

PRELIMINARY STORMWATER CONTROL PLAN

for

BUCHANAN CROSSING

ANTIOCH, CA

April 2025

Standard Buchanan Venture LP

1015 18th St, NW

Suite 601

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prepared by:

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Attachments

Attachment A: Stormwater Control Plan Exhibit
Attachment B: BAHM Buchanan Crossing Output
Attachment C: IMP Calculator Sizing Output

I. PROJECT DATA

Table 1. Project Data

Project Name/Number	Buchanan Crossings
Application Submittal Date	
Project Location	APN: 074-480-001 & 074-480-007
Name of Developer	Standard Buchanan Venture LP
Project Phase No.	N/A
Project Type and Description	Multi-Family Residential with 6 3-story buildings to contain 195 units
Project Watershed	Kirker Creek – Frontal Suisun Bay Estuaries
Total Project Site Area (acres)	±6.22 Acres
Total Area of Land Disturbed (acres)	±5.74 Acres
Total New Impervious Surface Area (sq. ft.)	±164,339 square feet
Total Replaced Impervious Surface Area	0 square feet
Total Pre-Project Impervious Surface Area	0 square feet
Total Post-Project Impervious Surface Area	±164,046 square feet
50% Rule[*]	Doesn't Apply
Project Density	31.3 Dwelling Unit/Acres
Applicable Special Project Categories	None
Percent LID and non-LID treatment	100% of proposed impervious area treated through Bioretention and Porous Asphalt
HM Compliance [†]	Applies

[*50% rule applies if:

Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area]

[†HM required (unless project meets one of the exemptions in *Guidebook Chapter 1 – Hydromodification Management Requirements – Exemptions*) if:

(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre]

II. SETTING

II.A. Project Location and Description

The Buchanan Crossing Project is in Antioch CA at 3110 Buchanan Rd at the Northwest end of the intersection of Buchanan Rd and Buchanan Crossings. The project is within the PR-Proposed

Development zoning and consists of 6 3-story buildings with 195 multi-family housing units and 294 parking stalls. The project also includes 2 fenced off C-3 areas, a small dog park, and a play structure.

Vicinity Map



II.B. Existing Site Features and Conditions

The existing site consists of a hilly landscape area with slopes ranging from 1-30% all draining to the northwest corner of the site. There are 2 culvert outfalls on the south side of the site that sheet-flow northwest, as well as 1 detention overflow from the neighboring property that outfalls in the north and flows to the west.

The existing pervious conditions of the site account for 100% of the site at ± 6.22 acres, consisting of hydrologic soil group C.

II.C. Opportunities and Constraints for Stormwater Control

The site is currently intaking runoff at 3 locations onsite. One constraint this causes for the development is creating a storm bypass for this flow that does not impact proposed buildings and utilities on site while accommodating the appropriate runoffs. The project is also constrained by the outfall location needed for the site runoff, constraining the area reserved for LID treatment to the northwest corner of the site.

The site consists of a large parking area, portions of which are utilized as porous asphalt to minimize impervious areas created and treat portions of the buildings and fire lanes and minimize runoff through the bioretention area. The remaining impervious areas created are treated by a large bioretention basin located in the northwest corner of the property.

III. LOW IMPACT DEVELOPMENT DESIGN STRATEGIES

III.A. Optimization of Site Layout

The proposed drainage design utilizes a combination of a detention basin, porous asphalt, and self-treating landscaped areas, as outlined in Attachment A – Stormwater Control Plan. Stormwater directed to the detention basin will be treated prior to discharge at the northwest corner of the property. The site has been thoughtfully graded to maintain existing drainage patterns, guiding runoff toward this discharge point.

To further reduce impervious surface coverage, porous asphalt has been strategically implemented throughout the site. This not only decreases runoff volume but also promotes on-site infiltration and treatment of stormwater. Any excess runoff exceeding the infiltration capacity of the porous asphalt will be bypassed offsite. Additionally, landscaping areas have been maximized to support self-treating functions, contributing to an overall low-impact, sustainable stormwater management strategy.

III.B. Use of Porous Asphalt

The porous asphalt system on-site was designed in accordance with Table 3-2 of the Contra Costa County C.3 Guidebook and sized using both the Bay Area Hydrology Model (BAHM) and the Contra Costa Clean Water Program IMP Sizing Tool to ensure compliance with hydromodification management requirements for the development. Results from the BAHM analysis are provided in Attachment B, and the output from the IMP Sizing Tool is included in Attachment C.

III.C. Bioretention or other Integrated Management Practices

In addition to adhering to the 4% sizing requirement outlined in the Contra Costa County C.3 Guidebook, the bioretention facility was designed using the Bay Area Hydrology Model (BAHM) to satisfy hydromodification management requirements for the development. The results of the BAHM analysis are provided in Attachment B. The facility was also sized using the Contra Costa Clean Water Program IMP Sizing Tool, with the corresponding output included in Attachment C.

IV. DOCUMENTATION OF DRAINAGE DESIGN

IV.A. Descriptions of each Drainage Management Area

Table 2. Drainage Management Areas

<i>DMA Name</i>	<i>Area (SF)</i>	<i>Surface Type/Description</i>	<i>DMA Type/Drains to</i>
<i>DMA 1-R</i>	<i>42,241</i>	<i>Conventional Roof</i>	<i>Bioretention Facility</i>
<i>DMA 1-A</i>	<i>49,497</i>	<i>Concrete or Asphalt</i>	
<i>DMA 1-C</i>	<i>16,052</i>	<i>Concrete or Asphalt</i>	
<i>DMA 1-L</i>	<i>16,659</i>	<i>Landscape</i>	
<i>DMA 2-R</i>	<i>11,575</i>	<i>Conventional Roof</i>	<i>Porous Asphalt</i>
<i>DMA 2-C</i>	<i>3,707</i>	<i>Concrete or Asphalt</i>	

<i>DMA 2-L</i>	<i>1,224</i>	<i>Landscape</i>	
<i>DMA 2-P</i>	<i>8,045</i>	<i>Self-Retained</i>	
<i>DMA 3-R</i>	<i>10,100</i>	<i>Conventional Roof</i>	<i>Porous Asphalt</i>
<i>DMA 3-A</i>	<i>22,266</i>	<i>Concrete or Asphalt</i>	
<i>DMA 3-C</i>	<i>2,511</i>	<i>Concrete or Asphalt</i>	
<i>DMA 3-L</i>	<i>4,800</i>	<i>Landscape</i>	
<i>DMA 3-P</i>	<i>19,170</i>	<i>Self-Retained</i>	
<i>DMA 4-A</i>	<i>4,073</i>	<i>Concrete or Asphalt</i>	<i>Porous Asphalt</i>
<i>DMA 4-C</i>	<i>2,024</i>	<i>Concrete or Asphalt</i>	
<i>DMA 4-L</i>	<i>772</i>	<i>Landscape</i>	
<i>DMA 4-P</i>	<i>3,517</i>	<i>Self-Retaining</i>	
<i>DMA 5</i>	<i>22,474</i>	<i>Self-Treating</i>	<i>Self Treating Landscape</i>

IV.A.1.Drainage Management Area Descriptions

DMA 1, totaling 124,449 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, and landscaping. Runoff from DMA 1 is sent to IMP 1- Bioretention Facility located on the northwest corner of the site.

DMA 2, totaling 24,551 square feet, is composed of multiple surfaces including roof, concrete or hardscape, landscaping, and porous asphalt. Runoff from DMA 2 is treated via infiltration into the porous asphalt. In the case of overflow runoff from the porous asphalt, the treated water is directed to the storm drain system through an under-drain system onsite and bypassed offsite.

DMA 3, totaling 58,847 square feet, is composed of multiple surfaces including roof, asphalt, concrete or hardscape, landscaping, and porous asphalt. Runoff from DMA 3 is treated via infiltration into the porous asphalt. In the case of overflow runoff from the porous asphalt, the treated water is directed to the storm drain system through an under-drain system onsite and bypassed offsite.

DMA 4, totaling 10,386 square feet, is composed of multiple surfaces including asphalt, concrete or hardscape, landscaping, and porous asphalt. Runoff from DMA 4 is treated via infiltration into the porous asphalt. In the case of overflow runoff from the porous asphalt, the treated water is directed the storm drain system through an under-drain system onsite and bypassed offsite.

DMA 5, totaling 22,474 square feet, drains by self-treating landscape.

IV.B.Integrated Management Practice Descriptions

The IMP for the site is bioretention (as shown on Attachment A). The bioretention area is designed with a minimum ponding depth of 6", minimum 2" of freeboard, a bioretention soil mix depth of 18" and a minimum base rock depth of 12".

IV.C.Tabulation and Sizing Calculations

The Bioretention Facility (IMP 1) has been sized and designed based on the 4% sizing rule under the Contra Costa County C3 guidebook as well as the Contra Costa Clean Water Program IMP Sizing Tool. The output from the IMP Sizing Tool is provided in Attachment C. In addition, the facility was modeled using the Bay Area Hydrology Model to meet hydromodification management requirements, with the results available in Attachment B.

V. SOURCE CONTROL MEASURES

V.A.Site activities and potential sources of pollutants

Potential sources of pollutants may include on-site dumping into storm drain inlets, the need for future or structural pest control, landscape/outdoor pesticide use, unprotected materials used for roofing, gutters and trim, air conditioning condensation, streets and sidewalk debris, and trash enclosures. To account for these potential sources, the source control table below lists control opportunities.

V.B.Source Control Table

Table 3. Source Controls

Potential source of runoff pollutants	Permanent source control BMPs	Operational source control BMPs
On-site dumping into storm drain inlets	All accessible on-site inlets require stainless steel markers with statement “No Dumping – Drains to Creek”	Markings will be periodically replaced. Inlets and pipes conveying stormwater to BMPs will be inspected and maintained as part of BMP Operation and Maintenance Plan.
Need for future indoor or structural pest control		Integrated Pest Management (IPM) information will be provided to property owners.
Landscape/outdoor pesticide use	Final landscape plans will: Be designed to minimize irrigation and runoff and to minimize use of fertilizers and pesticides that can contribute to stormwater pollution. Specific plantings within bioretention areas and swales that are tolerant of the sandy loam soil and periodic inundation. Include pest-resistant plants. Include plantings appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Landscape will be maintained using minimum or no pesticides. IPM information will be provided to property owners

Roofing, gutters and Trim	Do not utilize roofing, gutter or architecture trim materials made of copper or other unprotected materials that would leach into the storm water runoff.	
Air conditioning	Air conditioner condensation shall be directed to landscaped areas or plumbed to the sanitary sewer.	
Streets and Sidewalks		Sweep streets and sidewalks to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer, not to the storm drain.
Trash enclosures	Minimize stormwater pollutants of concern in urban runoff by plumbing to the sanitary sewer system.	

VI. STORMWATER FACILITY MAINTENANCE

VI.A.Ownership and Responsibility for Maintenance in Perpetuity

The ownership and responsibility for maintenance of the facilities will be determined when approved project improvements are available.

VI.B.Summary of Maintenance Requirements for Each Stormwater Facility

The maintenance requirements will be provided when approved project improvements are available.

VII. CONSTRUCTION PLAN C.3 CHECKLIST

Table 4. Construction Plan C.3 Checklist

Stormwater

Control

Plan

Page #

BMP Description

See Plan Sheet #s

Attachment A	IMP 1 – Bioretention Facility	C7.0
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VIII. CERTIFICATIONS

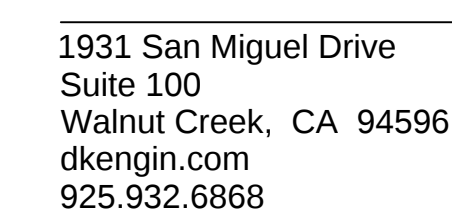
The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2015-0049.

[Check with local staff regarding other certification requirements.]

By

Print Name

ATTACHMENT A
STORMWATER CONTROL PLAN EXHIBIT



dk Project Number	24-1043
Contact	Stacey Gella
Email	sgella@dkengin.com
Principal	Andrew Palffy
Designer	Phoebe Illish

Applicant
Standard Buchanan Venture LP
1015 18th Street, NW
Suite 601
Washington, DC 20036

BUCHANAN CROSSINGS PHASE II

ANTIOCH, CA

[illegible]

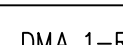
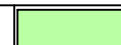
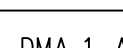
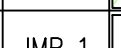
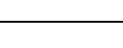
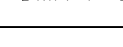
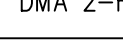
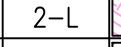
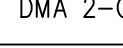
Client is responsible for notifying architect in writing for any discovered errors or omissions in the plans and specifications during construction of the project. Failure for Client to notify Architect of any known errors or omissions in the plans or specifications, and proceeding with constructing the portion of work shown in the plans or specifications containing known errors or omissions shall be a waiver by Client for any liability of Architect for such known errors or omissions. Client releases Architect for any liability for such portions of work, and Architect shall not be liable for any delay damages, change orders, repair costs, removal or demolition costs, or replacement of any such portions of work.

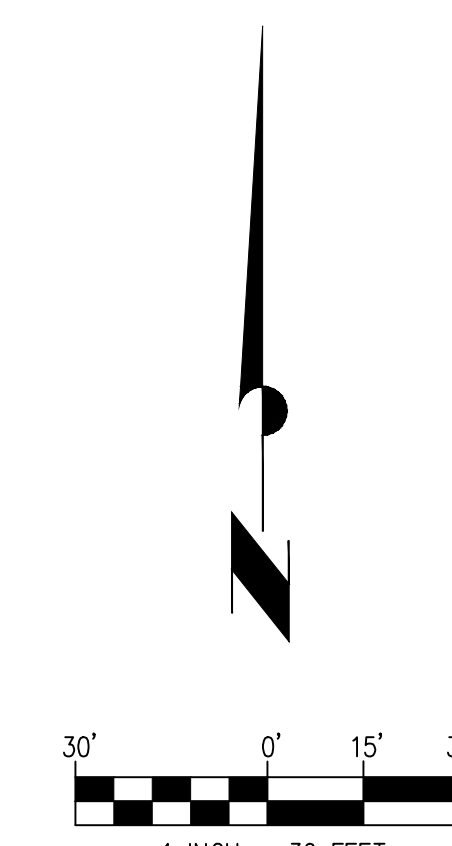
PRELIMINARY
STORMWATER CONTROL
PLAN

C7.0

DMA	DRAINAGE MANAGEMENT AREA
IMP	INTEGRATED MANAGEMENT PRACTICE
A	ASPHALT
C	CONCRETE OR HARDSCAPE
L	LANDSCAPE
P	POROUS ASPHALT
R	ROOF
---	PROJECT BOUNDARY
- - -	DMA BOUNDARY
	PROPOSED STORM DRAIN PIPE AND STRUCTURES

1. IMP 1 SIZED USING BAY AREA HYDROLOGY MODEL

LEGEND			
DMA	IMPERVIOUS		PERVIOUS
DMA-1	DMA 1-R		DMA 1-L IMP 1
	DMA 1-A		
	DMA 1-C		
DMA-2	DMA 2-R		DMA 2-L
	DMA 2-C		DMA 2-P
DMA-3	DMA 3-R		DMA 3-L
	DMA 3-A		DMA 3-P
	DMA 3-C		
DMA-4	DMA 4-A		DMA 4-L
	DMA 4-C		DMA 4-P
SELF TREATING - 22474 SF			



PRELIMINARY

Project Name: Buchanan Crossing
Project Type: Standard LID WQ Treatment
APN: 074-480-001, 007
Drainage Area: 249,135 sq ft
Mean Annual Precipitation: 13.0 inches

DMA Name	Area (sq ft)
DMA 5	23,474.0

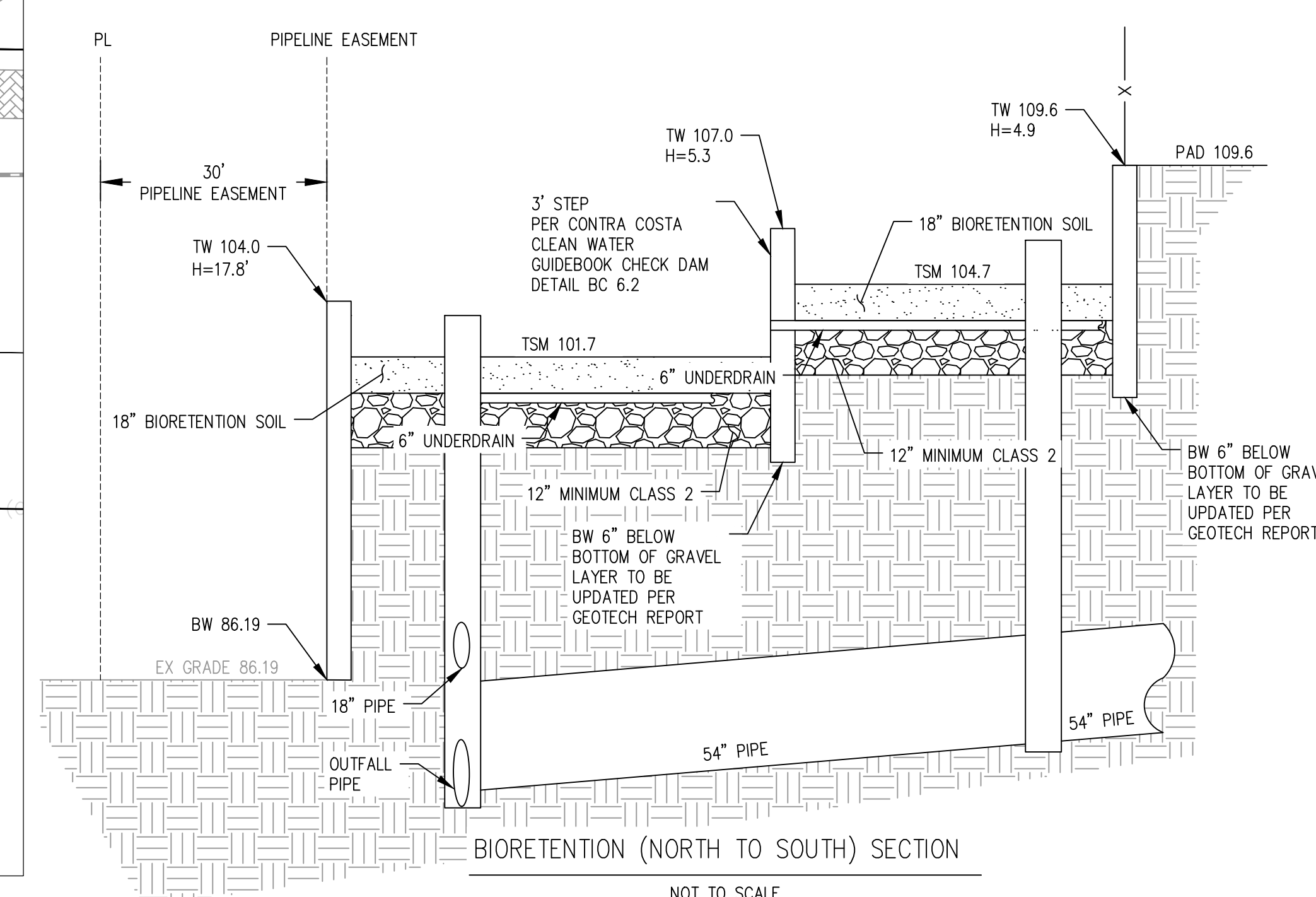
Self-Retaining DMA	
DMA Name	Area (sq ft)
DMA2-P	8.045
DMA3-P	19.170
DMA4-P	9.217

DMA Name	Area (sq ft)	Surface Type	Runoff Factor	Product (Area x Runoff Factor) [A]	Receiving Self Retaining DMA	Receiving Self-Retain g DMA Area (sq ft) [B]	Ratio [A]/[B]
DMA2-R	11575	Conventional Roof	1.0	11,575.0	DMA2-P	8,045	1.44
DMA2-C	3707	Concrete or Asphalt	1.0	3,707.0	DMA2-P	8,045	0.46
DMA2-L	1224	Landscape	0.1	122.4	DMA2-P	8,045	0.02
DMA3-R	10100	Conventional Roof	1.0	10,100.0	DMA3-P	19,170	0.53
DMA3-A	22266	Concrete or Asphalt	1.0	22,266.0	DMA3-P	19,170	1.16
DMA3-C	2511	Concrete or Asphalt	1.0	2,511.0	DMA3-P	19,170	0.13
DMA3-L	4800	Landscape	0.1	480.0	DMA3-P	19,170	0.03
DMA4-A	4073	Concrete or Asphalt	1.0	4,073.0	DMA4-P	3,517	1.16
DMA4-C	2024	Concrete or Asphalt	1.0	2,024.0	DMA4-P	3,517	0.58
DMA4-L	772	Landscape	0.1	77.2	DMA4-P	3,517	0.02

IMP Name: IMP1
IMP Type: Bioretention Facility
Soil Group: D

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA1-R	42,241	Concrete or Roof	1.00	42,241
DMA1-A	49,497	Concrete or Asphalt	1.00	49,497
DMA1-C	16,052	Concrete or Asphalt	1.00	16,052
DMA1-L	16,659	Landscape	0.10	1,666
			Total	106,456
Area	IMP Sizing Factor 0.040	Minimum 4,378 sq.ft.		Proposed 8735 sq.ft.

Report generated on 04/17/2025 by the Contra Costa Clean Water Program IMP Sizing Tool software (version 1.4.1.0)



ATTACHMENT B
BAHM BUCHANAN CROSSING OUTPUT

BAHM2023

PROJECT REPORT

General Model Information

BAHM2023 Project Name: preliminary buchanan Crossing bahm-permeable3

Site Name: Buchanan Crossing

Site Address: 3110 Buchanan rd

City: Antioch

Report Date: 4/17/2025

Gage: Los Medanos

Data Start: 1974/10/01

Data End: 2021/09/30

Timestep: Hourly

Precip Scale: 1.000

Version Date: 2024/06/19

POC Thresholds

Low Flow Threshold for POC1:	10 Percent of the 2 Year
High Flow Threshold for POC1:	10 Year

Landuse Basin Data

Pre-Project Land Use

Pre-Project

Bypass: No

GroundWater: No

Pervious Land Use	acre
C D,Grass,Flat(0-5%)	2.36
C D,Grass,Mod(5-10%)	0.34
C D,Grass,Ste(10-20)	0.82
C D,Grass,Very(>20%)	2.21

Pervious Total 5.73

Impervious Land Use acre

Impervious Total 0

Basin Total 5.73

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Mitigated Land Use

BASIN 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
C D,Grass,Flat(0-5%)	0.38

Pervious Total	0.38
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Impervious Land Use	acre
Roads,Flat(0-5%)	1.14

Roof Area	0.97
-----------	------

Sidewalks,Flat(0-5%)	0.37
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Impervious Total	2.48
------------------	------

Basin Total	2.86
-------------	------

Element Flow Components:

Surface	Interflow	Groundwater
---------	-----------	-------------

Component Flows To:

Surface retention	1	Surface retention	1
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BASIN 2R

Bypass: No
Impervious Land Use acre
Roof Area 0.27
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 2
POC 1

BASIN 2C

Bypass: No
Impervious Land Use acre
Sidewalks, Flat(0-5%) 0.09
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 2

BASIN 2L

Bypass: No

GroundWater: No

Pervious Land Use acre

C D,Shrub,Flat(0-5%) .03

Element Flow Componants:

Surface Interflow

Groundwater

Componant Flows To:

Permeable Pavement BASIN 2

Basin 5

Bypass: Yes

GroundWater: No

Pervious Land Use acre

C D,Grass,Flat(0-5%) 0.11

C D,Grass,Mod(5-10%) 0.41

Pervious Total 0.52

Impervious Land Use acre

Impervious Total 0

Basin Total 0.52

Element Flow Components:

Surface Interflow

Groundwater

Component Flows To:

POC 1 POC 1

BASIN 3L

Bypass: No

GroundWater: No

Pervious Land Use acre
C D,Shrub,Flat(0-5%) .11

Element Flow Componants:
Surface Interflow Groundwater
Componant Flows To:
Permeable Pavement BASIN 3
Impermeable Pavement BASIN 3

BASIN 3R

Bypass: No
Impervious Land Use acre
Roof Area 0.23
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 3
POC 1

BASIN 3A

Bypass: No
Impervious Land Use acre
Roads, Flat(0-5%) 0.51
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 3

BASIN 3C

Bypass: No
Impervious Land Use acre
Sidewalks, Flat(0-5%) 0.06
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 3

BASIN 4A

Bypass: No
Impervious Land Use acre
Roads, Flat(0-5%) 0.09
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 4

BASIN 4C

Bypass: No
Impervious Land Use acre
Sidewalks, Flat(0-5%) 0.05
Element Flow Component:
Surface
Component Flows To:
Permeable Pavement BASIN 4

BASIN 4L

Bypass: No

GroundWater: No

Pervious Land Use acre
C D,Shrub,Flat(0-5%) .02

Element Flow Componants:
Surface Interflow Groundwater
Componant Flows To:
Permeable Pavement BASIN 4
Impermeable Pavement BASIN 4

Routing Elements

Pre-Project Routing

Mitigated Routing

Bioretention 1

Bottom Length: 128.00 ft.
 Bottom Width: 65.00 ft.
 Material thickness of first layer: 1.5
 Material type for first layer: BAHM 5
 Material thickness of second layer: 2
 Material type for second layer: GRAVEL
 Material thickness of third layer: 0
 Material type for third layer: GRAVEL
 Infiltration On
 Infiltration rate: 0.2
 Infiltration reduction factor: 0.5
 Total Volume Infiltrated (ac-ft.): 80.712
 Total Volume Through Riser (ac-ft.): 4.494
 Total Volume Through Facility (ac-ft.): 90.307
 Percent Infiltrated: 89.38
 Total Precip Applied to Facility: 7.117
 Total Evap From Facility: 6.895
 Underdrain used
 Underdrain Diameter (feet): 0.5
 Orifice Diameter (in.): 1
 Offset (in.): 18
 Flow Through Underdrain (ac-ft.): 5.101
 Total Outflow (ac-ft.): 90.307
 Percent Through Underdrain: 5.65
 Discharge Structure
 Riser Height: 1.8 ft.
 Riser Diameter: 12 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	0.1910	0.0000	0.0000	0.0000
0.0637	0.1910	0.0046	0.0000	0.0000
0.1275	0.1910	0.0093	0.0000	0.0000
0.1912	0.1910	0.0139	0.0000	0.0000
0.2549	0.1910	0.0185	0.0000	0.0000
0.3187	0.1910	0.0231	0.0000	0.0000
0.3824	0.1910	0.0278	0.0000	0.0193
0.4462	0.1910	0.0324	0.0000	0.0193
0.5099	0.1910	0.0370	0.0000	0.0193
0.5736	0.1910	0.0416	0.0000	0.0193
0.6374	0.1910	0.0463	0.0000	0.0193
0.7011	0.1910	0.0509	0.0000	0.0193
0.7648	0.1910	0.0555	0.0000	0.0193
0.8286	0.1910	0.0601	0.0000	0.0193
0.8923	0.1910	0.0648	0.0000	0.0193
0.9560	0.1910	0.0694	0.0000	0.0193
1.0198	0.1910	0.0740	0.0000	0.0193
1.0835	0.1910	0.0786	0.0000	0.0193
1.1473	0.1910	0.0833	0.0000	0.0193

1.2110	0.1910	0.0879	0.0000	0.0193
1.2747	0.1910	0.0925	0.0000	0.0193
1.3385	0.1910	0.0971	0.0000	0.0193
1.4022	0.1910	0.1018	0.0000	0.0193
1.4659	0.1910	0.1064	0.0000	0.0193
1.5297	0.1910	0.1115	0.0000	0.0193
1.5934	0.1910	0.1165	0.0000	0.0193
1.6571	0.1910	0.1216	0.0000	0.0193
1.7209	0.1910	0.1266	0.0000	0.0193
1.7846	0.1910	0.1317	0.0000	0.0193
1.8484	0.1910	0.1367	0.0000	0.0193
1.9121	0.1910	0.1418	0.0000	0.0193
1.9758	0.1910	0.1468	0.0000	0.0193
2.0396	0.1910	0.1519	0.0000	0.0193
2.1033	0.1910	0.1569	0.0000	0.0193
2.1670	0.1910	0.1620	0.0000	0.0193
2.2308	0.1910	0.1670	0.0000	0.0193
2.2945	0.1910	0.1721	0.0000	0.0193
2.3582	0.1910	0.1771	0.0000	0.0193
2.4220	0.1910	0.1822	0.0000	0.0193
2.4857	0.1910	0.1872	0.0000	0.0193
2.5495	0.1910	0.1923	0.0000	0.0193
2.6132	0.1910	0.1973	0.0000	0.0193
2.6769	0.1910	0.2024	0.0000	0.0193
2.7407	0.1910	0.2074	0.0000	0.0193
2.8044	0.1910	0.2125	0.0000	0.0193
2.8681	0.1910	0.2175	0.0000	0.0193
2.9319	0.1910	0.2226	0.0000	0.0193
2.9956	0.1910	0.2276	0.0000	0.0193
3.0593	0.1910	0.2327	0.0068	0.0193
3.1231	0.1910	0.2378	0.0097	0.0193
3.1868	0.1910	0.2428	0.0119	0.0193
3.2505	0.1910	0.2479	0.0137	0.0193
3.3143	0.1910	0.2529	0.0154	0.0193
3.3780	0.1910	0.2580	0.0168	0.0193
3.4418	0.1910	0.2630	0.0182	0.0193
3.5000	0.1910	0.2676	0.0197	0.0193

Bioretention Surface Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	To Amended(cfs)	Infiltr(cfs)
3.5000	0.1910	0.2676	0.0000	0.0390	0.0000
3.5637	0.1910	0.2798	0.0000	0.0390	0.0000
3.6275	0.1910	0.2920	0.0000	0.0390	0.0000
3.6912	0.1910	0.3042	0.0000	0.0390	0.0000
3.7549	0.1910	0.3163	0.0000	0.0390	0.0000
3.8187	0.1910	0.3285	0.0000	0.0390	0.0000
3.8824	0.1910	0.3407	0.0000	0.0390	0.0000
3.9462	0.1910	0.3528	0.0000	0.0390	0.0000
4.0099	0.1910	0.3650	0.0000	0.0390	0.0000
4.0736	0.1910	0.3772	0.0000	0.0390	0.0000
4.1374	0.1910	0.3894	0.0000	0.0390	0.0000
4.2011	0.1910	0.4015	0.0000	0.0390	0.0000
4.2648	0.1910	0.4137	0.0000	0.0390	0.0000
4.3286	0.1910	0.4259	0.0000	0.0390	0.0000
4.3923	0.1910	0.4381	0.0000	0.0390	0.0000
4.4560	0.1910	0.4502	0.0000	0.0390	0.0000
4.5198	0.1910	0.4624	0.0000	0.0390	0.0000
4.5835	0.1910	0.4746	0.0000	0.0390	0.0000

4.6473	0.1910	0.4868	0.0000	0.0390	0.0000
4.7110	0.1910	0.4989	0.0000	0.0390	0.0000
4.7747	0.1910	0.5111	0.0000	0.0390	0.0000
4.8385	0.1910	0.5233	0.0000	0.0390	0.0000
4.9022	0.1910	0.5355	0.0000	0.0390	0.0000
4.9659	0.1910	0.5476	0.0000	0.0390	0.0000
5.0297	0.1910	0.5598	0.0000	0.0390	0.0000
5.0934	0.1910	0.5720	0.0000	0.0390	0.0000
5.1571	0.1910	0.5841	0.0000	0.0390	0.0000
5.2209	0.1910	0.5963	0.0000	0.0390	0.0000
5.2846	0.1910	0.6085	0.0000	0.0390	0.0000
5.3484	0.1910	0.6207	0.1127	0.0390	0.0000
5.4121	0.1910	0.6328	0.3949	0.0390	0.0000
5.4758	0.1910	0.6450	0.7588	0.0390	0.0000
5.5396	0.1910	0.6572	1.1535	0.0390	0.0000
5.6033	0.1910	0.6694	1.5277	0.0390	0.0000
5.6670	0.1910	0.6815	1.8361	0.0390	0.0000
5.7308	0.1910	0.6937	2.0532	0.0390	0.0000
5.7945	0.1910	0.7059	2.1930	0.0390	0.0000
5.8000	0.1910	0.7069	2.3533	0.0390	0.0000

Permeable Pavement BASIN 2

Pavement Area:0.1848 acre.Pavement Length:460.00 ft.

Pavement Width: 17.50 ft.
Pavement slope 1:0.01 To 1

Pavement thickness: 0.5

Pour Space of Pavement: 0.3

Material thickness of second layer: 0.5

Pour Space of material for second layer: 0.4

Material thickness of third layer: 0.83

Pour Space of material for third layer: 0.4

Infiltration On

Infiltration rate: 0.05

Infiltration reduction factor: 1

Total Volume Infiltrated (ac-ft.): 14.349

Total Volume Through Riser (ac-ft.): 4.392

Total Volume Through Facility (ac-ft.): 18.741

Percent Infiltrated: 76.56

Total Precip Applied to Facility: 0

Total Evap From Facility: 0.736

Discharge Structure

Riser Height: 1.84000004291534 ft.

Riser Diameter: 210 in.

Notch Type: Rectangular

Notch Width: 5.000 ft.

Notch Height: 0.000 ft.

Orifice 1 Diameter: 6.000 in. Elevation:0.25 ft.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Permeable Pavement Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.184	0.000	0.000	0.000
0.0204	0.184	0.001	0.000	0.009
0.0409	0.184	0.003	0.000	0.009
0.0613	0.184	0.004	0.000	0.009
0.0818	0.184	0.006	0.000	0.009
0.1022	0.184	0.007	0.000	0.009
0.1227	0.184	0.009	0.000	0.009
0.1431	0.184	0.010	0.000	0.009
0.1636	0.184	0.012	0.000	0.009
0.1840	0.184	0.013	0.000	0.009
0.2044	0.184	0.015	0.000	0.009
0.2249	0.184	0.016	0.000	0.009
0.2453	0.184	0.018	0.000	0.009
0.2658	0.184	0.019	0.122	0.009
0.2862	0.184	0.021	0.185	0.009
0.3067	0.184	0.022	0.232	0.009
0.3271	0.184	0.024	0.271	0.009
0.3476	0.184	0.025	0.305	0.009
0.3680	0.184	0.027	0.335	0.009
0.3884	0.184	0.028	0.363	0.009
0.4089	0.184	0.030	0.389	0.009
0.4293	0.184	0.031	0.413	0.009
0.4498	0.184	0.033	0.436	0.009

0.4702	0.184	0.034	0.458	0.009
0.4907	0.184	0.036	0.479	0.009
0.5111	0.184	0.037	0.499	0.009
0.5316	0.184	0.039	0.518	0.009
0.5520	0.184	0.040	0.536	0.009
0.5724	0.184	0.042	0.554	0.009
0.5929	0.184	0.043	0.572	0.009
0.6133	0.184	0.045	0.588	0.009
0.6338	0.184	0.046	0.605	0.009
0.6542	0.184	0.048	0.621	0.009
0.6747	0.184	0.049	0.636	0.009
0.6951	0.184	0.051	0.651	0.009
0.7156	0.184	0.052	0.666	0.009
0.7360	0.184	0.054	0.681	0.009
0.7564	0.184	0.055	0.695	0.009
0.7769	0.184	0.057	0.709	0.009
0.7973	0.184	0.058	0.722	0.009
0.8178	0.184	0.060	0.736	0.009
0.8382	0.184	0.062	0.749	0.009
0.8587	0.184	0.063	0.762	0.009
0.8791	0.184	0.065	0.774	0.009
0.8996	0.184	0.066	0.787	0.009
0.9200	0.184	0.068	0.799	0.009
0.9404	0.184	0.069	0.811	0.009
0.9609	0.184	0.071	0.823	0.009
0.9813	0.184	0.072	0.835	0.009
1.0018	0.184	0.074	0.847	0.009
1.0222	0.184	0.075	0.858	0.009
1.0427	0.184	0.077	0.869	0.009
1.0631	0.184	0.078	0.880	0.009
1.0836	0.184	0.080	0.891	0.009
1.1040	0.184	0.081	0.902	0.009
1.1244	0.184	0.083	0.913	0.009
1.1449	0.184	0.084	0.924	0.009
1.1653	0.184	0.086	0.934	0.009
1.1858	0.184	0.087	0.945	0.009
1.2062	0.184	0.089	0.955	0.009
1.2267	0.184	0.090	0.965	0.009
1.2471	0.184	0.092	0.975	0.009
1.2676	0.184	0.093	0.985	0.009
1.2880	0.184	0.095	0.995	0.009
1.3084	0.184	0.096	1.005	0.009
1.3289	0.184	0.098	1.014	0.009
1.3493	0.184	0.099	1.024	0.009
1.3698	0.184	0.100	1.033	0.009
1.3902	0.184	0.101	1.043	0.009
1.4107	0.184	0.102	1.052	0.009
1.4311	0.184	0.103	1.061	0.009
1.4516	0.184	0.105	1.070	0.009
1.4720	0.184	0.106	1.079	0.009
1.4924	0.184	0.107	1.088	0.009
1.5129	0.184	0.108	1.097	0.009
1.5333	0.184	0.109	1.106	0.009
1.5538	0.184	0.110	1.115	0.009
1.5742	0.184	0.111	1.124	0.009
1.5947	0.184	0.113	1.132	0.009
1.6151	0.184	0.114	1.141	0.009
1.6356	0.184	0.115	1.149	0.009

1.6560	0.184	0.116	1.158	0.009
1.6764	0.184	0.117	1.166	0.009
1.6969	0.184	0.118	1.175	0.009
1.7173	0.184	0.119	1.183	0.009
1.7378	0.184	0.120	1.191	0.009
1.7582	0.184	0.122	1.199	0.009
1.7787	0.184	0.123	1.207	0.009
1.7991	0.184	0.124	1.215	0.009
1.8196	0.184	0.125	1.223	0.009
1.8400	0.184	0.129	1.231	0.009

Permeable Pavement BASIN 3

Pavement Area:0.4399 acre.Pavement Length:219.00 ft.

Pavement Width: 87.50 ft.

Pavement slope 1:0.01 To 1

Pavement thickness: 0.5

Pour Space of Pavement: 0.3

Material thickness of second layer: 0.5

Pour Space of material for second layer: 0.4

Material thickness of third layer: 0.83

Pour Space of material for third layer: 0.4

Infiltration On

Infiltration rate: 0.05

Infiltration reduction factor: 1

Total Volume Infiltrated (ac-ft.): 33.695

Total Volume Through Riser (ac-ft.): 9.183

Total Volume Through Facility (ac-ft.): 42.878

Percent Infiltrated: 78.58

Total Precip Applied to Facility: 0

Total Evap From Facility: 1.752

Discharge Structure

Riser Height: 1.84000004291534 ft.

Riser Diameter: 1050 in.

Notch Type: Rectangular

Notch Width: 8.750 ft.

Notch Height: 0.000 ft.

Orifice 1 Diameter: 6.000 in. Elevation:0.25 ft.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Permeable Pavement Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.439	0.000	0.000	0.000
0.0204	0.439	0.003	0.000	0.022
0.0409	0.439	0.007	0.000	0.022
0.0613	0.439	0.010	0.000	0.022
0.0818	0.439	0.014	0.000	0.022
0.1022	0.439	0.018	0.000	0.022
0.1227	0.439	0.021	0.000	0.022
0.1431	0.439	0.025	0.000	0.022
0.1636	0.439	0.028	0.000	0.022
0.1840	0.439	0.032	0.000	0.022
0.2044	0.439	0.036	0.000	0.022
0.2249	0.439	0.039	0.000	0.022
0.2453	0.439	0.043	0.000	0.022
0.2658	0.439	0.046	0.122	0.022
0.2862	0.439	0.050	0.185	0.022
0.3067	0.439	0.054	0.232	0.022
0.3271	0.439	0.057	0.271	0.022
0.3476	0.439	0.061	0.305	0.022
0.3680	0.439	0.064	0.335	0.022
0.3884	0.439	0.068	0.363	0.022
0.4089	0.439	0.072	0.389	0.022
0.4293	0.439	0.075	0.413	0.022
0.4498	0.439	0.079	0.436	0.022

0.4702	0.439	0.082	0.458	0.022
0.4907	0.439	0.086	0.479	0.022
0.5111	0.439	0.089	0.499	0.022
0.5316	0.439	0.093	0.518	0.022
0.5520	0.439	0.097	0.536	0.022
0.5724	0.439	0.100	0.554	0.022
0.5929	0.439	0.104	0.572	0.022
0.6133	0.439	0.107	0.588	0.022
0.6338	0.439	0.111	0.605	0.022
0.6542	0.439	0.115	0.621	0.022
0.6747	0.439	0.118	0.636	0.022
0.6951	0.439	0.122	0.651	0.022
0.7156	0.439	0.125	0.666	0.022
0.7360	0.439	0.129	0.681	0.022
0.7564	0.439	0.133	0.695	0.022
0.7769	0.439	0.136	0.709	0.022
0.7973	0.439	0.140	0.722	0.022
0.8178	0.439	0.143	0.736	0.022
0.8382	0.439	0.147	0.749	0.022
0.8587	0.439	0.151	0.762	0.022
0.8791	0.439	0.154	0.774	0.022
0.8996	0.439	0.158	0.787	0.022
0.9200	0.439	0.161	0.799	0.022
0.9404	0.439	0.165	0.811	0.022
0.9609	0.439	0.169	0.823	0.022
0.9813	0.439	0.172	0.835	0.022
1.0018	0.440	0.176	0.847	0.022
1.0222	0.440	0.179	0.858	0.022
1.0427	0.440	0.183	0.869	0.022
1.0631	0.440	0.187	0.880	0.022
1.0836	0.440	0.190	0.891	0.022
1.1040	0.440	0.194	0.902	0.022
1.1244	0.440	0.197	0.913	0.022
1.1449	0.440	0.201	0.924	0.022
1.1653	0.440	0.205	0.934	0.022
1.1858	0.440	0.208	0.945	0.022
1.2062	0.440	0.212	0.955	0.022
1.2267	0.440	0.215	0.965	0.022
1.2471	0.440	0.219	0.975	0.022
1.2676	0.440	0.223	0.985	0.022
1.2880	0.440	0.226	0.995	0.022
1.3084	0.440	0.230	1.005	0.022
1.3289	0.440	0.233	1.014	0.022
1.3493	0.440	0.236	1.024	0.022
1.3698	0.440	0.239	1.033	0.022
1.3902	0.440	0.241	1.043	0.022
1.4107	0.440	0.244	1.052	0.022
1.4311	0.440	0.247	1.061	0.022
1.4516	0.440	0.250	1.070	0.022
1.4720	0.440	0.252	1.079	0.022
1.4924	0.440	0.255	1.088	0.022
1.5129	0.440	0.258	1.097	0.022
1.5333	0.440	0.260	1.106	0.022
1.5538	0.440	0.263	1.115	0.022
1.5742	0.440	0.266	1.124	0.022
1.5947	0.440	0.268	1.132	0.022
1.6151	0.440	0.271	1.141	0.022
1.6356	0.440	0.274	1.149	0.022

1.6560	0.440	0.277	1.158	0.022
1.6764	0.440	0.279	1.166	0.022
1.6969	0.440	0.282	1.175	0.022
1.7173	0.440	0.285	1.183	0.022
1.7378	0.440	0.287	1.191	0.022
1.7582	0.440	0.290	1.199	0.022
1.7787	0.440	0.293	1.207	0.022
1.7991	0.440	0.295	1.215	0.022
1.8196	0.440	0.298	1.223	0.022
1.8400	0.440	0.307	1.231	0.022

Permeable Pavement BASIN 4

Pavement Area:0.0808 acre.Pavement Length:201.00 ft.

Pavement Width: 17.50 ft.

Pavement slope 1:0.01 To 1

Pavement thickness: 0.5

Pour Space of Pavement: 0.3

Material thickness of second layer: 0.5

Pour Space of material for second layer: 0.4

Material thickness of third layer: 0.83

Pour Space of material for third layer: 0.4

Infiltration On

Infiltration rate: 0.05

Infiltration reduction factor: 1

Total Volume Infiltrated (ac-ft.): 5.961

Total Volume Through Riser (ac-ft.): 1.678

Total Volume Through Facility (ac-ft.): 7.639

Percent Infiltrated: 78.03

Total Precip Applied to Facility: 0

Total Evap From Facility: 0.312

Discharge Structure

Riser Height: 1.84000004291534 ft.

Riser Diameter: 210 in.

Notch Type: Rectangular

Notch Width: 5.000 ft.

Notch Height: 0.000 ft.

Orifice 1 Diameter: 6.000 in. Elevation:0.25 ft.

Element Outlets:

Outlet 1 Outlet 2

Outlet Flows To:

Permeable Pavement Hydraulic Table

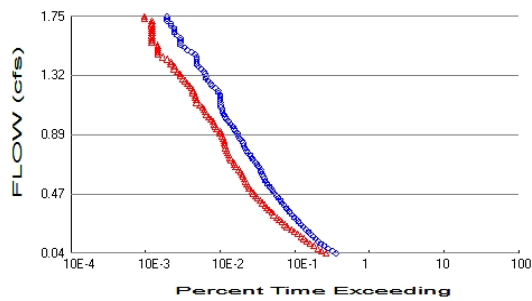
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.080	0.000	0.000	0.000
0.0204	0.080	0.000	0.000	0.004
0.0409	0.080	0.001	0.000	0.004
0.0613	0.080	0.002	0.000	0.004
0.0818	0.080	0.002	0.000	0.004
0.1022	0.080	0.003	0.000	0.004
0.1227	0.080	0.004	0.000	0.004
0.1431	0.080	0.004	0.000	0.004
0.1636	0.080	0.005	0.000	0.004
0.1840	0.080	0.005	0.000	0.004
0.2044	0.080	0.006	0.000	0.004
0.2249	0.080	0.007	0.000	0.004
0.2453	0.080	0.007	0.000	0.004
0.2658	0.080	0.008	0.122	0.004
0.2862	0.080	0.009	0.185	0.004
0.3067	0.080	0.009	0.232	0.004
0.3271	0.080	0.010	0.271	0.004
0.3476	0.080	0.011	0.305	0.004
0.3680	0.080	0.011	0.335	0.004
0.3884	0.080	0.012	0.363	0.004
0.4089	0.080	0.013	0.389	0.004
0.4293	0.080	0.013	0.413	0.004
0.4498	0.080	0.014	0.436	0.004

0.4702	0.080	0.015	0.458	0.004
0.4907	0.080	0.015	0.479	0.004
0.5111	0.080	0.016	0.499	0.004
0.5316	0.080	0.017	0.518	0.004
0.5520	0.080	0.017	0.536	0.004
0.5724	0.080	0.018	0.554	0.004
0.5929	0.080	0.019	0.572	0.004
0.6133	0.080	0.019	0.588	0.004
0.6338	0.080	0.020	0.605	0.004
0.6542	0.080	0.021	0.621	0.004
0.6747	0.080	0.021	0.636	0.004
0.6951	0.080	0.022	0.651	0.004
0.7156	0.080	0.023	0.666	0.004
0.7360	0.080	0.023	0.681	0.004
0.7564	0.080	0.024	0.695	0.004
0.7769	0.080	0.025	0.709	0.004
0.7973	0.080	0.025	0.722	0.004
0.8178	0.080	0.026	0.736	0.004
0.8382	0.080	0.027	0.749	0.004
0.8587	0.080	0.027	0.762	0.004
0.8791	0.080	0.028	0.774	0.004
0.8996	0.080	0.029	0.787	0.004
0.9200	0.080	0.029	0.799	0.004
0.9404	0.080	0.030	0.811	0.004
0.9609	0.080	0.031	0.823	0.004
0.9813	0.080	0.031	0.835	0.004
1.0018	0.080	0.032	0.847	0.004
1.0222	0.080	0.033	0.858	0.004
1.0427	0.080	0.033	0.869	0.004
1.0631	0.080	0.034	0.880	0.004
1.0836	0.080	0.035	0.891	0.004
1.1040	0.080	0.035	0.902	0.004
1.1244	0.080	0.036	0.913	0.004
1.1449	0.080	0.037	0.924	0.004
1.1653	0.080	0.037	0.934	0.004
1.1858	0.080	0.038	0.945	0.004
1.2062	0.080	0.039	0.955	0.004
1.2267	0.080	0.039	0.965	0.004
1.2471	0.080	0.040	0.975	0.004
1.2676	0.080	0.040	0.985	0.004
1.2880	0.080	0.041	0.995	0.004
1.3084	0.080	0.042	1.005	0.004
1.3289	0.080	0.042	1.014	0.004
1.3493	0.080	0.043	1.024	0.004
1.3698	0.080	0.043	1.033	0.004
1.3902	0.080	0.044	1.043	0.004
1.4107	0.080	0.044	1.052	0.004
1.4311	0.080	0.045	1.061	0.004
1.4516	0.080	0.045	1.070	0.004
1.4720	0.080	0.046	1.079	0.004
1.4924	0.080	0.046	1.088	0.004
1.5129	0.080	0.047	1.097	0.004
1.5333	0.080	0.047	1.106	0.004
1.5538	0.080	0.048	1.115	0.004
1.5742	0.080	0.048	1.124	0.004
1.5947	0.080	0.049	1.132	0.004
1.6151	0.080	0.049	1.141	0.004
1.6356	0.080	0.050	1.149	0.004

1.6560	0.080	0.050	1.158	0.004
1.6764	0.080	0.051	1.166	0.004
1.6969	0.080	0.051	1.175	0.004
1.7173	0.080	0.052	1.183	0.004
1.7378	0.080	0.052	1.191	0.004
1.7582	0.080	0.053	1.199	0.004
1.7787	0.080	0.053	1.207	0.004
1.7991	0.080	0.054	1.215	0.004
1.8196	0.080	0.054	1.223	0.004
1.8400	0.080	0.056	1.231	0.004

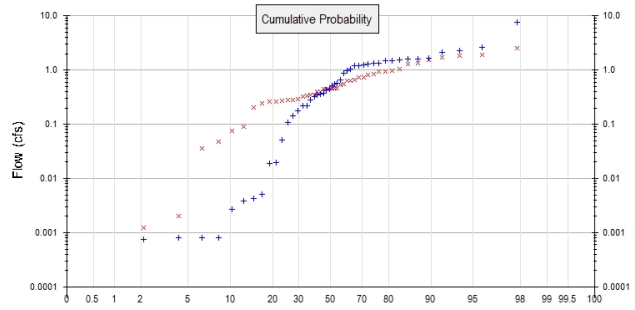
Analysis Results

POC 1



+ Pre-Project

x Mitigated



Pre-Project Landuse Totals for POC #1

Total Pervious Area: 5.73
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1

Total Pervious Area: 1.06
Total Impervious Area: 4.485464

Flow Frequency Method: Weibull

Flow Frequency Return Periods for Pre-Project. POC #1

Return Period	Flow(cfs)
2 year	0.444864
5 year	1.481438
10 year	1.745432
25 year	2.807968

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.447519
5 year	0.947242
10 year	1.582565
25 year	1.914861

Annual Peaks

Annual Peaks for Pre-Project and Mitigated. POC #1

Year	Pre-Project	Mitigated
1975	0.508	0.349
1976	0.000	0.000
1977	0.001	0.285
1978	1.239	0.437
1979	1.321	0.533
1980	1.036	0.855
1981	0.179	0.459
1982	1.296	1.301
1983	7.608	2.483
1984	0.556	0.259
1985	0.276	0.402
1986	1.672	0.441
1987	0.019	0.318
1988	0.374	0.282

1989	0.004	0.921
1990	0.003	0.291
1991	0.221	0.272
1992	0.020	0.247
1993	0.873	0.339
1994	0.219	0.460
1995	2.240	1.890
1996	0.649	0.825
1997	1.610	0.652
1998	2.111	1.846
1999	0.001	0.036
2000	0.001	0.002
2001	0.004	0.075
2002	0.573	0.738
2003	1.187	1.725
2004	0.445	0.394
2005	0.429	0.468
2006	0.343	0.259
2007	0.005	0.048
2008	0.977	0.928
2009	0.106	0.092
2010	1.464	1.554
2011	1.528	0.719
2012	0.144	0.205
2013	2.599	1.353
2014	0.323	0.344
2015	1.219	1.030
2016	1.339	0.631
2017	1.601	0.550
2018	0.354	0.448
2019	1.511	0.979
2020	0.051	0.001
2021	0.001	0.630

Ranked Annual Peaks

Ranked Annual Peaks for Pre-Project and Mitigated. POC #1

Rank	Pre-Project	Mitigated
1	7.6080	2.4830
2	2.5993	1.8902
3	2.2403	1.8465
4	2.1115	1.7251
5	1.6722	1.5541
6	1.6097	1.3529
7	1.6009	1.3012
8	1.5278	1.0302
9	1.5109	0.9788
10	1.4638	0.9283
11	1.3388	0.9208
12	1.3213	0.8554
13	1.2964	0.8252
14	1.2391	0.7375
15	1.2192	0.7191
16	1.1865	0.6521
17	1.0359	0.6312
18	0.9771	0.6296
19	0.8733	0.5501
20	0.6489	0.5328
21	0.5733	0.4681

22	0.5556	0.4599
23	0.5077	0.4595
24	0.4449	0.4475
25	0.4294	0.4411
26	0.3739	0.4373
27	0.3543	0.4016
28	0.3426	0.3937
29	0.3229	0.3486
30	0.2761	0.3436
31	0.2214	0.3387
32	0.2189	0.3183
33	0.1785	0.2915
34	0.1437	0.2852
35	0.1059	0.2819
36	0.0506	0.2724
37	0.0195	0.2588
38	0.0191	0.2586
39	0.0052	0.2470
40	0.0043	0.2047
41	0.0038	0.0915
42	0.0026	0.0746
43	0.0008	0.0481
44	0.0008	0.0359
45	0.0008	0.0020
46	0.0008	0.0012
47	0.0001	0.0000

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0445	1476	1079	73	Pass
0.0617	1311	944	72	Pass
0.0788	1162	838	72	Pass
0.0960	1028	738	71	Pass
0.1132	925	662	71	Pass
0.1304	854	598	70	Pass
0.1476	792	552	69	Pass
0.1648	738	502	68	Pass
0.1819	672	450	66	Pass
0.1991	628	405	64	Pass
0.2163	579	372	64	Pass
0.2335	539	328	60	Pass
0.2507	501	304	60	Pass
0.2678	464	279	60	Pass
0.2850	436	257	58	Pass
0.3022	402	237	58	Pass
0.3194	380	217	57	Pass
0.3366	352	203	57	Pass
0.3537	334	186	55	Pass
0.3709	316	173	54	Pass
0.3881	296	165	55	Pass
0.4053	280	152	54	Pass
0.4225	266	141	53	Pass
0.4397	248	131	52	Pass
0.4568	234	125	53	Pass
0.4740	221	115	52	Pass
0.4912	209	110	52	Pass
0.5084	198	101	51	Pass
0.5256	188	99	52	Pass
0.5427	176	94	53	Pass
0.5599	168	91	54	Pass
0.5771	160	87	54	Pass
0.5943	155	83	53	Pass
0.6115	152	81	53	Pass
0.6286	145	78	53	Pass
0.6458	145	73	50	Pass
0.6630	136	67	49	Pass
0.6802	129	64	49	Pass
0.6974	121	63	52	Pass
0.7146	114	58	50	Pass
0.7317	110	56	50	Pass
0.7489	105	54	51	Pass
0.7661	97	52	53	Pass
0.7833	93	50	53	Pass
0.8005	88	49	55	Pass
0.8176	85	48	56	Pass
0.8348	83	47	56	Pass
0.8520	80	47	58	Pass
0.8692	76	45	59	Pass
0.8864	72	44	61	Pass
0.9035	70	41	58	Pass
0.9207	65	41	63	Pass
0.9379	63	37	58	Pass

0.9551	61	36	59	Pass
0.9723	57	34	59	Pass
0.9895	54	33	61	Pass
1.0066	50	31	62	Pass
1.0238	48	29	60	Pass
1.0410	46	27	58	Pass
1.0582	44	26	59	Pass
1.0754	44	25	56	Pass
1.0925	42	24	57	Pass
1.1097	42	22	52	Pass
1.1269	42	20	47	Pass
1.1441	41	20	48	Pass
1.1613	41	19	46	Pass
1.1785	41	19	46	Pass
1.1956	39	18	46	Pass
1.2128	39	18	46	Pass
1.2300	35	17	48	Pass
1.2472	32	16	50	Pass
1.2644	31	15	48	Pass
1.2815	29	14	48	Pass
1.2987	27	13	48	Pass
1.3159	27	12	44	Pass
1.3331	26	12	46	Pass
1.3503	25	11	44	Pass
1.3674	23	10	43	Pass
1.3846	21	10	47	Pass
1.4018	20	9	45	Pass
1.4190	20	9	45	Pass
1.4362	20	8	40	Pass
1.4534	20	7	35	Pass
1.4705	19	6	31	Pass
1.4877	17	6	35	Pass
1.5049	15	6	40	Pass
1.5221	14	6	42	Pass
1.5393	12	6	50	Pass
1.5564	12	5	41	Pass
1.5736	12	5	41	Pass
1.5908	12	5	41	Pass
1.6080	11	5	45	Pass
1.6252	10	5	50	Pass
1.6423	10	5	50	Pass
1.6595	10	5	50	Pass
1.6767	9	5	55	Pass
1.6939	9	5	55	Pass
1.7111	8	5	62	Pass
1.7283	8	4	50	Pass
1.7454	8	4	50	Pass

Water Quality

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

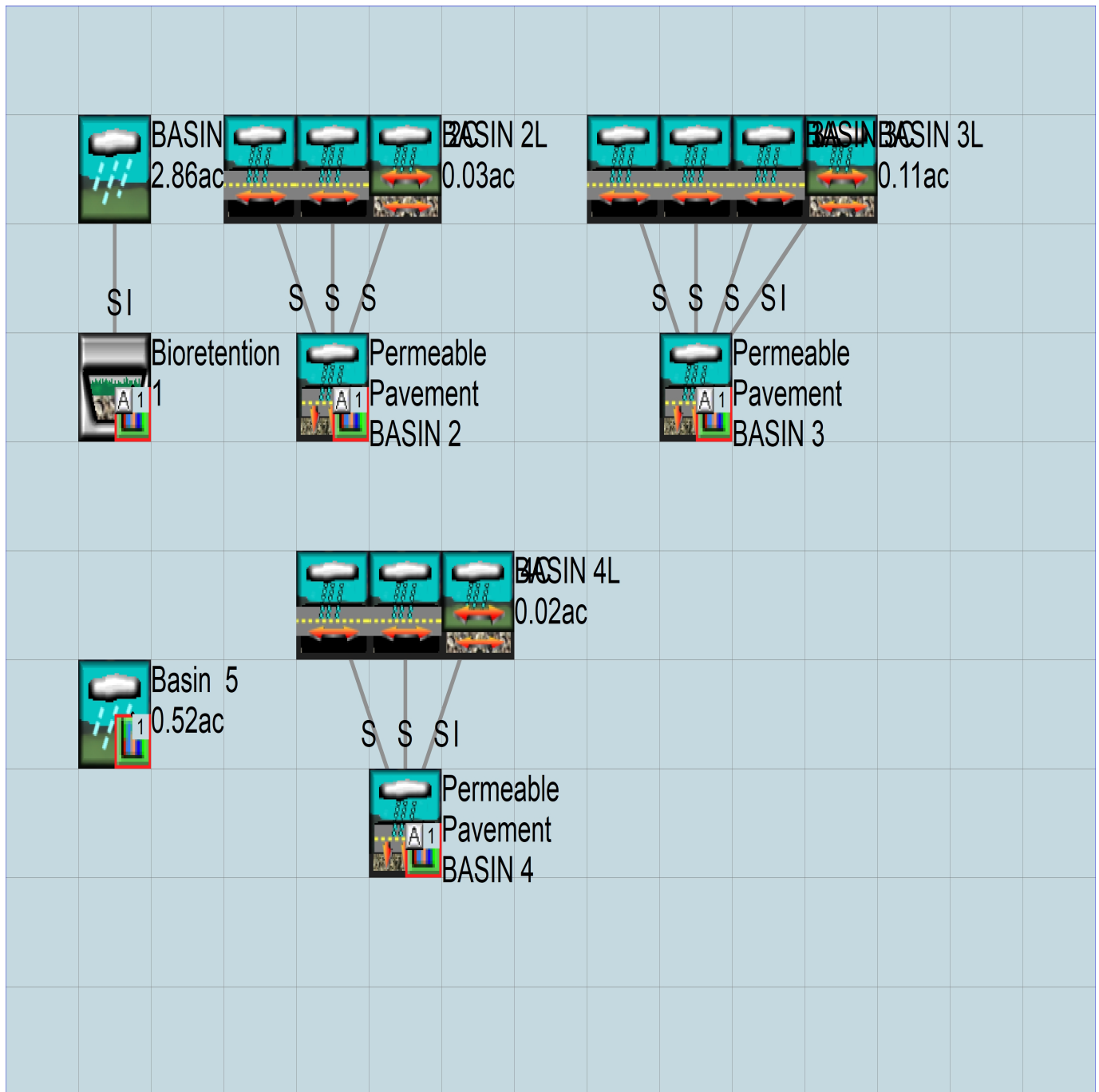
No IMPLND changes have been made.

Appendix
Pre-Project Schematic



Pre-Project
5.73ac

Mitigated Schematic



Disclaimer

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ATTACHMENT C
IMP CALCULATOR SIZING OUTPUT

Project Name: Buchanan Crossing
Project Type: Standard LID WQ Treatment
APN: 074-480-001, 007
Drainage Area: 249,135 sq ft
Mean Annual Precipitation: 13.0 inches

Self-Treating DMAs

DMA Name	Area (sq ft)
DMA 5	22,474.0

II. Self-Retaining Areas

Self-Retaining DMA	
DMA Name	Area (sq ft)
DMA2-P	8,045
DMA3-P	19,170
DMA4-P	3,517

III. Areas Draining to Self-Retaining Areas

DMA Name	Area (sq ft)	Surface Type	Runoff Factor	Product (Area x Runoff Factor) [A]	Receiving Self Retaining DMA	Receiving Self-Retaining DMA Area (sq ft) [B]	Ratio [A]/[B]
DMA2-R	11575	Conventional Roof	1.0	11,575.0	DMA2-P	8,045	1.44
DMA2-C	3707	Concrete or Asphalt	1.0	3,707.0	DMA2-P	8,045	0.46
DMA2-L	1224	Landscape	0.1	122.4	DMA2-P	8,045	0.02
DMA3-R	10100	Conventional Roof	1.0	10,100.0	DMA3-P	19,170	0.53
DMA3-A	22266	Concrete or Asphalt	1.0	22,266.0	DMA3-P	19,170	1.16
DMA3-C	2511	Concrete or Asphalt	1.0	2,511.0	DMA3-P	19,170	0.13
DMA3-L	4800	Landscape	0.1	480.0	DMA3-P	19,170	0.03
DMA4-A	4073	Concrete or Asphalt	1.0	4,073.0	DMA4-P	3,517	1.16
DMA4-C	2024	Concrete or Asphalt	1.0	2,024.0	DMA4-P	3,517	0.58
DMA4-L	772	Landscape	0.1	77.2	DMA4-P	3,517	0.02

IV. Areas Draining to IMPs

IMP Name: IMP1
IMP Type: Bioretention Facility
Soil Group: D

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA1-R	42,241	Conventional Roof	1.00	42,241
DMA1-A	49,497	Concrete or Asphalt	1.00	49,497
DMA1-C	16,052	Concrete or Asphalt	1.00	16,052
DMA1-L	16,659	Landscape	0.10	1,666
Total				109,456

Area	IMP Sizing Factor	Minimum	Proposed
	0.040	4,378 sq ft	8,333 sq ft

Report generated on 04/17/2025 by the Contra Costa Clean Water Program IMP Sizing Tool software (version 1.4.1.0).