



## PRELIMINARY DRAINAGE STUDY

For

Woodspring Suites Sacramento, CA 95834 APN: 225-0070-127

July 2024

Prepared by, CWE 2260 Douglas Blvd., Suite 160 Roseville, CA 95661 Ph 916-772-7800 CWE Project No. R23138



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### A. PROJECT LOCATION

The project property is located on Truxel Rd in Sacramento, CA 95834. The property is 2.24 acres. It is part of the Centerpointe Business Park located at the southeast corner of Truxel Road and Del Paso Road. Much of the storm drain infrastructure was installed 15-20 years ago with the initial project phases. The assessor's parcel number is 225-0070-127. The site is located at latitude 38°39'16" N and longitude 121°30'39" W. The vicinity map of this project can be found in Appendix A.

### B. PROJECT DESCRIPTION

This proposed project will include the construction of a 4-story hotel that will have a building footprint of approximately 13,120 square feet, 50,922 total square feet, and 122 guest rooms. The project will also include construction of new associated parking, flatwork, landscaping, and underground utilities. The site plan can be found in Appendix A.

### C. EXISTING CONDITIONS

The project site is largely undeveloped with seasonal grasses, however there are a number of existing utility lines located onsite such as electrical, gas, water, sewer, and storm drain. In summary, bordering properties include the following:

- North: Developed employment center property (2260 & 2280 Del Paso Road) and undeveloped employment center property (2290 Del Paso Road)
- East: Undeveloped employment center property (2240 Del Paso Road)
- South: Developed employment center property (4752 Truxel Road)
- > West: Truxel Road and undeveloped employment center property beyond (2380 Del Paso Road)

The existing site has mild slopes with elevations ranging between 10-14 feet. The existing site can be divided into three drainage sheds, A-X1 to A-X3. It should be noted that the overall drainage shed does not match the existing property boundary as the property owner is currently in the process of a boundary line adjustment, so the overall drainage shed perimeter matches the proposed property boundary. This project is part of a larger overall master plan that has been developed in phases, dating back to 2006. The existing conditions and delineated existing drainage sheds can be found on the Pre-Construction Shed Map in Appendix B.



### D. PROPOSED CONDITIONS

The storm drainage design of the site has been done in accordance with the City of Sacramento Onsite Design Manual. The proposed project has been split into four drainage management areas (DMA's), DMA-01 to DMA-04, that represent areas tributary to the proposed onsite system that ties into the larger existing system within the employment center complex. DMA-01 represents the western portion of the site, DMA-02 represents the southern portion of the site, DMA-03 represents the eastern portion of the site, and DMA-04 represents the northern portion of the site. DMA-01, DMA-02, and DMA-03 are each tributary to their own bioretention planters where runoff will be treated and eventually tie into the larger existing system. Runoff in DMA-04 will sheet flow into a combination of existing and proposed drainage inlets that tie into the larger existing system. The proposed conditions and delineated proposed drainage sheds can be found on the Post-Construction Shed Map in Appendix B.

### Design Criteria

Per Section 3.1.2 of the City of Sacramento Onsite Design Manual, the Rational Method (Static Analysis) was used to determine peak flows based on a 10-year event. A spreadsheet including all the information used to determine the peak flows using the rational method can be found in Appendix C. All proposed storm drain pipes will be 12" PVC SDR-35 pipe. CWE analyzed the capacity of several pipes that are deemed critical to the overall system using AutoCAD's Hydraflow Express Extension to ensure that 12" pipes would be sufficient to convey the peak flows calculated using the rational method. The critical pipes are labeled as SD1 through SD4 on the Post-Construction Shed Map in Appendix B. SD1 is the existing pipe that will convey the runoff from DMA-01 and DMA-04 into the existing larger system. The peak flow for DMA-01 and DMA-04 is substantially less than the full flow capacity a 12" pipe can convey, and since all onsite pipes have a 12" diameter, it can be assumed that all pipes that within the DMA-01 and DMA-04 system are sufficient. The peak flow for DMA-02 and DMA-03 combined is much larger as these shed areas are larger, so it was important that CWE analyzed the capacity of the onsite pipes in these sheds as well as the existing tie-in pipe. SD2 is the existing pipe that will convey the runoff from DMA-02 and DMA-03 into the existing larger system. SD3 is the proposed pipe that will convey the runoff from DMA-02 and DMA-03 from the DMA-03 bioretention planter to SD2. SD4 is the proposed pipe that will convey the DMA-02 runoff to SD3. The Hydraflow Express reports can be found in Appendix C.

### Detention

This project will be collected and conveyed to Basin 15, an existing regional detention facility for site drainage. This project conforms to the Basin 15 model and will not be required to provide onsite detention, as Basin 15 is sized adequately to accommodate the project site and the increased peak flows that come with this development. See Email Correspondence with Wint Tun in Appendix D that confirms onsite detention will not be required for this project.



### Low-Impact Development

Basin 15 provides treatment, however the project is still required to provide low-impact development control and accumulate 100 LID credits across the project site. DMA-01, DMA-02, and DMA-03 each propose bioretention planters of 458, 922, and 690 square feet respectively all with a 6" ponding depth. All four DMA's incorporate runoff reduction in the form of proposed deciduous and evergreen trees, disconnected roof drains, and landscape used to disconnect pavement. The overall weighted LID points for the project site totals over 100 points. The LID worksheet can be found in Appendix C.

### Trash Capture Control

To satisfy full trash capture control requirements, the proposed bioretention planters will be designed and regularly maintained per the California State Water Board's Bioretention BMP Minimum Specifications found in Appendix D. All proposed drainage inlets will also be installed with ADS Flexstorm Pure Inlet Filters that satisfy full trash capture requirements. Details and specifications for ADS Flexstorm Pure Inlet Filters can be found in Appendix D.

### Finish Floor Elevation

Per the City of Sacramento Onsite Design Manual, for an infill development, the finish floor elevation of new structures must be at least 6" above the nearest 100-year event HGL of the City's drainage system and 12" above the controlling overland release point in the public right of way. The nearest drainage node within the City's drainage system is Node 5319, about 140' west of the project site. Node 5319 has 10-year and 100-year HGL's of 9.987' and 10.474' respectively. The finish floor elevation of the proposed hotel is 14.50', which is 4.026' above the nearest City 100-year HGL, well above the 6" minimum. The controlling overland release point in the public right of way is the overland release point for the western bioretention planter tributary to DMA-01. The elevation at the back of walk along Truxel where runoff would flow into the public right of way is about 9.54, which is well under the 12" minimum.

This project is also located in a Special Flood Hazard Area (Zone A99), so this requires the lowest proposed finish floor to be at least 12" above the highest adjacent 100-year event HGL (Node 5319: 10.474') and 18" above the controlling overland release point in the public right of way (9.54'). The proposed hotel finish floor elevation of 14.50' is still well above these minimum requirements.

### E. CONCLUSIONS

The storm drainage improvements were designed to meet the minimum design standards of the City of Sacramento Onsite Design Manual. The proposed on-site storm drainage pipe system is adequate to convey the peak design flows. Overland flows would be routed off-site with sufficient freeboard from the building finish floor elevation.





### F. REFERENCES

• City of Sacramento Onsite Design Manual for Onsite Drainage, Sewer, Water, Stormwater Quality and Erosion and Sediment Control. May 2020

WOODSPRING SUITES

PRELIMINARY DRAINAGE STUDY



## VICINITY MAP AND SITE PLAN





WOODSPRING SUITES

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# APPENDIX B

## **PROJECT SHED MAPS**

# **PRE-CONSTRUCTION SHED AREAS (ACRES)**

SHED	IMPERVIOUS PERVIOUS		TOTAL	% IMPERVIOUS	
A-X1	0.000	1.059	1.059	0.0%	
A-X2	0.000	0.768	0.768	0.0%	
A-X3	0.000	0.262	0.262	0.0%	
TOTAL	0.000	2.089	2.09	0.0%	



# LEGEND



DRAINAGE AREA DESIGNATIONS & AREA



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DRAINAGE AREA BOUNDARY

OVERLAND RELEASE

SURFACE FLOW



WE PROJECT R23138 - WOODSPRING SUITES, SACRAMENT

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# **APPENDIX C**

## **DRAINAGE CALCULATIONS**



**Peak Flow Calculations** 

Date: 7/15/2024	Date: 7/15/2024					
Project: Woodspring Suites						
Location: Sacramento, (	Location: Sacramento, CA					
Designer: AEB						
References:	City of Sacramento Onsite Design Manual					

#### Land Coverage

									Time of	Rainfall	
								Runoff	Conc.	Intensity	
Shed	Imper	vious Area	Perviou	us Area	Total	Area	% Imp.	Coeff.	(min.)	(in./hr.)	Peak Flow (cfs)
	SF	AC	SF	AC	SF	AC		С	t	i	Q
DMA-01	6521	0.150	2845	0.065	9366	0.215	69.62%	0.78	6.09	2.88	0.484
DMA-02	35818	0.822	8767	0.201	44585	1.024	80.34%	0.84	5.79	2.96	2.551
DMA-03	14004	0.321	3397	0.078	17401	0.399	80.48%	0.84	5.79	2.96	0.997
DMA-04	17121	0.393	2539	0.058	19660	0.451	87.09%	0.88	5.61	3.02	1.197

Monday, Jul 15 2024

## Existing 12-inch SD Pipe (Serving DMA-01 and DMA-04)

Circular		Highlighted	
Diameter (ft)	= 1.00	Depth (ft) =	= 0.53
		Q (cfs)	= 1.681
		Area (sqft)	= 0.42
Invert Elev (ft)	= 7.30	Velocity (ft/s) =	= 3.96
Slope (%)	= 0.97	Wetted Perim (ft) =	= 1.63
N-Value	= 0.015	Crit Depth, Yc (ft)	= 0.55
		Top Width (ft) =	= 1.00
Calculations		EGL (ft) =	= 0.77
Compute by:	Known Q		
Known Q (cfs)	= 1.68		



Reach (ft)

## Existing 12-inch SD Pipe (Serving DMA-02 and DMA-03)

Circular		Highlighted	
Diameter (ft)	= 1.00	Depth (ft)	= 0.58
		Q (cfs)	= 3.550
		Area (sqft)	= 0.47
Invert Elev (ft)	= 7.50	Velocity (ft/s)	= 7.49
Slope (%)	= 3.39	Wetted Perim (ft)	= 1.73
N-Value	= 0.015	Crit Depth, Yc (ft)	= 0.81
		Top Width (ft)	= 0.99
Calculations		EGL (ft)	= 1.45
Compute by:	Known Q		
Known Q (cfs)	= 3.55		



Reach (ft)

## Proposed 12-inch SD Pipe (Serving DMA-02 and DMA-03)

Circular		Highlighted	
Diameter (ft)	= 1.00	Depth (ft)	= 0.77
		Q (cfs)	= 3.550
		Area (sqft)	= 0.65
Invert Elev (ft)	= 8.98	Velocity (ft/s)	= 5.46
Slope (%)	= 1.50	Wetted Perim (ft)	= 2.15
N-Value	= 0.015	Crit Depth, Yc (ft)	= 0.81
		Top Width (ft)	= 0.84
Calculations		EGL (ft)	= 1.23
Compute by:	Known Q		
Known Q (cfs)	= 3.55		



Monday, Jul 15 2024

## Proposed 12-inch SD Pipe (Serving DMA-02)

Circular		Highlighted		
Diameter (ft)	= 1.00	Depth (ft)	= C	).81
		Q (cfs)	= 2	2.550
		Area (sqft)	= C	).68
Invert Elev (ft)	= 10.01	Velocity (ft/s)	= 3	3.74
Slope (%)	= 0.70	Wetted Perim (ft)	= 2	2.24
N-Value	= 0.015	Crit Depth, Yc (ft)	= C	).69
		Top Width (ft)	= C	).78
Calculations		EGL (ft)	= 1	1.03
Compute by:	Known Q			
Known Q (cfs)	= 2.55			



Reach (ft)



### WEIGHTED LID TABLE

		Contributions	to Runoff					
Drainage Shed	Shed Area (AC)	Pervious (AC)	Impervious (AC)	Area of LID Feature <sup>1</sup> (SF)	LID Points from Worksheet (max 200) <sup>2</sup>	% of Site	Weighted LID Points	
DMA-01	0.215	0.065	0.150	458	173	10%	11.01	6-in pond d
DMA-02	1.024	0.201	0.822	922	99	49%	52.42	6-in pond d
DMA-03	0.399	0.078	0.321	690	123	19%	20.46	6-in pond d
DMA-04	0.451	0.058	0.393	0	80	22%	23.11	6-in pond d
DMA-05				-	-			
DMA-06				-	-			
Sub-Total	2.089	0.403	1.687	-	-	-	-	
Totals	2.089					100%	107.0	<sup>4</sup> This is the
	Ve	erify Sub-Total	2.089					

Notes:

<sup>1</sup> Area of LID features should not be included in Step 1 of the LID worksheet.

<sup>2</sup> Maximum of 200 LID credits per drainage shed can be applied to the weighting of the overall site LID.

<sup>3</sup> These DMAs are at the exterior of the site and flow offsite. SWQ has been met with inteceptor trees where needed.

<sup>4</sup> The weighted LID points only applies to obtaining LID compliance. 100% SWQ treatment is still required for any shed with new or reconstructed impervious area.

<sup>5</sup> Proprietary Sacramento Stormwater Quality Partnership (SSQP) approved SWQ Treatment structure with 50in/hr Hydraulic Load Rate (HLR).

<sup>6</sup> DMA-5 AND DMA-6 Do Not Require LID OR SWQ treatment as no additional impervious area is created or replaced.

# Description Aepth, 4-in subdrain, 0 new trees Aepth, 4-in subdrain, 0 new trees

Name of Drainage Shed: DMA-01				Fill in Blue Highlighted boxes	
Location of project: Sacramento				·	
Step 1 - Open Space and Pervious Area Cr	redits				
Is your project within the drainage area of a common drainage	plan that includes open space	? If not, skip to 1 b.			
1 a. Common Drainage Plan Area			488 acres	A <sub>CDP</sub>	
Common Drainage Plan Open Space (Off-project)	)		121 acres	A <sub>os</sub>	see area example
a. Natural storage reservoirs and drainage corridors			0 acres		below
b. Buffer zones for natural water bodies			0 acres		Delow
c. Natural areas including existing trees, other vegeta	ation, and soil		0 acres		
d. Common landscape area/park			107 acres		
e. Regional Flood Control/Drainage basins			14 acres		
1 b. Project Drainage Shed Area (Total) Project-Specific Open Space (In-project. commun	nal**)	(	0.215 acres	A A <sub>PSOS</sub>	
a. Natural storage reservoirs and drainage corridors	. ,		0.00 acres		
b. Buffer zones for natural water bodies			0.00 acres		
c. Natural areas including existing trees, other vegeta	ation, and soil		0.00 acres		see area example
d. Landscape area/park		(	0.0548 acres		below
e. Flood Control/Drainage basins			0.00 acres		
** Doesn't include impervious areas within individual I	lots and surrounding indiv	vidual units. That is accoun	ted for below usir	ng Form D-1a in Step 2.	
Area with Runoff Reduction Potential	A - A <sub>PSOS</sub> =	(	).1602 acres	A <sub>T</sub>	
Assumed Initial Impervious Fraction	A <sub>T</sub> / A =		0.75	I	
Open Space & Pervious Area LID Credit (Step 1)					
(A	$A_{OS}/A_{CDP} + A_{PSOS}/A) \times 100 =$		50 pts		





Step 2 - Runoff Reduction Credits							
Runoff Reduction Treatments	Impervious Area Managed		E	fficiency Factor		Effective Area Managed (A <sub>C</sub> )	
Porous Pavement:	0						
Option 1: Porous Pavement (see Fact Sheet, excludes porous pavement used in Option 2)		acres	x	1	= [	0.000	acres
Option 2: Disconnected Pavement use For (see Fact Sheet, excludes porous pavement used in Option 1)	orm D-2a for credits				[	0.00	acres
Landscaping used to Disconnect Pavement (see Fact Sheet)	0.0110	acres			= [	0.01	acres
Disconnected Roof Drains (see Fact Sheet and/or Table D-2b for summary of requirements)	0.028	acres			= [	0.03	acres
Ecoroof (see Fact Sheet)	0	acres			= [	0.00	acres
Interceptor Trees use Form D-2b for credits (see Fact Sheet)	·				[	0.00	acres
Total Effective Area Managed by Runoff Reduction Measure	ures			A <sub>C</sub>	[	0.04	acres
Runoff Reduction Credit (Step 2)				(A <sub>C</sub> / A <sub>T</sub>	)*100 =	24	pts

	Table D-2a			Table	D-2b	
		Efficiency			Minimu	n travel
	Porous Pavement Type Cobblestone Block Pavement Pervious Concrete/Asphalt	0.40 0.60		Maximum roof size ≤ 3,500 sq ft ≤ 5,000 sq ft	dista	21 ft 24 ft
	Reinforced Grass Pavement &	0.75 1.00		≤ 7,500 sq ft ≤ 10,000 sq ft		32 ft
Form D	0-2a: Disconnected Pavement V	Norksheet				
See Fact	Sheet for more information regarding Disc	onnected Pavemen	credit guidelines			Effective Area Managed (A c)
Paveme	nt Draining to Porous Pavement					
2. Enter	area draining onto Porous Pavement			0.00	acres	Box K1
<ol> <li>Enter</li> <li>(exclude)</li> </ol>	area of Receiving Porous Pavement s area entered in Step 2 under Porous	Pavement)		0.00	acres	Box K2
4. Ratio	of Areas (Box K1 / Box K2)			0.00		Box K3
5. Select	multiplier using ratio from Box K3 and Ratio (Box D) Ratio is < 0.5	enter into Box K4	Multiplier 1 00			
	Ratio is > 0.5 and < 1.0 Ratio is > 1.0 and < 1.5 Ratio is > 1.5 and < 2.0		0.83 0.71 0.55	1		Box K4
6. Enter	Efficiency of Porous Pavement (see ta	able below)				Box K5
	Porous Pavement Type	Efficiency Multiplier				
	Pervious Concrete Asphalt Pavement	0.60				
	Modular Block Pavement Porous Gravel Pavement	0.75				
7. Multip	Reinforced Grass Pavement by Box K2 by Box K5 and enter into Bo	1.00 x K6		0.00	acres	Box K6
8. Multip	bly Boxes K1,K4, and K5 and enter the	result in Box K7		0.00	acres	Box K7
9. Add E This is th	Box K6 to Box K7 and multiply by 60%, he amount of area credit to enter into th	and enter the Res e "Disconnected F	ult in Box K8 Pavement" Box of Form D-2			0.00 acres
<b>F</b> a maa <b>F</b>	) Obs. Jatomonton Trees Worksho	-4				
See Fact	Sheet for more information regarding Inter	e <b>t</b> ceptor Tree credit g	uidelines			
New Ev						
1. Enter	number of new evergreen trees that qu	alify as Intercepto	or Trees in Box L1.	0 trees	Box L1	
2. Multip	bly Box L1 by 200 and enter result in B	ox L2		0 sq. ft.	Box L2	
New De	ciduous Trees					
<ol> <li>Enter</li> <li>Multir</li> </ol>	Number of new deciduous trees that qu	uality as Intercepto	or Trees in Box L3.	0 trees	Box L3	
4. Ividia				0q. n.	Box E4	
Existing	Tree Canopy					
5. Enter	square footage of existing tree canopy	that qualifies as I	Existing Tree canopy in Box L5.	0 sq. ft.	Box L5	
6. Multip	bly Box L5 by 0.5 and enter the result in	Box L6		0 sq. ft.	Box L6	
Total Int	erceptor Tree EAM Credits					
Add Box	es L2, L4, and L6 and enter it into Box	L7		0 sq. ft.	Box L7	
Divide B This is th	ox L7 by 43,560 and multiply by 20% to be amount of area credit to enter into th	get effective area e "Interceptor Tre	a managed and enter result in Box L8 es" Box of Form D-2	0.00 acres	Box L8	

Chan 2 Dun off Monoromout C	ealts			
Capture and Use Credits				
Impervious Area Managed by Rair	barrels, Cisterns, and automatically-emptied	d systems		
(see Fact Sheet)	enter gallo	ns, for simple rain barrels	0	.00 acres
Automated-Control Capture and U	se System		0	00 acres
Rierotention/Infiltration Credite	ea managea by the system)			
Impervious Area Managed by Bior	etention BMPs Bioretention Area	458 sq ft		
(see Fact Sheet)	Subdrain Elevation	27 inches	0.07	794
	Ponding Depth, inches	b inches	0.07	acres
Impervious Area Managed by Infil	ration BMPs			
(see Fact Sheet)	Drawdown Time, hrs Soil Infiltration Bate, in/hr	drawdown_hrs_inf		
				00
	Sizing Option 1: Capture Volume, acre-it	capture_vol_int	0	.00 acres
	Sizing Option 2: Infiltration BMP surface area, sq ft	soil_surface_area	0.00	000 acres
	Basin or trench?	approximate BMP depth 0.00 f	ft	
Impervious Area Managed by Ame	nded Soil or Mulch Beds Mulched Infiltration Area, so ft	- mulch area	0	00 30765
	Multice militation Area, sq t	minion_area		
Total Effective Area Managed by Car	ture-and-Use/Bioretention/Infiltration BMPs		0.078	341 Auro
Runoff Management Credit (Step 3)		AL	$_{\rm IDC}/A_{\rm T}^{*}200 = 9$	7.9 pts
Total LID Credits (Step 1	+2+3) LID compliant. ch	eck for treatment sizing i	n Step 4 172	2.5
	on management? If yes, proceed to using S	aaliM		
Does project require hydromodificat		аспм.		
Does project require hydromodificat	ID Treatment	аспм. Ал - Ар -Анро =Г	0.0428	A.r
Does project require hydromodificat Adjusted Area for Flow-Based, Non-	.ID Treatment	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =	0.0428	A <sub>AT</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A fo	LD Treatment r Volume-Based, Non-LID Treatment	Астии. А <sub>Т</sub> - А <sub>С</sub> -А <sub>LIDC</sub> =[ А <sub>АТ</sub> / А = [	0.0428	A <sub>AT</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A fo	ID Treatment	$A_T - A_C - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$	0.0428 0.20	A <sub>AT</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A for Further treatment is req	ID Treatment or Volume-Based, Non-LID Treatment uired, see choose flow-based	A <sub>T</sub> - A <sub>C</sub> -A <sub>LDC</sub> =[ A <sub>AT</sub> / A = [ or volume-based sizing	0.0428 0.20 g in Step 4	A <sub>AT</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A fo Further treatment is req Step 4a Treatment - Flow-Based (Ratic	.ID Treatment r Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method)	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [ or volume-based sizing	0.0428 0.20 g in Step 4	A <sub>AT</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A fo Further treatment is req Step 4a Treatment - Flow-Based (Ratio	ID Treatment or Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method)	$A_T - A_C - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	0.0428 0.20 g in Step 4	A <sub>AT</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A fo Further treatment is req Step 4a Treatment - Flow-Based (Ratio Calculate treatment flow (cfs):	ID Treatment or Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method) Flow = Runoff Coefficient x Rai	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ or volume-based sizing	0.0428 0.20 g in Step 4 	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A for Further treatment is req Step 4a Treatment - Flow-Based (Ratio Calculate treatment flow (cfs): .ook up value for i in Table D-2c (Rainfall Intensi	LID Treatment or Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method) Flow = Runoff Coefficient x Rai	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ or volume-based sizing	0.0428 0.20 g in Step 4 Table D-2 Ra	A <sub>AT</sub> I <sub>A</sub>
Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A for Further treatment is req Step 4a Treatment - Flow-Based (Ratio Calculate treatment flow (cfs): .ook up value for i in Table D-2c (Rainfall Intensi Dotain A <sub>ex</sub> from Step 3	LID Treatment or Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method) Flow = Runoff Coefficient x Rai (y) 0.18 i 0.04 Aar	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ <b>or volume-based sizing</b> nfall Intensity x Area	0.0428 0.20 g in Step 4 Table D-2 Ra Roseville Sacramento	$A_{AT}$ $I_A$ $i = 0.20 in/hr$ $i = 0.18 in/hr$
Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A for Further treatment is req Step 4a Treatment - Flow-Based (Ratio Calculate treatment flow (cfs): Look up value for i in Table D-2c (Rainfall Intensi Obtain A <sub>AT</sub> from Step 3	LD Treatment vr Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method) Flow = Runoff Coefficient x Rai (0.18)i 0.04 A <sub>AT</sub>	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \begin{bmatrix} \\ \\ or volume-based sizing \\ \\ nfall Intensity x Area \end{bmatrix}$	0.0428 0.20 g in Step 4 Table D-2 Ra Roseville Sacramentc Folsom	$\begin{array}{c c} & A_{AT} \\ \hline & I_A \\ \hline \\ $
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Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A fo Further treatment is req Step 4a Treatment - Flow-Based (Ratio Calculate treatment flow (cfs): .ook up value for i in Table D-2c (Rainfall Intensi Dotain $A_{AT}$ from Step 3 Jse C = 0.95 Flow = 0.95 * i * $A_{AT}$ Step 4b Treatment - Volume-Based (At Calculate water quality volume (Acre-Feet): Dotain A from Step 1 Dotain P <sub>0</sub> : Maximized Detention Volume from fig n Appendix E of this manual using I <sub>k</sub> from Step 2 Calculate treatment volume (acre-ft): Treatment volume (acre-ft):	LID Treatment rr Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method) Flow = Runoff Coefficient x Rai 0.04 A <sub>AT</sub> 0.05 c 0.01 cfs SCE-WEF) WQV = Area x Maximized Dete 0.22 ures E-1 to E-4 0.12 0.002131	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} & / A = \begin{bmatrix} \\ 0 \end{bmatrix}$ or volume-based sizing nfall Intensity x Area ntion Volume (P <sub>0</sub> ) $A \qquad \boxed{12}$ P <sub>0</sub> Acre-Feet	0.0428 0.20 g in Step 4 Table D-2 Ra Roseville Sacramento Folsom	$A_{AT}$ $I_A$ $I_A$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $raw Down time$
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Does project require hydromodificat Adjusted Area for Flow-Based, Non- Adjusted Impervious Fraction of A for Further treatment is req Step 4a Treatment - Flow-Based (Ration Calculate treatment flow (cfs): Look up value for i in Table D-2c (Rainfall Intensis Dotain $A_{AT}$ from Step 3 Jse C = 0.95 Flow = 0.95 * i * $A_{AT}$ Step 4b Treatment - Volume-Based (A: Calculate water quality volume (Acre-Feet): Dotain A from Step 1 Dotain A from Step 1 Dotain P <sub>0</sub> : Maximized Detention Volume from fig n Appendix E of this manual using I <sub>6</sub> from Step 2 Calculate treatment volume (acre-ft): Treatment volume = A x (P <sub>0</sub> / 12)	LID Treatment r Volume-Based, Non-LID Treatment uired, see choose flow-based nal Method) Flow = Runoff Coefficient x Rai 0.04 A <sub>AT</sub> 0.05 c 0.01 cfs SCE-WEF) WQV = Area x Maximized Dete 0.22 ures E-1 to E-4 0.12 0.002131	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{XT} / A = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	0.0428 0.20 g in Step 4 Table D-2 Ra Roseville Sacramento Folsom	$A_{AT}$ $I_A$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ raw Down time

Appendix D-2: Commercial Sites: Low Im	pact Development (I	LID) Credits and T	reatment BMP Sizir	ng Calculations	
Name of Drainage Shed: DMA-02			]	Fill in Blue Highlighted boxes	
Location of project: Sacramento	)		-		
Step 1 - Open Space and Pervious Area C	redits				
Is your project within the drainage area of a common drainage	plan that includes open space	e? If not, skip to 1 b.			
1 a. Common Drainage Plan Area			488 acres	A <sub>CDP</sub>	
Common Drainage Plan Open Space (Off-project	)		121 acres	A <sub>os</sub>	see area example
a. Natural storage reservoirs and drainage corridors			0 acres		below
b. Buffer zones for natural water bodies			0 acres		Delow
c. Natural areas including existing trees, other vegeta	ation, and soil		0 acres		
d. Common landscape area/park			107 acres		
e. Regional Flood Control/Drainage basins			14 acres		
1 b. Project Drainage Shed Area (Total)			1.024 acres	А	
· ······					
Project-Specific Open Space (In-project, commun	nal**)		0.1801 acres	A <sub>PSOS</sub>	
a. Natural storage reservoirs and drainage corridors			0.00 acres		
b. Buffer zones for natural water bodies			0.00 acres		aaa araa ayamnia
c. Natural areas including existing trees, other vegeta	ation, and soil		0.00 acres		see area example
d. Landscape area/park			0.1801 acres		Delow
e. Flood Control/Drainage basins			0.00 acres		
** Doesn't include impervious areas within individual	lots and surrounding indi	vidual units. That is ac	counted for below using	g Form D-1a in Step 2.	
Area with Runoff Reduction Potential	A - A <sub>PSOS</sub> =		0.8434 acres	A <sub>T</sub>	
Assumed Initial Impervious Fraction	$A_T / A =$		0.82	Ι	
Open Space & Pervious Area LID Credit (Step 1)			40		
( <i>F</i>	$A_{OS}/A_{CDP} + A_{PSOS}/A) \times 100 =$		42 pts		





Step 2 - Runoff Reduction Credits						
Runoff Reduction Treatments	Impervious Area Managed		Efficiency Factor	Eff Ma	ective Area naged (A <sub>C</sub> )	
Porous Pavement:	-					
Option 1: Porous Pavement (see Fact Sheet, excludes porous pavement used in Option 2)	0	acres	x	=	0.000	acres
Option 2: Disconnected Pavement use For (see Fact Sheet, excludes porous pavement used in Option 1)	orm D-2a for credits				0.00	acres
Landscaping used to Disconnect Pavement (see Fact Sheet)	0.0410	acres		=	0.04	acres
Disconnected Roof Drains (see Fact Sheet and/or Table D-2b for summary of requirements)	0.121	acres		=	0.12	acres
Ecoroof (see Fact Sheet)	0	acres		=	0.00	acres
Interceptor Trees use Form D-2b for credits (see Fact Sheet)	·				0.00	acres
Total Effective Area Managed by Runoff Reduction Measu	ires		A <sub>C</sub>		0.16	acres
Runoff Reduction Credit (Step 2)			(A <sub>C</sub> / A	ν <sub>T</sub> )*100 =	19	pts

	Table D-2a			Table	D-2b	
		Efficiency			Minimu	n travel
	Porous Pavement Type Cobblestone Block Pavement Pervious Concrete/Asphalt	0.40 0.60		Maximum roof size ≤ 3,500 sq ft ≤ 5,000 sq ft	dista	21 ft 24 ft
	Reinforced Grass Pavement &	0.75 1.00		≤ 7,500 sq ft ≤ 10,000 sq ft		32 ft
Form D	0-2a: Disconnected Pavement V	Norksheet				
See Fact	Sheet for more information regarding Disc	onnected Pavemen	credit guidelines			Effective Area Managed (A c)
Paveme	nt Draining to Porous Pavement					
2. Enter	area draining onto Porous Pavement			0.00	acres	Box K1
<ol> <li>Enter</li> <li>(exclude)</li> </ol>	area of Receiving Porous Pavement s area entered in Step 2 under Porous	Pavement)		0.00	acres	Box K2
4. Ratio	of Areas (Box K1 / Box K2)			0.00		Box K3
5. Select	multiplier using ratio from Box K3 and Ratio (Box D) Ratio is < 0.5	enter into Box K4	Multiplier 1 00			
	Ratio is > 0.5 and < 1.0 Ratio is > 1.0 and < 1.5 Ratio is > 1.5 and < 2.0		0.83 0.71 0.55	1		Box K4
6. Enter	Efficiency of Porous Pavement (see ta	able below)				Box K5
	Porous Pavement Type	Efficiency Multiplier				
	Pervious Concrete Asphalt Pavement	0.60				
	Modular Block Pavement Porous Gravel Pavement	0.75				
7. Multip	Reinforced Grass Pavement by Box K2 by Box K5 and enter into Bo	1.00 x K6		0.00	acres	Box K6
8. Multip	bly Boxes K1,K4, and K5 and enter the	result in Box K7		0.00	acres	Box K7
9. Add E This is th	Box K6 to Box K7 and multiply by 60%, he amount of area credit to enter into th	and enter the Res e "Disconnected F	ult in Box K8 Pavement" Box of Form D-2			0.00 acres
<b>F</b> a maa <b>F</b>	) Obs. Jatomonton Trees Worksho	-4				
See Fact	Sheet for more information regarding Inter	e <b>t</b> ceptor Tree credit g	uidelines			
New Ev						
1. Enter	number of new evergreen trees that qu	alify as Intercepto	or Trees in Box L1.	0 trees	Box L1	
2. Multip	bly Box L1 by 200 and enter result in B	ox L2		0 sq. ft.	Box L2	
New De	ciduous Trees					
<ol> <li>Enter</li> <li>Multir</li> </ol>	Number of new deciduous trees that qu	uality as Intercepto	or Trees in Box L3.	0 trees	Box L3	
4. Ividiaj				0q. n.	Box E4	
Existing	Tree Canopy					
5. Enter	square footage of existing tree canopy	that qualifies as I	Existing Tree canopy in Box L5.	0 sq. ft.	Box L5	
6. Multip	bly Box L5 by 0.5 and enter the result in	Box L6		0 sq. ft.	Box L6	
Total Int	erceptor Tree EAM Credits					
Add Box	es L2, L4, and L6 and enter it into Box	L7		0 sq. ft.	Box L7	
Divide B This is th	ox L7 by 43,560 and multiply by 20% to be amount of area credit to enter into th	get effective area e "Interceptor Tre	a managed and enter result in Box L8 es" Box of Form D-2	0.00 acres	Box L8	

S	Step 3 - Runoff Management Credits Capture and Use Credits				
		<b></b>			
	Impervious Area Managed by Rain barrels,	Cisterns, and automatically-emptied	d systems		
	(see Fact Sheet)	- enter gallor	ons, for simple rain barrels		0.00 acres
	Automated-Control Capture and Use Syste	m			
	(see Fact Sheet, then enter impervious area manage	ed by the system)			0.00 acres
E	Bioretention/Infiltration Credits	RMDe Biorotontion Area	922 ca ft		
	(see Fact Sheet)	Subdrain Elevation	27 inches		
		Ponding Depth, inches	6 inches	0.1	1578 acres
	Increase increase Manageral Inclusion Di	MD-			
	(see Fact Sheet)	Drawdown Time, hrs	drawdown_hrs_inf		
		Soil Infiltration Rate, in/hr	soil_inf_rate		
	Sizing Op	otion 1: Capture Volume, acre-ft	capture_vol_inf		0.00 acres
	Sizing Or	ntion 2. Infiltration BMP surface area so ft	soil surface area	0.0	0000 acres
			son_son_area	0.0	adica
	Bas	sin or trench?	approximate BMP depth 0.00 f	t	
	Impervious Area Managed by Amended So (see Fact Sheet)	Il or Mulch Beds Mulched Infiltration Area, so ft	- mulch area		0.00 acres
	(,	······································	n		
т	Total Effective Area Managed by Capture-and	I-Use/Bioretention/Infiltration BMPs		0.15	5784 Aupo
F	Runoff Management Credit (Step 3)		AL	<sub>IDC</sub> /A <sub>T</sub> *200 =	37.4 pts
	Total LID Credits (Step 1+2+3)		Warning: More LID Is R	Required 9	9.0
1	Total LID Credits (Step 1+2+3) Does project require hydromodification mana	agement? If yes, proceed to using S	Warning: More LID Is R GacHM.	Required 9	99.0
1 C	Total LID Credits (Step 1+2+3) Does project require hydromodification mana	agement? If yes, proceed to using S	Warning: More LID Is R SacHM.	Required 9	99.0
ר ם א	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat	agement? If yes, proceed to using S iment	Warning: More LID Is R SacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[	Required 9 0.5236	99.0
ך ם מ	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume	agement? If yes, proceed to using S iment e-Based, Non-LID Treatment	Warning: More LID Is R SacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [	Required 9 0.5236 0.51	09.0
ר ב 4	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment	Warning: More LID Is R SacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [	Required 9 0.5236 0.51	99.0
ר ב א <b>ה</b>	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required,	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment See Choose flow-based	Warning: More LID Is R SacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [ or volume-based sizing	Required         9           0.5236         0.51           j in Step 4         9	99.0
T C A F	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required,	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based	Warning: More LID Is R sacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [ or volume-based sizing	Required         9           0.5236         0.51           j in Step 4         1	09.0
ן ב F Step 4a	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met	agement? If yes, proceed to using S iment e-Based, Non-LID Treatment <b>see choose flow-based</b> thod)	Warning: More LID Is R bacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LDC</sub> = A <sub>AT</sub> / A = [ or volume-based sizing	Required     9       0.5236     0.51       j in Step 4	99.0
۲ ۵ ۴ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲ ۲	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs):	agement? If yes, proceed to using S tment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai	Warning: More LID Is R sacHM. A <sub>T</sub> - A <sub>C</sub> -A <sub>LDC</sub> =[ A <sub>AT</sub> / A = [ or volume-based sizing	Required     9       0.5236     0.51       j in Step 4	99.0
T C A A F F Step 4a Calculate t	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs):	agement? If yes, proceed to using S ument e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai	Warning: More LID Is R sacHM. $A_T - A_C - A_{LDC} = [$ $A_{AT} / A = [$ <b>or volume-based sizing</b> infall Intensity x Area	Required         9           0.5236         0.51           j in Step 4         Table D-	99.0
F Step 4a Calculate t	Total LID Credits (Step 1+2+3) Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity)	agement? If yes, proceed to using S ument e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai	Warning: More LID Is R sacHM. $A_T - A_C - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Required         9           0.5236         0.51           j in Step 4         Table D-R           Roseville         R	2c infall Intensity i = 0.20 in/hr
T Step 4a Calculate t ook up va Dotain A <sub>AT</sub>	Total LID Credits (Step 1+2+3) Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) Torom Step 3	agement? If yes, proceed to using S ument e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub>	Warning: More LID Is R sacHM. $A_T - A_C - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Cequired 9 0.5236 0.51 1 in Step 4 Table D- Roseville Sacrament	$\begin{array}{c} A_{AT} \\ \hline \\ A_{AT} \\ \hline \\ I_{A} \\ \end{array}$
Step 4a Calculate t Cook up va	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) Torm Step 3	agement? If yes, proceed to using S iment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub>	Warning: More LID Is R sacHM. $A_T - A_C - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Cequired 9 0.5236 0.51 1 in Step 4 Table D- Roseville Sacrament Folsom	2c ainfall Intensity i = 0.20 in/hr i = 0.20 in/hr
T Step 4a Calculate t cook up va Dotain A <sub>AT</sub> Jse C = 0.	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 ji 0.52 A <sub>AT</sub> 0.95 c	Warning: More LID Is R sacHM. $A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \begin{bmatrix} \\ \\ Or volume-based sizing \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	Cequired 9 0.5236 0.51 1 in Step 4 Table D- R Roseville Sacrameni Folsom	$\frac{2c}{i = 0.20 in/hr}$
T Step 4a Calculate t Cook up va Dbtain A <sub>AT</sub> Jse C = 0.	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub>	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18]i 0.52]A <sub>AT</sub> 0.95]C	Warning: More LID Is R sacHM. $A_T - A_C - A_{LIDC} = [$ $A_{AT} / A = [$ <b>or volume-based sizing</b> infall Intensity x Area	Cequired 9 0.5236 0.51 0.51 0 in Step 4 Table D- R Roseville Sacrament Folsom	22c ainfall Intensity i = 0.20 in/hr i = 0.20 in/hr
Gitep 4a Bitep 4a Calculate t Calculate t Cook up va Dobtain A <sub>AT</sub>	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub>	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub> 0.95 c 0.09 cfs	Warning: More LID Is R sacHM. $A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Cequired 9 0.5236 0.51 J in Step 4 Table D- Roseville Sacrament Folsom	22c ainfall Intensity i = 0.20 in/hr to i = 0.20 in/hr i = 0.20 in/hr
<b>Step 4a</b> <b>Step 4a</b> Salculate t ook up va Dobtain A <sub>AT</sub> Ise C = 0.	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub>	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub> 0.95 c 0.09 cfs	Warning: More LID Is R SacHM. $A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Cequired 9 0.5236 0.51 1 in Step 4 Table D- Roseville Sacrament Folsom	2c ainfall Intensity i = 0.20 in/hr to i = 0.20 in/hr i = 0.20 in/hr
Step 4a Salculate t Cook up va Dotain A <sub>AT</sub> Jse C = 0.	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub> 0.95 c 0.09 cfs	Warning: More LID Is R sacHM. $A_T - A_C - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Cequired 9 0.5236 0.51 1 in Step 4 Table D- Roseville Sacrament Folsom	$\frac{2c}{i = 0.20 \text{ in/hr}}$
Step 4a Step 4a Salculate t ook up va Dotain A <sub>AT</sub> Jse C = 0.	Total LID Credits (Step 1+2+3) Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) Trom Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub> 0.95 c 0.09 cfs EF) WQV = Area x Maximized Dete	Warning: More LID Is R SacHM. A <sub>T</sub> - A <sub>C</sub> - A <sub>LIDC</sub> = [ A <sub>AT</sub> / A = [ or volume-based sizing infall Intensity x Area	Cequired 9 0.5236 0.51 1 in Step 4 Table D- R Roseville Sacrament Folsom	2c ainfall Intensity i = 0.20 in/hr to i = 0.18 in/hr i = 0.20 in/hr
<b>Step 4a</b> Calculate t Ook up va Dotain A <sub>AT</sub> Use C = 0. Step 4b Calculate v	Total LID Credits (Step 1+2+3) Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) Trom Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE water quality volume (Acre-Feet):	agement? If yes, proceed to using S iment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 i 0.52 A <sub>AT</sub> 0.95 c 0.09 cfs EF) WQV = Area x Maximized Dete	Warning: More LID Is R sacHM. $A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing	Required     9       0.5236     0.51       0.51     0       1 in Step 4     1       Table D- Roseville Sacrament Folsom	22c ainfall Intensity i = 0.20 in/hr i = 0.20 in/hr i = 0.20 in/hr
Image: Step 4a         Step 4a         Step 4a         Step 4a         Step 4a         Step 4b         Step 4b         Step 4b         Step 4b         Step 4b         Step 4b	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) Trom Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE water quality volume (Acre-Feet): irom Step 1	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18 ji 0.52 A <sub>AT</sub> 0.95 c 0.09 cfs EF) WQV = Area x Maximized Dete 1.02	Warning: More LID Is R sacHM. $A_{T} - A_{C} - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing infall Intensity x Area	Cequired 9 0.5236 0.51 0.51 0.51 0.51 0.51 0.52 0.51 0.51 0.51 0.51 0.51 0.51 0.51 0.51	2c ainfall Intensity i = 0.20 in/hr i = 0.20 in/hr i = 0.20 in/hr
Image: Step 4a         Step 4a         Step 4a         Step 4a         Step 4a         Step 4b	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE water quality volume (Acre-Feet): Trom Step 1	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18]i 0.52]A <sub>AT</sub> 0.95]c 0.09]cfs EF) WQV = Area x Maximized Dete 1.02 to E-4 0.25	Warning: More LID Is R sacHM. $A_{T} - A_{C} - A_{LDC} = \begin{bmatrix} \\ A_{AT} / A = \begin{bmatrix} \\ \end{bmatrix} \end{bmatrix}$ or volume-based sizing infall Intensity x Area	Cequired 9	2c ainfall Intensity i = 0.20 in/hr 0.18 in/hr i = 0.20 in/hr
Image: Step 4a         Step 4a         Calculate t         cook up va         Dbtain A <sub>AT</sub> Jse C = 0.         Step 4b         Calculate v         Dbtain A fr         Dbtain A fr         Dbtain A fr         Dbtain P <sub>0</sub> :         Appendition	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE water quality volume (Acre-Feet): rom Step 1 Maximized Detention Volume from figures E-1 t ix E of this manual using I <sub>k</sub> from Step 2.	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see Choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18   0.52 A <sub>AT</sub> 0.95 C 0.09 cfs EF) WQV = Area x Maximized Dete 1.02 to E-4 0.25	Warning: More LID Is R sacHM. $A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing infall Intensity x Area ention Volume (P <sub>0</sub> ) A 12	0.5236       0.51       j in Step 4         Table D-       Roseville       Sacrament       Folsom	$\begin{array}{c} A_{AT} \\ \hline \\ A_{AT} \\ \hline \\ I_{A} \\ \hline \\ $
$\frac{1}{3}$ $\frac{1}$	Total LID Credits (Step 1+2+3) Does project require hydromodification mana Adjusted Area for Flow-Based, Non-LID Treat Adjusted Impervious Fraction of A for Volume Further treatment is required, Treatment - Flow-Based (Rational Met treatment flow (cfs): alue for i in Table D-2c (Rainfall Intensity) T from Step 3 .95 Flow = 0.95 * i * A <sub>AT</sub> Treatment - Volume-Based (ASCE-WE water quality volume (Acre-Feet): rom Step 1 Maximized Detention Volume from figures E-1 t ix E of this manual using I <sub>6</sub> from Step 2. treatment volume (acre-ft):	agement? If yes, proceed to using S ment e-Based, Non-LID Treatment see Choose flow-based thod) Flow = Runoff Coefficient x Rai 0.18]i 0.52]A <sub>AT</sub> 0.95]C 0.09]cfs EF) WQV = Area x Maximized Dete 1.02 to E-4 0.25	Warning: More LID Is R sacHM. $A_T - A_C - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ or volume-based sizing infall Intensity x Area antion Volume (P <sub>0</sub> ) A 12 P <sub>0</sub>	0.5236       0.51       j in Step 4         Table D-       R       Roseville       Sacrament       Folsom	$\begin{array}{c} A_{AT} \\ \hline \\ A_{AT} \\ \hline \\ J_{A} \\ \hline \\ $

			in olizing outoulutions	
Name of Drainage Shed: DMA-03			Fill in Blue Highlig	hted boxes
Location of project: Sacramento				
Step 1 - Open Space and Pervious Area C	redits			
Is your project within the drainage area of a common drainage	plan that includes open space	? If not, skip to 1 b.		
1 a. Common Drainage Plan Area		488 ad	cres A <sub>CDP</sub>	
Common Drainage Plan Open Space (Off-project	, Г	121 ac	cres A <sub>os</sub>	see area example
a. Natural storage reservoirs and drainage corridors		0 ac	cres	below
b. Buffer zones for natural water bodies		0 ac	cres	below
c. Natural areas including existing trees, other vegeta	ation, and soil	0 ac	cres	
d. Common landscape area/park		107 ac	cres	
e. Regional Flood Control/Drainage basins		14 ac	cres	
1 b. Project Drainage Shed Area (Total)	[	0.399 ac	cres A	
Project-Specific Open Space (In-project, commun	nal**)	0.0621 ad	cres A <sub>PSOS</sub>	
a. Natural storage reservoirs and drainage corridors		0.00 ad	cres	
b. Buffer zones for natural water bodies		0.00 ad	cres	
c. Natural areas including existing trees, other vegeta	ation, and soil	0.00 ad	cres	see area example
d. Landscape area/park		0.0621 ad	cres	below
e. Flood Control/Drainage basins		0.00 ac	cres	
** Doesn't include impervious areas within individual	lots and surrounding indiv	idual units. That is accounted for bel	ow using Form D-1a in Step 2.	
Area with Runoff Reduction Potential	A - A <sub>PSOS</sub> =	0.3373 ad	cres A <sub>T</sub>	
		<u>I</u>		
Assumed Initial Impervious Fraction	A <sub>T</sub> / A =	0.84	Ι	
Open Space & Pervious Area LID Credit (Step 1)	_			
A)	A <sub>OS</sub> /A <sub>CDP</sub> +A <sub>PSOS</sub> /A)x100 =	40 pt	S	





Step 2 - Runoff Reduction Credits						
Runoff Reduction Treatments	Impervious Area Managed		Efficie Fac	ency tor	Effective Area Managed (A <sub>C</sub> )	
Porous Pavement:	-					
Option 1: Porous Pavement (see Fact Sheet, excludes porous pavement used in Option 2)	0	acres	x	=	0.000	acres
Option 2: Disconnected Pavement use Fo (see Fact Sheet, excludes porous pavement used in Option 1)	rm D-2a for credits			<b>→</b>	0.00	acres
Landscaping used to Disconnect Pavement (see Fact Sheet)	0.0104	acres		=	0.01	acres
Disconnected Roof Drains (see Fact Sheet and/or Table D-2b for summary of requirements)	0.0321	acres		=	0.03	acres
Ecoroof (see Fact Sheet)	0	acres		=	0.00	acres
Interceptor Trees use Form D-2b for credits (see Fact Sheet)				<b>→</b>	0.00	acres
Total Effective Area Managed by Runoff Reduction Measu	res		A	c	0.04	acres
Runoff Reduction Credit (Step 2)				(A <sub>C</sub> / A <sub>T</sub> )*100 =	13	pts

	Table D-2a			Table	D-2b	
		Efficiency			Minimu	m travel
	Porous Pavement Type Cobblestone Block Pavement Pervious Concrete/Asphalt	0.40 0.60		<u>Maximum roof size</u> ≤ 3,500 sq ft ≤ 5,000 sq ft	dista	21 ft 24 ft 28 ft
	Reinforced Grass Pavement	1.00		≤ 10,000 sq ft		32 ft
Form [	D-2a: Disconnected Pavement \	Norksheet				
See Fact	Sheet for more information regarding Disc	onnected Pavemen	credit guidelines			Effective Area Managed (A.)
Paveme	ent Draining to Porous Pavement					Ellective Area Manageu (A <sub>C</sub> )
2. Enter	area draining onto Porous Pavement			0.00	acres	Box K1
3 Enter	area of Receiving Porous Pavement			0.00	acres	Box K2
(exclude	s area entered in Step 2 under Porous	Pavement)		0.00	40/00	Box N2
4. Ratio	of Areas (Box K1 / Box K2)			0.00		Box K3
5. Selec	t multiplier using ratio from Box K3 and Ratio (Box D)	enter into Box K4	Multiplier			
	Ratio is ≤ 0.5 Ratio is > 0.5 and < 1.0		1.00 0.83			Box K4
	Ratio is > 1.0 and < 1.5 Ratio is > 1.5 and < 2.0		0.71 0.55	1		
6. Enter	Efficiency of Porous Pavement (see ta	able below)				Box K5
		Efficiency				
	Porous Pavement Type Cobblestone Block Pavement	Multiplier 0.40				
	Pervious Concrete	0.60				
	Modular Block Pavement	0.75				
	Reinforced Grass Pavement	1.00				
7. Multij	oly Box K2 by Box K5 and enter into Bo	x K6		0.00	acres	Box K6
8. Multij	oly Boxes K1,K4, and K5 and enter the	result in Box K7		0.00	acres	Box K7
9. Add I This is th	Box K6 to Box K7 and multiply by 60%, ne amount of area credit to enter into th	and enter the Res e "Disconnected F	ult in Box K8 Pavement" Box of Form D-2			0.00 acres
Form [	0-2b: Interceptor Tree Workshe	et				
See Fact	Sheet for more information regarding Inter-	ceptor Tree credit g	uidelines			
New Ev	ergreen Trees					
1. Enter	r number of new evergreen trees that qu	alify as Intercept	or Trees in Box L1.	trees	Box L1	
2. Multij	oly Box L1 by 200 and enter result in B	ox L2		0 sq. ft.	Box L2	
New De	ciduous Trees					
3. Enter	humber of new deciduous trees that qu	Jaility as Intercept	or Trees in Box L3.	0 trees	Box L3	
4. Multi	DIV Box L3 by 100 and enter result in Bo	DX L4		<u></u> υ sq. π.	Box L4	
Existing	J Tree Canopy					
5. Enter	square footage of existing tree canopy	that qualifies as I	existing Tree canopy in Box L5.	0 sq. ft.	Box L5	
6. Multij	oly Box L5 by 0.5 and enter the result in	Box L6		0 sq. ft.	Box L6	
Total In	terceptor Tree EAM Credits					
Add Box	es L2, L4, and L6 and enter it into Box	L7		0 sq. ft.	Box L7	
Divide B	ox L7 by 43,560 and multiply by 20% to	get effective area	a managed and enter result in Box L8	0.00 acres	Box L8	
1115 15 [[	is amount of area credit to enter into th	- merceptor rre	55 BOX OFF OHT D-2			

Sign 3 - Runoff Management Circlis         Capiter and Use Cedits         Important Name       0.00         Construction Control	Stop 2 Dupoff Management Credite				
Important Area Managed by Bain barries, Clasters, and automaticality-englishes were as the set of the	Capture and Use Credits				
We for Shard)	Impervious Area Managed by Rain barrels	, Cisterns, and automatically-emptied syst	ems		0.00
Automated-Control Capture and Use System       0.00       even         Biorectention/Infiltration Cardies       0.00       even         Scrap Differention BMPs       0.000       0.000       even         Scrap Differention BMPs       0.0000       even       0.000       even         Scrap Differention BMPs       0.0000       even       0.0000       even         Bells of theories       0.0000       even       0.0000       even         Bells of theories       0.0000       even       0.0000       even         Bells of theories       0.00000       even       0.00000       even         Total Effective Avea Managed by Annoted Seil of Multi-Base       0.01812       Ava       0.01812       Ava         Cotal LiD Oracitis (Step 1+2+3)       LiD compliant, check for treatment sizing in Step 4       12.00       12.00       even         Step 4 Treatment - Flow-Based (Atoma Method)       Even Homesee to step 0.01788       Ava / A =       <	(see Fact Sheet)	- enter gallons, for s	simple rain barrels		0.00 acres
Bioretericition/Inflitration Corcels       model of the set of the se	Automated-Control Capture and Use Syste (see Fact Sheet, then enter impervious area manac	em led by the system)			0.00 acres
Impervious Area Managed by Dirith clinics	Bioretention/Infiltration Credits				<u> </u>
(car Seal Read)       Baddate Readon, [7], and 6       0.1181       over         Impervious Area Managed by Inititation BMPs       Descense Time, the	Impervious Area Managed by Bioretention	BMPs Bioretention Area	690 sq ft		
Importions Area Managori by infitzation BMPs       Develoam Time, int       diversion, int, if         Biel Fried Revel       Scing Option 1:       Captore Values, ease 4:       captore, int, if         Biel Fried Revel       Scing Option 2:       Infitzation BMP autore was as 1:       out active, was       0.0000       was         Biel Fried Revel       Scing Option 2:       Infitzation BMP autore was as 1:       out active, was       0.0000       was         Biel Fried Revel       Out active       Biel Revel       0.000       was         Biel Revel       Out active       Out active       Out active       out active         Biel Revel       Out active       Out active       Out active       out active         Biel Revel       Out active       Out active       Out active       out active         Biel Revel       Out active       Out active       Out active       Out active       Out active         Biel Revel       Out active       Maddeel Repelor Cative       Maddeel Repelor Cative       Active       Out active         Catal Effective Actes Managed by Capture and Use BiordeentionInfittration BMPs       Out Biol       Active       Active       Active       Out Cative         Augusted Actes for Flow-Based (Cative Actes Active active active actower actowere active active active active actove activ	(see Fact Sheet)	Subdrain Elevation Ponding Depth, inches	27 inches 6 inches	0.1	1181 acres
Impervious Area Managed by Infiltration BMPs       Siting Option 1: course Values area 4 course values area 5 course 5					
Interview       Interview       Interview       Interview         Storing Option 1:       Coptare Volume, sure 4       C	Impervious Area Managed by Infiltration B	MPs	draudaum bra inf		
Sing Option 1:	(See Fact Sheet)	Soil Infiltration Rate, in/hr	soil_inf_rate		
Skring Option 2       initiation MMP hardines area, seg is initiation.       initiation initininitiatinininitiation initiation initiatininitiation in	Sizing O	ption 1: Capture Volume, acre-ft	capture_vol_inf		0.00 acres
Surg Quick 2:       manual water quarter area, eq				0.0	0000
Besin of trench?	Sizing O	ption 2: Infiltration BMP surface area, sq ft	soil_surface_area	0.0	JUUU acres
Impervious Area Managed by Amended Sol or Mulch Beds	Ва	isin or trench?a	pproximate BMP depth 0.00 f	t	
Impervious Area Managed by Amended Soil of Much Beds					
Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs       0.11812       A.cc.         Runoff Management Credit (Step 3)       A.cc./Ar200       70.0       pts         Total LID Credits (Step 1+2+3)       LID compliant, check for treatment sizing in Step 4       123.0         Does project require hydromodification management? If yes, proceed to using SachM.       Ar.r A.cc./Arac = 0.1768       Ar.r         Adjusted Area for Flow-Based, Non-LID Treatment       Ar.r AcArac = 0.1768       Ar.r         Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment       Ar.r / A = 0.44       Ta         Further treatment is required, see choose flow-based or volume-based sizing in Step 4       Table D-2c         Code up value for in Table D-2c (Rainfall Intensity)       0.18]       Mar. Step 4         Description of the OLS       Flow = Runoff Coefficient x Rainfall Intensity x Area       Table D-2c (Rainfall Intensity)         Disp 3       0.18]Ar       Table D-2c (Rainfall Intensity)       End 1.8         Description Ar, non Step 3       0.18]Ar       Table D-2c (Rainfall Intensity)       End 2.0         Disp 4       Treatment - Volume-Based (ASCE-WEF)       End 4       Table D-2c (Rainfall Intensity)       End 4.0         Disp 5       Interset - Volume-Based (ASCE-WEF)       End 4       Table D-2c (Rainfall Intensity)       End 4.0       Table D-2c (	(see Fact Sheet)	Mulched Infiltration Area, sq ft	- mulch_area		0.00 acres
Total Effective Area Managed by Capture-and-Use/Bioretention/Infiltration BMPs       0.11812       A.cc.         Runoff Management Credit (Step 1)       A.cc./P200       700       pis         Total LID Credits (Step 142+3)       LID compliant, check for treatment sizing in Step 4       123.0         Dees project require hydromodification management? If yes, proceed to using SacHM.       Ar. + Ac Ar.cc.       0.1768       Ar.t         Adjusted Area for Flow-Based, Non-LID Treatment       Ar.t + Ac Ar.cc.       0.1768       Ar.t         Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment       Ar.t + Ac Ar.cc.       0.1768       Ar.t         Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment       Ar.t + Ac Ar.cc.       0.1768       Ar.t         Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment       Ar.t + Ac Ar.cc.       0.1768       Ar.t         Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment       Ar.t       Ar.t       Impervious Fraction of A for Volume-Based Ar.t       Impervious Fractin Ar.t       Impervious Fraction Fraction Frac					
Runoff Management Credit (Step 3)       A.g.dA,*200 = 70.0 pts         Total LID Credits (Step 1+2+3)       LID compliant, check for treatment sizing in Step 4       123.0         Does project require hydromodification magement? If yes, proceed to using SacHM.       Ar. + Ac. + Ac. = 0.1768       Ar. +         Adjusted Area for Flow-Based, Non-LID Treatment       Ar. + Ac. + Ac. = 0.01768       Ar. +         Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment       Ar. + Ac. + Ac. = 0.044       I.         Further treatment is required, see choose flow-based or volume-based sizing in Step 4       Table D-2c         Step 4a Treatment - Flow-Based (Rational Method)       Image: Step 4a Treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Step 4a Treatment - Flow-Based (Rational Method)       Image: Step 4a Treatment is in 2.020 in/h       Step 4a Treatment is in 1 = 0.200 in/h         Octa up value for in Table D-2c (Rainfall Intensity)       0.18       Image: Step 4a Treatment - Volume-Based (ASCE-WEF)         Step 4b Treatment - Volume-Based (ASCE-WEF)       Image: Step 4b Treatment - Volume-Based (ASCE-WEF)       Image: Step 4b Treatment - Volume from Step 1       O.40       A       12       hrs       Specified Draw Down time         Obtain Pg: Maximized Detention Volume from Step 1       O.40       A       12       hrs       Specified Draw Down time         Obtain Pg: Maximized Detention Volume fro	Total Effective Area Managed by Capture-and	d-Use/Bioretention/Infiltration BMPs		0.11	812 A <sub>LIDc</sub>
Runnin management Creat (step 3) $A_{ec}A_r, 20 = 700$ pt         Total LID Credits (Step 1+2+3)       LID compliant, check for treatment sizing in Step 4       123.0         Does project require hydromodification management? If yes, proceed to using SacHM. $A_r - A_c - A_{r,c} = 0.1768$ $A_{r,r}$ $A_{r,r}$ Adjusted Area for Flow-Based, Non-LID Treatment $A_r - A_c - A_{r,c} = 0.1768$ $A_{r,r}$ $A_{r,r}$ Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $A_r - A_c - A_{r,c} = 0.1768$ $A_{r,r}$ $A_{r,r}$ Europervious Fraction of A for Volume-Based, Non-LID Treatment $A_r - A_c - A_{r,c} = 0.1768$ $A_{r,r}$ $A_{r,r} - A_c - A_{r,c} = 0.1768$ $A_{r,r}$ Further treatment is required, see choose flow-based or volume-based sizing in Step 4       Image: Step 4a Treatment - Flow-Based (Rational Method)         Calculate treatment flow (cfs):       Flow = Runoff Coefficient x Rainfail Intensity x Area       Table D-2c         Calculate treatment flow (cfs):       Flow = Runoff Coefficient x Rainfail Intensity x Area       Table D-2c         Detain $A_{r,r}$ from Step 3       0.18] $A_{r,r}$ Score = 0.95       0.095] c         Flow = 0.95 + I * A_{r,r}       0.03] cfs       Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WOV = Area x Maximized Detention Volume (P <sub>0</sub> )       Specified Draw Down time         Obtain $P_0$	Due of Management Ore dit (Oter 2)			(A \$000	70.0
Total LID Credits (Step 1+2+3)       LID compliant, check for treatment sizing in Step 4       123.0         Dees project require hydromodification management? If yes, proceed to using SacHM.       Aqueted Area for Flow-Based, Non-LID Treatment $A_{1} + A_{0} + A_{0} = 0.1768$ $A_{11}$ Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $A_{11} + A_{0} = 0.44$ $I_{A}$ Further treatment is required, see choose flow-based or volume-based sizing in Step 4       Step 4a         Step 4a Treatment - Flow-Based (Rational Method)       Step 4a Treatment flow (ds):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Cock up value for in Table D-2c (Rainfall Intensity)       0.18]       Rainfall Intensity         Description       0.18]       Rainfall Intensity         Step 4b Treatment - Volume-Based (ASCE-WEF)       Scaramento i = 0.20 in/h         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Detain Arg for Step 1       0.40       A       12 hrs         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> Detain A for Step 1       0.40       A       12 hrs       Specified Draw Down time         Detain Arg for Step 2.       0.007270       Acre-Feet       22 hrs       Specified Draw Down time	Runom Management Credit (Step 3)		AL	<sub>.IDC</sub> /A <sub>T</sub> *200 =	70.0 pts
Does project require hydromodification management? If yes, proceed to using SacHM. Adjusted Area for Flow-Based, Non-LID Treatment $A_T + A_C + A_{DC} = 0.1768$ $A_T$ Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $A_T + A = 0.44$ $I_A$ Further treatment is required, see choose flow-based or volume-based sizing in Step 4 Step 4a Treatment - Flow-Based (Rational Method) Salculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Area Table D-2c (Rainfall Intensity) 0.18] Salculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Area Table D-2c (Rainfall Intensity) 0.18] Salculate treatment of the order of the o	Total LID Credits (Step 1+2+3)	LID compliant, check	for treatment sizing in	n Step 4 12	3.0
Adjusted Area for Flow-Based, Non-LID Treatment $A_T + A_C - A_{LLO} = 0.1768$ $A_T$ Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $A_{TT} / A = 0.44$ $I_A$ Further treatment is required, see choose flow-based or volume-based sizing in Step 4 $I_A$ Step 4a Treatment - Flow-Based (Rational Method) $A_{TT} / A = 0.44$ $I_A$ Cook up value for in Table D-2c (Rainfall Intensity) $0.18$ $Table D-2c$ Cook up value for in Table D-2c (Rainfall Intensity) $0.18$ $Table D-2c$ Detain $A_{TT}$ from Step 3 $0.18$ $Table D-2c$ Jac C = 0.95 $0.95$ C $0.20$ in/h         Flow = 0.95 * 1* $A_{AT}$ $0.03$ cfs $0.20$ in/h         Step 4b Treatment - Volume-Based (ASCE-WEF) $0.40$ A $12$ hrs       Specified Draw Down time         Cobulate water quality volume (Acre-Feet): $WOV = Area x Maximized Detention Volume (P_0)       0.007270 Acre-Feet       0.007270 Acre-Feet   $					
Adjusted Impervious Fraction of A for Volume-Based, Non-LID Treatment $A_{n1} / A = 0.44$ I.         Further treatment is required, see choose flow-based or volume-based sizing in Step 4         Step 4a Treatment - Flow-Based (Rational Method)         Calculate treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Look up value for in Table D-2c (Rainfall Intensity)       0.18 j         Datain $A_{n1}$ from Step 3       0.18 j         Jae C = 0.95       0.95 c         Flow = 0.95 + 1 * $A_{n1}$ 0.03 dfs         Step 4b Treatment - Volume-Based (ASCE-WEF)       VQV = Area x Maximized Detention Volume ( $P_{n}$ )         Datain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Datain P <sub>2</sub> , Maximized Detention Volume from figures E-1 to E-4       0.22 $P_0$ Acre-Feet         Calculate water quality volume (Acre-Fie):       0.007270       Acre-Feet       Calculate water quality volume = A x ( $P_0$ / 12)       0.007270       Acre-Feet	Does project require hydromodification man	agement? If yes, proceed to using SacHM			
Adjusted impervious Fraction of A for Volume-Based, Non-LID Treatment $A_{xT} / A = 0.44$ $I_A$ Further treatment is required, see choose flow-based or volume-based sizing in Step 4         Step 4a Treatment - Flow-Based (Rational Method)         Calculate treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Data duale treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Data duale treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Data duale form Step 3       0.18 / Ar         Data A <sub>xT</sub> from Step 3       0.18 / Ar         Jae C = 0.95       0.95 c         Flow = 0.95 * 1* A <sub>AT</sub> 0.03 cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Detain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Detain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Detain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Detain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Detain A from Step 2.       0.007270       Acre-Feet       Cocc	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Treat	agement? If yes, proceed to using SacHM	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =	0.1768	A <sub>AT</sub>
Further treatment is required, see choose flow-based or volume-based sizing in Step 4         Step 4a Treatment - Flow-Based (Rational Method)         Calculate treatment flow (cfs):         Flow = Runoff Coefficient x Rainfall Intensity x Area         Table D-2c       Rainfall Intensity         O.18] in       0.18] in         Obtain A <sub>xT</sub> from Step 3       0.18] A <sub>xT</sub> Use C = 0.95       0.95 c         Flow = 0.95 * 1 * A <sub>xT</sub> 0.03 cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> Acre-Feet         Calculate treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet       Calculate treatment volume = A x (P <sub>0</sub> / 12)	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Treat	agement? If yes, proceed to using SacHM tment	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[	0.1768	A <sub>AT</sub>
Step 4a Treatment - Flow-Based (Rational Method)         Calculate treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Dotain $A_{xT}$ from Step 3       O.18] i         Distain $A_{xT}$ from Step 3       Calculate treatment flow (cfs):         Juse C = 0.95         Flow = 0.95 * i * $A_{xT}$ O.03] cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Dotain A <sub>r</sub> from Step 1       0.40       A       12] hrs       Specified Draw Down time         Obtain A <sub>r</sub> from Step 1       0.007270       Acre-Feet       Calculate treatment volume (acre-ft):         Treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum	agement? If yes, proceed to using SacHM tment ie-Based, Non-LID Treatment	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [	0.1768	A <sub>AT</sub>
Step 4a Treatment - Flow-Based (Rational Method)         Calculate treatment flow (cfs):       Flow = Runoff Coefficient x Rainfall Intensity x Area         Look up value for i in Table D-2c (Rainfall Intensity)       0.18 i         Dottain A <sub>xT</sub> from Step 3       0.18 A <sub>xT</sub> Use C = 0.95       0.95 c         Flow = 0.95 * 1 * A <sub>xT</sub> 0.03 cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Obtain A <sub>b</sub> from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain A <sub>b</sub> for Step 1       0.007270       Acre-Feet       Calculate treatment volume (acre-ft):       Treatment volume (Acre-Freet):	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum	agement? If yes, proceed to using SacHM tment Ie-Based, Non-LID Treatment See choose flow-based or y	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$	0.1768 0.44	A <sub>AT</sub>
Calculate treatment flow (cfs): Flow = Runoff Coefficient x Rainfall Intensity x Area   Look up value for i in Table D-2c (Rainfall Intensity) 0.18 i   Obtain A <sub>xt</sub> from Step 3 0.18 A <sub>xt</sub> Use C = 0.95 0.95 C   Flow = 0.95 * i* A <sub>xt</sub> 0.03 cfs   Step 4b Treatment - Volume-Based (ASCE-WEF)   Calculate water quality volume (Acre-Feet): WQV = Area x Maximized Detention Volume (P <sub>0</sub> )   Obtain A <sub>r</sub> from Step 1 0.40 A   Obtain A <sub>r</sub> from Step 1 0.40 A   Obtain A <sub>r</sub> from Step 1 0.40 A   Obtain P <sub>0</sub> : Maximized Detention Volume (Acre-Feet):   WQV = Area x Maximized Detention Volume (P <sub>0</sub> )   Calculate treatment volume (acre-fi):   Treatment volume (acre-fi):   Treatment volume (acre-fi):   Treatment volume (Acre-fiel):	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required,	agement? If yes, proceed to using SacHM tment ie-Based, Non-LID Treatment <b>see choose flow-based or v</b>	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [ rolume-based sizing	0.1768 0.44 J in Step 4	A <sub>AT</sub>
Look up value for i in Table D-2c (Rainfall Intensity)       0.18) i       Image: Step 1 in Table D-2c (Rainfall Intensity)         Dobtain A <sub>AT</sub> from Step 3       0.18) A <sub>AT</sub> Roseville i = 0.20 in/h         Sacramento i = 0.20       0.18 in/h         Jase C = 0.95       0.95 c         Flow = 0.95 * 1 * A <sub>AT</sub> 0.03 cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)       Image: Calculate water quality volume (Acre-Feet):         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (Po)         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain Po: Maximized Detention Volume (rom figures E-1 to E-4       0.22       Po       n Appendix E of this manual using I <sub>k</sub> from Step 2.       Image: Calculate treatment volume (acre-f):       Treatment volume A x (Po / 12)       0.0007270       Acre-Feet       Image: Calculate Volume A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A reace A x (Po / 12)       Image: Calculate A rea x (Po / 12)       Image: Calculat	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me	agement? If yes, proceed to using SacHM tment ie-Based, Non-LID Treatment <b>see choose flow-based or v</b> thod)	A <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> =[ A <sub>AT</sub> / A = [ rolume-based sizing	0.1768 0.44 J in Step 4	A <sub>AT</sub>
Code up value for fin in rable 5-20 (rating interisty)       0.16)       Interisty         Obtain A <sub>AT</sub> from Step 3       0.18)       A <sub>AT</sub> Disc C = 0.95       0.95) C         Flow = 0.95 * i * A <sub>AT</sub> 0.03) cfs    Step 4b Treatment - Volume-Based (ASCE-WEF) Calculate water quality volume (Acre-Feet):     Use C = 0.95    Step 4b Treatment - Volume-Based (ASCE-WEF) Calculate water quality volume (Acre-Feet):        Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )    Obtain A from Step 1        Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22        P <sub>0</sub> n Appendix E of this manual using k from Step 2.        Calculate treatment volume (acre-ft):      0.007270        Treatment volume = A x (P <sub>0</sub> / 12)      0.007270	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Mer alculate treatment flow (cfs):	agement? If yes, proceed to using SacHM tment e-Based, Non-LID Treatment <u>see choose flow-based or v</u> thod) Flow = Runoff Coefficient x Rainfall Ir	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ <b>volume-based sizing</b> Intensity x Area	0.1768 0.44 J in Step 4	A <sub>AT</sub>
Datain A <sub>AT</sub> from Step 3       0.18       A <sub>AT</sub> Sacramento i = 0.18 in/h         Jse C = 0.95       0.95 C       0.03 cfs         Flow = 0.95 * i * A <sub>AT</sub> 0.03 cfs       0.12 in/h         Step 4b Treatment - Volume-Based (ASCE-WEF)       VQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Dotain A from Step 1       0.40       A       12 hrs         Dotain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> Appendix E of this manual using I <sub>k</sub> from Step 2.       Calculate treatment volume (acre-ft):       Treatment volume = A x (P <sub>0</sub> / 12)         Treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, itep 4a Treatment - Flow-Based (Rational Mer alculate treatment flow (cfs):	agement? If yes, proceed to using SacHM tment e-Based, Non-LID Treatment see choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ <b>rolume-based sizing</b> ntensity x Area	0.1768 0.44 J in Step 4 Table D-	A <sub>AT</sub>
Jse C = 0.95 Flow = 0.95 * i * A <sub>AT</sub> Step 4b Treatment - Volume-Based (ASCE-WEF) Calculate water quality volume (Acre-Feet): WQV = Area x Maximized Detention Volume (P <sub>0</sub> ) Dotain A from Step 1 OL40 A 12 hrs Specified Draw Down time OL22 P <sub>0</sub> Acre-Feet Treatment volume (acre-ft): Treatment volume = A x (P <sub>0</sub> / 12) OL07270 Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Mer alculate treatment flow (cfs): pok up value for i in Table D-2c (Rainfall Intensity)	agement? If yes, proceed to using SacHM tment ie-Based, Non-LID Treatment <b>see choose flow-based or v</b> thod) Flow = Runoff Coefficient x Rainfall Ir 0.18]	$A_{T} - A_{C} - A_{LiDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$	0.1768 0.44 J in Step 4 Table D- Roseville	A <sub>AT</sub> I <sub>A</sub> 2c infall Intensity i = 0.20 in/hr
Flow = 0.95 * i * A <sub>AT</sub> 0.03 cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> P <sub>0</sub> Appendix E of this manual using I <sub>k</sub> from Step 2.       Calculate treatment volume (acre-ft):       Treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Mer alculate treatment flow (cfs): pok up value for i in Table D-2c (Rainfall Intensity) btain A <sub>AT</sub> from Step 3	agement? If yes, proceed to using SacHM tment ie-Based, Non-LID Treatment <b>see choose flow-based or v</b> thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament	A <sub>AT</sub> I <sub>A</sub> 2c           ainfall Intensity           i =         0.20 in/hr           to         i =         0.18 in/hr
Flow = 0.95 * i * A <sub>AT</sub> 0.03 cfs         Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> P <sub>0</sub> A Appendix E of this manual using I <sub>h</sub> from Step 2.       Calculate treatment volume (acre-ft):       Treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Mer alculate treatment flow (cfs): pok up value for i in Table D-2c (Rainfall Intensity) btain A <sub>AT</sub> from Step 3 se C = 0.95	agement? If yes, proceed to using SacHM tment ie-Based, Non-LID Treatment See choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18]i 0.18]A <sub>AT</sub> 0.95[c	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament Folsom	$A_{AT}$ $I_A$ $I_A$ $2c$ $ainfall Intensity$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$
Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> n Appendix E of this manual using I <sub>k</sub> from Step 2.         Calculate treatment volume (acre-ft):       0.007270       Acre-Feet       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Mer alculate treatment flow (cfs): pok up value for i in Table D-2c (Rainfall Intensity) betain A <sub>AT</sub> from Step 3 se C = 0.95	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 A <sub>AT</sub> 0.95 c	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ <b>rolume-based sizing</b> Intensity x Area	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament Folsom	$A_{AT}$ $I_A$ 2C ainfall Intensity $i = \begin{bmatrix} 0.20 & in/hr \\ 0.18 & in/hr \\ i = \end{bmatrix} 0.20 & in/hr$
Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> P <sub>0</sub> Calculate treatment volume (acre-ft):       Treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, itep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): bok up value for i in Table D-2c (Rainfall Intensity) ibtain $A_{AT}$ from Step 3 se C = 0.95 Flow = 0.95 * i * $A_{AT}$	agement? If yes, proceed to using SacHM tment see Based, Non-LID Treatment see Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 ji 0.18 A <sub>AT</sub> 0.95 C 0.03 cfs	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ <b>rolume-based sizing</b> Itensity x Area	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament Folsom	$A_{AT}$ $I_A$ $I_A$ $ainfall Intensity$ $i = 0.20 in/hr$ $i = 0.18 in/hr$ $i = 0.20 in/hr$
Step 4b Treatment - Volume-Based (ASCE-WEF)         Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P <sub>0</sub> )         Dbtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> P <sub>0</sub> Dbtain Le of this manual using l <sub>k</sub> from Step 2.       Data and the second s	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum <b>Further treatment is required</b> , itep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): pok up value for i in Table D-2c (Rainfall Intensity) ibtain $A_{AT}$ from Step 3 se C = 0.95 Flow = 0.95 * i * $A_{AT}$	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18]i 0.18]A <sub>AT</sub> 0.95]C 0.03]cfs	$A_{T} - A_{C} - A_{LiDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament Folsom	A <sub>AT</sub> I <sub>A</sub> Iainfall Intensity           i = 0.20 in/hr           i = 0.20 in/hr           i = 0.20 in/hr
Calculate water quality volume (Acre-Feet):       WQV = Area x Maximized Detention Volume (P0)         Obtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Obtain P0: Maximized Detention Volume from figures E-1 to E-4       0.22       P0       P0         n Appendix E of this manual using In from Step 2.       Calculate treatment volume (acre-ft):       0.007270       Acre-Feet	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, itep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): ook up value for i in Table D-2c (Rainfall Intensity) ibtain $A_{AT}$ from Step 3 se C = 0.95 Flow = 0.95 * i * $A_{AT}$	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 j 0.18 A <sub>AT</sub> 0.95 c 0.03 cfs	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$	0.1768 0.44 J in Step 4 Table D- R Roseville Sacrament Folsom	A <sub>AT</sub> I <sub>A</sub> I <sub>A</sub> <b>2c ainfall Intensity</b> i =         0.20 in/hr           t =         0.18 in/hr           i =         0.20 in/hr
Dbtain A from Step 1       0.40       A       12 hrs       Specified Draw Down time         Dbtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> n Appendix E of this manual using I <sub>h</sub> from Step 2.       P <sub>0</sub> Calculate treatment volume (acre-ft):       Treatment volume = A x (P <sub>0</sub> / 12)       0.007270       Acre-Feet	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         alculate treatment flow (cfs):         book up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 0.18 0.18 0.18 0.95 c 0.03 cfs	· Α <sub>T</sub> - A <sub>C</sub> -A <sub>LIDC</sub> = A <sub>AT</sub> / A = [ rolume-based sizing ntensity x Area	0.1768 0.44 J in Step 4 Table D- Reseville Sacrament Folsom	$A_{AT}$ I <sub>A</sub> I <sub>A</sub> 2c ainfall Intensity i = 0.20 in/hr i = 0.20 in/hr
Dbtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 to E-4       0.22       P <sub>0</sub> n Appendix E of this manual using I <sub>k</sub> from Step 2.       Calculate treatment volume (acre-ft):         Calculate treatment volume (acre-ft):       0.007270         Acre-Feet	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         iaculate treatment flow (cfs):         pok up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-WE         alculate water quality volume (Acre-Feet):	agement? If yes, proceed to using SacHM tment the-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 A <sub>AT</sub> 0.95 c 0.03 cfs EF) WQV = Area x Maximized Detention	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area	0.1768 0.44 J in Step 4 Table D- R Roseville Sacrament Folsom	$A_{AT}$ I <sub>A</sub> I <sub>A</sub> 2C ainfall Intensity i = 0.20 in/hr to i = 0.18 in/hr i = 0.20 in/hr
Johann Pg. Maximized Detention Volume from figures E-1 to E-4     0.22     Pg       n Appendix E of this manual using I <sub>k</sub> from Step 2.     Calculate treatment volume (acre-ft):       Calculate treatment volume = A x (Pg / 12)     0.007270   Acre-Feet	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         :alculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-We         alculate water quality volume (Acre-Feet):         btain A from Step 1	agement? If yes, proceed to using SacHM tment the Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 AAT 0.95 C 0.03 cfs EF) WQV = Area x Maximized Detention 1 0.40 A	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A = \end{bmatrix}$ <b>rolume-based sizing</b> Intensity x Area Volume (P <sub>0</sub> )	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament Folsom	$A_{AT}$ I <sub>A</sub> I <sub>A</sub> 2C ainfall Intensity i = 0.20 in/hr to i = 0.18 in/hr i = 0.20 in/hr
Calculate treatment volume (acre-ft): Treatment volume = A x (P <sub>0</sub> / 12) 0.007270 Acre-Feet	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         iaculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-With alculate water quality volume (Acre-Feet):         btain A from Step 1	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18]i 0.18]A <sub>AT</sub> 0.95]c 0.03]cfs EF) WQV = Area x Maximized Detention 1 0.40 A	$A_{T} - A_{C} - A_{LiDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area Volume (P <sub>0</sub> )	0.1768 0.44 J in Step 4 Table D- Roseville Sacrament Folsom	A <sub>AT</sub> I <sub>A</sub> I <sub>A</sub> 2c           ainfall Intensity           i = 0.20 in/hr           o i = 0.18 in/hr           i = 0.20 in/hr
Treatment volume = A x (P <sub>0</sub> / 12)         0.007270         Acre-Feet	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum <b>Further treatment is required</b> ,         itep 4a Treatment - Flow-Based (Rational Me         ialculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-With alculate water quality volume (Acre-Feet):         btain A from Step 1         btain $P_0$ : Maximized Detention Volume from figures E-1'         Appendix E of this manual using $l_h$ from Step 2.	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18]i 0.18]A <sub>AT</sub> 0.95]C 0.03]ofs EF) WQV = Area x Maximized Detention 1 0.40 A to E-4 0.22 P <sub>0</sub>	$A_{T} - A_{C} - A_{UDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ <b>rolume-based sizing</b> Intensity x Area Volume (P <sub>0</sub> )	0.1768 0.44 I in Step 4 Table D- R Roseville Sacrament Folsom	$A_{AT}$ $I_A$ $I_A$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$ $i = 0.20 in/hr$
	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         ialculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-Will         alculate water quality volume (Acre-Feet):         btain A from Step 1         btain P <sub>0</sub> : Maximized Detention Volume from figures E-1 * Appendix E of this manual using I <sub>h</sub> from Step 2.         alculate treatment volume (acre-ft):	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 A <sub>AT</sub> 0.95 C 0.03 cfs EF) WQV = Area x Maximized Detention T 0.40 A to E-4 0.22 P <sub>0</sub>	$A_{T} - A_{C} - A_{UDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ <b>rolume-based sizing</b> Intensity x Area Volume (P <sub>0</sub> ) $12$	0.1768 0.44 1 in Step 4 Table D- R Roseville Sacrament Folsom	$\begin{array}{c c} & A_{AT} \\ \hline & I_A \\ \hline \\ $
	Does project require hydromodification man Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum <b>Further treatment is required</b> , itep 4a Treatment - Flow-Based (Rational Me ialculate treatment flow (cfs): ook up value for i in Table D-2c (Rainfall Intensity) ibtain $A_{AT}$ from Step 3 se C = 0.95 Flow = 0.95 * i * $A_{AT}$ itep 4b Treatment - Volume-Based (ASCE-With alculate water quality volume (Acre-Feet): ibtain A from Step 1 btain P <sub>0</sub> : Maximized Detention Volume from figures E-1: Appendix E of this manual using $I_{A}$ from Step 2. alculate treatment volume (acre-ft): Treatment volume (acre-ft): Treatment volume = A x (P <sub>0</sub> / 12)	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 j 0.18 A <sub>AT</sub> 0.95 c 0.03 cfs EF) WQV = Area x Maximized Detention 0.40 A to E-4 0.22 P <sub>0</sub>	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area Volume (P <sub>0</sub> ) $12$	0.1768 0.44 <b>J in Step 4</b> <b>Table D-</b> Roseville Sacrament Folsom	$\begin{array}{c c} & A_{AT} \\ \hline & I_A \\ \hline \\ \hline \\ \hline \\ \hline \\ ainfall Intensity \\ i = 0.20 in/hr \\ \hline \\ \hline \\ i = 0.20 in/hr \\ \hline \\ $
	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         iaculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         se C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-With alculate water quality volume (Acre-Feet):         ibtain A from Step 1         btain P <sub>0</sub> : Maximized Detention Volume from figures E-1 * Appendix E of this manual using I <sub>h</sub> from Step 2.         alculate treatment volume (acre-ft):         Treatment volume = A x (P <sub>0</sub> / 12)	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir O.18 i O.18 i O.18 i O.18 c fs EF) WQV = Area x Maximized Detention WQV = Area x Maximized Detention to E-4 0.22 Po 0.007270 Acre-	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area Volume (P <sub>0</sub> ) $12$	0.1768 0.44 <b>J in Step 4</b> <b>Table D-</b> Roseville Sacrament Folsom	$\begin{array}{c c} & A_{AT} \\ \hline & I_A \\ \hline \\ $
	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         iaculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         ise C = 0.95         Flow = 0.95 * i * $A_{AT}$ itep 4b Treatment - Volume-Based (ASCE-Will         alculate water quality volume (Acre-Feet):         ibtain A from Step 1         ibtain P <sub>0</sub> : Maximized Detention Volume from figures E-1:         Appendix E of this manual using I <sub>k</sub> from Step 2.         alculate treatment volume (acre-ft):         Treatment volume = A x (P <sub>0</sub> / 12)	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 j 0.18 A <sub>AT</sub> 0.95 c 0.03 cfs EF) WQV = Area x Maximized Detention 1 0.40 A to E-4 0.22 P <sub>0</sub> 0.007270 Acre-	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area Volume (P <sub>0</sub> ) $12$	0.1768 0.44 <b>j in Step 4</b> <b>Table D-</b> Roseville Sacrament Folsom	$\begin{array}{c c} A_{AT} \\ \hline I_A \\ \hline \\ $
	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         :aculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         ise C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-Will         alculate water quality volume (Acre-Feet):         ibtain A from Step 1         ibtain P <sub>0</sub> : Maximized Detention Volume from figures E-1:         Appendix E of this manual using $l_h$ from Step 2.         alculate treatment volume (acre-ft):         Treatment volume = A x (P <sub>0</sub> / 12)	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 AAT 0.95 C 0.03 cfs EF) WQV = Area x Maximized Detention 0.40 A to E-4 0.22 Po 0.007270 Acre-	$A_{T} - A_{C} - A_{LIDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix} = \begin{bmatrix} \\ rolume-based sizing \\ rolume-based sizing \\ rolume (P_0) \end{bmatrix}$	0.1768 0.44 <b>J in Step 4</b> <b>Table D</b> - Roseville Sacrament Folsom	$\begin{array}{c c} & A_{AT} \\ \hline & I_A \\ \hline \\ $
	Does project require hydromodification man         Adjusted Area for Flow-Based, Non-LID Trea         Adjusted Impervious Fraction of A for Volum         Further treatment is required,         itep 4a Treatment - Flow-Based (Rational Me         iaculate treatment flow (cfs):         ook up value for i in Table D-2c (Rainfall Intensity)         ibtain $A_{AT}$ from Step 3         ise C = 0.95         Flow = 0.95 * i * $A_{AT}$ tep 4b Treatment - Volume-Based (ASCE-Will         alculate water quality volume (Acre-Feet):         ibtain A from Step 1         ibtain A from Step 1         ibtain P <sub>0</sub> : Maximized Detention Volume from figures E-1 · Appendix E of this manual using I <sub>h</sub> from Step 2.         alculate treatment volume (acre-ft):         Treatment volume = A x (P <sub>0</sub> / 12)	agement? If yes, proceed to using SacHM tment te-Based, Non-LID Treatment See Choose flow-based or v thod) Flow = Runoff Coefficient x Rainfall Ir 0.18 i 0.18 A <sub>AT</sub> 0.95 c 0.03 cfs EF) WQV = Area x Maximized Detention 1 0.40 A to E-4 0.22 P <sub>0</sub> 0.007270 Acre-	$A_{T} - A_{C} - A_{UDC} = \begin{bmatrix} \\ A_{AT} / A \end{bmatrix}$ rolume-based sizing ntensity x Area Volume (P <sub>0</sub> ) $12$	0.1768 0.44 <b>J in Step 4</b> <b>Table D-</b> Roseville Sacrament Folsom	$\begin{array}{c c} & A_{AT} \\ \hline & I_A \\ \hline \\ $

Name of Drainage Shed: DMA-04			]	Fill in Blue Highlighted boxes	
Location of project: Sacramento			J	·	
Step 1 - Open Space and Pervious Area Cr	redits				
Is your project within the drainage area of a common drainage	plan that includes open space	? If not, skip to 1 b.			
1 a. Common Drainage Plan Area			488 acres	A <sub>CDP</sub>	
Common Drainage Plan Open Space (Off-project)			121 acres	A <sub>os</sub>	see area example
a. Natural storage reservoirs and drainage corridors			0 acres		below
b. Buffer zones for natural water bodies			0 acres		Delow
c. Natural areas including existing trees, other vegeta	tion, and soil		0 acres		
d. Common landscape area/park			107 acres		
e. Regional Flood Control/Drainage basins			14 acres		
1 b. Project Drainage Shed Area (Total) Project-Specific Open Space (In-project. commun	al**)		0.451 acres	A A <sub>PSOS</sub>	
a. Natural storage reservoirs and drainage corridors	,		0.00 acres	1000	
b. Buffer zones for natural water bodies			0.00 acres		
c. Natural areas including existing trees, other vegeta	tion, and soil		0.00 acres		see area example
d. Landscape area/park			0.058 acres		below
e. Flood Control/Drainage basins			0.00 acres		
** Doesn't include impervious areas within individual l	ots and surrounding indiv	vidual units. That is ac	counted for below usin	g Form D-1a in Step 2.	
Area with Runoff Reduction Potential	A - A <sub>PSOS</sub> =		0.3930 acres	A <sub>T</sub>	
Assumed Initial Impervious Fraction	A <sub>T</sub> / A =		0.87	Ι	
Open Space & Pervious Area LID Credit (Step 1)					
(A	$_{OS}/A_{CDP}+A_{PSOS}/A)x100 =$		38 pts		





Step 2 - Runoff Reduction Credits						
Runoff Reduction Treatments	Impervious Area Managed		Efficiency Factor		Effective Area Managed (A <sub>C</sub> )	
Porous Pavement:	-					
Option 1: Porous Pavement (see Fact Sheet, excludes porous pavement used in Option 2)	0	acres	x	=	0.000	acres
Option 2: Disconnected Pavement use For (see Fact Sheet, excludes porous pavement used in Option 1)	rm D-2a for credits				0.00	acres
Landscaping used to Disconnect Pavement (see Fact Sheet)	0.0444	acres		=	0.04	acres
Disconnected Roof Drains (see Fact Sheet and/or Table D-2b for summary of requirements)	0.120684	acres		=	0.12	acres
Ecoroof (see Fact Sheet)	0	acres		=	0.00	acres
Interceptor Trees use Form D-2b for credits (see Fact Sheet)					0.00	acres
Total Effective Area Managed by Runoff Reduction Measured	res		Ac		0.17	acres
Runoff Reduction Credit (Step 2)			(A <sub>C</sub>	/ A <sub>T</sub> )*100 =	42	pts

	Table D-2a				Table D-2	D	
Porous Cobblesto Pervious Co Modular Bld Reinforced	Pavement Type ne Block Pavement oncrete/Asphalt ock Pavement & Grass Pavement	Efficiency Multiplier 0.40 0.60 0.75 1.00		Maximum roof s ≤ 3,500 sq ft ≤ 5,000 sq ft ≤ 7,500 sq ft ≤ 10,000 sq ft	size	Minimur dista	n travel ince 21 ft 24 ft 28 ft 32 ft
Form D-2a: Disco	nnected Pavement V	Norksheet	1				
See Fact Sheet for more	Information regarding Disc	onnected Pavemen	: creait guidelines	_	-	-	Effective Area Managed $(A_c)$
2 Enter area draining to	Porous Pavement			0.00	20	res	Box K1
<ol> <li>Enter area of Receiv (excludes area entered</li> <li>Ratio of Areas (Bo:</li> </ol>	ving Porous Pavement in Step 2 under Porous x K1 / Box K2)	Pavement)		0.00	ac	res	Box K2 Box K3
5. Select multiplier usin	g ratio from Box K3 and	enter into Box K4					
$\begin{array}{r} \text{Ratio (Box D)} \\ \text{Ratio is $ 0.5} \\ \text{Ratio is $ 0.5} \\ \text{Ratio is $ 1.0} \\ \text{Ratio is $ 1.5} \end{array}$	and < 1.0 and < 1.5 and < 2.0		Multiplier 1.00 0.83 0.71 0.55	1			Box K4
6. Enter Efficiency of P	orous Pavement (see ta	able below)					Box K5
Porous	Pavement Type	Efficiency Multiplier					
Cobblestone Pervious Co	e Block Pavement	0.40					
Asphalt Pav Modular Blo	ement ck Pavement	0.00					
Porous Grav Reinforced	vel Pavement Grass Pavement	1.00					
7. Multiply Box K2 by E	Box K5 and enter into Bo	x K6		0.00	ac	res	Box K6
<ol> <li>Multiply Boxes K1,K</li> </ol>	4, and K5 and enter the	result in Box K7		0.00	ac	res	Box K7
9. Add Box K6 to Box I This is the amount of a	K7 and multiply by 60%, rea credit to enter into th	and enter the Res e "Disconnected F	ult in Box K8 Pavement" Box of Form D-2				0.00 acres
Form D-2b: Interco	eptor Tree Workshe	et					
See Fact Sheet for more	information regarding Inter	ceptor Tree credit g	uidelines				
New Evergreen Trees	wevergreen trees that g	ualify as Intercente	r Trees in Box I 1		trees	Box I 1	
2 Multiply Roy I 1 by 2	00 and ontor result in R		I Trees III Dox LT.		uces	Box 1.2	
		0X L2		0	sq. n.	BUX L2	
New Deciduous Trees	; v deciduous trees that qu	ualify as Intercepto	or Trees in Box L3.		trees	Box I.3	
4. Multiply Box L3 by 1	00 and enter result in Bo	ox L4		0	sq. ft.	Box L4	
5 Enter square footage	e of existing tree canony	that qualifies as F	evicting Tree capopy in Boy I 5		og ft	Pox 1.5	
5. Enter square lootag	e of existing tree carlopy	that qualities as t	And the cartopy in Dox 23.		эч. п.	Box LJ	
6. Multiply Box L5 by 0	.5 and enter the result in	Box L6		0	sq. ft.	Box L6	
Total Interceptor Tree	EAM Credits						
Add Boxes L2, L4, and	L6 and enter it into Box	L7		0	sq. ft.	Box L7	
Divide Box L7 by 43,56 This is the amount of a	0 and multiply by 20% to rea credit to enter into th	get effective area e "Interceptor Tree	a managed and enter result in Box L8 es" Box of Form D-2	0.00	acres	Box L8	

Step 3 - Runoff Management Credits			
Impervious Area Managed by Rain barrels	, Cisterns, and automatically-emptied systems		
(see Fact Sheet)	enter gallons, for simple rain barrels		0.00 acres
Automated-Control Capture and Use Syste	em		
(see Fact Sheet, then enter impervious area manag	ged by the system)		0.00 acres
Bioretention/Infiltration Credits	DND-		
(see Fact Sheet)	Subdrain Elevation - inches		
	Ponding Depth, inches		0.0000 acres
Impervious Area Managed by Infiltration B (see Fact Sheet)	BMPs Drawdown Time, hrs	nf	
	Soil Infiltration Rate, in/hr soil_inf_rate		
Sizing O	Dotion 1: Capture Volume, acre-ft capture, vol. inf		0.00 acres
g -			
Sizing O	ption 2: Infiltration BMP surface area, sq ftsoil_surface_are	a	0.0000 acres
Ba	asin or trench? approximate BMP depth	0.00 ft	
Impervious Area Managed by Amended So	oil or Mulch Beds		
(see Fact Sheet)	Mulched Infiltration Area, sq ft mulch_area		0.00 acres
Total Effective Area Managed by Capture-and	d-Use/Bioretention/Infiltration BMPs	(	0.00000 A <sub>LIDc</sub>
Runoff Management Credit (Step 3)		A <sub>LIDC</sub> /A <sub>T</sub> *200 =	0.0 pts
Total LID Credits (Step 1+2+3	) Warning: More L	ID Is Required	79.7
Does project require hydromodification man	agement? If yes, proceed to using SacHM.		
Adjusted Area for Flow-Based, Non-LID Trea	utment A <sub>T</sub> - A <sub>C</sub>	-A <sub>LIDC</sub> = 0.2279	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea	ntment A <sub>T</sub> - A <sub>C</sub>	-A <sub>LIDC</sub> = 0.2279	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum	ntment A <sub>T</sub> - A <sub>C</sub> ne-Based, Non-LID Treatment	$A_{AT} - A_{LIDC} = 0.2279$ $A_{AT} - A_{AT} = 0.50$	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum	tment A <sub>T</sub> - A <sub>C</sub> re-Based, Non-LID Treatment A	$A_{LDC} = 0.2279$ $A_{AT} / A = 0.50$	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required,	ntment A <sub>T</sub> - A <sub>C</sub> ne-Based, Non-LID Treatment A , see choose flow-based or volume-based	A <sub>LDC</sub> = 0.2279 A <sub>AT</sub> / A = 0.50 sizing in Step 4	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required,	ttment A <sub>T</sub> - A <sub>C</sub> ne-Based, Non-LID Treatment A , see choose flow-based or volume-based	-A <sub>LDC</sub> = 0.2279 A <sub>AT</sub> / A = 0.50 sizing in Step 4	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me	ttment A <sub>T</sub> - A <sub>c</sub> ne-Based, Non-LID Treatment // , see choose flow-based or volume-based thod)	-A <sub>LIDC</sub> = 0.2279 A <sub>AT</sub> / A = 0.50 sizing in Step 4	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs):	ttment A <sub>T</sub> - A <sub>c</sub> ne-Based, Non-LID Treatment A , see choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area	A <sub>AT</sub> / A = 0.2279 <b>Sizing in Step 4</b> Table	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): ok up value for i in Table D-2c (Rainfall Intensity)	ttment A <sub>T</sub> - A <sub>d</sub> ne-Based, Non-LID Treatment A , see choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area	A <sub>AT</sub> / A = 0.2279 <b>Sizing in Step 4</b>	A <sub>AT</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): tok up value for i in Table D-2c (Rainfall Intensity)	ttment AT - Ac ne-Based, Non-LID Treatment A , see choose flow-based or volume-based sthod) Flow = Runoff Coefficient x Rainfall Intensity x Area	A <sub>AT</sub> / A = 0.2279 <b>Sizing in Step 4</b> Table	A <sub>AT</sub> I <sub>A</sub> I <sub>A</sub>
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): tok up value for i in Table D-2c (Rainfall Intensity) otain A <sub>AT</sub> from Step 3	ttment AT - Ac ne-Based, Non-LID Treatment A , see Choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18]i 0.23]A <sub>AT</sub>	A <sub>LIDC</sub> = 0.2279 A <sub>AT</sub> / A = 0.50 sizing in Step 4 Table Rosevil Sacram	$A_{AT}$ $I_A$ $I_A$ $B D-2c$ $Rainfall Intensity$ $I = 0.20 in/hr$ $i = 0.20 in/hr$
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): tok up value for i in Table D-2c (Rainfall Intensity) otain $A_{AT}$ from Step 3 te C = 0.95	tment AT - A ne-Based, Non-LID Treatment A see Choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 ji 0.23 A <sub>AT</sub> 0.95 C	A <sub>LIDC</sub> = 0.2279 A <sub>AT</sub> / A = 0.50 sizing in Step 4 Table Rosevil Sacran Folsom	A <sub>AT</sub> I <sub>A</sub> <b>B-2c</b> Rainfall Intensity le i = 0.20 in/hr i = 0.20 in/hr i = 0.20 in/hr
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): rok up value for i in Table D-2c (Rainfall Intensity) obtain $A_{AT}$ from Step 3 se C = 0.95	tment A <sub>T</sub> - A <sub>d</sub> ne-Based, Non-LID Treatment A , see choose flow-based or volume-based , see choose flow-based or volume-based Thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 ji 0.23 A <sub>AT</sub> 0.95 c	A <sub>AT</sub> / A = 0.2279 <b>sizing in Step 4</b> <b>Table</b> Rosevil Sacram Folsom	A <sub>AT</sub> I <sub>A</sub> I <sub>A</sub> Be i = 0.20 in/hr           i = 0.20 in/hr           i = 0.20 in/hr
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): whe up value for i in Table D-2c (Rainfall Intensity) btain $A_{AT}$ from Step 3 we C = 0.95 Flow = 0.95 * i * $A_{AT}$	tment AT - Ad ne-Based, Non-LID Treatment A , see choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 ji 0.23 A <sub>AT</sub> 0.95 c 0.04 efs	A <sub>AT</sub> / A = 0.2279 <b>sizing in Step 4</b> <b>Table</b> Rosevil Sacrarr Folsom	A <sub>AT</sub> I <sub>A</sub> <b>I</b> A <b>B-2C</b> <b>Rainfall Intensity</b> le i = 0.20 in/hr i = 0.20 in/hr
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum <b>Further treatment is required</b> , tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): tok up value for i in Table D-2c (Rainfall Intensity) obtain $A_{AT}$ from Step 3 se C = 0.95 Flow = 0.95 * i * $A_{AT}$	tment A <sub>T</sub> - A <sub>c</sub> ne-Based, Non-LID Treatment A see choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 ji 0.23 A <sub>AT</sub> 0.95 c 0.04 cfs	A <sub>AT</sub> / A = 0.2279 <b>sizing in Step 4</b> <b>Table</b> Rosevil Sacram Folsom	A <sub>AT</sub> I <sub>A</sub> <b>D-2c</b> <b>Rainfall Intensity</b> le i = 0.20 in/hr i = 0.20 in/hr
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum <b>Further treatment is required</b> , tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): tok up value for i in Table D-2c (Rainfall Intensity) otain $A_{AT}$ from Step 3 se C = 0.95 Flow = 0.95 * i * $A_{AT}$	tment A <sub>T</sub> - A <sub>c</sub> ne-Based, Non-LID Treatment <b>see choose flow-based or volume-based</b> <b>sthod)</b> Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 i 0.23 A <sub>AT</sub> 0.95 c 0.04 efs	A <sub>AT</sub> / A = 0.2279 <b>sizing in Step 4</b> <b>Table</b> Rosevil Sacram Folsom	A <sub>AT</sub> I <sub>A</sub> <b>PD-2c</b> <b>Rainfall Intensity</b> le i = 0.20 in/hr i = 0.20 in/hr
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): tok up value for i in Table D-2c (Rainfall Intensity) otain A <sub>AT</sub> from Step 3 se C = 0.95 Flow = 0.95 * i * A <sub>AT</sub>	tment A <sub>T</sub> - A <sub>d</sub> the Based, Non-LID Treatment A thod) thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 i 0.23 A <sub>AT</sub> 0.95 c 0.04 efs EF)	A <sub>AT</sub> / A = 0.2279 <b>sizing in Step 4</b> <b>Table</b> Rosevil Sacran Folsom	A <sub>AT</sub> I <sub>A</sub> <b>B-2C</b> <b>Rainfall Intensity</b> le i = 0.20 in/hr i = 0.20 in/hr i = 0.20 in/hr
Adjusted Area for Flow-Based, Non-LID Trea Adjusted Impervious Fraction of A for Volum Further treatment is required, tep 4a Treatment - Flow-Based (Rational Me alculate treatment flow (cfs): bok up value for i in Table D-2c (Rainfall Intensity) otain A <sub>AT</sub> from Step 3 se C = 0.95 Flow = 0.95 * i * A <sub>AT</sub>	tment A <sub>T</sub> - A <sub>c</sub> the-Based, Non-LID Treatment A see choose flow-based or volume-based thod) Flow = Runoff Coefficient x Rainfall Intensity x Area 0.18 i 0.23 A <sub>AT</sub> 0.95 c 0.04 cfs EF WQV = Area x Maximized Detention Volume (P <sub>0</sub> )	A <sub>AT</sub> / A = 0.2279 <b>sizing in Step 4</b> <b>Table</b> Rosevil Sacran Folsom	A <sub>AT</sub> I <sub>A</sub> I <sub>A</sub> PD-2c           Rainfall Intensity           le i =         0.20 in/hr           i =         0.20 in/hr
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WOODSPRING SUITES



WE

PRELIMINARY DRAINAGE STUDY

# APPENDIX D

## **PROPRIETARY INFORMATION**

### **Bioretention** Trash Best Management Practices (BMP) Minimum Specifications



Figure A: CA State University-Sacramento Bioretention BMP

Figure B. American Common Bio-Swale Detail

### Description

Bioretention BMPs, including bio-swales, remove pollutants from storm water runoff through physical filtration as storm water passes through media layers. The treatment area consists of: a ponding layer; vegetated, mulched, and engineered soil layer; and supporting bed layer of sand or gravel. Bioretention BMPs can be a variety of shapes and sizes. Storm water entering the treatment area evapotranspires or gradually passes through the mulch/soil/gravel layers where it then infiltrates into native soil or collects in an underdrain that conveys to a discharge point.

### Performance and Design

The bioretention BMP must be designed to trap trash particles that are 5 mm or greater and prevent offsite migration, and the design must include:

- 1. A screen<sup>1</sup> that prohibits the discharge of particles 5 mm or greater at the BMP overflow or bypass outlet;
- 2. A treatment capacity equal to or greater than the volume collected during the region specific one-year, one-hour storm event from the applicable drainage area; or a capacity to carry at least the same flows of the corresponding storm drain; and
- Stamped and signed design plans by a registered California licensed professional civil engineer (see Bus. & Prof. Code Section 6700, et seq.).

### Maintenance

Regular maintenance is required to maintain adequate trash capture capacity and to ensure that trapped trash does not migrate offsite. The owner should establish a maintenance schedule based on site-specific factors, including the size of the bioretention BMP trench, storm frequency, and characterization of upstream trash and vegetation accumulation. Trash capture and maintenance may be improved by addition of various forms of pretreatment, such as upstream swales or forebays.

<sup>&</sup>lt;sup>1</sup>Upon approval by the Regional Water Quality Control Board Executive Officer, an external design feature or upgradient structure designed to bypass flows exceeding the region specific one-year, one-hour, storm event does not require a 5 mm screen.

# FlexStorm Pure<sup>™</sup> Inlet Filters

FlexStorm Pure inlet filters are the preferred choice for permanent inlet protection and stormwater runoff control. Constructed of stainless steel, FlexStorm Pure inlet filters will fit any drainage structure and are available with site-specific filter bags providing various levels of filtration.

### Applications

- Car washes
- Commercial
- Loading ramps
- Industrial

### Features

- Custom stainless steel frames are configured to fit into any drainage structure
- Flow and bypass rates meet specific inlet requirements
- Works below grade with bypass to drain area if bag is full
- Installed and maintained by one worker, without additional equipment

- Gas stations
- Parking lots
- Dock drains
- Maintenance

### Benefits

- Stainless steel frame provides extended service life
- Easily replaceable filter bags
- Meets stringent removal requirements:
- All bags rated >80% removal efficiency of street sweep-size particles
- Optional FXP/PCP bags can be used for hydrocarbon removal when required







## **FlexStorm Pure Inlet Filters Specification**

### **Material and Performance**

The filter is comprised of a stainless steel frame and a replaceable geotextile filter bag attached to the frame with a stainless steel locking band. The filter bag hangs suspended below the grate that shall allow full bypass flow into the drainage structure if the bag is completely filled with sediment. The standard woven polypropylene "FX" filters bags are rated for 200 gpm/sqft with a removal efficiency of 82% when filtering a USDA Sandy Loam sediment load. The post-construction PCP filter bags are rated for 137 gpm/sqft and have been third-party tested at 99% TSS removal.

### Installation

- 1. Remove the grate from the inlet.
- 2. Clean debris from the ledges of the inlet.
- 3. Place the inlet filter onto the load bearing ledges of the structure.
- 4. Replace the grate and confirm it is not elevated more than 1/8" (3 mm).

### **Frequency of Inspections**

- 1. Inspection should occur following rain events greater than ½" (13 mm).
- 2. Filter inspections should occur a minimum of three times per year, and in snowfall affected regions, inspections prior to and after snowfall season.
- 3. Industrial application site inspections (loading ramps, wash racks & maintenance facilities) to be scheduled on a recurring basis no less than four times per year or as needed.

### **Maintenance Guidelines**

- 1. Empty the filter bag manually or by industrial vacuum taking care not to damage the geotextile bag when more than half filled or during scheduled inspection period.
- 2. Remove compacted silt from sediment bag and flush with medium spray.
- 3. "PCP" style bags should be pressed or wrung to recover retained oils.
- 4. Oil skimmer pouches solidify and darken when saturated, indicating time for replacement.
- 5. Dispose of all oil-contaminated products and recovered oils in accordance with EPA guidelines. Oil skimmer pouches, since a solidifier, will not leach and can be disposed of directly.
- 6. Inspect and replace bag if torn or punctured.

### Filter Bag Replacement

- 1. Remove the bag by loosening or cutting off clamping band.
- 2. Take the new correctly sized sediment bag and secure hose clamping band to the frame channel as previously removed.
- 3. Ensure bag is secure and there is no slack around perimeter.

### Build America, Buy America (BABA)

For any questions related to Build America, Buy America (BABA) Act compliance contact an ADS representative.



ADS "Terms and Conditions of Sale" are available on the ADS website, www.adspipe.com. ADS<sup>™</sup>, FlexStorm Pure<sup>™</sup> and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc. © 2023 Advanced Drainage Systems, Inc. #10892 02/23 MH

# ADS FLEXSTORM PURE INLET FILTERS



$\wedge$

ROUND INLET FILTER				
Close Oponing Sizo	Style D/N	Minimum Bypass		
Clear Opening Size	SLYIE P/IN	Flow Rate (CFS)		
Small: 10" - 16" Dia.	62SHDR	1.6		
Medium: 17" - 24" Dia.	62MHDR	2.7		
Large: 25" - 36" Dia.	62LHDR	3.8		

CURB OPEN THROAT INLET FILT	<u>ER</u>
Basin Width Size	S
Up to 4' Width (1 Piece Set)	62
4' - 8' Width (2 Piece Set)	62
8' - 12' Width (3 Piece Set)	62
12' - 16' Width (4 Piece Set)	62

4

SPECIFICATIONS BY NOMINAL SIZE RANGE (MIN. VALUES)					
Nominal Bag	Solids Storage	Flow Rate (CFS)*		Oil Retention (Oz)**	
Size	(CuFt)	FX/FXP	РСР	FXP	РСР
Small	1.6	1.2	0.8	89	168
Medium	2.1	1.7	1.2	89	204
Large	3.8	2.7	1.8	89	262
Extra Large	4.2	3.6	2.4	178	319
TSS Removal Rate		82%	N/A	Large scale 3rd party testing per ASTM D 7351 using 7% concentration USDA Sandy Loam	
TSS Removal Rate		NA	99%	Large Scale testing at 90 GPM using US Silica OK-110 sand at 1750 mg/L measuring TSS per SM 2540D.	
TPH Removal Rate		NA	97%	Large Scale testing at 90 GPM with used motor oil at 243 mg/L measuring per EPA Method 1664A.	
*Filter bag at 50% max solids storage capacity					
**Filter bag at 50% oil capacity and oil skimmer pouch at 100% oil capacity					

## NOTES:

4

1. ALL FRAMING IS CONSTRUCTED OF 304 STAINLESS STEEL.

2. TOTAL BYPASS CAPACITY WILL VARY WITH EACH SIZE DRAINAGE STRUCTURE. ADS DESIGNS FRAMING BYPASS TO MEET OR EXCEED THE DESIGN FLOW OF THE PARTICULAR DRAINAGE STRUCTURE.

3. UPON ORDERING, CONFIRMATION OF THE INLET SPECIFICATION, PRECAST/FOUNDRY CASTING MAKE AND MODEL, OR DETAILED DIMENSIONAL FORMS MUST BE PROVIDED TO CONFIGURE AND ASSEMBLE AN INLET FILTER.

3

4. ALL FILTERS MEET ASTM D8057 SPECIFICATIONS.

5. FOR WRITTEN SPECIFICATIONS AND MAINTENANCE GUIDELINES VISIT WWW.ADSPIPE.COM.



Extra-Large: 121" or Greater Perimeter

## **INSTALLATION INSTRUCTIONS:**

## 1. REMOVE GRATE

- 2. CLEAN GRATE LEDGE
- 3. SET INLET FILTER ON LOAD
- BEARING LEDGE OF STRUCTURE
- 4. REPLACE GRATE

2



62XLHD

7.2

## ALL PRODUCTS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS WWW.ADSPIPE.COM PH. 1-800-821-6710



SIZE		DATE		DWG NO		REV
С	0	2/06/	2023	ADS FLEXSTORM	PURE	Α
SCALE	EN	I/A			SHEET 1 OF 1	
					1	

### Aaron Bernatchy (CWE)

From:	Wint Tun <wtun@cityofsacramento.org></wtun@cityofsacramento.org>
Sent:	Wednesday, June 5, 2024 4:01 PM
То:	Aaron Bernatchy (CWE); Emmerson Zapata
Cc:	Bob Eynck (CWE)
Subject:	RE: Woodspring Suites Hotel at Centerpointe P24-013
Attachments:	2018 Commercial LID CreditsPW-withregionalbasin5NORTH_LID.xlsx

\*\*\*\*\* CAUTION: THIS EMAIL IS FROM AN EXTERNAL (i.e. NON-CWE) SENDER. \*\*\*\*\*

Aaron,

Your interpretation is correct. The regional detention basin provides the necessary treatment; therefore, you are required to implement Low Impact Development (LID) measures and achieve 100 LID credits for the site. Please ensure that you include the LID worksheet with your study as specified in the comments. Since the project is located in the North Natomas Area, you can receive some credits for the Common Drainage Plan Open Space (Off-Project). See the attached LID worksheet for Basin 15's Common Drainage Plan Open Space Credits. Be sure to fill in the specific Project Drainage Shed Area and the specific open space acreage.

I have confirmed that your proposed project does not require an onsite detention basin since the city's drainage system can handle up to 95% imperviousness. The post-project imperviousness shown on Sheet SM2 is 85.2%, which is within the city's allowed limit. However, this project still requires the implementation of LID and Full Trash Capture measures, as well as the inclusion of an LID worksheet as mentioned above. Additionally, the 10-year and 100-year HGL at node 5319 are 9.897 and 10.474 respectively.

Please include the city benchmark number and datum information used for the project in your report. If the runoff is directed into the drainage on the north, the neighboring properties must be under the same ownership. If they are not, an agreement must be provided for the construction of drainage across the neighboring property. This additional information should also be included in your report.

If you have any further questions or need additional clarification, please let me know.

Thank You,

Wint Tun Assistant Civil Engineer Department of Utilities 1395 35<sup>th</sup> Ave (916) 808-6241

