

ENGINEERING REPORT

Stormwater Drainage Report

Edmonds SD – College Place Campus
Lynnwood, WA
July 2025



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Edmonds School District – College Place Campus
Coughlin Porter Lundeen
Project No. C24084
July 2025

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I. PROJECT OVERVIEW

GENERAL DESCRIPTION

This Storm Drainage Report was written per the 2019 Department of Ecology Stormwater Management Manual for Western Washington.

College Place Elementary and Middle School will be located at 7501 208th St SW, Lynwood, WA 98036. The site is in the SW ¼ of Section 20, Township 27 N, Range 04E, Willamette Meridian. The site consists of two Snohomish County parcels (parcel numbers 27042000300300 and 27042000300200). This approximately 27.85 acre lot is bounded by 76th Ave W to the west, 208th St SW to the south, 204th St SW to the north and the City of Lynwood Municipal Golf Course to the east.

The project will re-develop the existing site to include a new combined middle and elementary schools building with associated utilities, landscaping and hardscaping as well as right of way improvements on 76th Ave W, 208th St SW and 204th St SW.

PRE-DEVELOPED SITE CONDITIONS

The existing parcels are fully developed consisting of middle school and elementary school campuses. The south parcel (27042000300300) consists of eight middle school buildings with associated parking, pedestrian paths, and landscaping. The south parcel also includes a track, athletic field and softball field that are underdrained. The north parcel (27042000300200) consists of six elementary school buildings with associated parking lots, pedestrian paths, and landscaping. The total impervious area is 674,573 sf (15.49 ac) and 511,792 sf (11.75 ac) of pervious area. On both parcels catch basins and downspouts collect runoff from the site and convey it to the city storm main near 208th St SW and 72nd Ave W. The site also contains below-grade utilities including cable/telephone, gas, water, sewer and power. Please see **Figure 2 – Existing Conditions** in Appendix A for the *Existing Conditions Map*.

The parcels drain to the city stormwater main eventually discharging to Hall Creek within the Hall Creek-Ballinger Basin. The site generally slopes from northeast to southwest, with a maximum elevation of 445 ft and a minimum elevation of 409 ft. The site generally slopes gently to moderately. However, in some areas slopes exceed 40% for up to 10ft.

A geotechnical investigation and report titled *Geotechnical Engineering Report, College Place Elementary & Middle School Campus* was prepared by GeoTest in February 2025. Subsurface conditions generally consisted of medium dense uncontrolled fill overlying dense to very dense glacial till. Deeper borings revealed a layer of very dense advanced outwash material underlying the glacial till layer. In the Southeastern portion of the site advanced outwash material was generally encountered relatively close to the surface. The near surface presence of the advanced outwash material allows for infiltration in the southeastern portion of the site at a rate of 1.01 in/hr. Groundwater was not encountered during the initial borings and test pits however a monitoring well was installed in the southeast of the site. The monitoring well recorded a maximum groundwater elevation of 24.48 ft below existing grade during the 2024 wet season. Groundwater is not anticipated to be present in significant volumes during excavation, but perched groundwater may be encountered during the wet season and/or following periods of extended precipitation.

POST-DEVELOPED SITE CONDITIONS

Site improvements will include the construction of a new school building encompassing both the middle and elementary schools. Site improvements will include site access roads, parking lots, pedestrian paths, soft surface play area, and associated landscaping. The project will result in an impervious area of 650,619 SF (14.93 ac) and 515,684 SF (11.84 ac) of pervious area.

Site work is anticipated to include the installation of new below grade utilities, site grading and paving. New utility systems on the site will include water, sanitary sewer, stormwater drainage, power, communication and gas. Work in the right of way will include extending sidewalk in 76th Ave S and 208th St SW to create a multimodal path.



Relocation of power poles and catch basins in the ROW will be required to avoid conflicts with the new sidewalk layout.

Stormwater runoff from the project site will continue to drain to the storm main near 208th St SW and 72nd Ave W which ultimately discharges to Hall Creek. The project will collect stormwater in onsite catch basins and roof downspouts. Runoff from pollution generating surfaces will be treated by on-site in modular wetland systems and by on-site bioretention. Stormwater will then be conveyed to an onsite combined infiltration and detention chamber system in the southeast portion of the site.

PROPOSED ONSITE STORMWATER INFRASTRUCTURE

The 2019 DOE Western Washington Storm Water Manual outlines nine minimum requirements in section I-3 that must be addressed prior to permit approval. For this project, all minimum requirements will be applied to both new and replaced impervious surfaces in the west basin based on our analysis of the “Flow Charts for Determining Requirements for New and Redevelopments” (See Appendix A, **Figure 7** for *Flow Chart for New Development Redevelopment* from Volume I Chapter 3 of the DOE WWSWM).

A detailed description of the minimum requirements and the proposed onsite stormwater infrastructure is provided in the following section.

II. MINIMUM REQUIREMENTS

The 2019 Surface Water Engineering Standards outlines nine minimum requirements that must be addressed prior to permit approval. For this project, all minimum requirements will be applied to both new and replaced impervious surfaces based on our analysis of the Flow Charts for Determining Minimum Requirements for New Projects. A summary of each of these minimum requirements, and the approach this project will take to address these requirements, are listed below.

MR1 (PREPARATION OF STORM WATER SITE PLANS)

Stormwater site plans and reports that address each of the applicable minimum requirements are prepared by a licensed civil engineer and included as part of the Site Development Permit.

MR2 (CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN)

A Construction Storm Water Pollution Prevention Plan will be prepared as a separate document and will be included in the Site Development Permit.

MR3 (SOURCE CONTROL OF POLLUTION)

Runoff from surface level pollution generating impervious surfaces (PGIS) and pollution generating pervious surfaces (PGPS) will be treated prior to discharge into the public storm system. Source control BMPs will be selected, designed, and maintained in accordance with the DOE Manual. These include the following:

- S417 BMPs for Maintenance of Stormwater Drainage and Treatment Systems
- S421 BMPs for Parking and Storage of Vehicles and Equipment
- S411 BMPs for Landscaping and Lawn/Vegetation Management
- S435 BMPs for Pesticide and an Integrated Pest management Program
- S442 BMPs for Labeling Storm Drain inlets on Your Property
- S443 BMPs for Fertilizer Application
- S450 BMPs for irrigation

MR4 (PRESERVATION OF NATURAL DRAINAGE SYSTEM AND OUTFALLS)

The proposed development will match the existing basins and maintain a general slope from North to South. The site will continue to discharge to the existing storm main under 208th Street SW.

MR5 (ON-SITE STORM WATER MANAGEMENT)

The project will employ On-site Stormwater Management to meet the requirements set forth in the 2019 Department of Ecology Stormwater Management Manual. Based on the analysis of Figure I-3.3 (See Appendix A for **Figure 8**) – *Flow Chart for Determining LID Requirements for Minimum Requirements (MR) #5* – On-site Stormwater Management, the project is required to evaluate the following BMP's under List NO. 2:

- **Surface Type: Lawn and Landscape Area:**
 - **BMP T5.13 Post-Construction Soil Quality and Depth:** All new landscaping will include 8" of compost amended soil.
- **Surface Type: Roofs:**
 - **BMP T5.30 Full Dispersion:** Dispersion is infeasible as the future buildings and site improvements do not allow sufficient space on site to provide a dispersion area.
 - **BMP T5.10A: Downspout Full Infiltration:** Full infiltration is not feasible because not all soils on site are compatible with infiltration, per the geotechnical report.
 - **BMP T7.30: Bioretention:** There is insufficient landscaped space around the building to provide bioretention for roof downspouts.

- **BMP T5.30 Downspout Dispersion:** Downspout Dispersion is infeasible because there is not a sufficient flow path with native vegetation to create a downspout dispersion area.
- **BMP T5.15 Perforated Stub-out Connections:** Perforated stub-out connections are infeasible as the downspouts are located adjacent to paved surfaces and hard compacted surfaces that make maintenance of perforated stub-out connections infeasible.
- **Surface Type: Other Hard Surfaces:**
 - **BMP T5.30 Full Dispersion:** Dispersion is infeasible as the future buildings and site improvements do not allow sufficient space on site to provide a dispersion area.
 - **BMP T5.15 Permeable Pavements:** Based on a geotechnical analysis, the native soils have negligible infiltration capacity, making permeable pavements infeasible. However, dedicated emergency access drives will be constructed from a grass-pave system, though no infiltration is anticipated for this pavement.
 - **BMP T7.30: Bioretention:** Bioretention will be used on the south of the site to treat runoff from a portion of the proposed bus drive and the southwest portion of the elementary school parking lot. Non-infiltrative bioretention will also be used to treat the north and southeast portions of the elementary school parking lot. See Figure 3 – Proposed Conditions for areas discharging to bioretention.

MR6 (RUNOFF TREATMENT)

The 2019 Department of Ecology Standards include requirements for water quality treatment. According to Section I-3.4.6 of the SWMM a project is required to provide water quality treatment if the amount of pollution generating impervious surface (PGIS) is greater than 5,000 square feet.

The new parking areas, access drive, and synthetic turf fields will result in a total PGIS of 310,931 sf. Water quality treatment will be done prior to site discharge.

MR7 (FLOW CONTROL)

The 2019 Department of Ecology Standards includes requirements for flow control. According to Section I-3.4.7 of the SWMM a project is required to provide flow control BMPs if the amount of impervious surfaces is greater than 10,000 square feet.

The fully developed site will include new buildings, asphalt play areas, and new on-site roads and parking stall with a total on-site impervious area of approximately 585,561 sf. Flows from these impervious areas will be collected and detained in a combined detention and infiltration chamber system prior to being discharged.

All flow control methods will be sized to meet Department of Ecology performance standards.

MR8 (WETLAND PROTECTION)

This requirement is not applicable since there are no existing wetlands or wetland buffers within the project area or downstream of the project site.

MR9 (OPERATION AND MAINTENANCE)

An Operations and Maintenance (O&M) Manual will be included in Appendix C of this report. The O&M Manual will remain on file with the project owner after completion to inform the property manager of maintenance requirements.

III. OFF-SITE ANALYSIS

FIELD INSPECTION

Site visits have been made to gather information including a Level 1 Downstream Analysis. No drainage problems were observed onsite. Please refer to downstream analysis below for more information.

DRAINAGE SYSTEM DESCRIPTIONS

The College Place Campus is located within the Hall Creek-Ballinger Basin (See Figure 5 – City of Lynwood Watershed).

The existing site onsite stormwater infrastructure consists of a private stormwater collection system of catch basins and roof downspout connections. Stormwater is generally conveyed south to the public stormwater main at a connection point near 208th St SW and 72nd Ave W.

The design team is considering infiltration and bioretention on the south side of the site to meet LID treatment goals per MR#5. A later version of this report will discuss this more thoroughly.

UPSTREAM ANALYSIS

Two storm mains collect runoff from the upstream catchment north of the site and convey stormwater south through the site before it is discharged back to the public main near 208th St SW and 72nd Ave W. Stormwater from the residential neighborhood to the north and from the east side of 76th Ave W is collected by catch basins and conveyed along 76th Ave W. Near the intersection of 206th St SW and 76th Ave W, the public storm main discharges to storm pipes draining to the east in the College Place Campus site. Runoff from the adjacent municipal golf course to the east of the site is collected by turf drains and catch basins. Stormwater is conveyed through a system of ponds and flow control structures prior to being discharged to a storm main running south along the eastern boundary of the College Place Campus site. The storm mains join near the existing track and field and continue south to the downstream discharge near 208th St SW and 72nd Ave W.

The proposed project will replace these connections with two new storm mains matching the capacity of the existing pipes. The storm mains will remain active during construction with no interruptions to the service. The project does not propose any modifications to the drainage patterns upstream of the site.

DOWNSTREAM ANALYSIS

Runoff from the site will be discharge to the existing stormwater main near 208th St SW and 72nd Ave W. Stormwater will continue to flow south below 74th Ave W through a 30" concrete storm main for approximately 703 ft. The 30" concrete storm main discharges to a 36" concrete storm main flowing east below 210th St SW for approximately 228 ft. Runoff is discharged to a 30" concrete storm main flowing south between 72nd Ave W and 70th Ave W for approximately 389 ft. Runoff continues through the city storm drainage network before being discharged to Hall Creek near 216th St SW.

IV. FLOW CONTROL AND WATER QUALITY FACILITY ANALYSIS AND DESIGN

EXISTING SITE HYDROLOGY

The development is concentrated on an existing site totaling 22.98 acres and includes existing structures, hardscape, and associated landscaping. An additional 4.54 acres will be demolished and converted to pervious area. Because this area will not be collected by the on-site conveyance system, it will not be included in flow control and water quality calculations and will be considered off-site. Proposed right-of-way work prior to dedication occurs on 0.75 acres of land, with runoff draining into the ROW and discharging to city mains. The existing onsite, offsite, and ROW conditions can be seen in Figure 2 – *Existing Conditions Map* in Appendix A.

Table 1 – Existing On-site Area	
Area Type	Area
<i>Units</i>	<i>Square Feet (Acres)</i>
PGIS	96,217 (2.21)
NPGIS	303,112 (6.96)
Roof	129,501 (2.97)
Pervious	427,267 (9.81)
Total	956,098 (21.95)

Table 2 – Existing Off-site Area	
Area Type	Area
<i>Units</i>	<i>Square Feet (Acres)</i>
PGIS	14,255 (0.33)
NPGIS	20,900 (0.48)
Roof	77,835 (1.79)
Pervious	84,531 (1.94)
Total	197,521 (1.94)

Table 3 – Existing ROW Area

Area Type	Area
<i>Units</i>	<i>Square Feet (Acres)</i>
PGIS	14,425 (0.33)
NPGIS	18,328 (0.42)
Pervious	0
Total	32,753 (0.75)

DEVELOPED SITE HYDROLOGY

The project includes the construction of a new school building with associated parking areas, play areas, landscaping and utilities (water, sanitary sewer, and stormwater). Runoff from the north portion of the site including the middle school parking lot, building and associated courtyards, soft play areas and athletic facilities will be collected by catch basins and conveyed directly to a combined infiltration and detention chamber system. The north portion of the elementary school parking lot, and adjacent section of access drive and auxiliary parking will be collected by catch basins and conveyed to a bioretention facility prior to being discharged to the infiltration/detention facility. The remainder of the elementary school parking lot, bus drive and auxiliary parking lot will drain to one of two bioretention facilities prior to being discharged to the existing storm main on-site. A portion of the elementary school bus drive and the southeast corner of the parking lot will sheet flow to the ROW where it will be collected by existing and replaced basins discharging to the city storm main. See Table 4 below for a detailed breakdown of on-site areas.

Table 4 – Proposed On-site Area						
Area Type	Discharge to Chambers	Discharge to North ES Bioretention	Discharge to South ES Bioretention	Discharge to South Drive Bioretention	Bypass	Total Area
<i>Units</i>	<i>Square Feet (Acres)</i>	<i>Square Feet (Acres)</i>	<i>Square Feet (Acres)</i>	<i>Square Feet (Acres)</i>	<i>Square Feet (Acres)</i>	<i>Square Feet (Acres)</i>
PGIS	228,723 (5.25)	50,385 (1.16)	6,793 (0.16)	17,571 (0.40)	7,459 (0.17)	310,931 (7.14)
NPGIS	144,424 (3.32)	12,781 (0.29)	2,549 (0.06)	1,636 (0.04)	1,216 (0.03)	162,606 (3.73)
Roof (NPGIS)	112,024 (2.57)	0	0	0	0	112,024 (2.57)
Pervious	304,691 (6.99)	22,428 (0.51)	5,005 (0.11)	9,306 (0.21)	13,593 (0.31)	334,954 (7.69)
Total	789,862 (18.13)	85,594 (1.96)	14,347 (0.33)	28,513 (0.65)	22,268 (0.51)	940,584 (21.59)

Demolition of the existing middle school will occur in the southwest corner of the site. Following the demolition of the middle school, the area will be converted into pervious area. The existing circulation paths and a parking lot will be maintained to allow access to this portion of the site. See Table 5 below for a detailed breakdown of off-site area.

Table 5 – Proposed Off-site Area	
Area Type	Area
<i>Units</i>	<i>Square Feet (Acres)</i>
PGIS	11,189 (0.26)
NPGIS	15,981 (0.37)
Pervious	167,613 (3.85)
Total	194,783 (4.47)

The project proposes the replacement of sidewalk along 208th St SW, 204th St W, and 76th Ave W to include a wider sidewalk creating a multimodal path. Runoff from the sidewalk and landscape strips will continue to drain

into the ROW and be collected by catch basins in the existing streets discharging to city mains. See Table 6 below for a detailed breakdown of ROW area following dedication.

Table 6 – Proposed ROW Area (After Dedication)	
Area Type	Area
<i>Units</i>	<i>Square Feet (Acres)</i>
PGIS	7427 (0.17)
NPGIS	30,461 (0.70)
Pervious	13,117 (0.30)
Total	51,005 (1.17)

The proposed onsite, offsite, and ROW conditions can be seen in **Figure 3 – Proposed Conditions** in Appendix A.

FLOW CONTROL

The project proposes over 10,000 SF of new and replaced impervious area and therefore is required to match predeveloped forested conditions. Stormwater from the proposed buildings and surrounding impervious area will be conveyed to a combined infiltration and detention facility in the southeast of the site. The required live storage volume is 52,272 CF. The proposed flow control facility will provide 57,324 CF of live storage. Additional flow control will be provided by infiltrating bioretention in the elementary school parking lot and the south end of the bus drive. A 0.51 acre area of the elementary school parking lot will bypass flow control. The flow control system is designed to compensate for the uncontrolled bypass area such that the net effect at the point of convergence downstream is the same with or without bypass.

The capacity of the chamber system and bioretention was evaluated using WWHM software to size the infiltration/detention facilities in compliance with DOE standards. The calculations for the infiltration/detention facilities are included in Appendix B.

The area referred to above as off-site area includes conversion of the existing middle school and associated hardscape into pervious landscaped area. No new stormwater infrastructure will be installed in this section of the site. Because this section of the site is only being converted to pervious area and it is not collected by the on-site conveyance system, it is not included in flow control and water quality calculations.

WATER QUALITY

This project includes parking lots, an access drive and synthetic turf fields, subject to pollutants generated by cars and synthetic materials, and therefore this project will provide runoff treatment in accordance with “Enhanced, Basic” water quality. Pollution generating flows from the new bus drive, parking areas, and synthetic turf fields will be conveyed to linear modular wetland systems prior to being collected in the infiltration and detention system. Water quality treatment for a portion of the bus loop and elementary school parking lots will be provided by the proposed bioretention areas. The water quality treatment units have been sized based on the tributary area that flows directly to each facility. These areas include non-PGIS walkways as well as roads, maintenance strips and synthetic turf fields.

The WWHM model was used to analyze the tributary areas to each water quality vault to ensure each unit meets the required runoff treated. The modular wetland system will be sized by the manufacturer based on the water quality flow rates provided by calculation in WWHM. The runoff flow rates calculated in WWHM for each phase will be provided in a later version of this report.



APPENDIX A: SUPPORTING FIGURES

FIGURE 1 – VICINITY MAP – VICINITY MAP

FIGURE 2 – EXISTING CONDITIONS

FIGURE 3 – PROPOSED CONDITIONS

FIGURE 4 – CITY OF LYNNWOOD CRITICAL AREAS MAP

FIGURE 5 – CITY OF LYNNWOOD WATERSHEDS MAP

FIGURE 6 – FLOW CHART FOR NEW DEVELOPMENT

FIGURE 7 – FLOW CHART FOR REDEVELOPMENT

FIGURE 8 – FLOW CHART FOR LID REQUIREMENTS

FIGURE 9 – UPSTREAM ANALYSIS MAP

FIGURE 10 – DOWNSTREAM ANALYSIS MAP

FIGURE 11 – NRCS SOIL MAP



FIGURE I
Vicinity Map

Project: College Place Campus - Edmonds SD

Project No: C24084

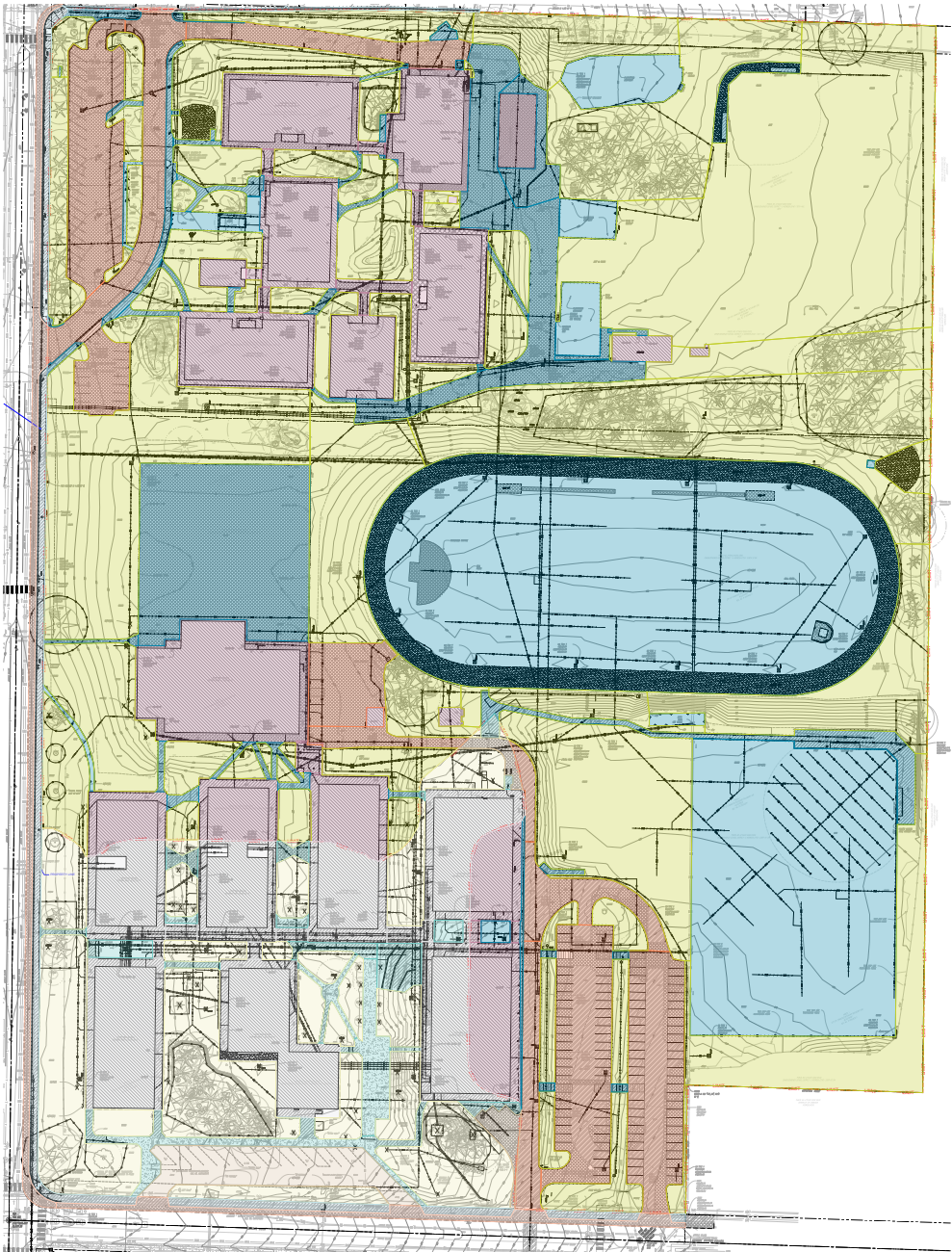
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scale: 1:200



Legend

Description	Quantity	Unit
Offsite - NPGIS	20,900	sf
Offsite - Pervious	84,531	sf
Offsite - PGIS	14,255	sf
Offsite - Roof	77,835	sf
Onsite - NPGIS	303,112	sf
Onsite - Pervious	472,267	sf
Onsite - PGIS	96,217	sf
Onsite - Roof	129,501	sf
ROW - NPGIS	18,328	sf
ROW - PGIS	14,425	sf

FIGURE 2

Existing Conditions Map

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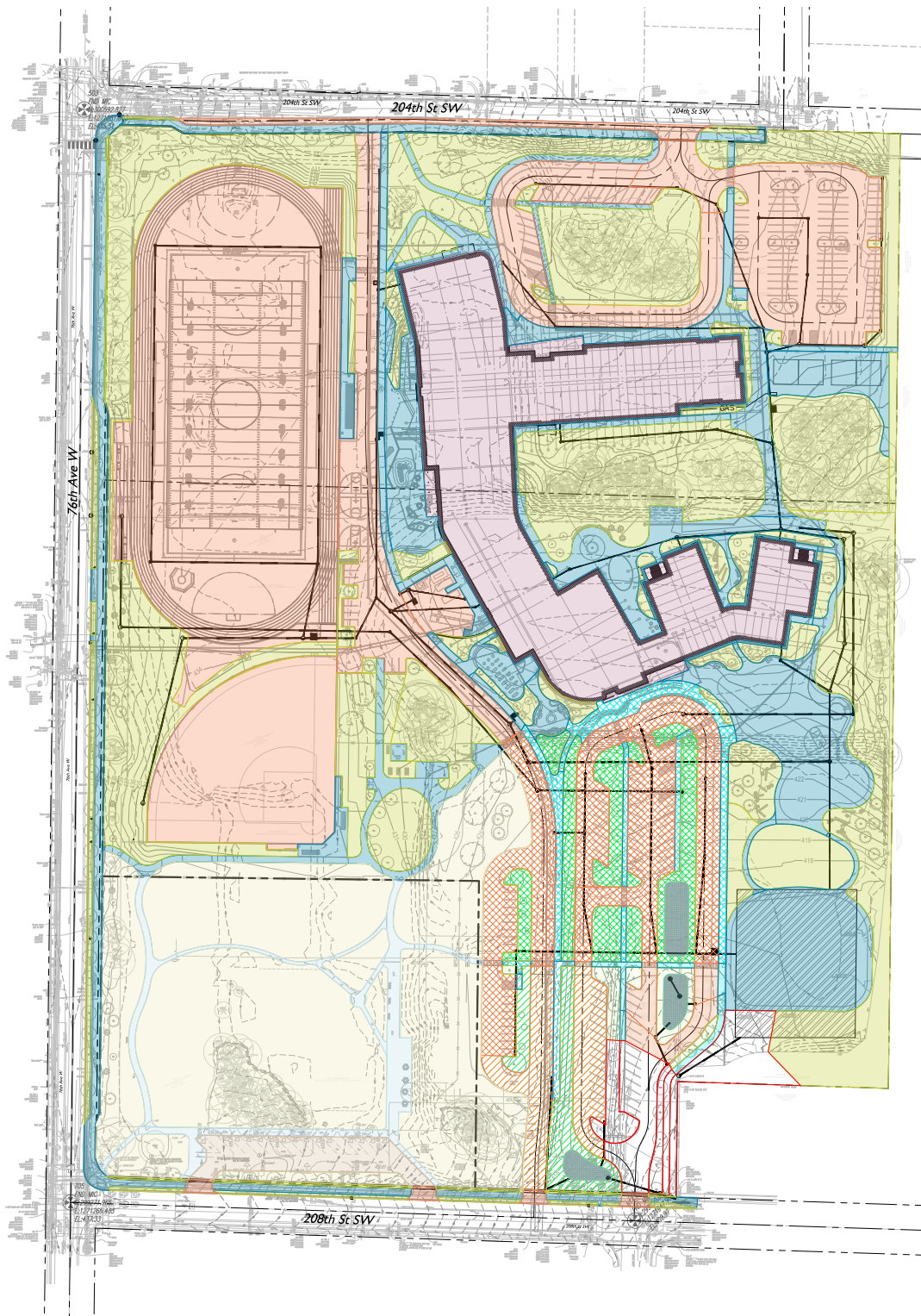
Project No: C24084 Date: 06/27/2025

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scale: 1:200



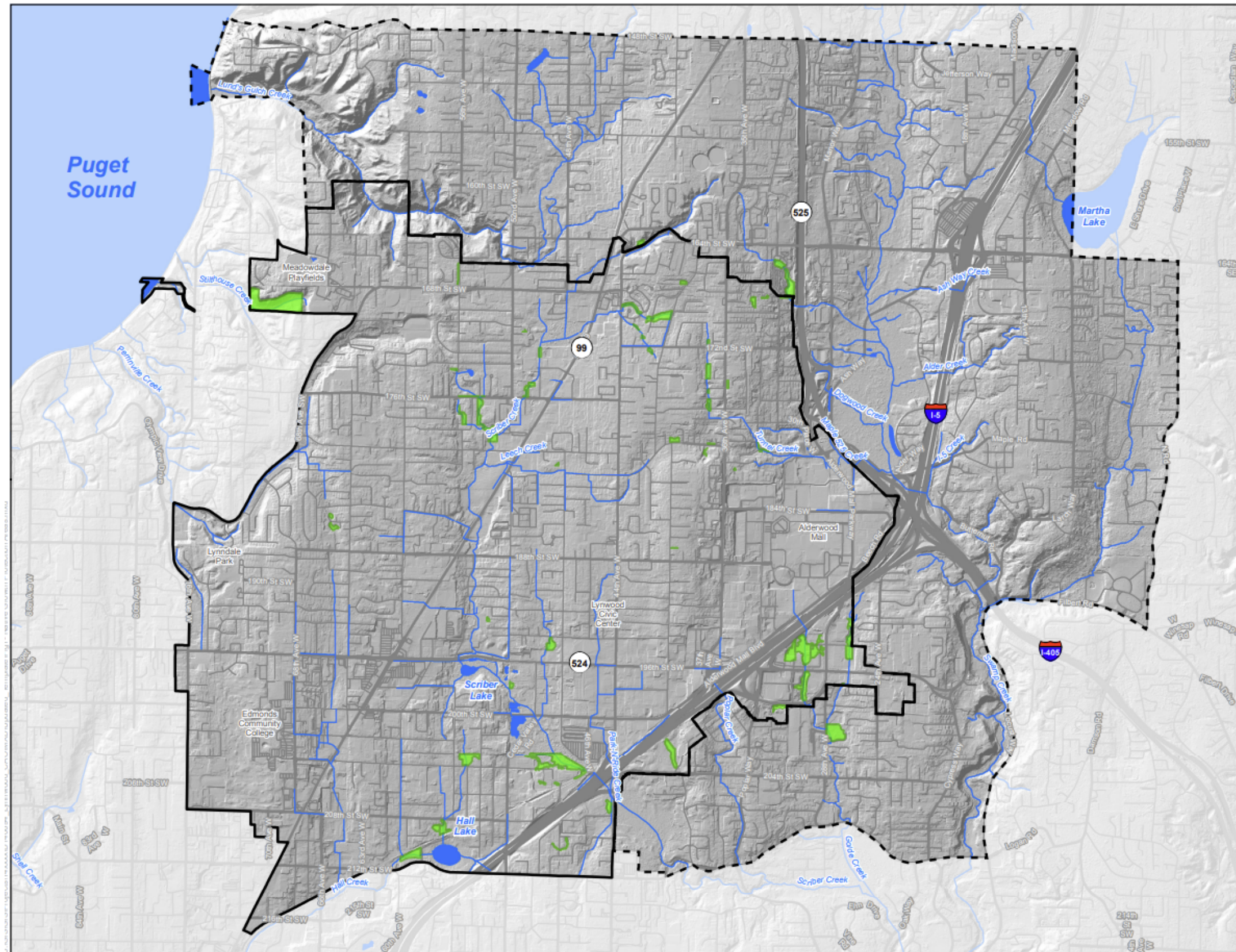
On-Site Area		
Description	Quantity	Unit
Bioretention (South Drive)	1,346	sf
Bioretention (North ES Bioretention)	2,540	sf
Bioretention (South ES Bioretention)	1,718	sf
Bypass Pervious	13,593	sf
Lawn (North ES Bioretention)	22,428	sf
Lawn (South ES Bioretention)	5,005	sf
Lawn (South Drive Bioretention)	9,306	sf
Lawn	304,991	sf
NPGIS (North ES Bioretention)	12,781	sf
NPGIS (South ES Bioretention)	2,549	sf
NPGIS Bypass	1,216	sf
NPGIS (South Drive Bioretention)	1,636	sf
NPGIS	144,424	sf
PGIS (North ES Bioretention)	50,385	sf
PGIS (South ES Bioretention)	6,793	sf
PGIS Bypass	7,459	sf
PGIS (South Drive Bioretention)	17,571	sf
PGIS	288,723	sf
Roof	112,024	sf

Off-site Area		
Description	Quantity	Unit
Off-site Pervious	167,613	sf
Off-site PGIS	11,189	sf
Offsite NPGIS	15,981	sf

ROW Area		
Description	Quantity	Unit
ROW Lawn	13,117	sf
ROW NPGIS	30,461	sf
ROW PGIS	7,427	sf

FIGURE 3

Proposed Conditions Map



ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Native Growth Protection Areas

Legend

- Native Growth Protection Area
- Stream
- City Limits
- Municipal Urban Growth Area
- Water Body

0 0.5
Miles



SOURCE: Snohomish County, 2013; City of Lynnwood, 2014; ESA, 2016; Puget Sound LIDAR Consortium, 2003

This figure is intended for planning purposes only. Environmentally critical areas layers depicted in this figure are based on available City of Lynnwood, Snohomish County, and Washington State inventory information, and do not represent surveyed boundaries. The City makes no representation or warranty as to this product's accuracy or location of any mapped features. For more information, contact the City of Lynnwood.

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FIGURE 4.a

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Project No: C24084

Date: 06/26/2025

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**Lynnwood Critical Areas Map
- Native Growth Protected**

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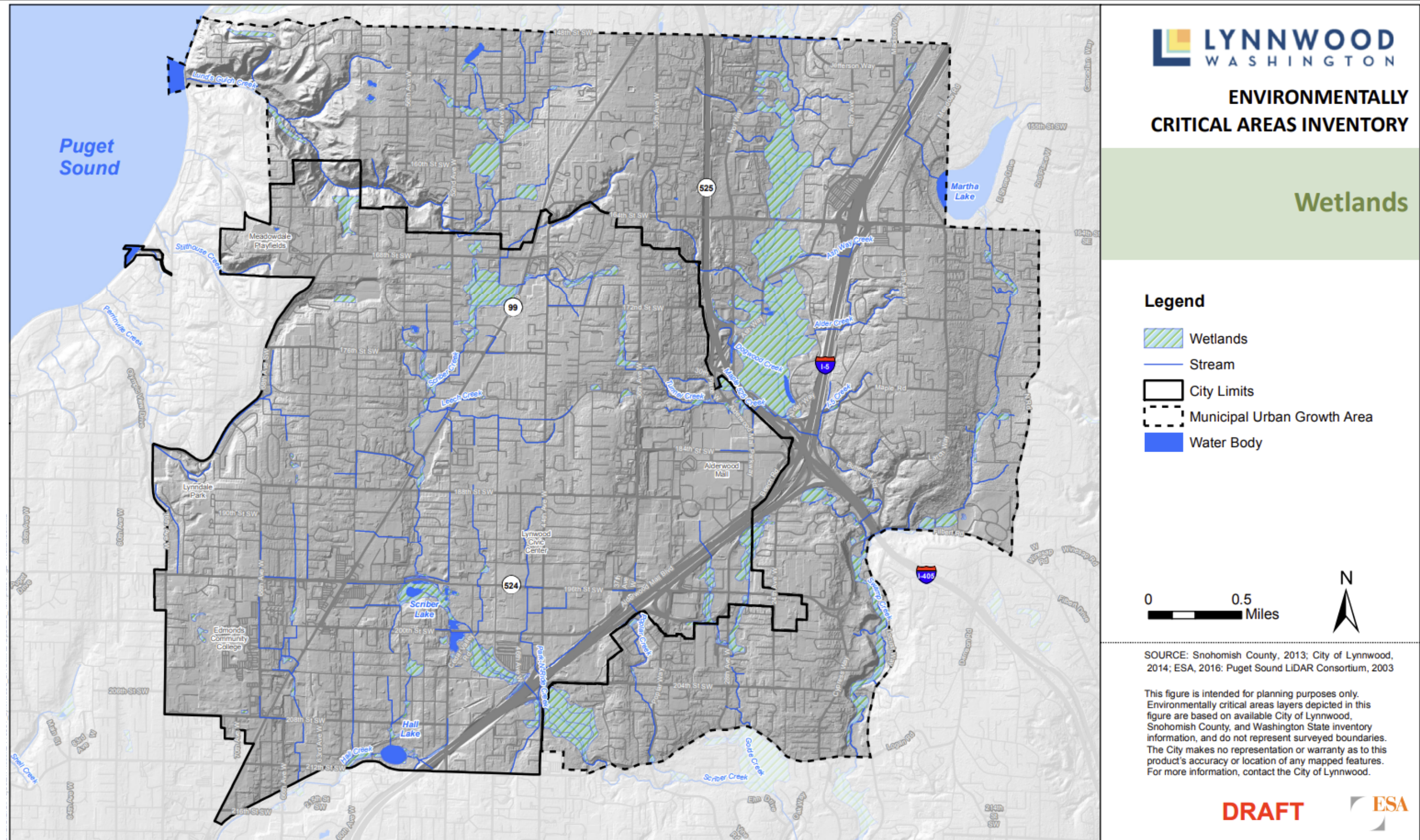
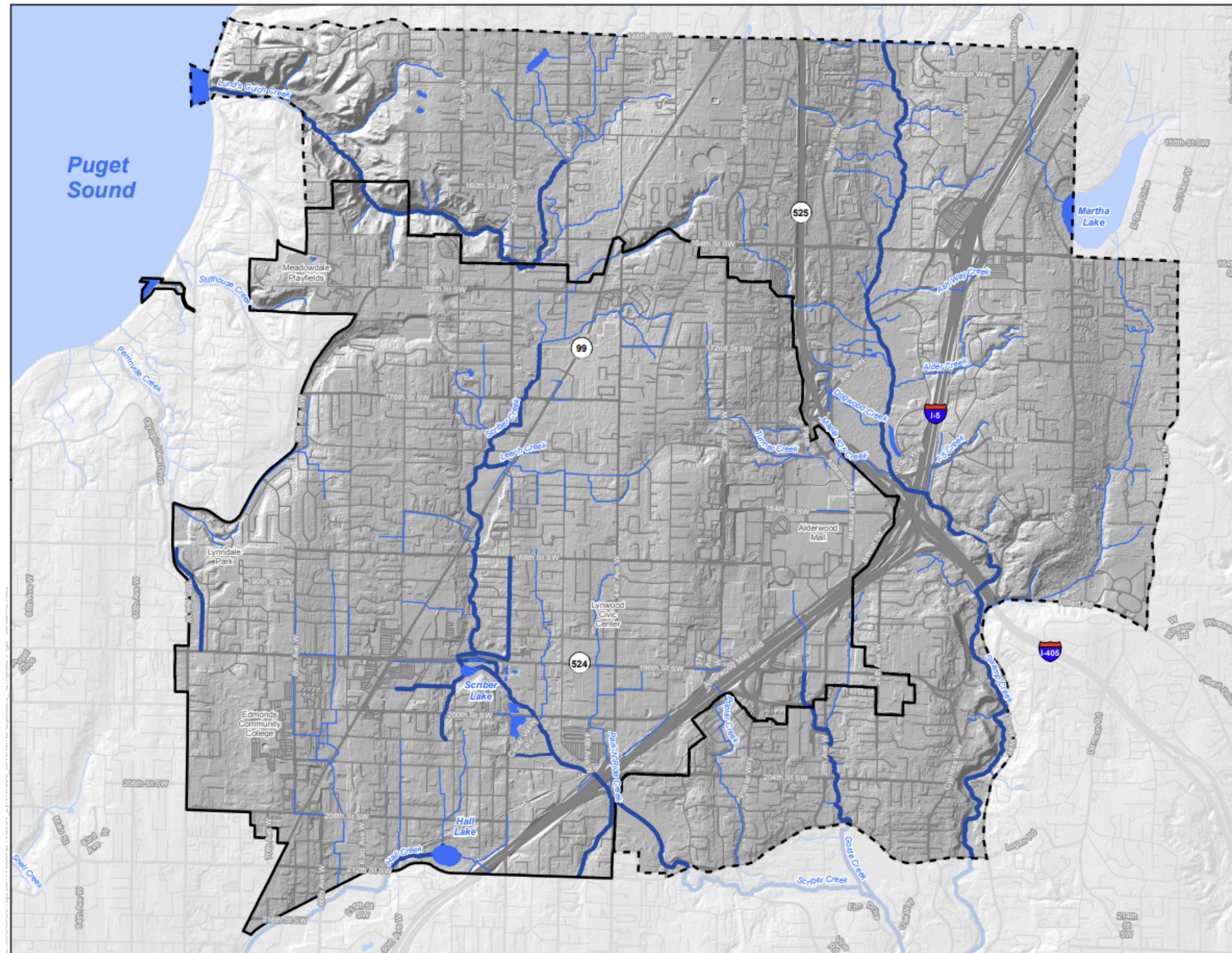


FIGURE 4.b

**Lynnwood Critical Areas Map
- Wetlands**



ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Streams

Legend

- Type F Stream (Fish Bearing)
- Untyped Stream
- City Limits
- Municipal Urban Growth Area
- Water Body

0 0.5
Miles



SOURCE: Snohomish County, 2013; City of Lynnwood, 2014; ESA, 2016; Puget Sound LIDAR Consortium, 2003

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FIGURE 4.c

Lynnwood Critical Areas Map

- Streams

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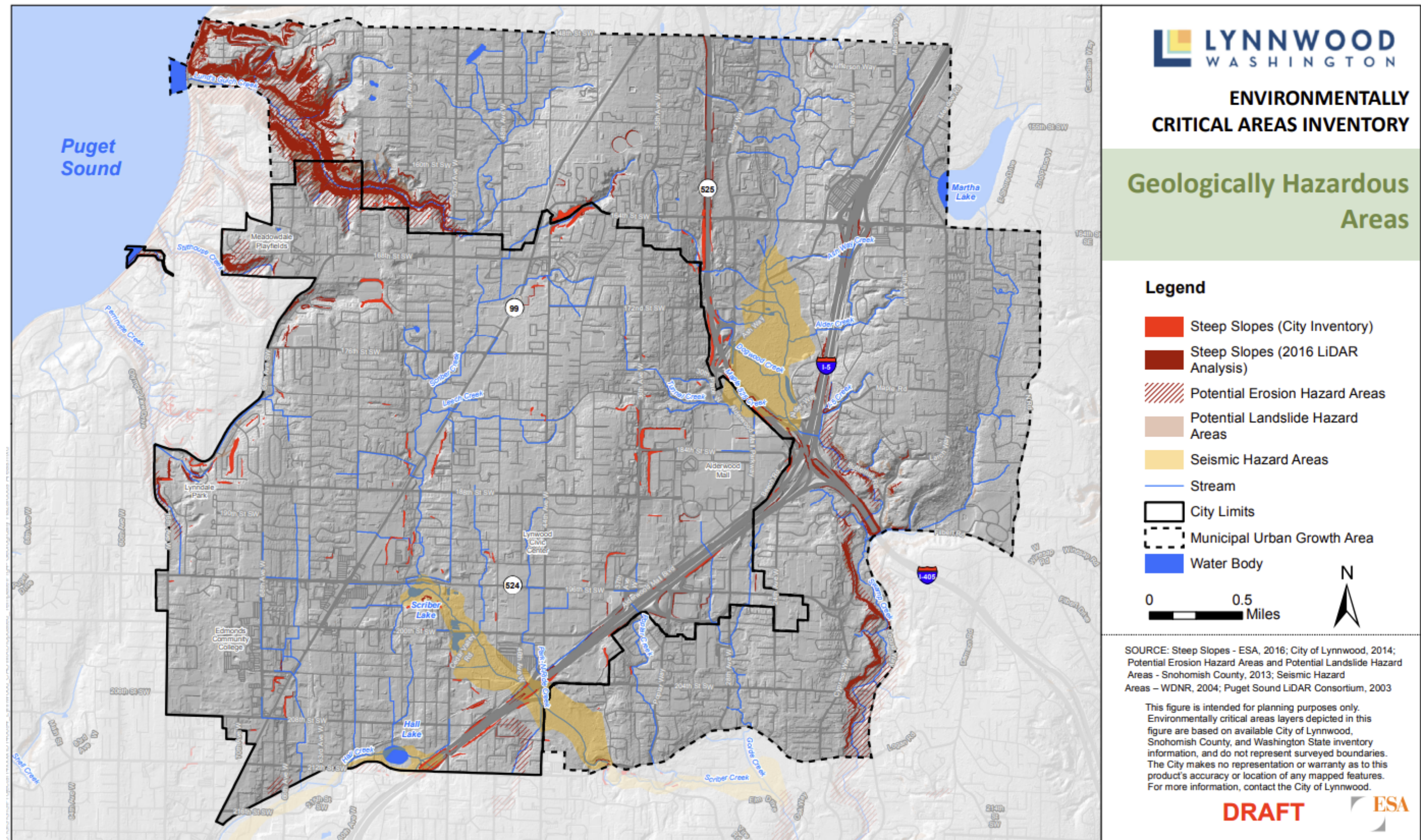
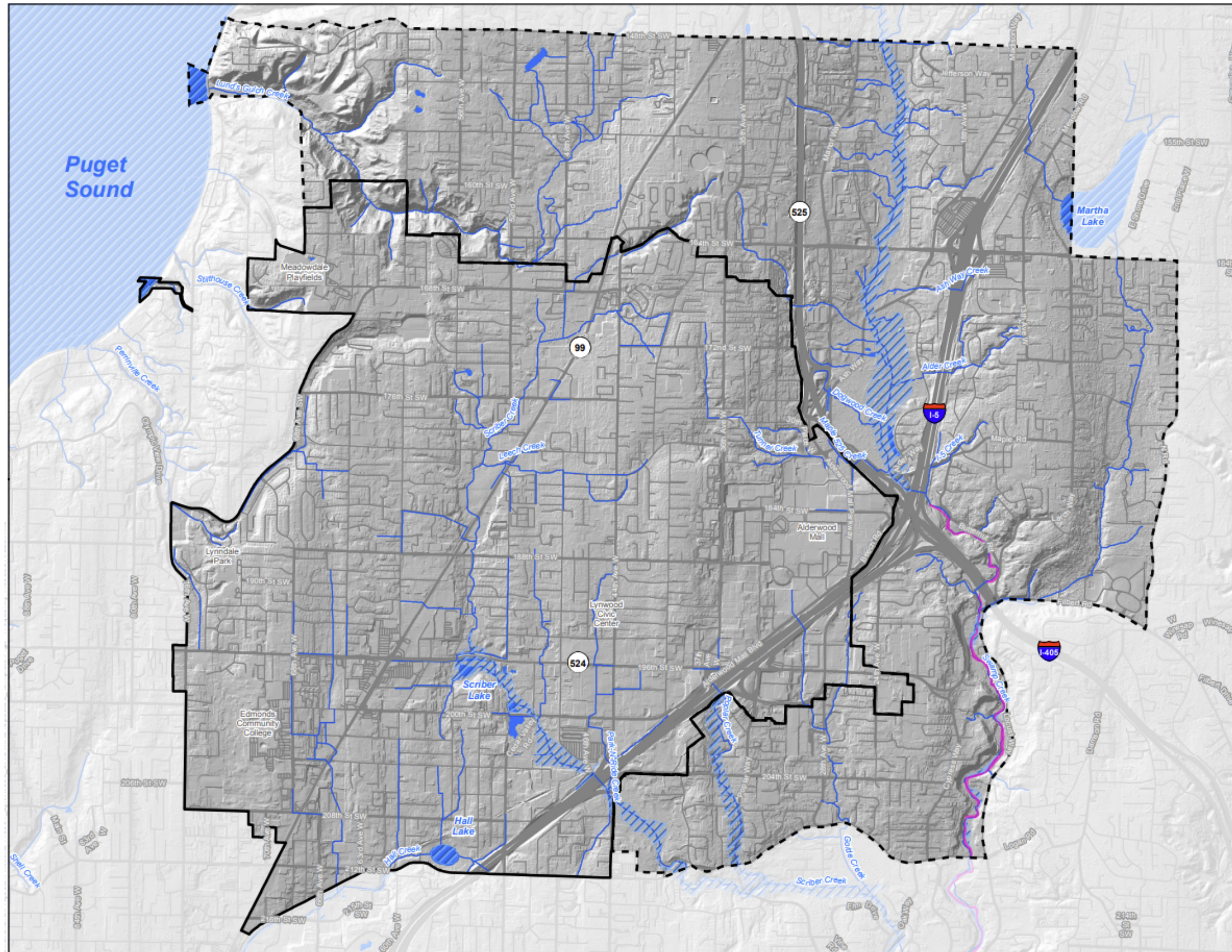


FIGURE 4.d

Lynnwood Critical Areas Map
- Geologically Hazardous



ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Frequently Flooded Areas

Legend

- Floodplain
- Floodway
- Stream
- City Limits
- Municipal Urban Growth Area
- Water Body

0 0.5
Miles



SOURCE: FEMA, 1999; ESA, 2016; Puget Sound
LIDAR Consortium, 2003

This figure is intended for planning purposes only.
Environmentally critical areas layers depicted in this
figure are based on available City of Lynnwood,
Snohomish County, and Washington State inventory
information, and do not represent surveyed boundaries.
The City makes no representation or warranty as to this
product's accuracy or location of any mapped features.
For more information, contact the City of Lynnwood.

DRAFT



FIGURE 4.e

Project: College Place Campus - Edmonds SD

Project No: C24084

Date: 06/26/2025

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Lynnwood Critical Areas Map
- Frequently Flooded

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ENVIRONMENTALLY CRITICAL AREAS INVENTORY

Critical Aquifer Recharge Areas

Legend

USGS Aquifer Sensitivity

- Moderate, 40 to 100 ft Deep
- High, 0 to 40 ft Deep
- Wellhead Protection Area for 164th Street Artesian Well
- Stream
- City Limits
- Municipal Urban Growth Area
- Water Body

0 0.5
Miles



SOURCE: USGS, 1997; Washington Department of Health, 2001; Snohomish Health District, 2001; ESA, 2016; Puget Sound LIDAR Consortium, 2003

This figure is intended for planning purposes only. Environmentally critical areas layers depicted in this figure are based on available City of Lynnwood, Snohomish County, and Washington State inventory information, and do not represent surveyed boundaries. The City makes no representation or warranty as to this product's accuracy or location of any mapped features. For more information, contact the City of Lynnwood.

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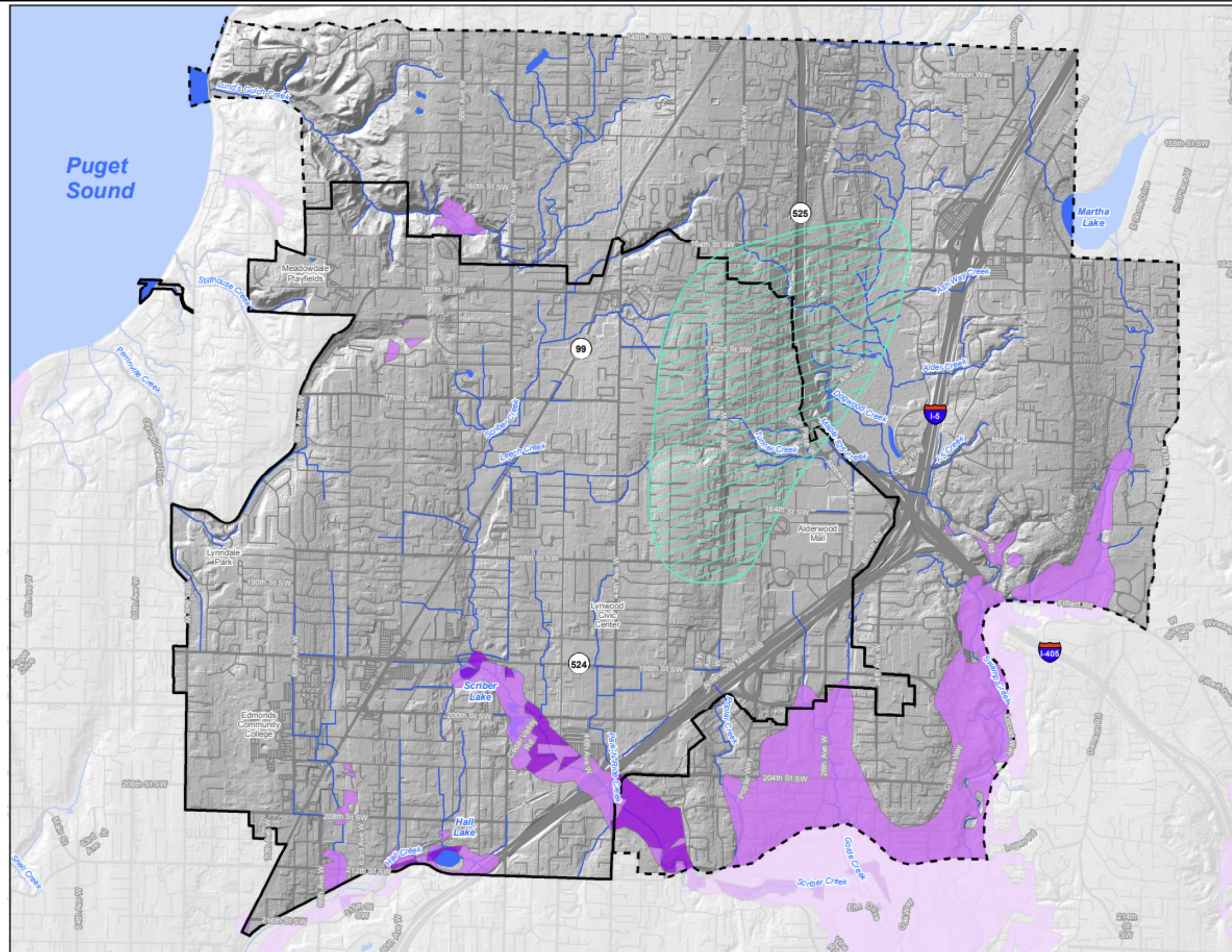


FIGURE 4.f

Lynnwood Critical Areas Map
- Critical Aquifer Recharge

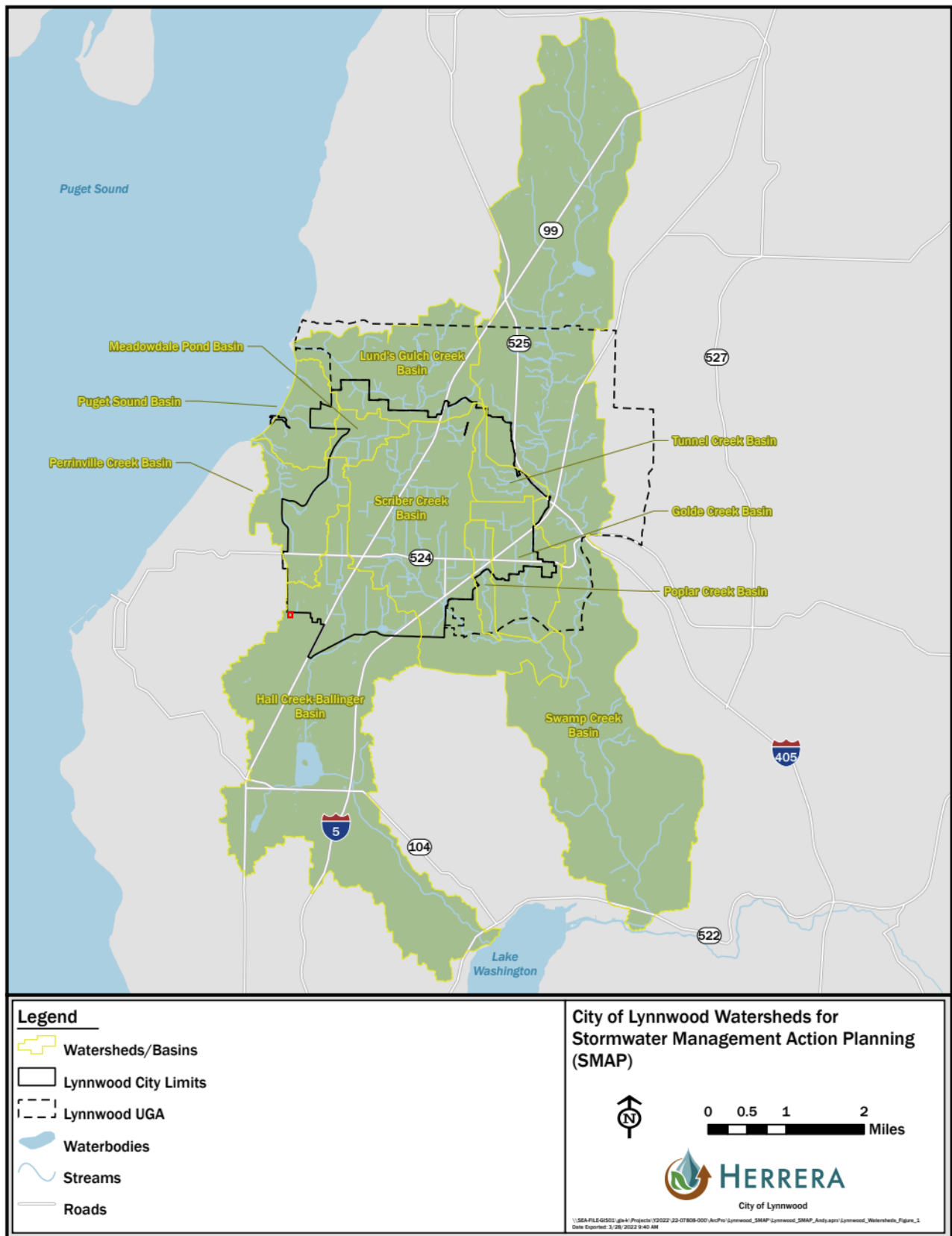


FIGURE 5

Lynnwood City Watershed Map

Project: College Place Campus - Edmonds SD

Project No: C24084

Date: 06/27/2025

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Figure I-3.1: Flow Chart for Determining Requirements for New Development

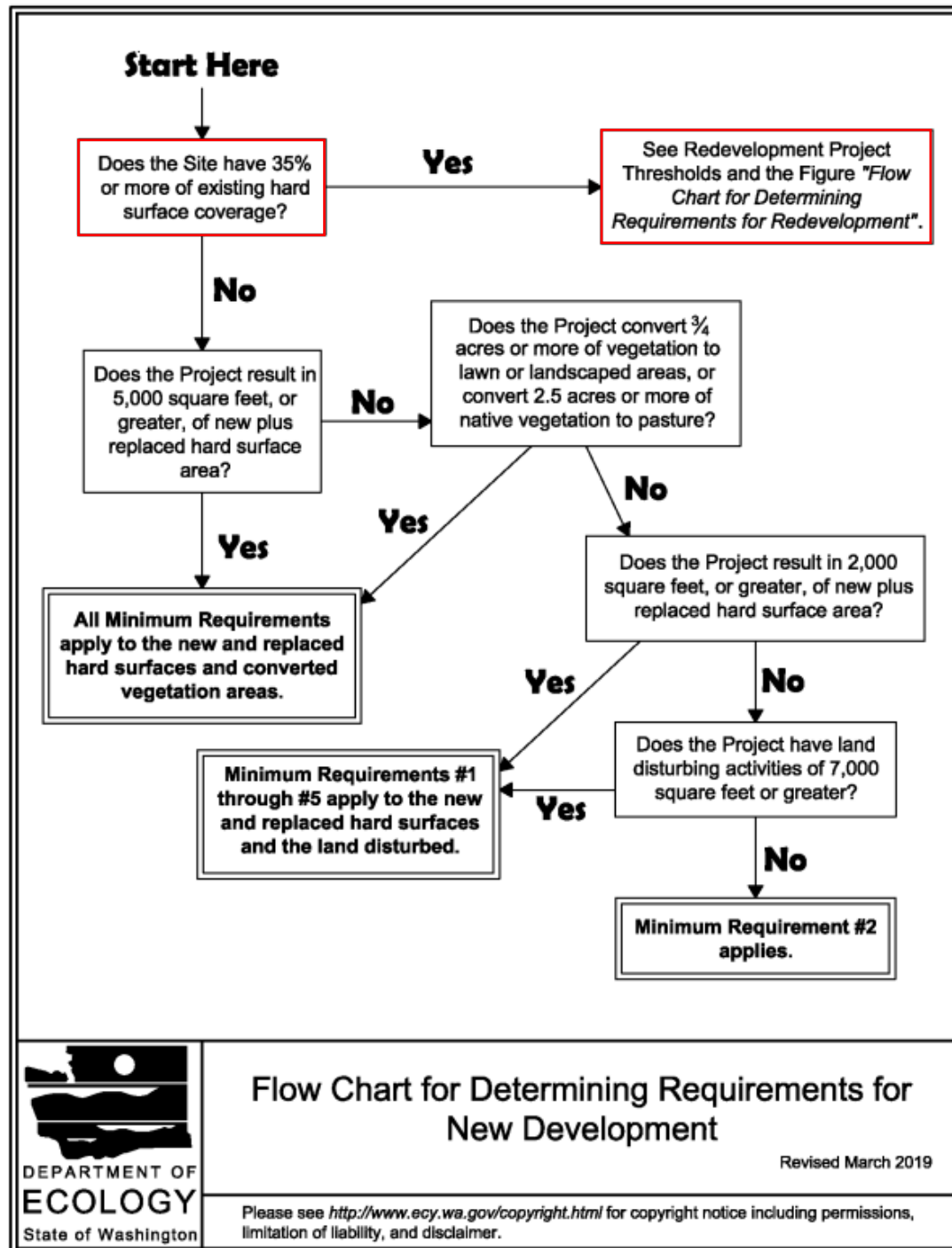


FIGURE 6

Flow Chart for New Development

Project: College Place Campus - Edmonds SD

Project No: C24084

Date:

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Figure 4: Flow Chart for Determining Requirements for Redevelopment

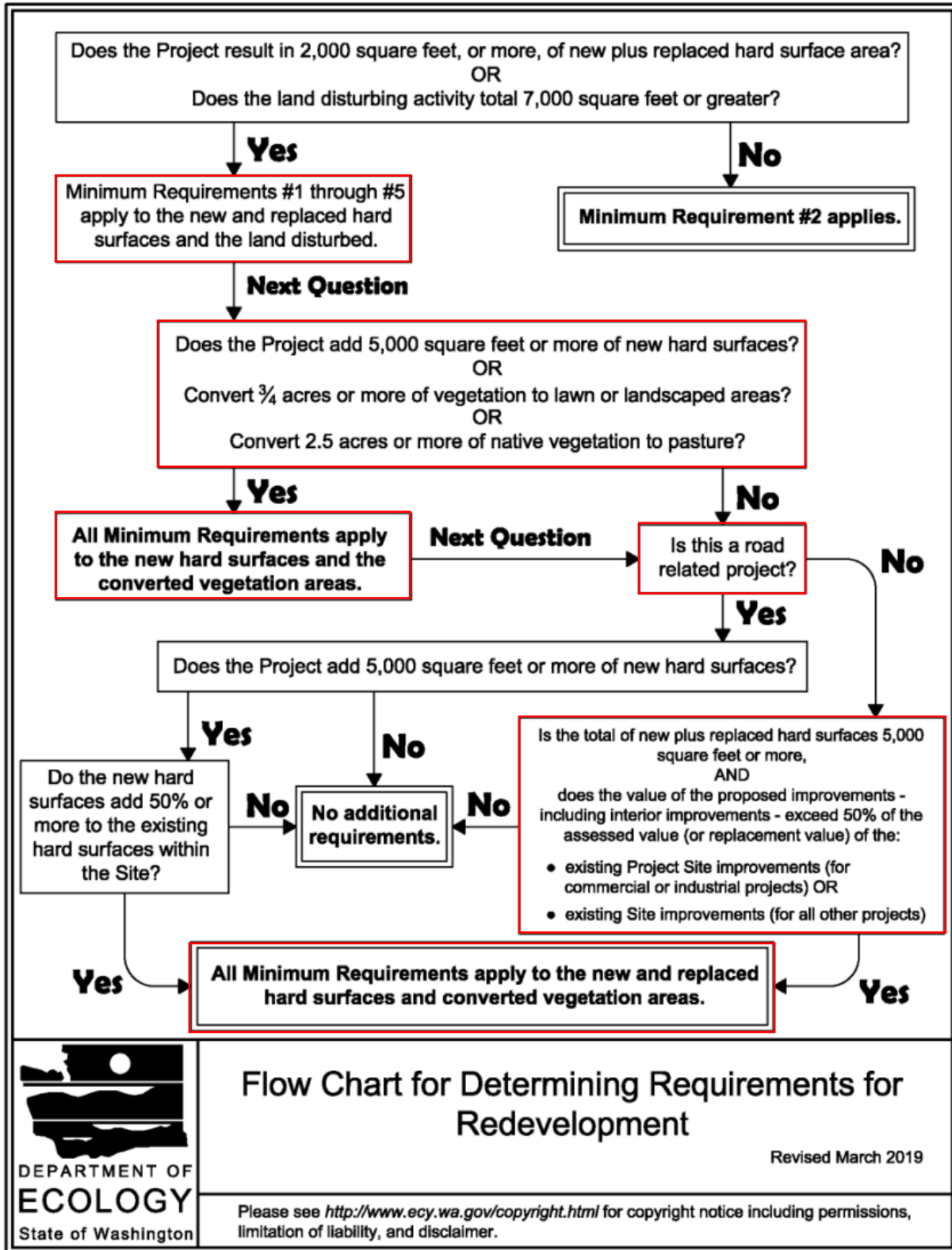


FIGURE 7

Flow Chart for Redevelopment

Project: College Place Campus - Edmonds SD

Project No: C24084

Date: 06/26/2025

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Figure I-3.3: Flow Chart for Determining MR #5 Requirements

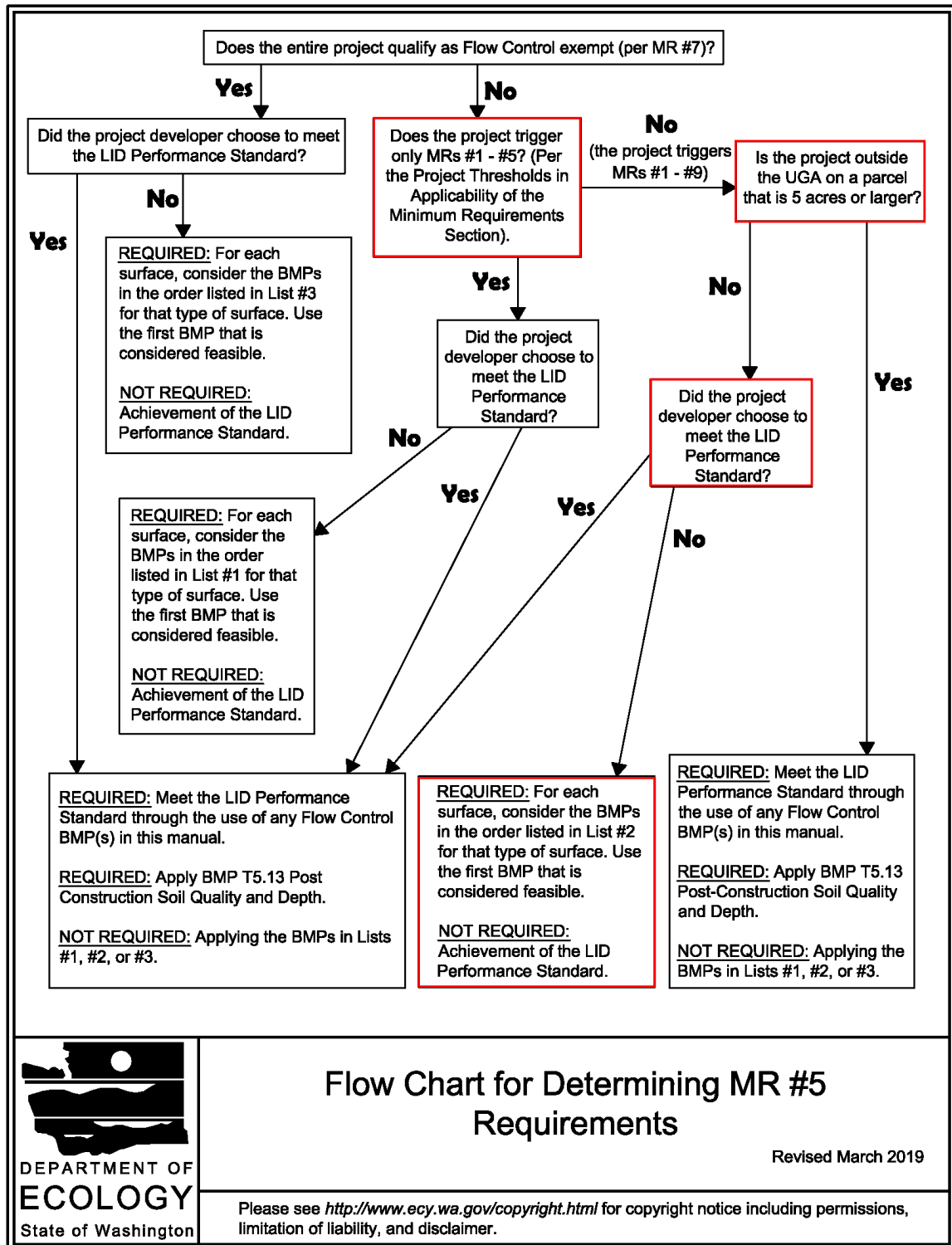


FIGURE 8

Flow Chart for LID Requirements

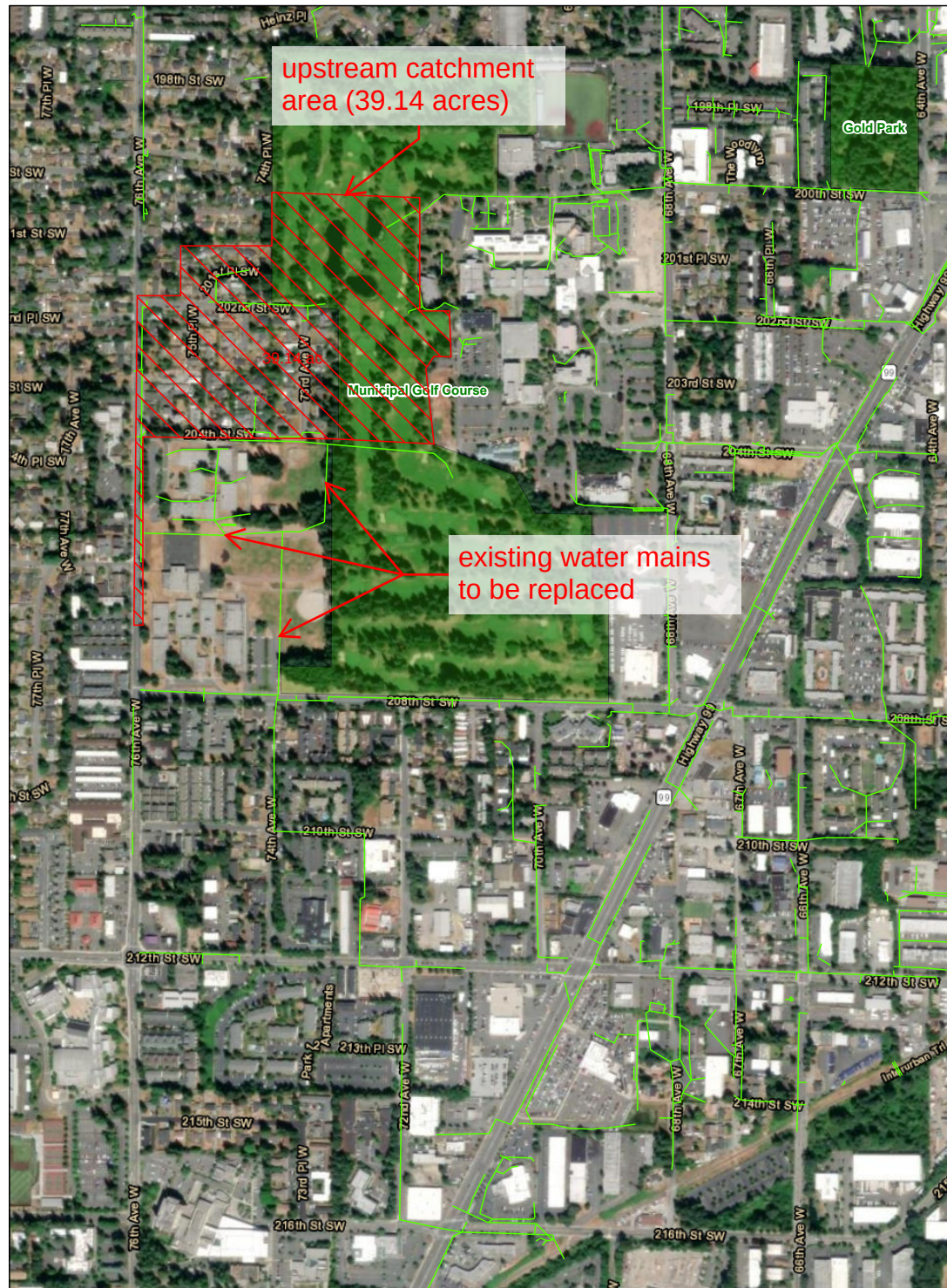
Project: College Place Campus - Edmonds SD

Project No: C24084

Date: 06/25/2025

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2/6/2025

- Storm Mainlines
- parks
- World Transportation
- World Imagery
- Low Resolution 15m Imagery

- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations
- 2.4m Resolution Metadata

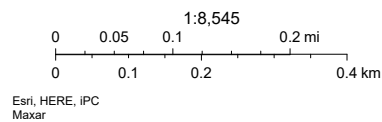


FIGURE 9

Upstream Analysis Map

Project: College Place Campus - Edmonds SD

Project No: C24084

Date: 06/26/2025

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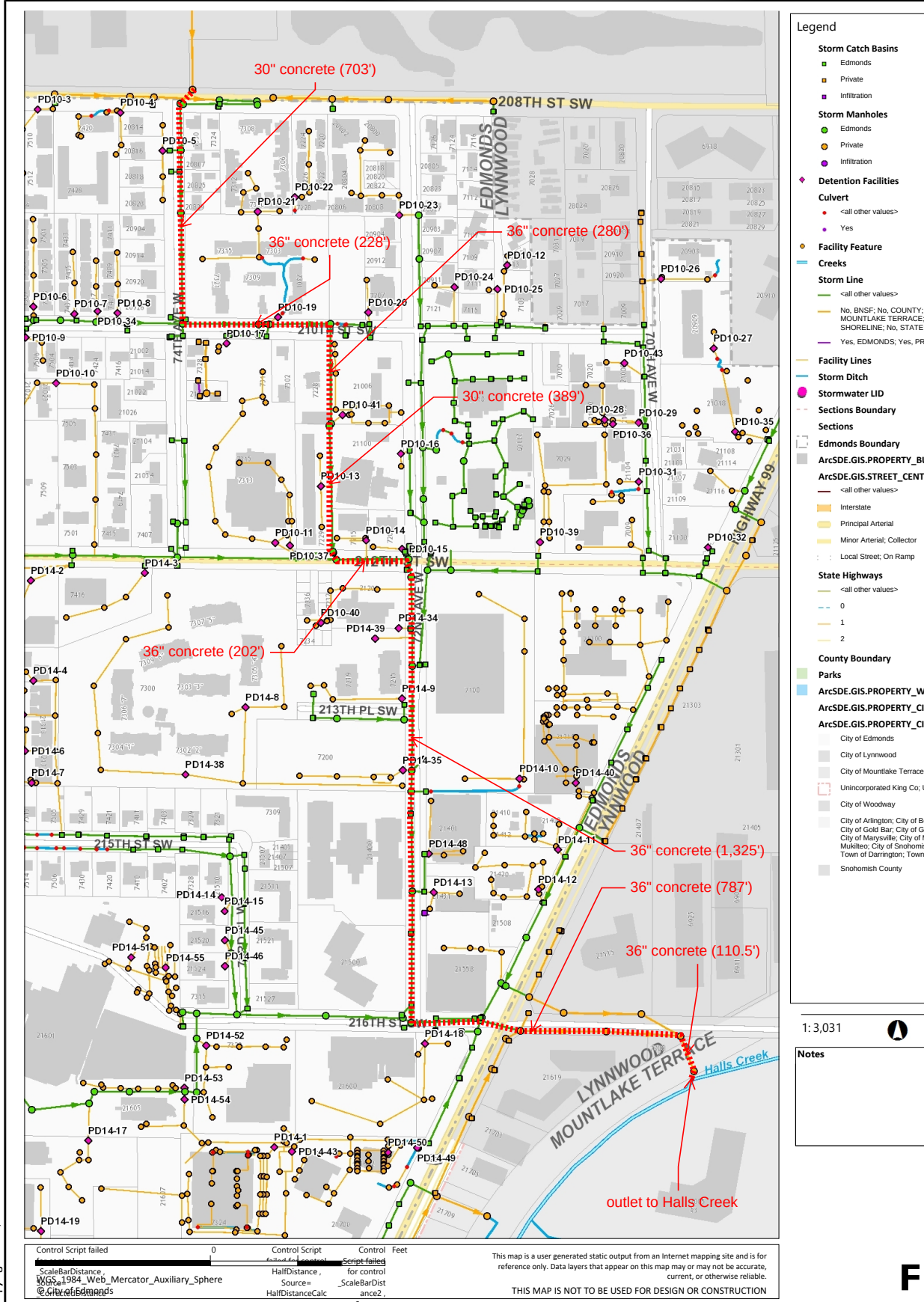


FIGURE 10

Project: College Place Campus - Edmonds SD

Downstream Analysis Map

Project No: C24084

Date: 06/26/2025

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MAP LEGEND

- Area of Interest (AOI)**
 - Area of Interest (AOI)
- Soils**
 - Soil Map Unit Polygons
 - Soil Map Unit Lines
 - Soil Map Unit Points
- Special Point Features**
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
- Water Features**
 - Streams and Canals
- Transportation**
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Background**
 - Aerial Photography
- Other**
 - Spoil Area
 - Stony Spot
 - Very Stony Spot
 - Wet Spot
 - Other
 - Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Snohomish County Area, Washington
Survey Area Data: Version 26, Aug 27, 2024

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

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Alderwood-Urban land complex, 2 to 8 percent slopes	71.8	100.0%
Totals for Area of Interest		71.8	100.0%

FIGURE I I

NCRS Soil Map



APPENDIX B: FLOW CONTROL AND WATER QUALITY CALCULATIONS

WWHM2012
PROJECT REPORT

General Model Information

WWHM2012 Project Name: 2025-06-11 College Place Detention

Site Name:

Site Address:

City:

Report Date: 6/30/2025

Gage: Everett

Data Start: 1948/10/01

Data End: 2009/09/30

Timestep: 15 Minute

Precip Scale: 1.000

Version Date: 2024/10/15

Version: 4.3.1

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, Forest, Flat	21.59
Pervious Total	21.59
Impervious Land Use	acre
Impervious Total	0
Basin Total	21.59

Element Flow Componentants:

Surface	Interflow	Groundwater
Component Flows To:		
POC 1	POC 1	

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Lawn, Flat	6.99
Pervious Total	6.99
Impervious Land Use	acre
ROADS FLAT	6.63
ROOF TOPS FLAT	2.57
SIDEWALKS FLAT	3.32
Impervious Total	12.52
Basin Total	19.51

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
StormTech 1	StormTech 1	

Infiltrating Bioretention

Bypass: No

GroundWater: No

Pervious Land Use acre
C, Lawn, Flat 0.21

Pervious Total 0.21

Impervious Land Use acre
ROADS FLAT 0.4
SIDEWALKS FLAT 0.04

Impervious Total 0.44

Basin Total 0.65

Element Flow Componants:

Surface Interflow Groundwater

Componant Flows To:

Surface Bioretention Surface Bioretention

South Bioretention (non-infiltrating)

Bypass: No

GroundWater: No

Pervious Land Use acre
C, Lawn, Flat 0.11

Pervious Total 0.11

Impervious Land Use acre
ROADS FLAT 0.16
SIDEWALKS FLAT 0.06

Impervious Total 0.22

Basin Total 0.33

Element Flow Components:

Surface Interflow Groundwater

Component Flows To:

Surface Bioretention Surface Bioretention

North Bioretention (Non-Infiltrating)

Bypass: No

GroundWater: No

Pervious Land Use acre
C, Lawn, Flat 0.51

Pervious Total 0.51

Impervious Land Use acre
ROADS FLAT 1.16
SIDEWALKS FLAT 0.29

Impervious Total 1.45

Basin Total 1.96

Element Flow Componants:

Surface Interflow Groundwater

Componant Flows To:

Surface Bioretention Surface Bioretention

Basin 5

Bypass: Yes

GroundWater: No

Pervious Land Use acre
C, Lawn, Flat 0.31

Pervious Total 0.31

Impervious Land Use acre
ROADS FLAT 0.2

Impervious Total 0.2

Basin Total 0.51

Element Flow Componants:

Surface Interflow

Componant Flows To:

POC 1 POC 1

Groundwater

Routing Elements

Predeveloped Routing

Mitigated Routing

StormTech 1

Chamber Model: 740
 Dimensions
 Max Row Length: 200
 Number of Chambers: 830
 Number of Endcaps: 62
 Top Stone Depth: 6
 Bottom Stone Depth: 6
 Infiltration On
 Infiltration rate: 1
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 2096.098
 Total Volume Through Riser (ac-ft.): 419.535
 Total Volume Through Facility (ac-ft.): 2515.633
 Percent Infiltrated: 83.32
 Total Precip Applied to Facility: 0
 Total Evap From Facility: 0
 Discharge Structure
 Riser Height: 2.75 ft.
 Riser Diameter: 12 in.
 Orifice 1 Diameter: 3.250 in. Elevation:0 ft.
 Orifice 2 Diameter: 3.500 in. Elevation:1.75 ft.
 Orifice 3 Diameter: 3.500 in. Elevation:2.75 ft.
 Element Flow Outlets:
 Outlet 1 Outlet 2
 Outlets Flow To:

StormTech Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.644	0.000	0.000	0.000
0.0833	0.682	0.021	0.082	0.649
0.1667	0.682	0.043	0.117	0.649
0.2500	0.682	0.064	0.143	0.649
0.3333	0.682	0.086	0.165	0.649
0.4167	0.682	0.107	0.185	0.649
0.5000	0.682	0.129	0.202	0.649
0.5833	0.682	0.175	0.218	0.649
0.6667	0.682	0.222	0.234	0.649
0.7500	0.682	0.268	0.248	0.649
0.8333	0.682	0.314	0.261	0.649
0.9167	0.682	0.360	0.274	0.649
1.0000	0.682	0.406	0.286	0.649
1.0833	0.682	0.451	0.298	0.649
1.1667	0.682	0.496	0.309	0.649
1.2500	0.682	0.540	0.320	0.649
1.3333	0.682	0.584	0.331	0.649
1.4167	0.682	0.628	0.341	0.649
1.5000	0.682	0.671	0.351	0.649
1.5833	0.682	0.714	0.360	0.649
1.6667	0.682	0.756	0.370	0.649
1.7500	0.682	0.797	0.379	0.649
1.8333	0.682	0.838	0.484	0.649
1.9167	0.682	0.878	0.532	0.649

2.0000	0.682	0.918	0.571	0.649
2.0833	0.682	0.957	0.605	0.649
2.1667	0.682	0.995	0.636	0.649
2.2500	0.682	1.032	0.665	0.649
2.3333	0.682	1.068	0.691	0.649
2.4167	0.682	1.103	0.717	0.649
2.5000	0.682	1.137	0.741	0.649
2.5833	0.682	1.169	0.764	0.649
2.6667	0.682	1.200	0.786	0.649
2.7500	0.682	1.228	0.807	0.649
2.8333	0.682	1.253	1.178	0.649
2.9167	0.682	1.276	1.687	0.649
3.0000	0.682	1.298	2.251	0.649
3.0833	0.682	1.320	2.762	0.649
3.1667	0.682	1.341	3.133	0.649
3.2500	0.682	1.363	3.362	0.649
3.3333	0.682	1.384	3.601	0.649
3.4167	0.682	1.406	3.802	0.649
3.5000	0.682	1.427	3.991	0.649

South Drive Bioretention

Bottom Length: 63.00 ft.
 Bottom Width: 21.00 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
 Material thickness of third layer: 0.5
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 1.01
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 85.473
 Total Volume Through Riser (ac-ft.): 0.109
 Total Volume Through Facility (ac-ft.): 85.582
 Percent Infiltrated: 99.87
 Total Precip Applied to Facility: 6.459
 Total Evap From Facility: 5.24
 Underdrain not used
 Discharge Structure
 Riser Height: 1 ft.
 Riser Diameter: 6 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0606	0.0000	0.0000	0.0000
0.0412	0.0602	0.0006	0.0000	0.0000
0.0824	0.0596	0.0013	0.0000	0.0000
0.1236	0.0590	0.0019	0.0000	0.0000
0.1648	0.0583	0.0026	0.0000	0.0000
0.2060	0.0577	0.0033	0.0000	0.0000
0.2473	0.0571	0.0040	0.0000	0.0000
0.2885	0.0565	0.0045	0.0007	0.0007
0.3297	0.0559	0.0051	0.0012	0.0012
0.3709	0.0553	0.0057	0.0018	0.0018
0.4121	0.0547	0.0062	0.0027	0.0027
0.4533	0.0541	0.0068	0.0037	0.0037
0.4945	0.0535	0.0074	0.0050	0.0050
0.5357	0.0529	0.0080	0.0065	0.0065
0.5769	0.0523	0.0086	0.0083	0.0083
0.6181	0.0517	0.0093	0.0104	0.0104
0.6593	0.0511	0.0099	0.0127	0.0127
0.7005	0.0505	0.0105	0.0153	0.0153
0.7418	0.0499	0.0112	0.0183	0.0183
0.7830	0.0494	0.0118	0.0215	0.0215
0.8242	0.0488	0.0125	0.0251	0.0251
0.8654	0.0482	0.0132	0.0290	0.0290
0.9066	0.0476	0.0139	0.0309	0.0309
0.9478	0.0471	0.0146	0.0309	0.0309
0.9890	0.0465	0.0153	0.0309	0.0309
1.0302	0.0459	0.0160	0.0309	0.0309
1.0714	0.0454	0.0167	0.0309	0.0309

1.1126	0.0448	0.0174	0.0309	0.0309
1.1538	0.0443	0.0181	0.0309	0.0309
1.1951	0.0437	0.0189	0.0309	0.0309
1.2363	0.0432	0.0196	0.0309	0.0309
1.2775	0.0426	0.0204	0.0309	0.0309
1.3187	0.0421	0.0212	0.0309	0.0309
1.3599	0.0415	0.0220	0.0309	0.0309
1.4011	0.0410	0.0228	0.0309	0.0309
1.4423	0.0405	0.0236	0.0309	0.0309
1.4835	0.0399	0.0244	0.0309	0.0309
1.5247	0.0394	0.0252	0.0309	0.0309
1.5659	0.0389	0.0260	0.0309	0.0309
1.6071	0.0384	0.0269	0.0309	0.0309
1.6484	0.0378	0.0277	0.0309	0.0309
1.6896	0.0373	0.0286	0.0309	0.0309
1.7308	0.0368	0.0295	0.0309	0.0309
1.7720	0.0363	0.0304	0.0309	0.0309
1.8132	0.0358	0.0313	0.0309	0.0309
1.8544	0.0353	0.0322	0.0309	0.0309
1.8956	0.0348	0.0332	0.0309	0.0309
1.9368	0.0343	0.0341	0.0309	0.0309
1.9780	0.0338	0.0351	0.0309	0.0309
2.0192	0.0333	0.0360	0.0309	0.0309
2.0604	0.0328	0.0370	0.0309	0.0309
2.1016	0.0323	0.0380	0.0309	0.0309
2.1429	0.0318	0.0390	0.0309	0.0309
2.1841	0.0313	0.0400	0.0309	0.0309
2.2253	0.0309	0.0410	0.0309	0.0309
2.2500	0.0304	0.0417	0.0309	0.0309

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.2500	0.0606	0.0417	0.0000	0.2194	0.0000
2.2912	0.0612	0.0442	0.0000	0.2194	0.0000
2.3324	0.0619	0.0467	0.0000	0.2245	0.0000
2.3736	0.0625	0.0493	0.0000	0.2295	0.0000
2.4148	0.0631	0.0519	0.0000	0.2346	0.0000
2.4560	0.0638	0.0545	0.0000	0.2396	0.0000
2.4973	0.0644	0.0571	0.0000	0.2447	0.0000
2.5385	0.0651	0.0598	0.0000	0.2497	0.0000
2.5797	0.0657	0.0625	0.0000	0.2548	0.0000
2.6209	0.0664	0.0652	0.0000	0.2598	0.0000
2.6621	0.0670	0.0680	0.0000	0.2649	0.0000
2.7033	0.0677	0.0707	0.0000	0.2699	0.0000
2.7445	0.0684	0.0735	0.0000	0.2750	0.0000
2.7857	0.0690	0.0764	0.0000	0.2800	0.0000
2.8269	0.0697	0.0792	0.0000	0.2850	0.0000
2.8681	0.0704	0.0821	0.0000	0.2901	0.0000
2.9093	0.0710	0.0850	0.0000	0.2951	0.0000
2.9505	0.0717	0.0880	0.0000	0.3002	0.0000
2.9918	0.0724	0.0909	0.0000	0.3052	0.0000
3.0330	0.0731	0.0939	0.0000	0.3103	0.0000
3.0742	0.0738	0.0970	0.0000	0.3153	0.0000
3.1154	0.0744	0.1000	0.0000	0.3204	0.0000
3.1566	0.0751	0.1031	0.0000	0.3254	0.0000
3.1978	0.0758	0.1062	0.0000	0.3305	0.0000
3.2390	0.0765	0.1093	0.0000	0.3355	0.0000
3.2802	0.0772	0.1125	0.0000	0.3406	0.0000

3.3214	0.0779	0.1157	0.0000	0.3456	0.0000
3.3626	0.0786	0.1189	0.0000	0.3507	0.0000
3.4038	0.0793	0.1222	0.0000	0.3557	0.0000
3.4451	0.0800	0.1255	0.0000	0.3608	0.0000
3.4863	0.0808	0.1288	0.0000	0.3658	0.0000
3.5275	0.0815	0.1321	0.0000	0.3709	0.0000
3.5687	0.0822	0.1355	0.0000	0.3759	0.0000
3.6099	0.0829	0.1389	0.0000	0.3810	0.0000
3.6511	0.0836	0.1423	0.0000	0.3860	0.0000
3.6923	0.0844	0.1458	0.0000	0.3911	0.0000
3.7335	0.0851	0.1493	0.0000	0.3961	0.0000
3.7500	0.0854	0.1507	0.0000	0.3981	0.0000

South Parking Bioretention

Bottom Length: 65.00 ft.
 Bottom Width: 26.00 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
 Material thickness of third layer: 0.5
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.75
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 38.635
 Total Volume Through Riser (ac-ft.): 5.57
 Total Volume Through Facility (ac-ft.): 44.205
 Percent Infiltrated: 87.4
 Total Precip Applied to Facility: 7.528
 Total Evap From Facility: 5.844
 Underdrain not used
 Discharge Structure
 Riser Height: 0 ft.
 Riser Diameter: 6 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0712	0.0000	0.0000	0.0000
0.0357	0.0706	0.0007	0.0000	0.0000
0.0714	0.0700	0.0014	0.0000	0.0000
0.1071	0.0695	0.0021	0.0000	0.0000
0.1429	0.0689	0.0029	0.0000	0.0000
0.1786	0.0683	0.0036	0.0000	0.0000
0.2143	0.0677	0.0043	0.0000	0.0000
0.2500	0.0672	0.0051	0.0000	0.0000
0.2857	0.0666	0.0057	0.0011	0.0011
0.3214	0.0660	0.0063	0.0018	0.0018
0.3571	0.0655	0.0069	0.0025	0.0025
0.3929	0.0649	0.0076	0.0035	0.0035
0.4286	0.0644	0.0082	0.0047	0.0047
0.4643	0.0638	0.0088	0.0061	0.0061
0.5000	0.0633	0.0095	0.0077	0.0077
0.5357	0.0627	0.0101	0.0095	0.0095
0.5714	0.0622	0.0108	0.0116	0.0116
0.6071	0.0616	0.0115	0.0140	0.0140
0.6429	0.0611	0.0121	0.0167	0.0167
0.6786	0.0605	0.0128	0.0196	0.0196
0.7143	0.0600	0.0135	0.0228	0.0228
0.7500	0.0595	0.0142	0.0263	0.0263
0.7857	0.0589	0.0149	0.0293	0.0293
0.8214	0.0584	0.0156	0.0293	0.0293
0.8571	0.0579	0.0163	0.0293	0.0293
0.8929	0.0573	0.0170	0.0293	0.0293
0.9286	0.0568	0.0178	0.0293	0.0293

0.9643	0.0563	0.0185	0.0293	0.0293
1.0000	0.0558	0.0192	0.0293	0.0293
1.0357	0.0552	0.0200	0.0293	0.0293
1.0714	0.0547	0.0208	0.0293	0.0293
1.1071	0.0542	0.0215	0.0293	0.0293
1.1429	0.0537	0.0223	0.0293	0.0293
1.1786	0.0532	0.0231	0.0293	0.0293
1.2143	0.0527	0.0239	0.0293	0.0293
1.2500	0.0522	0.0247	0.0293	0.0293
1.2857	0.0517	0.0255	0.0293	0.0293
1.3214	0.0511	0.0263	0.0293	0.0293
1.3571	0.0506	0.0271	0.0293	0.0293
1.3929	0.0501	0.0279	0.0293	0.0293
1.4286	0.0497	0.0288	0.0293	0.0293
1.4643	0.0492	0.0296	0.0293	0.0293
1.5000	0.0487	0.0304	0.0293	0.0293
1.5357	0.0482	0.0313	0.0293	0.0293
1.5714	0.0477	0.0322	0.0293	0.0293
1.6071	0.0472	0.0330	0.0293	0.0293
1.6429	0.0467	0.0339	0.0293	0.0293
1.6786	0.0462	0.0348	0.0293	0.0293
1.7143	0.0457	0.0357	0.0293	0.0293
1.7500	0.0453	0.0366	0.0293	0.0293
1.7857	0.0448	0.0376	0.0293	0.0293
1.8214	0.0443	0.0385	0.0293	0.0293
1.8571	0.0438	0.0395	0.0293	0.0293
1.8929	0.0434	0.0405	0.0293	0.0293
1.9286	0.0429	0.0414	0.0293	0.0293
1.9643	0.0424	0.0424	0.0293	0.0293
2.0000	0.0420	0.0434	0.0293	0.0293
2.0357	0.0415	0.0444	0.0293	0.0293
2.0714	0.0411	0.0454	0.0293	0.0293
2.1071	0.0406	0.0464	0.0293	0.0293
2.1429	0.0401	0.0474	0.0293	0.0293
2.1786	0.0397	0.0485	0.0293	0.0293
2.2143	0.0392	0.0495	0.0293	0.0293
2.2500	0.0388	0.0506	0.0293	0.0293

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.2500	0.0712	0.0506	0.0000	0.2794	0.0000
2.2857	0.0718	0.0531	0.0000	0.2794	0.0000
2.3214	0.0723	0.0557	0.0000	0.2850	0.0000
2.3571	0.0729	0.0583	0.0000	0.2906	0.0000
2.3929	0.0735	0.0609	0.0000	0.2962	0.0000
2.4286	0.0741	0.0635	0.0000	0.3018	0.0000
2.4643	0.0747	0.0662	0.0000	0.3074	0.0000
2.5000	0.0753	0.0689	0.0000	0.3130	0.0000
2.5357	0.0759	0.0716	0.0000	0.3186	0.0000
2.5714	0.0765	0.0743	0.0000	0.3241	0.0000
2.6071	0.0771	0.0770	0.0000	0.3297	0.0000
2.6429	0.0777	0.0798	0.0000	0.3353	0.0000
2.6786	0.0783	0.0826	0.0000	0.3409	0.0000
2.7143	0.0789	0.0854	0.0000	0.3465	0.0000
2.7500	0.0795	0.0882	0.0000	0.3521	0.0000
2.7857	0.0801	0.0911	0.0000	0.3577	0.0000
2.8214	0.0807	0.0940	0.0000	0.3633	0.0000
2.8571	0.0814	0.0969	0.0000	0.3688	0.0000

2.8929	0.0820	0.0998	0.0000	0.3744	0.0000
2.9286	0.0826	0.1027	0.0000	0.3800	0.0000
2.9643	0.0832	0.1057	0.0000	0.3856	0.0000
3.0000	0.0838	0.1087	0.0000	0.3912	0.0000
3.0357	0.0845	0.1117	0.0000	0.3968	0.0000
3.0714	0.0851	0.1147	0.0000	0.4024	0.0000
3.1071	0.0857	0.1177	0.0000	0.4080	0.0000
3.1429	0.0864	0.1208	0.0000	0.4136	0.0000
3.1786	0.0870	0.1239	0.0000	0.4191	0.0000
3.2143	0.0876	0.1270	0.0000	0.4247	0.0000
3.2500	0.0883	0.1302	0.0000	0.4303	0.0000
3.2500	0.0883	0.1302	0.0000	0.4303	0.0000

North Parking Bioretention

Bottom Length: 88.00 ft.
 Bottom Width: 28.85 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
 Material thickness of third layer: 0.5
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.75
 Infiltration safety factor: 1
 Total Volume Infiltrated (ac-ft.): 230.681
 Total Volume Through Riser (ac-ft.): 36.793
 Total Volume Through Facility (ac-ft.): 267.474
 Percent Infiltrated: 86.24
 Total Precip Applied to Facility: 12.508
 Total Evap From Facility: 9.349
 Underdrain not used
 Discharge Structure
 Riser Height: 0 ft.
 Riser Diameter: 6 in.
 Element Outlets:
 Outlet 1 Outlet 2
 Outlet Flows To:
 StormTech 1

Bioretention Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.0987	0.0000	0.0000	0.0000
0.0357	0.0980	0.0011	0.0000	0.0000
0.0714	0.0973	0.0021	0.0000	0.0000
0.1071	0.0966	0.0032	0.0000	0.0000
0.1429	0.0959	0.0043	0.0000	0.0000
0.1786	0.0952	0.0054	0.0000	0.0000
0.2143	0.0945	0.0065	0.0000	0.0000
0.2500	0.0938	0.0076	0.0000	0.0000
0.2857	0.0931	0.0085	0.0017	0.0017
0.3214	0.0924	0.0094	0.0026	0.0026
0.3571	0.0917	0.0103	0.0038	0.0038
0.3929	0.0910	0.0113	0.0053	0.0053
0.4286	0.0903	0.0122	0.0070	0.0070
0.4643	0.0897	0.0131	0.0091	0.0091
0.5000	0.0890	0.0141	0.0115	0.0115
0.5357	0.0883	0.0150	0.0143	0.0143
0.5714	0.0876	0.0160	0.0175	0.0175
0.6071	0.0870	0.0170	0.0210	0.0210
0.6429	0.0863	0.0180	0.0250	0.0250
0.6786	0.0856	0.0190	0.0294	0.0294
0.7143	0.0849	0.0200	0.0343	0.0343
0.7500	0.0843	0.0210	0.0396	0.0396
0.7857	0.0836	0.0220	0.0441	0.0441
0.8214	0.0830	0.0230	0.0441	0.0441
0.8571	0.0823	0.0241	0.0441	0.0441
0.8929	0.0816	0.0251	0.0441	0.0441
0.9286	0.0810	0.0262	0.0441	0.0441

0.9643	0.0803	0.0272	0.0441	0.0441
1.0000	0.0797	0.0283	0.0441	0.0441
1.0357	0.0790	0.0294	0.0441	0.0441
1.0714	0.0784	0.0305	0.0441	0.0441
1.1071	0.0778	0.0316	0.0441	0.0441
1.1429	0.0771	0.0327	0.0441	0.0441
1.1786	0.0765	0.0338	0.0441	0.0441
1.2143	0.0758	0.0349	0.0441	0.0441
1.2500	0.0752	0.0361	0.0441	0.0441
1.2857	0.0746	0.0372	0.0441	0.0441
1.3214	0.0739	0.0384	0.0441	0.0441
1.3571	0.0733	0.0395	0.0441	0.0441
1.3929	0.0727	0.0407	0.0441	0.0441
1.4286	0.0721	0.0419	0.0441	0.0441
1.4643	0.0714	0.0431	0.0441	0.0441
1.5000	0.0708	0.0443	0.0441	0.0441
1.5357	0.0702	0.0455	0.0441	0.0441
1.5714	0.0696	0.0467	0.0441	0.0441
1.6071	0.0690	0.0480	0.0441	0.0441
1.6429	0.0684	0.0492	0.0441	0.0441
1.6786	0.0677	0.0505	0.0441	0.0441
1.7143	0.0671	0.0517	0.0441	0.0441
1.7500	0.0665	0.0530	0.0441	0.0441
1.7857	0.0659	0.0544	0.0441	0.0441
1.8214	0.0653	0.0557	0.0441	0.0441
1.8571	0.0647	0.0570	0.0441	0.0441
1.8929	0.0641	0.0584	0.0441	0.0441
1.9286	0.0635	0.0598	0.0441	0.0441
1.9643	0.0629	0.0611	0.0441	0.0441
2.0000	0.0624	0.0625	0.0441	0.0441
2.0357	0.0618	0.0639	0.0441	0.0441
2.0714	0.0612	0.0653	0.0441	0.0441
2.1071	0.0606	0.0667	0.0441	0.0441
2.1429	0.0600	0.0682	0.0441	0.0441
2.1786	0.0594	0.0696	0.0441	0.0441
2.2143	0.0589	0.0710	0.0441	0.0441
2.2500	0.0583	0.0725	0.0441	0.0441

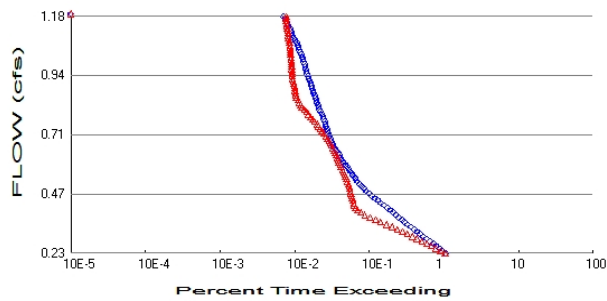
Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
2.2500	0.0987	0.0725	0.0000	0.4198	0.0000
2.2857	0.0994	0.0760	0.0000	0.4198	0.0000
2.3214	0.1001	0.0796	0.0000	0.4282	0.0000
2.3571	0.1008	0.0832	0.0000	0.4366	0.0000
2.3929	0.1015	0.0868	0.0000	0.4450	0.0000
2.4286	0.1022	0.0904	0.0000	0.4534	0.0000
2.4643	0.1030	0.0941	0.0000	0.4618	0.0000
2.5000	0.1037	0.0978	0.0000	0.4701	0.0000
2.5357	0.1044	0.1015	0.0000	0.4785	0.0000
2.5714	0.1051	0.1053	0.0000	0.4869	0.0000
2.6071	0.1059	0.1090	0.0000	0.4953	0.0000
2.6429	0.1066	0.1128	0.0000	0.5037	0.0000
2.6786	0.1073	0.1166	0.0000	0.5121	0.0000
2.7143	0.1081	0.1205	0.0000	0.5205	0.0000
2.7500	0.1088	0.1244	0.0000	0.5289	0.0000
2.7857	0.1095	0.1283	0.0000	0.5373	0.0000
2.8214	0.1103	0.1322	0.0000	0.5457	0.0000
2.8571	0.1110	0.1361	0.0000	0.5541	0.0000

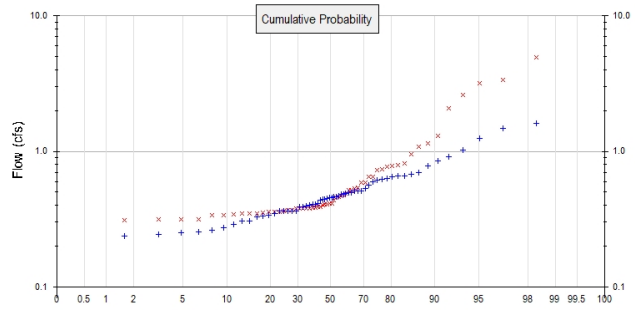
2.8929	0.1118	0.1401	0.0000	0.5625	0.0000
2.9286	0.1125	0.1441	0.0000	0.5709	0.0000
2.9643	0.1133	0.1481	0.0000	0.5793	0.0000
3.0000	0.1140	0.1522	0.0000	0.5877	0.0000
3.0357	0.1148	0.1563	0.0000	0.5961	0.0000
3.0714	0.1155	0.1604	0.0000	0.6045	0.0000
3.1071	0.1163	0.1645	0.0000	0.6129	0.0000
3.1429	0.1170	0.1687	0.0000	0.6213	0.0000
3.1786	0.1178	0.1729	0.0000	0.6297	0.0000
3.2143	0.1186	0.1771	0.0000	0.6381	0.0000
3.2500	0.1193	0.1814	0.0000	0.6465	0.0000
3.2500	0.1193	0.1814	0.0000	0.6465	0.0000

Analysis Results

POC 1



+ Predeveloped x Mitigated



Predeveloped Landuse Totals for POC #1

Total Pervious Area: 21.59
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1

Total Pervious Area: 8.13
Total Impervious Area: 14.83

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.462805
5 year	0.685016
10 year	0.837154
25 year	1.033373
50 year	1.181818
100 year	1.331875

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.500671
5 year	0.892285
10 year	1.269607
25 year	1.924876
50 year	2.576107
100 year	3.400277

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.262	0.357
1950	0.512	0.515
1951	0.414	0.409
1952	0.329	0.350
1953	0.271	0.380
1954	1.024	0.491
1955	0.694	0.777
1956	0.614	0.387
1957	0.681	0.478
1958	0.460	0.950

1959	0.495	0.384
1960	0.440	0.541
1961	0.458	2.591
1962	0.400	0.519
1963	0.483	0.649
1964	0.408	0.379
1965	0.460	0.295
1966	0.250	0.316
1967	0.565	0.584
1968	0.661	0.771
1969	0.496	0.591
1970	0.361	0.336
1971	0.508	0.413
1972	0.451	0.734
1973	0.361	0.365
1974	0.633	0.457
1975	0.364	0.380
1976	0.347	0.411
1977	0.291	0.377
1978	0.362	0.313
1979	0.652	1.076
1980	0.408	0.386
1981	0.333	0.350
1982	0.438	1.292
1983	0.619	0.400
1984	0.455	0.392
1985	0.600	0.722
1986	1.481	3.346
1987	0.658	0.813
1988	0.364	0.367
1989	0.306	0.360
1990	0.479	0.353
1991	0.510	0.533
1992	0.389	0.344
1993	0.254	0.369
1994	0.237	0.350
1995	0.488	0.380
1996	0.847	0.796
1997	1.617	4.936
1998	0.308	0.471
1999	0.445	0.338
2000	0.245	0.439
2001	0.080	0.313
2002	0.468	0.357
2003	0.340	0.312
2004	0.535	1.147
2005	0.394	0.653
2006	0.914	2.085
2007	0.779	0.462
2008	1.239	3.168
2009	0.388	0.406

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.6175	4.9361
2	1.4807	3.3455
3	1.2387	3.1683

4	1.0243	2.5911
5	0.9142	2.0853
6	0.8473	1.2921
7	0.7785	1.1465
8	0.6943	1.0764
9	0.6813	0.9502
10	0.6614	0.8125
11	0.6584	0.7960
12	0.6515	0.7770
13	0.6332	0.7710
14	0.6190	0.7336
15	0.6137	0.7220
16	0.6001	0.6526
17	0.5647	0.6490
18	0.5353	0.5915
19	0.5119	0.5843
20	0.5096	0.5414
21	0.5079	0.5331
22	0.4965	0.5190
23	0.4949	0.5147
24	0.4878	0.4910
25	0.4826	0.4782
26	0.4790	0.4705
27	0.4675	0.4625
28	0.4604	0.4570
29	0.4600	0.4386
30	0.4581	0.4132
31	0.4547	0.4107
32	0.4512	0.4089
33	0.4448	0.4061
34	0.4401	0.4002
35	0.4378	0.3917
36	0.4141	0.3870
37	0.4084	0.3860
38	0.4079	0.3842
39	0.3999	0.3802
40	0.3939	0.3801
41	0.3891	0.3799
42	0.3881	0.3789
43	0.3642	0.3770
44	0.3637	0.3686
45	0.3619	0.3670
46	0.3612	0.3652
47	0.3609	0.3602
48	0.3469	0.3574
49	0.3402	0.3574
50	0.3330	0.3531
51	0.3293	0.3501
52	0.3078	0.3498
53	0.3064	0.3495
54	0.2907	0.3443
55	0.2715	0.3379
56	0.2616	0.3364
57	0.2537	0.3157
58	0.2502	0.3129
59	0.2450	0.3128
60	0.2369	0.3123
61	0.0805	0.2954

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.2314	22736	22180	97	Pass
0.2410	20523	19201	93	Pass
0.2506	18709	16807	89	Pass
0.2602	16822	14470	86	Pass
0.2698	15272	12581	82	Pass
0.2794	13764	10789	78	Pass
0.2890	12457	9300	74	Pass
0.2986	11364	8117	71	Pass
0.3082	10264	6900	67	Pass
0.3178	9373	5959	63	Pass
0.3274	8481	5097	60	Pass
0.3370	7676	4327	56	Pass
0.3466	6983	3647	52	Pass
0.3562	6320	3031	47	Pass
0.3658	5818	2614	44	Pass
0.3754	5302	2199	41	Pass
0.3850	4851	1854	38	Pass
0.3946	4460	1634	36	Pass
0.4042	4096	1476	36	Pass
0.4138	3732	1392	37	Pass
0.4234	3386	1345	39	Pass
0.4330	3050	1312	43	Pass
0.4426	2772	1286	46	Pass
0.4522	2507	1258	50	Pass
0.4618	2314	1237	53	Pass
0.4714	2113	1215	57	Pass
0.4810	1949	1194	61	Pass
0.4906	1827	1168	63	Pass
0.5002	1699	1143	67	Pass
0.5098	1592	1124	70	Pass
0.5194	1485	1085	73	Pass
0.5290	1398	1059	75	Pass
0.5386	1334	1023	76	Pass
0.5482	1261	1000	79	Pass
0.5578	1202	964	80	Pass
0.5674	1139	930	81	Pass
0.5770	1081	891	82	Pass
0.5866	1025	871	84	Pass
0.5962	956	836	87	Pass
0.6058	916	817	89	Pass
0.6154	879	794	90	Pass
0.6250	845	777	91	Pass
0.6346	810	748	92	Pass
0.6442	767	718	93	Pass
0.6538	734	689	93	Pass
0.6634	701	664	94	Pass
0.6730	676	636	94	Pass
0.6826	655	614	93	Pass
0.6922	639	582	91	Pass
0.7018	620	556	89	Pass
0.7114	605	528	87	Pass
0.7210	587	495	84	Pass
0.7306	573	467	81	Pass

0.7402	560	448	80	Pass
0.7498	551	432	78	Pass
0.7594	539	393	72	Pass
0.7690	523	373	71	Pass
0.7786	513	346	67	Pass
0.7882	496	325	65	Pass
0.7978	473	310	65	Pass
0.8074	458	290	63	Pass
0.8170	448	266	59	Pass
0.8266	438	257	58	Pass
0.8362	427	248	58	Pass
0.8458	417	238	57	Pass
0.8554	402	225	55	Pass
0.8650	396	220	55	Pass
0.8746	385	218	56	Pass
0.8842	374	216	57	Pass
0.8938	363	213	58	Pass
0.9034	355	211	59	Pass
0.9130	349	207	59	Pass
0.9226	338	204	60	Pass
0.9322	329	200	60	Pass
0.9418	320	198	61	Pass
0.9514	310	197	63	Pass
0.9610	306	197	64	Pass
0.9706	301	196	65	Pass
0.9802	296	194	65	Pass
0.9898	289	193	66	Pass
0.9994	283	192	67	Pass
1.0090	276	190	68	Pass
1.0186	270	190	70	Pass
1.0282	260	189	72	Pass
1.0378	253	187	73	Pass
1.0474	246	187	76	Pass
1.0570	239	186	77	Pass
1.0666	234	185	79	Pass
1.0762	227	182	80	Pass
1.0858	216	179	82	Pass
1.0954	205	174	84	Pass
1.1050	200	174	87	Pass
1.1146	195	174	89	Pass
1.1242	188	171	90	Pass
1.1338	184	170	92	Pass
1.1434	176	168	95	Pass
1.1530	170	166	97	Pass
1.1626	165	165	100	Pass
1.1722	159	165	103	Pass
1.1818	152	165	108	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.

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



Basin 1
21.59ac

Mitigated Schematic



Predeveloped UCI File

RUN

GLOBAL

```
WWM4 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    2025-06-11 College Place Detention.wdm
MESSU    25    Pre2025-06-11 College Place Detention.MES
          27    Pre2025-06-11 College Place Detention.L61
          28    Pre2025-06-11 College Place Detention.L62
          30    POC2025-06-11 College Place Detention1.dat
```

END FILES

OPN SEQUENCE

INGRP INDELT 00:15

```
PERLND    10
COPY      501
DISPLY     1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INF01

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1 PYR DIG2 FIL2 YRND
1 Basin 1 MAX 1 2 30 9
```

END DISPLY-INF01

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 ***
```

```
10 C, 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 ***
10 0 0 1 0 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 *****
10 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 ***
10      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 KVARV AGWRC
10      0      4.5      0.08      400      0.05      0.5      0.996
END PWAT-PARM2

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

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
10      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
10      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
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	10	21.59		COPY	501	12
PERLND	10	21.59		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	***	ODGTFG for each	***	FUNCT for each	***
# - #	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	PERLND	1 999	EXTNL	PREC		
WDM	2	PREC	ENGL	1	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
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>		#
MASS-LINK		12					
PERLND	PWATER	SURO		0.083333	COPY	INPUT	MEAN
END MASS-LINK		12					

MASS-LINK		13					
PERLND	PWATER	IFW0		0.083333	COPY	INPUT	MEAN
END MASS-LINK		13					

END MASS-LINK

END RUN

Mitigated UCI File

RUN

GLOBAL

```
WWM4 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      2025-06-11 College Place Detention.wdm
MESSU    25      Mit2025-06-11 College Place Detention.MES
          27      Mit2025-06-11 College Place Detention.L61
          28      Mit2025-06-11 College Place Detention.L62
          30      POC2025-06-11 College Place Detention1.dat
```

END FILES

OPN SEQUENCE

INGRP INDELT 00:15

```
PERLND      16
IMPLND       1
IMPLND       4
IMPLND       8
GENER        2
RCHRES       1
RCHRES       2
GENER        4
RCHRES       3
RCHRES       4
GENER        6
RCHRES       5
RCHRES       6
RCHRES       7
COPY         1
COPY        501
COPY        601
DISPLY       1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INF01

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
1      Surface Bioretention      MAX      1      2      30      9
```

END DISPLY-INF01

END DISPLY

COPY

TIMESERIES

```
# - # NPT NMN ***
1      1      1
501     1      1
601     1      1
```

END TIMESERIES

END COPY

GENER

OPCODE

```
#      # OPCD ***
2      24
4      24
6      24
```

END OPCODE

PARM

```
#      #      K ***
2      0.
4      0.
6      0.
```

END PARM

```

END GENER
PERLND
GEN-INFO
  <PLS ><-----Name----->NBLKS      Unit-systems      Printer ***
  # - #                               User  t-series  Engl Metr ***
                                     in  out
16      C, Lawn, 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 ***
16      0      0      1      0      0      0      0      0      0      0      0
END ACTIVITY

PRINT-INFO
  <PLS > ***** Print-flags ***** PIVL  PYR
  # - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
16      0      0      4      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 ***
16      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
16      0      4.5      0.03      400      0.05      0.5      0.996
END PWAT-PARM2

PWAT-PARM3
  <PLS > PWATER input info: Part 3 ***
  # - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
16      0      0      2      2      0      0      0
END PWAT-PARM3
PWAT-PARM4
  <PLS > PWATER input info: Part 4 ***
  # - # CEPSC UZSN NSUR INTFW IRC LZETP ***
16      0.1      0.25      0.25      6      0.5      0.25
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
16      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
1      ROADS/FLAT                1    1    1    27    0
4      ROOF TOPS/FLAT            1    1    1    27    0
8      SIDEWALKS/FLAT            1    1    1    27    0
END GEN-INFO
*** Section IWATER***

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

```

8 0 0 1 0 0 0
END ACTIVITY

PRINT-INFO

<ILS > ***** Print-flags ***** PIVL PYR
- # ATMP SNOW IWAT SLD IWG IQAL *****
1 0 0 4 0 0 4 1 9
4 0 0 4 0 0 0 1 9
8 0 0 4 0 0 0 1 9
END PRINT-INFO

IWAT-PARM1

<PLS > IWATER variable monthly parameter value flags ***
- # CSNO RTOP VRS VNN RTLI ***
1 0 0 0 0 0
4 0 0 0 0 0
8 0 0 0 0 0
END IWAT-PARM1

IWAT-PARM2

<PLS > IWATER input info: Part 2 ***
- # *** LSUR SLSUR NSUR RETSC
1 400 0.01 0.1 0.1
4 400 0.01 0.1 0.1
8 400 0.01 0.1 0.1
END IWAT-PARM2

IWAT-PARM3

<PLS > IWATER input info: Part 3 ***
- # *** PETMAX PETMIN
1 0 0
4 0 0
8 0 0
END IWAT-PARM3

IWAT-STATE1

<PLS > *** Initial conditions at start of simulation
- # *** RETS SURS
1 0 0
4 0 0
8 0 0
END IWAT-STATE1

END IMPLND

SCHEMATIC

<-Source->	<-Area-->	<-Target->	MBLK	***
<Name> #	<-factor->	<Name> #	Tbl#	***
Basin 1***				
PERLND 16	6.99	RCHRES 7	2	
PERLND 16	6.99	RCHRES 7	3	
IMPLND 1	6.63	RCHRES 7	5	
IMPLND 4	2.57	RCHRES 7	5	
IMPLND 8	3.32	RCHRES 7	5	
Infiltrating Bioretention***				
PERLND 16	0.21	RCHRES 1	2	
PERLND 16	0.21	RCHRES 1	3	
IMPLND 1	0.4	RCHRES 1	5	
IMPLND 8	0.04	RCHRES 1	5	
South Bioretention (non-infiltrating)***				
PERLND 16	0.11	RCHRES 3	2	
PERLND 16	0.11	RCHRES 3	3	
IMPLND 1	0.16	RCHRES 3	5	
IMPLND 8	0.06	RCHRES 3	5	
North Bioretention (Non-Infiltrating)***				
PERLND 16	0.51	RCHRES 5	2	
PERLND 16	0.51	RCHRES 5	3	
IMPLND 1	1.16	RCHRES 5	5	
IMPLND 8	0.29	RCHRES 5	5	
Basin 5***				

PERLND	16	0.31	COPY	501	12
PERLND	16	0.31	COPY	601	12
PERLND	16	0.31	COPY	501	13
PERLND	16	0.31	COPY	601	13
IMPLND	1	0.2	COPY	501	15
IMPLND	1	0.2	COPY	601	15

*****Routing*****

PERLND	16	6.99	COPY	1	12
IMPLND	1	6.63	COPY	1	15
IMPLND	4	2.57	COPY	1	15
IMPLND	8	3.32	COPY	1	15
PERLND	16	6.99	COPY	1	13
PERLND	16	0.21	COPY	1	12
IMPLND	1	0.4	COPY	1	15
IMPLND	8	0.04	COPY	1	15
PERLND	16	0.21	COPY	1	13
RCHRES	1	1	RCHRES	2	8
PERLND	16	0.11	COPY	1	12
IMPLND	1	0.16	COPY	1	15
IMPLND	8	0.06	COPY	1	15
PERLND	16	0.11	COPY	1	13
RCHRES	3	1	RCHRES	4	8
RCHRES	6	1	RCHRES	7	7
RCHRES	6		COPY	1	17
RCHRES	5	1	RCHRES	7	7
RCHRES	5		COPY	1	17
RCHRES	5	1	RCHRES	6	8
RCHRES	7	1	COPY	501	17
RCHRES	2	1	COPY	501	17
RCHRES	1	1	COPY	501	17
RCHRES	4	1	COPY	501	17
RCHRES	3	1	COPY	501	17

END SCHEMATIC

NETWORK

<-Volume->	<-Grp>	<-Member->	<-Mult-->	Tran	<-Target	vols>	<-Grp>	<-Member->	***		
<Name>	#	<Name>	#	#<-factor->	strg	<Name>	#	<Name>	#		
COPY	501	OUTPUT	MEAN	1	1	48.4	DISPLY	1	INPUT	TIMSER	1
GENER	2	OUTPUT	TIMSER			.0011111	RCHRES	1	EXTNL	OUTDGT	1
GENER	4	OUTPUT	TIMSER			.0011111	RCHRES	3	EXTNL	OUTDGT	1
GENER	6	OUTPUT	TIMSER			.0011111	RCHRES	5	EXTNL	OUTDGT	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	Surface Bioreten-011	2	1	1 1	28 0 1	
2	South Drive Bior-010	2	1	1 1	28 0 1	
3	Surface Bioreten-014	2	1	1 1	28 0 1	
4	South Parking Bi-013	2	1	1 1	28 0 1	
5	Surface Bioreten-021	2	1	1 1	28 0 1	
6	North Parking Bi-020	2	1	1 1	28 0 1	
7	StormTech 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	
2			1	0	0	0	0	0	0	0	0	0	
3			1	0	0	0	0	0	0	0	0	0	

4	1	0	0	0	0	0	0	0	0	0
5	1	0	0	0	0	0	0	0	0	0
6	1	0	0	0	0	0	0	0	0	0
7	1	0	0	0	0	0	0	0	0	0

END ACTIVITY

PRINT-INFO

***** Print-flags *****												PIVL	PYR	
<PLS >	#	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	
4	4	0	0	0	0	0	0	0	0	0	0	1	9	
5	4	0	0	0	0	0	0	0	0	0	0	1	9	
6	4	0	0	0	0	0	0	0	0	0	0	1	9	
7	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 possible exit				ODGTFG for each possible exit				FUNCT for each possible exit			
		FG	FG	FG	FG	*	*	*	*	*	*	*	*	*	*	*	*
1		0	1	0	0	4	5	0	0	0	0	0	1	0	0	0	2 1 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	5	0	0	0	0	0	1	0	0	0	2 1 2 2 2
4		0	1	0	0	4	5	0	0	0	0	0	0	0	0	0	2 2 2 2 2
5		0	1	0	0	4	5	0	0	0	0	0	1	0	0	0	2 1 2 2 2
6		0	1	0	0	4	5	0	0	0	0	0	0	0	0	0	2 2 2 2 2
7		0	1	0	0	4	5	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	0.01	0.0	0.0	0.0	0.0	
2		2	0.01	0.0	0.0	0.0	0.0	
3		3	0.01	0.0	0.0	0.0	0.0	
4		4	0.01	0.0	0.0	0.0	0.0	
5		5	0.01	0.0	0.0	0.0	0.0	
6		6	0.02	0.0	0.0	0.0	0.0	
7		7	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		
2		0	4.0	5.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
3		0	4.0	5.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
4		0	4.0	5.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
5		0	4.0	5.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
6		0	4.0	5.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
7		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

```

*** User-Defined Variable Quantity Lines
***
***
*** kwd  varnam  optyp  opn  vari  s1 s2 s3 tp multiply  lc ls ac as agfn ***
<-----> <-----> <-----> <-> <-----> <-----> <-----> <-----> <-----> <-----> <-----> <-----> <-----> <----->
UVQUAN vol2    RCHRES    2 VOL                                4
UVQUAN v2m2    GLOBAL    WORKSP    1                        3
UVQUAN vpo2    GLOBAL    WORKSP    2                        3
UVQUAN v2d2    GENER     2 K        1                        3
*** User-Defined Variable Quantity Lines
***

```

```

***
*** kwd varnam optyp opn vari s1 s2 s3 tp multiply lc ls ac as agfn ***
<****> <-----> <-----> <-> <-----><-><-><-><-><-----> <><-> <><-> <-> ***
UVQUAN vol4 RCHRES 4 VOL 4
UVQUAN v2m4 GLOBAL WORKSP 3 3
UVQUAN vpo4 GLOBAL WORKSP 4 3
UVQUAN v2d4 GENER 4 K 1 3
*** User-Defined Variable Quantity Lines
*** addr
***
*** kwd varnam optyp opn vari s1 s2 s3 tp multiply lc ls ac as agfn ***
<****> <-----> <-----> <-> <-----><-><-><-><-><-----> <><-> <><-> <-> ***
UVQUAN vol6 RCHRES 6 VOL 4
UVQUAN v2m6 GLOBAL WORKSP 5 3
UVQUAN vpo6 GLOBAL WORKSP 6 3
UVQUAN v2d6 GENER 6 K 1 3
*** User-Defined Target Variable Names
*** addr or
***
*** kwd varnam ct vari s1 s2 s3 frac oper
<****> <-----><-> <-----><-><-><-> <-----> <->
UVNAME v2m2 1 WORKSP 1 1.0 QUAN
UVNAME vpo2 1 WORKSP 2 1.0 QUAN
UVNAME v2d2 1 K 1 1.0 QUAN
*** User-Defined Target Variable Names
*** addr or
***
*** kwd varnam ct vari s1 s2 s3 frac oper
<****> <-----><-> <-----><-><-><-> <-----> <->
UVNAME v2m4 1 WORKSP 3 1.0 QUAN
UVNAME vpo4 1 WORKSP 4 1.0 QUAN
UVNAME v2d4 1 K 1 1.0 QUAN
*** User-Defined Target Variable Names
*** addr or
***
*** kwd varnam ct vari s1 s2 s3 frac oper
<****> <-----><-> <-----><-><-><-> <-----> <->
UVNAME v2m6 1 WORKSP 5 1.0 QUAN
UVNAME vpo6 1 WORKSP 6 1.0 QUAN
UVNAME v2d6 1 K 1 1.0 QUAN
*** opt foplop dcdts yr mo dy hr mn d t vnam s1 s2 s3 ac quantity tc ts rp
<****><-><-><-><-><-><-> <> <> <> <><><> <-----><-><-><-><-><-----> <> <-><->
GENER 2 v2m2 = 1842.89
*** Compute remaining available pore space
GENER 2 vpo2 = v2m2
GENER 2 vpo2 -= vol2
*** Check to see if VPORA goes negative; if so set VPORA = 0.0
IF (vpo2 < 0.0) THEN
GENER 2 vpo2 = 0.0
END IF
*** Infiltration volume
GENER 2 v2d2 = vpo2
*** opt foplop dcdts yr mo dy hr mn d t vnam s1 s2 s3 ac quantity tc ts rp
<****><-><-><-><-><-><-> <> <> <> <><><> <-----><-><-><-><-><-----> <> <-><->
GENER 4 v2m4 = 2229.49
*** Compute remaining available pore space
GENER 4 vpo4 = v2m4
GENER 4 vpo4 -= vol4
*** Check to see if VPORA goes negative; if so set VPORA = 0.0
IF (vpo4 < 0.0) THEN
GENER 4 vpo4 = 0.0
END IF
*** Infiltration volume
GENER 4 v2d4 = vpo4
*** opt foplop dcdts yr mo dy hr mn d t vnam s1 s2 s3 ac quantity tc ts rp
<****><-><-><-><-><-><-> <> <> <> <><><> <-----><-><-><-><-><-----> <> <-><->
GENER 6 v2m6 = 3197.99
*** Compute remaining available pore space
GENER 6 vpo6 = v2m6
GENER 6 vpo6 -= vol6

```

*** Check to see if VPORA goes negative; if so set VPORA = 0.0

IF (vpo6 < 0.0) THEN

GENER 6 vpo6 = 0.0

END IF

*** Infiltration volume

GENER 6 v2d6 = vpo6

END SPEC-ACTIONS

FTABLES

FTABLE 7

43 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.644111	0.000000	0.000000	0.000000		
0.083333	0.682291	0.021497	0.082744	0.649478		
0.166667	0.682291	0.042994	0.117017	0.649478		
0.250000	0.682291	0.064574	0.143316	0.649478		
0.333333	0.682291	0.086064	0.165487	0.649478		
0.416667	0.682291	0.107595	0.185020	0.649478		
0.500000	0.682291	0.129126	0.202680	0.649478		
0.583333	0.682291	0.175855	0.218919	0.649478		
0.666667	0.682291	0.222418	0.234034	0.649478		
0.750000	0.682291	0.268815	0.248231	0.649478		
0.833333	0.682291	0.314880	0.261658	0.649478		
0.916667	0.682291	0.360696	0.274430	0.649478		
1.000000	0.682291	0.406263	0.286633	0.649478		
1.083333	0.682291	0.451498	0.298337	0.649478		
1.166667	0.682291	0.496318	0.309598	0.649478		
1.250000	0.682291	0.540723	0.320465	0.649478		
1.333333	0.682291	0.584796	0.330975	0.649478		
1.416667	0.682291	0.628371	0.341161	0.649478		
1.500000	0.682291	0.671531	0.351052	0.649478		
1.583333	0.682291	0.714193	0.360671	0.649478		
1.666667	0.682291	0.756274	0.370041	0.649478		
1.750000	0.682291	0.797774	0.379179	0.649478		
1.833333	0.682291	0.838693	0.484065	0.649478		
1.916667	0.682291	0.878948	0.532537	0.649478		
2.000000	0.682291	0.918456	0.571573	0.649478		
2.083333	0.682291	0.957383	0.605645	0.649478		
2.166667	0.682291	0.995480	0.636492	0.649478		
2.250000	0.682291	1.032415	0.665009	0.649478		
2.333333	0.682291	1.068354	0.691733	0.649478		
2.416667	0.682291	1.103380	0.717013	0.649478		
2.500000	0.682291	1.137078	0.741095	0.649478		
2.583333	0.682291	1.169448	0.764159	0.649478		
2.666667	0.682291	1.200075	0.786342	0.649478		
2.750000	0.682291	1.228461	0.807752	0.649478		
2.833333	0.682291	1.253112	1.178729	0.649478		
2.916667	0.682291	1.276435	1.687723	0.649478		
3.000000	0.682291	1.298596	2.251894	0.649478		
3.083333	0.682291	1.320093	2.762557	0.649478		
3.166667	0.682291	1.341590	3.133396	0.649478		
3.250000	0.682291	1.363170	3.362266	0.649478		
3.333333	0.682291	1.384661	3.601074	0.649478		
3.416667	0.682291	1.406192	3.802065	0.649478		
3.500000	0.682291	1.427723	3.991547	0.649478		

END FTABLE 7

FTABLE 2

56 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.060589	0.000000	0.000000	0.000000		
0.041209	0.060211	0.000637	0.000000	0.000000		
0.082418	0.059584	0.001284	0.000000	0.000000		
0.123626	0.058960	0.001941	0.000000	0.000000		
0.164835	0.058339	0.002608	0.000000	0.000000		
0.206044	0.057720	0.003286	0.000000	0.000000		
0.247253	0.057105	0.003973	0.000000	0.000000		
0.288462	0.056492	0.004528	0.000000	0.000687		
0.329670	0.055882	0.005091	0.000000	0.001172		
0.370879	0.055274	0.005662	0.000000	0.001828		

0.412088	0.054670	0.006242	0.000000	0.002674
0.453297	0.054068	0.006830	0.000000	0.003731
0.494505	0.053469	0.007426	0.000000	0.005013
0.535714	0.052873	0.008031	0.000000	0.006537
0.576923	0.052280	0.008644	0.000000	0.008317
0.618132	0.051689	0.009266	0.000000	0.010368
0.659341	0.051102	0.009896	0.000000	0.012702
0.700549	0.050517	0.010535	0.000000	0.015332
0.741758	0.049935	0.011183	0.000000	0.018269
0.782967	0.049355	0.011839	0.000000	0.021526
0.824176	0.048779	0.012504	0.000000	0.025113
0.865385	0.048205	0.013178	0.000000	0.029042
0.906593	0.047635	0.013861	0.000000	0.030931
0.947802	0.047066	0.014553	0.000000	0.030931
0.989011	0.046501	0.015254	0.000000	0.030931
1.030220	0.045939	0.015963	0.000000	0.030931
1.071429	0.045379	0.016682	0.000000	0.030931
1.112637	0.044822	0.017410	0.000000	0.030931
1.153846	0.044268	0.018147	0.000000	0.030931
1.195055	0.043717	0.018893	0.000000	0.030931
1.236264	0.043169	0.019649	0.000000	0.030931
1.277473	0.042623	0.020413	0.000000	0.030931
1.318681	0.042081	0.021187	0.000000	0.030931
1.359890	0.041541	0.021971	0.000000	0.030931
1.401099	0.041004	0.022764	0.000000	0.030931
1.442308	0.040469	0.023566	0.000000	0.030931
1.483516	0.039938	0.024378	0.000000	0.030931
1.524725	0.039409	0.025199	0.000000	0.030931
1.565934	0.038883	0.026030	0.000000	0.030931
1.607143	0.038360	0.026871	0.000000	0.030931
1.648352	0.037840	0.027721	0.000000	0.030931
1.689560	0.037322	0.028581	0.000000	0.030931
1.730769	0.036807	0.029451	0.000000	0.030931
1.771978	0.036296	0.030361	0.000000	0.030931
1.813187	0.035786	0.031280	0.000000	0.030931
1.854396	0.035280	0.032210	0.000000	0.030931
1.895604	0.034777	0.033150	0.000000	0.030931
1.936813	0.034276	0.034101	0.000000	0.030931
1.978022	0.033778	0.035061	0.000000	0.030931
2.019231	0.033283	0.036033	0.000000	0.030931
2.060440	0.032791	0.037015	0.000000	0.030931
2.101648	0.032302	0.038007	0.000000	0.030931
2.142857	0.031815	0.039010	0.000000	0.030931
2.184066	0.031331	0.040024	0.000000	0.030931
2.225275	0.030850	0.041048	0.000000	0.030931
2.250000	0.030372	0.042307	0.000000	0.030931

END FTABLE 2

FTABLE 1

38 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.030372	0.000000	0.000000	0.000000		
0.041209	0.061220	0.002510	0.000000	0.219423		
0.082418	0.061855	0.005046	0.000000	0.224471		
0.123626	0.062492	0.007608	0.000000	0.229519		
0.164835	0.063132	0.010196	0.000000	0.234567		
0.206044	0.063774	0.012811	0.000000	0.239616		
0.247253	0.064420	0.015452	0.000000	0.244664		
0.288462	0.065068	0.018120	0.000000	0.249712		
0.329670	0.065719	0.020815	0.000000	0.254760		
0.370879	0.066373	0.023537	0.000000	0.259808		
0.412088	0.067030	0.026285	0.000000	0.264856		
0.453297	0.067689	0.029061	0.000000	0.269904		
0.494505	0.068352	0.031864	0.000000	0.274952		
0.535714	0.069017	0.034695	0.000000	0.280000		
0.576923	0.069685	0.037553	0.000000	0.285048		
0.618132	0.070355	0.040438	0.000000	0.290096		
0.659341	0.071029	0.043351	0.000000	0.295144		
0.700549	0.071705	0.046292	0.000000	0.300193		
0.741758	0.072384	0.049261	0.000000	0.305241		

0.782967	0.073066	0.052258	0.000000	0.310289
0.824176	0.073751	0.055283	0.000000	0.315337
0.865385	0.074439	0.058336	0.000000	0.320385
0.906593	0.075129	0.061418	0.000000	0.325433
0.947802	0.075822	0.064528	0.000000	0.330481
0.989011	0.076518	0.067667	0.000000	0.335529
1.030220	0.077217	0.070835	0.027820	0.340577
1.071429	0.077919	0.074031	0.099620	0.345625
1.112637	0.078623	0.077257	0.188271	0.350673
1.153846	0.079331	0.080511	0.274281	0.355721
1.195055	0.080041	0.083795	0.340388	0.360770
1.236264	0.080753	0.087108	0.380140	0.365818
1.277473	0.081469	0.090451	0.414772	0.370866
1.318681	0.082188	0.093823	0.444506	0.375914
1.359890	0.082909	0.097225	0.472372	0.380962
1.401099	0.083633	0.100656	0.498684	0.386010
1.442308	0.084360	0.104117	0.523675	0.391058
1.483516	0.085090	0.107609	0.547527	0.396106
1.500000	0.085382	0.109014	0.570382	0.398125

END FTABLE 1

FTABLE 4

64 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.071183	0.000000	0.000000	0.000000		
0.035714	0.070604	0.000704	0.000000	0.000000		
0.071429	0.070027	0.001416	0.000000	0.000000		
0.107143	0.069451	0.002136	0.000000	0.000000		
0.142857	0.068878	0.002864	0.000000	0.000000		
0.178571	0.068307	0.003600	0.000000	0.000000		
0.214286	0.067738	0.004345	0.000000	0.000000		
0.250000	0.067172	0.005098	0.000000	0.000000		
0.285714	0.066607	0.005703	0.000000	0.001141		
0.321429	0.066044	0.006315	0.000000	0.001750		
0.357143	0.065484	0.006934	0.000000	0.002531		
0.392857	0.064926	0.007559	0.000000	0.003498		
0.428571	0.064369	0.008192	0.000000	0.004667		
0.464286	0.063815	0.008831	0.000000	0.006052		
0.500000	0.063263	0.009476	0.000000	0.007666		
0.535714	0.062713	0.010129	0.000000	0.009521		
0.571429	0.062166	0.010788	0.000000	0.011630		
0.607143	0.061620	0.011455	0.000000	0.014003		
0.642857	0.061076	0.012128	0.000000	0.016651		
0.678571	0.060535	0.012808	0.000000	0.019585		
0.714286	0.059995	0.013495	0.000000	0.022813		
0.750000	0.059458	0.014190	0.000000	0.026347		
0.785714	0.058923	0.014891	0.000000	0.029340		
0.821429	0.058390	0.015599	0.000000	0.029340		
0.857143	0.057859	0.016315	0.000000	0.029340		
0.892857	0.057330	0.017038	0.000000	0.029340		
0.928571	0.056804	0.017768	0.000000	0.029340		
0.964286	0.056279	0.018505	0.000000	0.029340		
1.000000	0.055756	0.019249	0.000000	0.029340		
1.035714	0.055236	0.020000	0.000000	0.029340		
1.071429	0.054718	0.020759	0.000000	0.029340		
1.107143	0.054202	0.021525	0.000000	0.029340		
1.142857	0.053688	0.022299	0.000000	0.029340		
1.178571	0.053176	0.023080	0.000000	0.029340		
1.214286	0.052666	0.023868	0.000000	0.029340		
1.250000	0.052158	0.024664	0.000000	0.029340		
1.285714	0.051652	0.025467	0.000000	0.029340		
1.321429	0.051149	0.026278	0.000000	0.029340		
1.357143	0.050647	0.027096	0.000000	0.029340		
1.392857	0.050148	0.027922	0.000000	0.029340		
1.428571	0.049651	0.028756	0.000000	0.029340		
1.464286	0.049156	0.029597	0.000000	0.029340		
1.500000	0.048663	0.030445	0.000000	0.029340		
1.535714	0.048172	0.031302	0.000000	0.029340		
1.571429	0.047683	0.032166	0.000000	0.029340		
1.607143	0.047196	0.033038	0.000000	0.029340		

1.642857	0.046712	0.033918	0.000000	0.029340
1.678571	0.046229	0.034805	0.000000	0.029340
1.714286	0.045749	0.035700	0.000000	0.029340
1.750000	0.045271	0.036634	0.000000	0.029340
1.785714	0.044795	0.037576	0.000000	0.029340
1.821429	0.044321	0.038526	0.000000	0.029340
1.857143	0.043849	0.039484	0.000000	0.029340
1.892857	0.043379	0.040450	0.000000	0.029340
1.928571	0.042911	0.041425	0.000000	0.029340
1.964286	0.042446	0.042408	0.000000	0.029340
2.000000	0.041982	0.043399	0.000000	0.029340
2.035714	0.041521	0.044399	0.000000	0.029340
2.071429	0.041062	0.045407	0.000000	0.029340
2.107143	0.040605	0.046424	0.000000	0.029340
2.142857	0.040150	0.047449	0.000000	0.029340
2.178571	0.039697	0.048483	0.000000	0.029340
2.214286	0.039246	0.049525	0.000000	0.029340
2.250000	0.038797	0.051182	0.000000	0.029340

END FTABLE 4

FTABLE 3

30	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.038797	0.000000	0.000000	0.000000			
0.035714	0.071765	0.002553	0.035714	0.279431			
0.071429	0.072349	0.005126	0.099620	0.285020			
0.107143	0.072934	0.007720	0.176175	0.290609			
0.142857	0.073522	0.010336	0.252684	0.296197			
0.178571	0.074112	0.012972	0.317120	0.301786			
0.214286	0.074704	0.015630	0.361900	0.307375			
0.250000	0.075298	0.018308	0.389498	0.312963			
0.285714	0.075895	0.021008	0.420887	0.318552			
0.321429	0.076493	0.023729	0.446418	0.324140			
0.357143	0.077094	0.026472	0.470566	0.329729			
0.392857	0.077696	0.029236	0.493534	0.335318			
0.428571	0.078301	0.032022	0.515479	0.340906			
0.464286	0.078908	0.034829	0.536528	0.346495			
0.500000	0.079517	0.037658	0.556781	0.352084			
0.535714	0.080128	0.040509	0.576323	0.357672			
0.571429	0.080741	0.043381	0.595224	0.363261			
0.607143	0.081356	0.046276	0.613543	0.368850			
0.642857	0.081974	0.049193	0.631331	0.374438			
0.678571	0.082593	0.052131	0.648630	0.380027			
0.714286	0.083215	0.055092	0.665481	0.385615			
0.750000	0.083838	0.058075	0.681915	0.391204			
0.785714	0.084464	0.061081	0.697962	0.396793			
0.821429	0.085092	0.064108	0.713649	0.402381			
0.857143	0.085722	0.067159	0.728998	0.407970			
0.892857	0.086354	0.070231	0.744030	0.413559			
0.928571	0.086989	0.073327	0.758765	0.419147			
0.964286	0.087625	0.076445	0.773219	0.424736			
1.000000	0.088263	0.079586	0.787408	0.430324			
1.000000	0.088263	0.079586	0.801345	0.430324			

END FTABLE 3

FTABLE 6

64	5						
Depth	Area	Volume	Outflow1	Outflow2	Velocity	Travel Time***	
(ft)	(acres)	(acre-ft)	(cfs)	(cfs)	(ft/sec)	(Minutes)***	
0.000000	0.098681	0.000000	0.000000	0.000000			
0.035714	0.097974	0.001056	0.000000	0.000000			
0.071429	0.097269	0.002123	0.000000	0.000000			
0.107143	0.096567	0.003200	0.000000	0.000000			
0.142857	0.095867	0.004288	0.000000	0.000000			
0.178571	0.095169	0.005386	0.000000	0.000000			
0.214286	0.094473	0.006495	0.000000	0.000000			
0.250000	0.093779	0.007614	0.000000	0.000000			
0.285714	0.093087	0.008513	0.000000	0.001714			
0.321429	0.092397	0.009420	0.000000	0.002630			
0.357143	0.091710	0.010335	0.000000	0.003801			
0.392857	0.091024	0.011259	0.000000	0.005254			

0.428571	0.090341	0.012192	0.000000	0.007011
0.464286	0.089659	0.013133	0.000000	0.009091
0.500000	0.088980	0.014082	0.000000	0.011516
0.535714	0.088303	0.015041	0.000000	0.014303
0.571429	0.087628	0.016008	0.000000	0.017471
0.607143	0.086955	0.016984	0.000000	0.021036
0.642857	0.086284	0.017969	0.000000	0.025014
0.678571	0.085616	0.018962	0.000000	0.029421
0.714286	0.084949	0.019964	0.000000	0.034271
0.750000	0.084285	0.020975	0.000000	0.039580
0.785714	0.083623	0.021995	0.000000	0.044076
0.821429	0.082962	0.023024	0.000000	0.044076
0.857143	0.082304	0.024062	0.000000	0.044076
0.892857	0.081648	0.025109	0.000000	0.044076
0.928571	0.080994	0.026164	0.000000	0.044076
0.964286	0.080343	0.027229	0.000000	0.044076
1.000000	0.079693	0.028303	0.000000	0.044076
1.035714	0.079045	0.029386	0.000000	0.044076
1.071429	0.078400	0.030478	0.000000	0.044076
1.107143	0.077757	0.031579	0.000000	0.044076
1.142857	0.077115	0.032689	0.000000	0.044076
1.178571	0.076476	0.033809	0.000000	0.044076
1.214286	0.075839	0.034938	0.000000	0.044076
1.250000	0.075204	0.036076	0.000000	0.044076
1.285714	0.074572	0.037223	0.000000	0.044076
1.321429	0.073941	0.038380	0.000000	0.044076
1.357143	0.073312	0.039546	0.000000	0.044076
1.392857	0.072686	0.040722	0.000000	0.044076
1.428571	0.072061	0.041907	0.000000	0.044076
1.464286	0.071439	0.043101	0.000000	0.044076
1.500000	0.070819	0.044305	0.000000	0.044076
1.535714	0.070201	0.045518	0.000000	0.044076
1.571429	0.069585	0.046741	0.000000	0.044076
1.607143	0.068971	0.047973	0.000000	0.044076
1.642857	0.068359	0.049216	0.000000	0.044076
1.678571	0.067750	0.050467	0.000000	0.044076
1.714286	0.067142	0.051729	0.000000	0.044076
1.750000	0.066537	0.053042	0.000000	0.044076
1.785714	0.065934	0.054366	0.000000	0.044076
1.821429	0.065332	0.055700	0.000000	0.044076
1.857143	0.064733	0.057044	0.000000	0.044076
1.892857	0.064136	0.058398	0.000000	0.044076
1.928571	0.063542	0.059763	0.000000	0.044076
1.964286	0.062949	0.061137	0.000000	0.044076
2.000000	0.062358	0.062522	0.000000	0.044076
2.035714	0.061770	0.063917	0.000000	0.044076
2.071429	0.061183	0.065323	0.000000	0.044076
2.107143	0.060599	0.066738	0.000000	0.044076
2.142857	0.060017	0.068164	0.000000	0.044076
2.178571	0.059437	0.069601	0.000000	0.044076
2.214286	0.058859	0.071048	0.000000	0.044076
2.250000	0.058283	0.073416	0.000000	0.044076

END FTABLE 6

FTABLE 5

30 5

Depth (ft)	Area (acres)	Volume (acre-ft)	Outflow1 (cfs)	Outflow2 (cfs)	Velocity (ft/sec)	Travel Time*** (Minutes)***
0.000000	0.058283	0.000000	0.000000	0.000000		
0.035714	0.099389	0.003537	0.035714	0.419775		
0.071429	0.100100	0.007099	0.099620	0.428171		
0.107143	0.100813	0.010687	0.176175	0.436566		
0.142857	0.101528	0.014300	0.252684	0.444962		
0.178571	0.102245	0.017939	0.317120	0.453358		
0.214286	0.102964	0.021603	0.361900	0.461753		
0.250000	0.103686	0.025294	0.389498	0.470149		
0.285714	0.104409	0.029010	0.420887	0.478544		
0.321429	0.105135	0.032752	0.446418	0.486940		
0.357143	0.105862	0.036519	0.470566	0.495335		
0.392857	0.106592	0.040313	0.493534	0.503731		
0.428571	0.107324	0.044133	0.515479	0.512126		

0.464286	0.108058	0.047979	0.536528	0.520522
0.500000	0.108794	0.051852	0.556781	0.528917
0.535714	0.109532	0.055750	0.576323	0.537313
0.571429	0.110273	0.059675	0.595224	0.545708
0.607143	0.111015	0.063627	0.613543	0.554104
0.642857	0.111760	0.067605	0.631331	0.562499
0.678571	0.112506	0.071610	0.648630	0.570895
0.714286	0.113255	0.075641	0.665481	0.579290
0.750000	0.114006	0.079699	0.681915	0.587686
0.785714	0.114759	0.083785	0.697962	0.596081
0.821429	0.115514	0.087897	0.713649	0.604477
0.857143	0.116271	0.092036	0.728998	0.612872
0.892857	0.117031	0.096202	0.744030	0.621268
0.928571	0.117792	0.100395	0.758765	0.629663
0.964286	0.118555	0.104615	0.773219	0.638059
1.000000	0.119321	0.108863	0.787408	0.646454
1.000000	0.119321	0.108863	0.801345	0.646454

END FTABLE 5
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	PERLND	1	999	EXTNL PREC	
WDM	2	PREC ENGL 1	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	
WDM	2	PREC ENGL 1	RCHRES	1		EXTNL PREC	
WDM	2	PREC ENGL 1	RCHRES	3		EXTNL PREC	
WDM	2	PREC ENGL 1	RCHRES	5		EXTNL PREC	
WDM	1	EVAP ENGL 0.5	RCHRES	1		EXTNL POTEV	
WDM	1	EVAP ENGL 0.76	RCHRES	2		EXTNL POTEV	
WDM	1	EVAP ENGL 0.5	RCHRES	3		EXTNL POTEV	
WDM	1	EVAP ENGL 0.76	RCHRES	4		EXTNL POTEV	
WDM	1	EVAP ENGL 0.5	RCHRES	5		EXTNL POTEV	
WDM	1	EVAP ENGL 0.76	RCHRES	6		EXTNL POTEV	

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	7	HYDR RO 1 1 1	WDM	1000	FLOW	ENGL		REPL
RCHRES	7	HYDR 0 1 1 1	WDM	1002	FLOW	ENGL		REPL
RCHRES	7	HYDR 0 2 1 1	WDM	1003	FLOW	ENGL		REPL
RCHRES	7	HYDR STAGE 1 1 1	WDM	1001	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
COPY	601	OUTPUT MEAN 1 1 48.4	WDM	901	FLOW	ENGL		REPL
RCHRES	2	HYDR RO 1 1 1	WDM	1004	FLOW	ENGL		REPL
RCHRES	2	HYDR 0 1 1 1	WDM	1005	FLOW	ENGL		REPL
RCHRES	2	HYDR 0 2 1 1	WDM	1006	FLOW	ENGL		REPL
RCHRES	2	HYDR STAGE 1 1 1	WDM	1007	STAG	ENGL		REPL
RCHRES	1	HYDR STAGE 1 1 1	WDM	1008	STAG	ENGL		REPL
RCHRES	1	HYDR 0 1 1 1	WDM	1009	FLOW	ENGL		REPL
RCHRES	4	HYDR RO 1 1 1	WDM	1010	FLOW	ENGL		REPL
RCHRES	4	HYDR 0 1 1 1	WDM	1014	FLOW	ENGL		REPL
RCHRES	4	HYDR 0 2 1 1	WDM	1015	FLOW	ENGL		REPL
RCHRES	4	HYDR STAGE 1 1 1	WDM	1011	STAG	ENGL		REPL
RCHRES	3	HYDR STAGE 1 1 1	WDM	1012	STAG	ENGL		REPL
RCHRES	3	HYDR 0 1 1 1	WDM	1013	FLOW	ENGL		REPL

END EXT TARGETS

MASS-LINK

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

MASS-LINK	3				
PERLND PWATER IFW0	0.083333	RCHRES	INFLOW	IVOL	
END MASS-LINK	3				
MASS-LINK	5				
IMPLND IWATER SURO	0.083333	RCHRES	INFLOW	IVOL	
END MASS-LINK	5				
MASS-LINK	7				
RCHRES OFLOW OVOL	1	RCHRES	INFLOW	IVOL	
END MASS-LINK	7				
MASS-LINK	8				
RCHRES OFLOW OVOL	2	RCHRES	INFLOW	IVOL	
END MASS-LINK	8				
MASS-LINK	12				
PERLND PWATER SURO	0.083333	COPY	INPUT	MEAN	
END MASS-LINK	12				
MASS-LINK	13				
PERLND PWATER IFW0	0.083333	COPY	INPUT	MEAN	
END MASS-LINK	13				
MASS-LINK	15				
IMPLND IWATER SURO	0.083333	COPY	INPUT	MEAN	
END MASS-LINK	15				
MASS-LINK	17				
RCHRES OFLOW OVOL	1	COPY	INPUT	MEAN	
END MASS-LINK	17				
END MASS-LINK					
END RUN					

Mitigated HSPF Message File

ERROR/WARNING ID: 341 5

DATE/TIME: 1985/11/29 17:15

RCHRES: 6

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
-3.014E+01	8170.0	-2.201E-05	-0.00093	-4.317E-10	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1996/12/31 23:30

RCHRES: 7

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
43	6.1254E+04	6.2192E+04	6.3608E+04

ERROR/WARNING ID: 341 5

DATE/TIME: 1996/12/31 23:30

RCHRES: 7

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	5.9441E+04	-1.492E+05	2.5107	2.5107E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1996/12/31 23:45

RCHRES: 7

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
43	6.1254E+04	6.2192E+04	6.6408E+04

ERROR/WARNING ID: 341 5

DATE/TIME: 1996/12/31 23:45

RCHRES: 7

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT	
0.0000E+00	5.9441E+04	-3.266E+05	5.4951	5.4951	5.4951	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1996/12/31 24: 0

RCHRES: 7

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
43	6.1254E+04	6.2192E+04	6.5963E+04

ERROR/WARNING ID: 341 5

DATE/TIME: 1996/12/31 24: 0

RCHRES: 7

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT	
0.0000E+00	5.9441E+04	-2.985E+05	5.0212	5.0212E+00	5.0212E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1997/ 1/ 1 0:15

RCHRES: 7

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
43	6.1254E+04	6.2192E+04	6.4223E+04

ERROR/WARNING ID: 341 5

DATE/TIME: 1997/ 1/ 1 0:15

RCHRES: 7

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT	
0.0000E+00	5.9441E+04	-1.882E+05	3.1658	3.1658E+00	3.1658E+00	2

ERROR/WARNING ID: 341 6

DATE/TIME: 1997/ 1/ 1 0:30

RCHRES: 7

The volume of water in this reach/mixed reservoir is greater than the value in the "volume" column of the last row of RCHTAB(). To continue the simulation the table has been extrapolated, based on information contained in the last two rows. This will usually result in some loss of accuracy. If depth is being calculated it will also cause an error condition. Relevant data are:

NROWS	V1	V2	VOL
43	6.1254E+04	6.2192E+04	6.2229E+04

ERROR/WARNING ID: 341 5

DATE/TIME: 1997/ 1/ 1 0:30

RCHRES: 7

Calculation of relative depth, using Newton's method of successive approximations, converged to an invalid value (not in range 0.0 to 1.0). Probably ftable was extrapolated. If extrapolation was small, no problem. Remedy; extend ftable. Relevant data are:

A	B	C	RDEP1	RDEP2	COUNT
0.0000E+00	5.9441E+04	-6.180E+04	1.0397	1.0397E+00	2

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APPENDIX C: OPERATIONS AND MAINTENANCE MANUAL

(Included in a later version of this report)



APPENDIX D: GEOTECHNICAL REPORT (INCLUDED SEPARATELY)