



CLEAR CREEK SOLUTIONS, INC.

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25 February 2021

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SUBJECT: Oslo Bay Apartments, Poulsbo, Washington, Wetland Hydroperiod Analysis

Introduction

This wetland hydroperiod letter report is based on the stormwater plan developed by KPFF for the Oslo Bay Apartments development in Poulsbo, Washington, as of February 2021. This letter report is based on the scope of work that I presented in my proposal of 19 December 2018 and approved in your signed approved dated 20 December 2018 plus subsequent discussions and site updates.

Summary

Wetland A is a Category III wetland. It is subject to the Department of Ecology Method 2 criteria for hydroperiod analysis. With the use of a flow splitter and flow dispersion (both described below) Wetland A meets the Method 2 criteria.

Wetland B and C are Category IV wetlands. No hydroperiod analysis is required for these wetlands.

Task 1. Review existing information.

I reviewed all of the documents and WWHM2012 model input provided to me by KPFF. For my hydroperiod modeling wetland analysis I relied primarily on “2020-08-10_Oslo Bay_Post-Developed Map.pdf” provided by KPFF (see Figure 1) and subbasin drainage areas delineated by KPFF (see Tables 1 and 2).

Based on discussions by Joanne Bartlett of Ecological Land Services and the City’s wetland consultant, Grette Associates LLC, it was decided that Wetland A is a Category III wetland and wetlands B and C are Category IV wetlands, as described in Joanne Bartlett’s wetland letter report dated August 23, 2020 (file “2407.01 Ed Rose-Oslo Bay Apts sw in wetlands-

revised.pdf"). The wetland category determines the wetland hydroperiod analysis required by the Department of Ecology. As described below, Wetland A requires a detailed wetland hydroperiod analysis; wetlands B and C do not.

Based on information provided by KPFF, I was able to ascertain the existing land use conditions. As shown below in Figure 2 from Google Earth, the predevelopment drainage area to Wetland A is currently forested and undeveloped.

Table 1 shows the distribution of drainage area to Wetland A from the East Basin for the predeveloped land use condition.

Table 1. Predevelopment Area to Wetland A

NRCS Soil Type	Vegetation	Land Slope	Area (ac)	Drains to	Runoff Components
C (till)	Forest	Moderate	12.63	Wetland A	Surface, Interflow, Groundwater
C (till)	Forest	Steep	5.26	Wetland A	Surface, Interflow, Groundwater
Saturated	Forest	Moderate	0.46	Wetland A	Surface, Interflow, Groundwater
Total			18.35		

Clear Creek Solutions, Inc.
Oslo Bay Apts Wetland Hydroperiod Analysis Report
25 February 2021

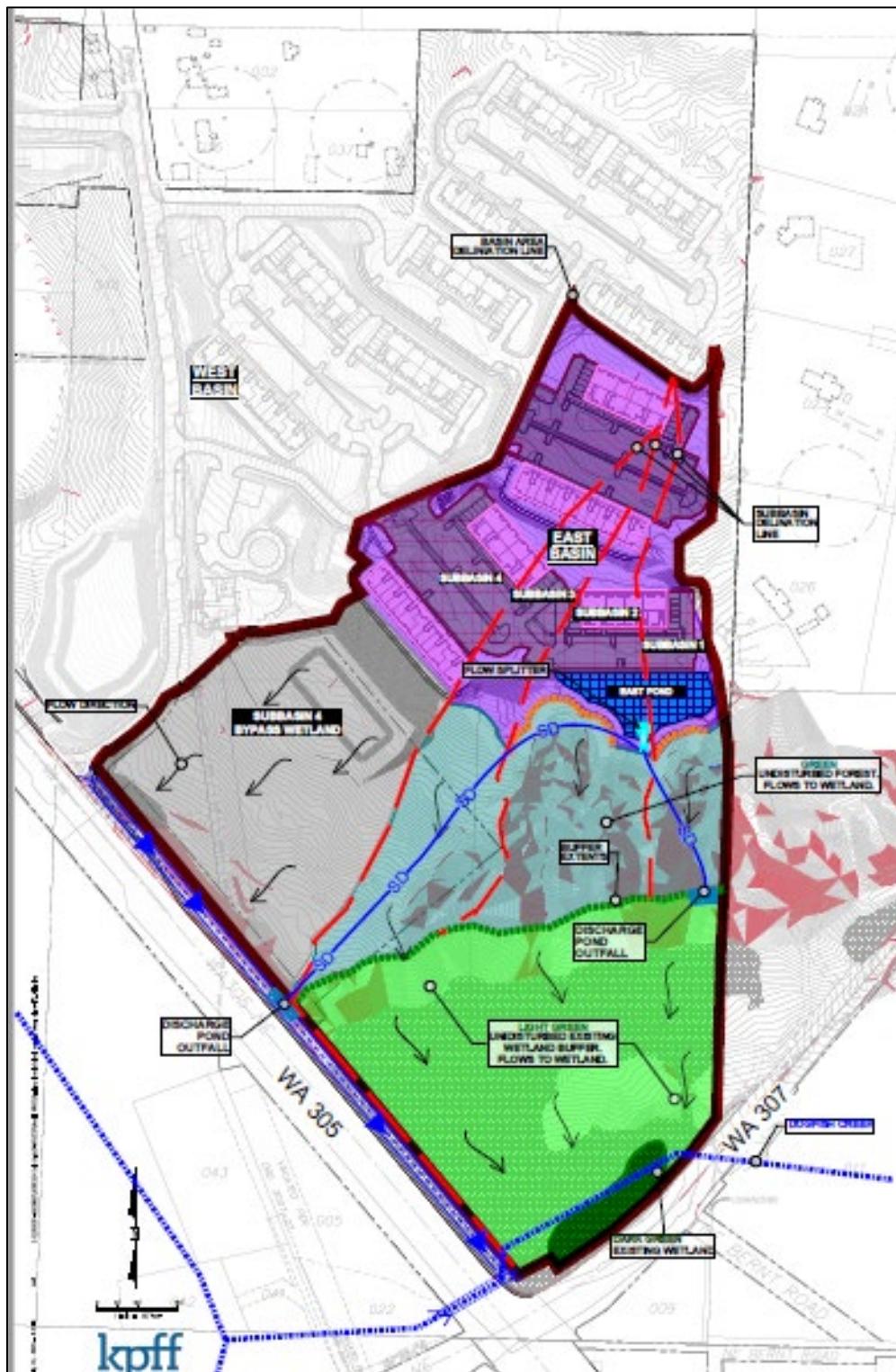


Figure 1. Oslo Bay Apartments Drainage to Wetland A

Table 2 shows the distribution of drainage area to Wetland A from the East Basin for the developed mitigated land use condition.

Table 2. Developed Mitigated Area to Wetland A

NRCS Soil Type	Vegetation	Land Slope	Area (ac)	Drains to	Runoff Components
C (till)	Lawn	Moderate	5.78	East Pond	Surface, Interflow
Impervious		Moderate	4.55	East Pond	Surface
Pond Surface		Flat	0.28	East Pond	Surface
C (till)	Forest	Moderate	0.46	East Pond	Surface, Interflow
C (till)	Lawn	Moderate	1.83	Wetland A	Groundwater
C (till)	Forest	Moderate	0.46	Wetland A	Groundwater
East Pond				Forest Dispersion	Groundwater
C (till)	Forest Dispersion	Moderate	7.14	Wetland A	Surface, Interflow, Groundwater
C (till)	Forest	Moderate	2.34	Wetland A	Surface, Interflow, Groundwater
C (till)	Forest	Steep	5.26	Wetland A	Surface, Interflow, Groundwater
Saturated	Forest	Moderate	0.46	Wetland A	Surface, Interflow, Groundwater
Total			26.27		

Land slope categories are flat (0-5 percent), moderate (5-15 percent), and steep (>15 percent).

Runoff components are surface (overland flow), interflow (shallow subsurface flow), and groundwater (deep subsurface flow). Impervious surfaces only produce surface runoff. The East Pond only collects surface runoff and interflow from the upslope drainage area. The upslope drainage area groundwater drains directly to Wetland A.

A portion of the East Pond outlet discharge is dispersed on the downslope forest area which, in turn, drains to Wetland A via groundwater recharge of the wetland. The division of the East Pond outlet discharge to the dispersal area is based on a flow splitter structure. This is discussed in more detail below.

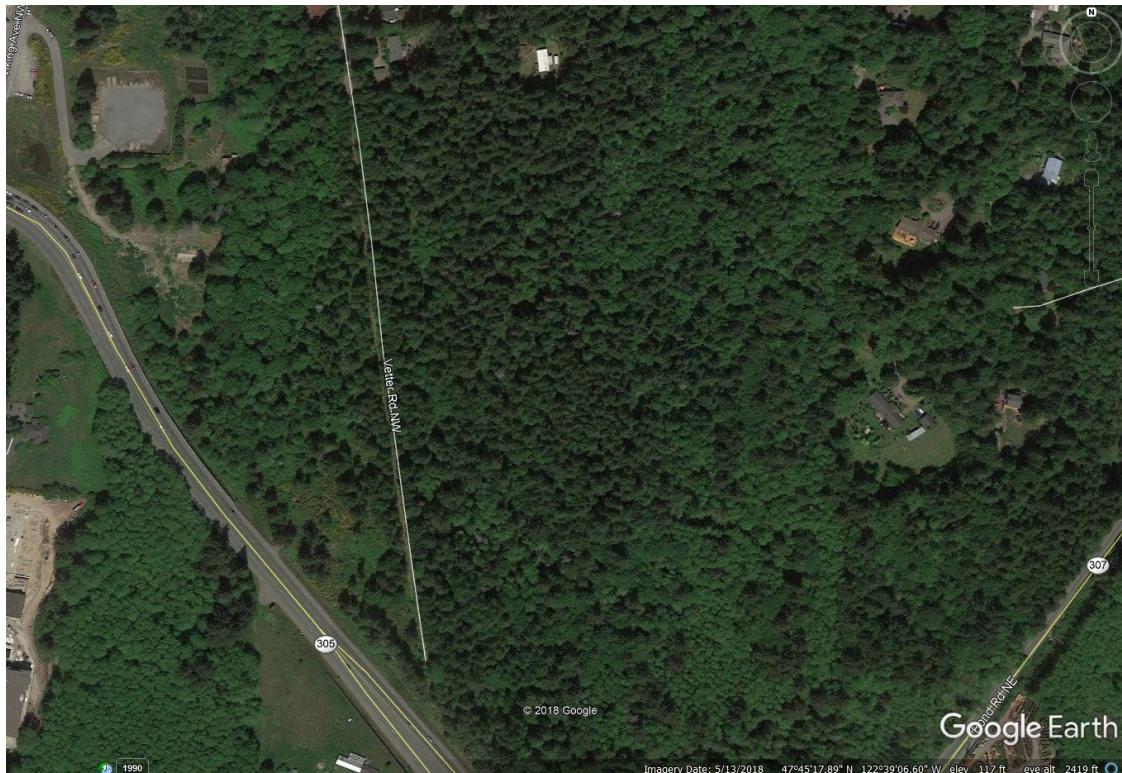


Figure 2. Google Earth Aerial Photo of Oslo Bay Apartment Site.

Task 2. Wetland Analysis.

As requested, I conducted a wetland hydroperiod analysis of the proposed developed property's impact on three wetlands (designated as Wetland A, Wetland B, and Wetland C) adjacent to the Oslo Bay Apartments site in accordance with the Department of Ecology Minimum Requirement #8, as provided in WWHM2012. The analysis shows that the proposed development plan does meet Minimum Requirement #8 (the details are provided below).

According to information provided to me by the consultant team lead, Berni Kenworthy of Axis Land Consulting, the initial proposed development was subject to the 2005 Department of Ecology stormwater requirements. That changed with when the proposed development became the Oslo Bay Apartments. The new proposed development is now subject to the 2012/2014 Department of Ecology stormwater requirements as updated in Appendix I-C: Wetland Protection Guidelines of the 2019 Stormwater Management Manual for Western Washington. With the 2012/2014/2019 requirements is a revised approach to evaluating stormwater impacts to wetlands, as described in Department of Ecology Minimum

Requirement #8 (MR #8) Appendix I-C. MR #8 is now based on two methods (Method 1 and Method 2) depending on the type and characteristics of the wetland.

As shown in Figure 1, the proposed Oslo Bay Apartments development and offsite improvements is located on forested land, located between SR305 and Viking Avenue NW on the west and Bond Road NE and Big Valley Road NE on the east. Approximately 27.5 acres of the site will be developed/disturbed. According to KPFF, the East Basin area of 18.35 acres drains to Wetland A to the southeast; 15.56 acres of West Basin drains to Wetland B to the southwest. None of the development area drains to Wetland C. The development will slightly change these drainage area divides.

The project drainage areas (identified as East Basin and West Basin) each direct most of the site runoff to a single stormwater control facility (a stormwater pond) in that particular drainage area prior to discharge. The runoff from some small areas bypasses the drainage area stormwater ponds. The East Basin Pond ("East Pond") discharges its water to a flow splitter that directs the flow to either Wetland A to the ditch running along the east side of SR305.

The KPFF WWHM2012 model input for the Wetland A drainage area consists of NRCS category C soils (till soils) with a small amount of wetland/saturated soils (NRCS category D soils). I made no attempt to independently verify the soil types selected by KPFF.

Washington Department of Ecology 2014/2019 Stormwater Management Manual for Western Washington (SWMMWW) includes Minimum Requirement #8: Wetlands Protection. As stated in SWMMWW, MR #8: The requirements apply only to projects whose stormwater discharges into a wetland, either directly or indirectly through a conveyance system. For the purposes of this analysis it is assumed that the Oslo Bay Apartments' stormwater will discharge into either Wetland A or Wetland B either directly or indirectly through a conveyance system and must comply with MR #8.

Washington Department of Ecology 2014 Stormwater Management Manual for Western Washington (SWMMWW) includes Guide Sheet 3: Wetland protection guidelines. (This guide sheet is not included in the 2019 manual, although much of the same information and guidelines are included in the 2019 manual.)

Guide Sheet 3 provides information on ways to protect wetlands from changes to their ecological structure and functions that result from human alterations of the landscape. It also recommends management actions that can avoid or minimize deleterious changes to wetlands.

Although, this guide sheet is intended primarily for the protection of the wetlands listed in Guide Sheet 1 (2014 manual); this guidance still should be applied, as practical, for wetlands listed in Guide Sheet 2 (2014 manual) when they are modified to meet stormwater requirements.

Guide Sheet 3 includes guide sheets 3A, 3B, and 3C.

Guide Sheet 3A provides general guidelines for protecting functions and values of wetlands and are summarized in the following seven specific measures.

1. Consult regulations issued under federal and state laws that govern the discharge of pollutants.
2. Maintain the wetland buffer required by local regulations.
3. Retain areas of native vegetation connecting the wetland and its buffer with nearby wetlands and other contiguous areas of native vegetation.
4. Avoid compaction of soil and introduction of exotic plant species during any work in a wetland.
5. Take measures to avoid general urban impacts.
6. The use of fences should be very carefully evaluated on the basis of the relative importance of intrusive impacts versus wildlife presence.
7. Use a diffuse flow method to discharge water into the wetland in order to prevent flow channelization.

These seven specific measures have been incorporated in the project's stormwater design and are discussed elsewhere in the application package.

Guide Sheet 3B provides guidelines on protecting wetlands from impacts of changes in water flows and relates to maintaining the existing wetland's hydroperiod. The guidelines (also included in the 2019 manual Appendix I-C: Wetland Protection Guidelines, I-C.4 Wetland Hydroperiod Protection) are dependent on wetland category. Analysis of wetland hydroperiod protection is separated into two methods (Methods 1 and 2).

Method 1 requires a minimum one year of monitoring followed by continuous simulation modeling of the wetland stage. Method 1 only applies to Category I or II depressional or riverine impounding (including special characteristics Category I or II) wetlands that the project proponent owns, or the project proponent has legal access to – for purposes of conducting monitoring in the wetland.

The project site wetlands (A, B, and C) do not meet the standard for application of Method 1.

Method 2 requires the use of a site discharge volume model to evaluate hydrologic changes in a wetland, with no additional wetland monitoring requirement. The Method 2 wetland hydroperiod protection criteria are:

- (1) Monthly flow volumes from the proposed development site cannot increase or decrease by more than 15 percent from existing conditions, and
- (2) Daily flow volumes from the proposed development site cannot increase or decrease by more than 20 percent from existing conditions.

Method 2 shall be applied to the wetlands listed below:

- Category I or II wetlands that are off-site or the project proponent doesn't have legal access to conduct monitoring in the wetland,
- Category I or II riverine, slope or lake-fringe wetlands,
- Category III and IV wetlands with habitat score greater than 5,
- Category III or IV interdunal special characteristic wetlands,
- Category III and IV wetlands that provide habitat for rare, threatened, endangered or sensitive species,
- Category III and IV wetlands that contain a breeding population of any native amphibian species.
 - If the wetland has permanent or seasonal ponding or inundation, assume that it has a breeding population of native amphibians.
 - For seasonal ponding, if the wetland has surface ponding after May 1 of a normal water year or drier, assume that it has a breeding population of native amphibians.

Wetland A is a Category III wetland, as previously discussed. It is subject to the Method 2 criteria for hydroperiod analysis, as described above. The explanation of how these criteria are met is provided below.

Wetland B and C are Category IV wetlands. According to Joanne Bartlett's wetland letter report dated August 23, 2020 (file "2407.01 Ed Rose-Oslo Bay Apts sw in wetlands-revised.pdf"), neither wetland is an interdunal special characteristic wetland; provides habitat for rare, threatened, endangered or sensitive species; nor contains a breeding population of any native amphibian species. No hydroperiod analysis is required for these two wetlands.

Guide Sheet 3C provides guidelines on protecting pollutants. These protection measures should include:

1. Use effective erosion control at construction sites in the wetland's drainage catchment.
2. Institute a program of source control BMPs and minimize the pollutants that will enter storm runoff that drains to the wetland.
3. For wetlands that meet the criteria in Guide Sheet 1, provide a water quality control facility consisting of one or more treatment BMPs to treat runoff entering the wetland.

The three specific measures addressed by Guide Sheet 3C have been incorporated in the project's stormwater design and are discussed elsewhere in the application package.

A WWHM2012 model was created for Wetland A to calculate the wetland daily and monthly flow volumes as specified in Method 2 (described above).

The model included a flow splitter (in the form of a SSD element) that sent a maximum of 0.01 cubic feet per second (cfs) from the East Pond to a flow dispersion site at the base of the forested steep slope area upslope to Wetland A. This flow dispersion allowed the water to spread into the adjacent 7.14 acres of forest area before draining into Wetland A. This dispersion mimics natural runoff conditions and events prior to development. The maximum dispersion flow of 0.01 cfs was selected together with the forested runoff to closely reproduce daily, monthly, and annual flow volumes into Wetland A. The East Pond outflow in excess of 0.01 cfs was directed to the ditch running along the east side of SR305, where it will not contribute to the Wetland A inflow volume.

The East Pond flow split and dispersion together with the natural runoff from the downslope forested area provide sufficient and appropriate water volume to maintain the hydroperiod of Wetland A in accordance with Method 2 (described above). With the planned development the monthly flow volumes into Wetland A are within 15 percent of the predevelopment monthly flow volumes (see Table 3 below).

Clear Creek Solutions, Inc.
Oslo Bay Apts Wetland Hydroperiod Analysis Report
25 February 2021

Table 3. Monthly Flow Volumes into Wetland A from Oslo Bay Apts Drainage Area

Month	Predevelopment (ac-ft)	Developed Mitigated (ac-ft)	Percent	Pass/Fail
Jan	7.2909	6.8243	93.6	Pass
Feb	5.7241	5.4364	95.0	Pass
Mar	4.9600	4.8048	96.9	Pass
Apr	3.1747	3.1922	100.6	Pass
May	1.7721	1.9031	107.4	Pass
Jun	1.3006	1.4041	108.0	Pass
Jul	0.9698	1.0633	109.6	Pass
Aug	0.7833	0.8513	108.7	Pass
Sep	0.6674	0.7442	111.5	Pass
Oct	0.9602	1.0405	108.4	Pass
Nov	3.5582	3.3777	94.9	Pass
Dec	6.1853	5.8106	93.9	Pass
ANNUAL	37.3466	36.4525	97.6	Pass

To pass the Method 2 monthly criterion the monthly percent value must be between 85 and 115 percent. All 12 months pass. On an annual basis Wetland A will receive 97.6 percent of the total water that is currently recharging the wetland from the Oslo Bay Apartments property.

The Method 2 daily criterion is that the daily percent value must be between 80 and 120 percent. For the entire year (365 days) every day met this criterion.

Figure 3 shows the Method 2 daily graphical results for Wetland A.

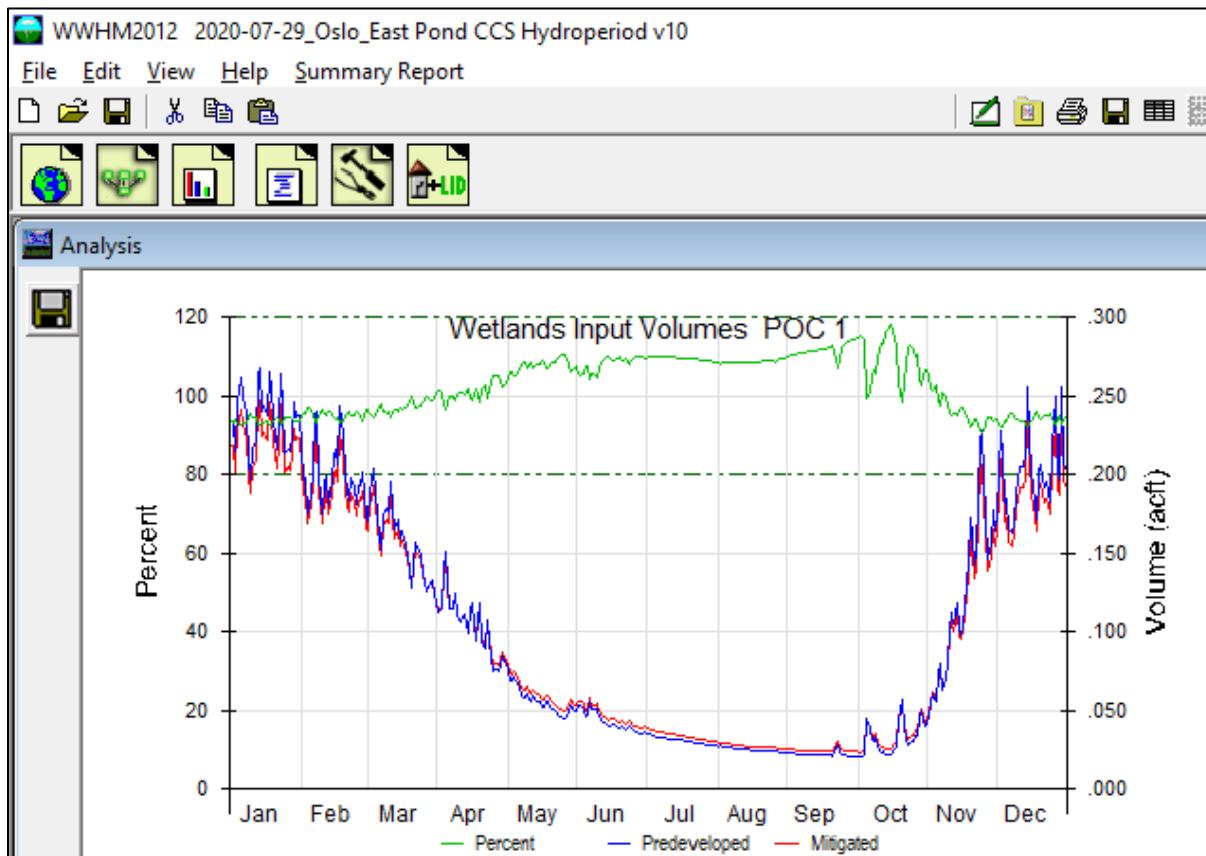


Figure 3. Wetland A Daily Hydroperiod Analysis

In Figure 3 the blue line is the daily predevelopment flow volume (in units of acre-feet) to Wetland A from the Oslo Bay Apartments property. The red line is the daily developed mitigated flow volume to Wetland A from the property. The red line should (and does) closely follow the blue line. The green line is the daily percentage value (developed mitigated volume divided by predevelopment volume). The green line should be between the 80 percent lower limit and the 120 percent upper limit. It is between these two limits for every single day of the year. The individual daily flow volumes are shown in Appendix A.

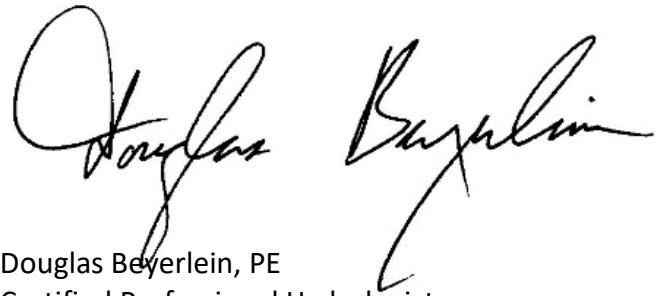
The WWHM2012 model report for Wetland A and its drainage area, including both model input and output plus the model HSPF UCI file, is attached in Appendix B.

No hydroperiod analyses were conducted for wetlands B and C because they are Category IV wetlands and no hydroperiod analysis is required for either wetland.

Clear Creek Solutions, Inc.
Oslo Bay Apts Wetland Hydroperiod Analysis Report
25 February 2021

Minimum Requirement #8 has been met.

This concludes my wetland hydroperiod analysis of the three wetlands for the proposed Oslo Bay Apartments development.

A handwritten signature in black ink, appearing to read "Douglas Beyerlein". The signature is fluid and cursive, with "Douglas" on the left and "Beyerlein" on the right, connected by a single continuous line.

Douglas Beyerlein, PE
Certified Professional Hydrologist
Member, American Institute of Hydrology

APPENDIX A

Method 2 Daily Flow Volumes to Wetland A

Month	Day	Predevelopment (ac-ft)	Developed Mitigated (ac-ft)	Percent	Pass/Fail
Jan	1	0.2340	0.2189	93.5	Pass
Jan	2	0.2343	0.2184	93.2	Pass
Jan	3	0.2146	0.2020	94.2	Pass
Jan	4	0.2473	0.2301	93.0	Pass
Jan	5	0.2521	0.2337	92.7	Pass
Jan	6	0.2616	0.2418	92.4	Pass
Jan	7	0.2425	0.2254	93.0	Pass
Jan	8	0.2412	0.2247	93.2	Pass
Jan	9	0.2101	0.1985	94.5	Pass
Jan	10	0.1972	0.1881	95.4	Pass
Jan	11	0.2159	0.2043	94.6	Pass
Jan	12	0.2216	0.2092	94.4	Pass
Jan	13	0.2632	0.2444	92.8	Pass
Jan	14	0.2674	0.2473	92.5	Pass
Jan	15	0.2399	0.2239	93.3	Pass
Jan	16	0.2435	0.2272	93.3	Pass
Jan	17	0.2379	0.2226	93.6	Pass
Jan	18	0.2655	0.2461	92.7	Pass
Jan	19	0.2555	0.2372	92.9	Pass
Jan	20	0.2357	0.2205	93.6	Pass
Jan	21	0.2165	0.2045	94.5	Pass
Jan	22	0.2327	0.2189	94.0	Pass
Jan	23	0.2639	0.2452	92.9	Pass
Jan	24	0.2432	0.2270	93.3	Pass
Jan	25	0.2134	0.2020	94.6	Pass
Jan	26	0.2163	0.2047	94.6	Pass
Jan	27	0.2143	0.2030	94.7	Pass
Jan	28	0.2249	0.2122	94.3	Pass
Jan	29	0.2457	0.2296	93.5	Pass
Jan	30	0.2364	0.2215	93.7	Pass
Jan	31	0.2380	0.2228	93.6	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Feb	1	0.2167	0.2047	94.5	Pass
Feb	2	0.1965	0.1877	95.5	Pass
Feb	3	0.1974	0.1887	95.6	Pass
Feb	4	0.1746	0.1694	97.0	Pass
Feb	5	0.1876	0.1807	96.3	Pass
Feb	6	0.2028	0.1934	95.4	Pass
Feb	7	0.2386	0.2236	93.7	Pass
Feb	8	0.2403	0.2243	93.3	Pass
Feb	9	0.1997	0.1894	94.9	Pass
Feb	10	0.1750	0.1688	96.5	Pass
Feb	11	0.1941	0.1855	95.6	Pass
Feb	12	0.1995	0.1899	95.2	Pass
Feb	13	0.1815	0.1746	96.2	Pass
Feb	14	0.1957	0.1867	95.4	Pass
Feb	15	0.2120	0.2005	94.6	Pass
Feb	16	0.2155	0.2032	94.3	Pass
Feb	17	0.2066	0.1957	94.7	Pass
Feb	18	0.2437	0.2271	93.2	Pass
Feb	19	0.2258	0.2113	93.6	Pass
Feb	20	0.2007	0.1901	94.7	Pass
Feb	21	0.1889	0.1804	95.5	Pass
Feb	22	0.1834	0.1758	95.9	Pass
Feb	23	0.1977	0.1881	95.2	Pass
Feb	24	0.1923	0.1833	95.3	Pass
Feb	25	0.1808	0.1735	95.9	Pass
Feb	26	0.1928	0.1838	95.4	Pass
Feb	27	0.1930	0.1837	95.2	Pass
Feb	28	0.2021	0.1890	93.5	Pass
Feb	29	0.1732	0.1670	96.4	Pass
Mar	1	0.1703	0.1645	96.6	Pass
Mar	2	0.1900	0.1815	95.5	Pass
Mar	3	0.1949	0.1851	95.0	Pass
Mar	4	0.2038	0.1926	94.5	Pass
Mar	5	0.1748	0.1676	95.9	Pass
Mar	6	0.1601	0.1553	97.0	Pass
Mar	7	0.1518	0.1485	97.9	Pass
Mar	8	0.1747	0.1680	96.2	Pass
Mar	9	0.1790	0.1714	95.8	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Mar	10	0.1765	0.1693	95.9	Pass
Mar	11	0.1959	0.1856	94.8	Pass
Mar	12	0.1793	0.1711	95.5	Pass
Mar	13	0.1659	0.1599	96.4	Pass
Mar	14	0.1710	0.1644	96.1	Pass
Mar	15	0.1592	0.1543	96.9	Pass
Mar	16	0.1638	0.1583	96.6	Pass
Mar	17	0.1597	0.1548	96.9	Pass
Mar	18	0.1560	0.1515	97.1	Pass
Mar	19	0.1406	0.1383	98.4	Pass
Mar	20	0.1283	0.1279	99.8	Pass
Mar	21	0.1438	0.1413	98.3	Pass
Mar	22	0.1573	0.1525	96.9	Pass
Mar	23	0.1541	0.1495	97.0	Pass
Mar	24	0.1496	0.1455	97.3	Pass
Mar	25	0.1377	0.1355	98.4	Pass
Mar	26	0.1334	0.1319	98.8	Pass
Mar	27	0.1258	0.1254	99.7	Pass
Mar	28	0.1319	0.1305	99.0	Pass
Mar	29	0.1334	0.1317	98.7	Pass
Mar	30	0.1244	0.1239	99.6	Pass
Mar	31	0.1198	0.1200	100.2	Pass
Apr	1	0.1120	0.1134	101.2	Pass
Apr	2	0.1142	0.1153	100.9	Pass
Apr	3	0.1389	0.1363	98.1	Pass
Apr	4	0.1506	0.1454	96.6	Pass
Apr	5	0.1323	0.1296	97.9	Pass
Apr	6	0.1142	0.1142	100.0	Pass
Apr	7	0.1150	0.1150	100.0	Pass
Apr	8	0.1243	0.1229	98.8	Pass
Apr	9	0.1130	0.1129	99.9	Pass
Apr	10	0.1071	0.1079	100.8	Pass
Apr	11	0.1058	0.1068	100.9	Pass
Apr	12	0.1108	0.1110	100.2	Pass
Apr	13	0.1060	0.1067	100.7	Pass
Apr	14	0.0991	0.1008	101.7	Pass
Apr	15	0.1130	0.1127	99.7	Pass
Apr	16	0.1186	0.1171	98.7	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Apr	17	0.0945	0.0963	102.0	Pass
Apr	18	0.1081	0.1083	100.2	Pass
Apr	19	0.1180	0.1161	98.4	Pass
Apr	20	0.0938	0.0953	101.6	Pass
Apr	21	0.0890	0.0914	102.7	Pass
Apr	22	0.1081	0.1076	99.5	Pass
Apr	23	0.0941	0.0952	101.2	Pass
Apr	24	0.0840	0.0867	103.2	Pass
Apr	25	0.0753	0.0793	105.3	Pass
Apr	26	0.0759	0.0798	105.1	Pass
Apr	27	0.0752	0.0790	105.1	Pass
Apr	28	0.0785	0.0818	104.3	Pass
Apr	29	0.0851	0.0872	102.5	Pass
Apr	30	0.0824	0.0848	102.9	Pass
May	1	0.0764	0.0795	104.0	Pass
May	2	0.0692	0.0733	106.0	Pass
May	3	0.0686	0.0727	106.1	Pass
May	4	0.0708	0.0745	105.2	Pass
May	5	0.0696	0.0733	105.4	Pass
May	6	0.0648	0.0690	106.5	Pass
May	7	0.0595	0.0645	108.3	Pass
May	8	0.0584	0.0635	108.6	Pass
May	9	0.0585	0.0633	108.3	Pass
May	10	0.0606	0.0649	107.2	Pass
May	11	0.0558	0.0607	108.8	Pass
May	12	0.0593	0.0635	107.1	Pass
May	13	0.0576	0.0619	107.4	Pass
May	14	0.0560	0.0604	107.9	Pass
May	15	0.0553	0.0597	108.0	Pass
May	16	0.0521	0.0568	109.1	Pass
May	17	0.0525	0.0571	108.7	Pass
May	18	0.0554	0.0594	107.2	Pass
May	19	0.0553	0.0591	106.9	Pass
May	20	0.0509	0.0553	108.6	Pass
May	21	0.0508	0.0551	108.5	Pass
May	22	0.0494	0.0537	108.8	Pass
May	23	0.0479	0.0524	109.4	Pass
May	24	0.0464	0.0510	109.9	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

May	25	0.0453	0.0500	110.4	Pass
May	26	0.0452	0.0499	110.4	Pass
May	27	0.0461	0.0506	109.7	Pass
May	28	0.0490	0.0530	108.3	Pass
May	29	0.0532	0.0565	106.2	Pass
May	30	0.0500	0.0536	107.3	Pass
May	31	0.0492	0.0529	107.5	Pass
Jun	1	0.0530	0.0559	105.6	Pass
Jun	2	0.0529	0.0558	105.3	Pass
Jun	3	0.0514	0.0544	105.7	Pass
Jun	4	0.0465	0.0501	107.7	Pass
Jun	5	0.0470	0.0505	107.5	Pass
Jun	6	0.0554	0.0579	104.5	Pass
Jun	7	0.0508	0.0537	105.7	Pass
Jun	8	0.0511	0.0538	105.4	Pass
Jun	9	0.0515	0.0540	104.9	Pass
Jun	10	0.0462	0.0495	107.1	Pass
Jun	11	0.0447	0.0482	107.9	Pass
Jun	12	0.0428	0.0465	108.8	Pass
Jun	13	0.0407	0.0447	109.9	Pass
Jun	14	0.0400	0.0441	110.1	Pass
Jun	15	0.0406	0.0444	109.6	Pass
Jun	16	0.0413	0.0451	109.0	Pass
Jun	17	0.0411	0.0447	108.9	Pass
Jun	18	0.0392	0.0431	109.7	Pass
Jun	19	0.0384	0.0423	110.1	Pass
Jun	20	0.0403	0.0439	109.0	Pass
Jun	21	0.0390	0.0426	109.3	Pass
Jun	22	0.0382	0.0418	109.4	Pass
Jun	23	0.0404	0.0438	108.3	Pass
Jun	24	0.0389	0.0423	108.8	Pass
Jun	25	0.0371	0.0407	109.7	Pass
Jun	26	0.0362	0.0398	110.1	Pass
Jun	27	0.0358	0.0395	110.2	Pass
Jun	28	0.0357	0.0393	110.2	Pass
Jun	29	0.0353	0.0389	110.2	Pass
Jun	30	0.0366	0.0400	109.3	Pass
Jul	1	0.0356	0.0390	109.6	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Jul	2	0.0348	0.0382	109.9	Pass
Jul	3	0.0341	0.0376	110.2	Pass
Jul	4	0.0338	0.0372	110.2	Pass
Jul	5	0.0334	0.0369	110.2	Pass
Jul	6	0.0331	0.0365	110.2	Pass
Jul	7	0.0331	0.0364	110.0	Pass
Jul	8	0.0328	0.0361	110.0	Pass
Jul	9	0.0326	0.0358	110.0	Pass
Jul	10	0.0322	0.0355	110.1	Pass
Jul	11	0.0321	0.0353	110.0	Pass
Jul	12	0.0321	0.0352	109.9	Pass
Jul	13	0.0318	0.0349	109.8	Pass
Jul	14	0.0315	0.0345	109.7	Pass
Jul	15	0.0313	0.0343	109.6	Pass
Jul	16	0.0311	0.0341	109.6	Pass
Jul	17	0.0307	0.0337	109.7	Pass
Jul	18	0.0304	0.0334	109.7	Pass
Jul	19	0.0302	0.0331	109.7	Pass
Jul	20	0.0299	0.0328	109.6	Pass
Jul	21	0.0297	0.0325	109.5	Pass
Jul	22	0.0294	0.0322	109.5	Pass
Jul	23	0.0292	0.0319	109.4	Pass
Jul	24	0.0290	0.0316	109.2	Pass
Jul	25	0.0288	0.0314	109.1	Pass
Jul	26	0.0286	0.0312	109.0	Pass
Jul	27	0.0284	0.0309	109.0	Pass
Jul	28	0.0281	0.0306	109.0	Pass
Jul	29	0.0279	0.0303	108.9	Pass
Jul	30	0.0277	0.0301	108.7	Pass
Jul	31	0.0275	0.0299	108.6	Pass
Aug	1	0.0274	0.0297	108.5	Pass
Aug	2	0.0275	0.0298	108.3	Pass
Aug	3	0.0271	0.0294	108.4	Pass
Aug	4	0.0268	0.0291	108.4	Pass
Aug	5	0.0266	0.0289	108.4	Pass
Aug	6	0.0265	0.0287	108.3	Pass
Aug	7	0.0263	0.0285	108.4	Pass
Aug	8	0.0261	0.0283	108.4	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Aug	9	0.0259	0.0281	108.4	Pass
Aug	10	0.0257	0.0279	108.4	Pass
Aug	11	0.0255	0.0277	108.4	Pass
Aug	12	0.0254	0.0275	108.4	Pass
Aug	13	0.0253	0.0274	108.4	Pass
Aug	14	0.0252	0.0273	108.3	Pass
Aug	15	0.0250	0.0271	108.4	Pass
Aug	16	0.0248	0.0270	108.5	Pass
Aug	17	0.0247	0.0268	108.5	Pass
Aug	18	0.0245	0.0266	108.6	Pass
Aug	19	0.0244	0.0265	108.7	Pass
Aug	20	0.0242	0.0264	108.8	Pass
Aug	21	0.0241	0.0263	108.9	Pass
Aug	22	0.0243	0.0264	108.9	Pass
Aug	23	0.0243	0.0265	108.9	Pass
Aug	24	0.0243	0.0264	109.0	Pass
Aug	25	0.0243	0.0265	109.0	Pass
Aug	26	0.0247	0.0269	108.6	Pass
Aug	27	0.0240	0.0262	109.2	Pass
Aug	28	0.0237	0.0259	109.6	Pass
Aug	29	0.0237	0.0260	109.6	Pass
Aug	30	0.0236	0.0259	109.7	Pass
Aug	31	0.0232	0.0255	110.0	Pass
Sep	1	0.0230	0.0253	110.2	Pass
Sep	2	0.0228	0.0252	110.3	Pass
Sep	3	0.0227	0.0251	110.4	Pass
Sep	4	0.0226	0.0250	110.6	Pass
Sep	5	0.0225	0.0249	110.7	Pass
Sep	6	0.0223	0.0248	110.9	Pass
Sep	7	0.0222	0.0247	111.0	Pass
Sep	8	0.0221	0.0246	111.2	Pass
Sep	9	0.0220	0.0245	111.3	Pass
Sep	10	0.0219	0.0244	111.4	Pass
Sep	11	0.0219	0.0244	111.5	Pass
Sep	12	0.0217	0.0242	111.7	Pass
Sep	13	0.0217	0.0242	111.7	Pass
Sep	14	0.0215	0.0241	111.9	Pass
Sep	15	0.0214	0.0240	112.0	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Sep	16	0.0216	0.0242	111.9	Pass
Sep	17	0.0217	0.0243	112.0	Pass
Sep	18	0.0216	0.0242	112.3	Pass
Sep	19	0.0216	0.0243	112.6	Pass
Sep	20	0.0213	0.0241	113.0	Pass
Sep	21	0.0229	0.0255	111.5	Pass
Sep	22	0.0279	0.0298	107.1	Pass
Sep	23	0.0243	0.0267	109.7	Pass
Sep	24	0.0224	0.0251	111.8	Pass
Sep	25	0.0217	0.0245	112.9	Pass
Sep	26	0.0212	0.0241	113.6	Pass
Sep	27	0.0211	0.0241	114.0	Pass
Sep	28	0.0211	0.0241	114.3	Pass
Sep	29	0.0213	0.0243	114.2	Pass
Sep	30	0.0208	0.0238	114.5	Pass
Oct	1	0.0206	0.0237	114.9	Pass
Oct	2	0.0205	0.0236	115.2	Pass
Oct	3	0.0210	0.0241	114.7	Pass
Oct	4	0.0217	0.0248	114.2	Pass
Oct	5	0.0450	0.0447	99.5	Pass
Oct	6	0.0385	0.0387	100.7	Pass
Oct	7	0.0311	0.0326	105.0	Pass
Oct	8	0.0303	0.0323	106.6	Pass
Oct	9	0.0329	0.0347	105.6	Pass
Oct	10	0.0271	0.0297	109.8	Pass
Oct	11	0.0238	0.0270	113.3	Pass
Oct	12	0.0241	0.0273	113.6	Pass
Oct	13	0.0225	0.0260	115.8	Pass
Oct	14	0.0220	0.0257	116.9	Pass
Oct	15	0.0215	0.0253	118.1	Pass
Oct	16	0.0229	0.0267	116.7	Pass
Oct	17	0.0251	0.0287	114.4	Pass
Oct	18	0.0268	0.0302	113.0	Pass
Oct	19	0.0433	0.0446	103.0	Pass
Oct	20	0.0569	0.0559	98.2	Pass
Oct	21	0.0399	0.0413	103.5	Pass
Oct	22	0.0327	0.0353	108.0	Pass
Oct	23	0.0285	0.0320	112.2	Pass

Clear Creek Solutions, Inc.
 Oslo Bay Apts Wetland Hydroperiod Analysis Report
 25 February 2021

Oct	24	0.0287	0.0324	113.0	Pass
Oct	25	0.0307	0.0344	112.1	Pass
Oct	26	0.0341	0.0375	110.2	Pass
Oct	27	0.0341	0.0377	110.5	Pass
Oct	28	0.0446	0.0467	104.8	Pass
Oct	29	0.0491	0.0504	102.6	Pass
Oct	30	0.0399	0.0426	106.7	Pass
Oct	31	0.0415	0.0442	106.6	Pass
Nov	1	0.0462	0.0485	105.0	Pass
Nov	2	0.0551	0.0563	102.2	Pass
Nov	3	0.0606	0.0614	101.3	Pass
Nov	4	0.0562	0.0578	102.9	Pass
Nov	5	0.0725	0.0718	99.0	Pass
Nov	6	0.0794	0.0775	97.5	Pass
Nov	7	0.0631	0.0636	100.8	Pass
Nov	8	0.0697	0.0697	100.0	Pass
Nov	9	0.0814	0.0799	98.1	Pass
Nov	10	0.1012	0.0970	95.9	Pass
Nov	11	0.1127	0.1069	94.9	Pass
Nov	12	0.1053	0.1007	95.7	Pass
Nov	13	0.1184	0.1123	94.9	Pass
Nov	14	0.1024	0.0985	96.1	Pass
Nov	15	0.0980	0.0953	97.2	Pass
Nov	16	0.1039	0.1008	96.9	Pass
Nov	17	0.1158	0.1111	96.0	Pass
Nov	18	0.1446	0.1356	93.8	Pass
Nov	19	0.1730	0.1598	92.4	Pass
Nov	20	0.1621	0.1501	92.6	Pass
Nov	21	0.1426	0.1339	93.9	Pass
Nov	22	0.1496	0.1405	93.9	Pass
Nov	23	0.2225	0.2027	91.1	Pass
Nov	24	0.2279	0.2067	90.7	Pass
Nov	25	0.1985	0.1815	91.5	Pass
Nov	26	0.1753	0.1626	92.7	Pass
Nov	27	0.1465	0.1387	94.7	Pass
Nov	28	0.1552	0.1467	94.5	Pass
Nov	29	0.1769	0.1655	93.6	Pass
Nov	30	0.1641	0.1547	94.2	Pass

Clear Creek Solutions, Inc.
Oslo Bay Apts Wetland Hydroperiod Analysis Report
25 February 2021

Dec	1	0.1749	0.1645	94.1	Pass
Dec	2	0.2283	0.2100	92.0	Pass
Dec	3	0.2134	0.1964	92.0	Pass
Dec	4	0.1822	0.1704	93.5	Pass
Dec	5	0.1845	0.1729	93.7	Pass
Dec	6	0.1656	0.1571	94.9	Pass
Dec	7	0.1626	0.1551	95.4	Pass
Dec	8	0.1693	0.1612	95.2	Pass
Dec	9	0.1889	0.1780	94.2	Pass
Dec	10	0.1952	0.1833	93.9	Pass
Dec	11	0.2047	0.1914	93.5	Pass
Dec	12	0.2052	0.1919	93.5	Pass
Dec	13	0.2122	0.1981	93.4	Pass
Dec	14	0.2552	0.2347	92.0	Pass
Dec	15	0.2258	0.2092	92.7	Pass
Dec	16	0.2015	0.1889	93.8	Pass
Dec	17	0.1834	0.1741	94.9	Pass
Dec	18	0.1709	0.1641	96.0	Pass
Dec	19	0.2010	0.1901	94.6	Pass
Dec	20	0.2061	0.1942	94.3	Pass
Dec	21	0.1916	0.1821	95.0	Pass
Dec	22	0.1951	0.1853	94.9	Pass
Dec	23	0.1895	0.1804	95.2	Pass
Dec	24	0.1822	0.1745	95.8	Pass
Dec	25	0.2187	0.2056	94.0	Pass
Dec	26	0.2498	0.2315	92.7	Pass
Dec	27	0.2024	0.1908	94.3	Pass
Dec	28	0.1972	0.1873	94.9	Pass
Dec	29	0.2556	0.2370	92.7	Pass
Dec	30	0.2080	0.1958	94.1	Pass
Dec	31	0.2023	0.1914	94.6	Pass

Clear Creek Solutions, Inc.
Oslo Bay Apts Wetland Hydroperiod Analysis Report
25 February 2021

APPENDIX B

WWHM2012 MODEL REPORT

WWHM2012

PROJECT REPORT

General Model Information

Project Name: 2020-07-29_Oslo_East Pond CCS Hydroperiod v10
Site Name: Oslo Bay Apts
Site Address:
City: Poulsbo
Report Date: 2/19/2021
Gage: Seatac
Data Start: 1948/10/01
Data End: 2009/09/30
Timestep: 15 Minute
Precip Scale: 1.167
Version Date: 2021/02/05
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

Drainage to Wetland A

Bypass: No

GroundWater: No

Pervious Land Use	acre
C, Forest, Mod	12.63
C, Forest, Steep	5.26
SAT, Forest, Mod	0.46

Pervious Total	18.35
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Impervious Land Use	acre
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Impervious Total	0
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Basin Total	18.35
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Element Flows To:

Surface	Interflow	Groundwater
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Mitigated Land Use

East Basin W

Bypass:	No
GroundWater:	No
Pervious Land Use C, Lawn, Mod	acre 3.95
Pervious Total	3.95
Impervious Land Use	acre
Impervious Total	0
Basin Total	3.95

Element Flows To:

Surface East Pond	Interflow East Pond	Groundwater
----------------------	------------------------	-------------

East Basin E

Bypass: Yes

GroundWater: No

Pervious Land Use acre
C, Lawn, Mod 1.83
C, Forest, Mod 0.46

Pervious Total 2.29

Impervious Land Use acre
ROADS MOD 4.55
POND 0.28

Impervious Total 4.83

Basin Total 7.12

Element Flows To:

Surface	Interflow	Groundwater
East Pond	East Pond	

Basin 1

Bypass: No

GroundWater: No

Pervious Land Use acre
C, Forest, Mod 4.14

Pervious Total 4.14

Impervious Land Use acre

Impervious Total 0

Basin Total 4.14

Element Flows To:

Surface Ditch	Interflow Ditch	Groundwater Ditch
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Non-dispersion Area

Bypass: Yes

GroundWater: No

Pervious Land Use acre
C, Forest, Mod 2.34
C, Forest, Steep 5.26
SAT, Forest, Mod 0.46

Pervious Total 8.06

Impervious Land Use acre

Impervious Total 0

Basin Total 8.06

Element Flows To:

Surface Interflow Groundwater

Forested Buffer

Bypass: No

GroundWater: No

Pervious Land Use
C, Forest, Mod
Element Flows To:

Surface Interflow Groundwater

Routing Elements

Predeveloped Routing

Mitigated Routing

East Pond

Bottom Length: 120.00 ft.
Bottom Width: 120.00 ft.
Depth: 9.5 ft.
Volume at riser head: 4.0006 acre-feet.
Side slope 1: 2 To 1
Side slope 2: 2 To 1
Side slope 3: 2 To 1
Side slope 4: 2 To 1
Discharge Structure
Riser Height: 9 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 1.75 in. Elevation:0 ft.
Orifice 2 Diameter: 1 in. Elevation:3 ft.
Orifice 3 Diameter: 1.25 in. Elevation:5 ft.
Element Flows To:
Outlet 1 Outlet 2
Flow Splitter

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
100.00	0.330	0.000	0.000	0.000
100.11	0.332	0.035	0.027	0.000
100.21	0.335	0.070	0.038	0.000
100.32	0.337	0.105	0.046	0.000
100.42	0.339	0.141	0.054	0.000
100.53	0.342	0.177	0.060	0.000
100.63	0.344	0.213	0.066	0.000
100.74	0.347	0.250	0.071	0.000
100.84	0.349	0.287	0.076	0.000
100.95	0.351	0.324	0.081	0.000
101.06	0.354	0.361	0.085	0.000
101.16	0.356	0.398	0.089	0.000
101.27	0.359	0.436	0.093	0.000
101.37	0.361	0.474	0.097	0.000
101.48	0.363	0.513	0.101	0.000
101.58	0.366	0.551	0.104	0.000
101.69	0.368	0.590	0.108	0.000
101.79	0.371	0.629	0.111	0.000
101.90	0.373	0.668	0.114	0.000
102.01	0.376	0.708	0.117	0.000
102.11	0.378	0.748	0.120	0.000
102.22	0.381	0.788	0.123	0.000
102.32	0.383	0.828	0.126	0.000
102.43	0.386	0.869	0.129	0.000
102.53	0.388	0.910	0.132	0.000
102.64	0.391	0.951	0.135	0.000
102.74	0.393	0.992	0.137	0.000
102.85	0.396	1.034	0.140	0.000
102.96	0.398	1.076	0.142	0.000
103.06	0.401	1.118	0.152	0.000
103.17	0.404	1.161	0.159	0.000
103.27	0.406	1.204	0.164	0.000
103.38	0.409	1.247	0.169	0.000

103.48	0.411	1.290	0.174	0.000
103.59	0.414	1.334	0.178	0.000
103.69	0.417	1.377	0.182	0.000
103.80	0.419	1.422	0.186	0.000
103.91	0.422	1.466	0.190	0.000
104.01	0.424	1.511	0.193	0.000
104.12	0.427	1.556	0.197	0.000
104.22	0.430	1.601	0.200	0.000
104.33	0.432	1.647	0.204	0.000
104.43	0.435	1.692	0.207	0.000
104.54	0.438	1.738	0.210	0.000
104.64	0.440	1.785	0.213	0.000
104.75	0.443	1.832	0.217	0.000
104.86	0.446	1.879	0.220	0.000
104.96	0.449	1.926	0.223	0.000
105.07	0.451	1.973	0.237	0.000
105.17	0.454	2.021	0.246	0.000
105.28	0.457	2.069	0.254	0.000
105.38	0.459	2.118	0.261	0.000
105.49	0.462	2.166	0.267	0.000
105.59	0.465	2.215	0.273	0.000
105.70	0.468	2.265	0.278	0.000
105.81	0.470	2.314	0.283	0.000
105.91	0.473	2.364	0.288	0.000
106.02	0.476	2.414	0.293	0.000
106.12	0.479	2.465	0.298	0.000
106.23	0.482	2.515	0.303	0.000
106.33	0.484	2.566	0.307	0.000
106.44	0.487	2.618	0.312	0.000
106.54	0.490	2.669	0.316	0.000
106.65	0.493	2.721	0.320	0.000
106.76	0.496	2.773	0.324	0.000
106.86	0.499	2.826	0.328	0.000
106.97	0.501	2.879	0.332	0.000
107.07	0.504	2.932	0.336	0.000
107.18	0.507	2.985	0.340	0.000
107.28	0.510	3.039	0.344	0.000
107.39	0.513	3.093	0.348	0.000
107.49	0.516	3.148	0.352	0.000
107.60	0.519	3.202	0.355	0.000
107.71	0.522	3.257	0.359	0.000
107.81	0.525	3.312	0.362	0.000
107.92	0.528	3.368	0.366	0.000
108.02	0.531	3.424	0.369	0.000
108.13	0.534	3.480	0.373	0.000
108.23	0.536	3.537	0.376	0.000
108.34	0.539	3.593	0.380	0.000
108.44	0.542	3.651	0.383	0.000
108.55	0.545	3.708	0.386	0.000
108.66	0.548	3.766	0.390	0.000
108.76	0.551	3.824	0.393	0.000
108.87	0.554	3.882	0.396	0.000
108.97	0.557	3.941	0.399	0.000
109.08	0.560	4.000	0.747	0.000
109.18	0.563	4.059	1.642	0.000
109.29	0.567	4.119	2.783	0.000
109.39	0.570	4.179	3.983	0.000
109.50	0.573	4.240	5.054	0.000

109.61

0.576

4.300

5.853

0.000

Ditch

Bottom Length: 500.00 ft.
Bottom Width: 5.00 ft.
Manning's n: 0.04
Channel bottom slope 1: 0.01 To 1
Channel Left side slope 0: 2 To 1
Channel right side slope 2: 2 To 1
Discharge Structure
Riser Height: 0 ft.
Riser Diameter: 0 in.
Element Flows To:
Outlet 1 Outlet 2

Channel Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.057	0.000	0.000	0.000
0.0556	0.059	0.003	0.151	0.000
0.1111	0.062	0.006	0.482	0.000
0.1667	0.065	0.010	0.954	0.000
0.2222	0.067	0.013	1.550	0.000
0.2778	0.070	0.017	2.264	0.000
0.3333	0.072	0.021	3.089	0.000
0.3889	0.075	0.025	4.024	0.000
0.4444	0.077	0.030	5.065	0.000
0.5000	0.080	0.034	6.213	0.000
0.5556	0.082	0.039	7.466	0.000
0.6111	0.085	0.043	8.824	0.000
0.6667	0.088	0.048	10.28	0.000
0.7222	0.090	0.053	11.85	0.000
0.7778	0.093	0.058	13.53	0.000
0.8333	0.095	0.063	15.31	0.000
0.8889	0.098	0.069	17.20	0.000
0.9444	0.100	0.074	19.20	0.000
1.0000	0.103	0.080	21.31	0.000
1.0556	0.105	0.086	23.53	0.000
1.1111	0.108	0.092	25.86	0.000
1.1667	0.111	0.098	28.31	0.000
1.2222	0.113	0.104	30.87	0.000
1.2778	0.116	0.110	33.54	0.000
1.3333	0.118	0.117	36.34	0.000
1.3889	0.121	0.124	39.25	0.000
1.4444	0.123	0.130	42.28	0.000
1.5000	0.126	0.137	45.44	0.000
1.5556	0.128	0.144	48.71	0.000
1.6111	0.131	0.152	52.11	0.000
1.6667	0.133	0.159	55.63	0.000
1.7222	0.136	0.166	59.29	0.000
1.7778	0.139	0.174	63.06	0.000
1.8333	0.141	0.182	66.97	0.000
1.8889	0.144	0.190	71.01	0.000
1.9444	0.146	0.198	75.18	0.000
2.0000	0.149	0.206	79.49	0.000
2.0556	0.151	0.215	83.93	0.000
2.1111	0.154	0.223	88.50	0.000
2.1667	0.156	0.232	93.21	0.000

2.2222	0.159	0.240	98.07	0.000
2.2778	0.162	0.249	103.0	0.000
2.3333	0.164	0.258	108.2	0.000
2.3889	0.167	0.268	113.4	0.000
2.4444	0.169	0.277	118.8	0.000
2.5000	0.172	0.287	124.4	0.000
2.5556	0.174	0.296	130.1	0.000
2.6111	0.177	0.306	136.0	0.000
2.6667	0.179	0.316	142.0	0.000
2.7222	0.182	0.326	148.2	0.000
2.7778	0.185	0.336	154.5	0.000
2.8333	0.187	0.346	161.0	0.000
2.8889	0.190	0.357	167.6	0.000
2.9444	0.192	0.368	174.4	0.000
3.0000	0.195	0.378	181.3	0.000
3.0556	0.197	0.389	188.4	0.000
3.1111	0.200	0.400	195.7	0.000
3.1667	0.202	0.412	203.1	0.000
3.2222	0.205	0.423	210.7	0.000
3.2778	0.207	0.434	218.4	0.000
3.3333	0.210	0.446	226.3	0.000
3.3889	0.213	0.458	234.4	0.000
3.4444	0.215	0.470	242.7	0.000
3.5000	0.218	0.482	251.1	0.000
3.5556	0.220	0.494	259.7	0.000
3.6111	0.223	0.506	268.4	0.000
3.6667	0.225	0.519	277.4	0.000
3.7222	0.228	0.531	286.5	0.000
3.7778	0.230	0.544	295.8	0.000
3.8333	0.233	0.557	305.2	0.000
3.8889	0.236	0.570	314.9	0.000
3.9444	0.238	0.583	324.7	0.000
4.0000	0.241	0.596	334.7	0.000
4.0556	0.243	0.610	344.9	0.000
4.1111	0.246	0.624	355.3	0.000
4.1667	0.248	0.637	365.8	0.000
4.2222	0.251	0.651	376.6	0.000
4.2778	0.253	0.665	387.5	0.000
4.3333	0.256	0.679	398.6	0.000
4.3889	0.258	0.694	409.9	0.000
4.4444	0.261	0.708	421.4	0.000
4.5000	0.264	0.723	433.1	0.000
4.5556	0.266	0.738	445.0	0.000
4.6111	0.269	0.752	457.1	0.000
4.6667	0.271	0.767	469.3	0.000
4.7222	0.274	0.783	481.8	0.000
4.7778	0.276	0.798	494.5	0.000
4.8333	0.279	0.813	507.3	0.000
4.8889	0.281	0.829	520.4	0.000
4.9444	0.284	0.845	533.7	0.000
5.0000	0.287	0.861	547.2	0.000
5.0556	0.289	0.877	560.8	0.000

Flow Splitter

Depth: 10 ft.

Element Flows To:

Outlet 1

Forested Buffer

Outlet 2

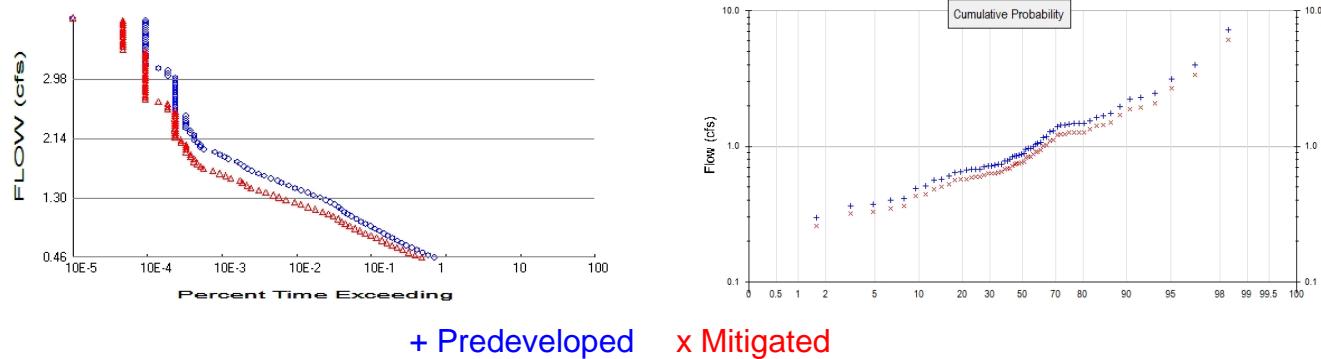
Ditch

SSD Table Hydraulic Table

Stage (feet)	Area (ac.)	Volume (ac-ft.)	Manual	Manual	NotUsed	NotUsed	NotUsed
0.000	0.021	0.000	0.000	0.000	0.000	0.000	0.000
0.010	0.021	0.000	0.010	0.000	0.000	0.000	0.000
0.020	0.021	0.000	0.010	0.010	0.000	0.000	0.000
0.040	0.021	0.001	0.010	0.030	0.000	0.000	0.000
0.050	0.021	0.001	0.010	0.040	0.000	0.000	0.000
0.060	0.021	0.001	0.010	0.050	0.000	0.000	0.000
0.080	0.021	0.002	0.010	0.070	0.000	0.000	0.000
0.100	0.021	0.002	0.010	0.090	0.000	0.000	0.000
0.200	0.021	0.004	0.010	0.190	0.000	0.000	0.000
0.300	0.021	0.006	0.010	0.290	0.000	0.000	0.000
0.400	0.021	0.008	0.010	0.390	0.000	0.000	0.000
0.500	0.021	0.010	0.010	0.490	0.000	0.000	0.000
0.600	0.021	0.012	0.010	0.590	0.000	0.000	0.000
0.700	0.021	0.014	0.010	0.690	0.000	0.000	0.000
0.800	0.021	0.017	0.010	0.790	0.000	0.000	0.000
0.900	0.021	0.019	0.010	0.890	0.000	0.000	0.000
1.000	0.021	0.021	0.010	0.990	0.000	0.000	0.000
2.000	0.021	0.041	0.010	1.990	0.000	0.000	0.000
4.000	0.021	0.083	0.010	3.990	0.000	0.000	0.000
6.000	0.021	0.124	0.010	5.990	0.000	0.000	0.000
8.000	0.021	0.165	0.010	7.990	0.000	0.000	0.000
10.000	0.021	0.207	0.010	9.990	0.000	0.000	0.000

Analysis Results

POC 1



Predeveloped Landuse Totals for POC #1

Total Pervious Area: 18.35

Total Impervious Area: 0

Mitigated Landuse Totals for POC #1

Total Pervious Area: 21.44

Total Impervious Area: 4.83

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.929182
5 year	1.604208
10 year	2.173055
25 year	3.045687
50 year	3.81736
100 year	4.70178

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.806931
5 year	1.380883
10 year	1.861371
25 year	2.59462
50 year	3.240139
100 year	3.977385

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.289	1.102
1950	1.470	1.273
1951	1.745	1.495
1952	0.650	0.571
1953	0.509	0.443
1954	0.718	0.629
1955	1.175	1.022
1956	1.037	0.910
1957	0.994	0.868
1958	0.846	0.733

1959	0.729	0.635
1960	1.433	1.235
1961	0.735	0.641
1962	0.491	0.431
1963	0.675	0.595
1964	0.960	0.833
1965	0.782	0.687
1966	0.602	0.528
1967	1.636	1.420
1968	0.886	0.769
1969	0.852	0.743
1970	0.738	0.650
1971	0.808	0.690
1972	1.404	1.209
1973	0.681	0.595
1974	0.837	0.721
1975	1.162	1.011
1976	0.858	0.750
1977	0.373	0.330
1978	0.674	0.588
1979	0.399	0.349
1980	2.221	1.871
1981	0.571	0.502
1982	1.546	1.342
1983	0.969	0.838
1984	0.639	0.561
1985	0.363	0.318
1986	1.432	1.230
1987	1.294	1.106
1988	0.562	0.485
1989	0.412	0.365
1990	3.977	3.382
1991	1.963	1.694
1992	0.780	0.678
1993	0.666	0.574
1994	0.297	0.259
1995	0.880	0.763
1996	2.280	1.947
1997	1.668	1.433
1998	0.706	0.616
1999	2.468	2.088
2000	0.713	0.627
2001	0.191	0.172
2002	0.948	0.823
2003	1.479	1.263
2004	1.477	1.271
2005	1.047	0.908
2006	1.073	0.938
2007	7.234	6.114
2008	3.144	2.682
2009	1.457	1.264

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	7.2339	6.1144
2	3.9774	3.3821
3	3.1444	2.6824

4	2.4683	2.0878
5	2.2804	1.9471
6	2.2206	1.8715
7	1.9629	1.6940
8	1.7452	1.4946
9	1.6683	1.4327
10	1.6357	1.4200
11	1.5461	1.3421
12	1.4789	1.2729
13	1.4766	1.2709
14	1.4701	1.2642
15	1.4567	1.2626
16	1.4335	1.2350
17	1.4321	1.2301
18	1.4040	1.2090
19	1.2942	1.1061
20	1.2885	1.1023
21	1.1755	1.0219
22	1.1618	1.0109
23	1.0732	0.9376
24	1.0467	0.9098
25	1.0374	0.9083
26	0.9939	0.8683
27	0.9688	0.8382
28	0.9600	0.8326
29	0.9476	0.8232
30	0.8856	0.7687
31	0.8799	0.7634
32	0.8579	0.7501
33	0.8523	0.7433
34	0.8460	0.7329
35	0.8365	0.7215
36	0.8076	0.6903
37	0.7821	0.6869
38	0.7801	0.6781
39	0.7384	0.6500
40	0.7349	0.6411
41	0.7290	0.6347
42	0.7181	0.6292
43	0.7134	0.6272
44	0.7058	0.6157
45	0.6811	0.5954
46	0.6753	0.5949
47	0.6743	0.5884
48	0.6660	0.5743
49	0.6496	0.5710
50	0.6394	0.5614
51	0.6018	0.5280
52	0.5708	0.5018
53	0.5624	0.4847
54	0.5085	0.4427
55	0.4906	0.4312
56	0.4118	0.3647
57	0.3993	0.3486
58	0.3730	0.3299
59	0.3630	0.3181
60	0.2973	0.2594
61	0.1908	0.1723

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.4646	14715	10078	68	Pass
0.4985	12352	8209	66	Pass
0.5323	10386	6797	65	Pass
0.5662	8710	5651	64	Pass
0.6001	7398	4755	64	Pass
0.6339	6335	4019	63	Pass
0.6678	5452	3456	63	Pass
0.7017	4710	2973	63	Pass
0.7355	4072	2524	61	Pass
0.7694	3568	2123	59	Pass
0.8033	3127	1787	57	Pass
0.8371	2753	1508	54	Pass
0.8710	2393	1286	53	Pass
0.9049	2063	1099	53	Pass
0.9387	1785	951	53	Pass
0.9726	1550	855	55	Pass
1.0065	1353	767	56	Pass
1.0403	1166	664	56	Pass
1.0742	1026	566	55	Pass
1.1081	928	472	50	Pass
1.1419	853	381	44	Pass
1.1758	775	307	39	Pass
1.2097	684	243	35	Pass
1.2435	603	199	33	Pass
1.2774	517	154	29	Pass
1.3112	441	124	28	Pass
1.3451	359	105	29	Pass
1.3790	301	82	27	Pass
1.4128	246	66	26	Pass
1.4467	203	52	25	Pass
1.4806	167	46	27	Pass
1.5144	134	40	29	Pass
1.5483	118	37	31	Pass
1.5822	95	28	29	Pass
1.6160	79	24	30	Pass
1.6499	65	20	30	Pass
1.6838	54	16	29	Pass
1.7176	47	12	25	Pass
1.7515	42	11	26	Pass
1.7854	38	10	26	Pass
1.8192	34	9	26	Pass
1.8531	26	9	34	Pass
1.8870	23	8	34	Pass
1.9208	20	8	40	Pass
1.9547	17	7	41	Pass
1.9886	12	7	58	Pass
2.0224	11	7	63	Pass
2.0563	11	7	63	Pass
2.0902	10	6	60	Pass
2.1240	9	6	66	Pass
2.1579	9	5	55	Pass
2.1918	9	5	55	Pass
2.2256	8	5	62	Pass

2.2595	8	5	62	Pass
2.2934	7	5	71	Pass
2.3272	7	5	71	Pass
2.3611	7	5	71	Pass
2.3950	7	5	71	Pass
2.4288	7	5	71	Pass
2.4627	7	5	71	Pass
2.4966	5	5	100	Pass
2.5304	5	5	100	Pass
2.5643	5	4	80	Pass
2.5982	5	4	80	Pass
2.6320	5	4	80	Pass
2.6659	5	3	60	Pass
2.6998	5	2	40	Pass
2.7336	5	2	40	Pass
2.7675	5	2	40	Pass
2.8014	5	2	40	Pass
2.8352	5	2	40	Pass
2.8691	5	2	40	Pass
2.9030	5	2	40	Pass
2.9368	5	2	40	Pass
2.9707	5	2	40	Pass
3.0046	5	2	40	Pass
3.0384	4	2	50	Pass
3.0723	4	2	50	Pass
3.1062	4	2	50	Pass
3.1400	3	2	66	Pass
3.1739	2	2	100	Pass
3.2078	2	2	100	Pass
3.2416	2	2	100	Pass
3.2755	2	2	100	Pass
3.3094	2	2	100	Pass
3.3432	2	2	100	Pass
3.3771	2	2	100	Pass
3.4110	2	1	50	Pass
3.4448	2	1	50	Pass
3.4787	2	1	50	Pass
3.5126	2	1	50	Pass
3.5464	2	1	50	Pass
3.5803	2	1	50	Pass
3.6142	2	1	50	Pass
3.6480	2	1	50	Pass
3.6819	2	1	50	Pass
3.7158	2	1	50	Pass
3.7496	2	1	50	Pass
3.7835	2	1	50	Pass
3.8174	2	1	50	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

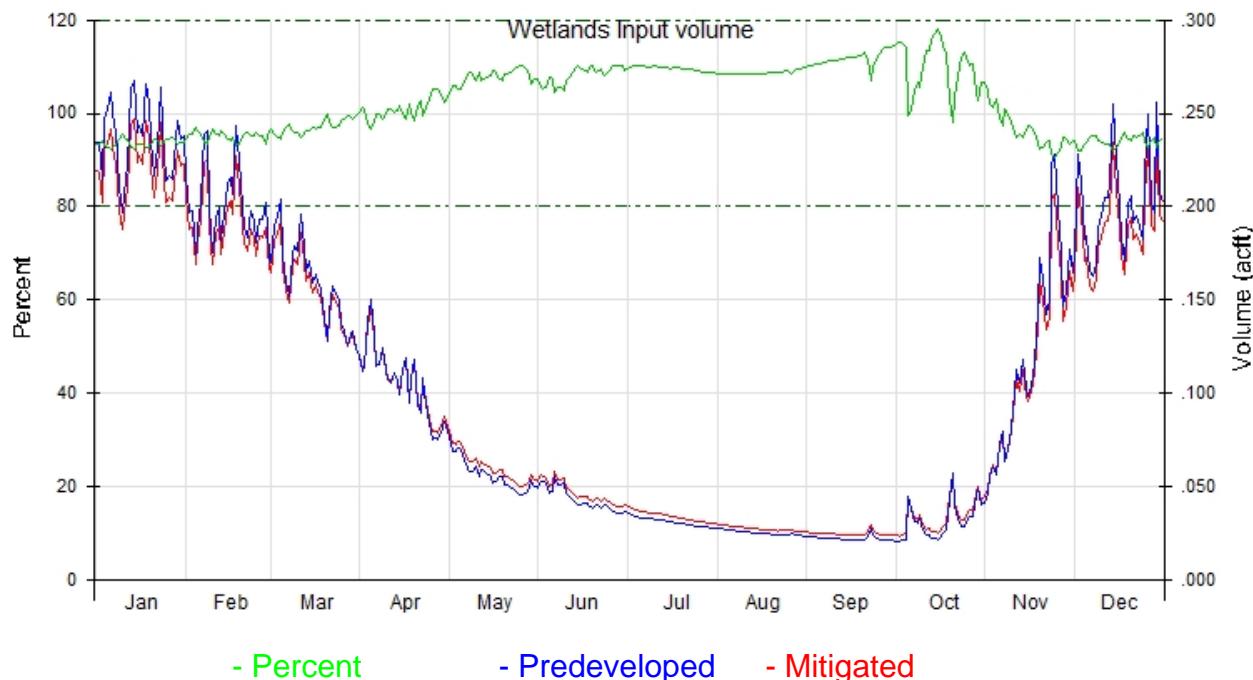
On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Wetland Input Volumes



Wetlands Input Volume for POC 1

Average Annual Volume (acft)

Series 1: 501 POC 1 Predeveloped flow

Series 2: 801 POC 1 Mitigated flow

Month	Series 1	Series 2	Percent	Pass/Fail
Jan	7.2909	6.8243	93.6	Pass
Feb	5.7241	5.4364	95.0	Pass
Mar	4.9600	4.8048	96.9	Pass
Apr	3.1747	3.1922	100.6	Pass
May	1.7721	1.9031	107.4	Pass
Jun	1.3006	1.4041	108.0	Pass
Jul	0.9698	1.0633	109.6	Pass
Aug	0.7833	0.8513	108.7	Pass
Sep	0.6674	0.7442	111.5	Pass
Oct	0.9602	1.0405	108.4	Pass
Nov	3.5582	3.3777	94.9	Pass
Dec	6.1853	5.8106	93.9	Pass

Day	Predevel	Mitigated	Percent	Pass/Fail
Jan1	0.2340	0.2189	93.5	Pass
2	0.2343	0.2184	93.2	Pass
3	0.2146	0.2020	94.2	Pass
4	0.2473	0.2301	93.0	Pass
5	0.2521	0.2337	92.7	Pass
6	0.2616	0.2418	92.4	Pass
7	0.2425	0.2254	93.0	Pass
8	0.2412	0.2247	93.2	Pass
9	0.2101	0.1985	94.5	Pass
10	0.1972	0.1881	95.4	Pass
11	0.2159	0.2043	94.6	Pass
12	0.2216	0.2092	94.4	Pass
13	0.2632	0.2444	92.8	Pass
14	0.2674	0.2473	92.5	Pass

15	0.2399	0.2239	93.3	Pass
16	0.2435	0.2272	93.3	Pass
17	0.2379	0.2226	93.6	Pass
18	0.2655	0.2461	92.7	Pass
19	0.2555	0.2372	92.9	Pass
20	0.2357	0.2205	93.6	Pass
21	0.2165	0.2045	94.5	Pass
22	0.2327	0.2189	94.0	Pass
23	0.2639	0.2452	92.9	Pass
24	0.2432	0.2270	93.3	Pass
25	0.2134	0.2020	94.6	Pass
26	0.2163	0.2047	94.6	Pass
27	0.2143	0.2030	94.7	Pass
28	0.2249	0.2122	94.3	Pass
29	0.2457	0.2296	93.5	Pass
30	0.2364	0.2215	93.7	Pass
31	0.2380	0.2228	93.6	Pass
Feb1	0.2167	0.2047	94.5	Pass
2	0.1965	0.1877	95.5	Pass
3	0.1974	0.1887	95.6	Pass
4	0.1746	0.1694	97.0	Pass
5	0.1876	0.1807	96.3	Pass
6	0.2028	0.1934	95.4	Pass
7	0.2386	0.2236	93.7	Pass
8	0.2403	0.2243	93.3	Pass
9	0.1997	0.1894	94.9	Pass
10	0.1750	0.1688	96.5	Pass
11	0.1941	0.1855	95.6	Pass
12	0.1995	0.1899	95.2	Pass
13	0.1815	0.1746	96.2	Pass
14	0.1957	0.1867	95.4	Pass
15	0.2120	0.2005	94.6	Pass
16	0.2155	0.2032	94.3	Pass
17	0.2066	0.1957	94.7	Pass
18	0.2437	0.2271	93.2	Pass
19	0.2258	0.2113	93.6	Pass
20	0.2007	0.1901	94.7	Pass
21	0.1889	0.1804	95.5	Pass
22	0.1834	0.1758	95.9	Pass
23	0.1977	0.1881	95.2	Pass
24	0.1923	0.1833	95.3	Pass
25	0.1808	0.1735	95.9	Pass
26	0.1928	0.1838	95.4	Pass
27	0.1930	0.1837	95.2	Pass
28	0.2021	0.1890	93.5	Pass
29	0.1732	0.1670	96.4	Pass
Mar1	0.1703	0.1645	96.6	Pass
2	0.1900	0.1815	95.5	Pass
3	0.1949	0.1851	95.0	Pass
4	0.2038	0.1926	94.5	Pass
5	0.1748	0.1676	95.9	Pass
6	0.1601	0.1553	97.0	Pass
7	0.1518	0.1485	97.9	Pass
8	0.1747	0.1680	96.2	Pass
9	0.1790	0.1714	95.8	Pass
10	0.1765	0.1693	95.9	Pass
11	0.1959	0.1856	94.8	Pass
12	0.1793	0.1711	95.5	Pass

13	0.1659	0.1599	96.4	Pass
14	0.1710	0.1644	96.1	Pass
15	0.1592	0.1543	96.9	Pass
16	0.1638	0.1583	96.6	Pass
17	0.1597	0.1548	96.9	Pass
18	0.1560	0.1515	97.1	Pass
19	0.1406	0.1383	98.4	Pass
20	0.1283	0.1279	99.8	Pass
21	0.1438	0.1413	98.3	Pass
22	0.1573	0.1525	96.9	Pass
23	0.1541	0.1495	97.0	Pass
24	0.1496	0.1455	97.3	Pass
25	0.1377	0.1355	98.4	Pass
26	0.1334	0.1319	98.8	Pass
27	0.1258	0.1254	99.7	Pass
28	0.1319	0.1305	99.0	Pass
29	0.1334	0.1317	98.7	Pass
30	0.1244	0.1239	99.6	Pass
31	0.1198	0.1200	100.2	Pass
Apr1	0.1120	0.1134	101.2	Pass
2	0.1142	0.1153	100.9	Pass
3	0.1389	0.1363	98.1	Pass
4	0.1506	0.1454	96.6	Pass
5	0.1323	0.1296	97.9	Pass
6	0.1142	0.1142	100.0	Pass
7	0.1150	0.1150	100.0	Pass
8	0.1243	0.1229	98.8	Pass
9	0.1130	0.1129	99.9	Pass
10	0.1071	0.1079	100.8	Pass
11	0.1058	0.1068	100.9	Pass
12	0.1108	0.1110	100.2	Pass
13	0.1060	0.1067	100.7	Pass
14	0.0991	0.1008	101.7	Pass
15	0.1130	0.1127	99.7	Pass
16	0.1186	0.1171	98.7	Pass
17	0.0945	0.0963	102.0	Pass
18	0.1081	0.1083	100.2	Pass
19	0.1180	0.1161	98.4	Pass
20	0.0938	0.0953	101.6	Pass
21	0.0890	0.0914	102.7	Pass
22	0.1081	0.1076	99.5	Pass
23	0.0941	0.0952	101.2	Pass
24	0.0840	0.0867	103.2	Pass
25	0.0753	0.0793	105.3	Pass
26	0.0759	0.0798	105.1	Pass
27	0.0752	0.0790	105.1	Pass
28	0.0785	0.0818	104.3	Pass
29	0.0851	0.0872	102.5	Pass
30	0.0824	0.0848	102.9	Pass
May1	0.0764	0.0795	104.0	Pass
2	0.0692	0.0733	106.0	Pass
3	0.0686	0.0727	106.1	Pass
4	0.0708	0.0745	105.2	Pass
5	0.0696	0.0733	105.4	Pass
6	0.0648	0.0690	106.5	Pass
7	0.0595	0.0645	108.3	Pass
8	0.0584	0.0635	108.6	Pass
9	0.0585	0.0633	108.3	Pass

10	0.0606	0.0649	107.2	Pass
11	0.0558	0.0607	108.8	Pass
12	0.0593	0.0635	107.1	Pass
13	0.0576	0.0619	107.4	Pass
14	0.0560	0.0604	107.9	Pass
15	0.0553	0.0597	108.0	Pass
16	0.0521	0.0568	109.1	Pass
17	0.0525	0.0571	108.7	Pass
18	0.0554	0.0594	107.2	Pass
19	0.0553	0.0591	106.9	Pass
20	0.0509	0.0553	108.6	Pass
21	0.0508	0.0551	108.5	Pass
22	0.0494	0.0537	108.8	Pass
23	0.0479	0.0524	109.4	Pass
24	0.0464	0.0510	109.9	Pass
25	0.0453	0.0500	110.4	Pass
26	0.0452	0.0499	110.4	Pass
27	0.0461	0.0506	109.7	Pass
28	0.0490	0.0530	108.3	Pass
29	0.0532	0.0565	106.2	Pass
30	0.0500	0.0536	107.3	Pass
31	0.0492	0.0529	107.5	Pass
Jun1	0.0530	0.0559	105.6	Pass
2	0.0529	0.0558	105.3	Pass
3	0.0514	0.0544	105.7	Pass
4	0.0465	0.0501	107.7	Pass
5	0.0470	0.0505	107.5	Pass
6	0.0554	0.0579	104.5	Pass
7	0.0508	0.0537	105.7	Pass
8	0.0511	0.0538	105.4	Pass
9	0.0515	0.0540	104.9	Pass
10	0.0462	0.0495	107.1	Pass
11	0.0447	0.0482	107.9	Pass
12	0.0428	0.0465	108.8	Pass
13	0.0407	0.0447	109.9	Pass
14	0.0400	0.0441	110.1	Pass
15	0.0406	0.0444	109.6	Pass
16	0.0413	0.0451	109.0	Pass
17	0.0411	0.0447	108.9	Pass
18	0.0392	0.0431	109.7	Pass
19	0.0384	0.0423	110.1	Pass
20	0.0403	0.0439	109.0	Pass
21	0.0390	0.0426	109.3	Pass
22	0.0382	0.0418	109.4	Pass
23	0.0404	0.0438	108.3	Pass
24	0.0389	0.0423	108.8	Pass
25	0.0371	0.0407	109.7	Pass
26	0.0362	0.0398	110.1	Pass
27	0.0358	0.0395	110.2	Pass
28	0.0357	0.0393	110.2	Pass
29	0.0353	0.0389	110.2	Pass
30	0.0366	0.0400	109.3	Pass
Jul1	0.0356	0.0390	109.6	Pass
2	0.0348	0.0382	109.9	Pass
3	0.0341	0.0376	110.2	Pass
4	0.0338	0.0372	110.2	Pass
5	0.0334	0.0369	110.2	Pass
6	0.0331	0.0365	110.2	Pass

7	0.0331	0.0364	110.0	Pass
8	0.0328	0.0361	110.0	Pass
9	0.0326	0.0358	110.0	Pass
10	0.0322	0.0355	110.1	Pass
11	0.0321	0.0353	110.0	Pass
12	0.0321	0.0352	109.9	Pass
13	0.0318	0.0349	109.8	Pass
14	0.0315	0.0345	109.7	Pass
15	0.0313	0.0343	109.6	Pass
16	0.0311	0.0341	109.6	Pass
17	0.0307	0.0337	109.7	Pass
18	0.0304	0.0334	109.7	Pass
19	0.0302	0.0331	109.7	Pass
20	0.0299	0.0328	109.6	Pass
21	0.0297	0.0325	109.5	Pass
22	0.0294	0.0322	109.5	Pass
23	0.0292	0.0319	109.4	Pass
24	0.0290	0.0316	109.2	Pass
25	0.0288	0.0314	109.1	Pass
26	0.0286	0.0312	109.0	Pass
27	0.0284	0.0309	109.0	Pass
28	0.0281	0.0306	109.0	Pass
29	0.0279	0.0303	108.9	Pass
30	0.0277	0.0301	108.7	Pass
31	0.0275	0.0299	108.6	Pass
Aug1	0.0274	0.0297	108.5	Pass
2	0.0275	0.0298	108.3	Pass
3	0.0271	0.0294	108.4	Pass
4	0.0268	0.0291	108.4	Pass
5	0.0266	0.0289	108.4	Pass
6	0.0265	0.0287	108.3	Pass
7	0.0263	0.0285	108.4	Pass
8	0.0261	0.0283	108.4	Pass
9	0.0259	0.0281	108.4	Pass
10	0.0257	0.0279	108.4	Pass
11	0.0255	0.0277	108.4	Pass
12	0.0254	0.0275	108.4	Pass
13	0.0253	0.0274	108.4	Pass
14	0.0252	0.0273	108.3	Pass
15	0.0250	0.0271	108.4	Pass
16	0.0248	0.0270	108.5	Pass
17	0.0247	0.0268	108.5	Pass
18	0.0245	0.0266	108.6	Pass
19	0.0244	0.0265	108.7	Pass
20	0.0242	0.0264	108.8	Pass
21	0.0241	0.0263	108.9	Pass
22	0.0243	0.0264	108.9	Pass
23	0.0243	0.0265	108.9	Pass
24	0.0243	0.0264	109.0	Pass
25	0.0243	0.0265	109.0	Pass
26	0.0247	0.0269	108.6	Pass
27	0.0240	0.0262	109.2	Pass
28	0.0237	0.0259	109.6	Pass
29	0.0237	0.0260	109.6	Pass
30	0.0236	0.0259	109.7	Pass
31	0.0232	0.0255	110.0	Pass
Sep1	0.0230	0.0253	110.2	Pass
2	0.0228	0.0252	110.3	Pass

3	0.0227	0.0251	110.4	Pass
4	0.0226	0.0250	110.6	Pass
5	0.0225	0.0249	110.7	Pass
6	0.0223	0.0248	110.9	Pass
7	0.0222	0.0247	111.0	Pass
8	0.0221	0.0246	111.2	Pass
9	0.0220	0.0245	111.3	Pass
10	0.0219	0.0244	111.4	Pass
11	0.0219	0.0244	111.5	Pass
12	0.0217	0.0242	111.7	Pass
13	0.0217	0.0242	111.7	Pass
14	0.0215	0.0241	111.9	Pass
15	0.0214	0.0240	112.0	Pass
16	0.0216	0.0242	111.9	Pass
17	0.0217	0.0243	112.0	Pass
18	0.0216	0.0242	112.3	Pass
19	0.0216	0.0243	112.6	Pass
20	0.0213	0.0241	113.0	Pass
21	0.0229	0.0255	111.5	Pass
22	0.0279	0.0298	107.1	Pass
23	0.0243	0.0267	109.7	Pass
24	0.0224	0.0251	111.8	Pass
25	0.0217	0.0245	112.9	Pass
26	0.0212	0.0241	113.6	Pass
27	0.0211	0.0241	114.0	Pass
28	0.0211	0.0241	114.3	Pass
29	0.0213	0.0243	114.2	Pass
30	0.0208	0.0238	114.5	Pass
Oct1	0.0206	0.0237	114.9	Pass
2	0.0205	0.0236	115.2	Pass
3	0.0210	0.0241	114.7	Pass
4	0.0217	0.0248	114.2	Pass
5	0.0450	0.0447	99.5	Pass
6	0.0385	0.0387	100.7	Pass
7	0.0311	0.0326	105.0	Pass
8	0.0303	0.0323	106.6	Pass
9	0.0329	0.0347	105.6	Pass
10	0.0271	0.0297	109.8	Pass
11	0.0238	0.0270	113.3	Pass
12	0.0241	0.0273	113.6	Pass
13	0.0225	0.0260	115.8	Pass
14	0.0220	0.0257	116.9	Pass
15	0.0215	0.0253	118.1	Pass
16	0.0229	0.0267	116.7	Pass
17	0.0251	0.0287	114.4	Pass
18	0.0268	0.0302	113.0	Pass
19	0.0433	0.0446	103.0	Pass
20	0.0569	0.0559	98.2	Pass
21	0.0399	0.0413	103.5	Pass
22	0.0327	0.0353	108.0	Pass
23	0.0285	0.0320	112.2	Pass
24	0.0287	0.0324	113.0	Pass
25	0.0307	0.0344	112.1	Pass
26	0.0341	0.0375	110.2	Pass
27	0.0341	0.0377	110.5	Pass
28	0.0446	0.0467	104.8	Pass
29	0.0491	0.0504	102.6	Pass
30	0.0399	0.0426	106.7	Pass

31	0.0415	0.0442	106.6	Pass
Nov1	0.0462	0.0485	105.0	Pass
2	0.0551	0.0563	102.2	Pass
3	0.0606	0.0614	101.3	Pass
4	0.0562	0.0578	102.9	Pass
5	0.0725	0.0718	99.0	Pass
6	0.0794	0.0775	97.5	Pass
7	0.0631	0.0636	100.8	Pass
8	0.0697	0.0697	100.0	Pass
9	0.0814	0.0799	98.1	Pass
10	0.1012	0.0970	95.9	Pass
11	0.1127	0.1069	94.9	Pass
12	0.1053	0.1007	95.7	Pass
13	0.1184	0.1123	94.9	Pass
14	0.1024	0.0985	96.1	Pass
15	0.0980	0.0953	97.2	Pass
16	0.1039	0.1008	96.9	Pass
17	0.1158	0.1111	96.0	Pass
18	0.1446	0.1356	93.8	Pass
19	0.1730	0.1598	92.4	Pass
20	0.1621	0.1501	92.6	Pass
21	0.1426	0.1339	93.9	Pass
22	0.1496	0.1405	93.9	Pass
23	0.2225	0.2027	91.1	Pass
24	0.2279	0.2067	90.7	Pass
25	0.1985	0.1815	91.5	Pass
26	0.1753	0.1626	92.7	Pass
27	0.1465	0.1387	94.7	Pass
28	0.1552	0.1467	94.5	Pass
29	0.1769	0.1655	93.6	Pass
30	0.1641	0.1547	94.2	Pass
Dec1	0.1749	0.1645	94.1	Pass
2	0.2283	0.2100	92.0	Pass
3	0.2134	0.1964	92.0	Pass
4	0.1822	0.1704	93.5	Pass
5	0.1845	0.1729	93.7	Pass
6	0.1656	0.1571	94.9	Pass
7	0.1626	0.1551	95.4	Pass
8	0.1693	0.1612	95.2	Pass
9	0.1889	0.1780	94.2	Pass
10	0.1952	0.1833	93.9	Pass
11	0.2047	0.1914	93.5	Pass
12	0.2052	0.1919	93.5	Pass
13	0.2122	0.1981	93.4	Pass
14	0.2552	0.2347	92.0	Pass
15	0.2258	0.2092	92.7	Pass
16	0.2015	0.1889	93.8	Pass
17	0.1834	0.1741	94.9	Pass
18	0.1709	0.1641	96.0	Pass
19	0.2010	0.1901	94.6	Pass
20	0.2061	0.1942	94.3	Pass
21	0.1916	0.1821	95.0	Pass
22	0.1951	0.1853	94.9	Pass
23	0.1895	0.1804	95.2	Pass
24	0.1822	0.1745	95.8	Pass
25	0.2187	0.2056	94.0	Pass
26	0.2498	0.2315	92.7	Pass
27	0.2024	0.1908	94.3	Pass

28	0.1972	0.1873	94.9	Pass
29	0.2556	0.2370	92.7	Pass
30	0.2080	0.1958	94.1	Pass
31	0.2023	0.1914	94.6	Pass

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
Flow Splitter	<input type="checkbox"/>	1420.49		<input type="checkbox"/>	85.01				
East Pond	<input type="checkbox"/>	1420.46		<input type="checkbox"/>	0.00				
Total Volume Infiltrated		2840.95	0.00	0.00		42.50	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

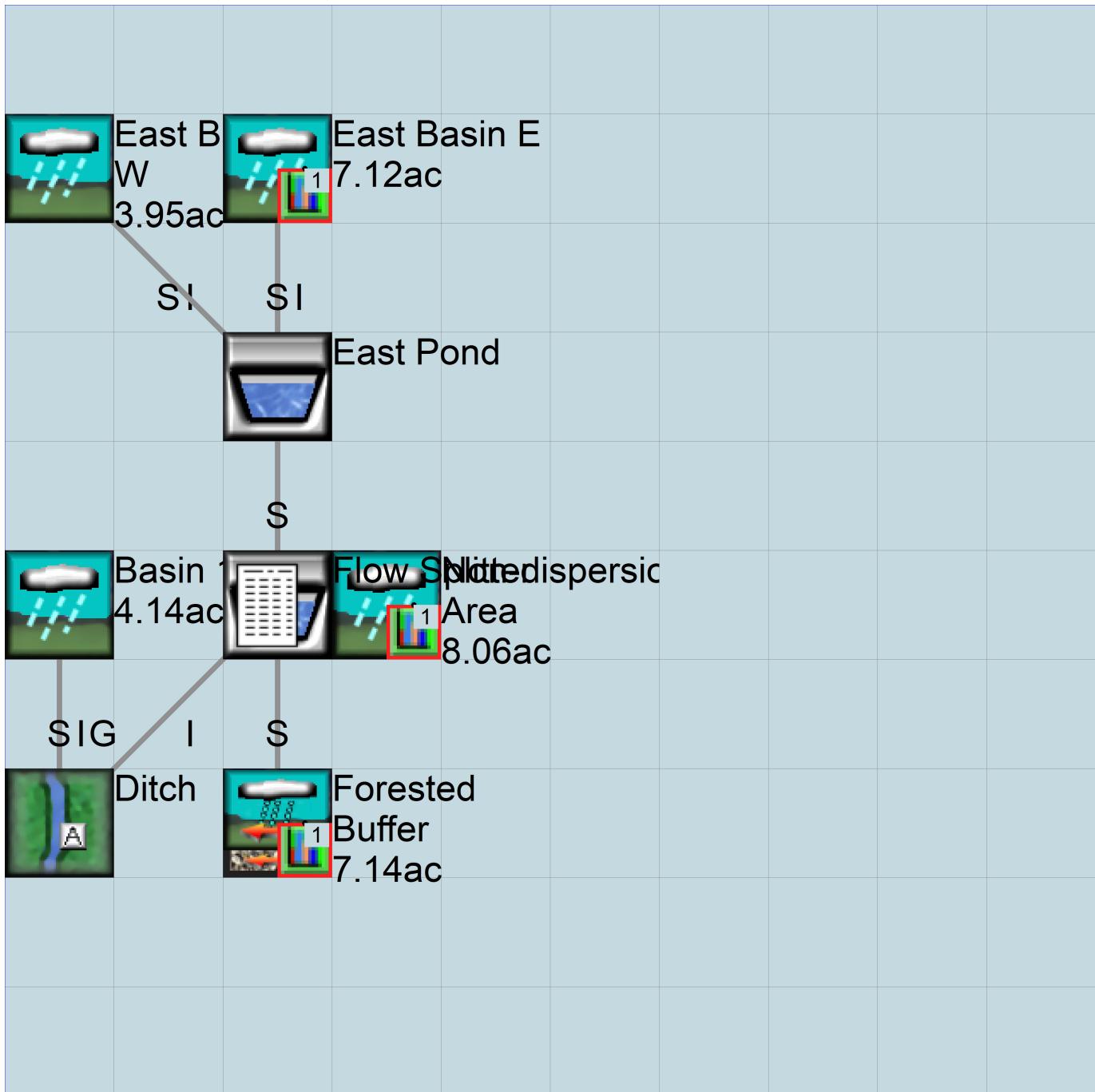
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

Mitigated UCI File

RUN

GLOBAL
WWHM4 model simulation
START 1948 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 2020-07-29_Oslo_East Pond CCS Hydroperiod v10.wdm
MESSU 25 Mit2020-07-29_Oslo_East Pond CCS Hydroperiod v10.MES
27 Mit2020-07-29_Oslo_East Pond CCS Hydroperiod v10.L61
28 Mit2020-07-29_Oslo_East Pond CCS Hydroperiod v10.L62
30 POC2020-07-29_Oslo_East Pond CCS Hydroperiod v101.dat
END FILES

OPN SEQUENCE
INGRP INDELT 00:15
PERLND 17
PERLND 11
IMPLND 2
IMPLND 14
PERLND 12
PERLND 20
RCHRES 1
RCHRES 2
PERLND 38
RCHRES 3
COPY 501
DISPLAY 1
END INGRP
END OPN SEQUENCE
DISPLAY
DISPLAY-INFO1
- #<-----Title----->***TRAN PIVL DIG1 FIL1 PYR DIG2 FIL2 YRND
1 Forested Buffer MAX 1 2 30 9
END DISPLAY-INFO1
END DISPLAY
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 ***
17 C, Lawn, Mod 1 1 1 27 0
11 C, Forest, Mod 1 1 1 27 0
12 C, Forest, Steep 1 1 1 27 0
20 SAT, Forest, Mod 1 1 1 27 0
38 C, Forest, Mod 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 ***
17 0 0 1 0 0 0 0 0 0 0 0 0 0
11 0 0 1 0 0 0 0 0 0 0 0 0 0
12 0 0 1 0 0 0 0 0 0 0 0 0 0
20 0 0 1 0 0 0 0 0 0 0 0 0 0
38 0 0 1 0 0 0 0 0 0 0 0 0 0
END ACTIVITY

PRINT-INFO
<PLS > **** Print-flags ****
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC PIVL PYR ***
17 0 0 4 0 0 0 0 0 0 0 0 0 1 9
11 0 0 4 0 0 0 0 0 0 0 0 0 1 9
12 0 0 4 0 0 0 0 0 0 0 0 0 1 9
20 0 0 4 0 0 0 0 0 0 0 0 0 1 9
38 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 VIRG VLE INFNC HWT ***
17 0 0 0 0 0 0 0 0 0 0 0 0
11 0 0 0 0 0 0 0 0 0 0 0 0
12 0 0 0 0 0 0 0 0 0 0 0 0
20 0 0 0 0 0 0 0 0 0 0 0 0
38 0 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
17 0 4.5 0.03 400 0.1 0.5 0.996
11 0 4.5 0.08 400 0.1 0.5 0.996
12 0 4.5 0.08 400 0.15 0.5 0.996
20 0 4 2 100 0.01 0.5 0.996
38 0 4.5 0.08 400 0.1 0.5 0.996
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
17 0 0 2 2 0 0 0
11 0 0 2 2 0 0 0
12 0 0 2 2 0 0 0
20 0 0 10 2 0 0 0.7
38 0 0 2 2 0 0 0
END PWAT-PARM3

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
17 0.1 0.25 0.25 6 0.5 0.25
11 0.2 0.5 0.35 6 0.5 0.7
12 0.2 0.3 0.35 6 0.3 0.7
20 0.2 3 0.5 1 0.7 0.8
38 0.2 0.5 0.35 6 0.5 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
17 0 0 0 0 2.5 1 0
11 0 0 0 0 2.5 1 0
12 0 0 0 0 2.5 1 0
20 0 0 0 0 4.2 1 0
38 0 0 0 0 2.5 1 0
END PWAT-STATE1

```

```

END PERLND

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

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
2 0 0 1 0 0 0
14 0 0 1 0 0 0
END ACTIVITY

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
2 0 0 4 0 0 0 1 9
14 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 ***
2 0 0 0 0 0
14 0 0 0 0 0
END IWAT-PARM1

IWAT-PARM2
<PLS > IWATER input info: Part 2 *****
# - # *** LSUR SLSUR NSUR RETSC
2 400 0.05 0.1 0.08
14 400 0.01 0.1 0.1
END IWAT-PARM2

IWAT-PARM3
<PLS > IWATER input info: Part 3 *****
# - # ***PETMAX PETMIN
2 0 0
14 0 0
END IWAT-PARM3

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # *** RETS SURS
2 0 0
14 0 0
END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source-> <-Area--> <-Target-> MBLK ***
<Name> # <-factor-> <Name> # Tbl# ***
East Basin W***
PERLND 17 3.95 RCHRES 1 2
PERLND 17 3.95 RCHRES 1 3
East Basin E***
PERLND 17 1.83 RCHRES 1 2
PERLND 17 1.83 RCHRES 1 3
PERLND 11 0.46 RCHRES 1 2
PERLND 11 0.46 RCHRES 1 3
IMPLND 2 4.55 RCHRES 1 5
IMPLND 14 0.28 RCHRES 1 5

```

```

Basin 1 ***
PERLND 11 4.14 RCHRES 3 2
PERLND 11 4.14 RCHRES 3 3
PERLND 11 4.14 RCHRES 3 4
East Basin E ***
PERLND 17 1.83 COPY 501 14
PERLND 17 1.83 COPY 601 14
PERLND 11 0.46 COPY 501 14
PERLND 11 0.46 COPY 601 14
Non-dispersion Area ***
PERLND 11 2.34 COPY 501 12
PERLND 11 2.34 COPY 601 12
PERLND 11 2.34 COPY 501 13
PERLND 11 2.34 COPY 601 13
PERLND 11 2.34 COPY 501 14
PERLND 11 2.34 COPY 601 14
PERLND 12 5.26 COPY 501 12
PERLND 12 5.26 COPY 601 12
PERLND 12 5.26 COPY 501 13
PERLND 12 5.26 COPY 601 13
PERLND 12 5.26 COPY 501 14
PERLND 12 5.26 COPY 601 14
PERLND 20 0.46 COPY 501 12
PERLND 20 0.46 COPY 601 12
PERLND 20 0.46 COPY 501 13
PERLND 20 0.46 COPY 601 13
PERLND 20 0.46 COPY 501 14
PERLND 20 0.46 COPY 601 14
Forested Buffer ***
PERLND 38 7.14 COPY 501 12
PERLND 38 7.14 COPY 501 13
PERLND 38 7.14 COPY 501 14

```

*****Routing*****

```

RCHRES 1 1 RCHRES 2 6
RCHRES 2 .1401 PERLND 38 65
RCHRES 2 COPY 1 17
RCHRES 2 1 RCHRES 3 8
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 DISPLAY 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 Nexit Unit Systems Printer ***
# - #<-----><----> User T-series Engl Metr LKFG
                                         in   out
1      East Pond          1     1     1     1    28    0     1
2      Flow Splitter      2     1     1     1    28    0     1
3      Ditch              1     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 0 1 9
2 4 0 0 0 0 0 0 0 0 0 0 1 9
3 4 0 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 0 0 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 0 2 2 2 2 2
3 0 1 0 0 4 0 0 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 0.02 0.0 100.0 0.5 0.0
2 2 0.01 0.0 0.0 0.5 0.0
3 3 0.09 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 0.0 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 0.0 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 4
Depth Area Volume Outflow1 Velocity Travel Time ***
(ft) (acres) (acre-ft) (cfs) (ft/sec) (Minutes) ***
0.000000 0.330579 0.000000 0.000000
0.105556 0.332909 0.035017 0.027001
0.211111 0.335247 0.070281 0.038185
0.316667 0.337594 0.105792 0.046767
0.422222 0.339949 0.141552 0.054001
0.527778 0.342312 0.177560 0.060375
0.633333 0.344684 0.213818 0.066138
0.738889 0.347063 0.250327 0.071437
0.844444 0.349451 0.287087 0.076370
0.950000 0.351847 0.324100 0.081002
1.055556 0.354251 0.361366 0.085384
1.161111 0.356663 0.398887 0.089551
1.266667 0.359083 0.436662 0.093533
1.372222 0.361512 0.474694 0.097352
1.477778 0.363949 0.512982 0.101027
1.583333 0.366394 0.551528 0.104573
1.688889 0.368847 0.590332 0.108003
1.794444 0.371308 0.629396 0.111327
1.900000 0.373778 0.668720 0.114554
2.005556 0.376255 0.708305 0.117693
2.111111 0.378741 0.748152 0.120751
2.216667 0.381235 0.788262 0.123733
2.322222 0.383738 0.828636 0.126645
2.427778 0.386248 0.869274 0.129491
2.533333 0.388767 0.910177 0.132276
2.638889 0.391294 0.951347 0.135004
2.744444 0.393829 0.992784 0.137677

```

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
2.850000	0.396372	1.034489	0.140300		
2.955556	0.398923	1.076463	0.142874		
3.061111	0.401483	1.118707	0.152112		
3.166667	0.404051	1.161221	0.158968		
3.272222	0.406627	1.204007	0.164492		
3.377778	0.409211	1.247065	0.169418		
3.483333	0.411803	1.290396	0.173973		
3.588889	0.414403	1.334001	0.178264		
3.694444	0.417012	1.377882	0.182352		
3.800000	0.419629	1.422038	0.186276		
3.905556	0.422254	1.466470	0.190063		
4.011111	0.424887	1.511181	0.193731		
4.116667	0.427529	1.556169	0.197296		
4.222222	0.430178	1.601437	0.200768		
4.327778	0.432836	1.646985	0.204159		
4.433333	0.435502	1.692814	0.207473		
4.538889	0.438176	1.738925	0.210719		
4.644444	0.440859	1.785318	0.213902		
4.750000	0.443549	1.831996	0.217025		
4.855556	0.446248	1.878957	0.220093		
4.961111	0.448955	1.926204	0.223110		
5.066667	0.451670	1.973737	0.237026		
5.172222	0.454393	2.021557	0.246597		
5.277778	0.457125	2.069665	0.254227		
5.383333	0.459864	2.118061	0.260970		
5.488889	0.462612	2.166748	0.267164		
5.594444	0.465368	2.215724	0.272970		
5.700000	0.468132	2.264992	0.278480		
5.805556	0.470905	2.314553	0.283753		
5.911111	0.473685	2.364406	0.288829		
6.016667	0.476474	2.414553	0.293737		
6.122222	0.479271	2.464995	0.298499		
6.227778	0.482076	2.515733	0.303133		
6.333333	0.484889	2.566767	0.307652		
6.438889	0.487711	2.618099	0.312067		
6.544444	0.490540	2.669729	0.316388		
6.650000	0.493378	2.721658	0.320622		
6.755556	0.496224	2.773887	0.324775		
6.861111	0.499079	2.826417	0.328855		
6.966667	0.501941	2.879248	0.332865		
7.072222	0.504812	2.932383	0.336809		
7.177778	0.507690	2.985820	0.340693		
7.283333	0.510577	3.039562	0.344519		
7.388889	0.513473	3.093609	0.348290		
7.494444	0.516376	3.147962	0.352010		
7.600000	0.519287	3.202622	0.355681		
7.705556	0.522207	3.257590	0.359304		
7.811111	0.525135	3.312867	0.362883		
7.916667	0.528071	3.368452	0.366419		
8.022222	0.531015	3.424349	0.369914		
8.127778	0.533968	3.480556	0.373369		
8.233333	0.536928	3.537076	0.376787		
8.338889	0.539897	3.593908	0.380168		
8.444444	0.542874	3.651054	0.383514		
8.550000	0.545860	3.708515	0.386827		
8.655556	0.548853	3.766292	0.390106		
8.761111	0.551854	3.824385	0.393354		
8.866667	0.554864	3.882795	0.396571		
8.972222	0.557882	3.941523	0.399759		
9.077778	0.560908	4.000570	0.747693		
9.183333	0.563943	4.059938	1.642357		
9.288889	0.566985	4.119625	2.783877		
9.394444	0.570036	4.179635	3.983475		
9.500000	0.573095	4.239967	5.054375		
END FTABLE	1				
FTABLE	3				
91	4				
Depth	Area	Volume	Outflow1	Velocity	Travel Time***
(ft)	(acres)	(acre-ft)	(cfs)	(ft/sec)	(Minutes)***
0.000000	0.057392	0.000000	0.000000		

0.055556	0.059943	0.003259	0.151302
0.111111	0.062494	0.006660	0.482765
0.166667	0.065045	0.010203	0.954247
0.222222	0.067596	0.013888	1.550813
0.277778	0.070147	0.017714	2.264332
0.333333	0.072698	0.021682	3.089883
0.388889	0.075249	0.025791	4.024385
0.444444	0.077800	0.030043	5.065920
0.500000	0.080351	0.034436	6.213361
0.555556	0.082902	0.038970	7.466145
0.611111	0.085453	0.043647	8.824122
0.666667	0.088004	0.048465	10.28745
0.722222	0.090555	0.053425	11.85654
0.777778	0.093106	0.058527	13.53198
0.833333	0.095657	0.063770	15.31450
0.888889	0.098208	0.069155	17.20497
0.944444	0.100759	0.074682	19.20434
1.000000	0.103310	0.080351	21.31365
1.055556	0.105861	0.086161	23.53399
1.111111	0.108412	0.092113	25.86652
1.166667	0.110963	0.098207	28.31243
1.222222	0.113514	0.104442	30.87295
1.277778	0.116066	0.110820	33.54934
1.333333	0.118617	0.117338	36.34290
1.388889	0.121168	0.123999	39.25491
1.444444	0.123719	0.130802	42.28671
1.500000	0.126270	0.137746	45.43964
1.555556	0.128821	0.144832	48.71502
1.611111	0.131373	0.152059	52.11423
1.666667	0.133924	0.159429	55.63863
1.722222	0.136475	0.166940	59.28958
1.777778	0.139026	0.174592	63.06846
1.833333	0.141578	0.182387	66.97663
1.888889	0.144129	0.190323	71.01549
1.944444	0.146680	0.198401	75.18640
2.000000	0.149231	0.206621	79.49074
2.055556	0.151783	0.214983	83.92990
2.111111	0.154334	0.223486	88.50525
2.166667	0.156885	0.232131	93.21816
2.222222	0.159437	0.240918	98.07002
2.277778	0.161988	0.249846	103.0622
2.333333	0.164539	0.258916	108.1960
2.388889	0.167091	0.268128	113.4729
2.444444	0.169642	0.277482	118.8943
2.500000	0.172194	0.286977	124.4614
2.555556	0.174745	0.296614	130.1756
2.611111	0.177296	0.306393	136.0383
2.666667	0.179848	0.316314	142.0509
2.722222	0.182399	0.326376	148.2146
2.777778	0.184951	0.336581	154.5309
2.833333	0.187502	0.346927	161.0010
2.888889	0.190054	0.357414	167.6264
2.944444	0.192605	0.368044	174.4083
3.000000	0.195157	0.378815	181.3481
3.055556	0.197708	0.389728	188.4470
3.111111	0.200260	0.400782	195.7065
3.166667	0.202811	0.411979	203.1278
3.222222	0.205363	0.423317	210.7122
3.277778	0.207914	0.434797	218.4611
3.333333	0.210466	0.446418	226.3757
3.388889	0.213017	0.458182	234.4574
3.444444	0.215569	0.470087	242.7075
3.500000	0.218121	0.482134	251.1272
3.555556	0.220672	0.494323	259.7178
3.611111	0.223224	0.506653	268.4806
3.666667	0.225775	0.519125	277.4169
3.722222	0.228327	0.531739	286.5280
3.777778	0.230879	0.544495	295.8151
3.833333	0.233430	0.557392	305.2796
3.888889	0.235982	0.570432	314.9226

```

3.944444 0.238534 0.583613 324.7454
4.000000 0.241085 0.596935 334.7493
4.055556 0.243637 0.610400 344.9356
4.111111 0.246189 0.624006 355.3055
4.166667 0.248741 0.637754 365.8602
4.222222 0.251292 0.651644 376.6010
4.277778 0.253844 0.665676 387.5291
4.333333 0.256396 0.679849 398.6458
4.388889 0.258948 0.694164 409.9522
4.444444 0.261499 0.708621 421.4496
4.500000 0.264051 0.723220 433.1393
4.555556 0.266603 0.737960 445.0225
4.611111 0.269155 0.752842 457.1003
4.666667 0.271707 0.767866 469.3740
4.722222 0.274259 0.783032 481.8447
4.777778 0.276810 0.798339 494.5138
4.833333 0.279362 0.813788 507.3824
4.888889 0.281914 0.829379 520.4517
4.944444 0.284466 0.845112 533.7228
5.000000 0.287018 0.860987 547.1971
END FTABLE 3
FTABLE 2
22 5
Depth      Area      Volume   Outflow1  Outflow2  Velocity  Travel Time***  

(ft)       (acres)   (acre-ft) (cfs)     (cfs)     (ft/sec)  (Minutes)***  

0.000000  0.020670  0.000000  0.000000  0.000000  

0.010000  0.020670  0.000206  0.010000  0.000000  

0.020000  0.020670  0.000413  0.010000  0.010000  

0.040000  0.020670  0.000826  0.010000  0.030000  

0.050000  0.020670  0.001033  0.010000  0.040000  

0.060000  0.020670  0.001240  0.010000  0.050000  

0.080000  0.020670  0.001653  0.010000  0.070000  

0.100000  0.020670  0.002067  0.010000  0.090000  

0.200000  0.020670  0.004134  0.010000  0.190000  

0.300000  0.020670  0.006201  0.010000  0.290000  

0.400000  0.020670  0.008268  0.010000  0.390000  

0.500000  0.020670  0.010335  0.010000  0.490000  

0.600000  0.020670  0.012402  0.010000  0.590000  

0.700000  0.020670  0.014469  0.010000  0.690000  

0.800000  0.020670  0.016536  0.010000  0.790000  

0.900000  0.020670  0.018603  0.010000  0.890000  

1.000000  0.020670  0.020670  0.010000  0.990000  

2.000000  0.020670  0.041340  0.010000  1.990000  

4.000000  0.020670  0.082680  0.010000  3.990000  

6.000000  0.020670  0.124020  0.010000  5.990000  

8.000000  0.020670  0.165360  0.010000  7.990000  

10.00000  0.020670  0.206700  0.010000  9.990000
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    1.167          PERLND  1 999 EXTNL  PREC  

WDM    2 PREC    ENGL    1.167          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  

COPY   601 OUTPUT MEAN 1 1    48.4    WDM    901 FLOW    ENGL    REPL  

RCHRES 3 HYDR  RO    1 1    1        WDM    1000 FLOW   ENGL    REPL  

RCHRES 3 HYDR STAGE 1 1    1        WDM    1001 STAG   ENGL    REPL
END EXT TARGETS

```

```

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

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

MASS-LINK 4 RCHRES INFLOW IVOL
PERLND PWATER AGWO 0.083333
END MASS-LINK 4

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

MASS-LINK 6 RCHRES INFLOW
RCHRES ROFLOW
END MASS-LINK 6

MASS-LINK 8 RCHRES INFLOW IVOL
RCHRES OFLOW OVOL 2
END MASS-LINK 8

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

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

MASS-LINK 14 COPY INPUT MEAN
PERLND PWATER AGWO 0.083333
END MASS-LINK 14

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

MASS-LINK 65 PERLND EXTNL AGWLI
RCHRES OFLOW OVOL 1 12.00000
END MASS-LINK 65

```

END MASS-LINK

END RUN

Predeveloped HSPF Message File

Mitigated HSPF Message File

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