PRELIMINARY STORMWATER SITE PLAN
FOR
SEATTLE GALVANIZING SMALL PARTS

ARLINGTON, WASHINGTON

NOVEMBER 29, 2023

PLN #1145

11/29/23

HARMSEN

MR 1: PREPARATION OF STORMWATER SITE PLANS

DRAINAGE PLAN DESCRIPTION

This Stormwater Site Plan has been prepared for the proposed Mina Properties VII redevelopment of 18520 67th Avenue NE, tax parcel 31052200102000, see Figure 1: Vicinity Map for the location of the project.

The property consists of a rectangular parcel located on the west side of 67th Avenue NE. The site is currently developed with a large industrial building surrounded by gravel parking. The topographic map of the site shows that the site is fairly flat around the building, at approximately elevation 147, with the ground dropping about a foot along the western property line. The site has no significant vegetation. The site access is at the northeast corner of the site with a retaining wall running south parallel to 67th Avenue NE. See Figure 2: Existing Conditions for a graphic depiction of the current site conditions.

The proposed site improvements consist of upgrading the building for the new owners and paving the parking areas around the building. New stormwater treatment and infiltration facilities are proposed for the new paving around building.

METHODOLOGY

The 2014 Department of Ecology Stormwater Manual as adopted by the City of Arlington was used as the basis of design. The site has the following characteristics:

- Approximately 2.5 ac disturbed area.
- More than 35% existing impervious. A redevelopment development site.
- The project will result in greater than 5,000 sf of new/replaced impervious surfaces.

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

SOILS DESCRIPTION

According to the geotechnical report prepared for the adjacent property by PanGeo Inc the soils underlying the site are fine to coarse sand with some silt and gravels. Groundwater was not encountered at depths of up to 25 feet, though is expected to be at a depth of 20-22 feet below the surface. The Geotech gave a design infiltration rate of 11.9 inches per hour for the northern portion of the site and 5.2 inches per hour for the southern portion.

CRITICAL AREAS

There are no known critical areas on or near the site.

MR 2: SWPPP NARRATIVE

With more than 1 acre of disturbance, a Department of Ecology Construction Stormwater Permit will be required. A separate SWPPP narrative based on the DOE template will be provided with the construction documents.

MR 3: WATER POLLUTION SOURCE CONTROL

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

- Container storage of wastes;
- Vegetation management;
- Cleaning of paved surfaces;
- Storm drainage maintenance.

MR 4: PRESERVATION OF NATURAL DRAINAGE

The site and surrounding properties have granular soils and under forested conditions would largely infiltrate runoff with any excess runoff sheet flowing to the west. The site currently appears to contain several infiltration systems and in the developed condition, the proposal is to continue to infiltrate all of the developed runoff from the site. This will preserve the natural condition.

MR 5: ON-SITE STORMWATER MANAGEMENT

As the site is located in the City of Arlington 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. Meeting the LID Performance Standard is proposed through the use of infiltration.

The site currently appears to contain several infiltration systems, however there are no known stormwater treatment facilities. These infiltration systems likely date back to the original building construction in 1979. Sediment laden runoff from the site's gravel surfacing over the past 40 years has likely compromised their operation. The one exception would be the infiltration system along the eastern property line that appears to only receive the building roof runoff. It is anticipated that this infiltration trench remains viable for continued use. New infiltration trenches for the new paved areas and adjacent landscaping are proposed. See MR 7 for the infiltration system design.

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. Imported site topsoil will be used for those small areas where pervious surfaces are proposed.

<u>MR 6: RUNOFF TREATMENT REQUIREMENTS</u>

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.

Infiltration for Treatment: The soils are sandy and gravelly are not expected to meet the CEC requirements.

Phosphorous Control: There is no indication in the downstream TMDL or on-site that would require special phosphorous controls.

Enhanced Treatment: The project is a commercial site that will infiltrate runoff within ¼ mile of a stream. Enhanced Treatment is not required.

Treatment will be provided through a pre-manufactured filter system such as a Filterra from Contech or a Biopod from Oldcastle. Both of Washington DOE GULD for Enhanced Treatment. Final sizing of the facilities will follow manufacturer's requirements based on the tributary basin and will be provided with the final report, to be prepared with the construction permits.

PRELIMINARY DESIGN
The site has been broken into 2 drainage basins, north and south. The basin characteristics are as follows:

Ground cover	North Basin	South Basin
Pavement	0.82 acres	0.39 acres
Landscaping	0.13 acres	0.10 acres

WWHM has been used to calculate the offline treatment flow rates for each basin. The required treatment rate, proposed BioPod facility and BioPod treatment rate for each basin are:

Basin	Required Rate	BioPod	Treatment Rate
North	0.09 cfs	BPU 68IB	0.128 cfs
South	0.043 cfs	BPU 46IB	0.057 cfs

MR 7: FLOW CONTROL

Flow control is required for the site development. Given the granular nature of the soils and the supporting infiltration rate from the geotechnical report, the proposal is to infiltrate runoff. The infiltration facilities will be placed under the parking lot to the north and southwest of the building.

The preliminary trenches have the following characteristics:

	North Basin	South Basin
Total Bottom Area	1,050 sf (105ft x 10 ft)	750 sf (75ft x 10 ft)
Storage Depth	5.0 ft	5.0 ft
Void Ratio of Rock	0.35	0.35
Infiltration Rate	11.9 in/hr	5.2 in/hr
Clearance to Groundwater	10' min	10' min

With those parameters, the trenches infiltrate 100% of the tributary basin runoff. See WWHM output in Appendix B.

MR 8: WETLANDS PROTECTION

There are no known wetlands or other critical areas on or near the site.

MR 9: OPERATION AND MAINTENANCE MANUAL

An Operations and Maintenance Manual will be provided with the construction documents.

APPENDIX A
FIGURES & BASIN MAPS
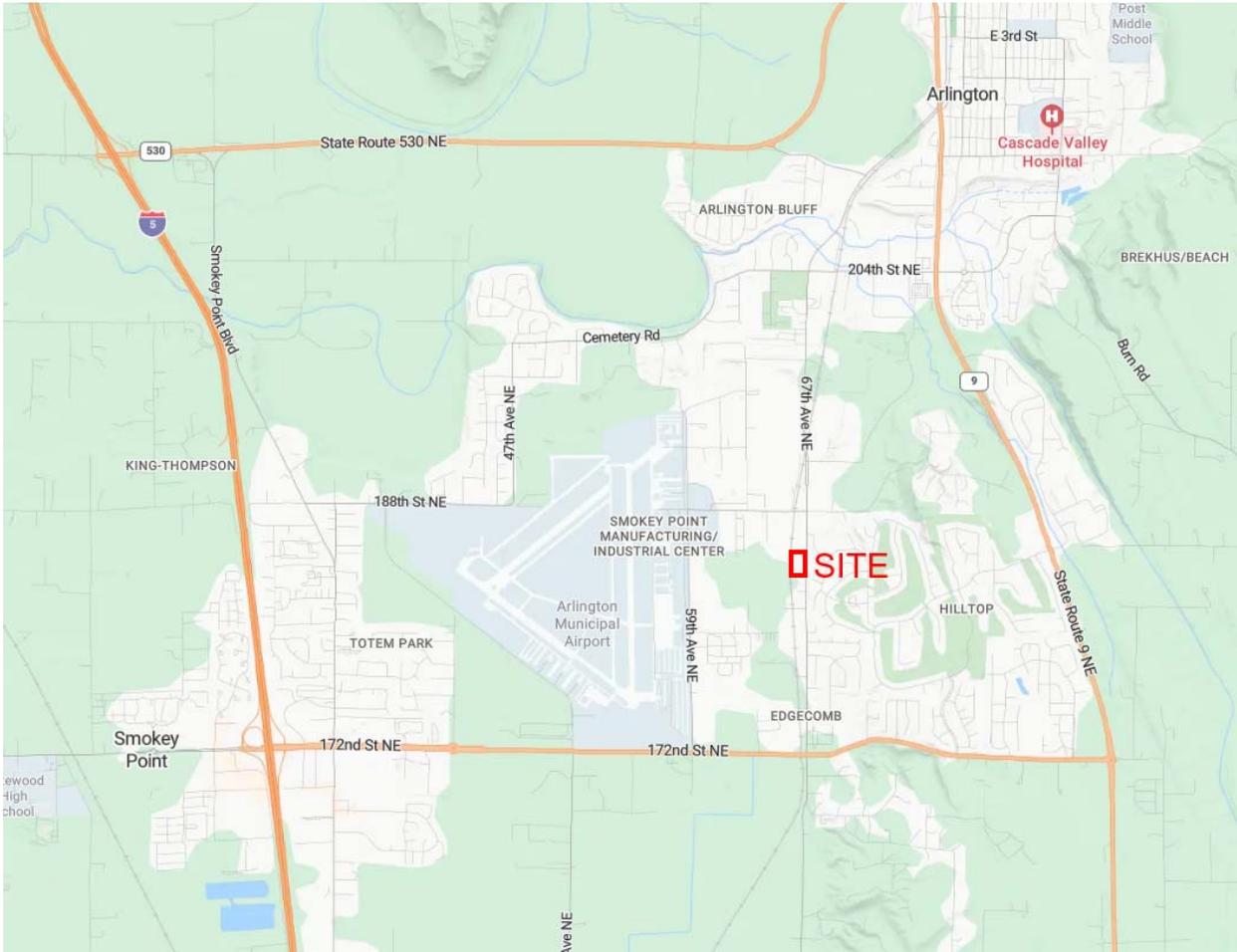
FIGURE 1: VICINITY MAP

FIGURE 2: EXISTING SITE MAP
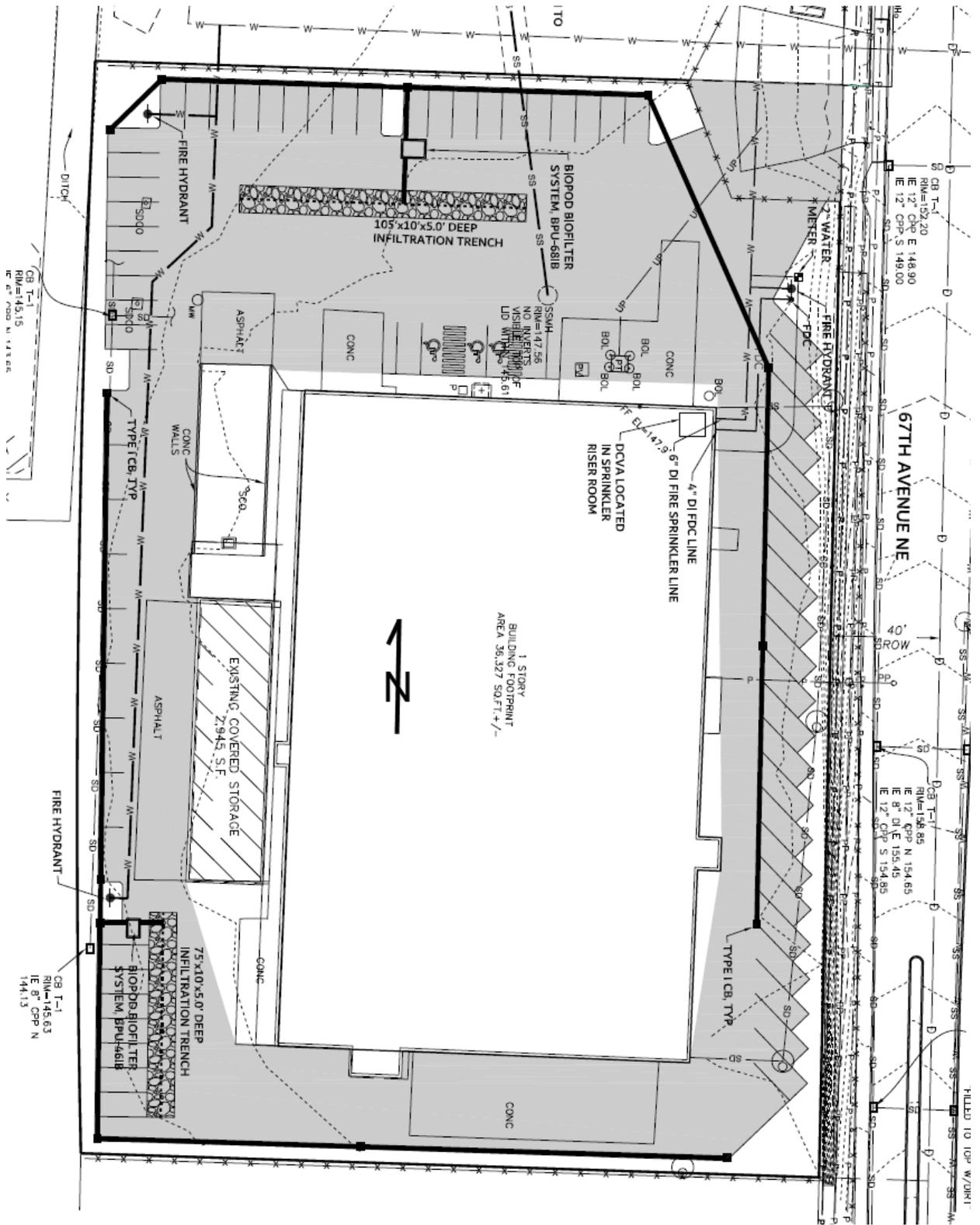
FIGURE 3: DEVELOPED SITE MAP

APPENDIX B

WWHM12 OUTPUT

Project Name: MINA
Report Date: 11/27/2023
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

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year
High Flow Threshold for POC 1: 50 year

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

PREDEVELOPED LAND USE

Name : Basin 1
Bypass: No
GroundWater: No

Pervious Land Use	acre
A B, Forest, Flat	.95

Pervious Total	0.95

Impervious Land Use	acre

Impervious Total	0

Basin Total	0.95

Element Flows To:

Surface	Interflow	Groundwater

Name : Basin 2
Bypass: No
GroundWater: No

Pervious Land Use	acre
A B, Forest, Flat	.49

Pervious Total	0.49

Impervious Land Use	acre

Impervious Total	0

Basin Total	0.49

Element Flows To:

Surface	Interflow	Groundwater

MITIGATED LAND USE

Name : Basin 1
Bypass: No
GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	.13

Pervious Total	0.13

Impervious Land Use	acre
PARKING FLAT	0.82

Impervious Total	0.82

Basin Total	0.95

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1	Gravel Trench Bed 1	

Name : Basin 2
Bypass: No
GroundWater: No

Pervious Land Use	acre
A B, Lawn, Flat	.1

Pervious Total	0.1

Impervious Land Use	acre
PARKING FLAT	0.39

Impervious Total	0.39

Basin Total	0.49

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1	Gravel Trench Bed 1	

Name : Gravel Trench Bed 1
Bottom Length: 105.00 ft.
Bottom Width: 10.00 ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 0.01 To 1
Trench right side slope 2: 0.01 To 1
Material thickness of first layer: 5.5
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: 11.9
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 158.649
Total Volume Through Riser (ac-ft.): 0.006
Total Volume Through Facility (ac-ft.): 158.656
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Discharge Structure
Riser Height: 5 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	0.024	0.000	0.000	0.000
0.0667	0.024	0.000	0.000	0.289
0.1333	0.024	0.001	0.000	0.289
0.2000	0.024	0.001	0.000	0.289
0.2667	0.024	0.002	0.000	0.289
0.3333	0.024	0.002	0.000	0.289
0.4000	0.024	0.003	0.000	0.289
0.4667	0.024	0.003	0.000	0.289
0.5333	0.024	0.004	0.000	0.289
0.6000	0.024	0.005	0.000	0.289
0.6667	0.024	0.005	0.000	0.289
0.7333	0.024	0.006	0.000	0.289
0.8000	0.024	0.006	0.000	0.289
0.8667	0.024	0.007	0.000	0.289
0.9333	0.024	0.007	0.000	0.289
1.0000	0.024	0.008	0.000	0.289
1.0667	0.024	0.009	0.000	0.289
1.1333	0.024	0.009	0.000	0.289
1.2000	0.024	0.010	0.000	0.289
1.2667	0.024	0.010	0.000	0.289
1.3333	0.024	0.011	0.000	0.289
1.4000	0.024	0.011	0.000	0.289
1.4667	0.024	0.012	0.000	0.289
1.5333	0.024	0.013	0.000	0.289
1.6000	0.024	0.013	0.000	0.289
1.6667	0.024	0.014	0.000	0.289
1.7333	0.024	0.014	0.000	0.289
1.8000	0.024	0.015	0.000	0.289
1.8667	0.024	0.015	0.000	0.289
1.9333	0.024	0.016	0.000	0.289
2.0000	0.024	0.016	0.000	0.289
2.0667	0.024	0.017	0.000	0.289

2.1333	0.024	0.018	0.000	0.289
2.2000	0.024	0.018	0.000	0.289
2.2667	0.024	0.019	0.000	0.289
2.3333	0.024	0.019	0.000	0.289
2.4000	0.024	0.020	0.000	0.289
2.4667	0.024	0.020	0.000	0.289
2.5333	0.024	0.021	0.000	0.289
2.6000	0.024	0.022	0.000	0.289
2.6667	0.024	0.022	0.000	0.289
2.7333	0.024	0.023	0.000	0.289
2.8000	0.024	0.023	0.000	0.289
2.8667	0.024	0.024	0.000	0.289
2.9333	0.024	0.024	0.000	0.289
3.0000	0.024	0.025	0.000	0.289
3.0667	0.024	0.026	0.000	0.289
3.1333	0.024	0.026	0.000	0.289
3.2000	0.024	0.027	0.000	0.289
3.2667	0.024	0.027	0.000	0.289
3.3333	0.024	0.028	0.000	0.289
3.4000	0.024	0.028	0.000	0.289
3.4667	0.024	0.029	0.000	0.289
3.5333	0.024	0.029	0.000	0.289
3.6000	0.024	0.030	0.000	0.289
3.6667	0.024	0.031	0.000	0.289
3.7333	0.024	0.031	0.000	0.289
3.8000	0.024	0.032	0.000	0.289
3.8667	0.024	0.032	0.000	0.289
3.9333	0.024	0.033	0.000	0.289
4.0000	0.024	0.033	0.000	0.289
4.0667	0.024	0.034	0.000	0.289
4.1333	0.024	0.035	0.000	0.289
4.2000	0.024	0.035	0.000	0.289
4.2667	0.024	0.036	0.000	0.289
4.3333	0.024	0.036	0.000	0.289
4.4000	0.024	0.037	0.000	0.289
4.4667	0.024	0.037	0.000	0.289
4.5333	0.024	0.038	0.000	0.289
4.6000	0.024	0.039	0.000	0.289
4.6667	0.024	0.039	0.000	0.289
4.7333	0.024	0.040	0.000	0.289
4.8000	0.024	0.040	0.000	0.289
4.8667	0.024	0.041	0.000	0.289
4.9333	0.024	0.041	0.000	0.289
5.0000	0.024	0.042	0.000	0.289
5.0667	0.024	0.043	0.182	0.289
5.1333	0.024	0.043	0.509	0.289
5.2000	0.024	0.044	0.907	0.289
5.2667	0.024	0.044	1.318	0.289
5.3333	0.024	0.045	1.683	0.289
5.4000	0.024	0.045	1.960	0.289
5.4667	0.024	0.046	2.138	0.289
5.5333	0.024	0.048	2.300	0.289
5.6000	0.024	0.049	2.439	0.289
5.6667	0.024	0.051	2.571	0.289
5.7333	0.024	0.052	2.697	0.289
5.8000	0.024	0.054	2.817	0.289
5.8667	0.024	0.056	2.932	0.289
5.9333	0.024	0.057	3.042	0.289
6.0000	0.024	0.059	3.149	0.289

Name : Gravel Trench Bed 2
Bottom Length: 75.00 ft.

Bottom Width: 10.00 ft.
Trench bottom slope 1: 0.01 To 1
Trench Left side slope 0: 0.01 To 1
Trench right side slope 2: 0.01 To 1
Material thickness of first layer: 5.5
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: 5.2
Infiltration safety factor: 1
Total Volume Infiltrated (ac-ft.): 75.486
Total Volume Through Riser (ac-ft.): 0.002
Total Volume Through Facility (ac-ft.): 75.489
Percent Infiltrated: 100
Total Precip Applied to Facility: 0
Total Evap From Facility: 0
Discharge Structure
Riser Height: 5 ft.
Riser Diameter: 12 in.

Element Flows To:
Outlet 1   Outlet 2

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Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.017	0.000	0.000	0.000
0.0667	0.017	0.000	0.000	0.090
0.1333	0.017	0.000	0.000	0.090
0.2000	0.017	0.001	0.000	0.090
0.2667	0.017	0.001	0.000	0.090
0.3333	0.017	0.002	0.000	0.090
0.4000	0.017	0.002	0.000	0.090
0.4667	0.017	0.002	0.000	0.090
0.5333	0.017	0.003	0.000	0.090
0.6000	0.017	0.003	0.000	0.090
0.6667	0.017	0.004	0.000	0.090
0.7333	0.017	0.004	0.000	0.090
0.8000	0.017	0.004	0.000	0.090
0.8667	0.017	0.005	0.000	0.090
0.9333	0.017	0.005	0.000	0.090
1.0000	0.017	0.006	0.000	0.090
1.0667	0.017	0.006	0.000	0.090
1.1333	0.017	0.006	0.000	0.090
1.2000	0.017	0.007	0.000	0.090
1.2667	0.017	0.007	0.000	0.090
1.3333	0.017	0.008	0.000	0.090
1.4000	0.017	0.008	0.000	0.090
1.4667	0.017	0.008	0.000	0.090
1.5333	0.017	0.009	0.000	0.090
1.6000	0.017	0.009	0.000	0.090
1.6667	0.017	0.010	0.000	0.090
1.7333	0.017	0.010	0.000	0.090
1.8000	0.017	0.010	0.000	0.090
1.8667	0.017	0.011	0.000	0.090
1.9333	0.017	0.011	0.000	0.090
2.0000	0.017	0.012	0.000	0.090
2.0667	0.017	0.012	0.000	0.090
2.1333	0.017	0.012	0.000	0.090
2.2000	0.017	0.013	0.000	0.090

2.2667	0.017	0.013	0.000	0.090
2.3333	0.017	0.014	0.000	0.090
2.4000	0.017	0.014	0.000	0.090
2.4667	0.017	0.014	0.000	0.090
2.5333	0.017	0.015	0.000	0.090
2.6000	0.017	0.015	0.000	0.090
2.6667	0.017	0.016	0.000	0.090
2.7333	0.017	0.016	0.000	0.090
2.8000	0.017	0.016	0.000	0.090
2.8667	0.017	0.017	0.000	0.090
2.9333	0.017	0.017	0.000	0.090
3.0000	0.017	0.018	0.000	0.090
3.0667	0.017	0.018	0.000	0.090
3.1333	0.017	0.018	0.000	0.090
3.2000	0.017	0.019	0.000	0.090
3.2667	0.017	0.019	0.000	0.090
3.3333	0.017	0.020	0.000	0.090
3.4000	0.017	0.020	0.000	0.090
3.4667	0.017	0.021	0.000	0.090
3.5333	0.017	0.021	0.000	0.090
3.6000	0.017	0.021	0.000	0.090
3.6667	0.017	0.022	0.000	0.090
3.7333	0.017	0.022	0.000	0.090
3.8000	0.017	0.023	0.000	0.090
3.8667	0.017	0.023	0.000	0.090
3.9333	0.017	0.023	0.000	0.090
4.0000	0.017	0.024	0.000	0.090
4.0667	0.017	0.024	0.000	0.090
4.1333	0.017	0.025	0.000	0.090
4.2000	0.017	0.025	0.000	0.090
4.2667	0.017	0.025	0.000	0.090
4.3333	0.017	0.026	0.000	0.090
4.4000	0.017	0.026	0.000	0.090
4.4667	0.017	0.027	0.000	0.090
4.5333	0.017	0.027	0.000	0.090
4.6000	0.017	0.027	0.000	0.090
4.6667	0.017	0.028	0.000	0.090
4.7333	0.017	0.028	0.000	0.090
4.8000	0.017	0.029	0.000	0.090
4.8667	0.017	0.029	0.000	0.090
4.9333	0.017	0.029	0.000	0.090
5.0000	0.017	0.030	0.000	0.090
5.0667	0.017	0.030	0.182	0.090
5.1333	0.017	0.031	0.509	0.090
5.2000	0.017	0.031	0.907	0.090
5.2667	0.017	0.031	1.318	0.090
5.3333	0.017	0.032	1.683	0.090
5.4000	0.017	0.032	1.960	0.090
5.4667	0.017	0.033	2.138	0.090
5.5333	0.017	0.034	2.300	0.090
5.6000	0.017	0.035	2.439	0.090
5.6667	0.017	0.036	2.571	0.090
5.7333	0.017	0.037	2.697	0.090
5.8000	0.017	0.039	2.817	0.090
5.8667	0.017	0.040	2.932	0.090
5.9333	0.017	0.041	3.042	0.090
6.0000	0.017	0.042	3.149	0.090

                        ANALYSIS RESULTS

                   Stream Protection Duration

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Predeveloped Landuse Totals for POC #1
Total Pervious Area:0.95
Total Impervious Area:0

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Mitigated Landuse Totals for POC #1
Total Pervious Area:0.13
Total Impervious Area:0.82

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Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.00109
5 year	0.002365
10 year	0.003794
25 year	0.006626
50 year	0.009791
100 year	0.014202

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

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Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.001	0.000
1950	0.002	0.000
1951	0.002	0.000
1952	0.001	0.000
1953	0.001	0.000
1954	0.005	0.000
1955	0.004	0.000
1956	0.001	0.000
1957	0.001	0.000
1958	0.001	0.000
1959	0.002	0.000
1960	0.001	0.000
1961	0.004	0.098
1962	0.001	0.000
1963	0.001	0.000
1964	0.002	0.000
1965	0.001	0.000
1966	0.001	0.000
1967	0.001	0.000
1968	0.001	0.000
1969	0.001	0.000
1970	0.001	0.000
1971	0.004	0.000

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1972              0.001          0.000
1973              0.001          0.000
1974              0.002          0.000
1975              0.001          0.000
1976              0.002          0.000
1977              0.001          0.000
1978              0.001          0.000
1979              0.002          0.000
1980              0.001          0.000
1981              0.001          0.000
1982              0.001          0.000
1983              0.001          0.000
1984              0.001          0.000
1985              0.001          0.000
1986              0.007          0.000
1987              0.004          0.000
1988              0.001          0.000
1989              0.001          0.000
1990              0.001          0.000
1991              0.001          0.000
1992              0.001          0.000
1993              0.001          0.000
1994              0.001          0.000
1995              0.001          0.000
1996              0.009          0.000
1997              0.024          0.000
1998              0.001          0.000
1999              0.001          0.000
2000              0.001          0.000
2001              0.001          0.000
2002              0.001          0.000
2003              0.001          0.000
2004              0.001          0.000
2005              0.001          0.000
2006              0.025          0.000
2007              0.001          0.000
2008              0.001          0.000
2009              0.001          0.000
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Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated.   POC #1

Rank	Predeveloped	Mitigated
1	0.0253	0.0975
2	0.0235	0.0000
3	0.0086	0.0000
4	0.0067	0.0000
5	0.0052	0.0000
6	0.0044	0.0000
7	0.0040	0.0000
8	0.0037	0.0000
9	0.0036	0.0000
10	0.0025	0.0000
11	0.0022	0.0000
12	0.0020	0.0000
13	0.0017	0.0000
14	0.0017	0.0000
15	0.0016	0.0000
16	0.0015	0.0000
17	0.0015	0.0000
18	0.0014	0.0000
19	0.0014	0.0000
20	0.0013	0.0000

```
21          0.0012                  0.0000
22          0.0011                  0.0000
23          0.0009                  0.0000
24          0.0008                  0.0000
25          0.0008                  0.0000
26          0.0008                  0.0000
27          0.0008                  0.0000
28          0.0008                  0.0000
29          0.0008                  0.0000
30          0.0008                  0.0000
31          0.0008                  0.0000
32          0.0008                  0.0000
33          0.0008                  0.0000
34          0.0008                  0.0000
35          0.0008                  0.0000
36          0.0008                  0.0000
37          0.0008                  0.0000
38          0.0008                  0.0000
39          0.0008                  0.0000
40          0.0008                  0.0000
41          0.0008                  0.0000
42          0.0008                  0.0000
43          0.0008                  0.0000
44          0.0008                  0.0000
45          0.0008                  0.0000
46          0.0008                  0.0000
47          0.0008                  0.0000
48          0.0008                  0.0000
49          0.0008                  0.0000
50          0.0007                  0.0000
51          0.0007                  0.0000
52          0.0007                  0.0000
53          0.0007                  0.0000
54          0.0007                  0.0000
55          0.0007                  0.0000
56          0.0007                  0.0000
57          0.0007                  0.0000
58          0.0007                  0.0000
59          0.0007                  0.0000
60          0.0007                  0.0000
61          0.0005                  0.0000
```

Stream Protection Duration
POC #1
The Facility PASSED

The Facility PASSED.

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0005	2357	5	0	Pass
0.0006	1330	5	0	Pass
0.0007	441	5	1	Pass
0.0008	112	5	4	Pass
0.0009	103	5	4	Pass
0.0010	89	5	5	Pass
0.0011	77	5	6	Pass
0.0012	66	5	7	Pass
0.0013	61	5	8	Pass
0.0014	58	5	8	Pass
0.0015	54	5	9	Pass
0.0016	50	5	10	Pass
0.0017	49	5	10	Pass

0.0018	47	5	10	Pass
0.0019	43	4	9	Pass
0.0019	40	4	10	Pass
0.0020	36	4	11	Pass
0.0021	36	4	11	Pass
0.0022	32	4	12	Pass
0.0023	31	4	12	Pass
0.0024	31	4	12	Pass
0.0025	29	4	13	Pass
0.0026	29	4	13	Pass
0.0027	27	4	14	Pass
0.0028	26	4	15	Pass
0.0029	26	4	15	Pass
0.0030	26	4	15	Pass
0.0031	25	4	16	Pass
0.0032	23	4	17	Pass
0.0033	23	4	17	Pass
0.0033	23	4	17	Pass
0.0034	23	4	17	Pass
0.0035	23	4	17	Pass
0.0036	21	4	19	Pass
0.0037	19	4	21	Pass
0.0038	18	4	22	Pass
0.0039	17	4	23	Pass
0.0040	16	4	25	Pass
0.0041	16	4	25	Pass
0.0042	15	4	26	Pass
0.0043	15	4	26	Pass
0.0044	14	4	28	Pass
0.0045	13	4	30	Pass
0.0046	13	4	30	Pass
0.0047	13	4	30	Pass
0.0047	13	4	30	Pass
0.0048	13	4	30	Pass
0.0049	13	4	30	Pass
0.0050	13	4	30	Pass
0.0051	13	4	30	Pass
0.0052	13	4	30	Pass
0.0053	11	4	36	Pass
0.0054	11	4	36	Pass
0.0055	11	4	36	Pass
0.0056	11	4	36	Pass
0.0057	11	4	36	Pass
0.0058	11	4	36	Pass
0.0059	11	4	36	Pass
0.0060	11	4	36	Pass
0.0061	11	4	36	Pass
0.0061	11	4	36	Pass
0.0062	11	4	36	Pass
0.0063	11	4	36	Pass
0.0064	11	4	36	Pass
0.0065	10	4	40	Pass
0.0066	10	4	40	Pass
0.0067	9	4	44	Pass
0.0068	9	4	44	Pass
0.0069	8	4	50	Pass
0.0070	8	4	50	Pass
0.0071	8	4	50	Pass
0.0072	8	4	50	Pass
0.0073	8	4	50	Pass
0.0074	8	4	50	Pass
0.0075	8	4	50	Pass
0.0075	8	4	50	Pass

```
0.0076    8    4    50    Pass
0.0077    8    4    50    Pass
0.0078    8    4    50    Pass
0.0079    8    4    50    Pass
0.0080    8    4    50    Pass
0.0081    8    4    50    Pass
0.0082    8    4    50    Pass
0.0083    7    4    57    Pass
0.0084    7    4    57    Pass
0.0085    7    4    57    Pass
0.0086    7    4    57    Pass
0.0087    6    4    66    Pass
0.0088    6    4    66    Pass
0.0089    6    4    66    Pass
0.0090    6    4    66    Pass
0.0090    6    4    66    Pass
0.0091    6    4    66    Pass
0.0092    6    4    66    Pass
0.0093    6    4    66    Pass
0.0094    6    4    66    Pass
0.0095    6    4    66    Pass
0.0096    6    4    66    Pass
0.0097    5    4    80    Pass
0.0098    5    4    80    Pass
```

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Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 0.0992 **acre-feet**
On-line facility target flow: 0.159 **cfs.**
Adjusted for 15 min: 0.159 **cfs.**
Off-line facility target flow: 0.09 **cfs.**
Adjusted for 15 min: 0.09 **cfs.**

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Predeveloped Landuse Totals for POC #2
Total Pervious Area:0.49
Total Impervious Area:0

Mitigated Landuse Totals for POC #2
Total Pervious Area:0.1
Total Impervious Area:0.39

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	Flow(cfs)
2 year	0.000562
5 year	0.00122
10 year	0.001957
25 year	0.003417
50 year	0.00505
100 year	0.007325

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

Stream Protection Duration
Annual Peaks for Predeveloped and Mitigated. POC #2

Year	Predeveloped	Mitigated
1949	0.000	0.000
1950	0.001	0.000
1951	0.001	0.000
1952	0.000	0.000
1953	0.000	0.000
1954	0.003	0.000
1955	0.002	0.000
1956	0.000	0.000
1957	0.000	0.000
1958	0.000	0.000
1959	0.001	0.000
1960	0.001	0.000
1961	0.002	0.055
1962	0.000	0.000
1963	0.000	0.000
1964	0.001	0.000
1965	0.000	0.000
1966	0.000	0.000
1967	0.001	0.000
1968	0.000	0.000
1969	0.000	0.000
1970	0.000	0.000
1971	0.002	0.000
1972	0.000	0.000
1973	0.000	0.000

Year		
1974	0.001	0.000
1975	0.000	0.000
1976	0.001	0.000
1977	0.000	0.000
1978	0.000	0.000
1979	0.001	0.000
1980	0.000	0.000
1981	0.000	0.000
1982	0.001	0.000
1983	0.000	0.000
1984	0.000	0.000
1985	0.001	0.000
1986	0.003	0.000
1987	0.002	0.000
1988	0.000	0.000
1989	0.000	0.000
1990	0.000	0.000
1991	0.000	0.000
1992	0.000	0.000
1993	0.000	0.000
1994	0.000	0.000
1995	0.000	0.000
1996	0.004	0.000
1997	0.012	0.000
1998	0.000	0.000
1999	0.000	0.000
2000	0.001	0.000
2001	0.000	0.000
2002	0.000	0.000
2003	0.000	0.000
2004	0.000	0.000
2005	0.000	0.000
2006	0.013	0.000
2007	0.000	0.000
2008	0.001	0.000
2009	0.000	0.000

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Stream Protection Duration
Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	0.0130	0.0552
2	0.0121	0.0000
3	0.0044	0.0000
4	0.0034	0.0000
5	0.0027	0.0000
6	0.0023	0.0000
7	0.0020	0.0000
8	0.0019	0.0000
9	0.0018	0.0000
10	0.0013	0.0000
11	0.0011	0.0000
12	0.0010	0.0000
13	0.0009	0.0000
14	0.0009	0.0000
15	0.0008	0.0000
16	0.0008	0.0000
17	0.0008	0.0000
18	0.0007	0.0000
19	0.0007	0.0000
20	0.0007	0.0000
21	0.0006	0.0000
22	0.0006	0.0000

```
23          0.0005              0.0000
24          0.0004              0.0000
25          0.0004              0.0000
26          0.0004              0.0000
27          0.0004              0.0000
28          0.0004              0.0000
29          0.0004              0.0000
30          0.0004              0.0000
31          0.0004              0.0000
32          0.0004              0.0000
33          0.0004              0.0000
34          0.0004              0.0000
35          0.0004              0.0000
36          0.0004              0.0000
37          0.0004              0.0000
38          0.0004              0.0000
39          0.0004              0.0000
40          0.0004              0.0000
41          0.0004              0.0000
42          0.0004              0.0000
43          0.0004              0.0000
44          0.0004              0.0000
45          0.0004              0.0000
46          0.0004              0.0000
47          0.0004              0.0000
48          0.0004              0.0000
49          0.0004              0.0000
50          0.0004              0.0000
51          0.0004              0.0000
52          0.0004              0.0000
53          0.0004              0.0000
54          0.0004              0.0000
55          0.0004              0.0000
56          0.0004              0.0000
57          0.0004              0.0000
58          0.0004              0.0000
59          0.0004              0.0000
60          0.0003              0.0000
61          0.0003              0.0000
```

Stream Protection Duration
POC #2
The Facility PASSED

The Facility **PASSED.**

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0003	2361	3	0	Pass
0.0003	1333	3	0	Pass
0.0004	444	3	0	Pass
0.0004	112	3	2	Pass
0.0005	103	3	2	Pass
0.0005	89	3	3	Pass
0.0006	77	3	3	Pass
0.0006	66	3	4	Pass
0.0007	61	3	4	Pass
0.0007	58	3	5	Pass
0.0008	54	3	5	Pass
0.0008	50	3	6	Pass
0.0009	49	3	6	Pass
0.0009	47	3	6	Pass
0.0010	43	3	6	Pass

0.0010	40	3	7	Pass
0.0011	36	3	8	Pass
0.0011	36	3	8	Pass
0.0011	32	3	9	Pass
0.0012	31	3	9	Pass
0.0012	31	3	9	Pass
0.0013	29	3	10	Pass
0.0013	29	3	10	Pass
0.0014	27	3	11	Pass
0.0014	26	3	11	Pass
0.0015	26	3	11	Pass
0.0015	26	3	11	Pass
0.0016	25	3	12	Pass
0.0016	23	3	13	Pass
0.0017	23	3	13	Pass
0.0017	23	3	13	Pass
0.0018	23	3	13	Pass
0.0018	23	3	13	Pass
0.0019	21	3	14	Pass
0.0019	19	3	15	Pass
0.0020	18	3	16	Pass
0.0020	17	3	17	Pass
0.0021	16	3	18	Pass
0.0021	16	3	18	Pass
0.0022	15	3	20	Pass
0.0022	15	3	20	Pass
0.0023	14	3	21	Pass
0.0023	13	3	23	Pass
0.0024	13	3	23	Pass
0.0024	13	3	23	Pass
0.0024	13	3	23	Pass
0.0025	13	3	23	Pass
0.0025	13	3	23	Pass
0.0026	13	3	23	Pass
0.0026	13	3	23	Pass
0.0027	13	3	23	Pass
0.0027	11	3	27	Pass
0.0028	11	3	27	Pass
0.0028	11	3	27	Pass
0.0029	11	3	27	Pass
0.0029	11	3	27	Pass
0.0030	11	3	27	Pass
0.0030	11	3	27	Pass
0.0031	11	3	27	Pass
0.0031	11	3	27	Pass
0.0032	11	3	27	Pass
0.0032	11	3	27	Pass
0.0033	11	3	27	Pass
0.0033	11	3	27	Pass
0.0034	10	3	30	Pass
0.0034	10	3	30	Pass
0.0035	9	3	33	Pass
0.0035	9	3	33	Pass
0.0036	8	3	37	Pass
0.0036	8	3	37	Pass
0.0037	8	3	37	Pass
0.0037	8	3	37	Pass
0.0037	8	3	37	Pass
0.0038	8	3	37	Pass
0.0038	8	3	37	Pass
0.0039	8	3	37	Pass
0.0039	8	3	37	Pass
0.0040	8	3	37	Pass

```
0.0040    8    3    37    Pass
0.0041    8    3    37    Pass
0.0041    8    3    37    Pass
0.0042    8    3    37    Pass
0.0042    8    3    37    Pass
0.0043    7    3    42    Pass
0.0043    7    3    42    Pass
0.0044    7    3    42    Pass
0.0044    7    3    42    Pass
0.0045    6    3    50    Pass
0.0045    6    3    50    Pass
0.0046    6    3    50    Pass
0.0046    6    3    50    Pass
0.0047    6    3    50    Pass
0.0047    6    3    50    Pass
0.0048    6    3    50    Pass
0.0048    6    3    50    Pass
0.0049    6    3    50    Pass
0.0049    6    3    50    Pass
0.0050    6    3    50    Pass
0.0050    5    3    60    Pass
0.0051    5    3    60    Pass
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Water Quality BMP Flow and Volume for POC #2
On-line facility volume: 0.0472 **acre-feet**
On-line facility target flow: 0.0757 **cfs.**
Adjusted for 15 min: 0.0757 **cfs.**
Off-line facility target flow: 0.0428 **cfs.**
Adjusted for 15 min: 0.0428 **cfs.**

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