STORMWATER SITE PLAN
FOR
PILCHUCK RENTALS

MARYSVILLE, WASHINGTON

APRIL 2, 2024

4/2/24

HARMSEN

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MR 1: PREPARATION OF STORMWATER SITE PLANS

DRAINAGE PLAN DESCRIPTION

This Stormwater Site Plan has been prepared for the Pilchuck Rentals project located on a 3.2 ac parcel at the southwest corner of the intersection of Smokey Point Blvd and 156th Street NW. Figure 1: Vicinity Map depicts the location of the project. The proposed construction consists of a 11,000 sf building located centrally on the site with a new paved parking lot along Smokey point Blvd. Access for the proposed development will be from Smokey Point Blvd. See Figure 3: Developed Site Conditions for the layout.

The site currently contains two larger buildings and several small sheds that will remain on the site. The majority of the site is gravel with a smaller paved parking area near Smokey Point Blvd. Other than the new building and parking area, the existing gravel will remain.

METHODOLOGY

The 2019 Department of Ecology Stormwater Manual as adopted by the City of Marysville was used as the basis of design. The site has the following characteristics:

- Approximately 1.0 ac disturbed area.
- More than 35% existing impervious. The site is RE-development.
- The project will result in greater than 5,000 sf of new impervious.

This requires the drainage system to meet Minimum Requirements 1-9.

SOILS DESCRIPTION

According to the geotechnical report prepared by GeoTest, Inc. titled *Geotechnical Engineering Report* and dated June 19, 2023, the soils underlying the site are Marysville Sand. The Marysville Sand is described as medium dense, tan to gray, mottled, damp to moist, slightly silty sands. Groundwater seepage and caving limited the depth of excavation to 6-7 feet. Above the Marysville Sand, the test pits showed a surface gravel layer about 6” thick underlain by a layer of previously placed fill material about 1’ thick over 6” of topsoil with a was observed in all test pits. GeoTest provided a long-term infiltration rate of 8.5 inches per hour.

CRITICAL AREAS

There are no critical areas on or near the site. Quilceda Creek, located about 2000 feet west of the site, is on the 303d list upstream of I-5 as Cat 5 for dissolved oxygen and a Cat 4A for Bacteria. Hayho Creek and its tributary is located about 800 feet east of the site are fish bearing waterways. As infiltration is proposed, no impact to these water bodies is anticipated.

MR 2: SWPPP NARRATIVE

With about 1 acre of disturbance, a Department of Ecology Construction Stormwater Permit will be required. A DOE SWPPP narrative will be provided with the construction permitting phase of the project.

MR 3: WATER POLLUTION SOURCE CONTROL

Source control will consist of both construction BMP's and long term source controls. The temporary measures are included in the SWPPP. Permanent Source Control will be done as follows:

- Container storage of wastes;
- Vegetation management;
- Cleaning of paved surfaces;
- Storm drainage maintenance;
- Vehicle washing will be done inside the building and be discharged to the sewer.

MR 4: PRESERVATION OF NATURAL DRAINAGE

There are no natural drainage systems in the local area. The City has storm drainage systems in both roadways that collects and conveys runoff. The site will use infiltration to control runoff and will not impact the City system.

MR 5: ON-SITE STORMWATER MANAGEMENT

As the site is located in the City of Marysville and will be required to meet MR #1-9, it can achieve MR 5 requirement either through the use of List #2 or by meeting the Low Impact Development Performance Standard. The LID Performance Standard will be used.

LAWN AND LANDSCAPED AREAS:

BMP T5.13 Post Construction Soil Quality and Depth will be implemented on disturbed and landscaped areas. It is expected that most disturbed soil will be covered with new impervious. Select site topsoil will be used for those small areas where pervious surfaced need restoration.

LOW IMPACT DEVELOPMENT PERFORMANCE STANDARD:

The site will achieve 100% infiltration of runoff from the re-developed portions of the site. based on the WWHM calculations using infiltration trenches. These are discussed in MR 7. With 100% infiltration, the site meets the Performance Standard.

MR 6: RUNOFF TREATMENT REQUIREMENTS

With more than 5,000 sf of pollution generating impervious surface the site requires runoff treatment. Per Figure 2.1 – Treatment Facility Selection Flow Chart, the site requires the following measures:

> Oil Control: The site does not meet the threshold of 100 vehicles per day/1,000 sf of building area. The site does not meet the threshold of storing 25 vehicles over 10 tons in size. The site does incorporate onsite fueling facilities, see discussion below.
>
> Infiltration for Treatment: There is no organic soil at infiltration depths.
>
> Phosphorous Control: We have reviewed the 303d listing and there are no listed water bodies in the local area.
>
> Enhanced Treatment: Enhanced treatment is required when a commercial site discharges directly to fresh waters or conveyance systems tributary to fresh waters designated for aquatic life use or that have an existing aquatic life use. It is also required when infiltration is used for flow control within ¼ mile of a fresh water designated for aquatic life use. The project will infiltrate runoff and is within a ¼ mile of a tributary of Quilceda Creek. Enhanced Treatment is required.

The proposed treatment system is 3 Biopods from Old Castle Infrastructure. The system has GULD from the Department of Ecology for Enhanced treatment. There are three drainage basins that will collect and convey runoff to the Biopods and infiltration trenches. They are as follows:

Oil Control is required for the fueling island. An oil/water separator will be employed to address this requirement and will be detailed further in the construction permit process.

SOUTHWEST TREATMENT BASIN

This basin contains 0.39 acres and consists of the southwest portion of the paved loop around the building and the south half of the building roof. As the building roof is not subject to vehicular traffic it does not require treatment and is not included in the Biopod sizing calculations. The drainage basin tributary to the Biopod has the following characteristics:

Land Use	Area
Sidewalks	0.04 ac
Paving	0.35 ac

The Biopod has been selected based on the required off-line treatment flow rate as calculated by WWHM for the basin. See Appendix C for WWHM output.

Treatment Flow Rate:	0.043 cfs (off-line)
Treatment System Rate:	0.057 cfs (BPU 46IB)
Peak Flow Rate:	0.53 cfs (100 year)

Internal Bypass Capacity	5.0 cfs

This system will be placed in the southwest corner of the new pavement on the site. A detail will be included on the construction drawings along with inlet, outlet and rim elevations.

EAST PARKING BASIN

This basin contains 0.52 acres and consists of the eastern parking area and adjacent planters and sidewalk. The drainage basin tributary to the Biopod has the following characteristics:

Land Use	Area
Lawn	0.07 ac
Sidewalks	0.02 ac
Paving	0.43 ac

The Biopod has been selected based on the required off-line treatment flow rate as calculated by WWHM for the basin. See Appendix C for WWHM output.

Treatment Flow Rate:	0.049 cfs (off-line)
Treatment System Rate:	0.057 cfs (BPU 46IB)
Peak Flow Rate:	0.65 cfs (100 year)
Internal Bypass Capacity	5.0 cfs

This system will be placed in the eastern parking area on the site. A detail will be included on the construction drawings along with inlet, outlet and rim elevations.

NORTHWEST TREATMENT BASIN

This basin contains 0.29 acres and consists of the northwest portion of the paved loop around the building and the north half of the building roof. As the building roof is not subject to vehicular traffic it does not require treatment and is not included in the Biopod sizing calculations. The drainage basin tributary to the Biopod has the following characteristics:

Land Use	Area
Sidewalks	0.03 ac
Paving	0.26 ac

The Biopod has been selected based on the required off-line treatment flow rate as calculated by WWHM for the basin. See Appendix C for WWHM output.

Treatment Flow Rate:	0.032 cfs (off-line)
Treatment System Rate:	0.057 cfs (BPU 46IB)
Peak Flow Rate:	0.39 cfs (100 year)
Internal Bypass Capacity	5.0 cfs

This system will be placed in the northwestern edge of the new pavement on the site. A detail will be included on the construction drawings along with inlet, outlet and rim elevations.

MR 7: FLOW CONTROL

Flow control is required for the site development. The on-site system will receive flow from the building, walks and parking of the development. Infiltration will be used for Flow Control with two separate facilities, one for the building and the other for the new paved parking area. With no change to the current surface conditions rainfall on the existing gravel yard area will continue to infiltrate.

The infiltration facilities have been sized using WWHM, with an infiltration rate of 8.5 inches per hour. This infiltration rate is based on the results of geotechnical evaluation prepared for the project by GeoTest. For more information see the GeoTest report dated 6/19/23 under separate cover.

This portion of Marysville is known to have high groundwater that can impact the ability of the soil to accept infiltrated runoff. It is expected that a mounding analysis by the geotechnical engineer will be required to verify the preliminary design prior to preparation of construction documents. The infiltration systems for the three basins are summarized as follows:

SOUTHWEST BASIN

This basin contains 0.53 acres and consists of the southwest portion of the paved loop around the building and the south half of the building roof. The drainage basin has the following characteristics:

Land Use	Area
Roof	0.14 ac
Sidewalks	0.04 ac
Paving	0.35 ac

The conceptual trench has the following characteristics:

Total Bottom Area	135 ft x 15 ft
Depth	1.0 ft
Side Slopes	Vertical
Rock Porosity	0.35
Percentage Infiltrated	100%

EAST PARKING BASIN

This basin contains 0.52 acres and consists of the eastern parking area and adjacent planters and sidewalk. The drainage basin has the following characteristics:

Land Use	Area
Lawn	0.07 ac
Sidewalks	0.02 ac
Paving	0.43 ac

The conceptual trench has the following characteristics:

Total Bottom Area	100 ft x 20 ft

Depth	1.0 ft
Side Slopes	Vertical
Rock Porosity	0.35
Percentage Infiltrated	100%

NORTHWEST BASIN
This basin contains 0.43 acres and consists of the northwest portion of the paved loop around the building and the north half of the building roof. The drainage basin has the following characteristics:

Land Use	Area
Roof	0.14 ac
Sidewalks	0.03 ac
Paving	0.26 ac

The conceptual trench has the following characteristics:

Total Bottom Area	110 ft x 20 ft
Depth	1.0 ft
Side Slopes	Vertical
Rock Porosity	0.35
Percentage Infiltrated	100%

With those parameters, the site meets the Stream Protection Duration standard as well as the Low Impact Development Performance Standard for the re-developed portions of the site. See Appendix for WWHM2012 output.

MR 8: WETLANDS PROTECTION

There are no wetlands on or near the site.

MR 9: OPERATION AND MAINTENANCE MANUAL

An Operations and Maintenance Manual will be provided under separate cover with the construction drawings.

FIGURES & BASIN MAPS

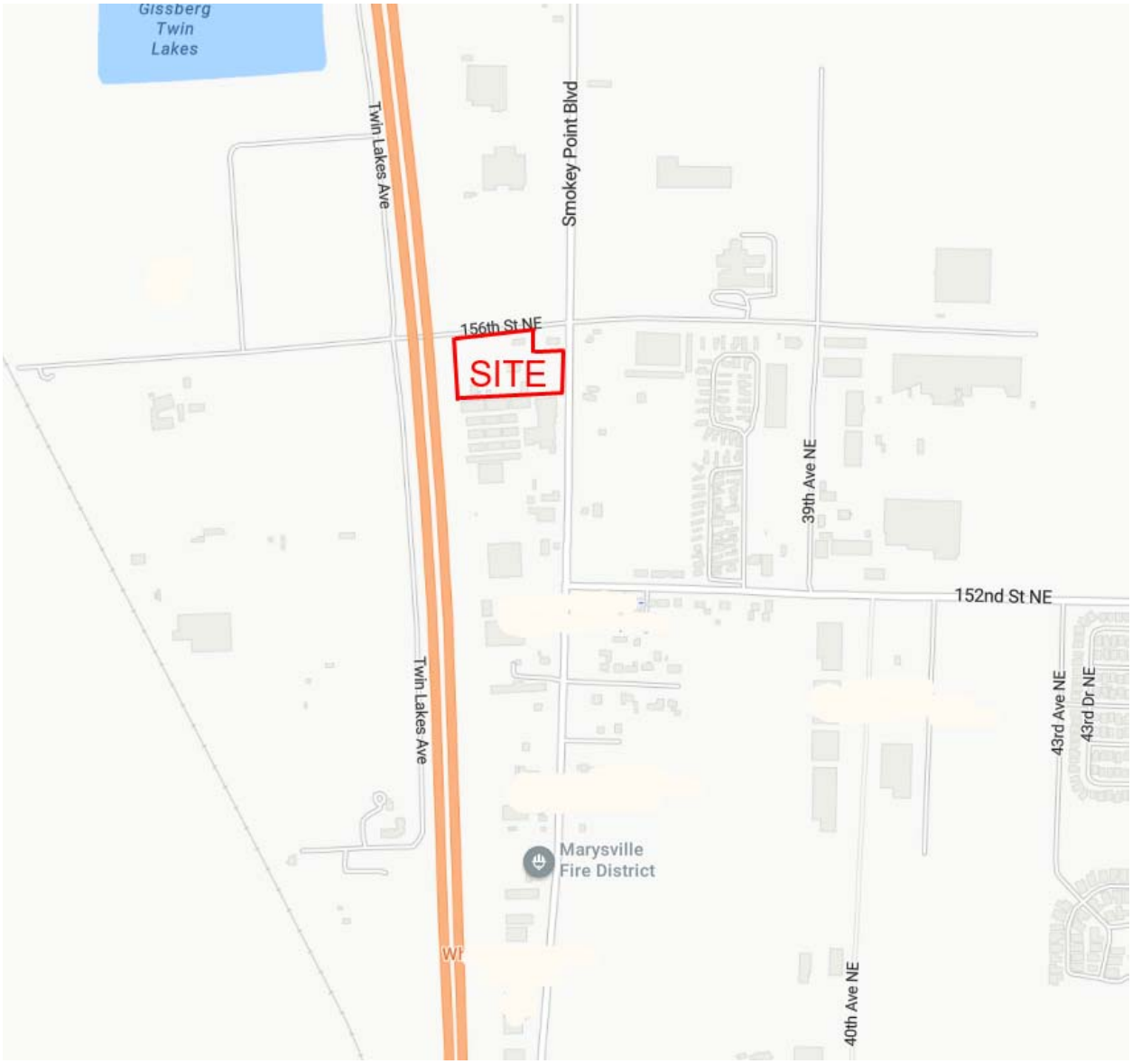

FIGURE 1: VICINITY MAP

FIGURE 2: EXISTING SITE MAP

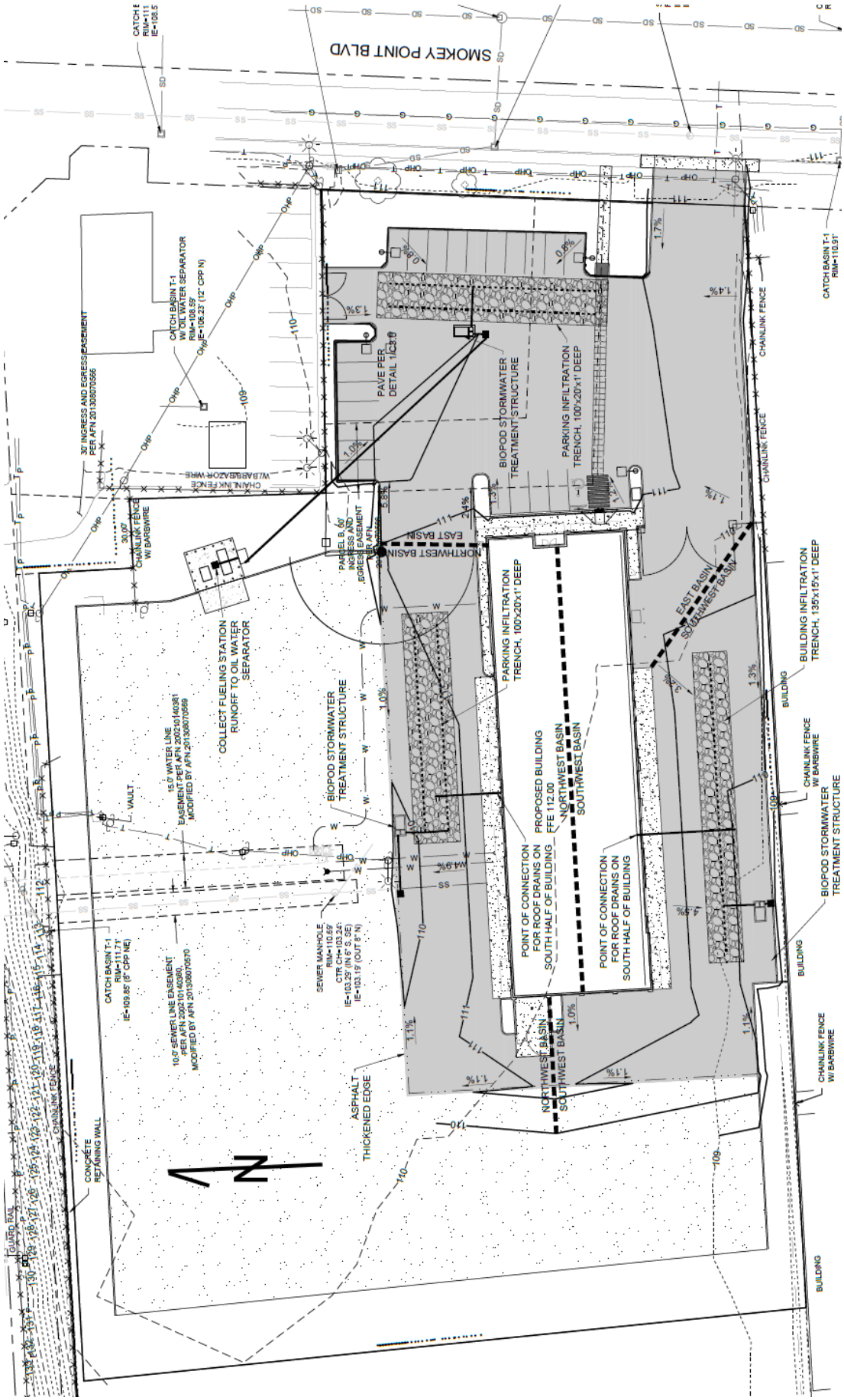

FIGURE 3: DEVELOPED SITE MAP

APPENDIX A
WWHM CALCULATIONS

PROJECT REPORT

Project Name: Pilchuck
Site Name:
Site Address:
City :
Report Date: 2/20/2024
Gage : Everett
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.20
Version Date: 2021/08/18
Version : 4.2.18

PREDEVELOPED LAND USE – NOT USED WITH FULL IFILTRATION BMPS

INFILTRATION TRENCH SIZING

MITIGATED LAND USE

Name : SOUTHWEST BASIN
Bypass: No
GroundWater: No

Pervious Land Use	acre
Pervious Total	**0**

Impervious Land Use	acre
ROOF TOPS FLAT	**0.14**
SIDEWALKS FLAT	**0.04**
PARKING FLAT	**0.35**
Impervious Total	**0.53**
Basin Total	**0.53**

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1	Gravel Trench Bed 1	

Name : Gravel Trench Bed 1
Bottom Length: 135.00 ft.
Bottom Width: 15.00 ft.
Trench bottom slope 1: 0 To 1
Trench Left side slope 0: 0 To 1
Trench right side slope 2: 0 To 1
Material thickness of first layer: 1.5
Pour Space of material for first layer: 0.35
Material thickness of second layer: 0
Pour Space of material for second layer: 0
Material thickness of third layer: 0
Pour Space of material for third layer: 0
Infiltration On
Infiltration rate: 8.5
Infiltration safety factor: 1
Wetted surface area On

Total Volume Infiltrated (ac-ft.): 101.815
Total Volume Through Riser (ac-ft.): 0.003
Total Volume Through Facility (ac-ft.): 101.818
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0

Discharge Structure

Riser Height: 1 ft.
Riser Diameter: 12 in.

Element Flows To:
Outlet 1 **Outlet 2**

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.046	0.000	0.000	0.000
0.0167	0.046	0.000	0.000	0.398
0.0333	0.046	0.000	0.000	0.398
0.0500	0.046	0.000	0.000	0.398
0.0667	0.046	0.001	0.000	0.398
0.0833	0.046	0.001	0.000	0.398
0.1000	0.046	0.001	0.000	0.398
0.1167	0.046	0.001	0.000	0.398
0.1333	0.046	0.002	0.000	0.398
0.1500	0.046	0.002	0.000	0.398
0.1667	0.046	0.002	0.000	0.398
0.1833	0.046	0.003	0.000	0.398
0.2000	0.046	0.003	0.000	0.398
0.2167	0.046	0.003	0.000	0.398
0.2333	0.046	0.003	0.000	0.398
0.2500	0.046	0.004	0.000	0.398
0.2667	0.046	0.004	0.000	0.398
0.2833	0.046	0.004	0.000	0.398
0.3000	0.046	0.004	0.000	0.398
0.3167	0.046	0.005	0.000	0.398
0.3333	0.046	0.005	0.000	0.398
0.3500	0.046	0.005	0.000	0.398
0.3667	0.046	0.006	0.000	0.398
0.3833	0.046	0.006	0.000	0.398
0.4000	0.046	0.006	0.000	0.398
0.4167	0.046	0.006	0.000	0.398
0.4333	0.046	0.007	0.000	0.398
0.4500	0.046	0.007	0.000	0.398
0.4667	0.046	0.007	0.000	0.398
0.4833	0.046	0.007	0.000	0.398
0.5000	0.046	0.008	0.000	0.398
0.5167	0.046	0.008	0.000	0.398
0.5333	0.046	0.008	0.000	0.398
0.5500	0.046	0.008	0.000	0.398
0.5667	0.046	0.009	0.000	0.398
0.5833	0.046	0.009	0.000	0.398
0.6000	0.046	0.009	0.000	0.398
0.6167	0.046	0.010	0.000	0.398
0.6333	0.046	0.010	0.000	0.398
0.6500	0.046	0.010	0.000	0.398
0.6667	0.046	0.010	0.000	0.398
0.6833	0.046	0.011	0.000	0.398
0.7000	0.046	0.011	0.000	0.398
0.7167	0.046	0.011	0.000	0.398
0.7333	0.046	0.011	0.000	0.398
0.7500	0.046	0.012	0.000	0.398
0.7667	0.046	0.012	0.000	0.398

0.7833	0.046	0.012	0.000	0.398
0.8000	0.046	0.013	0.000	0.398
0.8167	0.046	0.013	0.000	0.398
0.8333	0.046	0.013	0.000	0.398
0.8500	0.046	0.013	0.000	0.398
0.8667	0.046	0.014	0.000	0.398
0.8833	0.046	0.014	0.000	0.398
0.9000	0.046	0.014	0.000	0.398
0.9167	0.046	0.014	0.000	0.398
0.9333	0.046	0.015	0.000	0.398
0.9500	0.046	0.015	0.000	0.398
0.9667	0.046	0.015	0.000	0.398
0.9833	0.046	0.016	0.000	0.398
1.0000	0.046	0.016	0.000	0.398
1.0167	0.046	0.016	0.022	0.398
1.0333	0.046	0.016	0.064	0.398
1.0500	0.046	0.017	0.118	0.398
1.0667	0.046	0.017	0.182	0.398
1.0833	0.046	0.017	0.254	0.398
1.1000	0.046	0.017	0.333	0.398
1.1167	0.046	0.018	0.418	0.398
1.1333	0.046	0.018	0.509	0.398
1.1500	0.046	0.018	0.604	0.398
1.1667	0.046	0.019	0.703	0.398
1.1833	0.046	0.019	0.804	0.398
1.2000	0.046	0.019	0.907	0.398
1.2167	0.046	0.019	1.011	0.398
1.2333	0.046	0.020	1.115	0.398
1.2500	0.046	0.020	1.217	0.398
1.2667	0.046	0.020	1.318	0.398
1.2833	0.046	0.020	1.415	0.398
1.3000	0.046	0.021	1.509	0.398
1.3167	0.046	0.021	1.599	0.398
1.3333	0.046	0.021	1.683	0.398
1.3500	0.046	0.022	1.762	0.398
1.3667	0.046	0.022	1.834	0.398
1.3833	0.046	0.022	1.900	0.398
1.4000	0.046	0.022	1.960	0.398
1.4167	0.046	0.023	2.013	0.398
1.4333	0.046	0.023	2.060	0.398
1.4500	0.046	0.023	2.101	0.398
1.4667	0.046	0.023	2.138	0.398
1.4833	0.046	0.024	2.171	0.398
1.5000	0.046	0.024	2.203	0.398

Name : EAST BASIN
Bypass: No
GroundWater: No

Pervious Land Use	acre
C, Lawn, Flat	.07
Pervious Total	**0.07**

Impervious Land Use	acre
SIDEWALKS FLAT	0.02
PARKING FLAT	0.43
Impervious Total	**0.45**

Basin Total **0.52**

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 2	Gravel Trench Bed 2	

Name : Gravel Trench Bed 2
Bottom Length: 100.00 ft.
Bottom Width: 20.00 ft.
Trench bottom slope 1: 0 To 1
Trench Left side slope 0: 0 To 1
Trench right side slope 2: 0 To 1
Material thickness of first layer: 1.5
Pour Space of material for first layer: 0.35
Material thickness of second layer: 0
Pour Space of material for second layer: 0
Material thickness of third layer: 0
Pour Space of material for third layer: 0
Infiltration On
Infiltration rate: 8.5
Infiltration safety factor: 1
Wetted surface area On
Total Volume Infiltrated (ac-ft.): 93.21
Total Volume Through Riser (ac-ft.): 0
Total Volume Through Facility (ac-ft.): 93.211
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.

Element Flows To:

Outlet 1	Outlet 2

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.045	0.000	0.000	0.000
0.0167	0.045	0.000	0.000	0.393
0.0333	0.045	0.000	0.000	0.393
0.0500	0.045	0.000	0.000	0.393
0.0667	0.045	0.001	0.000	0.393
0.0833	0.045	0.001	0.000	0.393
0.1000	0.045	0.001	0.000	0.393
0.1167	0.045	0.001	0.000	0.393
0.1333	0.045	0.002	0.000	0.393

0.1500	0.045	0.002	0.000	0.393
0.1667	0.045	0.002	0.000	0.393
0.1833	0.045	0.002	0.000	0.393
0.2000	0.045	0.003	0.000	0.393
0.2167	0.045	0.003	0.000	0.393
0.2333	0.045	0.003	0.000	0.393
0.2500	0.045	0.004	0.000	0.393
0.2667	0.045	0.004	0.000	0.393
0.2833	0.045	0.004	0.000	0.393
0.3000	0.045	0.004	0.000	0.393
0.3167	0.045	0.005	0.000	0.393
0.3333	0.045	0.005	0.000	0.393
0.3500	0.045	0.005	0.000	0.393
0.3667	0.045	0.005	0.000	0.393
0.3833	0.045	0.006	0.000	0.393
0.4000	0.045	0.006	0.000	0.393
0.4167	0.045	0.006	0.000	0.393
0.4333	0.045	0.007	0.000	0.393
0.4500	0.045	0.007	0.000	0.393
0.4667	0.045	0.007	0.000	0.393
0.4833	0.045	0.007	0.000	0.393
0.5000	0.045	0.008	0.000	0.393
0.5167	0.045	0.008	0.000	0.393
0.5333	0.045	0.008	0.000	0.393
0.5500	0.045	0.008	0.000	0.393
0.5667	0.045	0.009	0.000	0.393
0.5833	0.045	0.009	0.000	0.393
0.6000	0.045	0.009	0.000	0.393
0.6167	0.045	0.009	0.000	0.393
0.6333	0.045	0.010	0.000	0.393
0.6500	0.045	0.010	0.000	0.393
0.6667	0.045	0.010	0.000	0.393
0.6833	0.045	0.011	0.000	0.393
0.7000	0.045	0.011	0.000	0.393
0.7167	0.045	0.011	0.000	0.393
0.7333	0.045	0.011	0.000	0.393
0.7500	0.045	0.012	0.000	0.393
0.7667	0.045	0.012	0.000	0.393
0.7833	0.045	0.012	0.000	0.393
0.8000	0.045	0.012	0.000	0.393
0.8167	0.045	0.013	0.000	0.393
0.8333	0.045	0.013	0.000	0.393
0.8500	0.045	0.013	0.000	0.393
0.8667	0.045	0.013	0.000	0.393
0.8833	0.045	0.014	0.000	0.393
0.9000	0.045	0.014	0.000	0.393
0.9167	0.045	0.014	0.000	0.393
0.9333	0.045	0.015	0.000	0.393
0.9500	0.045	0.015	0.000	0.393
0.9667	0.045	0.015	0.000	0.393
0.9833	0.045	0.015	0.000	0.393
1.0000	0.045	0.016	0.000	0.393
1.0167	0.045	0.016	0.022	0.393
1.0333	0.045	0.016	0.064	0.393
1.0500	0.045	0.016	0.118	0.393
1.0667	0.045	0.017	0.182	0.393
1.0833	0.045	0.017	0.254	0.393
1.1000	0.045	0.017	0.333	0.393
1.1167	0.045	0.017	0.418	0.393
1.1333	0.045	0.018	0.509	0.393
1.1500	0.045	0.018	0.604	0.393
1.1667	0.045	0.018	0.703	0.393
1.1833	0.045	0.019	0.804	0.393

1.2000	0.045	0.019	0.907	0.393
1.2167	0.045	0.019	1.011	0.393
1.2333	0.045	0.019	1.115	0.393
1.2500	0.045	0.020	1.217	0.393
1.2667	0.045	0.020	1.318	0.393
1.2833	0.045	0.020	1.415	0.393
1.3000	0.045	0.020	1.509	0.393
1.3167	0.045	0.021	1.599	0.393
1.3333	0.045	0.021	1.683	0.393
1.3500	0.045	0.021	1.762	0.393
1.3667	0.045	0.022	1.834	0.393
1.3833	0.045	0.022	1.900	0.393
1.4000	0.045	0.022	1.960	0.393
1.4167	0.045	0.022	2.013	0.393
1.4333	0.045	0.023	2.060	0.393
1.4500	0.045	0.023	2.101	0.393
1.4667	0.045	0.023	2.138	0.393
1.4833	0.045	0.023	2.171	0.393
1.5000	0.045	0.024	2.203	0.393

Name : NORTHWEST BASIN
Bypass: No
GroundWater: No

Pervious Land Use	acre
Pervious Total	**0**

Impervious Land Use	acre
ROOF TOPS FLAT	**0.14**
SIDEWALKS FLAT	**0.03**
PARKING FLAT	**0.26**
Impervious Total	**0.43**
Basin Total	**0.43**

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 3	Gravel Trench Bed 3	

Name : Gravel Trench Bed 3
Bottom Length: 110.00 ft.
Bottom Width: 15.00 ft.
Trench bottom slope 1: 0 To 1
Trench Left side slope 0: 0 To 1
Trench right side slope 2: 0 To 1
Material thickness of first layer: 1.5
Pour Space of material for first layer: 0.35
Material thickness of second layer: 0
Pour Space of material for second layer: 0
Material thickness of third layer: 0
Pour Space of material for third layer: 0
Infiltration On
Infiltration rate: 8.5
Infiltration safety factor: 1
Wetted surface area On
Total Volume Infiltrated (ac-ft.): 82.462
Total Volume Through Riser (ac-ft.): 0.002
Total Volume Through Facility (ac-ft.): 82.464
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Discharge Structure
Riser Height: 1 ft.
Riser Diameter: 12 in.

Element Flows To:

Outlet 1	Outlet 2

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.037	0.000	0.000	0.000
0.0167	0.037	0.000	0.000	0.324
0.0333	0.037	0.000	0.000	0.324
0.0500	0.037	0.000	0.000	0.324
0.0667	0.037	0.000	0.000	0.324
0.0833	0.037	0.001	0.000	0.324
0.1000	0.037	0.001	0.000	0.324

0.1167	0.037	0.001	0.000	0.324
0.1333	0.037	0.001	0.000	0.324
0.1500	0.037	0.002	0.000	0.324
0.1667	0.037	0.002	0.000	0.324
0.1833	0.037	0.002	0.000	0.324
0.2000	0.037	0.002	0.000	0.324
0.2167	0.037	0.002	0.000	0.324
0.2333	0.037	0.003	0.000	0.324
0.2500	0.037	0.003	0.000	0.324
0.2667	0.037	0.003	0.000	0.324
0.2833	0.037	0.003	0.000	0.324
0.3000	0.037	0.004	0.000	0.324
0.3167	0.037	0.004	0.000	0.324
0.3333	0.037	0.004	0.000	0.324
0.3500	0.037	0.004	0.000	0.324
0.3667	0.037	0.004	0.000	0.324
0.3833	0.037	0.005	0.000	0.324
0.4000	0.037	0.005	0.000	0.324
0.4167	0.037	0.005	0.000	0.324
0.4333	0.037	0.005	0.000	0.324
0.4500	0.037	0.006	0.000	0.324
0.4667	0.037	0.006	0.000	0.324
0.4833	0.037	0.006	0.000	0.324
0.5000	0.037	0.006	0.000	0.324
0.5167	0.037	0.006	0.000	0.324
0.5333	0.037	0.007	0.000	0.324
0.5500	0.037	0.007	0.000	0.324
0.5667	0.037	0.007	0.000	0.324
0.5833	0.037	0.007	0.000	0.324
0.6000	0.037	0.008	0.000	0.324
0.6167	0.037	0.008	0.000	0.324
0.6333	0.037	0.008	0.000	0.324
0.6500	0.037	0.008	0.000	0.324
0.6667	0.037	0.008	0.000	0.324
0.6833	0.037	0.009	0.000	0.324
0.7000	0.037	0.009	0.000	0.324
0.7167	0.037	0.009	0.000	0.324
0.7333	0.037	0.009	0.000	0.324
0.7500	0.037	0.009	0.000	0.324
0.7667	0.037	0.010	0.000	0.324
0.7833	0.037	0.010	0.000	0.324
0.8000	0.037	0.010	0.000	0.324
0.8167	0.037	0.010	0.000	0.324
0.8333	0.037	0.011	0.000	0.324
0.8500	0.037	0.011	0.000	0.324
0.8667	0.037	0.011	0.000	0.324
0.8833	0.037	0.011	0.000	0.324
0.9000	0.037	0.011	0.000	0.324
0.9167	0.037	0.012	0.000	0.324
0.9333	0.037	0.012	0.000	0.324
0.9500	0.037	0.012	0.000	0.324
0.9667	0.037	0.012	0.000	0.324
0.9833	0.037	0.013	0.000	0.324
1.0000	0.037	0.013	0.000	0.324
1.0167	0.037	0.013	0.022	0.324
1.0333	0.037	0.013	0.064	0.324
1.0500	0.037	0.013	0.118	0.324
1.0667	0.037	0.014	0.182	0.324
1.0833	0.037	0.014	0.254	0.324
1.1000	0.037	0.014	0.333	0.324
1.1167	0.037	0.014	0.418	0.324
1.1333	0.037	0.015	0.509	0.324
1.1500	0.037	0.015	0.604	0.324

1.1667	0.037	0.015	0.703	0.324
1.1833	0.037	0.015	0.804	0.324
1.2000	0.037	0.015	0.907	0.324
1.2167	0.037	0.016	1.011	0.324
1.2333	0.037	0.016	1.115	0.324
1.2500	0.037	0.016	1.217	0.324
1.2667	0.037	0.016	1.318	0.324
1.2833	0.037	0.017	1.415	0.324
1.3000	0.037	0.017	1.509	0.324
1.3167	0.037	0.017	1.599	0.324
1.3333	0.037	0.017	1.683	0.324
1.3500	0.037	0.017	1.762	0.324
1.3667	0.037	0.018	1.834	0.324
1.3833	0.037	0.018	1.900	0.324
1.4000	0.037	0.018	1.960	0.324
1.4167	0.037	0.018	2.013	0.324
1.4333	0.037	0.019	2.060	0.324
1.4500	0.037	0.019	2.101	0.324
1.4667	0.037	0.019	2.138	0.324
1.4833	0.037	0.019	2.171	0.324
1.5000	0.037	0.019	2.203	0.324

ANALYSIS RESULTS

Stream Protection Duration

Mitigated Landuse Totals for POC #1
Total Pervious Area:0
Total Impervious Area:0.53

Flow Frequency Return Periods for Mitigated. POC #1

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

Mitigated Landuse Totals for POC #2
Total Pervious Area:0.07
Total Impervious Area:0.45

Flow Frequency Return Periods for Mitigated. POC #2

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

Mitigated Landuse Totals for POC #6
Total Pervious Area:0
Total Impervious Area:0.43

Flow Frequency Return Periods for Mitigated. POC #6

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

TREATMENT SIZING

Name : SOUTHWEST BASIN - TREATMENT
Bypass: No
GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
SIDEWALKS FLAT	0.04
PARKING FLAT	0.35
Impervious Total	0.39

Basin Total	0.39

Element Flows To:

Surface	Interflow	Groundwater

Water Quality BMP Flow and Volume for POC #3
On-line facility volume: 0.0472 **acre-feet**
On-line facility target flow: 0.0754 **cfs.**
Adjusted for 15 min: 0.0754 **cfs.**
Off-line facility target flow: **0.0427 cfs.**
Adjusted for 15 min: 0.0427 **cfs.**

Name : EAST BASIN - TREATMENT
Bypass: No
GroundWater: No

Pervious Land Use	acre
C, Lawn, Flat	.07
Pervious Total	0.07

Impervious Land Use	acre
SIDEWALKS FLAT	0.02
PARKING FLAT	0.43
Impervious Total	0.45

Basin Total	0.52

Element Flows To:

Surface	Interflow	Groundwater

Water Quality BMP Flow and Volume for POC #4
On-line facility volume: 0.0562 **acre-feet**
On-line facility target flow: 0.0857 **cfs.**
Adjusted for 15 min: 0.0857 **cfs.**
Off-line facility target flow: **0.0485 cfs.**
Adjusted for 15 min: 0.0485 **cfs.**

Name : NORTHWEST BASIN - TREATMENT
Bypass: No
GroundWater: No

Pervious Land Use	acre
Pervious Total	0

Impervious Land Use	acre
SIDEWALKS FLAT	0.03
PARKING FLAT	0.26
Impervious Total	0.29
Basin Total	0.29

Element Flows To:

Surface	Interflow	Groundwater

Water Quality BMP Flow and Volume for POC #5
On-line facility volume: 0.035 **acre-feet**
On-line facility target flow: 0.0561 **cfs.**
Adjusted for 15 min: 0.0561 **cfs.**
Off-line facility target flow: **0.0317 cfs.**
Adjusted for 15 min: 0.0317 **cfs.**

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