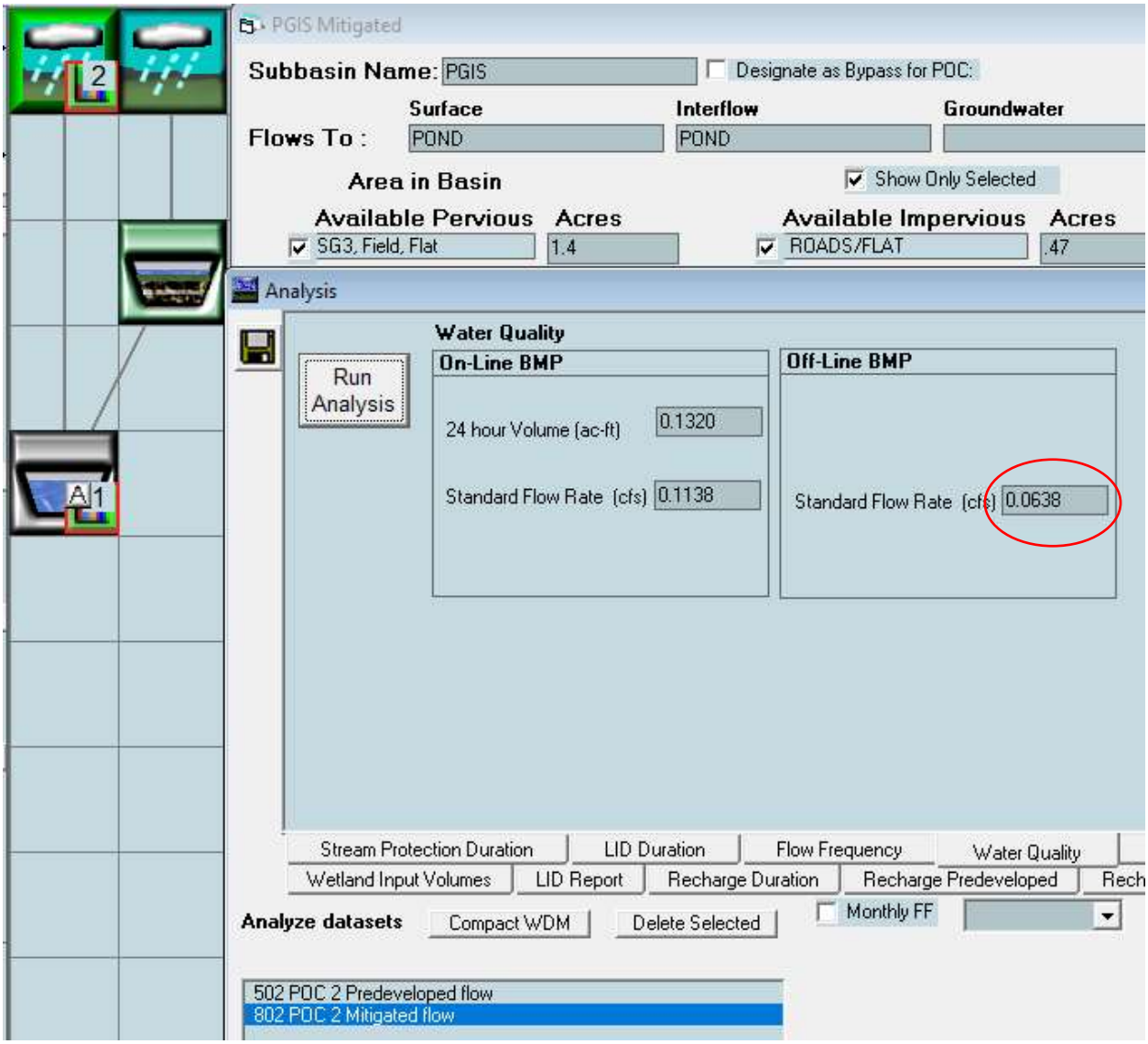
WWHM – WEST WATER QUALITY

WEST BASIN – WATER QUALITY = 0.2479 CFS 6' X 12' FILTERRA FLOW TREATED = 0.292 CFS



WWHM – EAST WATER QUALITY

EAST BASIN – WATER QUALITY = 0.0638 CFS 4' X 4' FILTERRA FLOW TREATED = 0.065 CFS



filterra®

Washington Sizing Table

Infiltration Rate:	Enhanced/Basic	Phosphorus	Oil/Grease
	[1] 175 in/hr (0.00405 ft/sec)	[1] 100 in/hr (0.00231 ft/sec)	[1] 50 in/hr (0.00116 ft/sec)

WADOE Sizing Table	Size	Flow Treated (cfs)	Flow Treated (cfs)	Flow Treated (cfs)
EAST →	4x4	0.065	0.037	0.019
Based on 2019 GULD	4x6 & 6x4	0.097	0.055	0.028
	4x8 & 8x4	0.130	0.074	0.037
Calculated by:	6x6	0.146	0.083	0.042
	6x8 & 8x6	0.194	0.111	0.056
$Flow\ Treated = Footprint * Infiltration\ Rate$	6x10 & 10x6	0.243	0.139	0.070
WEST →	6x12 & 12x6	0.292	0.166	0.084
	7x13 or 13x7	0.369	0.210	0.106

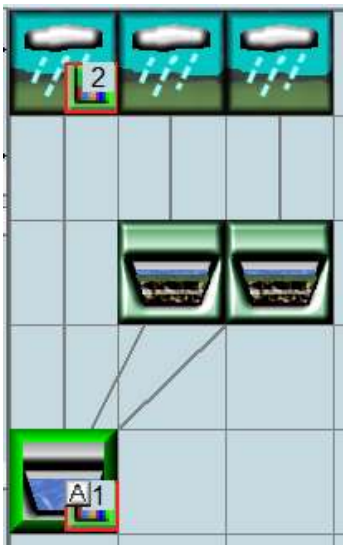
Shallow Filterra Table	Standard Size	Equivalent Shallow Size
	4x4	4x6 or 6x4
Found in 2019 GULD	4x6 or 6x4	6x6
	4x8 or 8x4	6x8 or 8x6
Standard Media Depth: 21"	6x6	6x10 or 10x6
Shallow Media Depth: 15"	6x8 or 8x6	6x12 or 12x6
	6x10 or 10x6	13x7

1. Only residential and commercial land types considered in sizing table. For roadway or regional treatment sizing contact your local Stormwater Consultant
2. For sizing in other areas, contact your local Contech Engineered Solutions representative

CONTECH® ENGINEERED SOLUTIONS

WWHM – WEST FLOW CONTROL

WEST SYSTEM:



POND Mitigated

Facility Name POND **Facility Type**

	Outlet 1	Outlet 2	Outlet 3
Downstream Connections	0	0	0

☐ Precipitation Applied to Facility
☐ Evaporation Applied to Facility

Auto Pond | Quick Pond

Facility Dimension Diagram

Facility Dimensions

Facility Bottom Elevation (ft)	0
Bottom Length (ft)	177
Bottom Width (ft)	60
Effective Depth (ft)	8.5
Left Side Slope (H/V)	0
Bottom Side Slope (H/V)	0
Right Side Slope (H/V)	0
Top Side Slope (H/V)	0

Outlet Structure Data

Riser Height (ft)	7.5
Riser Diameter (in)	18
Riser Type	Flat
Notch Type	

Infiltration	Yes
Measured Infiltration Rate (in/hr)	1
Reduction Factor(infilt*factor)	0.25
Use Wetted Surface Area (sidewalls)	NO
Total Volume Infiltrated (ac-ft)	486.53
Total Volume Through Riser (ac-ft)	196.637
Total Volume Through Facility (ac-ft)	683.17
Percent Infiltrated	71.22

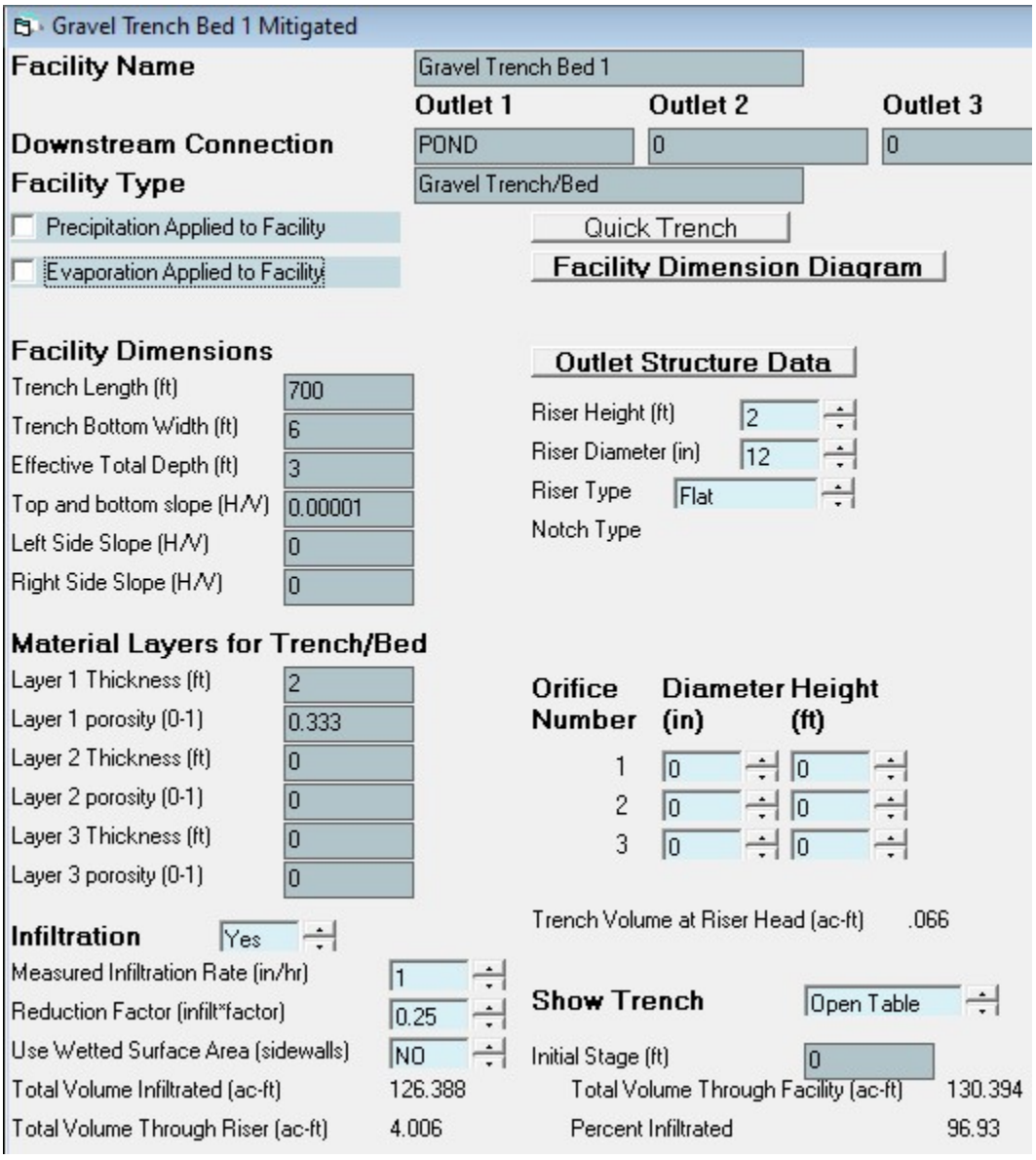
Orifice Number	Diameter (in)	Height (ft)
1	1.125	0
2	2	2.75
3	0	0

Pond Volume at Riser Head (ac-ft) 1.842

Show Pond Table Open Table

Initial 0

WWHM – WEST FLOW CONTROL



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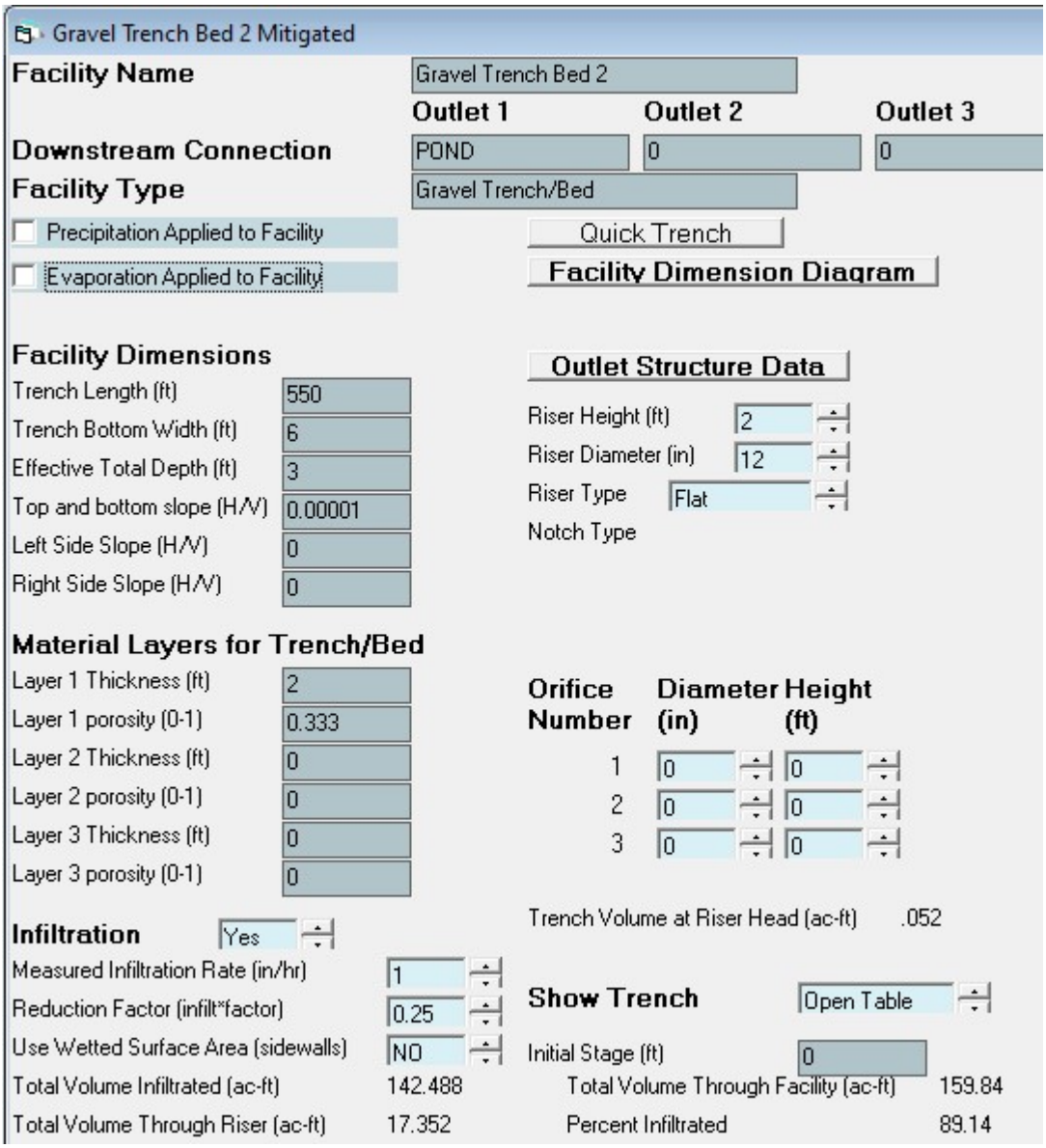
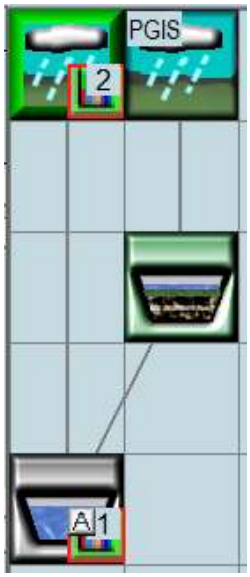


WWHM – EAST FLOW CONTROL

EAST SYSTEM:



POND Mitigated

Facility Name	POND	**Facility Type**	
	Outlet 1	**Outlet 2**	**Outlet 3**
Downstream Connections	0	0	0

☐ Precipitation Applied to Facility
☐ Evaporation Applied to Facility

Auto Pond | Quick Pond | **Facility Dimension Diagram**

Facility Dimensions

Facility Bottom Elevation (ft)	0
Bottom Length (ft)	70
Bottom Width (ft)	44
Effective Depth (ft)	6
Left Side Slope (H/V)	0
Bottom Side Slope (H/V)	0
Right Side Slope (H/V)	0
Top Side Slope (H/V)	0
Infiltration	Yes
Measured Infiltration Rate (in/hr)	1
Reduction Factor(infilt*factor)	0.25
Use Wetted Surface Area (sidewalls)	NO
Total Volume Infiltrated (ac-ft)	99.955
Total Volume Through Riser (ac-ft)	81.096
Total Volume Through Facility (ac-ft)	181.05
Percent Infiltrated	55.21

Outlet Structure Data

Riser Height (ft)	5
Riser Diameter (in)	18
Riser Type	Flat
Notch Type	

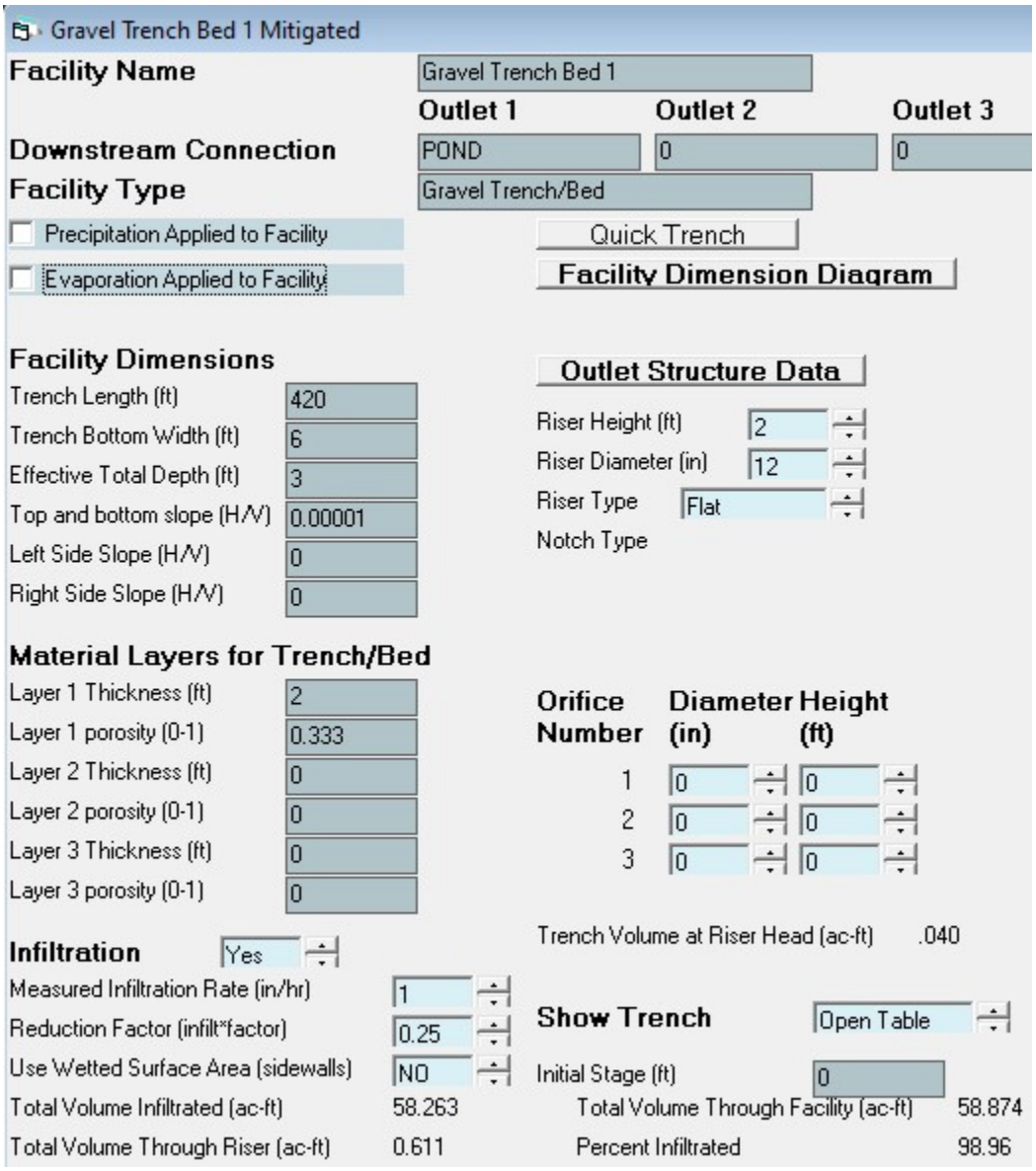
Orifice Number	Diameter (in)	Height (ft)
1	1.125	0
2	2	2.75
3	0	0

Pond Volume at Riser Head (ac-ft) .354

Show Pond Table Open Table

Initial 0

WWHM – EAST FLOW CONTROL



WWHM2012

PROJECT REPORT

General Model Information

Project Name:	2140 PRE_V2
Site Name:	MCINTOSH
Site Address:	
City:	CAMAS
Report Date:	6/22/2022
Gage:	Troutdale
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.370
Version Date:	2021/08/18
Version:	4.2.18

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year
Low Flow Threshold for POC2:	50 Percent of the 2 Year
High Flow Threshold for POC2:	50 Year

Landuse Basin Data

Predeveloped Land Use

PRE-NORTH

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Mod	5.26
Pervious Total	5.26

Impervious Land Use	acre
Impervious Total	0
Basin Total	5.26

Element Flows To:

Surface	Interflow	Groundwater

WQ-Placebo

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
SG3, Field, Flat	4.5
Pervious Total	4.5
Impervious Land Use	acre
ROADS FLAT	1.9
Impervious Total	1.9
Basin Total	6.4

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

PGIS

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Field, Flat	4.5
Pervious Total	4.5

Impervious Land Use	acre
ROADS FLAT	1.9
Impervious Total	1.9
Basin Total	6.4

Element Flows To:

Surface	Interflow	Groundwater
POND	POND	

W1-ROOFS

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.62
Impervious Total	0.62
Basin Total	0.62

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1	Gravel Trench Bed 1	

W2-ROOFS

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.76
Impervious Total	0.76
Basin Total	0.76

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 2	Gravel Trench Bed 2	

Routing Elements

Predeveloped Routing

Mitigated Routing

POND

Bottom Length:	177.00 ft.		
Bottom Width:	60.00 ft.		
Depth:	8.5 ft.		
Volume at riser head:	1.8421 acre-feet.		
Infiltration On			
Infiltration rate:	1		
Infiltration safety factor:	0.25		
Total Volume Infiltrated (ac-ft.):		486.53	
Total Volume Through Riser (ac-ft.):		196.637	
Total Volume Through Facility (ac-ft.):		683.168	
Percent Infiltrated:		71.22	
Total Precip Applied to Facility:		0	
Total Evap From Facility:		0	
Side slope 1:	0 To 1		
Side slope 2:	0 To 1		
Side slope 3:	0 To 1		
Side slope 4:	0 To 1		
Discharge Structure			
Riser Height:	7.5 ft.		
Riser Diameter:	18 in.		
Orifice 1 Diameter:	1.125 in.	Elevation:0 ft.	
Orifice 2 Diameter:	2 in.	Elevation:2.75 ft.	
Element Flows To:			
Outlet 1	Outlet 2		

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.243	0.000	0.000	0.000
0.0944	0.243	0.023	0.010	0.061
0.1889	0.243	0.046	0.014	0.061
0.2833	0.243	0.069	0.018	0.061
0.3778	0.243	0.092	0.021	0.061
0.4722	0.243	0.115	0.023	0.061
0.5667	0.243	0.138	0.025	0.061
0.6611	0.243	0.161	0.027	0.061
0.7556	0.243	0.184	0.029	0.061
0.8500	0.243	0.207	0.031	0.061
0.9444	0.243	0.230	0.033	0.061
1.0389	0.243	0.253	0.035	0.061
1.1333	0.243	0.276	0.036	0.061
1.2278	0.243	0.299	0.038	0.061
1.3222	0.243	0.322	0.039	0.061
1.4167	0.243	0.345	0.040	0.061
1.5111	0.243	0.368	0.042	0.061
1.6056	0.243	0.391	0.043	0.061
1.7000	0.243	0.414	0.044	0.061
1.7944	0.243	0.437	0.046	0.061
1.8889	0.243	0.460	0.047	0.061
1.9833	0.243	0.483	0.048	0.061
2.0778	0.243	0.506	0.049	0.061
2.1722	0.243	0.529	0.050	0.061
2.2667	0.243	0.552	0.051	0.061

2.3611	0.243	0.575	0.052	0.061
2.4556	0.243	0.598	0.053	0.061
2.5500	0.243	0.621	0.054	0.061
2.6444	0.243	0.644	0.055	0.061
2.7389	0.243	0.667	0.056	0.061
2.8333	0.243	0.690	0.089	0.061
2.9278	0.243	0.713	0.104	0.061
3.0222	0.243	0.736	0.116	0.061
3.1167	0.243	0.759	0.126	0.061
3.2111	0.243	0.782	0.135	0.061
3.3056	0.243	0.805	0.143	0.061
3.4000	0.243	0.828	0.150	0.061
3.4944	0.243	0.852	0.157	0.061
3.5889	0.243	0.875	0.164	0.061
3.6833	0.243	0.898	0.170	0.061
3.7778	0.243	0.921	0.176	0.061
3.8722	0.243	0.944	0.182	0.061
3.9667	0.243	0.967	0.188	0.061
4.0611	0.243	0.990	0.193	0.061
4.1556	0.243	1.013	0.198	0.061
4.2500	0.243	1.036	0.203	0.061
4.3444	0.243	1.059	0.208	0.061
4.4389	0.243	1.082	0.213	0.061
4.5333	0.243	1.105	0.218	0.061
4.6278	0.243	1.128	0.222	0.061
4.7222	0.243	1.151	0.227	0.061
4.8167	0.243	1.174	0.231	0.061
4.9111	0.243	1.197	0.235	0.061
5.0056	0.243	1.220	0.239	0.061
5.1000	0.243	1.243	0.244	0.061
5.1944	0.243	1.266	0.248	0.061
5.2889	0.243	1.289	0.251	0.061
5.3833	0.243	1.312	0.255	0.061
5.4778	0.243	1.335	0.259	0.061
5.5722	0.243	1.358	0.263	0.061
5.6667	0.243	1.381	0.267	0.061
5.7611	0.243	1.404	0.270	0.061
5.8556	0.243	1.427	0.274	0.061
5.9500	0.243	1.450	0.278	0.061
6.0444	0.243	1.473	0.281	0.061
6.1389	0.243	1.496	0.284	0.061
6.2333	0.243	1.519	0.288	0.061
6.3278	0.243	1.542	0.291	0.061
6.4222	0.243	1.565	0.295	0.061
6.5167	0.243	1.588	0.298	0.061
6.6111	0.243	1.611	0.301	0.061
6.7056	0.243	1.634	0.304	0.061
6.8000	0.243	1.657	0.308	0.061
6.8944	0.243	1.680	0.311	0.061
6.9889	0.243	1.703	0.314	0.061
7.0833	0.243	1.726	0.317	0.061
7.1778	0.243	1.750	0.320	0.061
7.2722	0.243	1.773	0.323	0.061
7.3667	0.243	1.796	0.326	0.061
7.4611	0.243	1.819	0.329	0.061
7.5556	0.243	1.842	0.540	0.061
7.6500	0.243	1.865	1.254	0.061
7.7444	0.243	1.888	2.215	0.061

7.8389	0.243	1.911	3.287	0.061
7.9333	0.243	1.934	4.332	0.061
8.0278	0.243	1.957	5.225	0.061
8.1222	0.243	1.980	5.881	0.061
8.2167	0.243	2.003	6.307	0.061
8.3111	0.243	2.026	6.737	0.061
8.4056	0.243	2.049	7.101	0.061
8.5000	0.243	2.072	7.447	0.061
8.5944	0.243	2.095	7.776	0.061

Gravel Trench Bed 1

Bottom Length:	700.00 ft.
Bottom Width:	6.00 ft.
Trench bottom slope 1:	0.00001 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.333
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	1
Infiltration safety factor:	0.25
Total Volume Infiltrated (ac-ft.):	126.388
Total Volume Through Riser (ac-ft.):	4.006
Total Volume Through Facility (ac-ft.):	130.394
Percent Infiltrated:	96.93
Total Precip Applied to Facility:	0
Total Evap From Facility:	0

Discharge Structure

Riser Height:	2 ft.
Riser Diameter:	12 in.

Element Flows To:

Outlet 1	Outlet 2
POND	

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.096	0.000	0.000	0.000
0.0333	0.096	0.001	0.000	0.024
0.0667	0.096	0.002	0.000	0.024
0.1000	0.096	0.003	0.000	0.024
0.1333	0.096	0.004	0.000	0.024
0.1667	0.096	0.005	0.000	0.024
0.2000	0.096	0.006	0.000	0.024
0.2333	0.096	0.007	0.000	0.024
0.2667	0.096	0.008	0.000	0.024
0.3000	0.096	0.009	0.000	0.024
0.3333	0.096	0.010	0.000	0.024
0.3667	0.096	0.011	0.000	0.024
0.4000	0.096	0.012	0.000	0.024
0.4333	0.096	0.013	0.000	0.024
0.4667	0.096	0.015	0.000	0.024
0.5000	0.096	0.016	0.000	0.024
0.5333	0.096	0.017	0.000	0.024
0.5667	0.096	0.018	0.000	0.024
0.6000	0.096	0.019	0.000	0.024
0.6333	0.096	0.020	0.000	0.024
0.6667	0.096	0.021	0.000	0.024
0.7000	0.096	0.022	0.000	0.024
0.7333	0.096	0.023	0.000	0.024
0.7667	0.096	0.024	0.000	0.024
0.8000	0.096	0.025	0.000	0.024
0.8333	0.096	0.026	0.000	0.024

0.8667	0.096	0.027	0.000	0.024
0.9000	0.096	0.028	0.000	0.024
0.9333	0.096	0.030	0.000	0.024
0.9667	0.096	0.031	0.000	0.024
1.0000	0.096	0.032	0.000	0.024
1.0333	0.096	0.033	0.000	0.024
1.0667	0.096	0.034	0.000	0.024
1.1000	0.096	0.035	0.000	0.024
1.1333	0.096	0.036	0.000	0.024
1.1667	0.096	0.037	0.000	0.024
1.2000	0.096	0.038	0.000	0.024
1.2333	0.096	0.039	0.000	0.024
1.2667	0.096	0.040	0.000	0.024
1.3000	0.096	0.041	0.000	0.024
1.3333	0.096	0.042	0.000	0.024
1.3667	0.096	0.043	0.000	0.024
1.4000	0.096	0.045	0.000	0.024
1.4333	0.096	0.046	0.000	0.024
1.4667	0.096	0.047	0.000	0.024
1.5000	0.096	0.048	0.000	0.024
1.5333	0.096	0.049	0.000	0.024
1.5667	0.096	0.050	0.000	0.024
1.6000	0.096	0.051	0.000	0.024
1.6333	0.096	0.052	0.000	0.024
1.6667	0.096	0.053	0.000	0.024
1.7000	0.096	0.054	0.000	0.024
1.7333	0.096	0.055	0.000	0.024
1.7667	0.096	0.056	0.000	0.024
1.8000	0.096	0.057	0.000	0.024
1.8333	0.096	0.058	0.000	0.024
1.8667	0.096	0.059	0.000	0.024
1.9000	0.096	0.061	0.000	0.024
1.9333	0.096	0.062	0.000	0.024
1.9667	0.096	0.063	0.000	0.024
2.0000	0.096	0.066	0.000	0.024
2.0333	0.096	0.069	0.064	0.024
2.0667	0.096	0.072	0.182	0.024
2.1000	0.096	0.076	0.333	0.024
2.1333	0.096	0.079	0.509	0.024
2.1667	0.096	0.082	0.703	0.024
2.2000	0.096	0.085	0.907	0.024
2.2333	0.096	0.088	1.115	0.024
2.2667	0.096	0.092	1.318	0.024
2.3000	0.096	0.095	1.509	0.024
2.3333	0.096	0.098	1.683	0.024
2.3667	0.096	0.101	1.834	0.024
2.4000	0.096	0.104	1.960	0.024
2.4333	0.096	0.108	2.060	0.024
2.4667	0.096	0.111	2.138	0.024
2.5000	0.096	0.114	2.227	0.024
2.5333	0.096	0.117	2.300	0.024
2.5667	0.096	0.121	2.371	0.024
2.6000	0.096	0.124	2.439	0.024
2.6333	0.096	0.127	2.506	0.024
2.6667	0.096	0.130	2.571	0.024
2.7000	0.096	0.133	2.635	0.024
2.7333	0.096	0.137	2.697	0.024
2.7667	0.096	0.140	2.757	0.024

2.8000	0.096	0.143	2.817	0.024
2.8333	0.096	0.146	2.875	0.024
2.8667	0.096	0.149	2.932	0.024
2.9000	0.096	0.153	2.988	0.024
2.9333	0.096	0.156	3.042	0.024
2.9667	0.096	0.159	3.096	0.024
3.0000	0.096	0.162	3.149	0.024

Gravel Trench Bed 2

Bottom Length:	550.00 ft.
Bottom Width:	6.00 ft.
Trench bottom slope 1:	0.00001 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.333
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	1
Infiltration safety factor:	0.25
Total Volume Infiltrated (ac-ft.):	142.488
Total Volume Through Riser (ac-ft.):	17.352
Total Volume Through Facility (ac-ft.):	159.84
Percent Infiltrated:	89.14
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	2 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2
POND	

Gravel Trench Bed Hydraulic Table

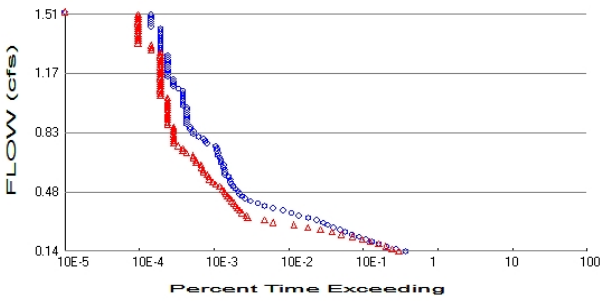
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.075	0.000	0.000	0.000
0.0333	0.075	0.000	0.000	0.019
0.0667	0.075	0.001	0.000	0.019
0.1000	0.075	0.002	0.000	0.019
0.1333	0.075	0.003	0.000	0.019
0.1667	0.075	0.004	0.000	0.019
0.2000	0.075	0.005	0.000	0.019
0.2333	0.075	0.005	0.000	0.019
0.2667	0.075	0.006	0.000	0.019
0.3000	0.075	0.007	0.000	0.019
0.3333	0.075	0.008	0.000	0.019
0.3667	0.075	0.009	0.000	0.019
0.4000	0.075	0.010	0.000	0.019
0.4333	0.075	0.010	0.000	0.019
0.4667	0.075	0.011	0.000	0.019
0.5000	0.075	0.012	0.000	0.019
0.5333	0.075	0.013	0.000	0.019
0.5667	0.075	0.014	0.000	0.019
0.6000	0.075	0.015	0.000	0.019
0.6333	0.075	0.016	0.000	0.019
0.6667	0.075	0.016	0.000	0.019
0.7000	0.075	0.017	0.000	0.019
0.7333	0.075	0.018	0.000	0.019
0.7667	0.075	0.019	0.000	0.019
0.8000	0.075	0.020	0.000	0.019
0.8333	0.075	0.021	0.000	0.019

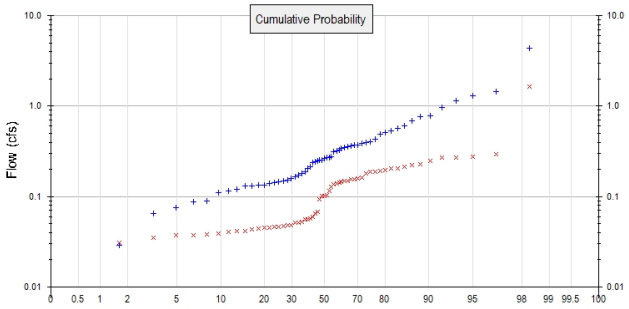
0.8667	0.075	0.021	0.000	0.019
0.9000	0.075	0.022	0.000	0.019
0.9333	0.075	0.023	0.000	0.019
0.9667	0.075	0.024	0.000	0.019
1.0000	0.075	0.025	0.000	0.019
1.0333	0.075	0.026	0.000	0.019
1.0667	0.075	0.026	0.000	0.019
1.1000	0.075	0.027	0.000	0.019
1.1333	0.075	0.028	0.000	0.019
1.1667	0.075	0.029	0.000	0.019
1.2000	0.075	0.030	0.000	0.019
1.2333	0.075	0.031	0.000	0.019
1.2667	0.075	0.032	0.000	0.019
1.3000	0.075	0.032	0.000	0.019
1.3333	0.075	0.033	0.000	0.019
1.3667	0.075	0.034	0.000	0.019
1.4000	0.075	0.035	0.000	0.019
1.4333	0.075	0.036	0.000	0.019
1.4667	0.075	0.037	0.000	0.019
1.5000	0.075	0.037	0.000	0.019
1.5333	0.075	0.038	0.000	0.019
1.5667	0.075	0.039	0.000	0.019
1.6000	0.075	0.040	0.000	0.019
1.6333	0.075	0.041	0.000	0.019
1.6667	0.075	0.042	0.000	0.019
1.7000	0.075	0.042	0.000	0.019
1.7333	0.075	0.043	0.000	0.019
1.7667	0.075	0.044	0.000	0.019
1.8000	0.075	0.045	0.000	0.019
1.8333	0.075	0.046	0.000	0.019
1.8667	0.075	0.047	0.000	0.019
1.9000	0.075	0.047	0.000	0.019
1.9333	0.075	0.048	0.000	0.019
1.9667	0.075	0.049	0.000	0.019
2.0000	0.075	0.052	0.000	0.019
2.0333	0.075	0.054	0.064	0.019
2.0667	0.075	0.057	0.182	0.019
2.1000	0.075	0.059	0.333	0.019
2.1333	0.075	0.062	0.509	0.019
2.1667	0.075	0.064	0.703	0.019
2.2000	0.075	0.067	0.907	0.019
2.2333	0.075	0.069	1.115	0.019
2.2667	0.075	0.072	1.318	0.019
2.3000	0.075	0.074	1.509	0.019
2.3333	0.075	0.077	1.683	0.019
2.3667	0.075	0.079	1.834	0.019
2.4000	0.075	0.082	1.960	0.019
2.4333	0.075	0.085	2.060	0.019
2.4667	0.075	0.087	2.138	0.019
2.5000	0.075	0.090	2.227	0.019
2.5333	0.075	0.092	2.300	0.019
2.5667	0.075	0.095	2.371	0.019
2.6000	0.075	0.097	2.439	0.019
2.6333	0.075	0.100	2.506	0.019
2.6667	0.075	0.102	2.571	0.019
2.7000	0.075	0.105	2.635	0.019
2.7333	0.075	0.107	2.697	0.019
2.7667	0.075	0.110	2.757	0.019

2.8000	0.075	0.112	2.817	0.019
2.8333	0.075	0.115	2.875	0.019
2.8667	0.075	0.117	2.932	0.019
2.9000	0.075	0.120	2.988	0.019
2.9333	0.075	0.122	3.042	0.019
2.9667	0.075	0.125	3.096	0.019
3.0000	0.075	0.127	3.149	0.019

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 5.26
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 4.5
Total Impervious Area: 3.28

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.271377
5 year	0.584552
10 year	0.842843
25 year	1.213538
50 year	1.514787
100 year	1.832581

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.088982
5 year	0.181767
10 year	0.274591
25 year	0.439576
50 year	0.605992
100 year	0.818354

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.389	0.268
1950	0.268	0.149
1951	0.429	0.149
1952	0.320	0.065
1953	0.268	0.135
1954	0.253	0.068
1955	0.345	0.041
1956	0.975	0.245
1957	0.190	0.059
1958	0.111	0.045

1959	0.142	0.052
1960	0.150	0.043
1961	0.262	0.195
1962	0.133	0.048
1963	0.148	0.051
1964	0.314	0.154
1965	0.329	0.229
1966	0.371	0.156
1967	0.247	0.048
1968	0.402	0.142
1969	0.494	0.105
1970	4.382	0.269
1971	0.145	0.046
1972	0.273	0.102
1973	0.139	0.128
1974	0.784	0.278
1975	0.254	0.101
1976	1.290	0.051
1977	0.006	0.037
1978	0.371	0.194
1979	0.121	0.041
1980	0.364	0.205
1981	0.396	0.222
1982	0.687	0.163
1983	1.152	0.115
1984	0.568	0.046
1985	0.353	0.093
1986	0.134	0.037
1987	0.339	0.178
1988	0.116	0.056
1989	0.088	0.031
1990	0.131	0.055
1991	0.167	0.038
1992	0.178	0.045
1993	0.159	0.045
1994	0.244	0.141
1995	0.171	0.205
1996	1.437	1.644
1997	0.530	0.291
1998	0.213	0.039
1999	0.240	0.188
2000	0.089	0.035
2001	0.029	0.028
2002	0.761	0.057
2003	0.512	0.187
2004	0.065	0.041
2005	0.076	0.047
2006	0.610	0.146
2007	0.130	0.212
2008	0.205	0.157

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	4.3824	1.6435
2	1.4368	0.2910
3	1.2901	0.2781
4	1.1517	0.2687

5	0.9751	0.2685
6	0.7842	0.2454
7	0.7610	0.2287
8	0.6869	0.2225
9	0.6096	0.2122
10	0.5684	0.2050
11	0.5298	0.2046
12	0.5122	0.1955
13	0.4940	0.1939
14	0.4294	0.1877
15	0.4019	0.1869
16	0.3961	0.1781
17	0.3887	0.1627
18	0.3714	0.1572
19	0.3708	0.1563
20	0.3638	0.1541
21	0.3528	0.1486
22	0.3450	0.1486
23	0.3388	0.1462
24	0.3287	0.1424
25	0.3202	0.1406
26	0.3137	0.1353
27	0.2730	0.1283
28	0.2679	0.1152
29	0.2679	0.1045
30	0.2623	0.1020
31	0.2536	0.1013
32	0.2528	0.0926
33	0.2469	0.0680
34	0.2441	0.0645
35	0.2395	0.0589
36	0.2132	0.0566
37	0.2052	0.0558
38	0.1897	0.0554
39	0.1781	0.0521
40	0.1712	0.0512
41	0.1667	0.0509
42	0.1586	0.0478
43	0.1504	0.0477
44	0.1482	0.0469
45	0.1454	0.0463
46	0.1418	0.0459
47	0.1386	0.0451
48	0.1342	0.0447
49	0.1333	0.0446
50	0.1314	0.0434
51	0.1298	0.0414
52	0.1206	0.0412
53	0.1156	0.0406
54	0.1113	0.0393
55	0.0893	0.0384
56	0.0876	0.0373
57	0.0760	0.0372
58	0.0647	0.0351
59	0.0290	0.0311
60	0.0063	0.0282

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1357	7687	6290	81	Pass
0.1496	5722	5079	88	Pass
0.1635	4277	4216	98	Pass
0.1775	3372	3381	100	Pass
0.1914	2733	2596	94	Pass
0.2053	2245	2042	90	Pass
0.2193	1839	1512	82	Pass
0.2332	1476	1070	72	Pass
0.2471	1202	803	66	Pass
0.2611	1015	560	55	Pass
0.2750	838	377	44	Pass
0.2889	702	248	35	Pass
0.3029	604	130	21	Pass
0.3168	501	99	19	Pass
0.3307	383	59	15	Pass
0.3446	284	57	20	Pass
0.3586	229	50	21	Pass
0.3725	175	46	26	Pass
0.3864	130	43	33	Pass
0.4004	99	41	41	Pass
0.4143	81	39	48	Pass
0.4282	64	36	56	Pass
0.4422	55	34	61	Pass
0.4561	50	32	64	Pass
0.4700	46	30	65	Pass
0.4839	44	29	65	Pass
0.4979	41	27	65	Pass
0.5118	38	25	65	Pass
0.5257	36	22	61	Pass
0.5397	35	20	57	Pass
0.5536	35	18	51	Pass
0.5675	33	18	54	Pass
0.5815	29	17	58	Pass
0.5954	29	15	51	Pass
0.6093	29	15	51	Pass
0.6232	28	14	50	Pass
0.6372	28	14	50	Pass
0.6511	26	12	46	Pass
0.6650	26	12	46	Pass
0.6790	25	11	44	Pass
0.6929	24	11	45	Pass
0.7068	24	9	37	Pass
0.7208	23	8	34	Pass
0.7347	23	8	34	Pass
0.7486	22	7	31	Pass
0.7626	17	6	35	Pass
0.7765	16	6	37	Pass
0.7904	15	6	40	Pass
0.8043	13	6	46	Pass
0.8183	11	6	54	Pass
0.8322	11	6	54	Pass
0.8461	10	6	60	Pass
0.8601	10	6	60	Pass

0.8740	9	5	55	Pass
0.8879	9	5	55	Pass
0.9019	9	5	55	Pass
0.9158	9	5	55	Pass
0.9297	9	5	55	Pass
0.9436	9	5	55	Pass
0.9576	9	5	55	Pass
0.9715	9	5	55	Pass
0.9854	8	5	62	Pass
0.9994	8	5	62	Pass
1.0133	8	5	62	Pass
1.0272	8	5	62	Pass
1.0412	8	4	50	Pass
1.0551	8	4	50	Pass
1.0690	8	4	50	Pass
1.0829	7	4	57	Pass
1.0969	6	4	66	Pass
1.1108	6	4	66	Pass
1.1247	6	4	66	Pass
1.1387	6	4	66	Pass
1.1526	5	4	80	Pass
1.1665	5	4	80	Pass
1.1805	5	4	80	Pass
1.1944	5	4	80	Pass
1.2083	5	4	80	Pass
1.2223	5	4	80	Pass
1.2362	5	4	80	Pass
1.2501	5	4	80	Pass
1.2640	5	4	80	Pass
1.2780	5	4	80	Pass
1.2919	4	4	100	Pass
1.3058	4	3	75	Pass
1.3198	4	3	75	Pass
1.3337	4	3	75	Pass
1.3476	4	2	50	Pass
1.3616	4	2	50	Pass
1.3755	4	2	50	Pass
1.3894	4	2	50	Pass
1.4033	4	2	50	Pass
1.4173	4	2	50	Pass
1.4312	4	2	50	Pass
1.4451	3	2	66	Pass
1.4591	3	2	66	Pass
1.4730	3	2	66	Pass
1.4869	3	2	66	Pass
1.5009	3	2	66	Pass
1.5148	3	2	66	Pass

Water Quality

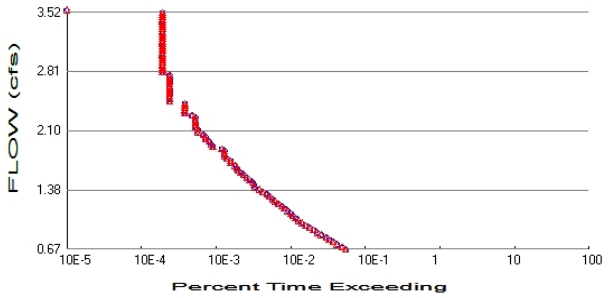
Water Quality BMP Flow and Volume for POC #1

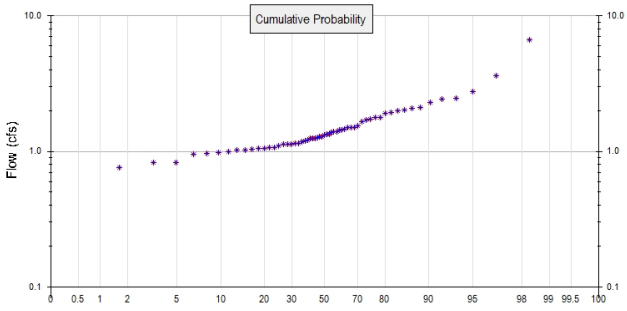
On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
POND POC	☐	621.68			☐	71.22			
Gravel Trench Bed 1	☐	118.66			☐	96.93			
Gravel Trench Bed 2	☐	145.45			☐	89.14			
Total Volume Infiltrated		885.80	0.00	0.00		77.60	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

POC 2





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 4.5
Total Impervious Area: 1.9

Mitigated Landuse Totals for POC #2
Total Pervious Area: 4.5
Total Impervious Area: 1.9

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	1.339874
5 year	1.895431
10 year	2.333465
25 year	2.974305
50 year	3.520293
100 year	4.129638

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	1.339874
5 year	1.895431
10 year	2.333465
25 year	2.974305
50 year	3.520293
100 year	4.129638

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	**Predeveloped**	**Mitigated**
1949	1.696	1.696
1950	1.015	1.015
1951	1.384	1.384
1952	1.506	1.506
1953	1.195	1.195
1954	1.432	1.432
1955	1.042	1.042
1956	2.024	2.024
1957	1.071	1.071
1958	1.128	1.128
1959	0.823	0.823

1960	1.060	1.060
1961	1.099	1.099
1962	1.130	1.130
1963	1.285	1.285
1964	1.245	1.245
1965	1.324	1.324
1966	1.461	1.461
1967	1.048	1.048
1968	2.068	2.068
1969	1.789	1.789
1970	6.665	6.665
1971	1.401	1.401
1972	1.220	1.220
1973	1.286	1.286
1974	1.787	1.787
1975	1.240	1.240
1976	2.435	2.435
1977	0.762	0.762
1978	1.429	1.429
1979	1.342	1.342
1980	0.995	0.995
1981	1.498	1.498
1982	1.929	1.929
1983	2.452	2.452
1984	1.662	1.662
1985	1.151	1.151
1986	1.177	1.177
1987	1.122	1.122
1988	1.490	1.490
1989	1.148	1.148
1990	0.982	0.982
1991	1.399	1.399
1992	1.048	1.048
1993	2.294	2.294
1994	1.016	1.016
1995	1.253	1.253
1996	2.776	2.776
1997	1.984	1.984
1998	1.736	1.736
1999	0.972	0.972
2000	0.711	0.711
2001	0.826	0.826
2002	2.116	2.116
2003	1.535	1.535
2004	1.348	1.348
2005	1.263	1.263
2006	1.902	1.902
2007	0.959	0.959
2008	3.631	3.631

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	**Predeveloped**	**Mitigated**
1	6.6652	6.6652
2	3.6305	3.6305
3	2.7763	2.7763
4	2.4524	2.4524
5	2.4351	2.4351

6	2.2935	2.2935
7	2.1159	2.1159
8	2.0677	2.0677
9	2.0240	2.0240
10	1.9836	1.9836
11	1.9286	1.9286
12	1.9022	1.9022
13	1.7892	1.7892
14	1.7866	1.7866
15	1.7356	1.7356
16	1.6961	1.6961
17	1.6623	1.6623
18	1.5350	1.5350
19	1.5059	1.5059
20	1.4979	1.4979
21	1.4900	1.4900
22	1.4609	1.4609
23	1.4316	1.4316
24	1.4287	1.4287
25	1.4005	1.4005
26	1.3989	1.3989
27	1.3842	1.3842
28	1.3478	1.3478
29	1.3419	1.3419
30	1.3236	1.3236
31	1.2861	1.2861
32	1.2846	1.2846
33	1.2631	1.2631
34	1.2528	1.2528
35	1.2451	1.2451
36	1.2401	1.2401
37	1.2205	1.2205
38	1.1954	1.1954
39	1.1772	1.1772
40	1.1514	1.1514
41	1.1484	1.1484
42	1.1302	1.1302
43	1.1282	1.1282
44	1.1221	1.1221
45	1.0987	1.0987
46	1.0708	1.0708
47	1.0603	1.0603
48	1.0483	1.0483
49	1.0477	1.0477
50	1.0424	1.0424
51	1.0165	1.0165
52	1.0155	1.0155
53	0.9950	0.9950
54	0.9817	0.9817
55	0.9722	0.9722
56	0.9591	0.9591
57	0.8256	0.8256
58	0.8233	0.8233
59	0.7616	0.7616
60	0.7110	0.7110

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.6699	1147	1147	100	Pass
0.6987	1017	1017	100	Pass
0.7275	878	878	100	Pass
0.7563	776	776	100	Pass
0.7851	686	686	100	Pass
0.8139	625	625	100	Pass
0.8427	543	543	100	Pass
0.8715	477	477	100	Pass
0.9003	426	426	100	Pass
0.9291	376	376	100	Pass
0.9579	332	332	100	Pass
0.9866	297	297	100	Pass
1.0154	269	269	100	Pass
1.0442	244	244	100	Pass
1.0730	222	222	100	Pass
1.1018	213	213	100	Pass
1.1306	192	192	100	Pass
1.1594	173	173	100	Pass
1.1882	160	160	100	Pass
1.2170	143	143	100	Pass
1.2458	129	129	100	Pass
1.2746	120	120	100	Pass
1.3033	108	108	100	Pass
1.3321	101	101	100	Pass
1.3609	88	88	100	Pass
1.3897	80	80	100	Pass
1.4185	70	70	100	Pass
1.4473	67	67	100	Pass
1.4761	65	65	100	Pass
1.5049	59	59	100	Pass
1.5337	54	54	100	Pass
1.5625	49	49	100	Pass
1.5913	45	45	100	Pass
1.6201	41	41	100	Pass
1.6488	40	40	100	Pass
1.6776	38	38	100	Pass
1.7064	33	33	100	Pass
1.7352	33	33	100	Pass
1.7640	29	29	100	Pass
1.7928	27	27	100	Pass
1.8216	27	27	100	Pass
1.8504	27	27	100	Pass
1.8792	25	25	100	Pass
1.9080	19	19	100	Pass
1.9368	18	18	100	Pass
1.9656	17	17	100	Pass
1.9943	15	15	100	Pass
2.0231	15	15	100	Pass
2.0519	14	14	100	Pass
2.0807	12	12	100	Pass
2.1095	12	12	100	Pass
2.1383	11	11	100	Pass
2.1671	11	11	100	Pass

2.1959	11	11	100	Pass
2.2247	11	11	100	Pass
2.2535	11	11	100	Pass
2.2823	10	10	100	Pass
2.3111	8	8	100	Pass
2.3398	8	8	100	Pass
2.3686	8	8	100	Pass
2.3974	8	8	100	Pass
2.4262	8	8	100	Pass
2.4550	5	5	100	Pass
2.4838	5	5	100	Pass
2.5126	5	5	100	Pass
2.5414	5	5	100	Pass
2.5702	5	5	100	Pass
2.5990	5	5	100	Pass
2.6278	5	5	100	Pass
2.6565	5	5	100	Pass
2.6853	5	5	100	Pass
2.7141	5	5	100	Pass
2.7429	5	5	100	Pass
2.7717	5	5	100	Pass
2.8005	4	4	100	Pass
2.8293	4	4	100	Pass
2.8581	4	4	100	Pass
2.8869	4	4	100	Pass
2.9157	4	4	100	Pass
2.9445	4	4	100	Pass
2.9733	4	4	100	Pass
3.0020	4	4	100	Pass
3.0308	4	4	100	Pass
3.0596	4	4	100	Pass
3.0884	4	4	100	Pass
3.1172	4	4	100	Pass
3.1460	4	4	100	Pass
3.1748	4	4	100	Pass
3.2036	4	4	100	Pass
3.2324	4	4	100	Pass
3.2612	4	4	100	Pass
3.2900	4	4	100	Pass
3.3188	4	4	100	Pass
3.3475	4	4	100	Pass
3.3763	4	4	100	Pass
3.4051	4	4	100	Pass
3.4339	4	4	100	Pass
3.4627	4	4	100	Pass
3.4915	4	4	100	Pass
3.5203	4	4	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #2

On-line facility volume:	0.4738 acre-feet
On-line facility target flow:	0.4415 cfs.
Adjusted for 15 min:	0.4415 cfs.
Off-line facility target flow:	0.2479 cfs.
Adjusted for 15 min:	0.2479 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

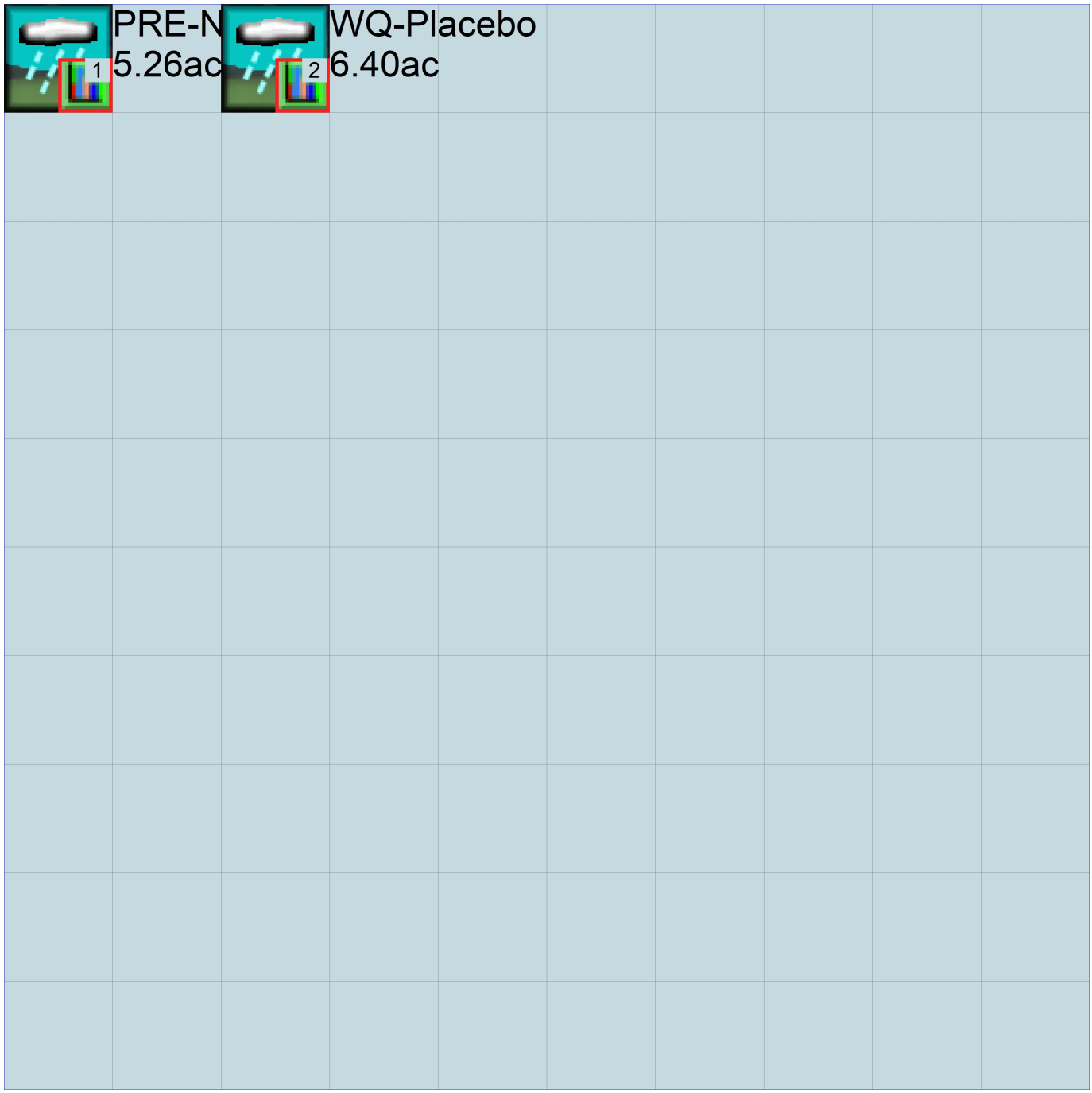
No PERLND changes have been made.

IMPLND Changes

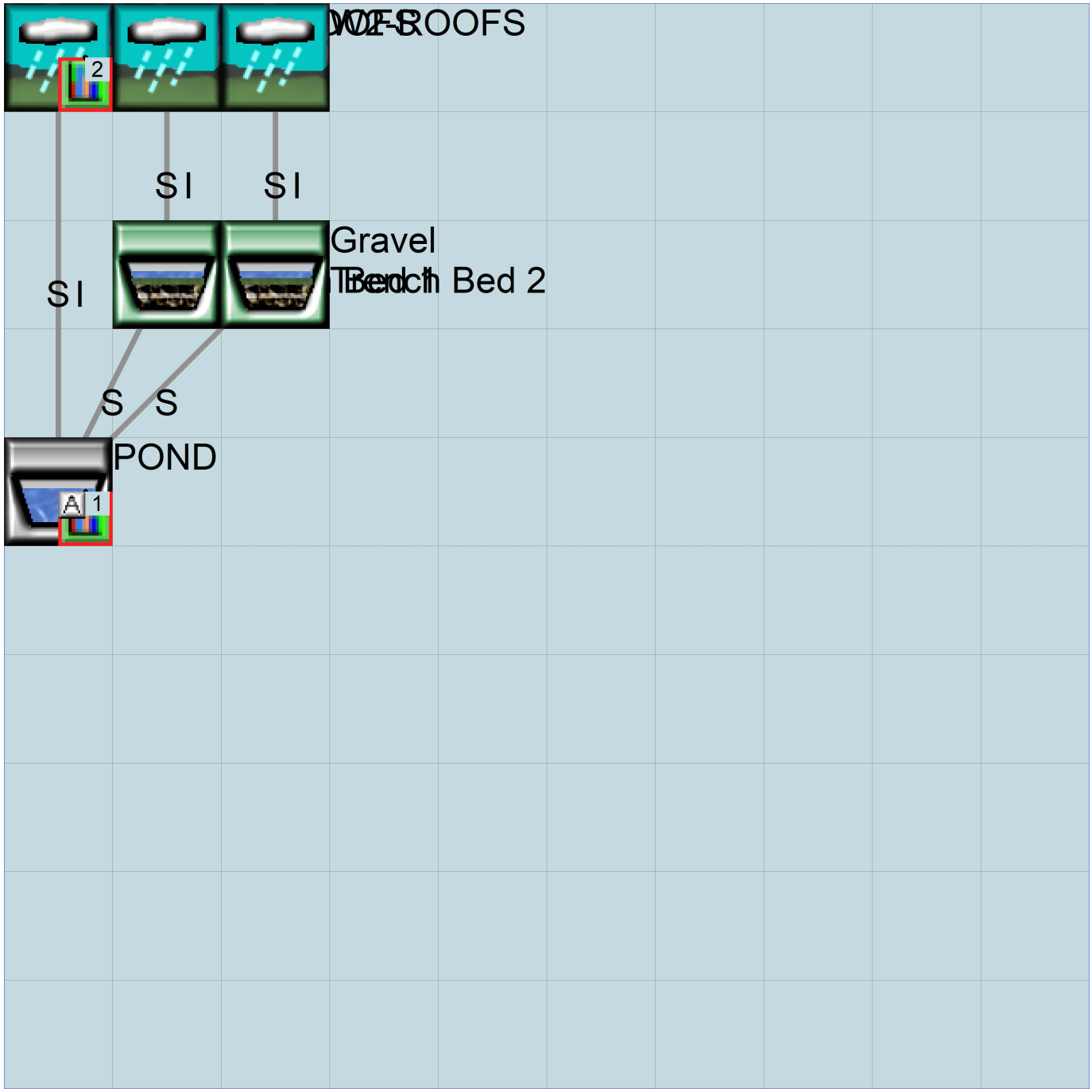
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   2140 PRE_V2.wdm
MESSU       25   Pre2140 PRE_V2.MES
            27   Pre2140 PRE_V2.L61
            28   Pre2140 PRE_V2.L62
            30   POC2140 PRE_V21.dat
            31   POC2140 PRE_V22.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      20
      PERLND      22
      IMPLND       1
      COPY       501
      COPY       502
      DISPLY       1
      DISPLY       2
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        PRE-NORTH                  MAX                    1    2   30    9
    2        WQ-Placebo                 MAX                    1    2   31    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  502         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out            ***
   20     SG3, Forest, Mod        1    1    1    1   27    0
   22     SG3, Field, Flat        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   20         0    0    1    0    0    0    0    0    0    0    0    0
```

```
   22         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   20         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   20         0    0    0    0    0    0    0    0    0    0    0
   22         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   20              0         9      0.08       400       0.1         0      0.96
   22              0         9      0.06       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   20              0         0       2.5         2         0         0         0
   22              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   20           0.2         1      0.35         4       0.4       0.7
   22          0.15         1       0.3         4       0.4       0.4
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   20              0         0         0         0         3         1         0
   22              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
```

```
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
PRE-NORTH***
PERLND  20                       5.26     COPY   501     12
PERLND  20                       5.26     COPY   501     13
WQ-Placebo***
PERLND  22                        4.5     COPY   502     12
PERLND  22                        4.5     COPY   502     13
IMPLND   1                        1.9     COPY   502     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
```

```
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
             FG FG FG FG  possible  exit  *** possible  exit      possible  exit
              *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.37           PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.37           IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
COPY   502 OUTPUT MEAN   1 1     48.4      WDM    502 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   2140 PRE_V2.wdm
MESSU       25   Mit2140 PRE_V2.MES
            27   Mit2140 PRE_V2.L61
            28   Mit2140 PRE_V2.L62
            31   POC2140 PRE_V22.dat
            30   POC2140 PRE_V21.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      22
      IMPLND       1
      IMPLND       4
      RCHRES       1
      RCHRES       2
      RCHRES       3
      COPY       502
      COPY         1
      COPY       501
      DISPLY       2
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    2        PGIS                       MAX                   1    2   31    9
    1        POND                       MAX                   1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  502         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   22     SG3, Field, Flat        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
```

```
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   22         0    0    1    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   22         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   22              0         9      0.06       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   22              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   22           0.15         1       0.3         4       0.4       0.4
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   22              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
```

```
    1         0    0    0    0    0
    4         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
W1-ROOFS ***
IMPLND   4                        0.62     RCHRES   1      5
W2-ROOFS***
IMPLND   4                        0.76     RCHRES   2      5
PGIS***
PERLND  22                         4.5     RCHRES   3      2
PERLND  22                         4.5     RCHRES   3      3
IMPLND   1                         1.9     RCHRES   3      5
PGIS***
PERLND  22                         4.5     COPY   502     12
PERLND  22                         4.5     COPY   502     13
IMPLND   1                         1.9     COPY   502     15

******Routing******
PERLND  22                         4.5     COPY     1     12
IMPLND   1                         1.9     COPY     1     15
PERLND  22                         4.5     COPY     1     13
RCHRES   1                           1     RCHRES   3      7
RCHRES   1                                 COPY     1     17
RCHRES   2                           1     RCHRES   3      7
RCHRES   2                                 COPY     1     17
RCHRES   3                           1     COPY   501     17
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<----------------><---> User T-series  Engl Metr LKFG             ***
```

```
                                          in  out                                  ***
    1     Gravel Trench Be-007    2    1    1    1   28    0    1
    2     Gravel Trench Be-009    2    1    1    1   28    0    1
    3     POND                    2    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
    3         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
    2         4    0    0    0    0    0    0    0    0    0    1    9
    3         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
    1       0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    2       0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    3       0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1             1      0.13       0.0       0.0       0.5       0.0
    2             2       0.1       0.0       0.0       0.5       0.0
    3             3      0.03       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1           0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    2           0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    3           0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      3
   91    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)      (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.243802  0.000000  0.000000  0.000000
  0.094444  0.243802  0.023026  0.010555  0.061458
  0.188889  0.243802  0.046051  0.014927  0.061458
  0.283333  0.243802  0.069077  0.018282  0.061458
  0.377778  0.243802  0.092103  0.021110  0.061458
  0.472222  0.243802  0.115129  0.023601  0.061458
  0.566667  0.243802  0.138154  0.025854  0.061458
  0.661111  0.243802  0.161180  0.027926  0.061458
  0.755556  0.243802  0.184206  0.029854  0.061458
  0.850000  0.243802  0.207231  0.031665  0.061458
  0.944444  0.243802  0.230257  0.033377  0.061458
  1.038889  0.243802  0.253283  0.035006  0.061458
```

1.133333	0.243802	0.276309	0.036563	0.061458
1.227778	0.243802	0.299334	0.038056	0.061458
1.322222	0.243802	0.322360	0.039493	0.061458
1.416667	0.243802	0.345386	0.040879	0.061458
1.511111	0.243802	0.368411	0.042219	0.061458
1.605556	0.243802	0.391437	0.043519	0.061458
1.700000	0.243802	0.414463	0.044780	0.061458
1.794444	0.243802	0.437489	0.046008	0.061458
1.888889	0.243802	0.460514	0.047203	0.061458
1.983333	0.243802	0.483540	0.048368	0.061458
2.077778	0.243802	0.506566	0.049507	0.061458
2.172222	0.243802	0.529591	0.050619	0.061458
2.266667	0.243802	0.552617	0.051708	0.061458
2.361111	0.243802	0.575643	0.052774	0.061458
2.455556	0.243802	0.598669	0.053819	0.061458
2.550000	0.243802	0.621694	0.054845	0.061458
2.644444	0.243802	0.644720	0.055851	0.061458
2.738889	0.243802	0.667746	0.056840	0.061458
2.833333	0.243802	0.690771	0.089146	0.061458
2.927778	0.243802	0.713797	0.104534	0.061458
3.022222	0.243802	0.736823	0.116342	0.061458
3.116667	0.243802	0.759848	0.126362	0.061458
3.211111	0.243802	0.782874	0.135254	0.061458
3.305556	0.243802	0.805900	0.143350	0.061458
3.400000	0.243802	0.828926	0.150843	0.061458
3.494444	0.243802	0.851951	0.157858	0.061458
3.588889	0.243802	0.874977	0.164484	0.061458
3.683333	0.243802	0.898003	0.170782	0.061458
3.777778	0.243802	0.921028	0.176799	0.061458
3.872222	0.243802	0.944054	0.182573	0.061458
3.966667	0.243802	0.967080	0.188134	0.061458
4.061111	0.243802	0.990106	0.193503	0.061458
4.155556	0.243802	1.013131	0.198702	0.061458
4.250000	0.243802	1.036157	0.203747	0.061458
4.344444	0.243802	1.059183	0.208650	0.061458
4.438889	0.243802	1.082208	0.213425	0.061458
4.533333	0.243802	1.105234	0.218082	0.061458
4.627778	0.243802	1.128260	0.222628	0.061458
4.722222	0.243802	1.151286	0.227073	0.061458
4.816667	0.243802	1.174311	0.231423	0.061458
4.911111	0.243802	1.197337	0.235684	0.061458
5.005556	0.243802	1.220363	0.239862	0.061458
5.100000	0.243802	1.243388	0.243962	0.061458
5.194444	0.243802	1.266414	0.247987	0.061458
5.288889	0.243802	1.289440	0.251943	0.061458
5.383333	0.243802	1.312466	0.255833	0.061458
5.477778	0.243802	1.335491	0.259660	0.061458
5.572222	0.243802	1.358517	0.263427	0.061458
5.666667	0.243802	1.381543	0.267137	0.061458
5.761111	0.243802	1.404568	0.270793	0.061458
5.855556	0.243802	1.427594	0.274397	0.061458
5.950000	0.243802	1.450620	0.277952	0.061458
6.044444	0.243802	1.473646	0.281459	0.061458
6.138889	0.243802	1.496671	0.284920	0.061458
6.233333	0.243802	1.519697	0.288337	0.061458
6.327778	0.243802	1.542723	0.291712	0.061458
6.422222	0.243802	1.565748	0.295047	0.061458
6.516667	0.243802	1.588774	0.298343	0.061458
6.611111	0.243802	1.611800	0.301600	0.061458
6.705556	0.243802	1.634826	0.304822	0.061458
6.800000	0.243802	1.657851	0.308008	0.061458
6.894444	0.243802	1.680877	0.311160	0.061458
6.988889	0.243802	1.703903	0.314279	0.061458
7.083333	0.243802	1.726928	0.317367	0.061458
7.177778	0.243802	1.749954	0.320423	0.061458
7.272222	0.243802	1.772980	0.323450	0.061458
7.366667	0.243802	1.796006	0.326447	0.061458
7.461111	0.243802	1.819031	0.329416	0.061458
7.555556	0.243802	1.842057	0.540630	0.061458
7.650000	0.243802	1.865083	1.254348	0.061458

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7.744444  0.243802  1.888108  2.215472  0.061458
7.838889  0.243802  1.911134  3.287032  0.061458
7.933333  0.243802  1.934160  4.332692  0.061458
8.027778  0.243802  1.957185  5.225432  0.061458
8.122222  0.243802  1.980211  5.881490  0.061458
8.216667  0.243802  2.003237  6.306991  0.061458
8.311111  0.243802  2.026263  6.737363  0.061458
8.405556  0.243802  2.049288  7.101436  0.061458
8.500000  0.243802  2.072314  7.447087  0.061458
END FTABLE  3
FTABLE      1
 92    5
   Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)      (cfs)   (ft/sec)    (Minutes)***
0.000000  0.096419  0.000000  0.000000  0.000000
0.033333  0.096419  0.001070  0.000000  0.024306
0.066667  0.096419  0.002140  0.000000  0.024306
0.100000  0.096419  0.003211  0.000000  0.024306
0.133333  0.096419  0.004281  0.000000  0.024306
0.166667  0.096419  0.005351  0.000000  0.024306
0.200000  0.096419  0.006421  0.000000  0.024306
0.233333  0.096419  0.007492  0.000000  0.024306
0.266667  0.096419  0.008562  0.000000  0.024306
0.300000  0.096419  0.009632  0.000000  0.024306
0.333333  0.096419  0.010702  0.000000  0.024306
0.366667  0.096419  0.011773  0.000000  0.024306
0.400000  0.096419  0.012843  0.000000  0.024306
0.433333  0.096419  0.013913  0.000000  0.024306
0.466667  0.096419  0.014983  0.000000  0.024306
0.500000  0.096419  0.016054  0.000000  0.024306
0.533333  0.096419  0.017124  0.000000  0.024306
0.566667  0.096419  0.018194  0.000000  0.024306
0.600000  0.096419  0.019264  0.000000  0.024306
0.633333  0.096419  0.020335  0.000000  0.024306
0.666667  0.096419  0.021405  0.000000  0.024306
0.700000  0.096419  0.022475  0.000000  0.024306
0.733333  0.096419  0.023545  0.000000  0.024306
0.766667  0.096419  0.024616  0.000000  0.024306
0.800000  0.096419  0.025686  0.000000  0.024306
0.833333  0.096419  0.026756  0.000000  0.024306
0.866667  0.096419  0.027826  0.000000  0.024306
0.900000  0.096419  0.028897  0.000000  0.024306
0.933333  0.096419  0.029967  0.000000  0.024306
0.966667  0.096419  0.031037  0.000000  0.024306
1.000000  0.096419  0.032107  0.000000  0.024306
1.033333  0.096419  0.033178  0.000000  0.024306
1.066667  0.096419  0.034248  0.000000  0.024306
1.100000  0.096419  0.035318  0.000000  0.024306
1.133333  0.096419  0.036388  0.000000  0.024306
1.166667  0.096419  0.037459  0.000000  0.024306
1.200000  0.096419  0.038529  0.000000  0.024306
1.233333  0.096419  0.039599  0.000000  0.024306
1.266667  0.096419  0.040669  0.000000  0.024306
1.300000  0.096419  0.041740  0.000000  0.024306
1.333333  0.096419  0.042810  0.000000  0.024306
1.366667  0.096419  0.043880  0.000000  0.024306
1.400000  0.096419  0.044950  0.000000  0.024306
1.433333  0.096419  0.046021  0.000000  0.024306
1.466667  0.096419  0.047091  0.000000  0.024306
1.500000  0.096419  0.048161  0.000000  0.024306
1.533333  0.096419  0.049231  0.000000  0.024306
1.566667  0.096419  0.050302  0.000000  0.024306
1.600000  0.096419  0.051372  0.000000  0.024306
1.633333  0.096419  0.052442  0.000000  0.024306
1.666667  0.096419  0.053512  0.000000  0.024306
1.700000  0.096419  0.054583  0.000000  0.024306
1.733333  0.096419  0.055653  0.000000  0.024306
1.766667  0.096419  0.056723  0.000000  0.024306
1.800000  0.096419  0.057793  0.000000  0.024306
1.833333  0.096419  0.058864  0.000000  0.024306
```

```
1.866667  0.096419  0.059934  0.000000  0.024306
1.900000  0.096419  0.061004  0.000000  0.024306
1.933333  0.096419  0.062074  0.000000  0.024306
1.966667  0.096419  0.063145  0.000000  0.024306
2.000000  0.096419  0.066359  0.000000  0.024306
2.033333  0.096419  0.069573  0.064540  0.024306
2.066667  0.096419  0.072787  0.182234  0.024306
2.100000  0.096419  0.076000  0.333520  0.024306
2.133333  0.096419  0.079214  0.509662  0.024306
2.166667  0.096419  0.082428  0.703432  0.024306
2.200000  0.096419  0.085642  0.907676  0.024306
2.233333  0.096419  0.088856  1.115035  0.024306
2.266667  0.096419  0.092070  1.318080  0.024306
2.300000  0.096419  0.095284  1.509672  0.024306
2.333333  0.096419  0.098498  1.683468  0.024306
2.366667  0.096419  0.101712  1.834531  0.024306
2.400000  0.096419  0.104926  1.960035  0.024306
2.433333  0.096419  0.108140  2.060036  0.024306
2.466667  0.096419  0.111354  2.138326  0.024306
2.500000  0.096419  0.114568  2.227125  0.024306
2.533333  0.096419  0.117782  2.300165  0.024306
2.566667  0.096419  0.120996  2.370955  0.024306
2.600000  0.096419  0.124210  2.439693  0.024306
2.633333  0.096419  0.127424  2.506546  0.024306
2.666667  0.096419  0.130638  2.571662  0.024306
2.700000  0.096419  0.133852  2.635170  0.024306
2.733333  0.096419  0.137066  2.697182  0.024306
2.766667  0.096419  0.140280  2.757800  0.024306
2.800000  0.096419  0.143494  2.817115  0.024306
2.833333  0.096419  0.146708  2.875206  0.024306
2.866667  0.096419  0.149921  2.932146  0.024306
2.900000  0.096419  0.153135  2.988001  0.024306
2.933333  0.096419  0.156349  3.042832  0.024306
2.966667  0.096419  0.159563  3.096691  0.024306
3.000000  0.096419  0.162777  3.149630  0.024306
3.033333  0.096419  0.165991  3.201694  0.024306
END FTABLE  1
FTABLE      2
 92    5
   Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)      (cfs)   (ft/sec)    (Minutes)***
0.000000  0.075758  0.000000  0.000000  0.000000
0.033333  0.075758  0.000841  0.000000  0.019097
0.066667  0.075758  0.001682  0.000000  0.019097
0.100000  0.075758  0.002523  0.000000  0.019097
0.133333  0.075758  0.003364  0.000000  0.019097
0.166667  0.075758  0.004205  0.000000  0.019097
0.200000  0.075758  0.005045  0.000000  0.019097
0.233333  0.075758  0.005886  0.000000  0.019097
0.266667  0.075758  0.006727  0.000000  0.019097
0.300000  0.075758  0.007568  0.000000  0.019097
0.333333  0.075758  0.008409  0.000000  0.019097
0.366667  0.075758  0.009250  0.000000  0.019097
0.400000  0.075758  0.010091  0.000000  0.019097
0.433333  0.075758  0.010932  0.000000  0.019097
0.466667  0.075758  0.011773  0.000000  0.019097
0.500000  0.075758  0.012614  0.000000  0.019097
0.533333  0.075758  0.013455  0.000000  0.019097
0.566667  0.075758  0.014295  0.000000  0.019097
0.600000  0.075758  0.015136  0.000000  0.019097
0.633333  0.075758  0.015977  0.000000  0.019097
0.666667  0.075758  0.016818  0.000000  0.019097
0.700000  0.075758  0.017659  0.000000  0.019097
0.733333  0.075758  0.018500  0.000000  0.019097
0.766667  0.075758  0.019341  0.000000  0.019097
0.800000  0.075758  0.020182  0.000000  0.019097
0.833333  0.075758  0.021023  0.000000  0.019097
0.866667  0.075758  0.021864  0.000000  0.019097
0.900000  0.075758  0.022705  0.000000  0.019097
0.933333  0.075758  0.023545  0.000000  0.019097
```

```
  0.966667  0.075758  0.024386  0.000000  0.019097
  1.000000  0.075758  0.025227  0.000000  0.019097
  1.033333  0.075758  0.026068  0.000000  0.019097
  1.066667  0.075758  0.026909  0.000000  0.019097
  1.100000  0.075758  0.027750  0.000000  0.019097
  1.133333  0.075758  0.028591  0.000000  0.019097
  1.166667  0.075758  0.029432  0.000000  0.019097
  1.200000  0.075758  0.030273  0.000000  0.019097
  1.233333  0.075758  0.031114  0.000000  0.019097
  1.266667  0.075758  0.031955  0.000000  0.019097
  1.300000  0.075758  0.032795  0.000000  0.019097
  1.333333  0.075758  0.033636  0.000000  0.019097
  1.366667  0.075758  0.034477  0.000000  0.019097
  1.400000  0.075758  0.035318  0.000000  0.019097
  1.433333  0.075758  0.036159  0.000000  0.019097
  1.466667  0.075758  0.037000  0.000000  0.019097
  1.500000  0.075758  0.037841  0.000000  0.019097
  1.533333  0.075758  0.038682  0.000000  0.019097
  1.566667  0.075758  0.039523  0.000000  0.019097
  1.600000  0.075758  0.040364  0.000000  0.019097
  1.633333  0.075758  0.041205  0.000000  0.019097
  1.666667  0.075758  0.042045  0.000000  0.019097
  1.700000  0.075758  0.042886  0.000000  0.019097
  1.733333  0.075758  0.043727  0.000000  0.019097
  1.766667  0.075758  0.044568  0.000000  0.019097
  1.800000  0.075758  0.045409  0.000000  0.019097
  1.833333  0.075758  0.046250  0.000000  0.019097
  1.866667  0.075758  0.047091  0.000000  0.019097
  1.900000  0.075758  0.047932  0.000000  0.019097
  1.933333  0.075758  0.048773  0.000000  0.019097
  1.966667  0.075758  0.049614  0.000000  0.019097
  2.000000  0.075758  0.052139  0.000000  0.019097
  2.033333  0.075758  0.054664  0.064540  0.019097
  2.066667  0.075758  0.057189  0.182234  0.019097
  2.100000  0.075758  0.059715  0.333520  0.019097
  2.133333  0.075758  0.062240  0.509662  0.019097
  2.166667  0.075758  0.064765  0.703432  0.019097
  2.200000  0.075758  0.067290  0.907676  0.019097
  2.233333  0.075758  0.069816  1.115035  0.019097
  2.266667  0.075758  0.072341  1.318080  0.019097
  2.300000  0.075758  0.074866  1.509672  0.019097
  2.333333  0.075758  0.077391  1.683468  0.019097
  2.366667  0.075758  0.079917  1.834531  0.019097
  2.400000  0.075758  0.082442  1.960035  0.019097
  2.433333  0.075758  0.084967  2.060036  0.019097
  2.466667  0.075758  0.087492  2.138326  0.019097
  2.500000  0.075758  0.090018  2.227125  0.019097
  2.533333  0.075758  0.092543  2.300165  0.019097
  2.566667  0.075758  0.095068  2.370955  0.019097
  2.600000  0.075758  0.097593  2.439693  0.019097
  2.633333  0.075758  0.100119  2.506546  0.019097
  2.666667  0.075758  0.102644  2.571662  0.019097
  2.700000  0.075758  0.105169  2.635170  0.019097
  2.733333  0.075758  0.107694  2.697182  0.019097
  2.766667  0.075758  0.110220  2.757800  0.019097
  2.800000  0.075758  0.112745  2.817115  0.019097
  2.833333  0.075758  0.115270  2.875206  0.019097
  2.866667  0.075758  0.117795  2.932146  0.019097
  2.900000  0.075758  0.120321  2.988001  0.019097
  2.933333  0.075758  0.122846  3.042832  0.019097
  2.966667  0.075758  0.125371  3.096691  0.019097
  3.000000  0.075758  0.127896  3.149630  0.019097
  3.033333  0.075758  0.130422  3.201694  0.019097
  END FTABLE  2
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.37           PERLND   1 999 EXTNL  PREC
```

```
WDM      2 PREC     ENGL    1.37           IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY     2 OUTPUT MEAN   1 1     48.4      WDM    702 FLOW     ENGL      REPL
COPY   502 OUTPUT MEAN   1 1     48.4      WDM    802 FLOW     ENGL      REPL
RCHRES   3 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   3 HYDR   O      1 1        1      WDM   1001 FLOW     ENGL      REPL
RCHRES   3 HYDR   O      2 1        1      WDM   1002 FLOW     ENGL      REPL
RCHRES   3 HYDR   STAGE  1 1        1      WDM   1003 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK        7
RCHRES     OFLOW  OVOL   1                 RCHRES         INFLOW IVOL
  END MASS-LINK    7

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       17
RCHRES     OFLOW  OVOL   1                 COPY           INPUT  MEAN
  END MASS-LINK   17


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

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WWHM2012

PROJECT REPORT

General Model Information

Project Name:	2140 PRE_V2
Site Name:	MCINTOSH
Site Address:	
City:	CAMAS
Report Date:	6/22/2022
Gage:	Troutdale
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.370
Version Date:	2021/08/18
Version:	4.2.18

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year
Low Flow Threshold for POC2:	50 Percent of the 2 Year
High Flow Threshold for POC2:	50 Year

Landuse Basin Data

Predeveloped Land Use

PRE-E1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Mod	2.64
Pervious Total	2.64

Impervious Land Use	acre
Impervious Total	0
Basin Total	2.64

Element Flows To:

Surface	Interflow	Groundwater

WQ-Placebo

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Field, Flat	1.4
Pervious Total	1.4

Impervious Land Use	acre
ROADS FLAT	0.47
Impervious Total	0.47
Basin Total	1.87

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

PGIS

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Field, Flat	1.4
Pervious Total	1.4

Impervious Land Use	acre
ROADS FLAT	0.47
Impervious Total	0.47
Basin Total	1.87

Element Flows To:

Surface	Interflow	Groundwater
POND	POND	

W1-ROOFS

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.28
Impervious Total	0.28
Basin Total	0.28

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1	Gravel Trench Bed 1	

Routing Elements

Predeveloped Routing

Mitigated Routing

POND

Bottom Length:	70.00 ft.		
Bottom Width:	44.00 ft.		
Depth:	6 ft.		
Volume at riser head:	0.3535 acre-feet.		
Infiltration On			
Infiltration rate:	1		
Infiltration safety factor:	0.25		
Total Volume Infiltrated (ac-ft.):		99.955	
Total Volume Through Riser (ac-ft.):		81.096	
Total Volume Through Facility (ac-ft.):		181.051	
Percent Infiltrated:		55.21	
Total Precip Applied to Facility:		0	
Total Evap From Facility:		0	
Side slope 1:	0 To 1		
Side slope 2:	0 To 1		
Side slope 3:	0 To 1		
Side slope 4:	0 To 1		
Discharge Structure			
Riser Height:	5 ft.		
Riser Diameter:	18 in.		
Orifice 1 Diameter:	1.125 in.	Elevation:0 ft.	
Orifice 2 Diameter:	2 in.	Elevation:2.75 ft.	
Element Flows To:			
Outlet 1	Outlet 2		

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.070	0.000	0.000	0.000
0.0667	0.070	0.004	0.008	0.017
0.1333	0.070	0.009	0.012	0.017
0.2000	0.070	0.014	0.015	0.017
0.2667	0.070	0.018	0.017	0.017
0.3333	0.070	0.023	0.019	0.017
0.4000	0.070	0.028	0.021	0.017
0.4667	0.070	0.033	0.023	0.017
0.5333	0.070	0.037	0.025	0.017
0.6000	0.070	0.042	0.026	0.017
0.6667	0.070	0.047	0.028	0.017
0.7333	0.070	0.051	0.029	0.017
0.8000	0.070	0.056	0.030	0.017
0.8667	0.070	0.061	0.032	0.017
0.9333	0.070	0.066	0.033	0.017
1.0000	0.070	0.070	0.034	0.017
1.0667	0.070	0.075	0.035	0.017
1.1333	0.070	0.080	0.036	0.017
1.2000	0.070	0.084	0.037	0.017
1.2667	0.070	0.089	0.038	0.017
1.3333	0.070	0.094	0.039	0.017
1.4000	0.070	0.099	0.040	0.017
1.4667	0.070	0.103	0.041	0.017
1.5333	0.070	0.108	0.042	0.017
1.6000	0.070	0.113	0.043	0.017

1.6667	0.070	0.117	0.044	0.017
1.7333	0.070	0.122	0.045	0.017
1.8000	0.070	0.127	0.046	0.017
1.8667	0.070	0.132	0.046	0.017
1.9333	0.070	0.136	0.047	0.017
2.0000	0.070	0.141	0.048	0.017
2.0667	0.070	0.146	0.049	0.017
2.1333	0.070	0.150	0.050	0.017
2.2000	0.070	0.155	0.050	0.017
2.2667	0.070	0.160	0.051	0.017
2.3333	0.070	0.165	0.052	0.017
2.4000	0.070	0.169	0.053	0.017
2.4667	0.070	0.174	0.053	0.017
2.5333	0.070	0.179	0.054	0.017
2.6000	0.070	0.183	0.055	0.017
2.6667	0.070	0.188	0.056	0.017
2.7333	0.070	0.193	0.056	0.017
2.8000	0.070	0.198	0.081	0.017
2.8667	0.070	0.202	0.095	0.017
2.9333	0.070	0.207	0.105	0.017
3.0000	0.070	0.212	0.113	0.017
3.0667	0.070	0.216	0.121	0.017
3.1333	0.070	0.221	0.128	0.017
3.2000	0.070	0.226	0.134	0.017
3.2667	0.070	0.231	0.140	0.017
3.3333	0.070	0.235	0.145	0.017
3.4000	0.070	0.240	0.150	0.017
3.4667	0.070	0.245	0.155	0.017
3.5333	0.070	0.249	0.160	0.017
3.6000	0.070	0.254	0.165	0.017
3.6667	0.070	0.259	0.169	0.017
3.7333	0.070	0.264	0.174	0.017
3.8000	0.070	0.268	0.178	0.017
3.8667	0.070	0.273	0.182	0.017
3.9333	0.070	0.278	0.186	0.017
4.0000	0.070	0.282	0.190	0.017
4.0667	0.070	0.287	0.193	0.017
4.1333	0.070	0.292	0.197	0.017
4.2000	0.070	0.297	0.201	0.017
4.2667	0.070	0.301	0.204	0.017
4.3333	0.070	0.306	0.208	0.017
4.4000	0.070	0.311	0.211	0.017
4.4667	0.070	0.315	0.214	0.017
4.5333	0.070	0.320	0.218	0.017
4.6000	0.070	0.325	0.221	0.017
4.6667	0.070	0.330	0.224	0.017
4.7333	0.070	0.334	0.227	0.017
4.8000	0.070	0.339	0.230	0.017
4.8667	0.070	0.344	0.233	0.017
4.9333	0.070	0.348	0.236	0.017
5.0000	0.070	0.353	0.239	0.017
5.0667	0.070	0.358	0.516	0.017
5.1333	0.070	0.363	1.016	0.017
5.2000	0.070	0.367	1.652	0.017
5.2667	0.070	0.372	2.374	0.017
5.3333	0.070	0.377	3.136	0.017
5.4000	0.070	0.381	3.888	0.017
5.4667	0.070	0.386	4.585	0.017

5.5333	0.070	0.391	5.186	0.017
5.6000	0.070	0.396	5.665	0.017
5.6667	0.070	0.400	6.021	0.017
5.7333	0.070	0.405	6.283	0.017
5.8000	0.070	0.410	6.610	0.017
5.8667	0.070	0.414	6.872	0.017
5.9333	0.070	0.419	7.123	0.017
6.0000	0.070	0.424	7.366	0.017
6.0667	0.070	0.429	7.601	0.017

Gravel Trench Bed 1

Bottom Length:	420.00 ft.
Bottom Width:	6.00 ft.
Trench bottom slope 1:	0.00001 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.333
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	1
Infiltration safety factor:	0.25
Total Volume Infiltrated (ac-ft.):	58.263
Total Volume Through Riser (ac-ft.):	0.611
Total Volume Through Facility (ac-ft.):	58.874
Percent Infiltrated:	98.96
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	2 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2
POND	

Gravel Trench Bed Hydraulic Table

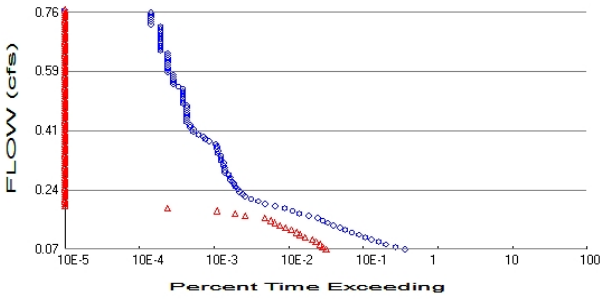
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.057	0.000	0.000	0.000
0.0333	0.057	0.000	0.000	0.014
0.0667	0.057	0.001	0.000	0.014
0.1000	0.057	0.001	0.000	0.014
0.1333	0.057	0.002	0.000	0.014
0.1667	0.057	0.003	0.000	0.014
0.2000	0.057	0.003	0.000	0.014
0.2333	0.057	0.004	0.000	0.014
0.2667	0.057	0.005	0.000	0.014
0.3000	0.057	0.005	0.000	0.014
0.3333	0.057	0.006	0.000	0.014
0.3667	0.057	0.007	0.000	0.014
0.4000	0.057	0.007	0.000	0.014
0.4333	0.057	0.008	0.000	0.014
0.4667	0.057	0.009	0.000	0.014
0.5000	0.057	0.009	0.000	0.014
0.5333	0.057	0.010	0.000	0.014
0.5667	0.057	0.010	0.000	0.014
0.6000	0.057	0.011	0.000	0.014
0.6333	0.057	0.012	0.000	0.014
0.6667	0.057	0.012	0.000	0.014
0.7000	0.057	0.013	0.000	0.014
0.7333	0.057	0.014	0.000	0.014
0.7667	0.057	0.014	0.000	0.014
0.8000	0.057	0.015	0.000	0.014
0.8333	0.057	0.016	0.000	0.014

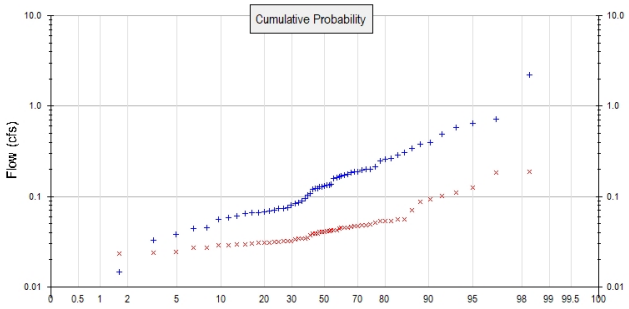
0.8667	0.057	0.016	0.000	0.014
0.9000	0.057	0.017	0.000	0.014
0.9333	0.057	0.018	0.000	0.014
0.9667	0.057	0.018	0.000	0.014
1.0000	0.057	0.019	0.000	0.014
1.0333	0.057	0.019	0.000	0.014
1.0667	0.057	0.020	0.000	0.014
1.1000	0.057	0.021	0.000	0.014
1.1333	0.057	0.021	0.000	0.014
1.1667	0.057	0.022	0.000	0.014
1.2000	0.057	0.023	0.000	0.014
1.2333	0.057	0.023	0.000	0.014
1.2667	0.057	0.024	0.000	0.014
1.3000	0.057	0.025	0.000	0.014
1.3333	0.057	0.025	0.000	0.014
1.3667	0.057	0.026	0.000	0.014
1.4000	0.057	0.027	0.000	0.014
1.4333	0.057	0.027	0.000	0.014
1.4667	0.057	0.028	0.000	0.014
1.5000	0.057	0.028	0.000	0.014
1.5333	0.057	0.029	0.000	0.014
1.5667	0.057	0.030	0.000	0.014
1.6000	0.057	0.030	0.000	0.014
1.6333	0.057	0.031	0.000	0.014
1.6667	0.057	0.032	0.000	0.014
1.7000	0.057	0.032	0.000	0.014
1.7333	0.057	0.033	0.000	0.014
1.7667	0.057	0.034	0.000	0.014
1.8000	0.057	0.034	0.000	0.014
1.8333	0.057	0.035	0.000	0.014
1.8667	0.057	0.036	0.000	0.014
1.9000	0.057	0.036	0.000	0.014
1.9333	0.057	0.037	0.000	0.014
1.9667	0.057	0.037	0.000	0.014
2.0000	0.057	0.039	0.000	0.014
2.0333	0.057	0.041	0.064	0.014
2.0667	0.057	0.043	0.182	0.014
2.1000	0.057	0.045	0.333	0.014
2.1333	0.057	0.047	0.509	0.014
2.1667	0.057	0.049	0.703	0.014
2.2000	0.057	0.051	0.907	0.014
2.2333	0.057	0.053	1.115	0.014
2.2667	0.057	0.055	1.318	0.014
2.3000	0.057	0.057	1.509	0.014
2.3333	0.057	0.059	1.683	0.014
2.3667	0.057	0.061	1.834	0.014
2.4000	0.057	0.063	1.960	0.014
2.4333	0.057	0.064	2.060	0.014
2.4667	0.057	0.066	2.138	0.014
2.5000	0.057	0.068	2.227	0.014
2.5333	0.057	0.070	2.300	0.014
2.5667	0.057	0.072	2.371	0.014
2.6000	0.057	0.074	2.439	0.014
2.6333	0.057	0.076	2.506	0.014
2.6667	0.057	0.078	2.571	0.014
2.7000	0.057	0.080	2.635	0.014
2.7333	0.057	0.082	2.697	0.014
2.7667	0.057	0.084	2.757	0.014

2.8000	0.057	0.086	2.817	0.014
2.8333	0.057	0.088	2.875	0.014
2.8667	0.057	0.090	2.932	0.014
2.9000	0.057	0.091	2.988	0.014
2.9333	0.057	0.093	3.042	0.014
2.9667	0.057	0.095	3.096	0.014
3.0000	0.057	0.097	3.149	0.014

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 2.64
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 1.4
Total Impervious Area: 0.75

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.136204
5 year	0.293387
10 year	0.423024
25 year	0.609076
50 year	0.760273
100 year	0.919774

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.040788
5 year	0.06205
10 year	0.079792
25 year	0.107012
50 year	0.131209
100 year	0.159158

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.195	0.101
1950	0.134	0.048
1951	0.216	0.047
1952	0.161	0.039
1953	0.134	0.041
1954	0.127	0.039
1955	0.173	0.031
1956	0.489	0.109
1957	0.095	0.034
1958	0.056	0.033

1959	0.071	0.031
1960	0.076	0.029
1961	0.132	0.053
1962	0.067	0.032
1963	0.074	0.035
1964	0.157	0.045
1965	0.165	0.088
1966	0.186	0.045
1967	0.124	0.032
1968	0.202	0.045
1969	0.248	0.043
1970	2.200	0.093
1971	0.073	0.032
1972	0.137	0.042
1973	0.070	0.037
1974	0.394	0.125
1975	0.127	0.041
1976	0.648	0.039
1977	0.003	0.024
1978	0.186	0.056
1979	0.061	0.032
1980	0.183	0.046
1981	0.199	0.070
1982	0.345	0.049
1983	0.578	0.042
1984	0.285	0.034
1985	0.177	0.041
1986	0.067	0.027
1987	0.170	0.053
1988	0.058	0.032
1989	0.044	0.023
1990	0.066	0.031
1991	0.084	0.030
1992	0.089	0.027
1993	0.080	0.035
1994	0.123	0.048
1995	0.086	0.055
1996	0.721	0.187
1997	0.266	0.182
1998	0.107	0.029
1999	0.120	0.047
2000	0.045	0.024
2001	0.015	0.019
2002	0.382	0.040
2003	0.257	0.051
2004	0.032	0.029
2005	0.038	0.030
2006	0.306	0.042
2007	0.065	0.053
2008	0.103	0.045

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	2.1995	0.1870
2	0.7211	0.1819
3	0.6475	0.1252
4	0.5780	0.1092

5	0.4894	0.1011
6	0.3936	0.0931
7	0.3819	0.0882
8	0.3448	0.0701
9	0.3059	0.0557
10	0.2853	0.0553
11	0.2659	0.0533
12	0.2571	0.0533
13	0.2479	0.0530
14	0.2155	0.0509
15	0.2017	0.0488
16	0.1988	0.0482
17	0.1951	0.0479
18	0.1864	0.0467
19	0.1861	0.0466
20	0.1826	0.0465
21	0.1771	0.0449
22	0.1732	0.0447
23	0.1701	0.0447
24	0.1650	0.0446
25	0.1607	0.0427
26	0.1575	0.0423
27	0.1370	0.0420
28	0.1345	0.0416
29	0.1344	0.0412
30	0.1317	0.0407
31	0.1273	0.0407
32	0.1269	0.0404
33	0.1239	0.0392
34	0.1225	0.0392
35	0.1202	0.0389
36	0.1070	0.0370
37	0.1030	0.0347
38	0.0952	0.0346
39	0.0894	0.0343
40	0.0859	0.0343
41	0.0837	0.0335
42	0.0796	0.0321
43	0.0755	0.0320
44	0.0744	0.0319
45	0.0730	0.0317
46	0.0712	0.0315
47	0.0696	0.0311
48	0.0674	0.0309
49	0.0669	0.0306
50	0.0660	0.0304
51	0.0652	0.0297
52	0.0606	0.0293
53	0.0580	0.0289
54	0.0559	0.0288
55	0.0448	0.0272
56	0.0440	0.0268
57	0.0381	0.0244
58	0.0325	0.0240
59	0.0146	0.0235
60	0.0032	0.0189

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0681	7616	663	8	Pass
0.0751	5672	601	10	Pass
0.0821	4248	552	12	Pass
0.0891	3358	490	14	Pass
0.0961	2722	434	15	Pass
0.1031	2232	348	15	Pass
0.1101	1835	297	16	Pass
0.1170	1474	271	18	Pass
0.1240	1201	229	19	Pass
0.1310	1014	189	18	Pass
0.1380	833	159	19	Pass
0.1450	693	138	19	Pass
0.1520	597	121	20	Pass
0.1590	514	101	19	Pass
0.1660	391	55	14	Pass
0.1730	290	40	13	Pass
0.1800	236	23	9	Pass
0.1870	185	5	2	Pass
0.1940	137	0	0	Pass
0.2009	101	0	0	Pass
0.2079	83	0	0	Pass
0.2149	66	0	0	Pass
0.2219	55	0	0	Pass
0.2289	51	0	0	Pass
0.2359	46	0	0	Pass
0.2429	44	0	0	Pass
0.2499	41	0	0	Pass
0.2569	39	0	0	Pass
0.2639	37	0	0	Pass
0.2709	35	0	0	Pass
0.2779	35	0	0	Pass
0.2848	33	0	0	Pass
0.2918	29	0	0	Pass
0.2988	29	0	0	Pass
0.3058	29	0	0	Pass
0.3128	28	0	0	Pass
0.3198	28	0	0	Pass
0.3268	26	0	0	Pass
0.3338	26	0	0	Pass
0.3408	26	0	0	Pass
0.3478	24	0	0	Pass
0.3548	24	0	0	Pass
0.3618	23	0	0	Pass
0.3687	23	0	0	Pass
0.3757	22	0	0	Pass
0.3827	18	0	0	Pass
0.3897	16	0	0	Pass
0.3967	15	0	0	Pass
0.4037	13	0	0	Pass
0.4107	11	0	0	Pass
0.4177	11	0	0	Pass
0.4247	10	0	0	Pass
0.4317	10	0	0	Pass

0.4387	9	0	0	Pass
0.4456	9	0	0	Pass
0.4526	9	0	0	Pass
0.4596	9	0	0	Pass
0.4666	9	0	0	Pass
0.4736	9	0	0	Pass
0.4806	9	0	0	Pass
0.4876	9	0	0	Pass
0.4946	8	0	0	Pass
0.5016	8	0	0	Pass
0.5086	8	0	0	Pass
0.5156	8	0	0	Pass
0.5226	8	0	0	Pass
0.5295	8	0	0	Pass
0.5365	8	0	0	Pass
0.5435	7	0	0	Pass
0.5505	6	0	0	Pass
0.5575	6	0	0	Pass
0.5645	6	0	0	Pass
0.5715	6	0	0	Pass
0.5785	6	0	0	Pass
0.5855	5	0	0	Pass
0.5925	5	0	0	Pass
0.5995	5	0	0	Pass
0.6065	5	0	0	Pass
0.6134	5	0	0	Pass
0.6204	5	0	0	Pass
0.6274	5	0	0	Pass
0.6344	5	0	0	Pass
0.6414	5	0	0	Pass
0.6484	4	0	0	Pass
0.6554	4	0	0	Pass
0.6624	4	0	0	Pass
0.6694	4	0	0	Pass
0.6764	4	0	0	Pass
0.6834	4	0	0	Pass
0.6904	4	0	0	Pass
0.6973	4	0	0	Pass
0.7043	4	0	0	Pass
0.7113	4	0	0	Pass
0.7183	4	0	0	Pass
0.7253	3	0	0	Pass
0.7323	3	0	0	Pass
0.7393	3	0	0	Pass
0.7463	3	0	0	Pass
0.7533	3	0	0	Pass
0.7603	3	0	0	Pass

Water Quality

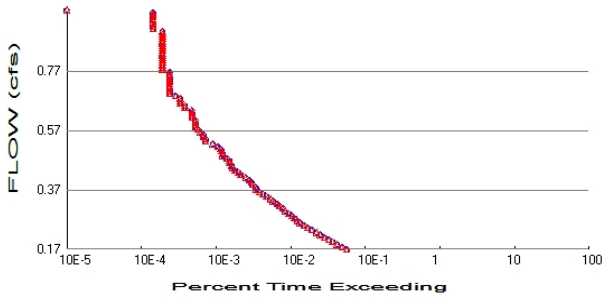
Water Quality BMP Flow and Volume for POC #1

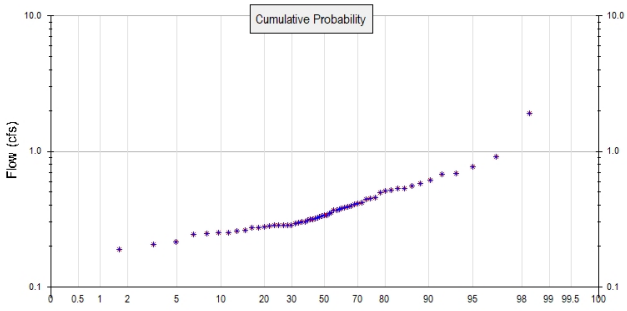
On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
POND POC	☐	164.76			☐	55.21			
Gravel Trench Bed 1	☐	53.58			☐	98.96			
Total Volume Infiltrated		218.33	0.00	0.00		65.94	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

POC 2





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 1.4
Total Impervious Area: 0.47

Mitigated Landuse Totals for POC #2
Total Pervious Area: 1.4
Total Impervious Area: 0.47

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	0.347843
5 year	0.502331
10 year	0.626117
25 year	0.809673
50 year	0.96796
100 year	1.146346

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	0.347843
5 year	0.502331
10 year	0.626117
25 year	0.809673
50 year	0.96796
100 year	1.146346

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	**Predeveloped**	**Mitigated**
1949	0.420	0.420
1950	0.251	0.251
1951	0.379	0.379
1952	0.382	0.382
1953	0.314	0.314
1954	0.373	0.373
1955	0.281	0.281
1956	0.558	0.558
1957	0.284	0.284
1958	0.284	0.284
1959	0.214	0.214

1960	0.262	0.262
1961	0.286	0.286
1962	0.296	0.296
1963	0.339	0.339
1964	0.325	0.325
1965	0.355	0.355
1966	0.394	0.394
1967	0.276	0.276
1968	0.512	0.512
1969	0.443	0.443
1970	1.906	1.906
1971	0.347	0.347
1972	0.302	0.302
1973	0.318	0.318
1974	0.497	0.497
1975	0.329	0.329
1976	0.681	0.681
1977	0.189	0.189
1978	0.388	0.388
1979	0.340	0.340
1980	0.272	0.272
1981	0.404	0.404
1982	0.532	0.532
1983	0.689	0.689
1984	0.451	0.451
1985	0.285	0.285
1986	0.291	0.291
1987	0.303	0.303
1988	0.369	0.369
1989	0.286	0.286
1990	0.243	0.243
1991	0.366	0.366
1992	0.274	0.274
1993	0.609	0.609
1994	0.252	0.252
1995	0.310	0.310
1996	0.768	0.768
1997	0.532	0.532
1998	0.456	0.456
1999	0.258	0.258
2000	0.176	0.176
2001	0.204	0.204
2002	0.581	0.581
2003	0.413	0.413
2004	0.333	0.333
2005	0.313	0.313
2006	0.516	0.516
2007	0.246	0.246
2008	0.910	0.910

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	1.9056	1.9056
2	0.9105	0.9105
3	0.7678	0.7678
4	0.6886	0.6886
5	0.6811	0.6811

6	0.6092	0.6092
7	0.5806	0.5806
8	0.5584	0.5584
9	0.5322	0.5322
10	0.5321	0.5321
11	0.5159	0.5159
12	0.5118	0.5118
13	0.4968	0.4968
14	0.4558	0.4558
15	0.4506	0.4506
16	0.4428	0.4428
17	0.4196	0.4196
18	0.4127	0.4127
19	0.4043	0.4043
20	0.3936	0.3936
21	0.3876	0.3876
22	0.3822	0.3822
23	0.3794	0.3794
24	0.3729	0.3729
25	0.3687	0.3687
26	0.3657	0.3657
27	0.3550	0.3550
28	0.3466	0.3466
29	0.3400	0.3400
30	0.3394	0.3394
31	0.3335	0.3335
32	0.3291	0.3291
33	0.3252	0.3252
34	0.3182	0.3182
35	0.3145	0.3145
36	0.3126	0.3126
37	0.3100	0.3100
38	0.3025	0.3025
39	0.3020	0.3020
40	0.2957	0.2957
41	0.2914	0.2914
42	0.2863	0.2863
43	0.2860	0.2860
44	0.2850	0.2850
45	0.2841	0.2841
46	0.2836	0.2836
47	0.2806	0.2806
48	0.2765	0.2765
49	0.2739	0.2739
50	0.2720	0.2720
51	0.2625	0.2625
52	0.2583	0.2583
53	0.2519	0.2519
54	0.2513	0.2513
55	0.2465	0.2465
56	0.2429	0.2429
57	0.2145	0.2145
58	0.2043	0.2043
59	0.1886	0.1886
60	0.1759	0.1759

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.1739	1188	1188	100	Pass
0.1819	1013	1013	100	Pass
0.1900	880	880	100	Pass
0.1980	763	763	100	Pass
0.2060	681	681	100	Pass
0.2140	593	593	100	Pass
0.2220	521	521	100	Pass
0.2301	464	464	100	Pass
0.2381	401	401	100	Pass
0.2461	353	353	100	Pass
0.2541	315	315	100	Pass
0.2621	279	279	100	Pass
0.2702	255	255	100	Pass
0.2782	236	236	100	Pass
0.2862	217	217	100	Pass
0.2942	199	199	100	Pass
0.3023	178	178	100	Pass
0.3103	164	164	100	Pass
0.3183	147	147	100	Pass
0.3263	137	137	100	Pass
0.3343	122	122	100	Pass
0.3424	113	113	100	Pass
0.3504	99	99	100	Pass
0.3584	90	90	100	Pass
0.3664	80	80	100	Pass
0.3744	73	73	100	Pass
0.3825	71	71	100	Pass
0.3905	64	64	100	Pass
0.3985	62	62	100	Pass
0.4065	58	58	100	Pass
0.4145	52	52	100	Pass
0.4226	45	45	100	Pass
0.4306	42	42	100	Pass
0.4386	38	38	100	Pass
0.4466	35	35	100	Pass
0.4546	34	34	100	Pass
0.4627	32	32	100	Pass
0.4707	32	32	100	Pass
0.4787	29	29	100	Pass
0.4867	26	26	100	Pass
0.4947	26	26	100	Pass
0.5028	25	25	100	Pass
0.5108	24	24	100	Pass
0.5188	22	22	100	Pass
0.5268	19	19	100	Pass
0.5348	15	15	100	Pass
0.5429	15	15	100	Pass
0.5509	14	14	100	Pass
0.5589	14	14	100	Pass
0.5669	13	13	100	Pass
0.5750	12	12	100	Pass
0.5830	11	11	100	Pass
0.5910	11	11	100	Pass

0.5990	11	11	100	Pass
0.6070	11	11	100	Pass
0.6151	10	10	100	Pass
0.6231	10	10	100	Pass
0.6311	10	10	100	Pass
0.6391	10	10	100	Pass
0.6471	8	8	100	Pass
0.6552	8	8	100	Pass
0.6632	7	7	100	Pass
0.6712	7	7	100	Pass
0.6792	7	7	100	Pass
0.6872	6	6	100	Pass
0.6953	5	5	100	Pass
0.7033	5	5	100	Pass
0.7113	5	5	100	Pass
0.7193	5	5	100	Pass
0.7273	5	5	100	Pass
0.7354	5	5	100	Pass
0.7434	5	5	100	Pass
0.7514	5	5	100	Pass
0.7594	5	5	100	Pass
0.7674	5	5	100	Pass
0.7755	4	4	100	Pass
0.7835	4	4	100	Pass
0.7915	4	4	100	Pass
0.7995	4	4	100	Pass
0.8075	4	4	100	Pass
0.8156	4	4	100	Pass
0.8236	4	4	100	Pass
0.8316	4	4	100	Pass
0.8396	4	4	100	Pass
0.8477	4	4	100	Pass
0.8557	4	4	100	Pass
0.8637	4	4	100	Pass
0.8717	4	4	100	Pass
0.8797	4	4	100	Pass
0.8878	4	4	100	Pass
0.8958	4	4	100	Pass
0.9038	4	4	100	Pass
0.9118	3	3	100	Pass
0.9198	3	3	100	Pass
0.9279	3	3	100	Pass
0.9359	3	3	100	Pass
0.9439	3	3	100	Pass
0.9519	3	3	100	Pass
0.9599	3	3	100	Pass
0.9680	3	3	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #2

On-line facility volume:	0.132 acre-feet
On-line facility target flow:	0.1138 cfs.
Adjusted for 15 min:	0.1138 cfs.
Off-line facility target flow:	0.0638 cfs.
Adjusted for 15 min:	0.0638 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

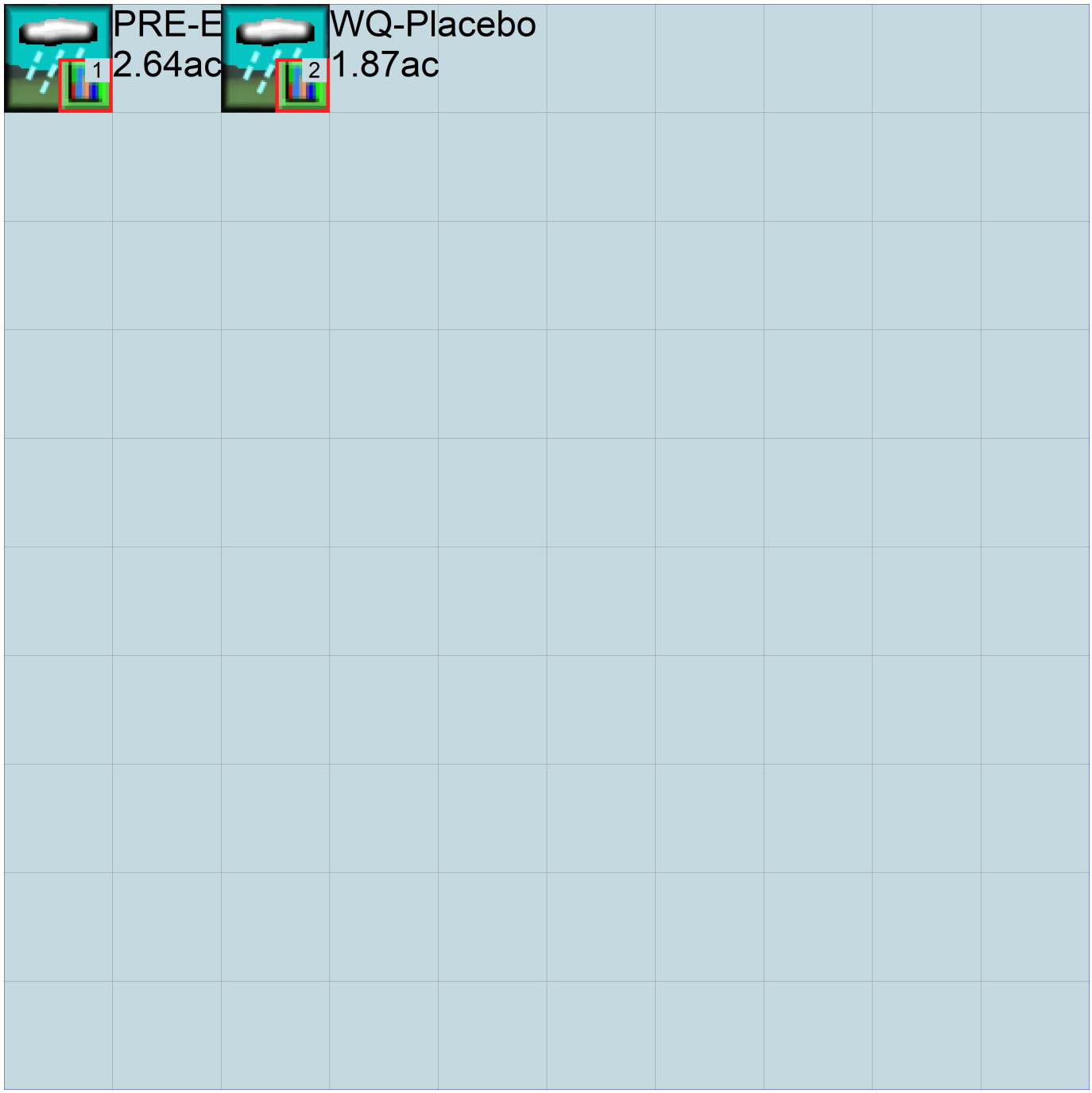
No PERLND changes have been made.

IMPLND Changes

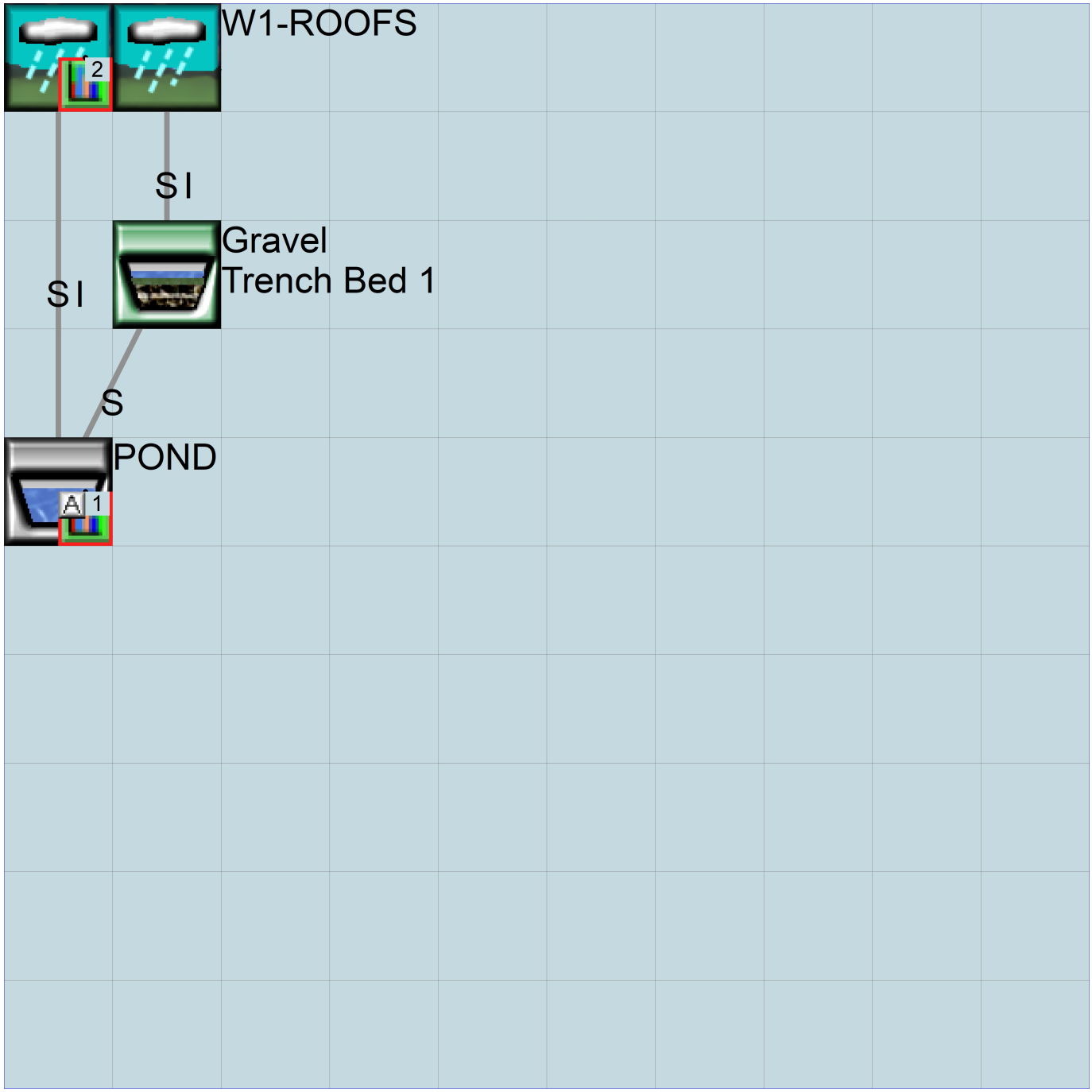
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   2140 PRE_V2.wdm
MESSU       25   Pre2140 PRE_V2.MES
            27   Pre2140 PRE_V2.L61
            28   Pre2140 PRE_V2.L62
            30   POC2140 PRE_V21.dat
            31   POC2140 PRE_V22.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      20
      PERLND      22
      IMPLND       1
      COPY       501
      COPY       502
      DISPLY       1
      DISPLY       2
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        PRE-E1                     MAX                    1    2   30    9
    2        WQ-Placebo                 MAX                    1    2   31    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  502         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out            ***
   20     SG3, Forest, Mod        1    1    1    1   27    0
   22     SG3, Field, Flat        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   20         0    0    1    0    0    0    0    0    0    0    0    0
```

```
   22         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   20         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   20         0    0    0    0    0    0    0    0    0    0    0
   22         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   20              0         9      0.08       400       0.1         0      0.96
   22              0         9      0.06       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   20              0         0       2.5         2         0         0         0
   22              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   20          0.2         1      0.35         4       0.4       0.7
   22         0.15         1       0.3         4       0.4       0.4
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   20              0         0         0         0         3         1         0
   22              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
```

```
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
PRE-E1***
PERLND  20                       2.64     COPY   501     12
PERLND  20                       2.64     COPY   501     13
WQ-Placebo***
PERLND  22                        1.4     COPY   502     12
PERLND  22                        1.4     COPY   502     13
IMPLND   1                       0.47     COPY   502     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
```

```
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                          ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.37           PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.37           IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
COPY   502 OUTPUT MEAN   1 1     48.4      WDM    502 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   2140 PRE_V2.wdm
MESSU       25   Mit2140 PRE_V2.MES
            27   Mit2140 PRE_V2.L61
            28   Mit2140 PRE_V2.L62
            31   POC2140 PRE_V22.dat
            30   POC2140 PRE_V21.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      22
      IMPLND       1
      IMPLND       4
      RCHRES       1
      RCHRES       2
      COPY       502
      COPY         1
      COPY       501
      DISPLY       2
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    2        PGIS                       MAX                    1    2   31    9
    1        POND                       MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  502         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
   22     SG3, Field, Flat        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
```

```
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   22         0    0    1    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   22         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   22         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   22              0         9      0.06       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   22              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   22           0.15         1       0.3         4       0.4       0.4
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   22              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
```

```
    4         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    4            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
W1-ROOFS ***
IMPLND   4                        0.28     RCHRES   1      5
PGIS***
PERLND  22                         1.4     RCHRES   2      2
PERLND  22                         1.4     RCHRES   2      3
IMPLND   1                        0.47     RCHRES   2      5
PGIS***
PERLND  22                         1.4     COPY   502     12
PERLND  22                         1.4     COPY   502     13
IMPLND   1                        0.47     COPY   502     15

******Routing******
PERLND  22                         1.4     COPY     1     12
IMPLND   1                        0.47     COPY     1     15
PERLND  22                         1.4     COPY     1     13
RCHRES   1                           1     RCHRES   2      7
RCHRES   1                                 COPY     1     17
RCHRES   2                           1     COPY   501     17
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                        in  out                             ***
    1     Gravel Trench Be-007    2    1    1    1   28    0    1
    2     POND                    2    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***
```

```
  ACTIVITY
    <PLS > ************* Active Sections *****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
    2         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                         ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *          ***
    1        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
    2        0  1  0  0    4  5  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50        ***
  <------><--------><--------><--------><--------><--------><-------->        ***
    1             1      0.08       0.0       0.0       0.5       0.0
    2             2      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                            ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit       for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1           0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    2           0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      2
   91    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)     (cfs)     (cfs)  (ft/sec)    (Minutes)***
  0.000000  0.070707  0.000000  0.000000  0.000000
  0.066667  0.070707  0.004714  0.008868  0.017824
  0.133333  0.070707  0.009428  0.012541  0.017824
  0.200000  0.070707  0.014141  0.015360  0.017824
  0.266667  0.070707  0.018855  0.017736  0.017824
  0.333333  0.070707  0.023569  0.019829  0.017824
  0.400000  0.070707  0.028283  0.021722  0.017824
  0.466667  0.070707  0.032997  0.023462  0.017824
  0.533333  0.070707  0.037710  0.025082  0.017824
  0.600000  0.070707  0.042424  0.026604  0.017824
  0.666667  0.070707  0.047138  0.028043  0.017824
  0.733333  0.070707  0.051852  0.029411  0.017824
  0.800000  0.070707  0.056566  0.030719  0.017824
  0.866667  0.070707  0.061279  0.031973  0.017824
  0.933333  0.070707  0.065993  0.033180  0.017824
  1.000000  0.070707  0.070707  0.034345  0.017824
  1.066667  0.070707  0.075421  0.035471  0.017824
  1.133333  0.070707  0.080135  0.036563  0.017824
  1.200000  0.070707  0.084848  0.037623  0.017824
  1.266667  0.070707  0.089562  0.038654  0.017824
  1.333333  0.070707  0.094276  0.039658  0.017824
  1.400000  0.070707  0.098990  0.040638  0.017824
  1.466667  0.070707  0.103704  0.041594  0.017824
```

```
1.533333  0.070707  0.108418  0.042529  0.017824
1.600000  0.070707  0.113131  0.043443  0.017824
1.666667  0.070707  0.117845  0.044339  0.017824
1.733333  0.070707  0.122559  0.045217  0.017824
1.800000  0.070707  0.127273  0.046079  0.017824
1.866667  0.070707  0.131987  0.046924  0.017824
1.933333  0.070707  0.136700  0.047755  0.017824
2.000000  0.070707  0.141414  0.048571  0.017824
2.066667  0.070707  0.146128  0.049374  0.017824
2.133333  0.070707  0.150842  0.050164  0.017824
2.200000  0.070707  0.155556  0.050942  0.017824
2.266667  0.070707  0.160269  0.051708  0.017824
2.333333  0.070707  0.164983  0.052463  0.017824
2.400000  0.070707  0.169697  0.053207  0.017824
2.466667  0.070707  0.174411  0.053941  0.017824
2.533333  0.070707  0.179125  0.054665  0.017824
2.600000  0.070707  0.183838  0.055380  0.017824
2.666667  0.070707  0.188552  0.056085  0.017824
2.733333  0.070707  0.193266  0.056782  0.017824
2.800000  0.070707  0.197980  0.081742  0.017824
2.866667  0.070707  0.202694  0.095226  0.017824
2.933333  0.070707  0.207407  0.105300  0.017824
3.000000  0.070707  0.212121  0.113761  0.017824
3.066667  0.070707  0.216835  0.121228  0.017824
3.133333  0.070707  0.221549  0.128001  0.017824
3.200000  0.070707  0.226263  0.134254  0.017824
3.266667  0.070707  0.230976  0.140098  0.017824
3.333333  0.070707  0.235690  0.145609  0.017824
3.400000  0.070707  0.240404  0.150843  0.017824
3.466667  0.070707  0.245118  0.155839  0.017824
3.533333  0.070707  0.249832  0.160630  0.017824
3.600000  0.070707  0.254545  0.165241  0.017824
3.666667  0.070707  0.259259  0.169692  0.017824
3.733333  0.070707  0.263973  0.174000  0.017824
3.800000  0.070707  0.268687  0.178179  0.017824
3.866667  0.070707  0.273401  0.182240  0.017824
3.933333  0.070707  0.278114  0.186194  0.017824
4.000000  0.070707  0.282828  0.190050  0.017824
4.066667  0.070707  0.287542  0.193814  0.017824
4.133333  0.070707  0.292256  0.197494  0.017824
4.200000  0.070707  0.296970  0.201095  0.017824
4.266667  0.070707  0.301684  0.204622  0.017824
4.333333  0.070707  0.306397  0.208080  0.017824
4.400000  0.070707  0.311111  0.211474  0.017824
4.466667  0.070707  0.315825  0.214807  0.017824
4.533333  0.070707  0.320539  0.218082  0.017824
4.600000  0.070707  0.325253  0.221302  0.017824
4.666667  0.070707  0.329966  0.224471  0.017824
4.733333  0.070707  0.334680  0.227590  0.017824
4.800000  0.070707  0.339394  0.230662  0.017824
4.866667  0.070707  0.344108  0.233690  0.017824
4.933333  0.070707  0.348822  0.236675  0.017824
5.000000  0.070707  0.353535  0.239619  0.017824
5.066667  0.070707  0.358249  0.516219  0.017824
5.133333  0.070707  0.362963  1.016856  0.017824
5.200000  0.070707  0.367677  1.652686  0.017824
5.266667  0.070707  0.372391  2.374842  0.017824
5.333333  0.070707  0.377104  3.136301  0.017824
5.400000  0.070707  0.381818  3.888714  0.017824
5.466667  0.070707  0.386532  4.585239  0.017824
5.533333  0.070707  0.391246  5.186080  0.017824
5.600000  0.070707  0.395960  5.665744  0.017824
5.666667  0.070707  0.400673  6.021632  0.017824
5.733333  0.070707  0.405387  6.283713  0.017824
5.800000  0.070707  0.410101  6.610792  0.017824
5.866667  0.070707  0.414815  6.872146  0.017824
5.933333  0.070707  0.419529  7.123699  0.017824
6.000000  0.070707  0.424242  7.366482  0.017824
END FTABLE  2
FTABLE      1
```

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Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.057851	0.000000	0.000000	0.000000		
0.033333	0.057851	0.000642	0.000000	0.014583		
0.066667	0.057851	0.001284	0.000000	0.014583		
0.100000	0.057851	0.001926	0.000000	0.014583		
0.133333	0.057851	0.002569	0.000000	0.014583		
0.166667	0.057851	0.003211	0.000000	0.014583		
0.200000	0.057851	0.003853	0.000000	0.014583		
0.233333	0.057851	0.004495	0.000000	0.014583		
0.266667	0.057851	0.005137	0.000000	0.014583		
0.300000	0.057851	0.005779	0.000000	0.014583		
0.333333	0.057851	0.006421	0.000000	0.014583		
0.366667	0.057851	0.007064	0.000000	0.014583		
0.400000	0.057851	0.007706	0.000000	0.014583		
0.433333	0.057851	0.008348	0.000000	0.014583		
0.466667	0.057851	0.008990	0.000000	0.014583		
0.500000	0.057851	0.009632	0.000000	0.014583		
0.533333	0.057851	0.010274	0.000000	0.014583		
0.566667	0.057851	0.010917	0.000000	0.014583		
0.600000	0.057851	0.011559	0.000000	0.014583		
0.633333	0.057851	0.012201	0.000000	0.014583		
0.666667	0.057851	0.012843	0.000000	0.014583		
0.700000	0.057851	0.013485	0.000000	0.014583		
0.733333	0.057851	0.014127	0.000000	0.014583		
0.766667	0.057851	0.014769	0.000000	0.014583		
0.800000	0.057851	0.015412	0.000000	0.014583		
0.833333	0.057851	0.016054	0.000000	0.014583		
0.866667	0.057851	0.016696	0.000000	0.014583		
0.900000	0.057851	0.017338	0.000000	0.014583		
0.933333	0.057851	0.017980	0.000000	0.014583		
0.966667	0.057851	0.018622	0.000000	0.014583		
1.000000	0.057851	0.019264	0.000000	0.014583		
1.033333	0.057851	0.019907	0.000000	0.014583		
1.066667	0.057851	0.020549	0.000000	0.014583		
1.100000	0.057851	0.021191	0.000000	0.014583		
1.133333	0.057851	0.021833	0.000000	0.014583		
1.166667	0.057851	0.022475	0.000000	0.014583		
1.200000	0.057851	0.023117	0.000000	0.014583		
1.233333	0.057851	0.023760	0.000000	0.014583		
1.266667	0.057851	0.024402	0.000000	0.014583		
1.300000	0.057851	0.025044	0.000000	0.014583		
1.333333	0.057851	0.025686	0.000000	0.014583		
1.366667	0.057851	0.026328	0.000000	0.014583		
1.400000	0.057851	0.026970	0.000000	0.014583		
1.433333	0.057851	0.027612	0.000000	0.014583		
1.466667	0.057851	0.028255	0.000000	0.014583		
1.500000	0.057851	0.028897	0.000000	0.014583		
1.533333	0.057851	0.029539	0.000000	0.014583		
1.566667	0.057851	0.030181	0.000000	0.014583		
1.600000	0.057851	0.030823	0.000000	0.014583		
1.633333	0.057851	0.031465	0.000000	0.014583		
1.666667	0.057851	0.032107	0.000000	0.014583		
1.700000	0.057851	0.032750	0.000000	0.014583		
1.733333	0.057851	0.033392	0.000000	0.014583		
1.766667	0.057851	0.034034	0.000000	0.014583		
1.800000	0.057851	0.034676	0.000000	0.014583		
1.833333	0.057851	0.035318	0.000000	0.014583		
1.866667	0.057851	0.035960	0.000000	0.014583		
1.900000	0.057851	0.036602	0.000000	0.014583		
1.933333	0.057851	0.037245	0.000000	0.014583		
1.966667	0.057851	0.037887	0.000000	0.014583		
2.000000	0.057851	0.039815	0.000000	0.014583		
2.033333	0.057851	0.041744	0.064540	0.014583		
2.066667	0.057851	0.043672	0.182234	0.014583		
2.100000	0.057851	0.045600	0.333520	0.014583		
2.133333	0.057851	0.047529	0.509662	0.014583		
2.166667	0.057851	0.049457	0.703432	0.014583		
2.200000	0.057851	0.051385	0.907676	0.014583		

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  2.233333  0.057851  0.053314  1.115035  0.014583
  2.266667  0.057851  0.055242  1.318080  0.014583
  2.300000  0.057851  0.057171  1.509672  0.014583
  2.333333  0.057851  0.059099  1.683468  0.014583
  2.366667  0.057851  0.061027  1.834531  0.014583
  2.400000  0.057851  0.062956  1.960035  0.014583
  2.433333  0.057851  0.064884  2.060036  0.014583
  2.466667  0.057851  0.066812  2.138326  0.014583
  2.500000  0.057851  0.068741  2.227125  0.014583
  2.533333  0.057851  0.070669  2.300165  0.014583
  2.566667  0.057851  0.072598  2.370955  0.014583
  2.600000  0.057851  0.074526  2.439693  0.014583
  2.633333  0.057851  0.076454  2.506546  0.014583
  2.666667  0.057851  0.078383  2.571662  0.014583
  2.700000  0.057851  0.080311  2.635170  0.014583
  2.733333  0.057851  0.082239  2.697182  0.014583
  2.766667  0.057851  0.084168  2.757800  0.014583
  2.800000  0.057851  0.086096  2.817115  0.014583
  2.833333  0.057851  0.088025  2.875206  0.014583
  2.866667  0.057851  0.089953  2.932146  0.014583
  2.900000  0.057851  0.091881  2.988001  0.014583
  2.933333  0.057851  0.093810  3.042832  0.014583
  2.966667  0.057851  0.095738  3.096691  0.014583
  3.000000  0.057851  0.097666  3.149630  0.014583
  3.033333  0.057851  0.099595  3.201694  0.014583
  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.37           PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.37           IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY     2 OUTPUT MEAN   1 1     48.4      WDM    702 FLOW     ENGL      REPL
COPY   502 OUTPUT MEAN   1 1     48.4      WDM    802 FLOW     ENGL      REPL
RCHRES   2 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   2 HYDR   O      1 1        1      WDM   1001 FLOW     ENGL      REPL
RCHRES   2 HYDR   O      2 1        1      WDM   1002 FLOW     ENGL      REPL
RCHRES   2 HYDR   STAGE  1 1        1      WDM   1003 STAG     ENGL      REPL
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK        7
RCHRES     OFLOW  OVOL   1                 RCHRES         INFLOW IVOL
  END MASS-LINK    7
```

```
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       17
RCHRES     OFLOW  OVOL   1               COPY           INPUT  MEAN
  END MASS-LINK   17


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

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Geotechnical Report Appendix D

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