Appendix G-1

Low Impact Development (LID) Report for Tract No. 83301

LOW IMPACT DEVELOPMENT (LID) REPORT

FOR
TRACT No. 83301

The Trails at Lyons Canyon
Stevenson Ranch, CA

Prepared For:

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HYDROLOGY STUDY APPROVED

REVIEWED BY:_____ DATE 10/07/2024

APPROVED BY:_____ DATE 10/07/2024

COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

October 3, 2024

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1. Introduction

1.1 Project Description

The project study area is located westerly adjacent to The Old Road between Lyons Avenue and Calgrove Boulevard in an unincorporated area in the County of Los Angeles (Appendix A). The L-shaped site encompasses approximately 235± acres. The southerly and westerly portions of the project site are bound by undeveloped land. The northerly portion of the site is bound by existing residential and commercial properties and the Old Road bounds the easterly portion of the site. Site access is currently obtained from various locked gates located along The Old Road.

The project site is currently undeveloped land. The runoff that drains northeasterly flows into the existing Caltran's double RCB box culvert which carries the flow under The Old Road and the I-5 freeway. Two large offsite tributary watersheds and several small offsite watersheds drain through the project area to the existing box culvert. The runoff that drains southeasterly flows into the existing Caltran's 24" CMP under The Old Road.

The proposed offsite flood control improvements include two regional debris basins and five smaller ones to capture debris. The offsite development hydrology and hydraulics are documented in a separate report by Pacific Advanced Civil Engineering, Inc. (PACE) [1].

The Tentative Tract Map (TTM) [2] includes a total of 32 lots for the proposed site: eight lots of attached condos, two lots of senior housing, two lots of recreation center, two lots of water tank, two lots of private streets, four lots of natural open spaces, eleven lots of HOA open space, and three lots of debris basin. Also, there are two public streets going through the site.

1.2 Purpose and Scope

The purpose of this study is to analyze stormwater quality mitigation flow and volume and propose source control and treatment measures to satisfy the Low Impact Development (LID) requirement.

2. Regularity Jurisdiction

The area of the study site is under the jurisdiction of the Los Angeles County Department of Public Works (LACDPW). All values are calculated in accordance with the Los Angeles County Department of Public Works LID manual [2].

3. Hydrologic Data

The project is located in the Oat Mountain quadrant of Isohyetal Map 1-H1.35. The 24-hour 50-year storm is 8.4 inch and the soil classification includes types 020 and 097. The

24-hour 85th percentile rainfall is 1.05 inch [3], per Los Angeles County 85th percentile precipitation isoheytal map of LACDPW (Appendix B). The imperviousness of each drainage area is measured based on the site plan [4].

4. Methodology

Design storm water quality flow rates (Qpm) and volumes (SWQDv) were calculated using hydrologic calculator (HydroCalc) of LACDPW [5] With the 85th percentile rainfall depth of 1.05 inch, Qpm and SWQDv calculations for each onsite drainage subarea are provided in Appendix C and summarized in Table 1.

5. Low Impact Development (LID)

5.1 Source Control Measures

This project is a designated project of new development. The Los Angeles County's LID requirement for source control (LID manual, Section 5} is discussed in the table below:

Name	Description of BMP Implementation
Storm Drain Message and Signage (S-1)	Storm drain system stencilling and signage ((e.g., "No Dumping – Drains to the Ocean") will be installed at catch basins and inlets.
Outdoor Material Storage Area (S-2)	The project does not propose outdoor material storage areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines in the LID Manual.
Outdoor Trash Storage/ Waste Handling Area (S-3)	Each house will have their own trash bins. The rec building will trash enclosure.
Outdoor Loading/Unloading Dock Area (S-4)	The project does not propose outdoor loading and unloading dock areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines in the LID Manual.
Outdoor Vehicle/Equipment Repair/Maintenance Area (S-5)	The project does not propose outdoor vehicle equipment repair areas, or outdoor vehicle maintenance areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines outlined above and in the LID Manual.
Outdoor Vehicle/ Equipment/ Accessory Wash Area (S-6)	The project does not propose outdoor vehicle equipment areas or outdoor vehicle accessory washing areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines in the LID Manual.
Fuel & Maintenance Area (S-7)	The project does not propose fuel and maintenance areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines in the LID Manual.

Landscape Irrigation Practices (S-8)	Landscape Irrigation systems for the project will be designed pursuant to the guidelines in the LID Manual.
Building Materials (S-9)	Building material selection will be designed pursuant to the guidelines in the LID Manual.
Animal Care and Handling Facilities (S-10)	The project does not propose animal care or handling facilities. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines in the LID Manual.
Outdoor Horticulture Areas (S-11)	The project does not propose outdoor horticulture areas. If these conditions change, it is the responsibility of the project site owner/operator to ensure that outdoor materials storage will be designed pursuant to the guidelines in the LID Manual.

5.2 Proposed BMPs

The LID ordinance requires that the following priority check list should be followed in determining storm water treatment design for a project.

1) Infiltration
2) Capture and Use
3) Biofiltration
4) Combination

Infiltration

Per the soil report [6] (Appendix D), due to cut/fill transitions, the compacted fill soils are not expected to meet the County's minimum infiltration rate of 0.3 in/hr. In addition, the alluvial soils at the site are designated as have the potential of being subject to liquefaction when saturated. Therefore, the geotechnical engineer has recommended infiltration not applied for the site.

Capture and Use

Rainwater harvesting is deemed infeasible for the site due to the proposed use of drought tolerant vegetation. Drought tolerant vegetation will not require the volume of water captured and long-term storage of harvested rainwater would result in vector and other health concerns.

Biofiltration

Based on the limitation discussed above, biofiltration is selected for the site. Modular wetlands were proposed to treat the onsite flow and that in the perimeter roads. Filterra units were proposed to treat the flow of public streets (see LID map). For modular wetland, the manufacturer provides two ways for sizing – flow-based and volume-based (Appendix E), thus the units were sized to satisfy the treatment requirements for both flow (1.5xQpm) and volume (1.5xSWQDv). For Filterra, the units were sized based on the flow rates table (Appendix E). A 6-hour routing period was used to calculate the volume that flows through

the system during typical storm events [7] (Appendix E). The units were selected to ensure that 1.5x SWQDv. The details of the drainage groups, BMP models and capacities for each group are provided in Table 2. It is noted that Filterra is flow through unit, i.e., high flow bypass within the unit. For modular wetland, concrete boxes were proposed to divert low flow to treatment devices.

The maintenance information is provided in Appendix F

6. Conclusions

The County's LID requirements are satisfied by source control measure and biofiltration BMPs. The proposed modular wetlands and Filterra units are sized to provide sufficient capacity to treat design flow and volume. The treated flow is conveyed by the proposed storm drain and discharged to the existing Caltran storm drain system. Overall, the proposed development will not have negative impact to the surrounding area.

References

1) Drainage Concept Report – Volume I, Regional Flood Protection and Debris Management, Tract No. 83301, Pacific Advanced Civil Engineering, Inc., September 2024.
2) Low Impact Development Standards Manual, County of Los Angeles Department of Public Works, 2014
3) 85th percentile 24-hour rainfall depth, http://dpw.lacounty.gov/wrd/hydrologygis/
4) The Trails at Lyons Canyon, Vesting Tentative Tract Map No. 083301, United Civil Inc., December 2021, most recent revision September 2024
5) Hydrologic Calculator, LACDPW, http://dpw.lacounty.gov/wrd/publication/.
6) Revised Geotechnical 100-scale Plan Review, Lyons Canyon Development, Vesting Tentative Tract No. 83301, Los Angeles County, California, Geotechnical Engineering & Engineering Geology, September 15, 2023
7) Filterra Equivalency Analysis and Design Criteria, Pursuant to Los Angeles County MS4 Permit (Order R4-2012-075), prepared for CONTECH Engineered Solutions, Geosyntec Consultants, August 2015

Table 1 – LID Flow and Volume Summary

(24-hr, 85th Percentile rain =1.05 inch)

Subarea/ Node	Area	Length	Slope	Soil Type	Impervious	Q_{pm}	$SWQD_v$
	(ac)	(ft)				(cfs)	(cf)
1A	8.52	1,019	0.011	97	0.65	1.178	19,968
2B	2.16	465	0.013	97	0.70	0.419	5,389
3C	0.59	258	0.006	97	0.70	0.127	1,472
4BC	-	-	-	-	-	-	-
5B	3.22	669	0.011	97	0.70	0.548	8,033
6B	1.73	528	0.005	97	0.70	0.294	4,316
7D	3.60	512	0.007	97	0.82	0.759	10,288
8D	5.18	853	0.009	97	0.70	0.806	12,923
9E(1)	2.62					0	0
10E	0.59	443	0.039	97	0.78	0.144	1,615
11F(1)	12.56					0	0
12EF	-	-	-	-	-	-	-
13DE	-	-	-	-	-	-	-
14D	0.82	595	0.009	97	0.78	0.16	2,244
15G	3.00	540	0.010	97	0.75	0.585	7,938
16G	3.74	619	0.009	20	0.71	0.654	9,444
17DG							
18D	0.78	578	0.018	20	0.78	0.163	2,135
19G	0.71	224	0.013	20	0.70	0.172	1,773
20DG	-	-	-	-	-	-	-
21H	6.53	841	0.010	97	0.70	1.028	16,291
22DH	-	-	-	-	-	-	-
23I	1.26	341	0.010	20	0.74	0.279	3,296
24DI	-	-	-	-	-	-	-
25J	1.92	580	0.068	97	0.07	0	0
26J	0.72	520	0.041	20	0.78	0.167	1,971
27J	1.30	350	0.010	20	0.75	0.291	3,440
28DJ	-	-	-	-	-	-	-
29K	0.94	791	0.016	97	0.78	0.178	2,573
30DK	-	-	-	-	-	-	-
31L	1.66	550	0.064	97	0.07	0	0
32M	1.21	908	0.059	97	0.78	0.244	3,311
33N	0.49	465	0.008	97	0.78	0.102	1,341
34LN	-	-	-	-	-	-	-
35O	0.72	696	0.010	97	0.78	0.137	1,970
36P	0.48	659	0.023	97	0.78	0.099	1,314

37Q	1.02	836	0.018	97	0.78	0.191	2,791
38R	1.32	974	0.029	97	0.4	0.12	2,096
Tank & Access Rd	1.24	1520	0.102	97	0.8	0.23)	3,469
SC1(2)	0.21			97	0.07		
SC2(2)	0.25			20	0.07		

(1) Offsite Subarea, natural flow not to be treated.
(2) Self-contained area for tree protection. No treatment needed.

Table 2 – Proposed LID Devices Summary

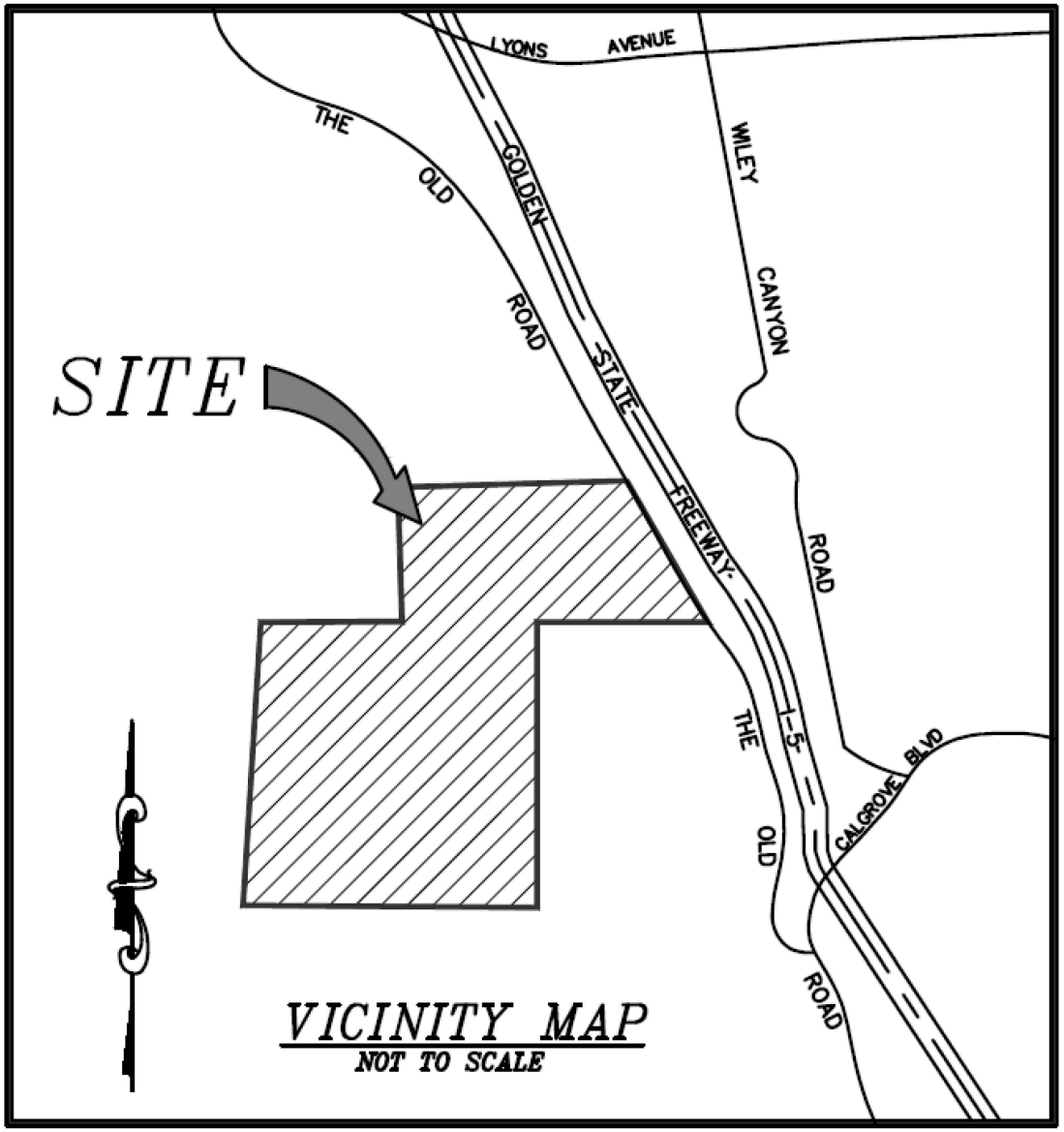
Subarea	Area	Q_{pm}	1.5x Qpm	$SWQD_v$	1.5x $SWQD_v$	LID Device	BMP Flow Rate[3]	BMP Volume [4]
	(ac)	(cfs)	(cfs)	(cf)	(cf)		(cfs)	(cf)
1A	8.52	1.18	1.77	19,968	29,952	MWS-L-8-20-V	0.577	25,120
						MWS-L-8-20-V	0.577	25,120
						MWS-L-8-24-V	0.693	30,216
∑	**8.52**	**1.18**	**1.77**	**19,968**	**29,952**		**∑=1.85**	**∑=80,456**
2B	2.16	0.42	0.63	5,389	8,084	MWS-L-8-24-V	0.693	30,216
3C	0.59	0.13	0.19	1,472	2,208	MWS-L-8-24-V	0.693	30,216
5B	3.22	0.55	0.82	8,033	12,050	MWS-L-8-24-V	0.693	30,216
6B	1.73	0.29	0.44	4,316	6,474			
∑=	**7.7**	**1.39**	**2.08**	**19,210**	**28,814**		**∑=2.08**	**∑=90,648**
7D	3.6	0.76	1.14	10,288	15,432	MWS-L-8-24-V	0.693	30,216
8D	5.18	0.81	1.22	12,923	19,385	MWS-L-8-24-V	0.693	30,216
						MWS-L-8-20-V	0.577	25,120
						MWS-L-8-16-V	0.462	20,145
∑=	**8.78**	**1.57**	**2.36**	**23,211**	**34,817**		**∑=2.43**	**∑=105,697**
9E[1]	2.62	0	0	0	0	-	-	-
10E	0.59	0.144		1,615	2,423			
(N)[2]	0.32	**0.079**	**-**	883	**1,325**	FTIBC0606LS-C	**0.084**	**1,818**
(S)[2]	0.27	**0.065**		732	**1,098**	FTIBC0606LS-C	**0.084**	**1,818**
11F[1]	12.56	0	0	0	0	-	-	-
12EF	-	-	-	-	-	-	-	-
13DE	-	-	-	-	-	-	-	-
14D	0.82	0.16		2,244	3,366			
(W)[2]	0.41	**0.08**	-	1,122	**1,683**	FTIBC0606LS-C	**0.084**	**1,818**
(E)[2]	0.41	**0.08**		1,122	**1,683**	FTIBC0606LS-C	**0.084**	**1,818**
15G	3	0.59	0.89	7,938	11,907	MWS-L-8-20-V	0.577	25,120
16G	3.74	0.65	0.98	9,444	14,166	MWS-L-8-24-V	0.693	30,216
						MWS-L-8-24-V	0.693	30,216
∑=	**6.74**	**1.24**	**1.86**	**17,382**	**26,073**		**∑=1.96**	**∑=85,552**
17DG	-	-		-	-	-	-	-
18D	0.78	0.16		2,135	3,203			
(N)[2]	0.43	**0.09**	-	1,186	**1,779**	FTIBC0806-C	**0.112**	**2,424**
(S)[2]	0.35	**0.07**		949	**1,424**	FTIBC0606LS-C	**0.084**	**1,818**
19G	0.71	0.17	0.26	1,773	2,660	MWS-L-4-21-V	0.268	11,706
∑	**0.71**	**0.17**	**0.26**	**1,773**	**2,660**		**∑=0.27**	**∑=11,706**
20DG	-	-		-	-	-	-	-

21H	6.53	1.03	1.55	16,291	24,437	MWS-L-8-16-V	0.462	20,145
						MWS-L-8-20-V	0.577	25,120
						MWS-L-8-20-V	0.577	25,120
∑	**6.53**	**1.03**	**1.55**	**16,291**	**24,437**		**∑1.62**	**∑70,385**
22DH	-	-		-	-	-	-	-
23I	1.26	0.28	0.42	3,334	5,001	MWS-L-8-16-V	0.462	20,145
∑	**1.26**	**0.28**	**0.42**	**3,334**	**5,001**		**∑=0.46**	**∑=20,145**
24DI	-	-	-	-	-	-	-	-
25J	1.92	0	0	0	0	-	-	-
26J	0.72	0.17		1,971	2,957			
(N)(2)	0.39	**0.09**	-	1,067	**1,600**	FTIBC0806-C	**0.112**	**2,424**
(S)(2)	0.33	**0.08**		904	**1,357**	FTIBC0606LS-C	**0.084**	**1,818**
27J	1.3	0.29	0.44	3,440	5,160	MWS-L-8-16-V	0.462	20,145
∑	**1.3**	**0.29**	**0.44**	**3,440**	**5,160**		**∑=0.46**	**∑=20,145**
28DJ	-	-	-	-	-	-	-	-
29K	0.94	0.18	-	2,573	3,860	FTIBC1208-C	**0.222**	**4,795**
∑	**0.94**	**0.18**		**2,573**	**3,860**			
30DK	-	-	-	-	-	-	-	-
31L	1.66	0	0	0	0	-	-	-
32M	1.21	0.24		3,311	4,967			
(N)(2)	0.67	**0.13**	-	1,821	**2,732**	FTIBC1006-C	**0.14**	**3,030**
(S)(2)	0.55	**0.11**		1,490	**2,235**	FTIBC0806-C	**0.112**	**2,424**
33N	0.49	0.1	-	1,341	2,012	FTIBC0806-C	**0.112**	**2,424**
∑	**0.49**	**0.1**		**1,341**	**2,012**			
34LN	-	-	-	-	-			
Access Rd	1.24	0.23	0.35	3,469	5,204	MWS-L-8-20-V	0.577	25,120
35O	0.72	0.14	0.21	1,970	2,955			
∑	**1.31**	**0.37**	**0.56**	**5,439**	**8,159**		**∑=0.58**	**∑=25,120**
36P	0.48	0.1	0.15	1,314	1,971	MWS-L-8-16-V	0.462	20,145
37Q-S	0.82	0.15	0.23	2,233	3,350			
∑	**1.3**	**0.25**	**0.38**	**3,547**	**5,321**		**∑=0.46**	**∑=20,145**
37Q-N	0.2	0.04	0.06	558	837	MWS-L-4-21-V	0.268	7,623
38R	1.32	0.12	0.18	2,096	3,144			
∑	**1.52**	**0.16**	**0.24**	**2,654**	**3,981**		**∑=0.27**	**∑=7,623**

(1) Offsite Subarea, natural flow
(2) indicate the location of the BMP device in the subarea, i.e., north, south, west, or east
(3) Flow rate tables (see Appendix E)
(4) For MWS, volume sizing table (see Appendix E)
For Filterra, flow rate x 6 hours routing for typical storms (see Appendix E)

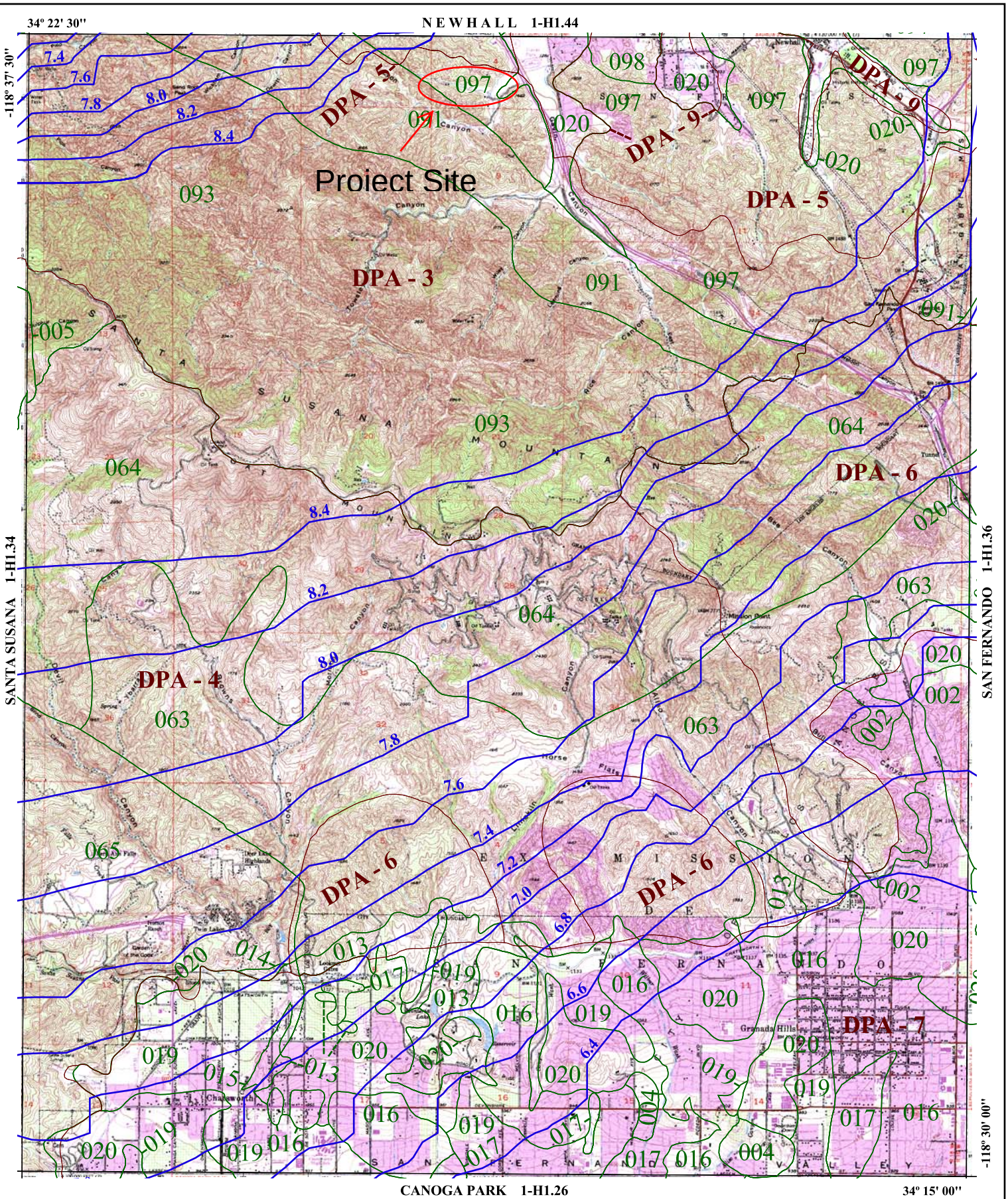
APPENDIX A

VICINITY MAP


LYONS AVENUE
THE OLD ROAD
GOLDEN STATE FREEWAY
WILEY CANYON ROAD
SITE
I-5
THE OLD ROAD
CALGROVE BLVD
VICINITY MAP
NOT TO SCALE

APPENDIX B

HYDROLOGIC AND LID DATA



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

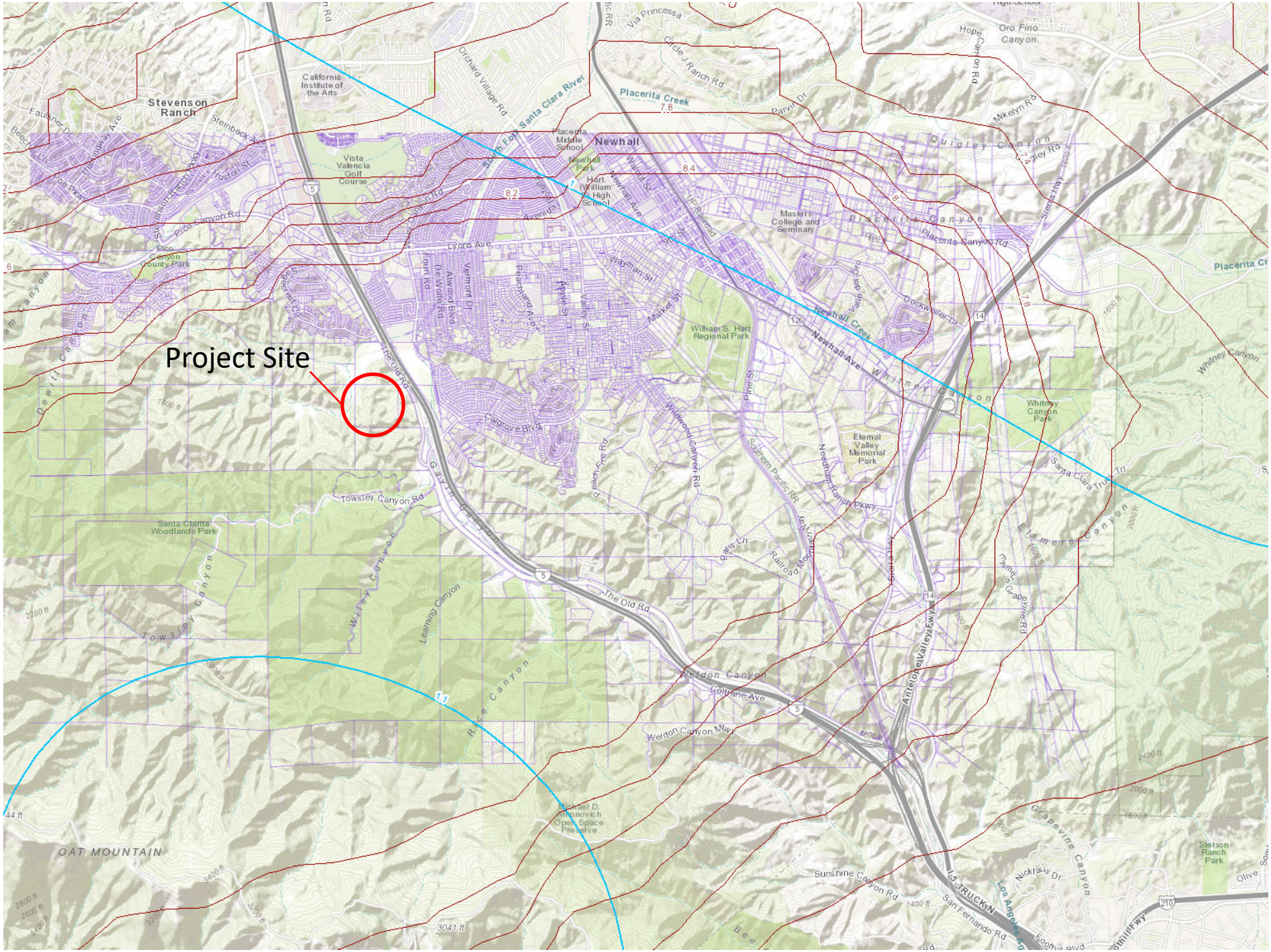
1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

OAT MOUNTAIN
50-YEAR 24-HOUR ISOHYET

1-H1.35

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works


Project Site
Stevenson Ranch
California Institute of the Arts
Newhall
Placerita Creek
South Fork Santa Clara River
Placerita Middle School
Newhall Park
Hart (William S.) High School
Vista Valencia Golf Course
Pico Canyon County Park
Pico Canyon Rd
Lyons Ave
Newhall Ave
Wayman St
Market St
Apple St
Valley St
Peachland Ave
Vermont Dr
Atwood Blvd
De Wolfe Rd
Four Rl
Orchard Village Rd
Via Princessa
Circle J Ranch Rd
Parvin Dr
Hope Canyon Rd
Oro Fino Canyon
Mikelyn Rd
Quigley Canyon
Quigley Rd
Sierra Hwy
Placerita Canyon
Placerita Canyon Rd
Masters College and Seminary
Dockweiler Dr
Newhall Creek
William S. Hart Regional Park
Whitney Canyon
Whitney Canyon Park
Eternal Valley Memorial Park
Pine St
Southern Pacific RR
Needham Ranch Pkwy
Wildwood Canyon Rd
Calgrove Blvd
Peachland Ave
The Old Rd
Towsley Canyon Rd
Towsley Canyon
Santa Clarita Woodlands Park
Learning Canyon
Rice Canyon
Weldon Canyon
Golden Valley Rd
Antelope Valley Fwy
Railroad Canyon
Rath Ln
Elsmere Canyon
Grapevine Canyon
Sunshine Canyon Rd
San Fernando Rd
Nicklaus Dr
Stetson Ranch Park
Michael D. Antonovich Open Space Preserve
OAT MOUNTAIN
3041 ft
Dewitt Canyon
Beechwood Ln
Faulkner Dr
Steinbeck Ave
Houston St
Stevenson Ranch Pkwy
Beechwood Rd
Fourl Rd
Placerita Cr
Whitney Canyon
Olive
Los Angeles
Foothill Fwy
5
14
126
210
1.1
7.8
8.2
8.4

APPENDIX C

LID Calculations

Peak Flow Hydrologic Analysis

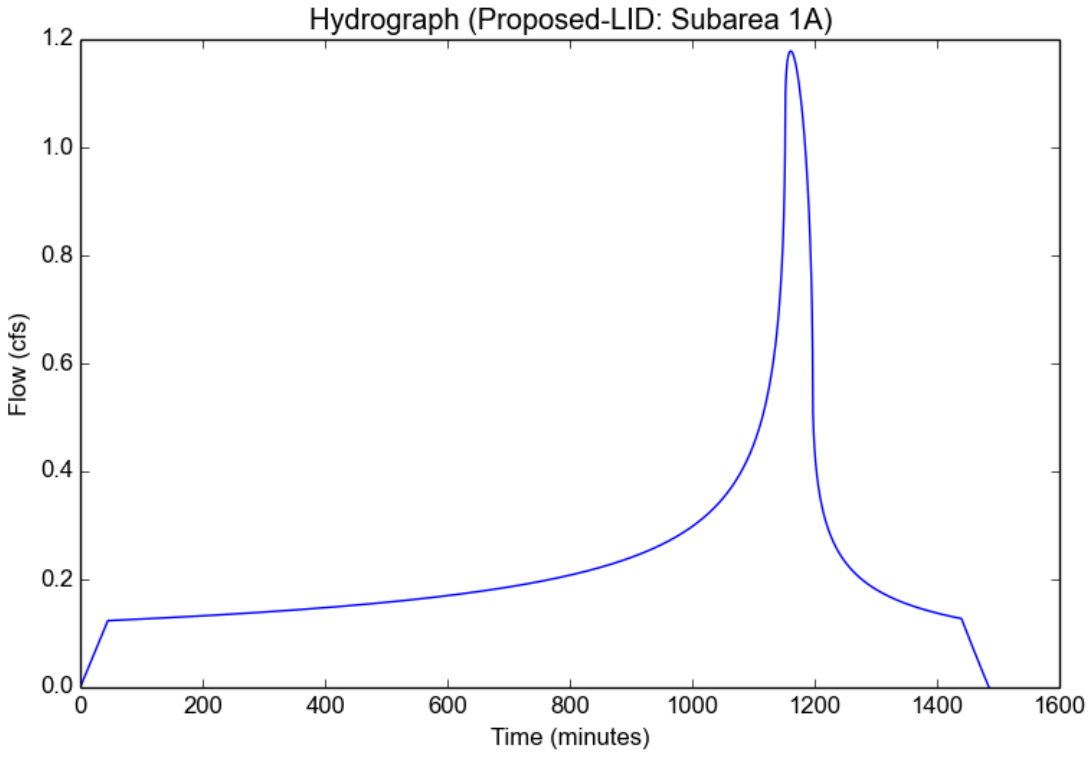
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 1A.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 1A
Area (ac)	8.52
Flow Path Length (ft)	1019.0
Flow Path Slope (vft/hft)	0.011
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.65
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.223
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.62
Time of Concentration (min)	45.0
Clear Peak Flow Rate (cfs)	1.1782
Burned Peak Flow Rate (cfs)	1.1782
24-Hr Clear Runoff Volume (ac-ft)	0.4584
24-Hr Clear Runoff Volume (cu-ft)	19967.9929



Peak Flow Hydrologic Analysis

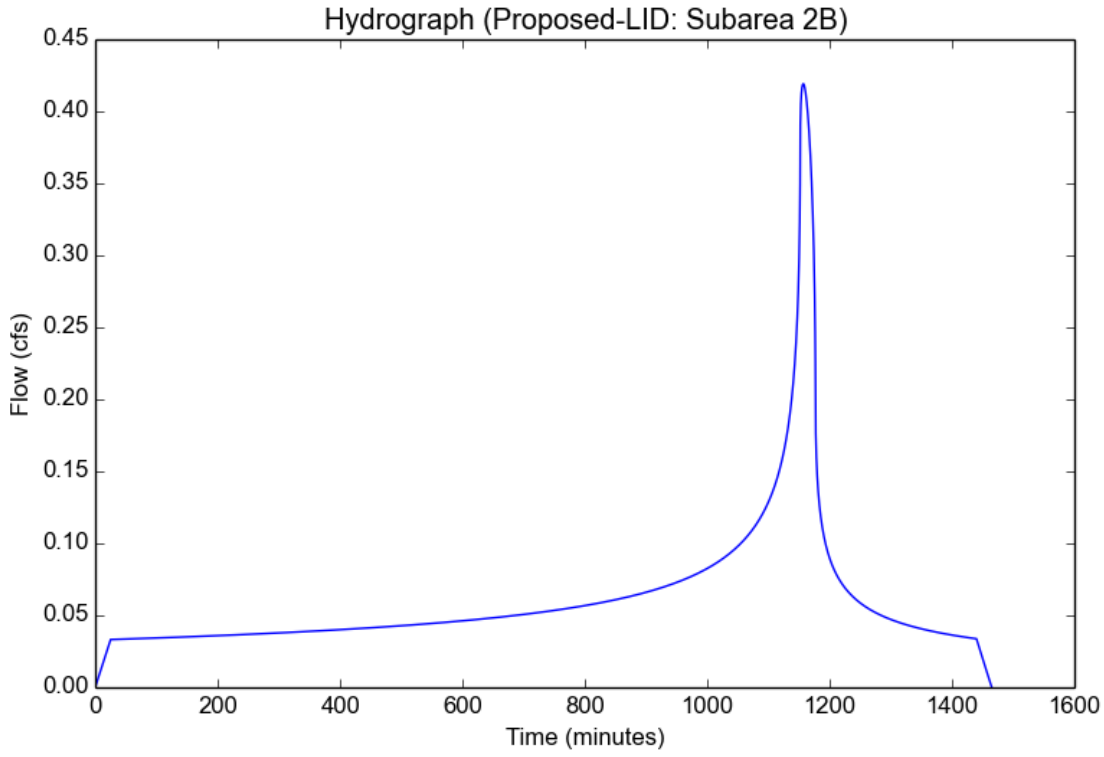
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 2B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 2B
Area (ac)	2.16
Flow Path Length (ft)	465.0
Flow Path Slope (vft/hft)	0.013
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.294
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	25.0
Clear Peak Flow Rate (cfs)	0.4192
Burned Peak Flow Rate (cfs)	0.4192
24-Hr Clear Runoff Volume (ac-ft)	0.1237
24-Hr Clear Runoff Volume (cu-ft)	5388.8108



Peak Flow Hydrologic Analysis

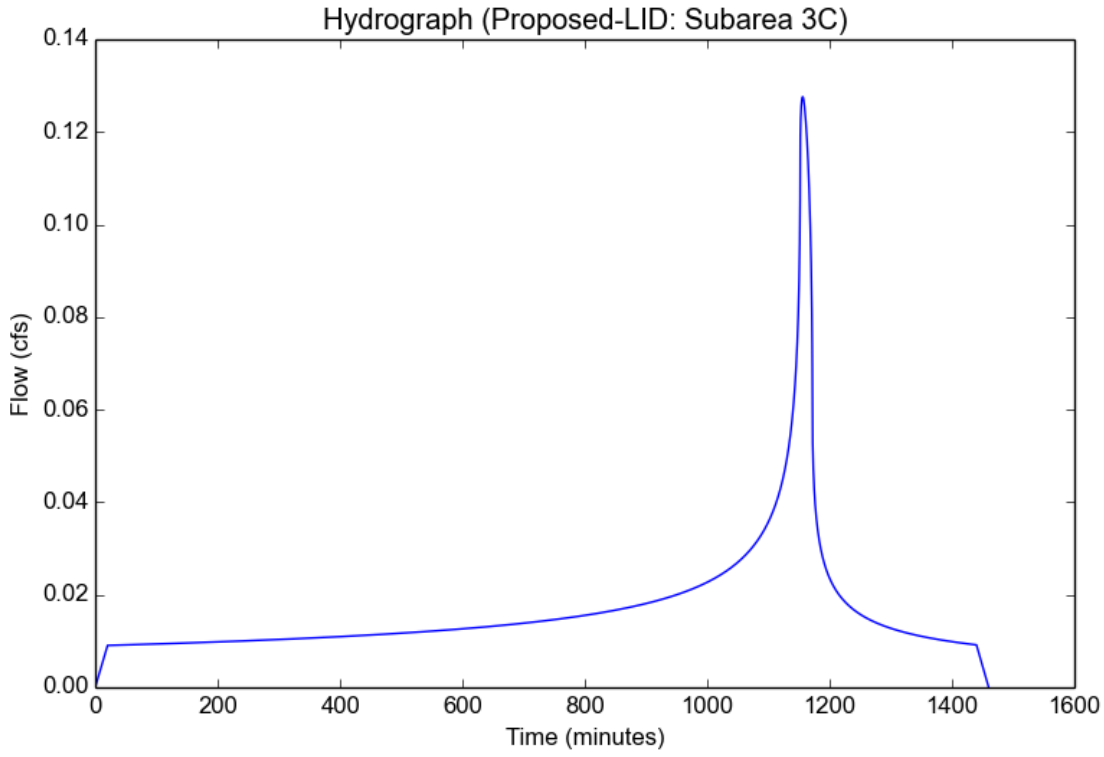
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 3C.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 3C
Area (ac)	0.59
Flow Path Length (ft)	258.0
Flow Path Slope (vft/hft)	0.006
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3265
Undeveloped Runoff Coefficient (Cu)	0.1077
Developed Runoff Coefficient (Cd)	0.6623
Time of Concentration (min)	20.0
Clear Peak Flow Rate (cfs)	0.1276
Burned Peak Flow Rate (cfs)	0.1276
24-Hr Clear Runoff Volume (ac-ft)	0.0338
24-Hr Clear Runoff Volume (cu-ft)	1472.0515



Peak Flow Hydrologic Analysis

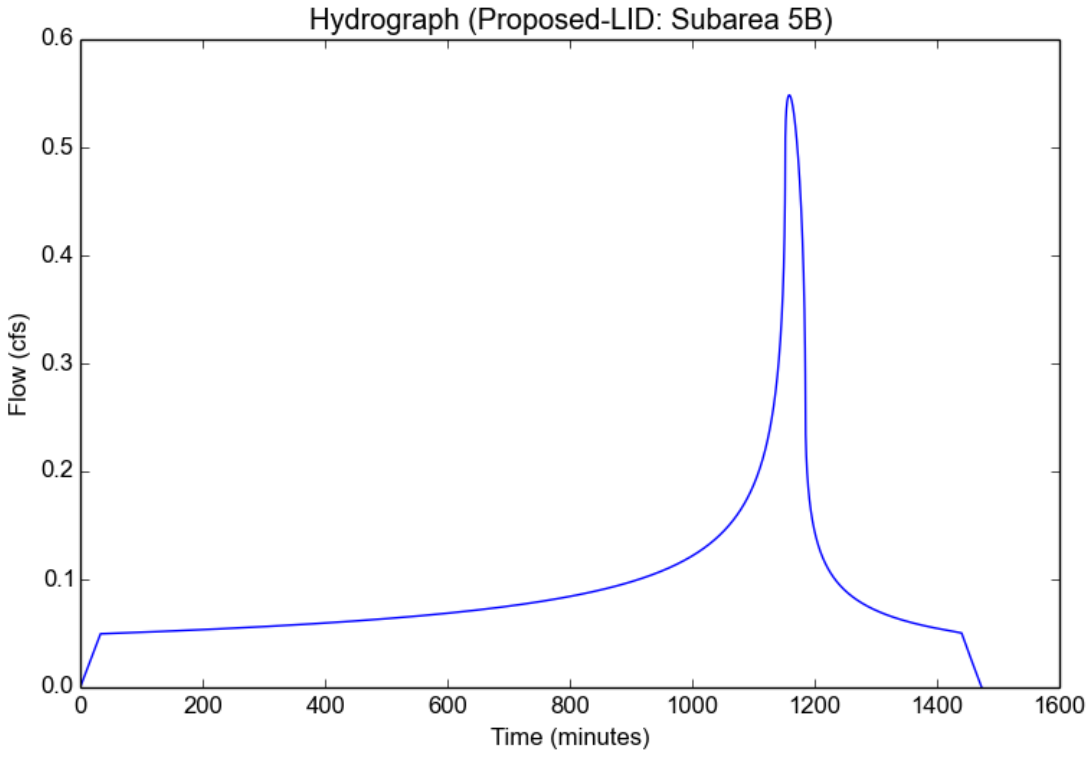
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 5B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 5B
Area (ac)	3.22
Flow Path Length (ft)	656.0
Flow Path Slope (vft/hft)	0.011
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2581
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	33.0
Clear Peak Flow Rate (cfs)	0.5484
Burned Peak Flow Rate (cfs)	0.5484
24-Hr Clear Runoff Volume (ac-ft)	0.1844
24-Hr Clear Runoff Volume (cu-ft)	8033.3678



Peak Flow Hydrologic Analysis

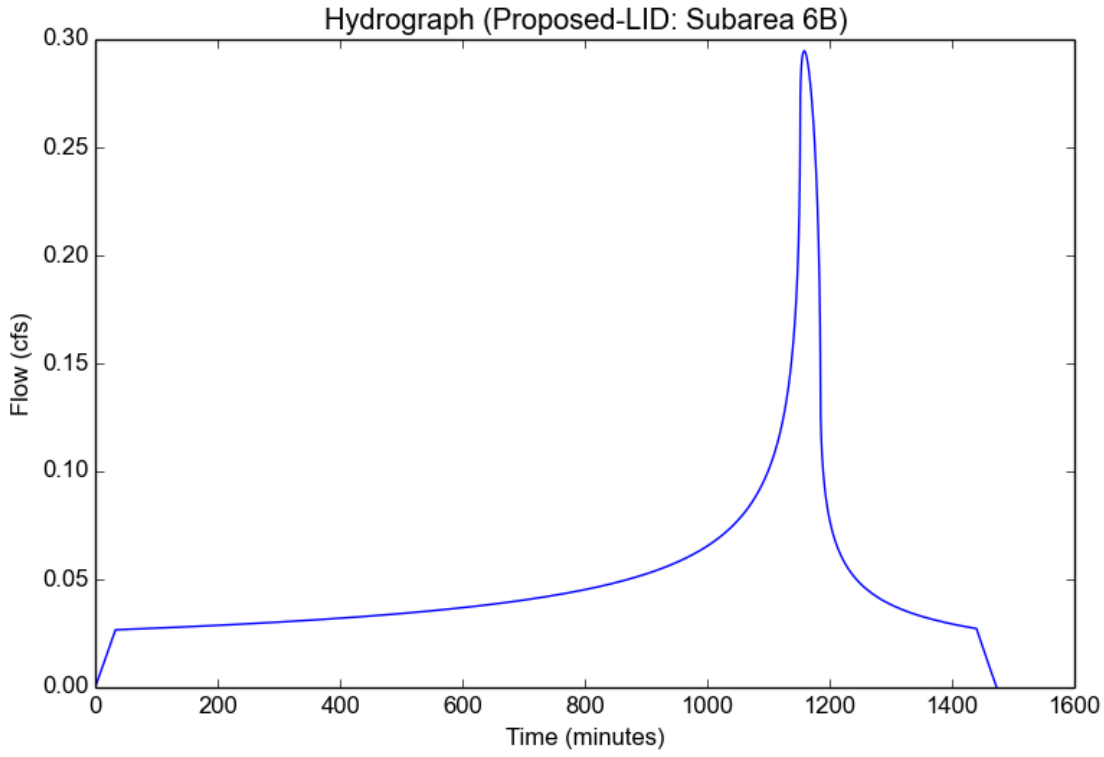
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 6B.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 6B
Area (ac)	1.73
Flow Path Length (ft)	528.0
Flow Path Slope (vft/hft)	0.005
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2581
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	33.0
Clear Peak Flow Rate (cfs)	0.2946
Burned Peak Flow Rate (cfs)	0.2946
24-Hr Clear Runoff Volume (ac-ft)	0.0991
24-Hr Clear Runoff Volume (cu-ft)	4316.0641



Peak Flow Hydrologic Analysis

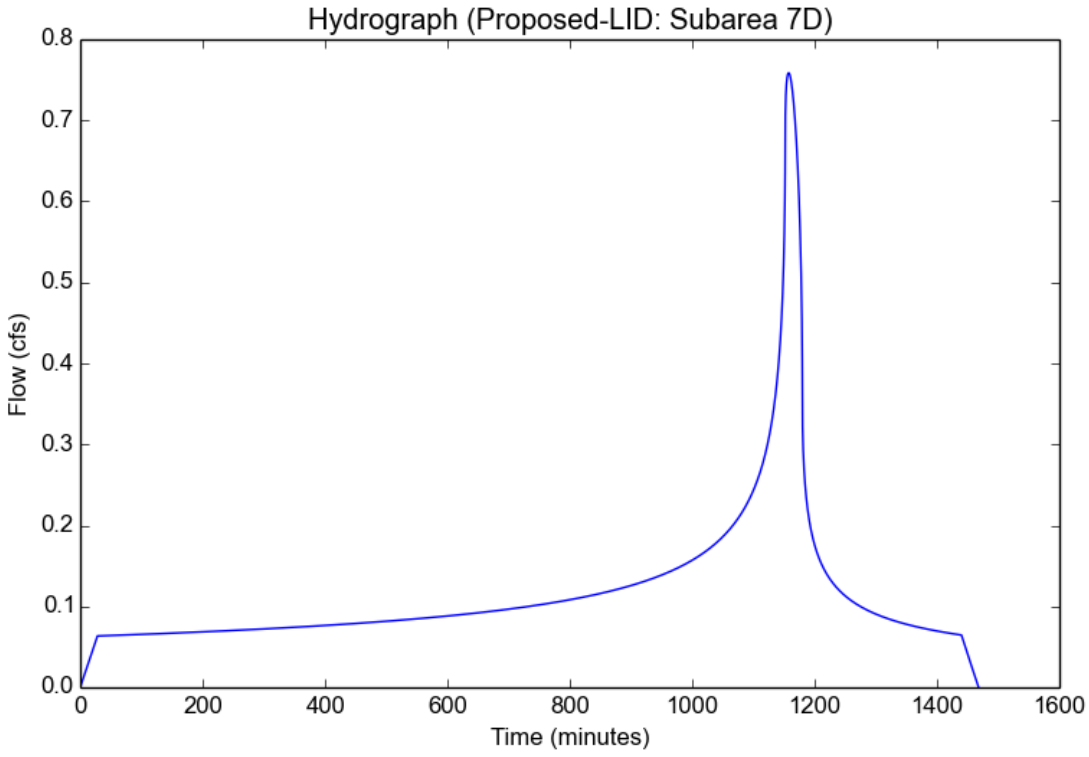
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 7D.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 7D
Area (ac)	3.6
Flow Path Length (ft)	512.0
Flow Path Slope (vft/hft)	0.007
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.82
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2788
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.756
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.7587
Burned Peak Flow Rate (cfs)	0.7587
24-Hr Clear Runoff Volume (ac-ft)	0.2362
24-Hr Clear Runoff Volume (cu-ft)	10287.7508



Peak Flow Hydrologic Analysis

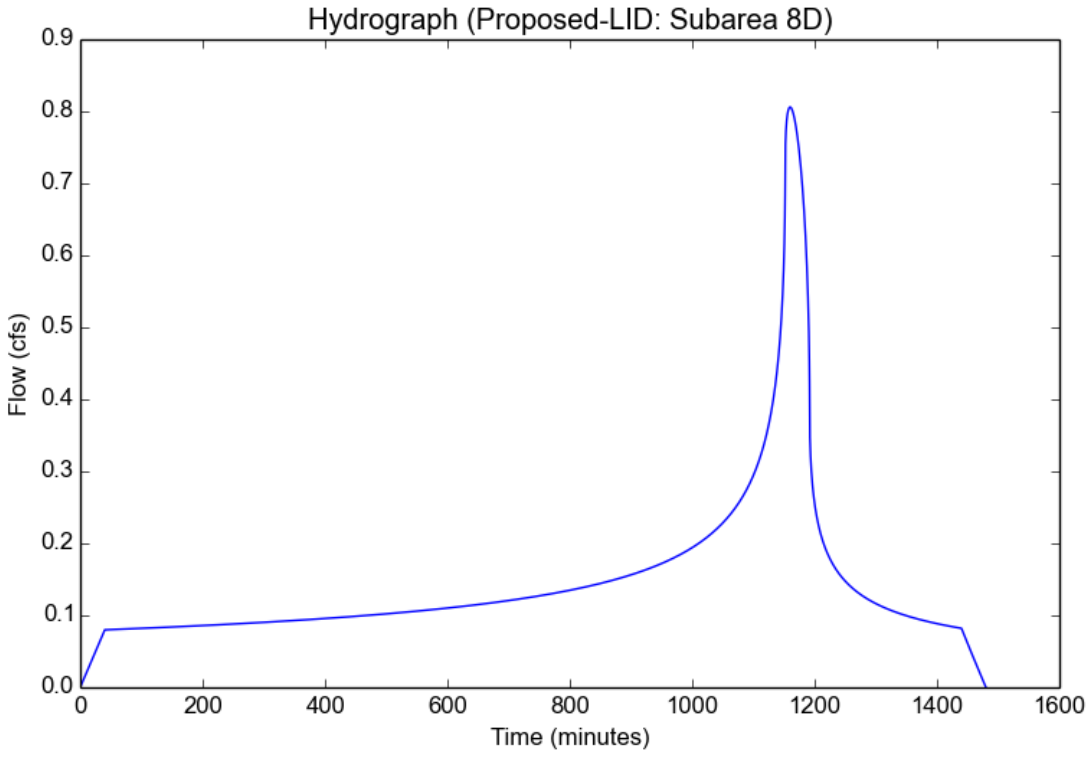
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 8D.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 8D
Area (ac)	5.18
Flow Path Length (ft)	853.0
Flow Path Slope (vft/hft)	0.009
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2357
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	40.0
Clear Peak Flow Rate (cfs)	0.806
Burned Peak Flow Rate (cfs)	0.806
24-Hr Clear Runoff Volume (ac-ft)	0.2967
24-Hr Clear Runoff Volume (cu-ft)	12923.3295



Peak Flow Hydrologic Analysis

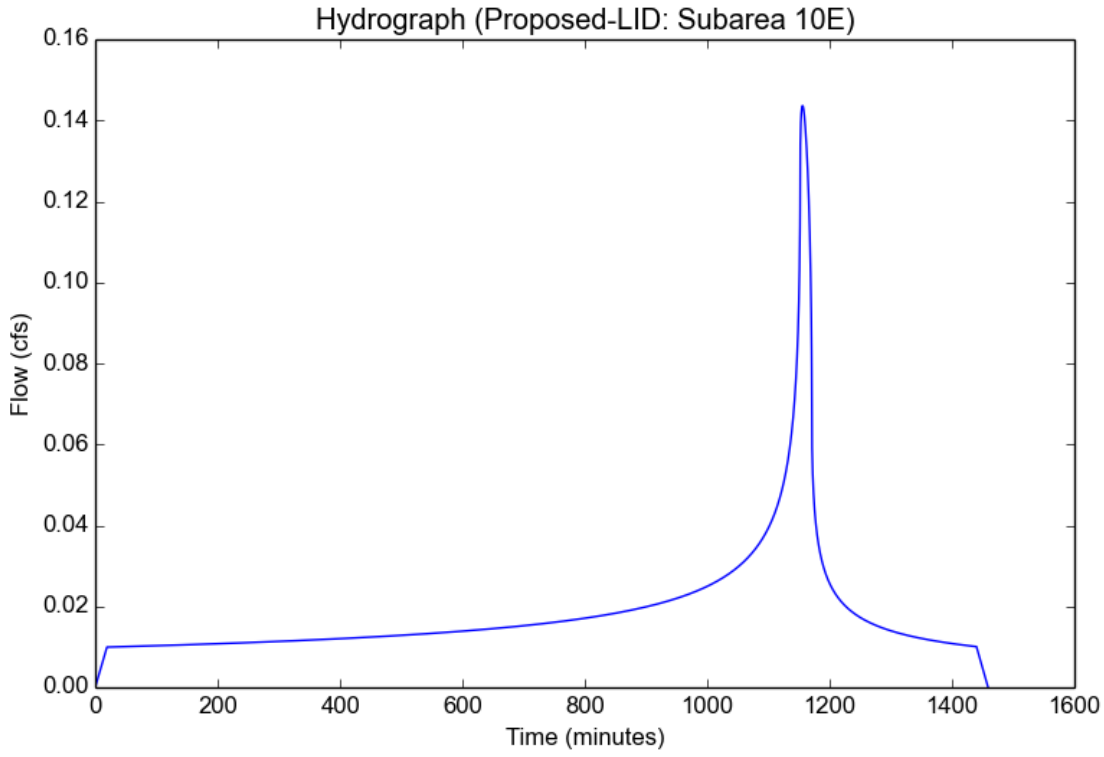
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 10E.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 10E
Area (ac)	0.59
Flow Path Length (ft)	443.0
Flow Path Slope (vft/hft)	0.039
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3345
Undeveloped Runoff Coefficient (Cu)	0.1171
Developed Runoff Coefficient (Cd)	0.7278
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	0.1436
Burned Peak Flow Rate (cfs)	0.1436
24-Hr Clear Runoff Volume (ac-ft)	0.0371
24-Hr Clear Runoff Volume (cu-ft)	1614.9278



Peak Flow Hydrologic Analysis

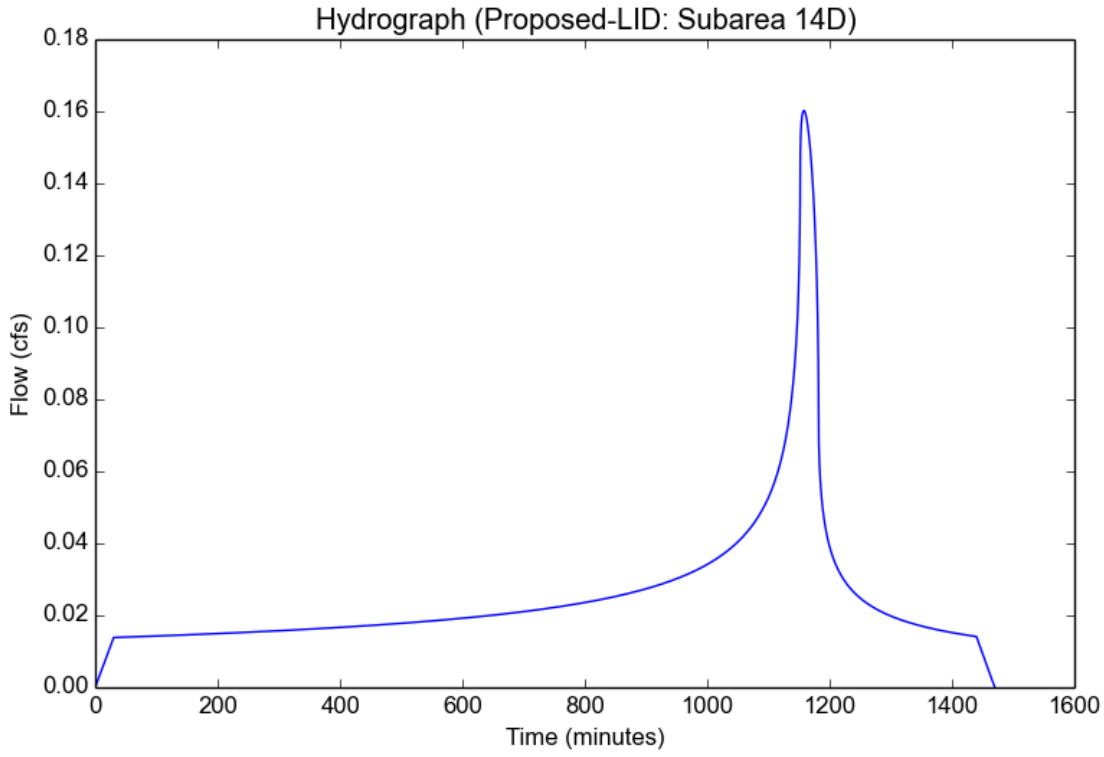
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 14D.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 14D
Area (ac)	0.82
Flow Path Length (ft)	595.0
Flow Path Slope (vft/hft)	0.009
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2699
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	0.1602
Burned Peak Flow Rate (cfs)	0.1602
24-Hr Clear Runoff Volume (ac-ft)	0.0515
24-Hr Clear Runoff Volume (cu-ft)	2244.1362



Peak Flow Hydrologic Analysis

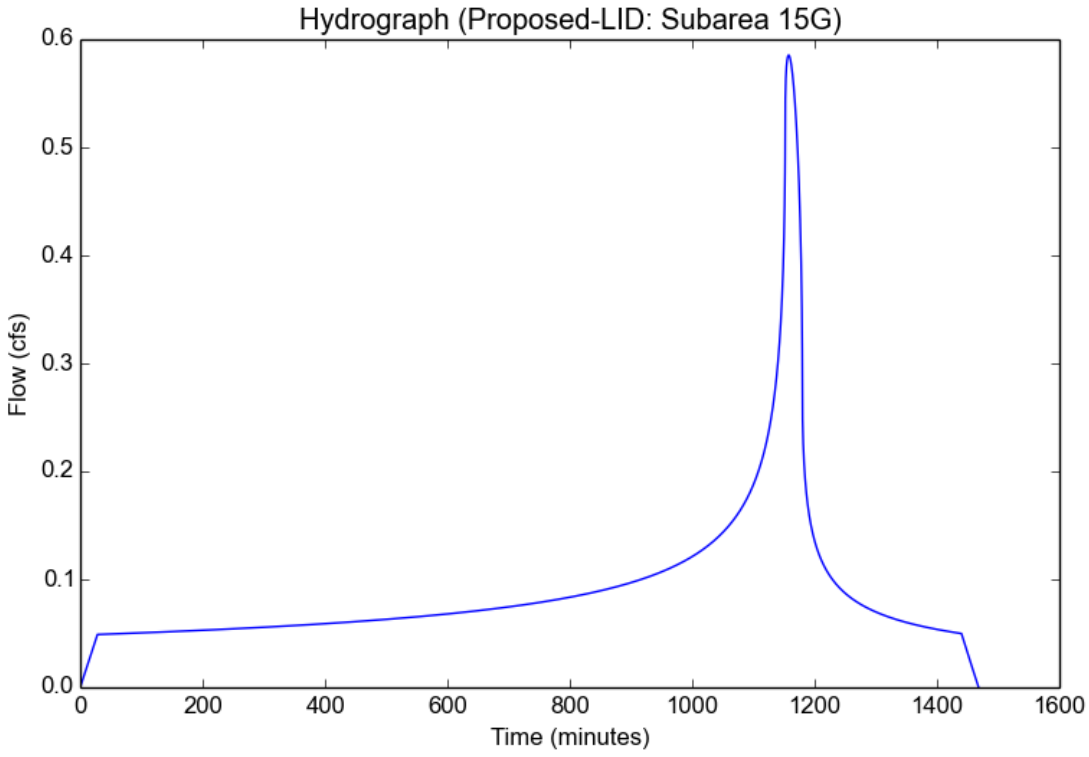
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 15G.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 15G
Area (ac)	3.0
Flow Path Length (ft)	540.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.75
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2788
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.7
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.5854
Burned Peak Flow Rate (cfs)	0.5854
24-Hr Clear Runoff Volume (ac-ft)	0.1822
24-Hr Clear Runoff Volume (cu-ft)	7938.0793



Peak Flow Hydrologic Analysis

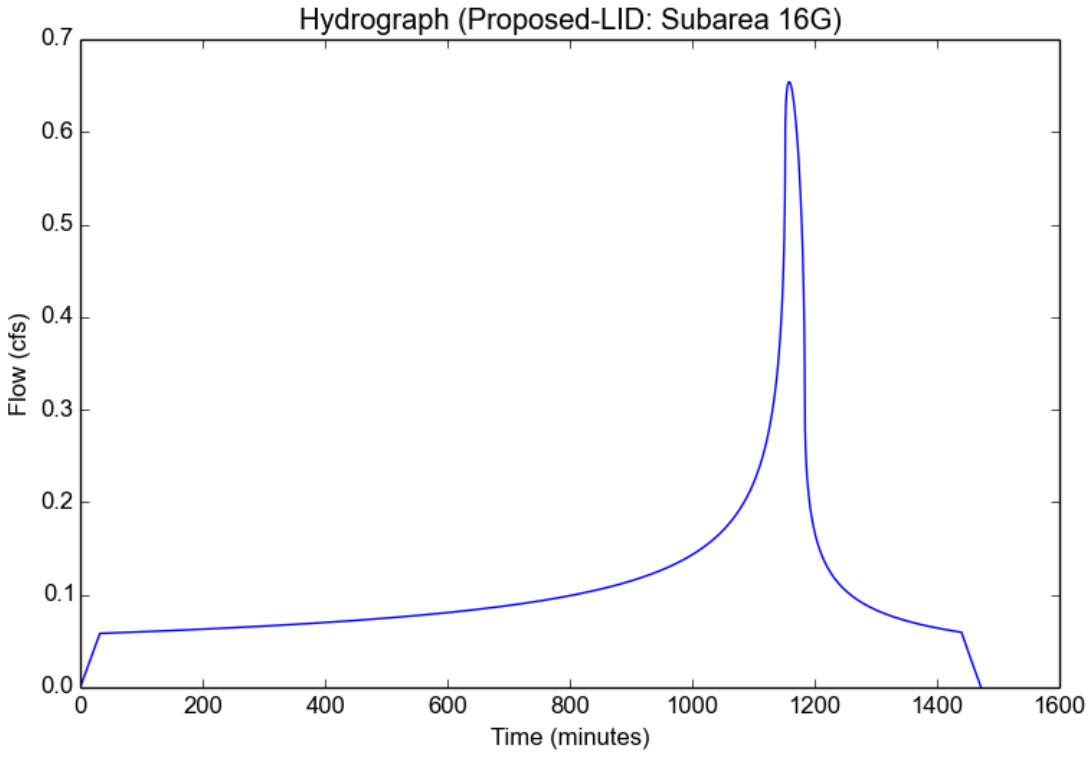
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 16G.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 16G
Area (ac)	3.74
Flow Path Length (ft)	619.0
Flow Path Slope (vft/hft)	0.009
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.71
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2618
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.668
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.6541
Burned Peak Flow Rate (cfs)	0.6541
24-Hr Clear Runoff Volume (ac-ft)	0.2168
24-Hr Clear Runoff Volume (cu-ft)	9443.7731



Peak Flow Hydrologic Analysis

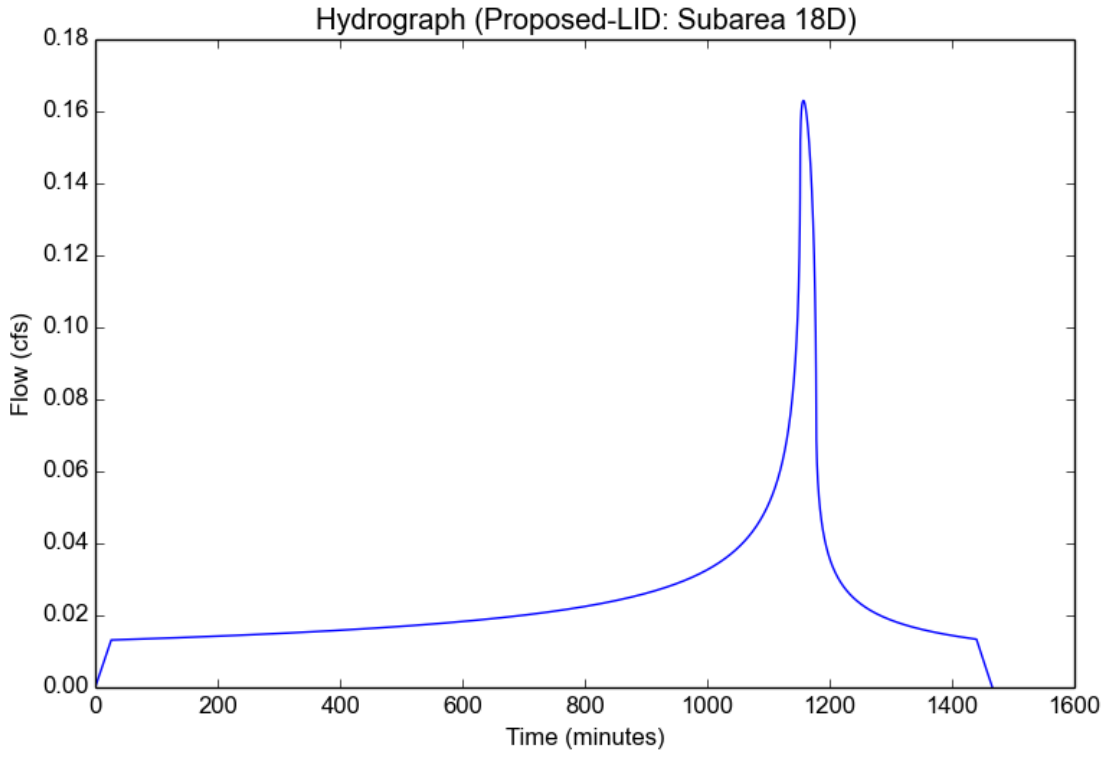
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 18D.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 18D
Area (ac)	0.78
Flow Path Length (ft)	578.0
Flow Path Slope (vft/hft)	0.018
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2886
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.163
Burned Peak Flow Rate (cfs)	0.163
24-Hr Clear Runoff Volume (ac-ft)	0.049
24-Hr Clear Runoff Volume (cu-ft)	2134.66



Peak Flow Hydrologic Analysis

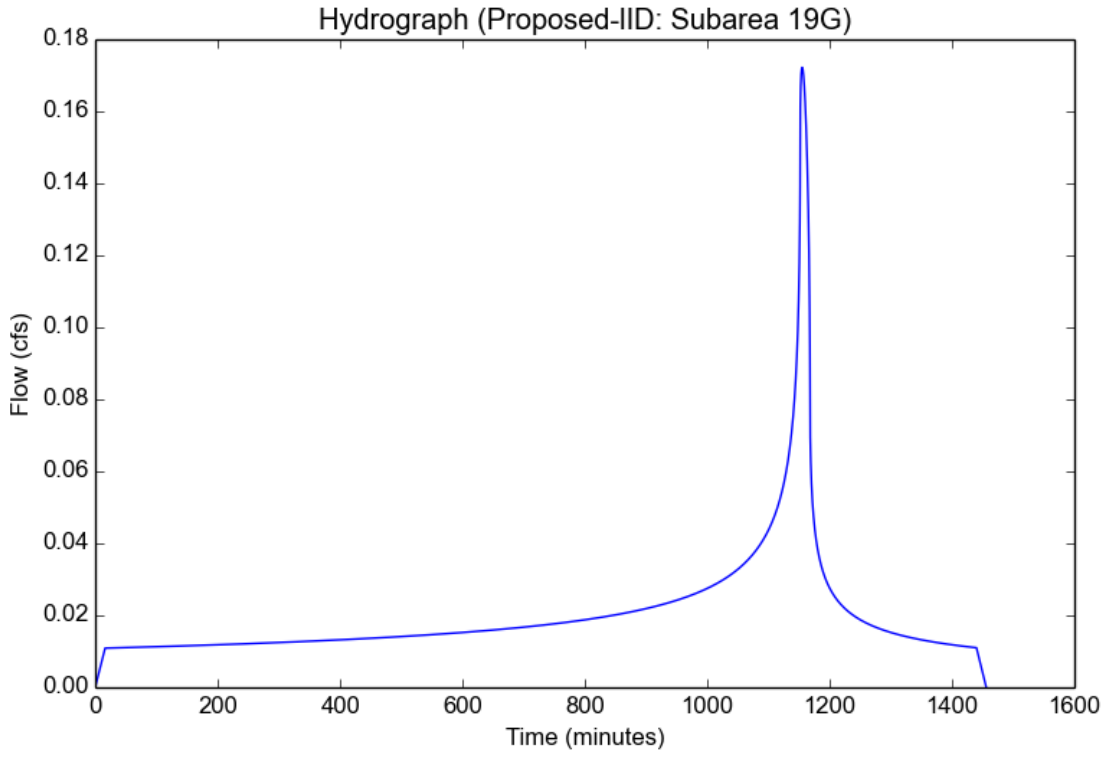
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-IID - Subarea 19G.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-IID
Subarea ID	Subarea 19G
Area (ac)	0.71
Flow Path Length (ft)	224.0
Flow Path Slope (vft/hft)	0.013
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3626
Undeveloped Runoff Coefficient (Cu)	0.1296
Developed Runoff Coefficient (Cd)	0.6689
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	0.1722
Burned Peak Flow Rate (cfs)	0.1722
24-Hr Clear Runoff Volume (ac-ft)	0.0407
24-Hr Clear Runoff Volume (cu-ft)	1772.4902



Peak Flow Hydrologic Analysis

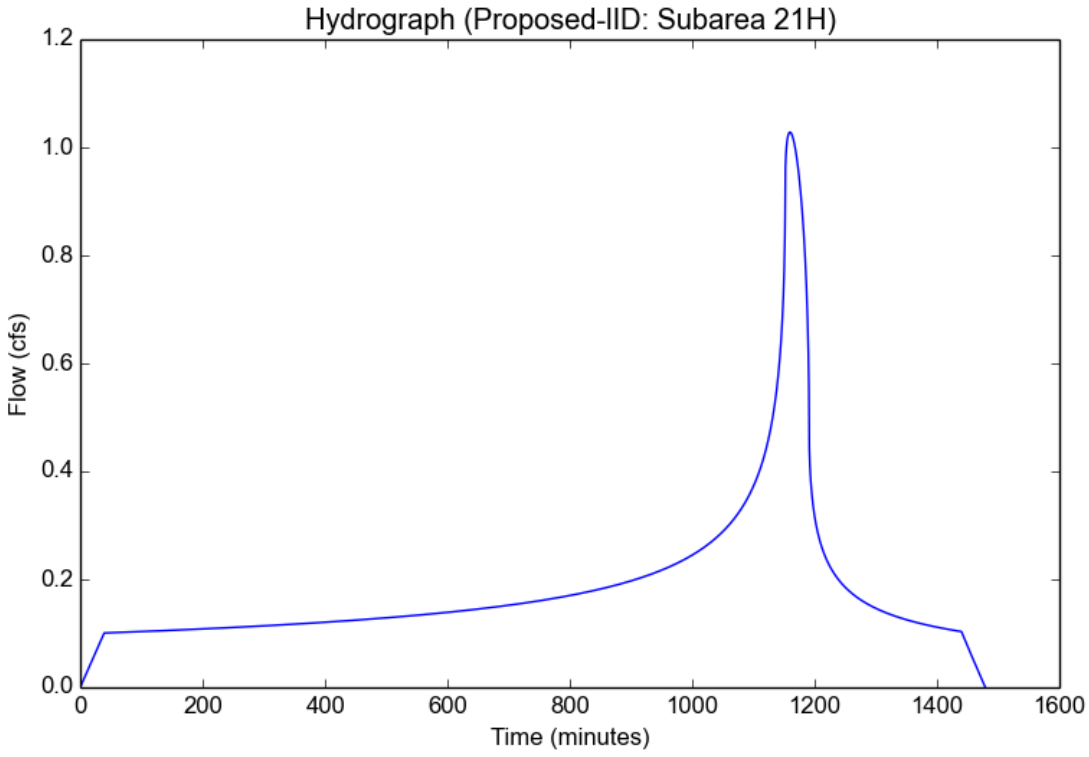
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-IID - Subarea 21H.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-IID
Subarea ID	Subarea 21H
Area (ac)	6.53
Flow Path Length (ft)	841.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.7
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2386
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.66
Time of Concentration (min)	39.0
Clear Peak Flow Rate (cfs)	1.0282
Burned Peak Flow Rate (cfs)	1.0282
24-Hr Clear Runoff Volume (ac-ft)	0.374
24-Hr Clear Runoff Volume (cu-ft)	16291.362



Peak Flow Hydrologic Analysis

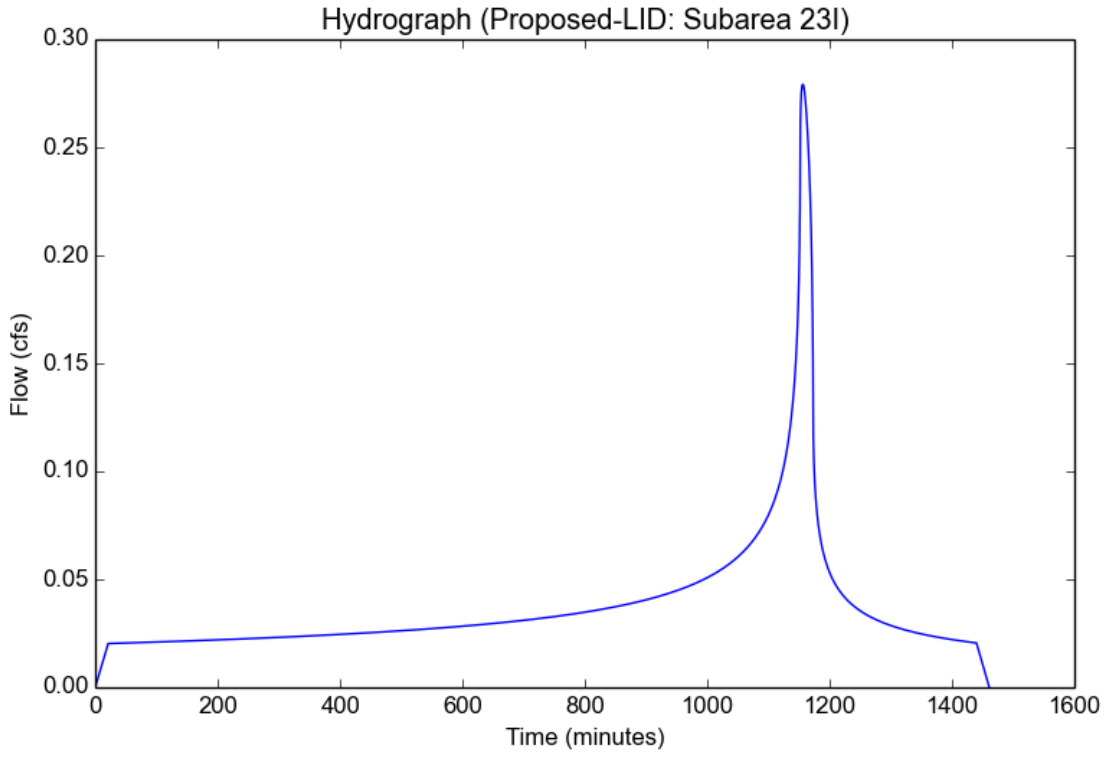
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 23I.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 23I
Area (ac)	1.26
Flow Path Length (ft)	341.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.74
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3191
Undeveloped Runoff Coefficient (Cu)	0.109
Developed Runoff Coefficient (Cd)	0.6944
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	0.2792
Burned Peak Flow Rate (cfs)	0.2792
24-Hr Clear Runoff Volume (ac-ft)	0.0757
24-Hr Clear Runoff Volume (cu-ft)	3296.2923



Peak Flow Hydrologic Analysis

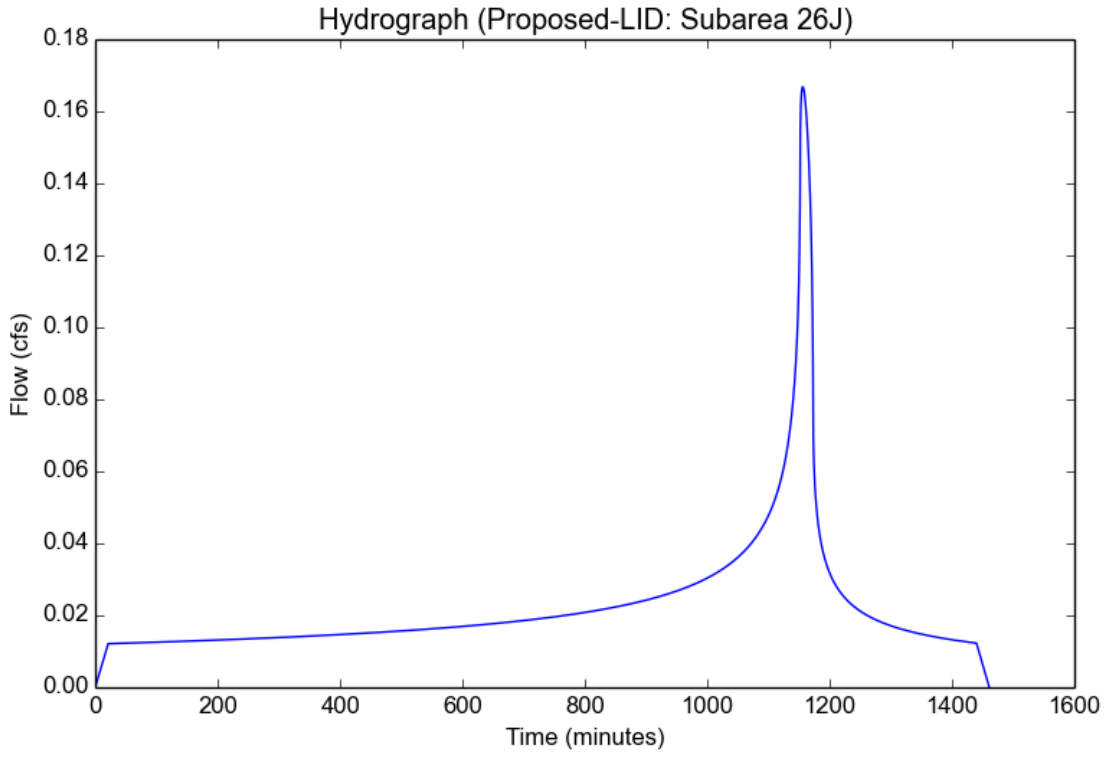
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 26J.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 26J
Area (ac)	0.72
Flow Path Length (ft)	520.0
Flow Path Slope (vft/hft)	0.041
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3191
Undeveloped Runoff Coefficient (Cu)	0.109
Developed Runoff Coefficient (Cd)	0.726
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	0.1668
Burned Peak Flow Rate (cfs)	0.1668
24-Hr Clear Runoff Volume (ac-ft)	0.0452
24-Hr Clear Runoff Volume (cu-ft)	1970.6507



Peak Flow Hydrologic Analysis

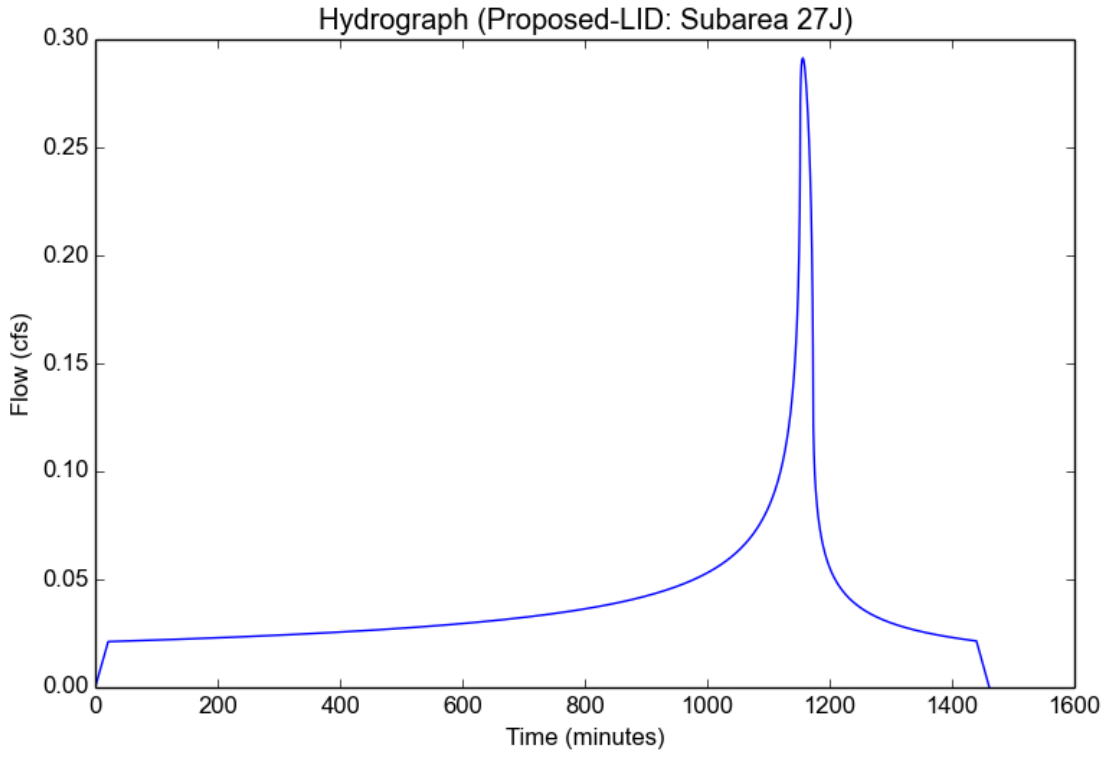
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 27J.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 27J
Area (ac)	1.3
Flow Path Length (ft)	350.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.75
Soil Type	20
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.3191
Undeveloped Runoff Coefficient (Cu)	0.109
Developed Runoff Coefficient (Cd)	0.7023
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	0.2913
Burned Peak Flow Rate (cfs)	0.2913
24-Hr Clear Runoff Volume (ac-ft)	0.079
24-Hr Clear Runoff Volume (cu-ft)	3440.2322



Peak Flow Hydrologic Analysis

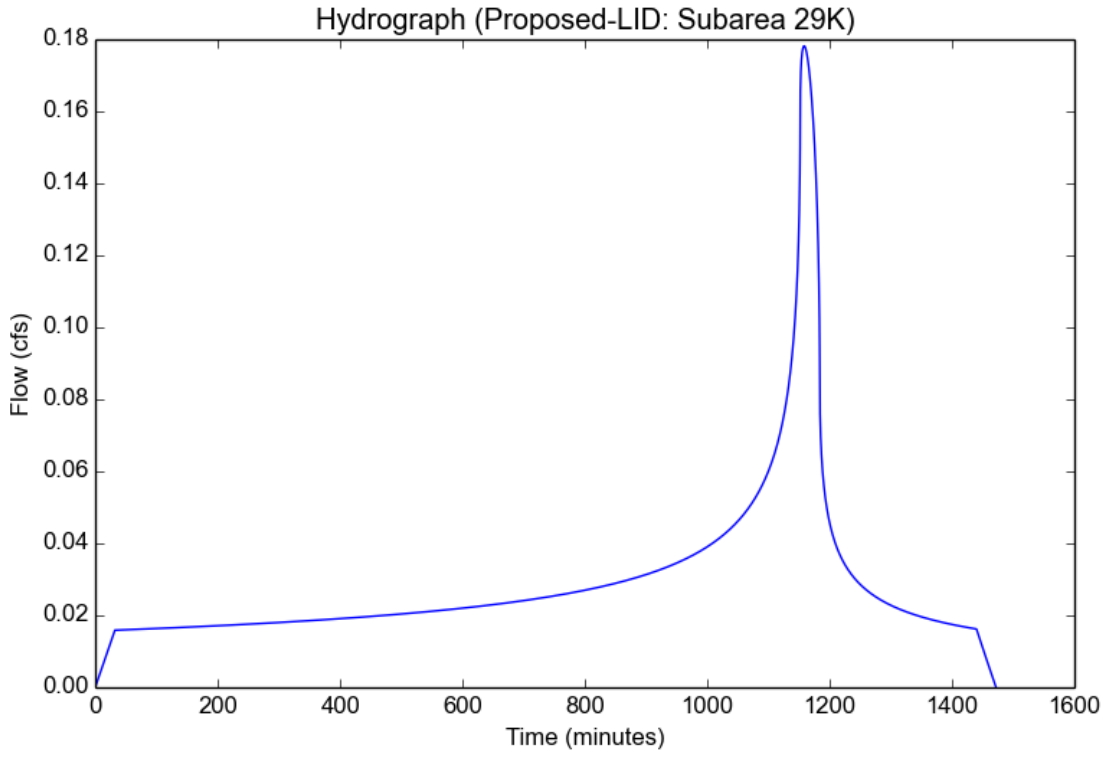
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 29K.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 29K
Area (ac)	0.94
Flow Path Length (ft)	791.0
Flow Path Slope (vft/hft)	0.016
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2618
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.1782
Burned Peak Flow Rate (cfs)	0.1782
24-Hr Clear Runoff Volume (ac-ft)	0.0591
24-Hr Clear Runoff Volume (cu-ft)	2572.5504



Peak Flow Hydrologic Analysis

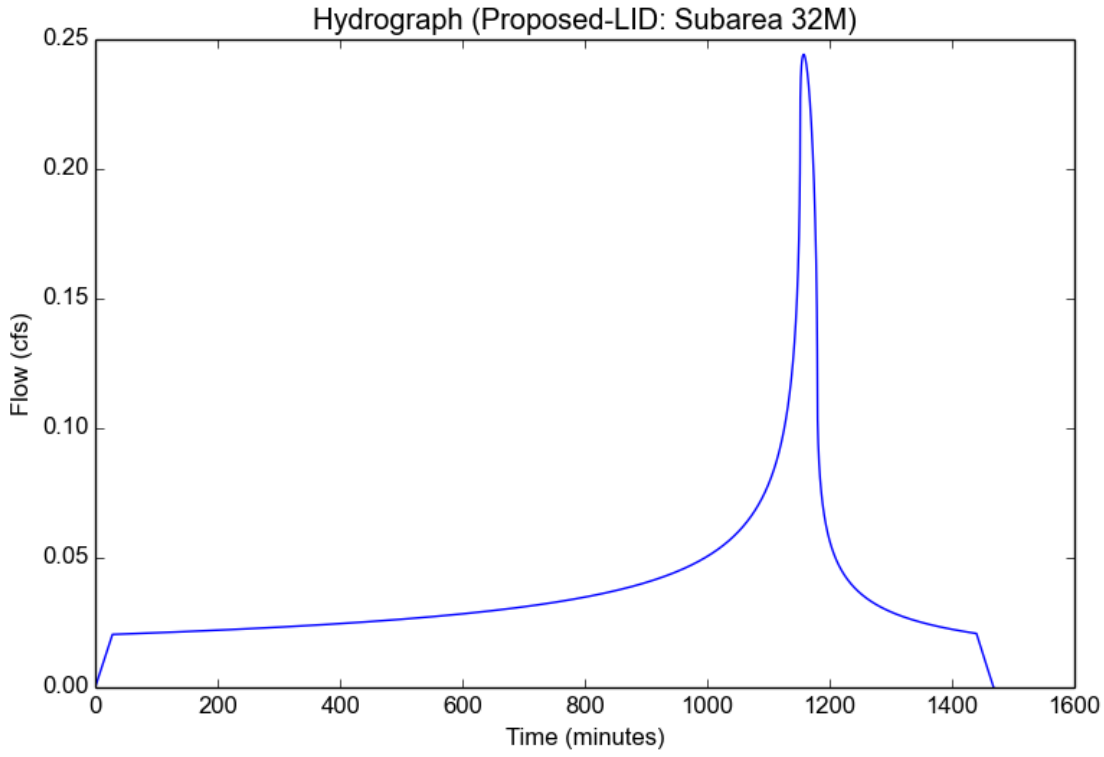
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 32M.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 32M
Area (ac)	1.21
Flow Path Length (ft)	908.0
Flow Path Slope (vft/hft)	0.059
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2788
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	28.0
Clear Peak Flow Rate (cfs)	0.2442
Burned Peak Flow Rate (cfs)	0.2442
24-Hr Clear Runoff Volume (ac-ft)	0.076
24-Hr Clear Runoff Volume (cu-ft)	3311.4643



Peak Flow Hydrologic Analysis

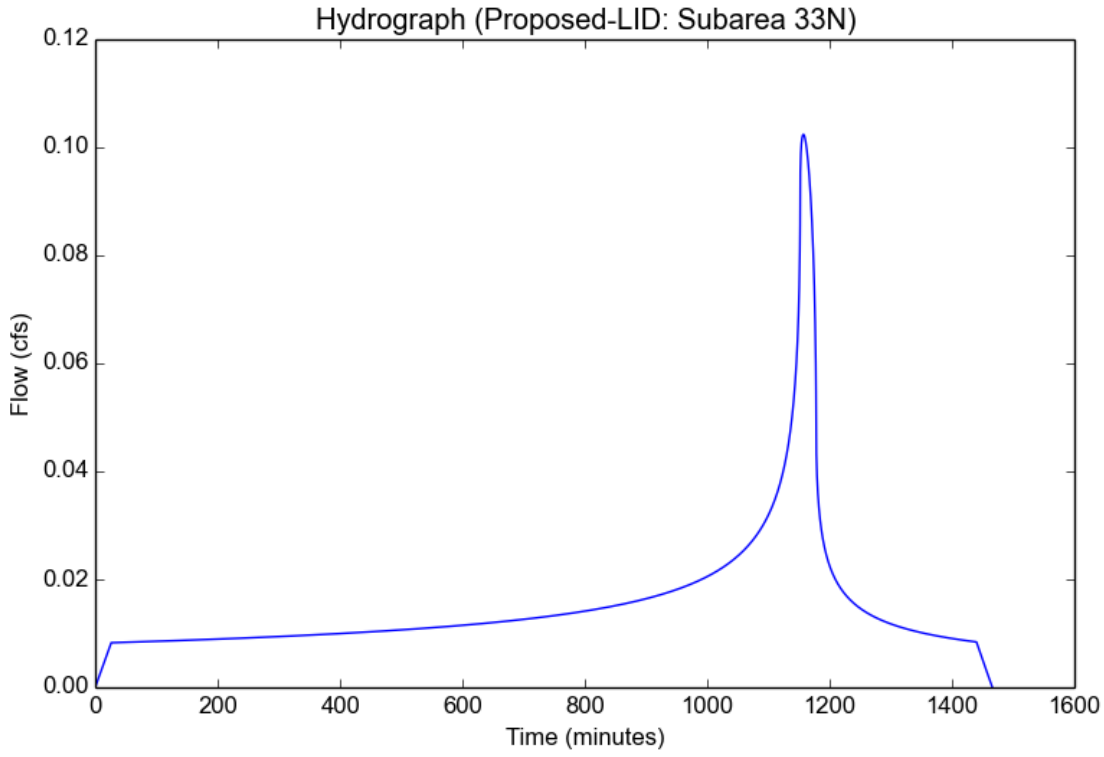
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 33N.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 33N
Area (ac)	0.49
Flow Path Length (ft)	465.0
Flow Path Slope (vft/hft)	0.008
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2886
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.1024
Burned Peak Flow Rate (cfs)	0.1024
24-Hr Clear Runoff Volume (ac-ft)	0.0308
24-Hr Clear Runoff Volume (cu-ft)	1341.0043



Peak Flow Hydrologic Analysis

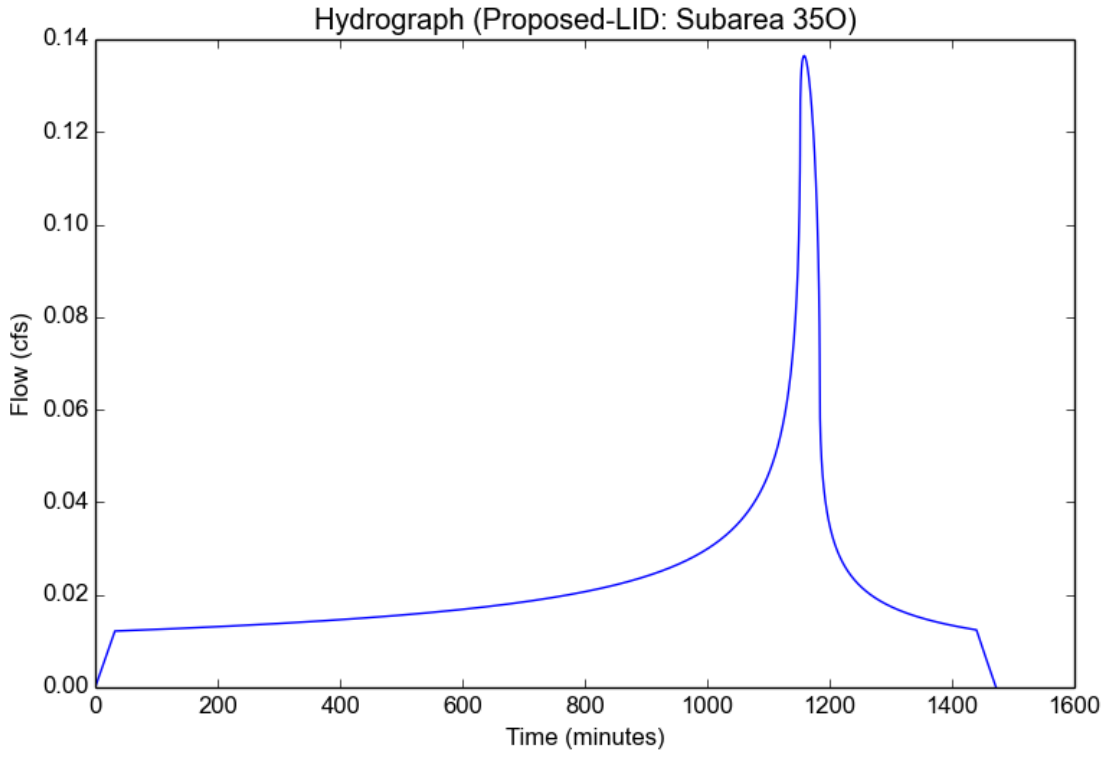
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 35O.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 35O
Area (ac)	0.72
Flow Path Length (ft)	696.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2618
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	32.0
Clear Peak Flow Rate (cfs)	0.1365
Burned Peak Flow Rate (cfs)	0.1365
24-Hr Clear Runoff Volume (ac-ft)	0.0452
24-Hr Clear Runoff Volume (cu-ft)	1970.4642



Peak Flow Hydrologic Analysis

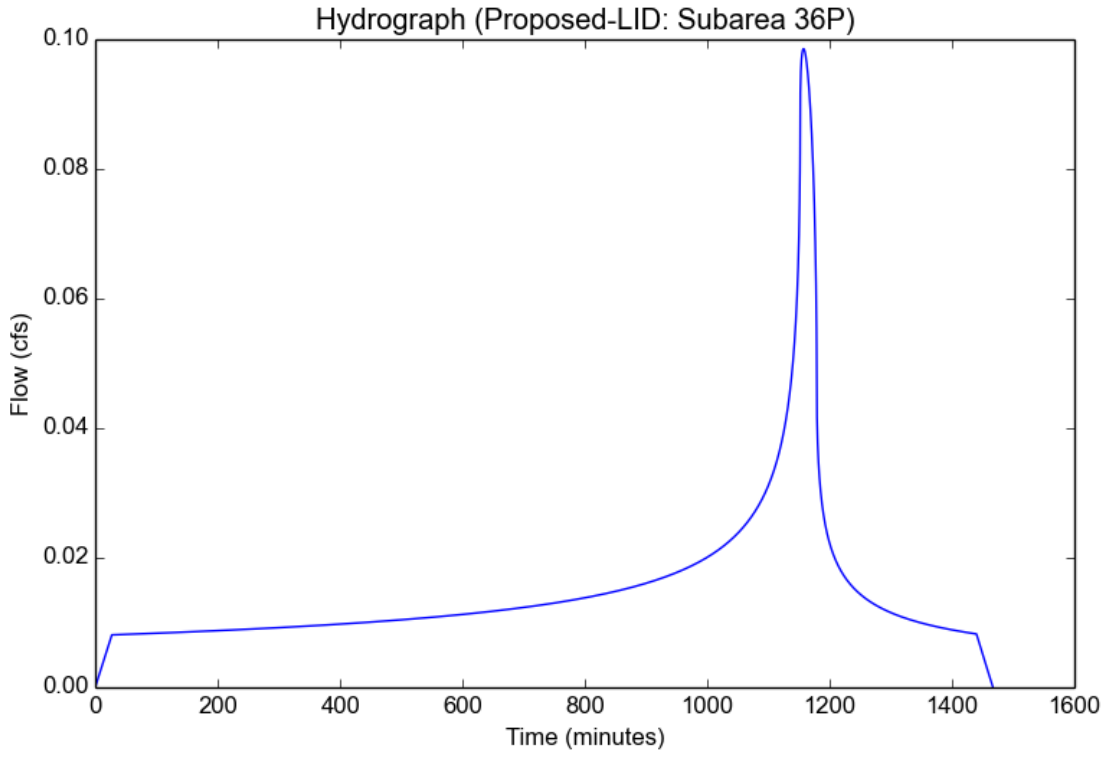
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 36P.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 36P
Area (ac)	0.48
Flow Path Length (ft)	659.0
Flow Path Slope (vft/hft)	0.023
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2836
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	27.0
Clear Peak Flow Rate (cfs)	0.0985
Burned Peak Flow Rate (cfs)	0.0985
24-Hr Clear Runoff Volume (ac-ft)	0.0302
24-Hr Clear Runoff Volume (cu-ft)	1313.6378



Peak Flow Hydrologic Analysis

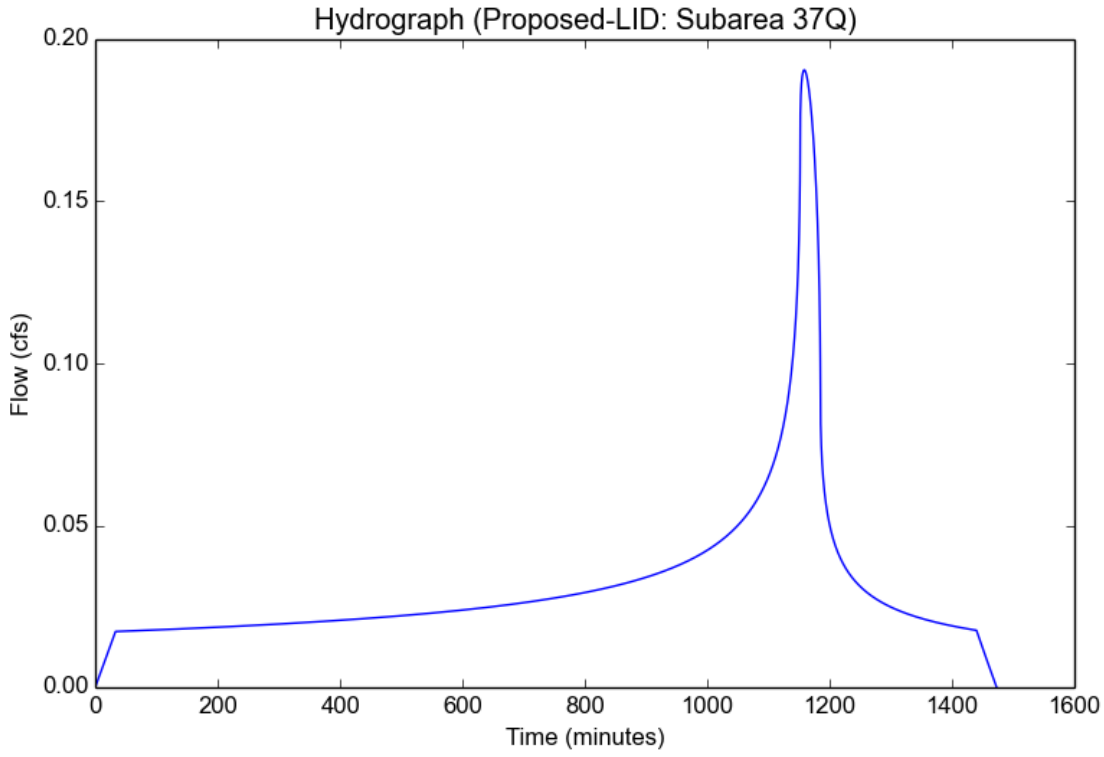
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 37Q.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 37Q
Area (ac)	1.02
Flow Path Length (ft)	836.0
Flow Path Slope (vft/hft)	0.018
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.78
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2581
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	33.0
Clear Peak Flow Rate (cfs)	0.1906
Burned Peak Flow Rate (cfs)	0.1906
24-Hr Clear Runoff Volume (ac-ft)	0.0641
24-Hr Clear Runoff Volume (cu-ft)	2791.4933



Peak Flow Hydrologic Analysis

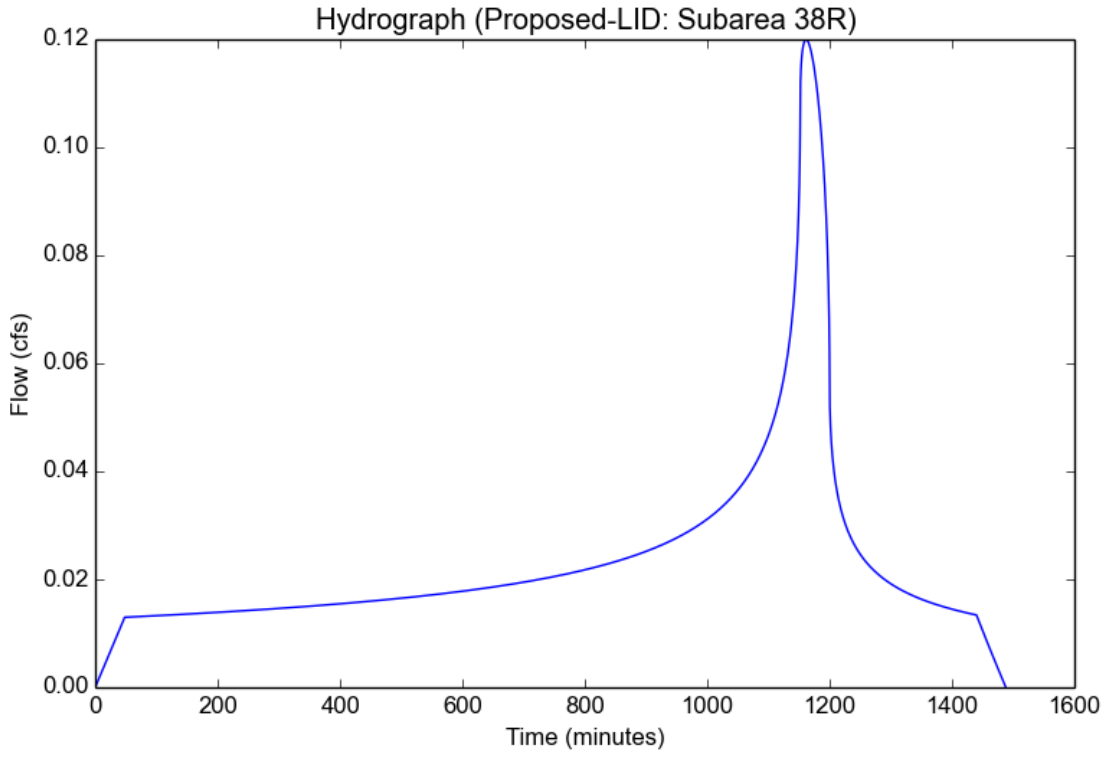
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea 38R.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea 38R
Area (ac)	1.32
Flow Path Length (ft)	974.0
Flow Path Slope (vft/hft)	0.029
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.4
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.2164
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.42
Time of Concentration (min)	48.0
Clear Peak Flow Rate (cfs)	0.12
Burned Peak Flow Rate (cfs)	0.12
24-Hr Clear Runoff Volume (ac-ft)	0.0481
24-Hr Clear Runoff Volume (cu-ft)	2095.6943



Peak Flow Hydrologic Analysis

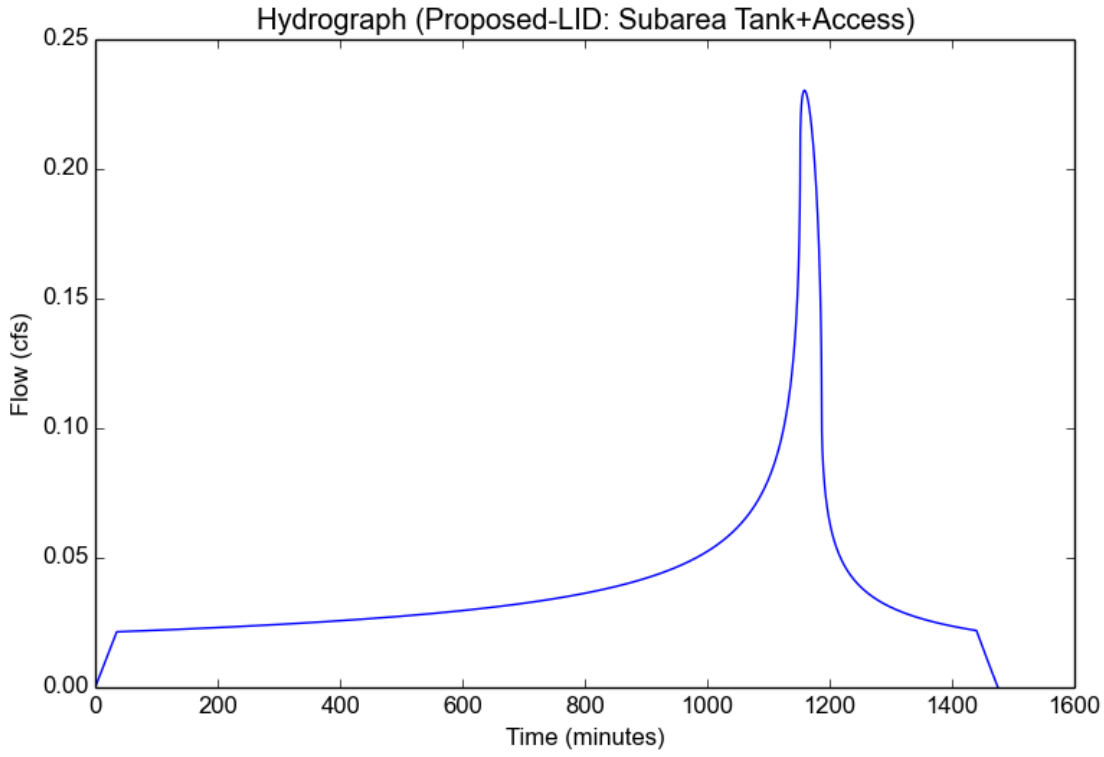
File location: Q:/Santa Clarita/Lyons Canyon Ranch/UCI/Hydrology/Tc/2024-1-4/Proposed-LID - Subarea Tank+Access.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Proposed-LID
Subarea ID	Subarea Tank+Access
Area (ac)	1.24
Flow Path Length (ft)	1520.0
Flow Path Slope (vft/hft)	0.102
85th Percentile Rainfall Depth (in)	1.05
Percent Impervious	0.8
Soil Type	97
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.05
Peak Intensity (in/hr)	0.251
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.74
Time of Concentration (min)	35.0
Clear Peak Flow Rate (cfs)	0.2303
Burned Peak Flow Rate (cfs)	0.2303
24-Hr Clear Runoff Volume (ac-ft)	0.0796
24-Hr Clear Runoff Volume (cu-ft)	3468.5824



APPENDIX D

Soil Report Excerpts

REVISED GEOTECHNICAL 100-SCALE PLAN REVIEW

LYONS CANYON DEVELOPMENT

VESTING TENTATIVE TRACT NO. 83301

LOS ANGELES COUNTY, CALIFORNIA

FOR

NUWI – LYONS CANYON, LLC

September 15, 2023

Job No. 2020-200-001

RTF&A

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

September 15, 2023

NUWI – Lyons Canyon, LLC
2001 Wilshire Blvd., Suite 401
Santa Monica, California 90403

Job No. 2020-200-001

Attention: Mr. Jason Han

Subject: Revised 100-Scale Geotechnical Plan Review
Proposed Lyons Canyon Development
The Trails at Lyons Canyon
Vesting Tentative Tract No. 83301
Los Angeles County, California

References: See attached References

R. T. Frankian & Associates, Inc., (RTF&A) is pleased to present this updated and revised geotechnical grading plan review for Lyons Canyon, Tract 83301, Los Angeles County, California (Site). We recently prepared a revised geotechnical plan review (RTF&A, 2022) and it was requested by the project team that our previous approved Tentative Plan Review Report (RTF&A, 2021a) and approved response (RTF&A, 2021b) be presented in Appendix J and Appendix K of this report. Grading Plan revisions evaluated herein were made to the previous Los Angeles County approved RTF&A Geotechnical 100-Scale Plan. This report updates and supersedes our June 9, 2022 report (RTF&A, 2022).

This revised plan review is based on the attached September 5, 2023, The Trails at Lyons Canyon, Vesting Tentative Tract No. 83301 Plan prepared by United Civil, Inc. (United), included in Appendix I. Sheet 2 of 5 was used as a base for our Geotechnical Map, attached as Figure 1. The purpose of the report is to provide an updated geotechnical report to verify the applicability of the recommendations presented in our referenced reports relative to the current

15 or 20 feet and replaced with compacted fill soils as indicated on the attached Geotechnical Map, Figure 1. Properly compacted fill soils would not be subject to liquefaction.

Structural Mitigation: According to GMED GS 045.0, dated October 1, 2014, structural mitigation alone is acceptable for up to 4 inches of total seismically induced settlement, with up to 1 inch of seismically induced differential vertical displacement over a horizontal distance of 30 feet. Anything in excess of these settlements requires a combination of ground modification and structural mitigation. Accordingly, the recommended liquefaction mitigation at this Site consists of a combination of ground modification below the proposed building areas and structural mitigation.

Structural mitigation to reduce the potential for liquefaction and/or seismically induced settlement of the proposed buildings would include minimum requirements for foundation and floor slab construction as presented in the following "Recommendations" section of this report. The project Structural Engineer should also be consulted regarding the design of structural components of the buildings to reduce adverse impacts associated with liquefaction-induced settlement of the proposed structures at the Site.

INFILTRATION

The Los Angeles County Department of Public Works (LACDPW) prepared "Guidelines for Design, Investigation, and Reporting Low Impact Development Stormwater Infiltration" (Document GS200.2, dated June 30, 2017). These guidelines provide stringent requirements for minimum infiltration rates, hillside developments with steep slopes, and sites subject to liquefaction.

At the completion of the proposed grading operations, the surface of the Site is expected to consist of either relatively shallow certified compacted fill cap overlying bedrock in the existing cut areas or deeper fill soils ranging from about 20 to greater than 30 feet overlying alluvial soils. All the alluvial soils at the Site are underlain by bedrock. Compacted fill soils at the Site are not expected to meet the minimum county infiltration requirements of 0.3 inches per hour. In addition, the alluvial soils at the Site are designated by the State of California as having

the potential of being subject to liquefaction when saturated and are subject to seismic settlement as evaluated in this report. The guidelines state that infiltration shall not increase the potential for seismic settlement of structures on or adjacent to the Site. Accordingly, in compliance with the LACDPW Guidelines, it is recommended that infiltration into the subsurface compacted fill soils not occur at the Site and that stormwater mitigation requirements be achieved by methods other than on-site infiltration.

GRADING

General: The following sections present recommendations for treatment of cut and fill slopes, and grading. The applicability of the preliminary recommendations given in the following sections for foundation and retaining wall design should be confirmed at the completion of grading. Paving studies and soil corrosivity tests should be performed at the completion of rough grading to develop detailed recommendations for protection of utilities, structures, and for construction of the proposed roads.

Site Preparation: Prior to performing earthwork, the existing vegetation and any deleterious debris should be removed from the Site. All unsuitable soils in the areas of grading that are receiving fill should be removed to competent bedrock materials and replaced with engineered fill. The depth of removal and recompaction of unsuitable soils is noted on the Geotechnical Map. Any fill required to raise the Site grades should be properly compacted.

Removal of the exposed natural soils should extend to at least the depths indicated on the Geotechnical Map.

Removal Depths: The required depth of removal and recompaction of the natural soils is indicated on the Geotechnical Map. Deeper removals will be required if disturbed or unsuitable soils are encountered. After excavation of the upper natural soils on hillsides and in canyons, further excavation should be performed, if necessary, to remove slope wash or other unsuitable soils.

The Geotechnical Consultant of Record may require that additional shallow excavations be made periodically in the exposed bottom to determine that sufficient removals have been

APPENDIX E

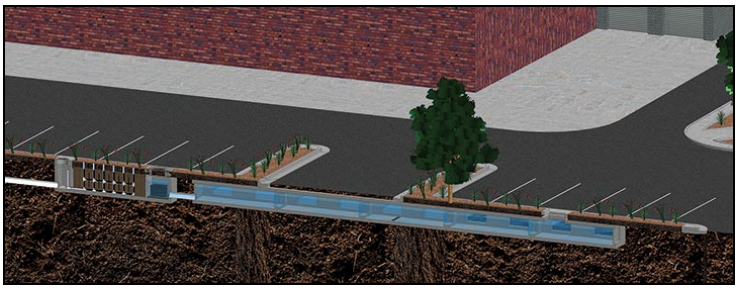
LID Sizing References

MWS Linear | *Sizing Options*

Flow Based Sizing

The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

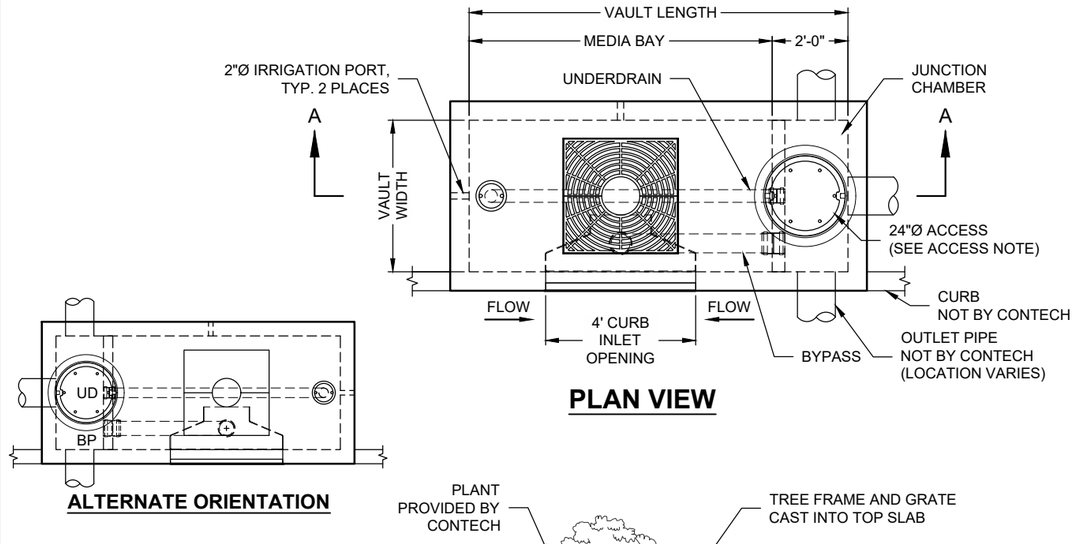
Model #	Dimensions	WetlandMEDIA Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4′ x 4′	23 sq. ft.	0.052
MWS-L-4-6	4′ x 6′	32 sq. ft.	0.073
MWS-L-4-8	4′ x 8′	50 sq. ft.	0.115
MWS-L-4-13	4′ x 13′	63 sq. ft.	0.144
MWS-L-4-15	4′ x 15′	76 sq. ft.	0.175
MWS-L-4-17	4′ x 17′	90 sq. ft.	0.206
MWS-L-4-19	4′ x 19′	103 sq. ft.	0.237
MWS-L-4-21	4′ x 21′	117 sq. ft.	0.268
MWS-L-6-8	7′ x 9′	64 sq. ft.	0.147
MWS-L-8-8	8′ x 8′	100 sq. ft.	0.230
MWS-L-8-12	8′ x 12′	151 sq. ft.	0.346
MWS-L-8-16	8′ x 16′	201 sq. ft.	0.462
MWS-L-8-20	9′ x 21′	252 sq. ft.	0.577
MWS-L-8-24	9′ x 25′	302 sq. ft.	0.693



Volume Based Sizing

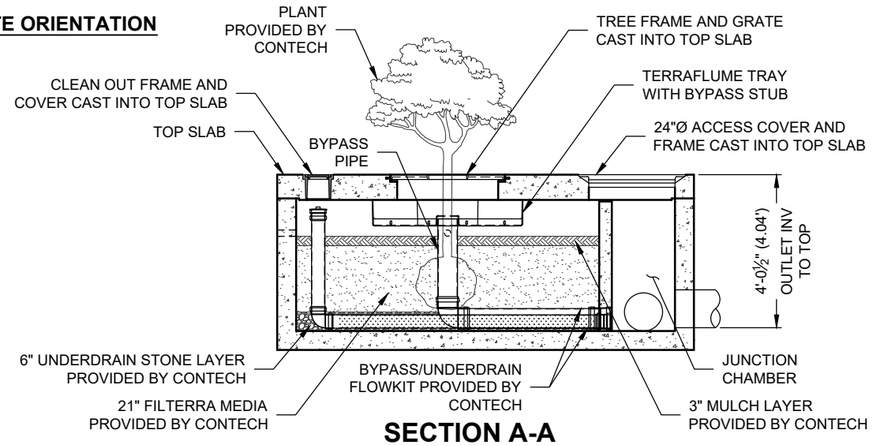
Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-6-8	3191	6382
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145
MWS-L-8-20	12560	25120
MWS-L-8-24	15108	30216



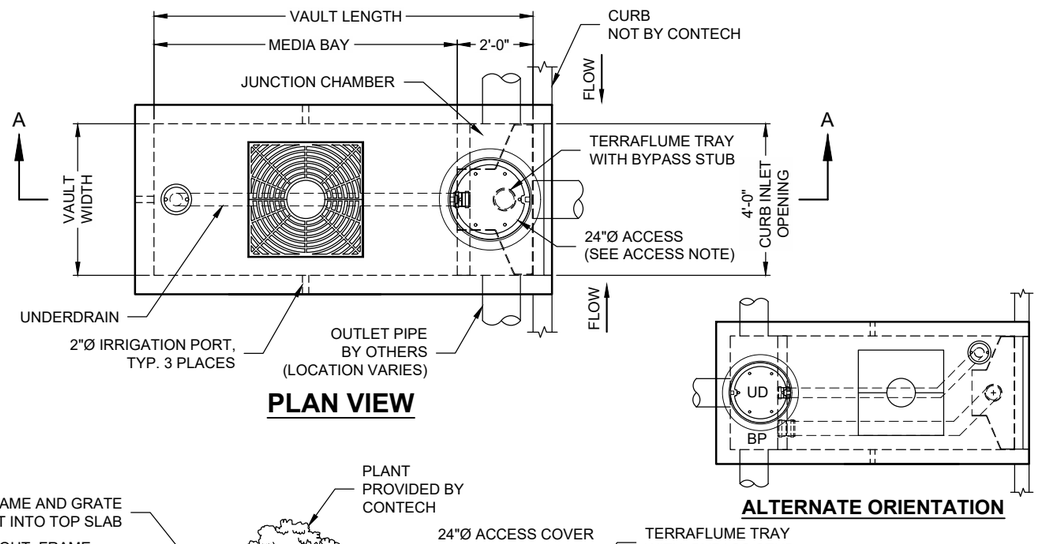
PLAN VIEW

ALTERNATE ORIENTATION



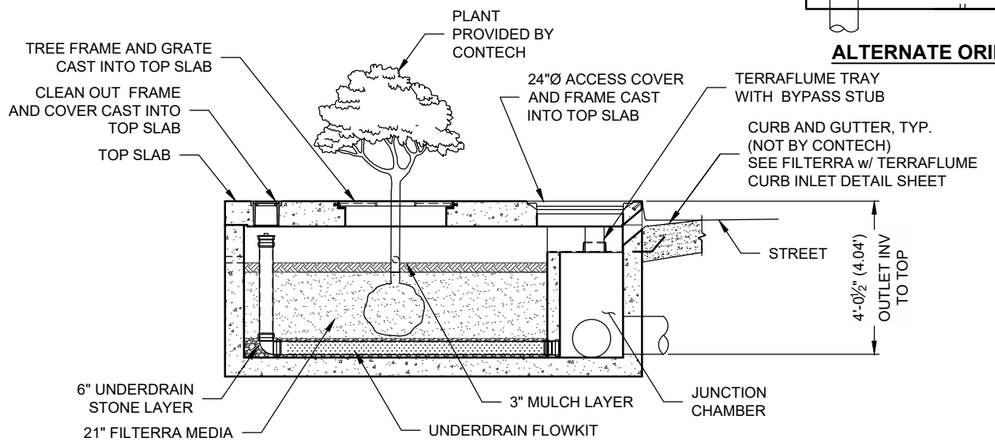
SECTION A-A

ACCESS NOTE:
JUNCTION CHAMBER TOP SLAB ACCESS WILL BE 12"Ø FOR FTIBC0404-CSS AND FTIBC0404-CLS DUE TO STRUCTURAL CONSIDERATIONS



PLAN VIEW

ALTERNATE ORIENTATION



SECTION A-A

FTIBC-C LONG SIDE CURB INLET

DESIGNATION (LONG SIDE)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. BYPASS PIPE DIA	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0404LS-C	N/A CA	4 x 4	6 x 4	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC04504-C	CA ONLY	4.5 x 4	6.5 x 4	8"SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC058045-C	MID-ATL ONLY	5.83 x 4.5	7.83 x 4.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0604-C	N/A MID-ATL	6 x 4	8 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0606LS-C	ALL	6 x 6	8 x 6	10" SDR 35	2.37	4" SDR 35	(1) 3' x 3'
FTIBC0806-C	ALL	8 x 6	10 x 6	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC1006-C	ALL	10 x 6	12 x 6	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1107-C	ALL	11 x 7	13 x 7	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1208-C*	CALL CONTECH	12 x 8	14 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1408-C*	CALL CONTECH	14 x 8	16 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1608-C*	CALL CONTECH	16 x 8	18 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1808-C*	CALL CONTECH	18 x 8	20 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'
FTIBC2008-C*	CALL CONTECH	20 x 8	22 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'
FTIBC2208-C*	CALL CONTECH	22 x 8	24 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'

N/A = NOT AVAILABLE
*REQUIRES (2) TERRAFLUMES

FTIBC-C SHORT SIDE CURB INLET

DESIGNATION (SHORT SIDE)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	MAX. BYPASS PIPE DIA	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0404SS-C	N/A CA	4 x 4	4 x 6	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC04045-C	CA ONLY	4 x 4.5	4 x 6.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0406-C	N/A MID-ATL	4 x 6	4 x 8	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC045058-C	MID-ATL	4.5 x 5.83	4.5 x 7.83	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0606SS-C	ALL	6 x 6	6 x 8	10" SDR 35	2.37	4" SDR 35	(1) 3' x 3'
FTIBC0608-C	ALL	6 x 8	6 x 10	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC0610-C	ALL	6 x 10	6 x 12	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0711-C	ALL	7 x 11	7 x 13	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0812-C	CALL CONTECH	8 x 12	8 x 14	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE

filterra®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 6,277,274; 6,569,321; 7,625,485; 7,425,261; 7,833,412; RELATED FOREIGN PATENTS.

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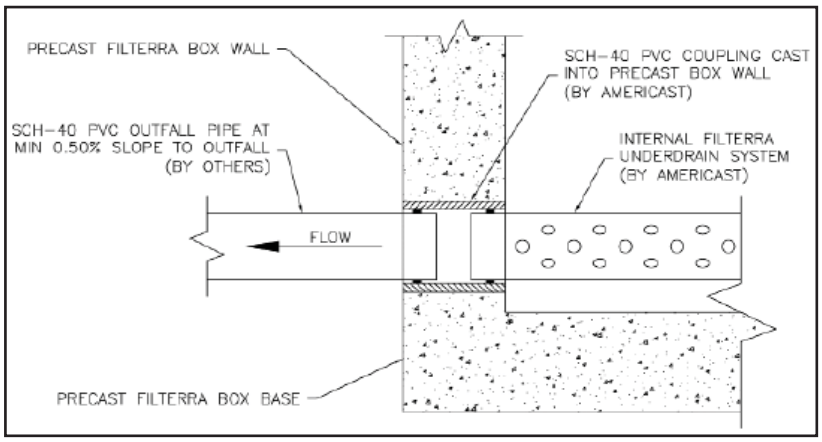
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA INTERNAL BYPASS CURB WITH CHAMBER (FTIBC-C) CONFIGURATION DETAIL

I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\FTIBC-C - INTERNAL BYPASS CURB INLET - CHAMBER CONFIG DETAILS.DWG 11/1/2019 2:03 PM

Filterra® Piping Technical Details

Filterra® is supplied with an internal underdrain system that exits a wall in a perpendicular direction. Most efficient drainage is accomplished when the drain exits on the lower side of the Filterra®, i.e. nearest the overflow bypass. This is more important when using the larger sized Filterra® Systems.



Drawing DP1:
Section View through Filterra Precast Box Wall at Outfall Pipe Connection

All units are supplied with the drainage pipe coupling precast into the wall, at a depth of 3.50 feet (INV to TC). Drawing DP1 is a detail of the coupling. The coupling used is SCH-40 PVC.

Typically, a minimum slope of 0.5% is adequate to accommodate the flow of treated water from the Filterra®, but each site may present unique conditions based on routing of the outfall pipe (elbows). The pipe must not be a restricting point for the successful operation of Filterra®. All connecting pipes must accommodate freefall flow. Table 3 lists approved treatment sizing flow rates of the various size Filterra® units. A safety factor of at least two should be used to size piping from the Filterra based on these conservative approved treatment flow rates.

Table 3: Filterra Flow Rates & Pipe Details

Important Note: Actual flow rate may be more than double rates below.

Filterra® Size (feet)	Expected Flow Rate (cubic feet/second)	Connecting Drainage Pipe
4x4	0.037	4” SCH-40 PVC
4 x 6 or 6 x 4	0.055	4” SCH-40 PVC
4x6.5 or 6.5x4	0.061	4" SCH-40 PVC
4 x 8 or 8 x 4	0.075	4” SCH-40 PVC
4x16 or 16x4	0.150	6” SCH-40 PVC
6 x 6	0.084	4” SCH-40 PVC
6 x 8 or 8 x 6	0.112	4” SCH-40 PVC
6 x 10 or 10 x 6	0.140	6” SCH-40 PVC
6 x 12 or 12 x 6	0.168	6” SCH-40 PVC
8x12 or 12x8	0.224	6" SCH-40 PVC
8x16 or 16x8	0.297	6” SCH-40 PVC
8x18 or 18x8	0.337	6” SCH-40 PVC
8x20 or 20x8	0.374	6” SCH-40 PVC

FILTERRA EQUIVALENCY ANALYSIS AND DESIGN CRITERIA

Pursuant to:

Los Angeles County MS4 Permit (Order R4-2012-0175)

Prepared for

CONTECH Engineered Solutions

Prepared by

Geosyntec consultants

engineers | scientists | innovators

621 SW Morrison Street, Suite 600
Portland, Oregon 97205

August 2015

Table A.1 Biofiltration Design Assumptions from Various Sources and Selected Representative Design Assumptions

Design Assumption	Design References					Selected Representative Design Assumption	Rationale for Selected Design Assumption
	MS4 Permit Attachment H	Los Angeles County LID Manual, static method	Los Angeles County LID Manual, routing method	City of Los Angeles LID Manual	Ventura County TGM		
Ponding Depth, ft	0.5 to 1.5	0.5 to **1.5**	0.5 to **1.5**	0.5 to **1.5**	0.5 to **1.5**	1.5	Many designers will utilize deepest depth allowable because of space efficiency.
Media Depth, ft	2 to 3	**2** to 3	**2** to 3	**2** to 3	**2** to 3	2	Typical design approach is to use minimum depth due to cost of media.
Gravel "sump" depth below underdrain, ft	Not specified; narrative	Not specified, narrative	Not specified, narrative	At least 1 feet; up to **2** feet if soils allow incidental infiltration	**0.5** minimum below underdrain	Depth that would drain in 24 hours. For example, 1.5 ft if site infiltration rate estimated at just less than 0.3 in/hr	Approach produces a reasonable design that considers infiltration rates; Attachment H states that volume infiltrated within 24 hours can be considered retained.
Media Filtration Rate, in/hr	5 to 12	**5** to 12	**5** to 12	**5** to 12	1 to 12 **(5)**	5	Representative of long term operation after some clogging
Allowable Routing Period for Biofiltration Treatment, hrs	Not specified	Routing is not part of simple method	Allows routing of **24-hour** design hydrograph from LA County HydroCalc model	**3** hours, unless using a routing model	Depth up to ponding depth (**1.5 ft**) can be considered routed	6 hours[1]	Based on evaluation of storm durations for events similar to design event. See footnote 1.
Resulting Footprint Factor at 0.3 in/hr Infiltration Rate, in/hr (% of impervious area)	Not enough information to calculate	7.5%	1.4%	2.4% (1.4% with routing similar to LA County)	2.8%	2.0%	Calculated based on assumptions.

Note: where a range of guidance is allowed, the bolded number indicates the value that was used in calculations. The design values were selected based on developing the most economical and space-efficient design that meets the applicable criteria.

1 – The allowable routing period was estimated based on the typical storm duration associated with events similar to the 85th percentile, 24-hour storm depth (1.0 inches at LAX). This was estimated in two ways. For days with precipitation totals between 0.9 and 1.1 inches, the total number of hours with rainfall was tabulated (average = 11 hours; 10th percentile = 6 hours). This does not consider dry periods between hours with rainfall, therefore is somewhat conservative in estimating the period of time available for routing biofiltered water during a given day. For unique precipitation events, separated by 6 hour dry period (potentially spanning across breaks in calendar days), with precipitation totals between 0.9 and 1.1 inches, the total storm durations were tabulated (average = 16 hours; 10th percentile = 7 hours). Based on this analysis, a 6 hour routing period is considered to be defensible and conservative in estimating the amount of water that can be routed through a biofiltration system during typical storm events similar to the design storm event.

APPENDIX F

BMP Maintenance

Area	Item	Frequency	Equipment / Materials Necessary	Safety Equipment
Catch Basin Signage	Replace signage when worn or wording is no longer legible.	When deemed necessary by inspection	Replacement sign or paint/stencil	Safety glasses, gloves, long pants, and sturdy work shoes
Catch Basins	Remove debris and clean as necessary.	When deemed necessary by inspection	None	Safety glasses, gloves, long pants, and sturdy work shoes
Covered Trash Enclosures	Repair or replace trash enclosure roof. Clean oily residue in the area.	When deemed necessary by inspection	General hand tools	Safety glasses, gloves, long pants, and sturdy work shoes
Filterra Units (By LACFCD)	- Remove accumulated trash and debris in the basin. - Replace pretreatment mulch. - Prune the vegetation.	When deemed necessary by inspection	Shovel, broom, pruners, and other General hand tools	Safety glasses, gloves, long pants, shovel and sturdy work shoes

"

EXHIBIT 2-1

Maintenance Procedures

Screening Device Average maintenance interval is 6 to 12 months

1. Remove grate or manhole cover to gain access to the screening device in the Pre-Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck. The hose of the vacuum truck will not damage the screening device.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber Average maintenance interval is 12 to 24 months

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters Average maintenance interval is 12 to 24 months

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter Average maintenance interval is 12 to 24 months

1. Remove hatch or manhole cover over discharge chamber and enter chamber.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

EXHIBIT 2-2

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

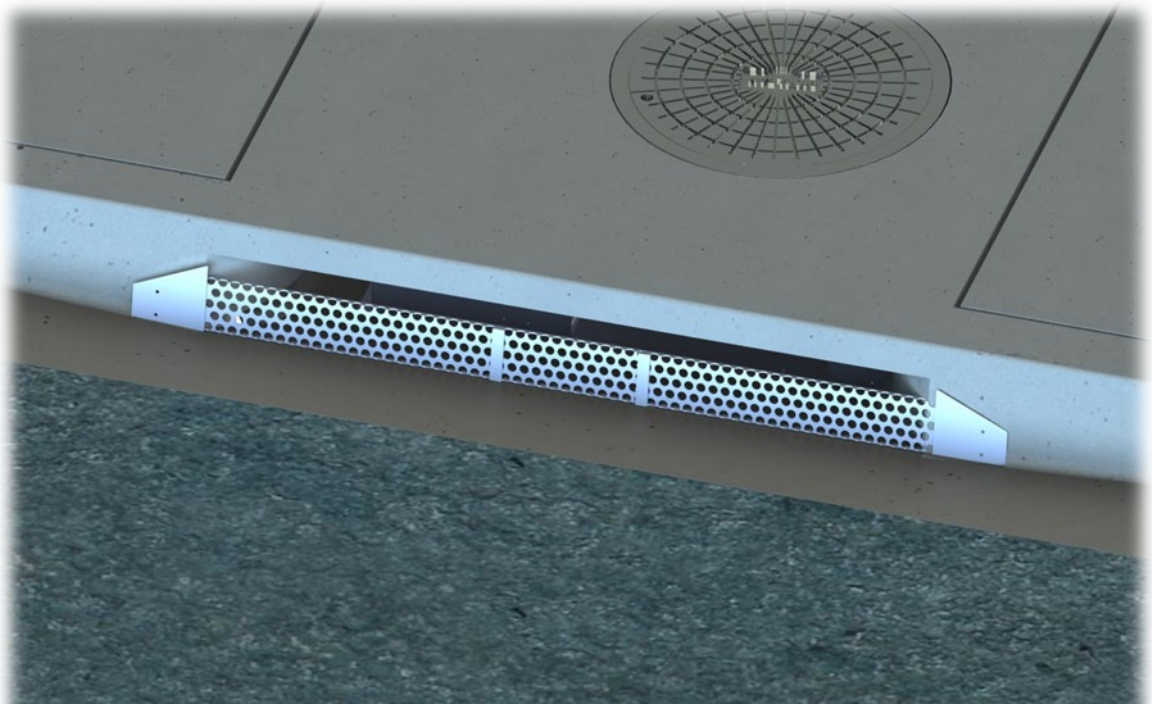
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

EXHIBIT 2-3

MAINTENANCE

The Bio Clean Curb Guard requires minimal preventative maintenance. Regular street sweeping will prevent debris from building up in front of the unit thereby obstructing storm water from entering the perforations.

Pressure-washing the unit may be necessary if street sweeping is unavailable.



Yearly Maintenance Schedule:

Inspections consist of visually inspecting the unit from street level and cleaning debris of the screen.

Visual Inspection:

1. Built-up debris and foreign object debris can hinder the unit's operation. Remove any visible debris that may be on, in front of, and nearby the unit.

2. Look for any visible signs of vandalism or damage that may compromise the unit's ability to properly function. Attempted vandalism and slight damage should be inspected closely to ensure no future damage may result.

Replacement Schedule:

All components on the Bio Clean Curb Guard are made from 304 stainless steel parts. Replacement of individual parts is not recommended. If during maintenance inspection it is observed the unit is damaged or vandalized to the point it won't function, the unit should be replaced. Bio Clean Environmental should be notified if a replacement is required.

For Maintenance Services
Please Contact Us At:
760-433-7640
info@biocleanenvironmental.com

EXHIBIT 2-4

Section [_____]
Stormwater Low Flow Diversion Device

PART 1 – GENERAL

01.01.00 Purpose
The purpose of this specification is to establish generally acceptable criteria for devices used to divert treatment (low) flows from standard curb and grate type catch basins to treatment BMPs. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

01.02.00 Description
Stormwater Low Flow Diversion Devices (SLFDD) are used to divert runoff captured by catch basins. The SLFDD is a trough system.

01.03.00 Manufacturer
The manufacturer of the SLFDD shall be one that is regularly engaged in the engineering, design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which have a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the SLFDD(s) shall be a trough system device manufactured/distributed by Bio Clean Environmental Services, Inc., or assigned distributors or licensees. Bio Clean Environmental Services, Inc. can be reached at:

Corporate Headquarters:
2972 San Luis Rey Road
Oceanside, CA 92058
Phone: (760) 433-7640
Fax: (760) 433-3176
www.biocleanenvironmental.net

01.04.00 Submittals

01.04.01 Shop drawings are to be submitted with each order to the contractor and engineer of work.

01.04.02 Shop drawings are to detail the SLFDD, its components and the sequence for installation, including:
- SLFDD configuration with primary dimensions
- Various SLFDD components
- Any accessory equipment

01.04.03 Inspection and maintenance documentation submitted upon request.

01.05.00 Work Included

01.05.01 Specification requirements for installation of SLFDD.

01.05.02 Manufacturer to supply SLFDD(s):
- Trough System
- Mounting Hardware

01.06.00 Reference Standards

ASTM D2690-98	Standard Test Method for Isophthalic Acid in Alkyd and Polyester Resins
ASTM C 582-02	Standard Specification for Contact-Molded Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion-Resistant Equipment
ASTM D 4097	Standard Specification for Contact-Molded Glass-Fiber-Reinforced Thermoset Resin Corrosion-Resistant Tanks
ASTM D3409	Standard Test Method for Adhesion of Asphalt-Roof Cement to Damp, Wet, or Underwater Surfaces
IFI 114	Break Mandrel Blind Rivets

PART 2 – COMPONENTS

02.01.00 Trough System Components

02.01.01 Trough System shall be manufactured of 100% marine grade polyester resin and fiberglass strands.

- The entire fiberglass structure must be coated with a polyester gel coating with ultra violet inhibitors incorporated into the coating for maximum ultra violet protection.
- Fiberglass must have a minimum thickness of 3/16".

02.01.02 Mounting Hardware shall be 100% non-corrosive metals.

- Nuts and Bolts
- Rivets
- Support Brackets
- Concrete Anchors

02.01.03 Concrete Filler and Sealant shall be made of Acrylic Emulsion and have a minimum service temperature range of -30°F to 150°F.

PART 3 – PERFORMANCE

03.01.00 General

03.01.01 Function - The SLFDD has no moving internal components and functions based on gravity flow, unless otherwise specified. The SLFDD is composed of a Trough System. Runoff enters the SLFDD from a curb or grate opening and flows into the Trough System which is mounted under the face of the curb or grate opening. It then flows horizontally inside the Trough System to an outlet pipe leading outside of the catch basin to an adjacent or downstream treatment BMP. The SLFDD can also be cleaned without entering the access point by using a vacuum truck.

03.01.02 Peak Flow Rate – The SLFDD is designed to fit within the catch basin in a way not to affect the hydraulics at high flows. The open area over the top of the trough is always greater than the open area of the curb or grate above. Therefore, the SLFDD does not create a critical point of restriction.

PART 4 - EXECUTION

04.01.00 General

The installation and use of the SLFDD shall conform to all applicable national, state, municipal and local specifications.

04.02.00 Installation

The contractor shall furnish all labor, equipment, materials and incidentals required to install the (SLFDD) device(s) and appurtenances in accordance with the drawings, installation manual, and these specifications, and be inspected and approved by the local governing agency. Installation contractor should possess a Confined Space Entry Certification Permit, pursuant to OSHA standards. Any damage to catch basin and surrounding infrastructure caused by the installation of the SLFDD is the responsibility of the installation contractor.

04.02.01 Trough System will be installed in accordance with manufactures' recommendations. The Trough component will be installed the complete width of the curb or grate opening, or underneath any wings as to provide 100% coverage of incoming stormwater. The Trough System must be properly mounted and assembled inside the catch basin with drive pins and pop rivets per manufacture's recommendations. Once the Trough System is secured to the walls of the catch basin all seams must be filled with sealant per section 02.01.03.

04.03.00 Shipping, Storage and Handling

04.03.01 Shipping – SLFDD shall be shipped to the contractor's address and is the responsibility of the contractor to transport the unit(s) to the exact site of installation.

04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the SLFDD(s) and its components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted, and unloading has commenced shall be born by the contractor. The SLFDD(s) and its components shall always be stored indoors and transported inside the original shipping container(s) until the SLFDD(s) are ready to be installed. The SLFDD shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

04.04.00 Maintenance and Inspection

04.04.01 Inspection – After installation, the contractor shall demonstrate that the SLFDD has been properly installed at the correct location(s), elevations, and with appropriate supports and fasteners. All components associated with the SLFDD and its installation shall be subject to inspection by the engineer of work, governing agency, and the manufacture at the place of installation. In addition, the contractor shall demonstrate that the SLFDD has been installed per the manufacturer's specifications and recommendations. SLFDD(s) shall be physically inspected regularly in accordance to owner's Stormwater Pollution Prevention Plans (SWPPP) and manufacture's recommendations. An inspection record shall be kept by the inspection operator. The record shall include the condition of the SLFDD and its appurtenances. The most current copy of the inspection record shall always be copied and placed in the owner's SWPPP.

04.04.02 Maintenance – Routine maintenance and cleaning time of the SLFDD shall take no more than 10 minutes. If the downstream treatment BMP is beyond 100% capacity in which the Trough System can hold debris and sediment. The SLFDD(s) shall be inspected, maintained and cleaned 1 to 4 times a year in accordance to owner's Stormwater Pollution Prevention Plans (SWPPP). The maintenance shall be preformed by someone qualified. A Maintenance Manual is available upon request from the manufacturer. The manual has detailed information regarding the maintenance of the SLFDD. A Maintenance Record shall be kept by the maintenance operator. The Maintenance Record shall include any maintenance activities preformed, amount and description of debris collected, and the condition of the trough. The most current copy of the Maintenance Record shall always be copied and placed in the owner's SWPPP.

04.04.03 Material Disposal - All debris, trash, organics, and sediments captured and removed from the SLFDD shall be transported and disposed of at an approved facility for disposal in accordance with local and state regulations. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURANCE

05.01.00 Warranty

The manufacturer shall guarantee the SLFDD against all manufacturing defects in materials and workmanship for a period of (5) years from the date of delivery to the contractor. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The SLFDD is limited to recommended application for which it was designed.

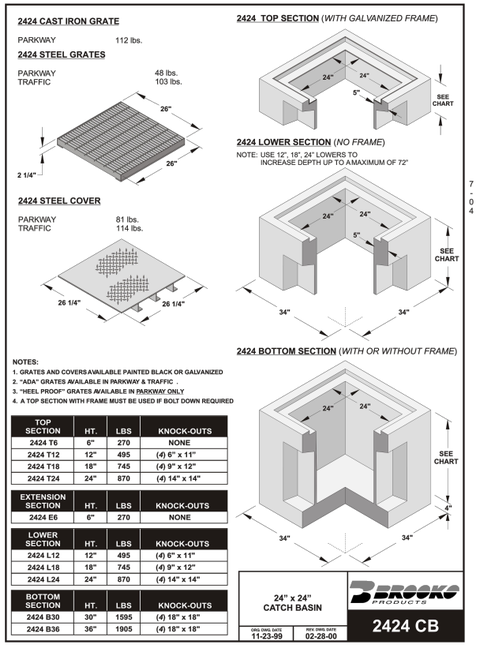
[End of This Section]

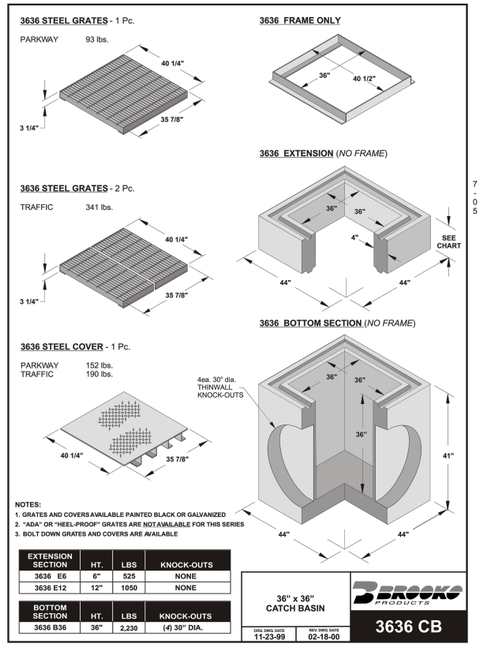
LID Plan

BMP DEVICE SUMMARY

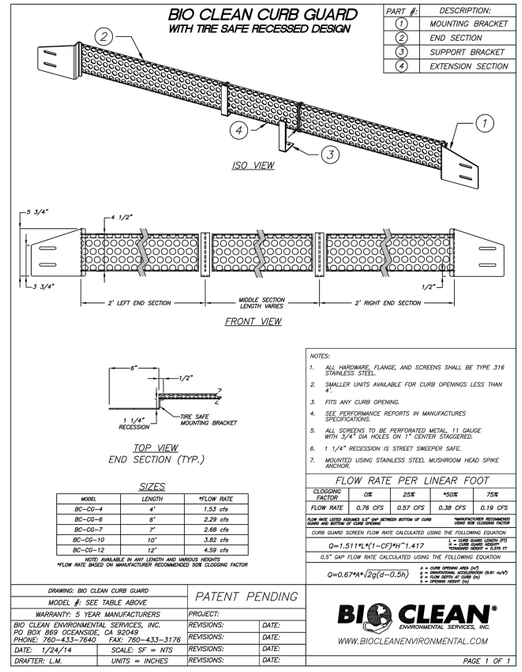
Subarea	Area	Q_{pm}	1.5x Qpm	$SWQD_v$	1.5x $SWQD_v$	LID Device	BMP Flow Rate(3)	BMP Volume (4)
	(ac)	(cfs)	(cfs)	(cf)	(cf)		(cfs)	(cf)
1A	8.52	1.18	1.77	19,968	29,952	MWS-L-8-20-V	0.577	25,120
						MWS-L-8-20-V	0.577	25,120
						MWS-L-8-24-V	0.693	30,216
∑	**8.52**	**1.18**	**1.77**	**19,968**	**29,952**		**∑=1.85**	**∑=80,456**
2B	2.16	0.42	0.63	5,389	8,084	MWS-L-8-24-V	0.693	30,216
3C	0.59	0.13	0.19	1,472	2,208	MWS-L-8-24-V	0.693	30,216
5B	3.22	0.55	0.82	8,033	12,050	MWS-L-8-24-V	0.693	30,216
6B	1.73	0.29	0.44	4,316	6,474			
∑=	**7.7**	**1.39**	**2.08**	**19,210**	**28,814**		**∑=2.08**	**∑=90,648**
7D	3.6	0.76	1.14	10,288	15,432	MWS-L-8-24-V	0.693	30,216
8D	5.18	0.81	1.22	12,923	19,385	MWS-L-8-24-V	0.693	30,216
						MWS-L-8-20-V	0.577	25,120
						MWS-L-8-16-V	0.462	20,145
∑=	**8.78**	**1.57**	**2.36**	**23,211**	**34,817**		**∑=2.43**	**∑=105,697**
9E(1)	2.62	0	0	0	0	-	-	-
10E	0.59	0.144		1,615	2,423			
(N)(2)	0.32	**0.079**	-	883	**1,325**	FTIBC0606LS-C	**0.084**	**1,818**
(S)(2)	0.27	**0.065**		732	**1,098**	FTIBC0606LS-C	**0.084**	**1,818**
11F(1)	12.56	0	0	0	0	-	-	-
12EF	-	-	-	-	-	-	-	-
13DE	-	-	-	-	-	-	-	-
14D	0.82	0.16		2,244	3,366			
(W)(2)	0.41	**0.08**	-	1,122	**1,683**	FTIBC0606LS-C	**0.084**	**1,818**
(E)(2)	0.41	**0.08**		1,122	**1,683**	FTIBC0606LS-C	**0.084**	**1,818**
15G	3	0.59	0.89	7,938	11,907	MWS-L-8-20-V	0.577	25,120
16G	3.74	0.65	0.98	9,444	14,166	MWS-L-8-24-V	0.693	30,216
						MWS-L-8-24-V	0.693	30,216
∑=	**6.74**	**1.24**	**1.86**	**17,382**	**26,073**		**∑=1.96**	**∑=85,552**
17DG	-	-	-	-	-	-	-	-
18D	0.78	0.16		2,135	3,203			
(N)(2)	0.43	**0.09**	-	1,186	**1,779**	FTIBC0806-C	**0.112**	**2,424**
(S)(2)	0.35	**0.07**		949	**1,424**	FTIBC0606LS-C	**0.084**	**1,818**
19G	0.71	0.17	0.26	1,773	2,660	MWS-L-4-21-V	0.268	11,706
∑	**0.71**	**0.17**	**0.26**	**1,773**	**2,660**		**∑=0.27**	**∑=11,706**
20DG	-	-	-	-	-	-	-	-
21H	6.53	1.03	1.55	16,291	24,437	MWS-L-8-16-V	0.462	20,145
						MWS-L-8-20-V	0.577	25,120
						MWS-L-8-20-V	0.577	25,120
∑	**6.53**	**1.03**	**1.55**	**16,291**	**24,437**		**∑1.62**	**∑70,385**
22DH	-	-	-	-	-	-	-	-
23I	1.26	0.28	0.42	3,334	5,001	MWS-L-8-16-V	0.462	20,145
∑	**1.26**	**0.28**	**0.42**	**3,334**	**5,001**		**∑=0.46**	**∑=20,145**
24DI	-	-	-	-	-	-	-	-
25J	1.92	0	0	0	0	-	-	-
26J	0.72	0.17		1,971	2,957			
(N)(2)	0.39	**0.09**	-	1,067	**1,600**	FTIBC0806-C	**0.112**	**2,424**
(S)(2)	0.33	**0.08**		904	**1,357**	FTIBC0606LS-C	**0.084**	**1,818**
27J	1.3	0.29	0.44	3,440	5,160	MWS-L-8-16-V	0.462	20,145
∑	**1.3**	**0.29**	**0.44**	**3,440**	**5,160**		**∑=0.46**	**∑=20,145**
28DJ	-	-	-	-	-	-	-	-
29K	0.94	0.18		2,573	3,860			
∑	**0.94**	**0.18**	-	**2,573**	**3,860**	FTIBC1208-C	**0.222**	**4,795**
30DK	-	-	-	-	-	-	-	-
31L	1.66	0	0	0	0	-	-	-
32M	1.21	0.24		3,311	4,967			
(N)(2)	0.67	**0.13**	-	1,821	**2,732**	FTIBC1006-C	**0.14**	**3,030**
(S)(2)	0.55	**0.11**		1,490	**2,235**	FTIBC0806-C	**0.112**	**2,424**
33N	0.49	0.1		1,341	2,012			
∑	**0.49**	**0.1**	-	**1,341**	**2,012**	FTIBC0806-C	**0.112**	**2,424**
34LN	-	-	-	-	-	-		
Access Rd	1.24	0.23	0.35	3,469	5,204	MWS-L-8-20-V	0.577	25,120
35O	0.72	0.14	0.21	1,970	2,955			
∑	**1.31**	**0.37**	**0.56**	**5,439**	**8,159**		**∑=0.58**	**∑=25,120**
36P	0.48	0.1	0.15	1,314	1,971	MWS-L-8-16-V	0.462	20,145
37Q-S	0.82	0.15	0.23	2,233	3,350			
∑	**1.3**	**0.25**	**0.38**	**3,547**	**5,321**		**∑=0.46**	**∑=20,145**
37Q-N	0.2	0.04	0.06	558	837	MWS-L-4-21-V	0.268	7,623
38R	1.32	0.12	0.18	2,096	3,144			
∑	**1.52**	**0.16**	**0.24**	**2,654**	**3,981**		**∑=0.27**	**∑=7,623**

(1) Offsite Subarea, natural flow
(2) indicate the location of the BMP device in the subarea, i.e., north, south, west, or east
(3) Flow rate tables (see Appendix E)
(4) For MWS, volume sizing table (see Appendix E)
For Filterra, flow rate x 6 hours routing for typical storms (see Appendix E)

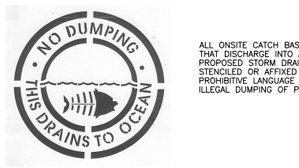




B CONCRETE CATCH BASIN/JUNCTION STRUCTURE



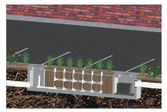
C CURB OPENING CATCH BASIN BARRIER



ALL ONSITE CATCH BASINS AND INLETS THAT DISCHARGE INTO AN EXISTING OR PROPOSED STORM DRAIN MUST BE STENCILED OR AFFIXED WITH SIMILAR PROHIBITIVE LANGUAGE TO DISCOURAGE ILLEGAL DUMPING OF POLLUTANTS.

A STENCIL SIGNAGE

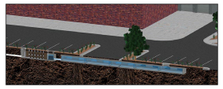
MWS Linear | *Sizing Options*



Flow Based Sizing

The MWS Linear can be used in stand alone applications to meet treatment flow requirements. Since the MWS Linear is the only biofiltration system that can accept inflow pipes several feet below the surface it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

Model #	Dimensions	WetlandMEDIA Surface Area	Treatment Flow Rate (cfs)
MWS-L-4-4	4' x 4'	23 sq. ft.	0.052
MWS-L-4-6	4' x 6'	32 sq. ft.	0.073
MWS-L-4-8	4' x 8'	50 sq. ft.	0.115
MWS-L-4-13	4' x 13'	63 sq. ft.	0.144
MWS-L-4-15	4' x 15'	76 sq. ft.	0.175
MWS-L-4-17	4' x 17'	90 sq. ft.	0.206
MWS-L-4-19	4' x 19'	103 sq. ft.	0.237
MWS-L-4-21	4' x 21'	117 sq. ft.	0.268
MWS-L-6-8	7' x 9'	64 sq. ft.	0.147
MWS-L-8-8	8' x 8'	100 sq. ft.	0.230
MWS-L-8-12	8' x 12'	151 sq. ft.	0.346
MWS-L-8-16	8' x 16'	201 sq. ft.	0.462
MWS-L-8-20	9' x 21'	252 sq. ft.	0.577
MWS-L-8-24	9' x 25'	302 sq. ft.	0.693



Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.

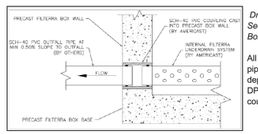
Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down	Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	2280
MWS-L-4-6	1600	3200
MWS-L-4-8	2518	5036
MWS-L-4-13	3131	6261
MWS-L-4-15	3811	7623
MWS-L-4-17	4492	8984
MWS-L-4-19	5172	10345
MWS-L-4-21	5853	11706
MWS-L-6-8	3191	6382
MWS-L-8-8	5036	10072
MWS-L-8-12	7554	15109
MWS-L-8-16	10073	20145
MWS-L-8-20	12560	25120
MWS-L-8-24	15108	30216

D BMP SIZING REFERENCE

filterra Bioretention Systems by KRISTAR

Filterra® Piping Technical Details

Filterra® is supplied with an internal underdrain system that exits a wall in a perpendicular direction. Most efficient drainage is accomplished when the drain exits on the lower side of the Filterra®, i.e. nearest the overflow bypass. This is more important when using the larger sized Filterra® Systems.



Drawing DP1: Section View through Filterra Precast Box Wall at Outfall Pipe Connection

All units are supplied with the drainage pipe coupling precast into the wall, at a depth of 3.50 feet (INV to TC). Drawing DP1 is a detail of the coupling. The coupling used is SCH-40 PVC.

Typically, a minimum slope of 0.5% is adequate to accommodate the flow of treated water from the Filterra®, but each site may present unique conditions based on routing of the outfall pipe (elbows). The pipe must not be a restricting point for the successful operation of Filterra®. All connecting pipes must accommodate freefall flow. Table 3 lists approved treatment sizing flow rates of the various size Filterra® units. A safety factor of at least two should be used to size piping from the Filterra based on these conservative approved treatment flow rates.

Table 3: Filterra Flow Rates & Pipe Details

Important Note: Actual flow rate may be more than double rates below.

Filterra® Size (feet)	Expected Flow Rate (cubic feet/second)	Connecting Drainage Pipe
4x4	0.037	4" SCH-40 PVC
4 x 6 or 6 x 4	0.055	4" SCH-40 PVC
4x6.5 or 6.5x4	0.061	4" SCH-40 PVC
4 x 8 or 8 x 4	0.075	4" SCH-40 PVC
4x16 or 16x4	0.150	6" SCH-40 PVC
6 x 6	0.084	4" SCH-40 PVC
6 x 8 or 8 x 6	0.112	4" SCH-40 PVC
6 x 10 or 10 x 6	0.140	6" SCH-40 PVC
6 x 12 or 12 x 6	0.168	6" SCH-40 PVC
8x12 or 12x8	0.224	6" SCH-40 PVC
8x16 or 16x8	0.297	6" SCH-40 PVC
8x18 or 18x8	0.337	6" SCH-40 PVC
8x20 or 20x8	0.374	6" SCH-40 PVC

UNITED CIVIL INC
30141 Agoura Road, Suite 215
Agoura Hills, CA 91301
PH: (818) 707-3648
SIEW HUAT NG R.C.E. 46026 10/3/2024 DATE

REGISTERED PROFESSIONAL ENGINEER SIEW HUAT NG NO. 46026 EXP 12-31-24 CIVIL STATE OF CALIFORNIA

OWNER/APPLICANT:
NUWI LYONS CANYON, LLC
2001 WILSHIRE BOULEVARD, SUITE 401
SANTA MONICA, CA 90403
TEL: (310) 864-2427

NO.	DATE	REVISIONS	BY	APPR

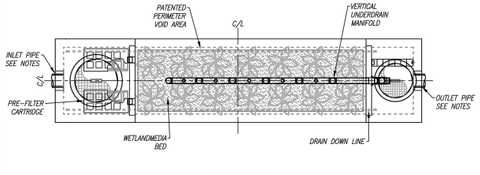
THE TRAILS AT LYONS CANYON
LID PLAN
VESTING TENTATIVE TRACT MAP NO. 83301
LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE: 10/3/2024
SHEET 2 OF 4

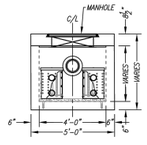
Q:\Santa Clarita\Lyons Canyon Ranch\UC\Hydrology\CAD\2038_LID.dwg

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.693	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	#30"	OPEN PLANTER	#24"
NOTES:			

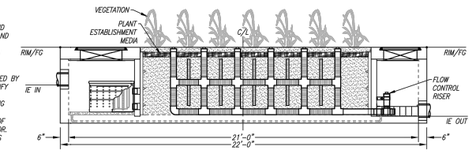
* PRELIMINARY NOT FOR CONSTRUCTION



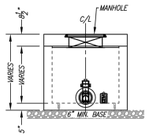
PLAN VIEW



LEFT END VIEW



ELEVATION VIEW



RIGHT END VIEW

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TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	3946263264845330
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

SWETLANDS
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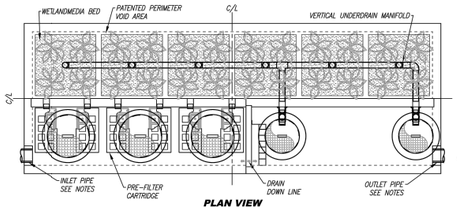
Bio Clean
A Forterra Company

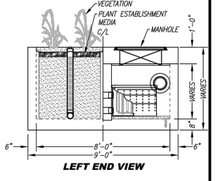
MWS-L-4-21-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.693	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	2EA #30"	OPEN PLANTER	2EA #24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



LEFT END VIEW

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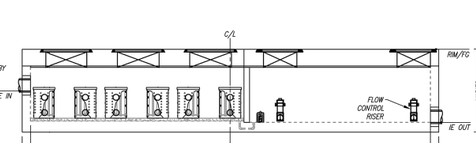
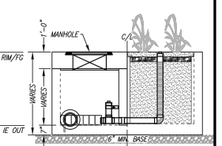


ELEVATION VIEW



RIGHT END VIEW

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TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	4004460771451050
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

SWETLANDS
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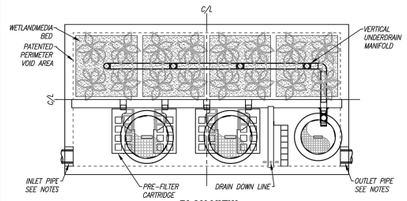
Bio Clean
A Forterra Company

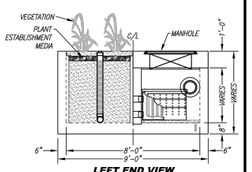
MWS-L-8-24-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.693	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	2EA #30"	OPEN PLANTER	#24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



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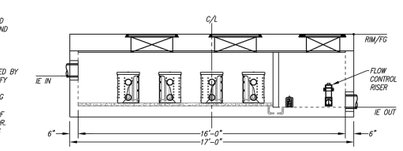
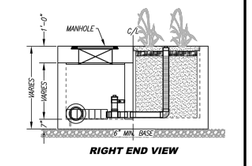


ELEVATION VIEW



RIGHT END VIEW

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TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	4004460771451050
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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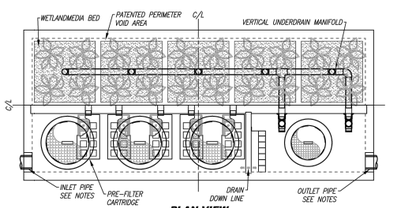
Bio Clean
A Forterra Company

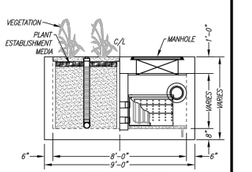
MWS-L-8-16-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.693	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	3EA #30"	OPEN PLANTER	#24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



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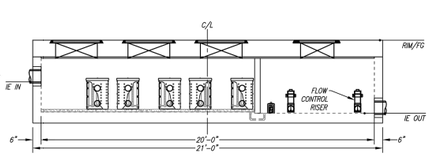
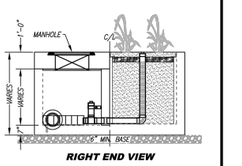
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.



ELEVATION VIEW



RIGHT END VIEW

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.

TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	3975019679874050
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

SWETLANDS
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Bio Clean
A Forterra Company

MWS-L-8-20-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

E MODULAR WETLAND DETAILS (CONT.)

UNITED CIVIL INC
30141 Agoura Road, Suite 215
Agoura Hills, CA 91301
PH: (818) 707-8648

SIEW HUAT NG R.C.E. 46026 10/3/2024

REGISTERED PROFESSIONAL ENGINEER SIEW HUAT NG NO.46026 EXP.12-31-24 CIVIL STATE OF CALIFORNIA

OWNER/APPLICANT:

NUWI LYONS CANYON, LLC
2001 WILSHIRE BOULEVARD, SUITE 401
SANTA MONICA, CA 90403
TEL: (310) 864-2427

NO.	DATE	REVISIONS	BY	APPR

THE TRAILS AT LYONS CANYON

LID PLAN

VESTING TENTATIVE TRACT MAP NO. 83301

LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE: 10/3/2024

SHEET 3 OF 4

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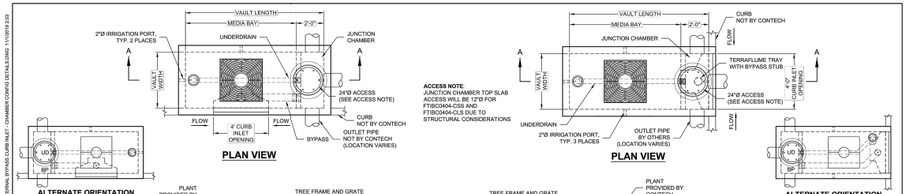

FTIBC-C LONG SIDE CURB INLET

DESIGNATION (LONG SIDE)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (L x W)	MAX. BYPASS PIPE DIA	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0404LS-C	N/A CA	4 x 4	6 x 4	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC0404X-C	CA ONLY	4.5 x 4	6.5 x 4	8"SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0585404-C	MID-ATL ONLY	5.83 x 4.5	7.83 x 4.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0804-C	N/A MID-ATL	6 x 4	8 x 4	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0606LS-C	ALL	6 x 6	8 x 6	10" SDR 35	2.37	4" SDR 35	(1) 3' x 3'
FTIBC0808-C	ALL	8 x 6	10 x 6	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC1006-C	ALL	10 x 6	12 x 6	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1107-C	ALL	11 x 7	13 x 7	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC1208-C*	CALL CONTECH	12 x 8	14 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1408-C*	CALL CONTECH	14 x 8	16 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1608-C*	CALL CONTECH	16 x 8	18 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'
FTIBC1808-C*	CALL CONTECH	18 x 8	20 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'
FTIBC2008-C*	CALL CONTECH	20 x 8	22 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'
FTIBC2208-C*	CALL CONTECH	22 x 8	24 x 8	(2) 10" SDR 35	4.74	6" SDR 35	(3) 4' x 4'

N/A = NOT AVAILABLE
*REQUIRES (2) TERRAFLUMES

INTERNAL PIPE CONFIGURATION MAY VARY DEPENDING ON VAULT SIZE

FTIBC-C SHORT SIDE CURB INLET

DESIGNATION (SHORT SIDE)	AVAILABILITY	MEDIA BAY SIZE	VAULT SIZE (W x L)	MAX. BYPASS PIPE DIA	MAX. BYPASS FLOW (CFS)	UNDERDRAIN PIPE DIA. (PERF.)	TREE GRATE QTY. & SIZE
FTIBC0404SS-C	N/A CA	4 x 4	4 x 6	6" SDR 35	1.42	4" SDR 35	(1) 3' x 3'
FTIBC0404S-C	CA ONLY	4 x 4.5	4 x 6.5	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0408-C	N/A MID-ATL	4 x 6	4 x 8	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0455S8-C	MID-ATL	4.5 x 5.83	4.5 x 7.83	8" SDR 35	1.89	4" SDR 35	(1) 3' x 3'
FTIBC0606SS-C	ALL	6 x 6	6 x 8	10" SDR 35	2.37	4" SDR 35	(1) 3' x 3'
FTIBC0608-C	ALL	6 x 8	6 x 10	10" SDR 35	2.37	4" SDR 35	(1) 4' x 4'
FTIBC0810-C	ALL	6 x 10	6 x 12	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0711-C	ALL	7 x 11	7 x 13	10" SDR 35	2.37	6" SDR 35	(1) 4' x 4'
FTIBC0812-C	CALL CONTECH	8 x 12	8 x 14	(2) 10" SDR 35	4.74	6" SDR 35	(2) 4' x 4'

N/A = NOT AVAILABLE

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FILTERRA INTERNAL BYPASS CURB WITH CHAMBER (FTIBC-C) CONFIGURATION DETAIL

F CONTECH FILTERRA UNITS

UNITED CIVIL INC
30141 Agoura Road, Suite 215
Agoura Hills, CA 91301
PH: (818) 707-8648

SIEW HUAT NG R.C.E. 46026 10/3/2024 DATE

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THE TRAILS AT LYONS CANYON

LID PLAN

VESTING TENTATIVE TRACT MAP NO. 83301

LOCATED IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA

DATE: 10/3/2024
SHEET 4
OF 4

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