Preliminary Stormwater Technical Information Report

Trammell Crow Company
Mid I-5 Industrial Park

Talley Way
Kelso, WA 98626

Submitted To:

Prepared By:

GIBBS & OLSON
CIVIL ENGINEERS • LAND SURVEYORS

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July 2022

Gibbs & Olson Project No. 0788.0247

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PRELIMINARY

07/05/2022

July 2022
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Preliminary Stormwater TIR Table of Contents

References

City of Kelso Engineering Design Manual, Kelso, WA, February 1, 2011, Amended June 20, 2017.

Washington State Department of Ecology, Olympia, WA; Stormwater Manual for Western Washington, 2019.

Due Diligence Geotechnical Report, Segale Site, Southwest of I-5 and State Route 432, NV5, October 25, 2021

U. S. Department of Agriculture Natural Resources Conservation Services; Web Soil Survey available on the NRCS website: http://websoilsurvey.nrcs.usda.gov

Section A – Project Overview

The Mid I-5 Industrial Park is located west of Interstate 5, east of the Cowlitz River, at the end of Talley Way in Kelso, WA and is identified as Parcel Number 24095. See the Vicinity Map in Appendix A for location. The otherwise undeveloped lot contains an extension to Talley Way consisting of an approximate 40' wide road, sewer, and water utilities intended to serve a development previously planned for in the year 2011, but improvements were not constructed. Trammell Crow Company intends to construct an approximate 1.43 million square foot industrial building and parking lot on Parcel 24095. The project will require site grading; the construction of paved parking lots; stormwater management; and installing sewer, water, and fire protection services. The existing Talley Way extension will be removed, and site roads will be constructed from Talley Way at the entrance to the site where the existing road is removed. Temporary erosion and sediment control will be employed during construction. Stormwater management from the pollution generating impervious surfaces (PGIS) for the site will be addressed using a combination of bioretention and mechanical treatment. Flow control for new impervious surfaces will be addressed using infiltration.

The proposed layout meets or exceeds the City of Kelso's landscape and setback criteria. This work will require a building permit; a civil permit, including a grading permit; a Department of Ecology (Ecology) NPDES Construction Stormwater Permit; and a Stormwater Pollution Prevention Plan (SWPPP). The proposed project follows the City of Kelso's development design requirements per the City of Kelso Engineering and Design Manual (KEDM) and Ecology's current Stormwater Management Manual for Western Washington (SWMMWW).

Section B – Existing Conditions and Soils

The existing topography of the site is relatively flat, with the exception of two soil stockpiles, and has previously been built up approximately 15 feet in elevation with dredge sand. Along the property lines, are approximate 50 percent slopes to match from approximate elevation 30 to approximate elevation 15. Aside from the Talley Way connection, the site is surrounded by areas identified as wetlands and is bordered on the east by Interstate 5 and on the west by the Burlington Northern Sante Fe (BNSF) Railway. The pre-developed site is split between two threshold discharge areas (TDAs). The northeast and south half of the site sheet flows to wetlands northeast and south of the site. These wetlands drain south towards the Carrolls Channel and Owl Creek wetlands, which flows into the Columbia River south of the site. The northwest portion of the site sheet flows to a ditch located between the site and the railroad along the west side of the property and discharges to the Coweeman River near its convergence with the Cowlitz River.

The site is not located in within the shoreline management area. The Federal Emergency Management Agency (FEMA) identifies the site to be surrounded by areas in Zone AE. Zone AE is defined as a floodway that is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights.

The site is not within a critical aquifer recharge area. As previously mentioned, wetlands and slopes of approximately 50 percent surround the site. A base flood line, wetland buffer, and geotechnical crest buffer have been developed and are shown on the Site Plan Drawings.

According to the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey, soil for this property has been identified as Caples silty clay loam which is classified as Hydrologic Soil Group C/D. See the soils map in Appendix A; however, the site has been built up with approximately 26 to 30 feet of dredge sand fill.

A geotechnical investigation was performed for this site and a Geotechnical Engineering Report (Geotechnical Report) was prepared on October 25, 2021, by NV5. Additional groundwater and infiltration testing was also performed in May 2022. Static groundwater was encountered during subsurface explorations between 17.2 and 19.5 feet below ground surface. Based on surface elevations and the weather conditions and time of year testing was performed, the seasonal high groundwater elevation is calculated to be between 15.6 and 16.4 feet.

Analysis of the subsurface indicated soils were dredge sand fill, native fine-grained soil, sand, and bedrock, see the Geotech report in Appendix B. Twelve falling head infiltration tests at depths ranging between 2 feet and 13 feet below ground surface were performed onsite in accordance with the SWMMWW. Eleven native infiltration rates were measured onsite to be greater than 500 inches per hour and one native infiltration rate near the Talley Way connection was measured to be 110 inches per hour. Because of these results, infiltration will be the primary method used to address the stormwater management for this site.

Section C – Minimum Requirements Analysis

This project is considered new development and results in more than 5,000 square feet of new hard surface; therefore, all minimum requirements (#1-#9) from the SWMMWW apply per the KEDM, see Flow Chart in Appendix C.

This project exceeds the threshold requirements of Sections 2.7 and 3.4.2 of Volume I of the SWMMWW; therefore, a Construction Stormwater Permit as well as a Construction Stormwater Pollution Prevention Plan (SWPPP) will be required. A preliminary SWPPP will be prepared and submitted with the Final TIR. The contractor will be responsible to complete the scheduling portions of the Construction SWPPP and re-submit for approval. The Construction SWPPP will be retained on-site and updated throughout the life of the project.

Section D – On-Site Stormwater Mgmt. Selection and Sizing (MR5)

Per Section 3.4.5, Vol. I of the SWMMWW, the project is inside City of Kelso's Urban Growth Area (UGA). This project will fully infiltrate stormwater runoff from impervious surfaces (see Section F – MR7) and therefore meet the LID Performance Standard.

Post-construction soil quality and depth shall be implemented in accordance with BMP T5.13 for lawn and landscaped areas.

Section E – Runoff Treatment Analysis and Design (MR6)

The project will add more than 5,000 square feet of new PGIS with the construction of new access roads and parking areas. Per Section III-1.2 of the SWMMWW, the project is within the UGA and expected to generate below an Average Annual Daily Traffic of 7,500; therefore, basic treatment is required.

Stormwater runoff from the front access roads and the front employee auto parking lot will be treated through bioretention facilities designed per SWMMWW BMP T7.30. The bioretention facilities will be constructed with 6-inches of freeboard, a 1.0-foot ponding depth, 3-inches of coarse compost, and 18-inches of Ecology's default bioretention soil mix which has an initial saturated hydraulic conductivity (Ksat) of 12 inches per hour. See the bioretention pond section view on the Site Plan Drawings.

Preliminary bioretention facility sizing to treat and infiltrate 100% of the stormwater runoff was modeled with the Western Washington Hydrology Model (WWHM). A Ksat safety factor of 4 (for greater than 5,000 square feet of pollution-generating impervious surface) was used. Multiple bioretention facilities with a total bottom area of 13,500 square feet (as shown in the Site Plan Drawings) are modeled to meet the requirement to treat 91% of the stormwater runoff from these PGIS's, see Appendix D for a bioretention facility modeling report.

Stormwater runoff from the remaining trailer parking lots will be treated through mechanical treatment. Concrete vaults containing twenty-nine 12-inch-tall treatment cartridges are capable of treating a maximum flow rate of 0.44 cfs. WWHM was used to determine the water quality flow rate from an approximate 4-acre impervious surface to also be 0.44 cfs. See Appendix D for modeling results. The approximate 32-acre parking areas and access roads were preliminarily divided into eight 4-acre maximum sub-basins with one mechanical treatment vault per sub-basin.

Section F – Flow Control Analysis and Design (MR7)

Flow control will be addressed by fully infiltrating stormwater. The bioretention facilities used to treat stormwater runoff from the access road and employee auto parking lot are sized to fully infiltrate 100% of the runoff.

Clean stormwater runoff from the access roads, parking lots and roof areas will be fully infiltrated through infiltration facilities. Stormwater runoff from roof areas does not require treatment and will be routed directly to the infiltration facilities. Stormwater runoff from parking lots and access roads will be mechanically treated before infiltrating through the infiltration facilities. For preliminary design, 48-inch diameter perforated corrugated metal pipe (CMP) surrounded by crushed drain rock was used to calculate an infiltration facility footprint that fully infiltrates 100% of the runoff. WWHM was used to determine the size of the 48-inch CMP underground infiltration facility from an approximate 8-acre impervious surface as shown in the preliminary Site Plans Drawings. See Appendix D for modeling results. As described in Section E, the approximate 32-acre parking lot was divided into eight 4-acre sub-basins. Two of these 4-acre sub-basins were routed to one infiltration facility for a total of 4 infiltration facilities for the parking areas and access roads. Roof areas were also divided into 4 approximate 8-acre areas and routed to 4

infiltration facilities. See the preliminary Site Plan Drawings for locations and sizing of the infiltration facilities.

As discussed under the Existing Conditions and Soils section, the native soil infiltration rate under the locations of proposed infiltration facilities was measured to be greater than 500 inches per hour. A design infiltration rate was calculated per Section V-5.4 of the SWMMWW. A site variability correction factor was not used because 11 of 12 infiltration tests yielded the same result. An uncertainty of test method correction factor of 0.40 was used for falling head infiltration tests. For the CMP infiltration facilities, a degree of influent control to prevent siltation correction factor of 0.9 was used; per BMP T7.30, this correction factor is not required for bioretention facilities. The design Ksat for bioretention facilities is calculated to be 200 inches per hour and the design Ksat for CMP infiltration facilities is calculated to be 180 inches per hour.

A preliminary analysis was also performed to determine the depth below the bottom of the infiltration facility to groundwater. The approximate trailer parking lot elevation is 30'. Using a minimum drop through the mechanical treatment units of 4-feet, an assumed drop of 1-foot for pipe slope, and an assumed invert elevation into the CMP infiltration facilities of 1-foot above the bottom of pipe such that the invert is above the 2-year storm water surface elevation, and a 1-foot layer of crushed drain rock, the bottom of the infiltration facility is calculated to be at elevation 23. This results in a separation of 6.6 to 7.4 feet from the bottom of the infiltration facility to the seasonal high groundwater elevation; therefore, the requirement under SSC-5 Depth to Bedrock, Water Table, or Impermeable Layer of the SWMMWW, Volume V, Section 5.6 that the base of infiltration facilities shall be greater than or equal to 5 feet above the seasonal high groundwater elevation is satisfied.

Section G – Conveyance System Analysis and Design

The stormwater conveyance system will be designed, and an analysis will be performed with the Final TIR.

Section H – Source Control

Ongoing operational source control BMPs shall be applied to this project to prevent stormwater from coming in contact with pollutants through the implementation of the Long-term Stormwater Site Management Plan.

The project owner will include ongoing operational source control at the Mid I-5 Industrial Park as outlined in Volume IV of the SWMMWW, and will employ various BMPs including the following:

- BMP S411: Landscaping and Lawn/Vegetation Management
- BMP S417: Maintenance of Stormwater Drainage and Treatment Systems

Section I – Ongoing Operation and Maintenance

Operation and Maintenance of the on-site collection, conveyance, treatment, and flow control facilities will be privately maintained. Additional details and attachments will be included in the Long-Term Stormwater Site Management Plan with the Final TIR.

Section J – Groundwater Monitoring Program

A groundwater monitoring program is not required for this project.

Section K – Technical Appendices

Appendix A
Map Submittals – to be included with the Final TIR

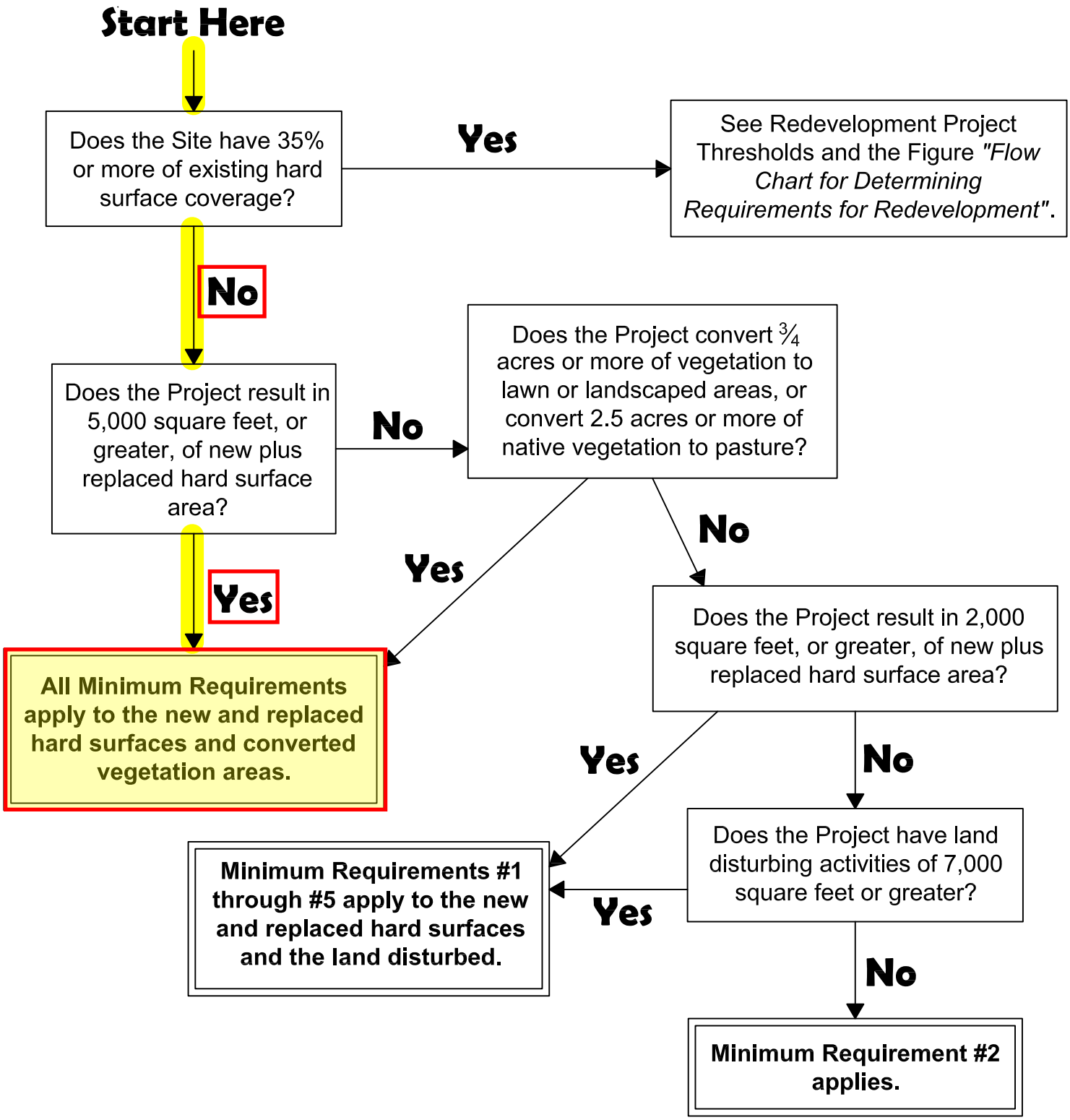
Appendix B
Geotechnical Information – to be included with the Final TIR

Appendix C
Flow Charts

Appendix D
Modeling Reports

Appendix C

Flow Chart for Determining Minimum Requirements



DEPARTMENT OF ECOLOGY
State of Washington

Flow Chart for Determining Requirements for New Development

Revised March 2019

Appendix D

WWHM Bioretention Report
WWHM Treatment Report
WWHM Flow Control Report

WWHM2012

PROJECT REPORT

BIORETENTION

General Model Information

Project Name:	Mid I-5 Industrial Park - Bioretention
Site Name:	Mid I-5 Industrial Park
Site Address:	Talley Way
City:	Kelso, WA
Report Date:	7/18/2022
Gage:	Longview
Data Start:	1955/10/01
Data End:	2009/09/30
Timestep:	15 Minute
Precip Scale:	1.143
Version Date:	2018/10/10
Version:	4.2.16

POC Thresholds

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

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C, Pasture, Flat	7.1718
Pervious Total	7.1718

Impervious Land Use	acre
ROADS FLAT	0.7791
Impervious Total	0.7791
Basin Total	7.9509

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
C, Lawn, Flat	2.101
Pervious Total	2.101

Impervious Land Use	acre
ROADS FLAT	2.5649
PARKING FLAT	3.285
Impervious Total	5.8499
Basin Total	7.9509

Element Flows To:

Surface	Interflow	Groundwater
Surface retention 1	Surface retention 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

Bioretention 1

Bottom Length:	45.00 ft.
Bottom Width:	300.00 ft.
Material thickness of first layer:	0.25
Material type for first layer:	ASTM 100
Material thickness of second layer:	1.5
Material type for second layer:	SMMWW 12 in/hr
Material thickness of third layer:	0
Material type for third layer:	GRAVEL
Infiltration On	
Infiltration rate:	500
Infiltration safety factor:	0.4
Wetted surface area On	
Total Volume Infiltrated (ac-ft.):	1323.604
Total Volume Through Riser (ac-ft.):	0.036
Total Volume Through Facility (ac-ft.):	1323.64
Percent Infiltrated:	100
Total Precip Applied to Facility:	25.263
Total Evap From Facility:	15.201
Underdrain not used	
Discharge Structure	
Riser Height:	1 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.3099	0.0000	0.0000	0.0000
0.0357	0.3099	0.0056	0.0000	0.0000
0.0714	0.3099	0.0112	0.0000	0.0000
0.1071	0.3099	0.0168	0.0000	0.0007
0.1429	0.3099	0.0224	0.0000	0.0016
0.1786	0.3099	0.0279	0.0000	0.0030
0.2143	0.3099	0.0335	0.0000	0.0050
0.2500	0.3099	0.0391	0.0000	0.0078
0.2857	0.3099	0.0442	0.0000	0.0112
0.3214	0.3099	0.0493	0.0000	0.0155
0.3571	0.3099	0.0543	0.0000	0.0207
0.3929	0.3099	0.0594	0.0000	0.0268
0.4286	0.3099	0.0644	0.0000	0.0338
0.4643	0.3099	0.0695	0.0000	0.0419
0.5000	0.3099	0.0746	0.0000	0.0510
0.5357	0.3099	0.0796	0.0000	0.0612
0.5714	0.3099	0.0847	0.0000	0.0726
0.6071	0.3099	0.0897	0.0000	0.0847
0.6429	0.3099	0.0948	0.0000	0.0852
0.6786	0.3099	0.0999	0.0000	0.0990
0.7143	0.3099	0.1049	0.0000	0.1140
0.7500	0.3099	0.1100	0.0000	0.1304
0.7857	0.3099	0.1151	0.0000	0.1481
0.8214	0.3099	0.1201	0.0000	0.1672
0.8571	0.3099	0.1252	0.0000	0.1877

0.8929	0.3099	0.1302	0.0000	0.2096
0.9286	0.3099	0.1353	0.0000	0.2330
0.9643	0.3099	0.1404	0.0000	0.2579
1.0000	0.3099	0.1454	0.0000	0.2843
1.0357	0.3099	0.1505	0.0000	0.3123
1.0714	0.3099	0.1555	0.0000	0.3419
1.1071	0.3099	0.1606	0.0000	0.3731
1.1429	0.3099	0.1657	0.0000	0.3909
1.1786	0.3099	0.1707	0.0000	0.4060
1.2143	0.3099	0.1758	0.0000	0.4405
1.2500	0.3099	0.1809	0.0000	0.4767
1.2857	0.3099	0.1859	0.0000	0.5147
1.3214	0.3099	0.1910	0.0000	0.5544
1.3571	0.3099	0.1960	0.0000	0.5960
1.3929	0.3099	0.2011	0.0000	0.6393
1.4286	0.3099	0.2062	0.0000	0.6844
1.4643	0.3099	0.2112	0.0000	0.7314
1.5000	0.3099	0.2163	0.0000	0.7803
1.5357	0.3099	0.2213	0.0000	0.8310
1.5714	0.3099	0.2264	0.0000	0.8836
1.6071	0.3099	0.2315	0.0000	0.9375
1.6429	0.3099	0.2365	0.0000	0.9375
1.6786	0.3099	0.2416	0.0000	0.9375
1.7143	0.3099	0.2467	0.0000	0.9375
1.7500	0.3099	0.2517	0.0000	2.0313

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infilt(cfs)
1.7500	0.3099	0.2517	0.0000	1.1161	0.3425
1.7857	0.3116	0.2628	0.0000	1.1161	0.6854
1.8214	0.3133	0.2740	0.0000	1.1384	1.0287
1.8571	0.3150	0.2852	0.0000	1.1607	1.3724
1.8929	0.3167	0.2965	0.0000	1.1830	1.7166
1.9286	0.3184	0.3078	0.0000	1.2054	2.0612
1.9643	0.3201	0.3192	0.0000	1.2277	2.4063
2.0000	0.3218	0.3307	0.0000	1.2500	2.7517
2.0357	0.3236	0.3422	0.0000	1.2723	3.0976
2.0714	0.3253	0.3538	0.0000	1.2946	3.4439
2.1071	0.3270	0.3654	0.0000	1.3170	3.7906
2.1429	0.3287	0.3772	0.0000	1.3393	4.1378
2.1786	0.3304	0.3889	0.0000	1.3616	4.4853
2.2143	0.3322	0.4008	0.0000	1.3839	4.8333
2.2500	0.3339	0.4126	0.0000	1.4063	5.1818
2.2857	0.3356	0.4246	0.0000	1.4286	5.5306
2.3214	0.3373	0.4366	0.0000	1.4509	5.8799
2.3571	0.3391	0.4487	0.0000	1.4732	6.2296
2.3929	0.3408	0.4608	0.0000	1.4955	6.5797
2.4286	0.3425	0.4730	0.0000	1.5179	6.9303
2.4643	0.3443	0.4853	0.0000	1.5402	7.2813
2.5000	0.3460	0.4976	0.0000	1.5625	7.6327
2.5357	0.3478	0.5100	0.0000	1.5848	7.9845
2.5714	0.3495	0.5225	0.0000	1.6071	8.3367
2.6071	0.3513	0.5350	0.0000	1.6295	8.6894
2.6429	0.3530	0.5476	0.0000	1.6518	9.0425
2.6786	0.3548	0.5602	0.0000	1.6741	9.3960
2.7143	0.3565	0.5729	0.0000	1.6964	9.7500
2.7500	0.3583	0.5857	0.0000	1.7188	10.104
2.7857	0.3600	0.5985	0.0716	1.7411	10.459

2.8214	0.3618	0.6114	0.2020	1.7634	10.814
2.8571	0.3635	0.6243	0.3694	1.7857	11.170
2.8929	0.3653	0.6374	0.5635	1.8080	11.526
2.9286	0.3671	0.6504	0.7756	1.8304	11.883
2.9643	0.3688	0.6636	0.9966	1.8527	12.240
3.0000	0.3706	0.6768	1.2176	1.8750	12.597
3.0357	0.3724	0.6900	1.4294	1.8973	12.955
3.0714	0.3742	0.7034	1.6238	1.9196	13.313
3.1071	0.3759	0.7168	1.7939	1.9420	13.672
3.1429	0.3777	0.7302	1.9353	1.9643	14.031
3.1786	0.3795	0.7437	2.0472	1.9866	14.390
3.2143	0.3813	0.7573	2.1333	2.0089	14.750
3.2500	0.3831	0.7710	2.2271	2.0313	14.750
3.2500	0.3831	0.7710	2.3053	2.0313	0.0000

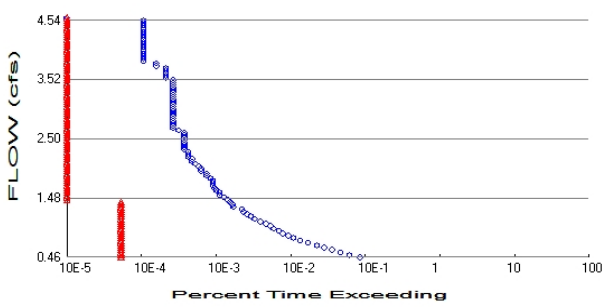
Surface retention 1

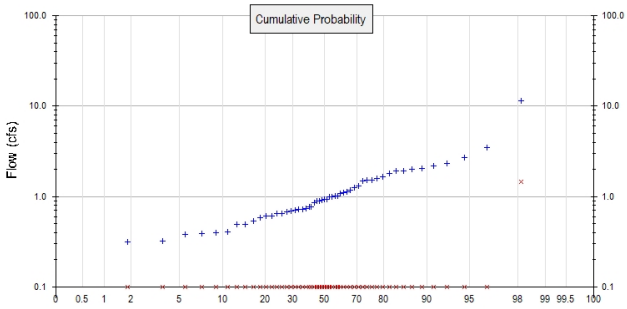
Element Flows To:

Outlet 1	Outlet 2
	Bioretention 1

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 7.1718
Total Impervious Area: 0.7791

Mitigated Landuse Totals for POC #1
Total Pervious Area: 2.101
Total Impervious Area: 5.8499

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.914116
5 year	1.698555
10 year	2.396787
25 year	3.515413
50 year	4.542072
100 year	5.753512

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1956	1.525	0.000
1957	1.925	0.000
1958	1.913	0.000
1959	0.679	0.000
1960	1.988	0.000
1961	1.263	0.000
1962	2.063	0.000
1963	2.164	0.000
1964	0.940	0.000
1965	0.772	0.000

1966	0.384	0.000
1967	0.536	0.000
1968	0.490	0.000
1969	0.772	0.000
1970	0.604	0.000
1971	1.320	0.000
1972	0.925	0.000
1973	0.646	0.000
1974	1.181	0.000
1975	2.681	0.000
1976	1.661	0.000
1977	0.721	0.000
1978	1.796	0.000
1979	0.649	0.000
1980	0.722	0.000
1981	0.589	0.000
1982	0.983	0.000
1983	1.085	0.000
1984	1.005	0.000
1985	0.407	0.000
1986	1.475	0.000
1987	1.022	0.000
1988	0.732	0.000
1989	0.323	0.000
1990	0.883	0.000
1991	0.990	0.000
1992	0.385	0.000
1993	0.689	0.000
1994	0.396	0.000
1995	1.511	0.000
1996	1.594	0.000
1997	0.606	0.000
1998	2.309	0.000
1999	0.491	0.000
2000	0.709	0.000
2001	0.133	0.000
2002	3.517	0.000
2003	0.861	0.000
2004	0.312	0.000
2005	11.379	1.445
2006	0.895	0.000
2007	1.111	0.000
2008	0.916	0.000
2009	1.129	0.000

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	11.3793	1.4450
2	3.5175	0.0000
3	2.6807	0.0000
4	2.3087	0.0000
5	2.1645	0.0000
6	2.0629	0.0000
7	1.9884	0.0000
8	1.9254	0.0000
9	1.9127	0.0000
10	1.7958	0.0000

11	1.6610	0.0000
12	1.5938	0.0000
13	1.5247	0.0000
14	1.5114	0.0000
15	1.4745	0.0000
16	1.3196	0.0000
17	1.2625	0.0000
18	1.1806	0.0000
19	1.1292	0.0000
20	1.1108	0.0000
21	1.0855	0.0000
22	1.0223	0.0000
23	1.0055	0.0000
24	0.9905	0.0000
25	0.9833	0.0000
26	0.9395	0.0000
27	0.9252	0.0000
28	0.9155	0.0000
29	0.8955	0.0000
30	0.8832	0.0000
31	0.8611	0.0000
32	0.7721	0.0000
33	0.7719	0.0000
34	0.7317	0.0000
35	0.7215	0.0000
36	0.7206	0.0000
37	0.7086	0.0000
38	0.6890	0.0000
39	0.6789	0.0000
40	0.6487	0.0000
41	0.6458	0.0000
42	0.6060	0.0000
43	0.6044	0.0000
44	0.5886	0.0000
45	0.5365	0.0000
46	0.4909	0.0000
47	0.4896	0.0000
48	0.4069	0.0000
49	0.3963	0.0000
50	0.3851	0.0000
51	0.3835	0.0000
52	0.3232	0.0000
53	0.3117	0.0000
54	0.1328	0.0000

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.4571	1616	1	0	Pass
0.4983	1154	1	0	Pass
0.5396	873	1	0	Pass
0.5808	674	1	0	Pass
0.6221	527	1	0	Pass
0.6634	422	1	0	Pass
0.7046	323	1	0	Pass
0.7459	253	1	0	Pass
0.7872	205	1	0	Pass
0.8284	174	1	0	Pass
0.8697	148	1	0	Pass
0.9109	131	1	0	Pass
0.9522	111	1	0	Pass
0.9935	102	1	0	Pass
1.0347	88	1	1	Pass
1.0760	74	1	1	Pass
1.1173	62	1	1	Pass
1.1585	55	1	1	Pass
1.1998	49	1	2	Pass
1.2411	44	1	2	Pass
1.2823	42	1	2	Pass
1.3236	32	1	3	Pass
1.3648	31	1	3	Pass
1.4061	29	1	3	Pass
1.4474	27	0	0	Pass
1.4886	24	0	0	Pass
1.5299	21	0	0	Pass
1.5712	21	0	0	Pass
1.6124	19	0	0	Pass
1.6537	18	0	0	Pass
1.6949	17	0	0	Pass
1.7362	17	0	0	Pass
1.7775	17	0	0	Pass
1.8187	16	0	0	Pass
1.8600	14	0	0	Pass
1.9013	14	0	0	Pass
1.9425	12	0	0	Pass
1.9838	12	0	0	Pass
2.0250	11	0	0	Pass
2.0663	10	0	0	Pass
2.1076	9	0	0	Pass
2.1488	9	0	0	Pass
2.1901	8	0	0	Pass
2.2314	8	0	0	Pass
2.2726	8	0	0	Pass
2.3139	7	0	0	Pass
2.3551	7	0	0	Pass
2.3964	7	0	0	Pass
2.4377	7	0	0	Pass
2.4789	7	0	0	Pass
2.5202	7	0	0	Pass
2.5615	7	0	0	Pass
2.6027	7	0	0	Pass

2.6440	6	0	0	Pass
2.6852	5	0	0	Pass
2.7265	5	0	0	Pass
2.7678	5	0	0	Pass
2.8090	5	0	0	Pass
2.8503	5	0	0	Pass
2.8916	5	0	0	Pass
2.9328	5	0	0	Pass
2.9741	5	0	0	Pass
3.0153	5	0	0	Pass
3.0566	5	0	0	Pass
3.0979	5	0	0	Pass
3.1391	5	0	0	Pass
3.1804	5	0	0	Pass
3.2217	5	0	0	Pass
3.2629	5	0	0	Pass
3.3042	5	0	0	Pass
3.3455	5	0	0	Pass
3.3867	5	0	0	Pass
3.4280	5	0	0	Pass
3.4692	5	0	0	Pass
3.5105	5	0	0	Pass
3.5518	4	0	0	Pass
3.5930	4	0	0	Pass
3.6343	4	0	0	Pass
3.6756	4	0	0	Pass
3.7168	4	0	0	Pass
3.7581	3	0	0	Pass
3.7993	3	0	0	Pass
3.8406	2	0	0	Pass
3.8819	2	0	0	Pass
3.9231	2	0	0	Pass
3.9644	2	0	0	Pass
4.0057	2	0	0	Pass
4.0469	2	0	0	Pass
4.0882	2	0	0	Pass
4.1294	2	0	0	Pass
4.1707	2	0	0	Pass
4.2120	2	0	0	Pass
4.2532	2	0	0	Pass
4.2945	2	0	0	Pass
4.3358	2	0	0	Pass
4.3770	2	0	0	Pass
4.4183	2	0	0	Pass
4.4595	2	0	0	Pass
4.5008	2	0	0	Pass
4.5421	2	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
retention 1 POC	☐	1204.51			☐	100.00			
Total Volume Infiltrated		1204.51	0.00	0.00		100.00	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.

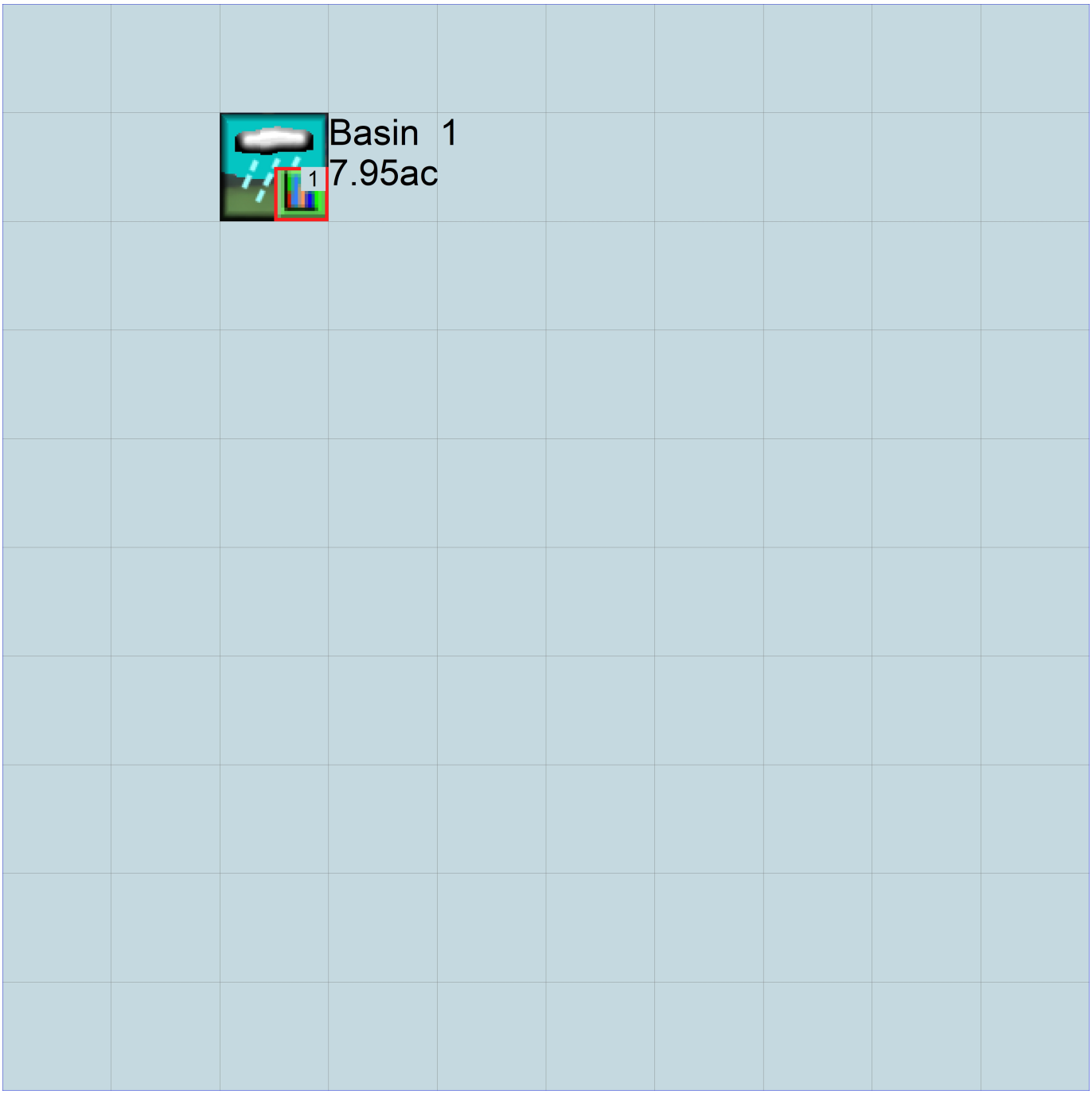
PERLND Changes

No PERLND changes have been made.

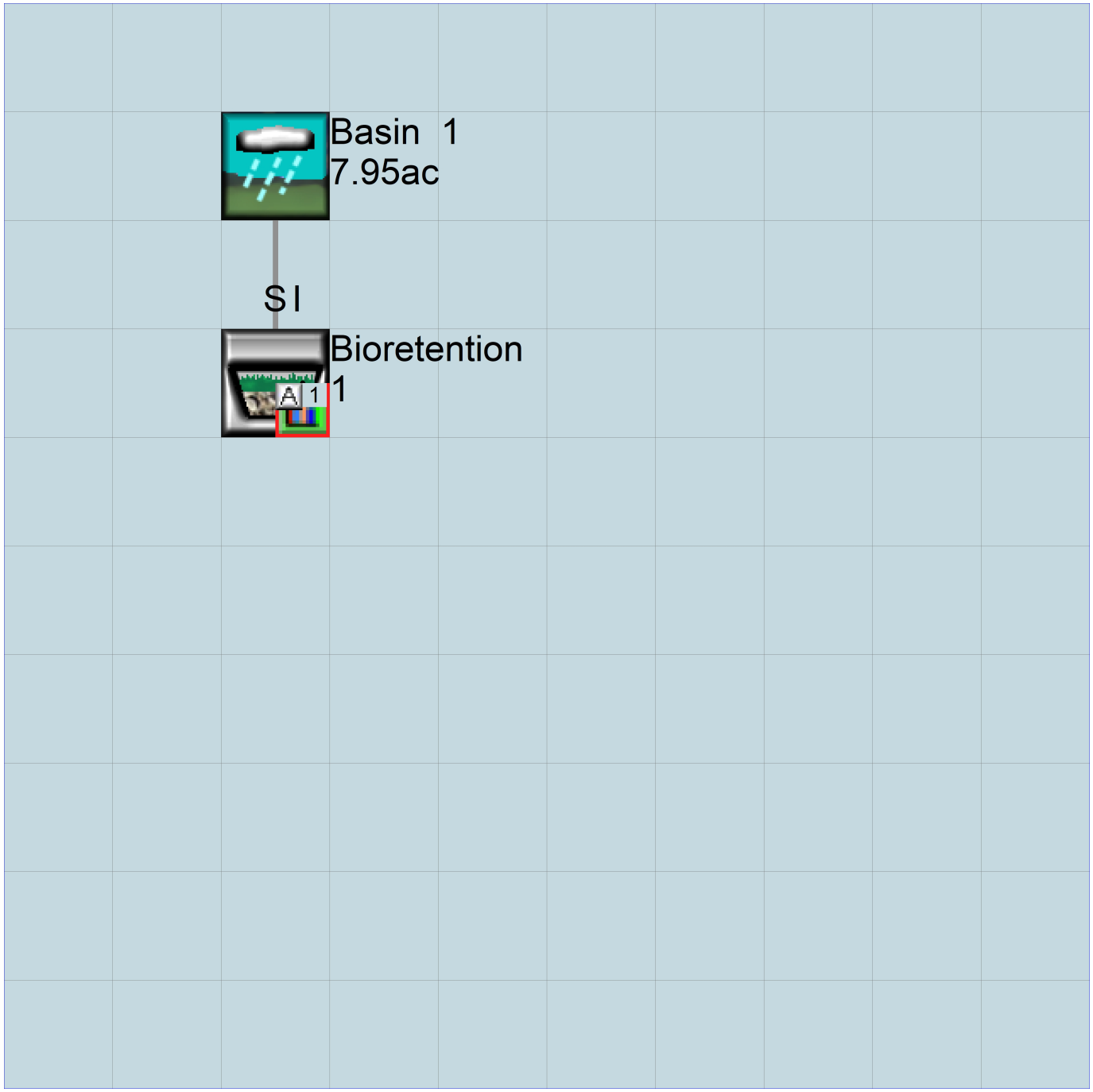
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

Mitigated UCI File

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

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WWHM2012

PROJECT REPORT

TREATMENT

(USED ONLY TO OBTAIN THE
OFF-LINE WATER QUALITY
FLOW RATE, SEE PAGE 12)

General Model Information

Project Name:	Mid I-5 Industrial Treatment
Site Name:	Mid I-5 Industrial Park Treatment
Site Address:	
City:	Kelso, WA
Report Date:	7/19/2022
Gage:	Longview
Data Start:	1955/10/01
Data End:	2009/09/30
Timestep:	15 Minute
Precip Scale:	1.143
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

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Flat	4
Pervious Total	4
Impervious Land Use	acre
Impervious Total	0
Basin Total	4

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	4
Impervious Total	4
Basin Total	4

Element Flows To:

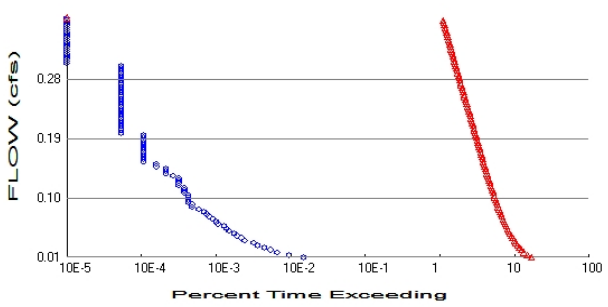
Surface	Interflow	Groundwater

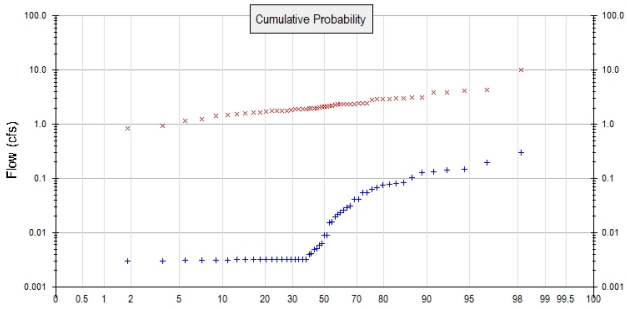
Routing Elements
Predeveloped Routing

Mitigated Routing

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 4
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0
Total Impervious Area: 4

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.012268
5 year	0.045676
10 year	0.094839
25 year	0.213759
50 year	0.368148
100 year	0.607961

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	2.084386
5 year	3.0236
10 year	3.717999
25 year	4.679276
50 year	5.457407
100 year	6.289724

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1956	0.145	2.427
1957	0.016	3.026
1958	0.149	2.876
1959	0.041	1.994
1960	0.131	2.857
1961	0.130	2.905
1962	0.300	2.434
1963	0.054	3.122
1964	0.042	2.096
1965	0.009	2.327

1966	0.003	1.957
1967	0.003	1.653
1968	0.003	1.556
1969	0.005	1.887
1970	0.003	1.499
1971	0.020	1.971
1972	0.083	2.189
1973	0.003	1.432
1974	0.103	2.389
1975	0.082	3.911
1976	0.006	2.394
1977	0.003	1.899
1978	0.055	3.032
1979	0.003	1.584
1980	0.004	1.931
1981	0.005	2.345
1982	0.078	1.786
1983	0.022	2.339
1984	0.063	1.791
1985	0.003	2.083
1986	0.076	2.251
1987	0.003	2.388
1988	0.003	1.801
1989	0.003	0.920
1990	0.031	1.738
1991	0.026	2.056
1992	0.003	1.966
1993	0.009	1.775
1994	0.003	1.259
1995	0.003	2.806
1996	0.196	3.135
1997	0.029	1.917
1998	0.003	3.924
1999	0.003	1.171
2000	0.003	2.162
2001	0.003	0.635
2002	0.003	4.169
2003	0.003	4.273
2004	0.003	0.854
2005	0.004	10.046
2006	0.015	1.705
2007	0.067	2.348
2008	0.023	1.675
2009	0.006	2.116

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.3005	10.0457
2	0.1960	4.2728
3	0.1493	4.1691
4	0.1446	3.9236
5	0.1309	3.9111
6	0.1297	3.1345
7	0.1028	3.1225
8	0.0827	3.0319
9	0.0817	3.0258
10	0.0782	2.9052

11	0.0763	2.8763
12	0.0668	2.8567
13	0.0633	2.8061
14	0.0553	2.4337
15	0.0538	2.4271
16	0.0416	2.3939
17	0.0409	2.3893
18	0.0311	2.3877
19	0.0288	2.3482
20	0.0259	2.3446
21	0.0232	2.3389
22	0.0215	2.3270
23	0.0199	2.2507
24	0.0158	2.1888
25	0.0151	2.1616
26	0.0091	2.1158
27	0.0089	2.0955
28	0.0064	2.0833
29	0.0058	2.0558
30	0.0050	1.9942
31	0.0049	1.9709
32	0.0041	1.9664
33	0.0040	1.9570
34	0.0032	1.9306
35	0.0032	1.9167
36	0.0032	1.8988
37	0.0032	1.8874
38	0.0032	1.8014
39	0.0032	1.7912
40	0.0032	1.7861
41	0.0032	1.7749
42	0.0032	1.7382
43	0.0032	1.7053
44	0.0032	1.6750
45	0.0032	1.6525
46	0.0032	1.5841
47	0.0032	1.5555
48	0.0031	1.4989
49	0.0031	1.4323
50	0.0031	1.2591
51	0.0031	1.1711
52	0.0030	0.9200
53	0.0030	0.8543
54	0.0030	0.6347

Duration Flows

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0061	279	319245	114424	Fail
0.0098	178	278913	156692	Fail
0.0134	124	252972	204009	Fail
0.0171	100	233848	233848	Fail
0.0208	84	219078	260807	Fail
0.0244	68	206581	303795	Fail
0.0281	60	195788	326313	Fail
0.0317	46	186510	405456	Fail
0.0354	41	178103	434397	Fail
0.0390	36	170624	473955	Fail
0.0427	33	163769	496269	Fail
0.0464	28	157502	562507	Fail
0.0500	26	151708	583492	Fail
0.0537	24	146425	610104	Fail
0.0573	20	141445	707225	Fail
0.0610	19	136806	720031	Fail
0.0646	17	132526	779564	Fail
0.0683	15	128455	856366	Fail
0.0720	14	124725	890892	Fail
0.0756	13	121165	932038	Fail
0.0793	11	117738	1070345	Fail
0.0829	9	114443	1271588	Fail
0.0866	9	111471	1238566	Fail
0.0902	8	108574	1357175	Fail
0.0939	8	105771	1322137	Fail
0.0976	8	103044	1288050	Fail
0.1012	8	100431	1255387	Fail
0.1049	7	97989	1399842	Fail
0.1085	7	95622	1366028	Fail
0.1122	7	93350	1333571	Fail
0.1158	6	90983	1516383	Fail
0.1195	6	88900	1481666	Fail
0.1231	6	86855	1447583	Fail
0.1268	6	84772	1412866	Fail
0.1305	5	82803	1656060	Fail
0.1341	4	80872	2021800	Fail
0.1378	4	79167	1979175	Fail
0.1414	4	77425	1935625	Fail
0.1451	3	75740	2524666	Fail
0.1487	3	74017	2467233	Fail
0.1524	2	72389	3619450	Fail
0.1561	2	70817	3540850	Fail
0.1597	2	69340	3467000	Fail
0.1634	2	67939	3396950	Fail
0.1670	2	66462	3323100	Fail
0.1707	2	65023	3251150	Fail
0.1743	2	63697	3184850	Fail
0.1780	2	62315	3115750	Fail
0.1817	2	61066	3053300	Fail
0.1853	2	59797	2989850	Fail
0.1890	2	58528	2926400	Fail
0.1926	2	57316	2865800	Fail
0.1963	1	56105	5610500	Fail
0.1999	1	54893	5489300	Fail

THIS FILE IS NOT USED FOR FLOW CONTROL; SEE THE FLOW CONTROL REPORT

0.2036	1	53757	5375700	Fail
0.2073	1	52639	5263900	Fail
0.2109	1	51541	5154100	Fail
0.2146	1	50481	5048100	Fail
0.2182	1	49402	4940200	Fail
0.2219	1	48436	4843600	Fail
0.2255	1	47357	4735700	Fail
0.2292	1	46372	4637200	Fail
0.2328	1	45406	4540600	Fail
0.2365	1	44365	4436500	Fail
0.2402	1	43456	4345600	Fail
0.2438	1	42471	4247100	Fail
0.2475	1	41619	4161900	Fail
0.2511	1	40691	4069100	Fail
0.2548	1	39858	3985800	Fail
0.2584	1	39044	3904400	Fail
0.2621	1	38230	3823000	Fail
0.2658	1	37397	3739700	Fail
0.2694	1	36582	3658200	Fail
0.2731	1	35768	3576800	Fail
0.2767	1	35011	3501100	Fail
0.2804	1	34272	3427200	Fail
0.2840	1	33553	3355300	Fail
0.2877	1	32833	3283300	Fail
0.2914	1	32114	3211400	Fail
0.2950	1	31451	3145100	Fail
0.2987	1	30788	3078800	Fail
0.3023	0	30182	n/a	Fail
0.3060	0	29595	n/a	Fail
0.3096	0	29027	n/a	Fail
0.3133	0	28421	n/a	Fail
0.3170	0	27853	n/a	Fail
0.3206	0	27285	n/a	Fail
0.3243	0	26755	n/a	Fail
0.3279	0	26225	n/a	Fail
0.3316	0	25695	n/a	Fail
0.3352	0	25165	n/a	Fail
0.3389	0	24634	n/a	Fail
0.3426	0	24142	n/a	Fail
0.3462	0	23669	n/a	Fail
0.3499	0	23214	n/a	Fail
0.3535	0	22703	n/a	Fail
0.3572	0	22268	n/a	Fail
0.3608	0	21813	n/a	Fail
0.3645	0	21188	n/a	Fail
0.3681	0	20753	n/a	Fail

THIS FILE IS NOT USED FOR FLOW CONTROL; SEE THE FLOW CONTROL REPORT

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.5738 acre-feet
On-line facility target flow:	0.8102 cfs.
Adjusted for 15 min:	0.8102 cfs.
Off-line facility target flow:	0.446 cfs.
Adjusted for 15 min:	0.446 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 = Failed

Model Default Modifications

Total of 0 changes have been made.

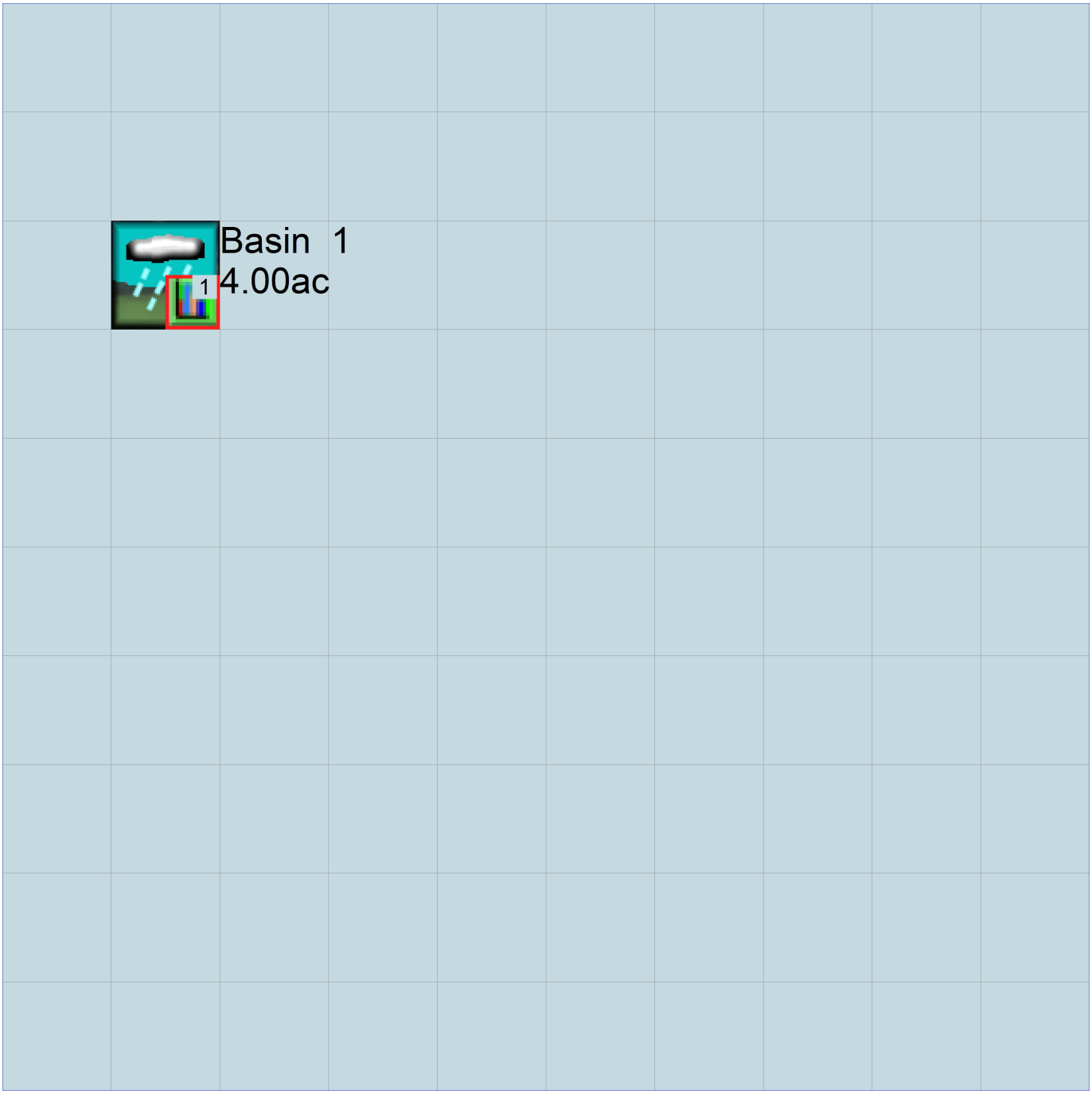
PERLND Changes

No PERLND changes have been made.

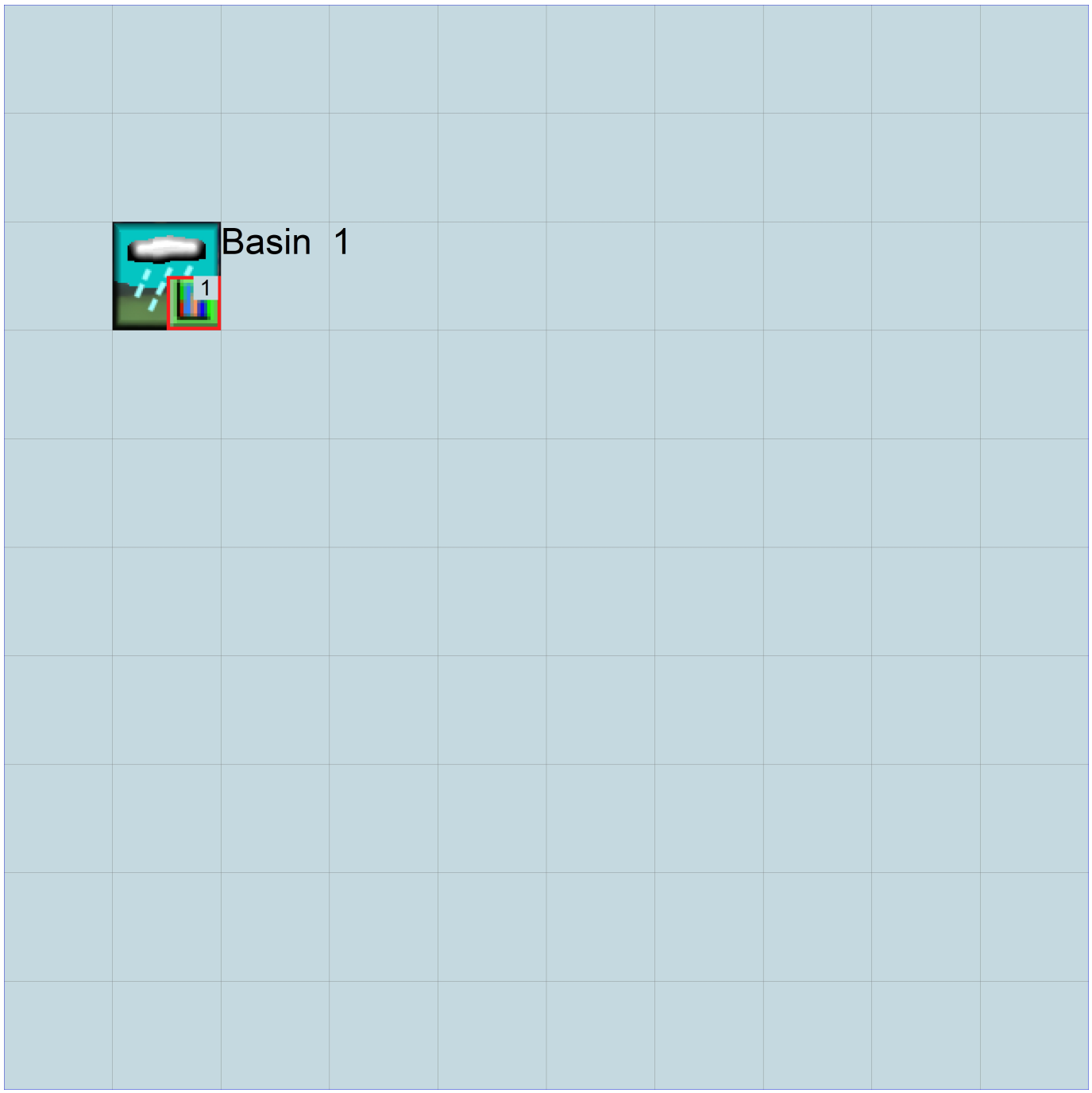
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1955 10 01        END    2009 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   Mid I-5 Industrial Treatment.wdm
MESSU       25   PreMid I-5 Industrial Treatment.MES
            27   PreMid I-5 Industrial Treatment.L61
            28   PreMid I-5 Industrial Treatment.L62
            30   POCMid I-5 Industrial Treatment1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND       1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         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           ***
    1     A/B, Forest, 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 ***
    1         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  *********
    1         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 ***
    1         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
    1               0         5         2       400      0.05       0.3     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
    1              0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
    1          0.2       0.5      0.35         0       0.7       0.7
  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
    1              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           ***
  END GEN-INFO
  *** Section IWATER***

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

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

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

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

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

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

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND   1                          4     COPY   501     12
PERLND   1                          4     COPY   501     13

******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



<-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    1.143          PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.143          IMPLND   1 999 EXTNL  PREC
```

```
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           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
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


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1955 10 01        END    2009 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   Mid I-5 Industrial Treatment.wdm
MESSU       25   MitMid I-5 Industrial Treatment.MES
            27   MitMid I-5 Industrial Treatment.L61
            28   MitMid I-5 Industrial Treatment.L62
            30   POCMid I-5 Industrial Treatment1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      IMPLND      11
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         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           ***
  END GEN-INFO
  *** Section PWATER***

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

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

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

```
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
  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
  END PWAT-STATE1

END PERLND

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

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
   11         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
   11         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     ***
   11         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
   11            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
   11              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
   11              0         0
  END IWAT-STATE1

END IMPLND
```

```
SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
IMPLND  11                          4     COPY   501     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



<-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    1.143          PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.143          IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           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     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       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

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WWHM2012

PROJECT REPORT

FLOW CONTROL

General Model Information

Project Name:	Mid I-5 Industrial Park FC
Site Name:	Mid I-5 Industrial Park
Site Address:	
City:	
Report Date:	7/19/2022
Gage:	Longview
Data Start:	1955/10/01
Data End:	2009/09/30
Timestep:	15 Minute
Precip Scale:	1.143
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

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Flat	8
Pervious Total	8
Impervious Land Use	acre
Impervious Total	0
Basin Total	8

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
DRIVEWAYS FLAT	8
Impervious Total	8
Basin Total	8

Element Flows To:

Surface	Interflow	Groundwater
Contech CMP 1	Contech CMP 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

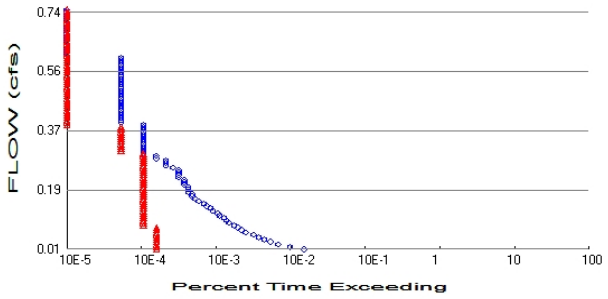
Contech CMP 1

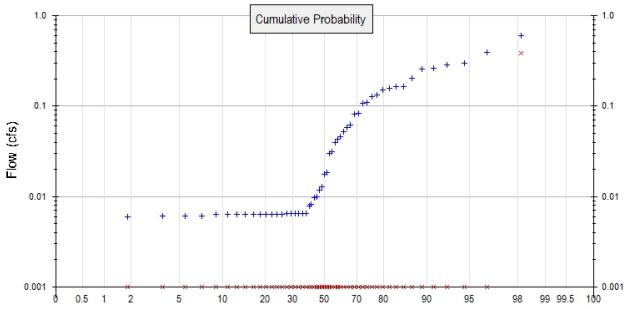
Element Flows To:

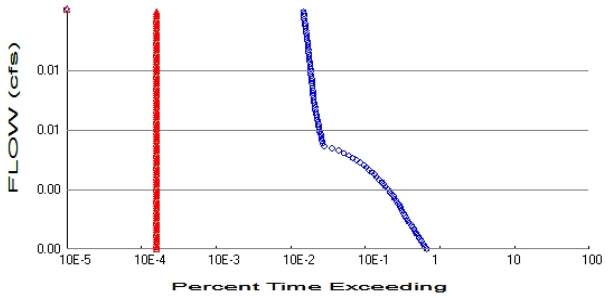
Outlet 1	Outlet 2

Analysis Results

POC 1







\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 8
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0
Total Impervious Area: 8

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.024537
5 year	0.091352
10 year	0.189678
25 year	0.427519
50 year	0.736296
100 year	1.215923

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1956	0.289	0.000
1957	0.032	0.000
1958	0.299	0.000
1959	0.082	0.000
1960	0.262	0.000
1961	0.259	0.000
1962	0.601	0.000
1963	0.108	0.000
1964	0.083	0.000
1965	0.018	0.000
1966	0.006	0.000
1967	0.006	0.000
1968	0.006	0.000
1969	0.010	0.000
1970	0.006	0.000
1971	0.040	0.000
1972	0.165	0.000
1973	0.006	0.000
1974	0.206	0.000
1975	0.163	0.000
1976	0.013	0.000
1977	0.006	0.000
1978	0.111	0.000
1979	0.006	0.000
1980	0.008	0.000
1981	0.010	0.000
1982	0.156	0.000
1983	0.043	0.000
1984	0.127	0.000
1985	0.006	0.000
1986	0.153	0.000
1987	0.006	0.000
1988	0.006	0.000
1989	0.006	0.000
1990	0.062	0.000
1991	0.052	0.000
1992	0.006	0.000
1993	0.018	0.000
1994	0.006	0.000
1995	0.006	0.000
1996	0.392	0.000
1997	0.058	0.000
1998	0.006	0.000
1999	0.006	0.000
2000	0.006	0.000
2001	0.006	0.000
2002	0.006	0.000
2003	0.006	0.000
2004	0.006	0.000
2005	0.008	0.389
2006	0.030	0.000
2007	0.134	0.000
2008	0.046	0.000
2009	0.012	0.000

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.6010	0.3894
2	0.3921	0.0000
3	0.2986	0.0000
4	0.2892	0.0000
5	0.2617	0.0000
6	0.2594	0.0000
7	0.2056	0.0000
8	0.1655	0.0000
9	0.1633	0.0000
10	0.1565	0.0000
11	0.1526	0.0000
12	0.1336	0.0000
13	0.1267	0.0000
14	0.1107	0.0000
15	0.1076	0.0000
16	0.0831	0.0000
17	0.0818	0.0000
18	0.0623	0.0000
19	0.0576	0.0000
20	0.0518	0.0000
21	0.0463	0.0000
22	0.0431	0.0000
23	0.0398	0.0000
24	0.0315	0.0000
25	0.0301	0.0000
26	0.0182	0.0000
27	0.0178	0.0000
28	0.0128	0.0000
29	0.0117	0.0000
30	0.0100	0.0000
31	0.0097	0.0000
32	0.0082	0.0000
33	0.0079	0.0000
34	0.0065	0.0000
35	0.0065	0.0000
36	0.0064	0.0000
37	0.0064	0.0000
38	0.0064	0.0000
39	0.0064	0.0000
40	0.0064	0.0000
41	0.0064	0.0000
42	0.0064	0.0000
43	0.0064	0.0000
44	0.0064	0.0000
45	0.0064	0.0000
46	0.0063	0.0000
47	0.0063	0.0000
48	0.0063	0.0000
49	0.0063	0.0000
50	0.0061	0.0000
51	0.0061	0.0000
52	0.0060	0.0000
53	0.0059	0.0000
54	0.0059	0.0000

LID Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0020	12493	3	0	Pass
0.0021	11865	3	0	Pass
0.0022	11355	3	0	Pass
0.0023	10816	3	0	Pass
0.0024	10323	3	0	Pass
0.0025	9878	3	0	Pass
0.0026	9430	3	0	Pass
0.0027	9059	3	0	Pass
0.0028	8600	3	0	Pass
0.0029	8189	3	0	Pass
0.0030	7797	3	0	Pass
0.0031	7388	3	0	Pass
0.0032	6979	3	0	Pass
0.0033	6663	3	0	Pass
0.0034	6377	3	0	Pass
0.0035	6137	3	0	Pass
0.0036	5883	3	0	Pass
0.0037	5643	3	0	Pass
0.0038	5434	3	0	Pass
0.0039	5175	3	0	Pass
0.0040	4940	3	0	Pass
0.0041	4694	3	0	Pass
0.0043	4474	3	0	Pass
0.0044	4247	3	0	Pass
0.0045	4020	3	0	Pass
0.0046	3810	3	0	Pass
0.0047	3554	3	0	Pass
0.0048	3323	3	0	Pass
0.0049	3132	3	0	Pass
0.0050	2891	3	0	Pass
0.0051	2676	3	0	Pass
0.0052	2501	3	0	Pass
0.0053	2310	3	0	Pass
0.0054	2117	3	0	Pass
0.0055	1960	3	0	Pass
0.0056	1805	3	0	Pass
0.0057	1607	3	0	Pass
0.0058	1429	3	0	Pass
0.0059	1285	3	0	Pass
0.0060	1136	3	0	Pass
0.0061	974	3	0	Pass
0.0062	825	3	0	Pass
0.0063	679	3	0	Pass
0.0064	526	3	0	Pass
0.0065	504	3	0	Pass
0.0066	493	3	0	Pass
0.0068	488	3	0	Pass
0.0069	484	3	0	Pass
0.0070	475	3	0	Pass
0.0071	462	3	0	Pass
0.0072	452	3	0	Pass
0.0073	450	3	0	Pass
0.0074	444	3	0	Pass

0.0075	437	3	0	Pass
0.0076	430	3	0	Pass
0.0077	424	3	0	Pass
0.0078	416	3	0	Pass
0.0079	411	3	0	Pass
0.0080	406	3	0	Pass
0.0081	403	3	0	Pass
0.0082	395	3	0	Pass
0.0083	390	3	0	Pass
0.0084	384	3	0	Pass
0.0085	380	3	0	Pass
0.0086	378	3	0	Pass
0.0087	375	3	0	Pass
0.0088	374	3	0	Pass
0.0089	371	3	0	Pass
0.0090	369	3	0	Pass
0.0091	365	3	0	Pass
0.0092	363	3	0	Pass
0.0094	360	3	0	Pass
0.0095	356	3	0	Pass
0.0096	354	3	0	Pass
0.0097	352	3	0	Pass
0.0098	348	3	0	Pass
0.0099	344	3	0	Pass
0.0100	344	3	0	Pass
0.0101	337	3	0	Pass
0.0102	334	3	0	Pass
0.0103	333	3	0	Pass
0.0104	331	3	0	Pass
0.0105	329	3	0	Pass
0.0106	325	3	0	Pass
0.0107	322	3	0	Pass
0.0108	322	3	0	Pass
0.0109	321	3	0	Pass
0.0110	314	3	0	Pass
0.0111	311	3	0	Pass
0.0112	309	3	0	Pass
0.0113	306	3	0	Pass
0.0114	304	3	0	Pass
0.0115	300	3	1	Pass
0.0116	297	3	1	Pass
0.0117	294	3	1	Pass
0.0119	289	3	1	Pass
0.0120	287	3	1	Pass
0.0121	285	3	1	Pass
0.0122	283	3	1	Pass
0.0123	280	3	1	Pass

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0123	287	3	1	Pass
0.0196	186	3	1	Pass
0.0269	130	3	2	Pass
0.0342	101	3	2	Pass
0.0415	84	3	3	Pass
0.0488	70	3	4	Pass
0.0561	60	3	5	Pass
0.0635	47	3	6	Pass
0.0708	41	3	7	Pass
0.0781	37	3	8	Pass
0.0854	33	2	6	Pass
0.0927	28	2	7	Pass
0.1000	26	2	7	Pass
0.1073	24	2	8	Pass
0.1147	21	2	9	Pass
0.1220	20	2	10	Pass
0.1293	17	2	11	Pass
0.1366	16	2	12	Pass
0.1439	14	2	14	Pass
0.1512	13	2	15	Pass
0.1585	11	2	18	Pass
0.1659	10	2	20	Pass
0.1732	9	2	22	Pass
0.1805	9	2	22	Pass
0.1878	8	2	25	Pass
0.1951	8	2	25	Pass
0.2024	8	2	25	Pass
0.2097	7	2	28	Pass
0.2170	7	2	28	Pass
0.2244	7	2	28	Pass
0.2317	6	2	33	Pass
0.2390	6	2	33	Pass
0.2463	6	2	33	Pass
0.2536	6	2	33	Pass
0.2609	5	2	40	Pass
0.2682	4	2	50	Pass
0.2756	4	2	50	Pass
0.2829	4	2	50	Pass
0.2902	3	2	66	Pass
0.2975	3	2	66	Pass
0.3048	2	2	100	Pass
0.3121	2	1	50	Pass
0.3194	2	1	50	Pass
0.3267	2	1	50	Pass
0.3341	2	1	50	Pass
0.3414	2	1	50	Pass
0.3487	2	1	50	Pass
0.3560	2	1	50	Pass
0.3633	2	1	50	Pass
0.3706	2	1	50	Pass
0.3779	2	1	50	Pass
0.3853	2	1	50	Pass
0.3926	2	0	0	Pass

0.3999	1	0	0	Pass
0.4072	1	0	0	Pass
0.4145	1	0	0	Pass
0.4218	1	0	0	Pass
0.4291	1	0	0	Pass
0.4364	1	0	0	Pass
0.4438	1	0	0	Pass
0.4511	1	0	0	Pass
0.4584	1	0	0	Pass
0.4657	1	0	0	Pass
0.4730	1	0	0	Pass
0.4803	1	0	0	Pass
0.4876	1	0	0	Pass
0.4950	1	0	0	Pass
0.5023	1	0	0	Pass
0.5096	1	0	0	Pass
0.5169	1	0	0	Pass
0.5242	1	0	0	Pass
0.5315	1	0	0	Pass
0.5388	1	0	0	Pass
0.5461	1	0	0	Pass
0.5535	1	0	0	Pass
0.5608	1	0	0	Pass
0.5681	1	0	0	Pass
0.5754	1	0	0	Pass
0.5827	1	0	0	Pass
0.5900	1	0	0	Pass
0.5973	1	0	0	Pass
0.6047	0	0	0	Pass
0.6120	0	0	0	Pass
0.6193	0	0	0	Pass
0.6266	0	0	0	Pass
0.6339	0	0	0	Pass
0.6412	0	0	0	Pass
0.6485	0	0	0	Pass
0.6558	0	0	0	Pass
0.6632	0	0	0	Pass
0.6705	0	0	0	Pass
0.6778	0	0	0	Pass
0.6851	0	0	0	Pass
0.6924	0	0	0	Pass
0.6997	0	0	0	Pass
0.7070	0	0	0	Pass
0.7144	0	0	0	Pass
0.7217	0	0	0	Pass
0.7290	0	0	0	Pass
0.7363	0	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
Contech CMP 1 POC	☐	1340.47			☐	100.00			
Total Volume Infiltrated		1340.47	0.00	0.00		100.00	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.

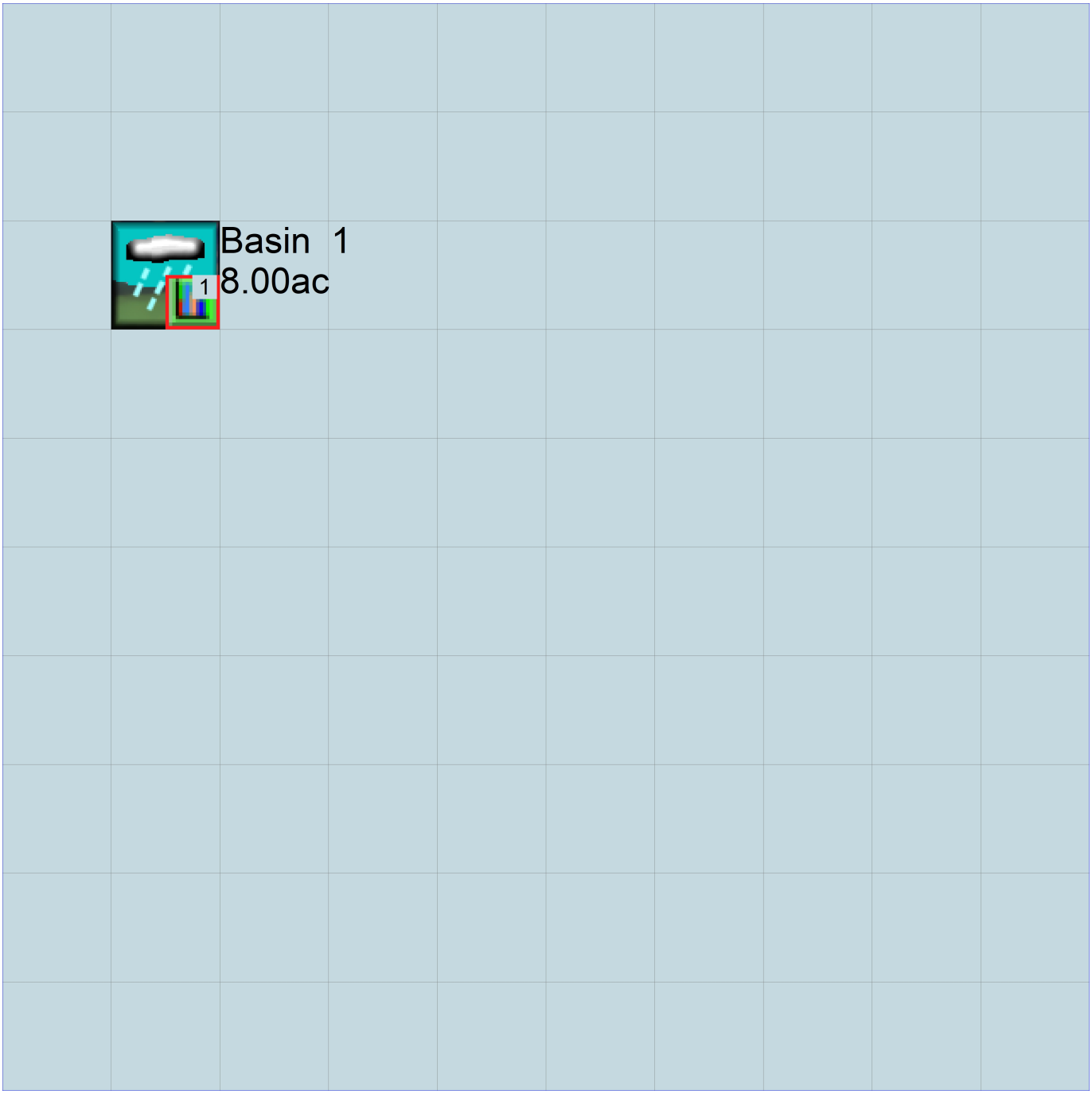
PERLND Changes

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       1955 10 01        END    2009 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   Mid I-5 Industrial Park FC.wdm
MESSU       25   PreMid I-5 Industrial Park FC.MES
            27   PreMid I-5 Industrial Park FC.L61
            28   PreMid I-5 Industrial Park FC.L62
            30   POCMid I-5 Industrial Park FC1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND       1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         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           ***
    1     A/B, Forest, 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 ***
    1         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  *********
    1         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 ***
    1         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
    1              0         5         2       400      0.05       0.3     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
    1              0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
    1          0.2       0.5      0.35         0       0.7       0.7
  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
    1              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           ***
  END GEN-INFO
  *** Section IWATER***

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

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

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

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

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

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

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND   1                          8     COPY   501     12
PERLND   1                          8     COPY   501     13

******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



<-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    1.143          PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.143          IMPLND   1 999 EXTNL  PREC
```

```
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           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
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


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1955 10 01        END    2009 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   Mid I-5 Industrial Park FC.wdm
MESSU       25   MitMid I-5 Industrial Park FC.MES
            27   MitMid I-5 Industrial Park FC.L61
            28   MitMid I-5 Industrial Park FC.L62
            30   POCMid I-5 Industrial Park FC1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      IMPLND       5
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Contech CMP  1             MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         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           ***
  END GEN-INFO
  *** Section PWATER***

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

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

  PWAT-PARM1
```

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

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
  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
  END PWAT-STATE1

END PERLND

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

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    5         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    5         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     ***
    5         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    5            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    5              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    5              0         0
  END IWAT-STATE1
```

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
IMPLND   5                          8     RCHRES   1      5

******Routing******
IMPLND   5                          8     COPY     1     15
RCHRES   1                          1     COPY   501     17
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



<-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     Contech CMP  1          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
  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
  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
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><--------><--------> ***
    1             1      0.04       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
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
```

FTABLES
FTABLE 1
91 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.286502	0.000000	0.000000	0.000000		
0.050000	0.286502	0.005737	0.000000	6.933341		
0.100000	0.286502	0.011473	0.000000	6.933341		
0.150000	0.286502	0.017211	0.000000	6.933341		
0.200000	0.286502	0.022948	0.000000	6.933341		
0.250000	0.286502	0.028684	0.000000	6.933341		
0.300000	0.286502	0.034342	0.000000	6.933341		
0.350000	0.286502	0.040079	0.000000	6.933341		
0.400000	0.286502	0.045815	0.000000	6.933341		
0.450000	0.286502	0.051553	0.000000	6.933341		
0.500000	0.286502	0.057290	0.000000	6.933341		
0.544444	0.286502	0.062871	0.000000	6.933341		
0.633333	0.286502	0.075747	0.000000	6.933341		
0.677778	0.286502	0.082766	0.000000	6.933341		
0.722222	0.286502	0.090024	0.000000	6.933341		
0.766667	0.286502	0.097487	0.000000	6.933341		
0.855556	0.286502	0.112751	0.000000	6.933341		
0.900000	0.286502	0.120729	0.000000	6.933341		
0.944444	0.286502	0.128863	0.000000	6.933341		
0.988889	0.286502	0.137130	0.000000	6.933341		
1.077778	0.286502	0.153976	0.000000	6.933341		
1.122222	0.286502	0.162756	0.000000	6.933341		
1.166667	0.286502	0.171601	0.000000	6.933341		
1.211111	0.286502	0.180902	0.000000	6.933341		
1.300000	0.286502	0.198701	0.000000	6.933341		
1.344444	0.286502	0.207906	0.000000	6.933341		
1.388889	0.286502	0.217183	0.000000	6.933341		
1.433333	0.286502	0.226986	0.000000	6.933341		
1.522222	0.286502	0.245615	0.000000	6.933341		
1.566667	0.286502	0.255244	0.000000	6.933341		
1.611111	0.286502	0.264920	0.000000	6.933341		
1.655556	0.286502	0.275080	0.000000	6.933341		
1.744444	0.286502	0.294273	0.000000	6.933341		
1.788889	0.286502	0.304154	0.000000	6.933341		
1.833333	0.286502	0.314081	0.000000	6.933341		
1.877778	0.286502	0.324543	0.000000	6.933341		
1.966667	0.286502	0.344176	0.000000	6.933341		
2.011111	0.286502	0.354280	0.000000	6.933341		
2.055556	0.286502	0.364408	0.000000	6.933341		
2.100000	0.286502	0.375026	0.000000	6.933341		
2.188889	0.286502	0.394923	0.000000	6.933341		
2.233333	0.286502	0.405140	0.000000	6.933341		
2.277778	0.286502	0.415383	0.000000	6.933341		
2.322222	0.286502	0.426126	0.000000	6.933341		
2.411111	0.286502	0.446175	0.000000	6.933341		
2.455556	0.286502	0.456455	0.000000	6.933341		
2.500000	0.286502	0.466735	0.000000	6.933341		
2.544444	0.286502	0.477501	0.000000	6.933341		
2.633333	0.286502	0.497574	0.000000	6.933341		
2.677778	0.286502	0.507842	0.000000	6.933341		
2.722222	0.286502	0.518098	0.000000	6.933341		
2.766667	0.286502	0.528829	0.000000	6.933341		
2.855556	0.286502	0.548782	0.000000	6.933341		
2.900000	0.286502	0.558978	0.000000	6.933341		
2.944444	0.286502	0.569150	0.000000	6.933341		
2.988889	0.286502	0.579768	0.000000	6.933341		
3.077778	0.286502	0.599473	0.000000	6.933341		
3.122222	0.286502	0.609505	0.000000	6.933341		
3.166667	0.286502	0.619512	0.000000	6.933341		
3.211111	0.286502	0.629938	0.000000	6.933341		
3.300000	0.286502	0.649272	0.000000	6.933341		
3.344444	0.286502	0.659099	0.000000	6.933341		
3.388889	0.286502	0.668867	0.000000	6.933341		
3.433333	0.286502	0.679011	0.000000	6.933341		
3.522222	0.286502	0.697772	0.000000	6.933341		

```
  3.611111  0.286502  0.716270  0.000000  6.933341
  3.655556  0.286502  0.725622  0.000000  6.933341
  3.744444  0.286502  0.744099  0.000000  6.933341
  3.788889  0.286502  0.753211  0.000000  6.933341
  3.833333  0.286502  0.762227  0.000000  6.933341
  3.877778  0.286502  0.771129  0.000000  6.933341
  4.011111  0.286502  0.796668  0.000000  6.933341
  4.055556  0.286502  0.805057  0.000000  6.933341
  4.100000  0.286502  0.813314  0.000000  6.933341
  4.188889  0.286502  0.829024  0.000000  6.933341
  4.233333  0.286502  0.837149  0.000000  6.933341
  4.277778  0.286502  0.845067  0.032721  6.933341
  4.322222  0.286502  0.852341  0.136269  6.933341
  4.411111  0.286502  0.866111  0.423303  6.933341
  4.455556  0.286502  0.872497  0.564295  6.933341
  4.500000  0.286502  0.878320  0.678003  6.933341
  4.550000  0.286502  0.882791  0.762603  6.933341
  4.600000  0.286502  0.888527  0.828154  6.933341
  4.650000  0.286502  0.894264  0.885334  6.933341
  4.700000  0.286502  0.900002  0.939038  6.933341
  4.750000  0.286502  0.905738  0.989833  6.933341
  4.800000  0.286502  0.911395  1.038146  6.933341
  4.850000  0.286502  0.917133  1.084308  6.933341
  4.900000  0.286502  0.922869  1.128584  6.933341
  4.950000  0.286502  0.928606  1.171186  6.933341
  5.000000  0.286502  0.934343  1.212293  6.933341
  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    1.143          PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.143          IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           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***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      1 1        1      WDM   1001 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      2 1        1      WDM   1002 FLOW     ENGL      REPL
RCHRES   1 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        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  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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