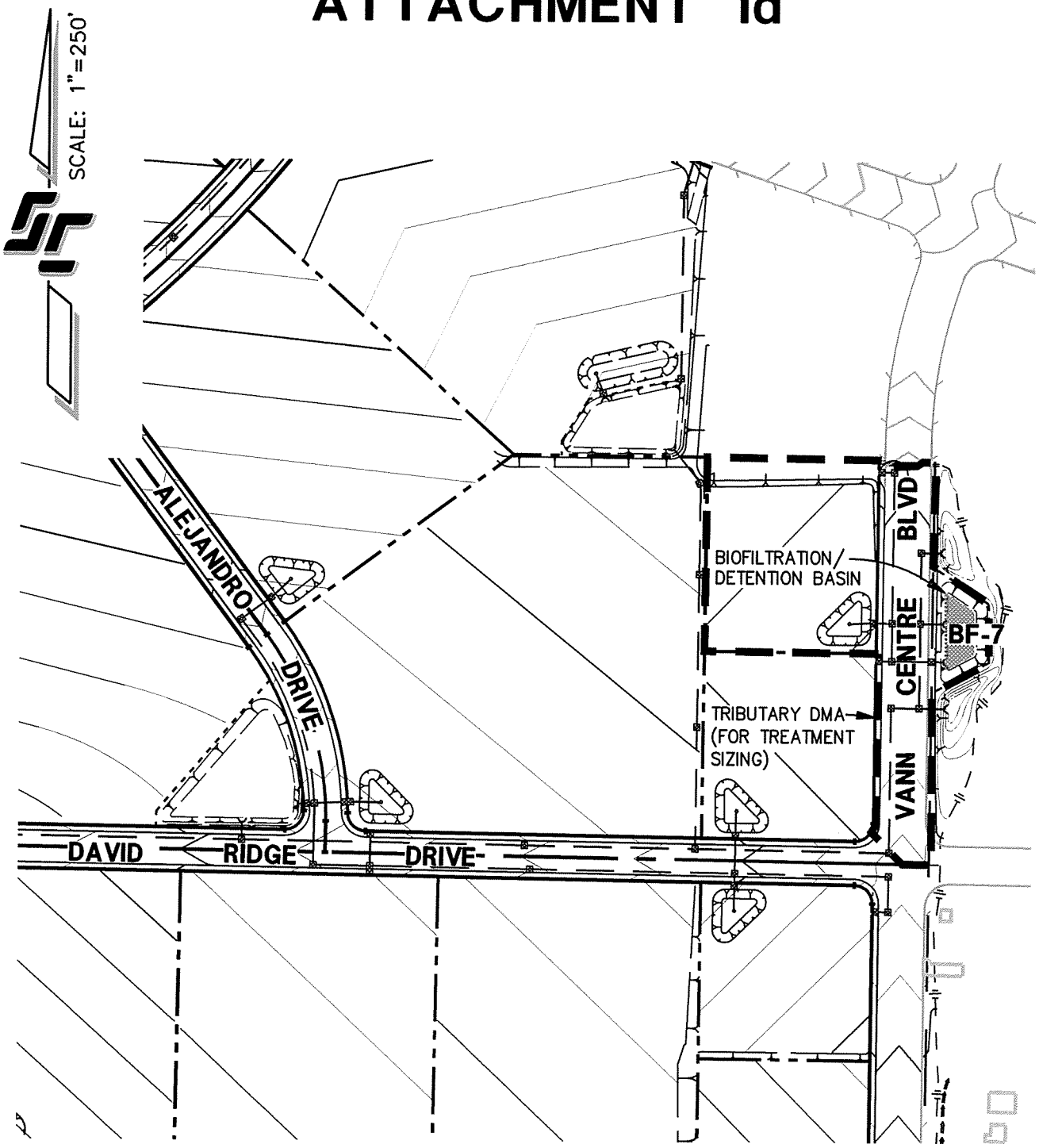
ATTACHMENT 1d



BF-7
BMP DMA MAPBOOK

SCALE: 1"=250'

3

ATTACHMENT 2

BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 2a	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	☒ Included ☐ Submitted as separate stand-alone document
Attachment 2b	Hydromodification Management Exhibit (Required)	☒ Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2c	Management of Critical Coarse Sediment Yield Areas See Section 6.2 and Appendix H of the BMP Design Manual.	☒ Exhibit depicting onsite and/or upstream sources of critical coarse sediment as mapped by Regional or Jurisdictional approaches outlined in Appendix H.1 AND, ☐ Demonstration that the project effectively avoids and bypasses sources of mapped critical coarse sediment per approaches outlined in Appendix H.2 and H.3. OR, ☐ Demonstration that project does not generate a net impact on the receiving water per approaches outlined in Appendix H.4.
Attachment 2d	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☐ Not performed ☒ Included ☐ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐ Included ☒ Not required because BMPs will drain in less than 96 hours

Attachment 2a

Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary

Note: The BMP Sizing Spreadsheet calculations are intended to demonstrate feasibility only and are not to be used for final BMP design: Continuous simulation modeling will be provided at Final Engineering.

BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	Stevens Cresto Engineering	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name:	BF 1	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
PER TO IMP	201983	D	Flat	ASPHALT	1.0	0.08	0.0667	0.048	16159	13472	9695
PER TO PER	1836023	D	Flat	LANDSCAPE	0.1	0.08	0.0667	0.048	14688	12246	8813
BF 1	25000	D	Flat	BIOFILTER	0.1	0.08	0.0667	0.048	200	167	120
											Total
Total BMP Area	2063006								Minimum BMP Size	31046.824	25885	18628 4453
									Proposed BMP Size*	25000	30000	15000 45000
										Soil Matrix Depth	18.00	in
										Minimum Ponding Depth	12.42	in
										Maximum Ponding Depth	192.08	in
										Selected Ponding Depth	14.40	in

Describe the BMP's in sufficient detail in your SWMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

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Designated Staff have final review and approval authority over the project design.

This Sizing Calculator has been developed in compliance with the Countywide Model SUSMP. For questions or concerns please contact the jurisdiction in which your project is located.

NOTE: BMP IS ADEQUATELY SIZED TO PROVIDE HYDROMODIFICATION MITIGATION VOLUMES REQUIRED AND PROVIDED AREA IS ADEQUATE FOR POLLUTANT CONTROL (SEE ATTACHMENT 1a). CONTINUOUS SIMULATION MODELING WILL BE UTILIZED AT FINAL ENGINEERING TO REFINE BMP DESIGN AND MINIMIZE PONDING DEPTH.

BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	tevens Cresto Engineerir	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name	BF 1	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
PER TO IMP	Lindbergh	D	Scrub	Flat	0.05	4.637	0.116	**2.83**
PER TO PER	Lindbergh	D	Scrub	Flat	0.05	42.149	1.054	**25.73**
BF 1	Lindbergh	D	Scrub	Flat	0.05	0.574	0.014	**0.35**

1.184	**28.91**	**6.07**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

1.158	**28.27**	6.00
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	7.2

BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	Stevens Cresto Engineering	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name:	BF 2	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
PER TO IMP	80445	D	Flat	ASPHALT	1.0	0.08	0.0667	0.048	6436	5366	3861
PER TO PER	761659	D	Flat	LANDSCAPE	0.1	0.08	0.0667	0.048	6093	5080	3656
BF 2	10000	D	Flat	BIOFILTER	0.1	0.08	0.0667	0.048	80	67	48
Total BMP Area	852104										

Minimum BMP Size	12608.872	10513	7565
Proposed BMP Size*	10000	12500	6000
Soil Matrix Depth		18.00	in
Minimum Ponding Depth		12.62	in
Maximum Ponding Depth		200.29	in
Selected Ponding Depth		15.00	in

Total
18078
18500

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BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	tevens Cresto Engineerir	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name	BF 2	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
PER TO IMP	Lindbergh	D	Scrub	Flat	0.05	1.847	0.046	**1.13**
PER TO PER	Lindbergh	D	Scrub	Flat	0.05	17.485	0.437	**10.67**
BF 2	Lindbergh	D	Scrub	Flat	0.05	0.230	0.006	**0.14**

0.489	**11.94**	**3.90**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

0.483	**11.79**	3.88
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	7.2

BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	Stevens Cresto Engineering	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name:	BF 3	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
PER TO IMP	124435	D	Flat	ASPHALT	1.0	0.08	0.0667	0.048	9955	8300	5973
PER TO PER	350453	D	Flat	LANDSCAPE	0.1	0.08	0.0667	0.048	2804	2338	1682
BF 3	13000	D	Flat	BIOFILTER	0.1	0.08	0.0667	0.048	104	87	62
Total BMP Area	487888										

Minimum BMP Size	12862.424	10724	7717
Proposed BMP Size*	13000	13000	7800
Soil Matrix Depth		18.00	in
Minimum Ponding Depth		9.90	in
Maximum Ponding Depth		84.81	in
Selected Ponding Depth		12.00	in

Total
18441
20800

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BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	tevens Cresto Engineerir	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name	BF 3	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
PER TO IMP	Lindbergh	D	Scrub	Flat	0.05	2.857	0.071	**1.74**
PER TO PER	Lindbergh	D	Scrub	Flat	0.05	8.045	0.201	**4.91**
BF 3	Lindbergh					0.298		

0.273	**6.66**	**2.91**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

0.266	**6.49**	2.88
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	13.6

BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	Stevens Cresto Engineering	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name:	BF 4	BMP Type:	Bioretention
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	0.024

Areas Draining to BMP						HMP Sizing Factors			Minimum BMP Size		
DMA Name	Area (sf)	Soil Type	Slope	Post Project Surface Type	Runoff Factor (Table 4-2)	Surface Area	Surface Volume	Subsurface Volume	Surface Area (sf)	Surface Volume (cf)	Subsurface Volume (cf)
PER TO IMP	229767	D	Flat	ASPHALT	1.0	0.08	0.0667	0.048	18381	15325	11029
PER TO PER	1056066	D	Flat	LANDSCAPE	0.1	0.08	0.0667	0.048	8449	7044	5069
BF 4	21000	D	Flat	BIOFILTER	0.1	0.08	0.0667	0.048	168	140	101
Total BMP Area	1306833										

Minimum BMP Size	26997.888	22509	16199
Proposed BMP Size*	21000	26250	12600
Soil Matrix Depth		18.00	in
Minimum Ponding Depth		12.86	in
Maximum Ponding Depth		143.31	in
Selected Ponding Depth		15.00	in

Total
38705
38850

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BMP Sizing Spreadsheet V1.04			
Project Name:	Otay 250	Hydrologic Unit:	911 Tijuana Watershed
Project Applicant:	tevens Cresto Engineerir	Rain Gauge:	Lindbergh
Jurisdiction:	County of San Diego	Total Project Area:	253 AC
Parcel (APN):		Low Flow Threshold:	0.5Q2
BMP Name	BF 4	BMP Type:	Bioretention

DMA Name	Rain Gauge	Existing Condition			Q2 Sizing Factor (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	**Orifice Area (in2)**
		Soil Type	Cover	Slope				
PER TO IMP	Lindbergh	D	Scrub	Flat	0.05	5.275	0.132	**3.22**
PER TO PER	Lindbergh	D	Scrub	Flat	0.05	24.244	0.606	**14.80**
BF 4	Lindbergh	D	Scrub	Flat	0.05	0.482	0.012	**0.29**

0.750	**18.31**	**4.83**
Tot. Allowable Orifice Flow (cfs)	**Tot. Allowable Orifice Area (in2)**	**Max Orifice Diameter (in)**

0.726	**17.72**	4.75
Actual Orifice Flow (cfs)	Actual Orifice Area (in2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	10.0