

NEW
FLOWSTOBAY.ORG
WEBSITE +
“GREENSUITE”
DESIGN GUIDES

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Governments

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SAN MATEO COUNTYWIDE
**Water Pollution
Prevention Program**

Clean Water. Healthy Community.

www.flowstobay.org



NEW WEBSITE!

Green Infrastructure
for a Sustainable
San Mateo County

[[GREEN INFRASTRUCTURE](#)]



NEW FEATURES

- Streamlined Design
- Restructured Content
- New Content
- Added Features
- Permittee Content



From The Flows to Bay Blog



Storage Do's And Don'ts For Household Hazardous Waste



Don't Keep Rainwater at Bay - Use It!



Stormwater 101



King Tides: What They Are & Why They Matter

ICONS + GRAPHICS

SEARCH SITE

Search ...

SEARCH

QUICK LINKS

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[« All Events](#)

ReScape Maintenance Qualification Renewal Training (Online)

June 18 @ 8:30 am - 3:30 pm

Online ReScape Maintenance Qualification Renewal Training

\$220 (includes 2-year membership)

\$265 (includes 2-year membership plus [Directory Listing](#))

Training Discounts & Scholarships During COVID-19 – We understand this is a difficult time for many, thus we are offering \$100 discounts on our design and maintenance qualification trainings. Use the discount code “**RESILIENCE**”. Additionally, limited **[scholarships](#)** are available for participants in Sacramento County and employees of [StopWaste Member Agencies](#).

Open to any and all current or formerly qualified ReScape Qualified Professionals in Landscape Maintenance. Please reach out to info@rescapeca.org with questions about your qualification status.



LANDSCAPE MAINTENANCE QUALIFICATION TRAINING RENEWAL

- Refresh your skills
- Get the latest best practices from field experts
- Join like-minded professionals regenerating our landscapes

CLEAN LAYOUT/QUICK LINKS

COLOR CODING



English / Español / 中文 / Tagalog

Events Calendar

Contact

Blog

 Search



ABOUT FLOWS TO BAY

PREVENTING STORMWATER POLLUTION

DATA & RESOURCES

GET INVOLVED

PERMITTEES

MAPS

- Green Infrastructure Story Map
- Municipal Trash Generation Maps
- SRP Web Viewer
- Watershed Map

PLANS

- Stormwater Resource Plan
- Sustainable Streets Master Plan

REPORTS

- Annual Report
- Funding Source Analysis & Recommendations
- Reasonable Assurance Analysis – Green Infrastructure
- Studies & Research
- Urban Creek Monitoring Reports

RESOURCES

- C.3 Regulated Projects
- Green Infrastructure Design Guide
- Major Creeks Of San Mateo County
- Municipal Regional Permit
- Outreach Materials
- Presentations & Workshops



C.3 Regulated Projects Guide

For use by developers, builders and project applicants to design and build low impact development projects

Version 1.0 | January 2020



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COMMITTEES

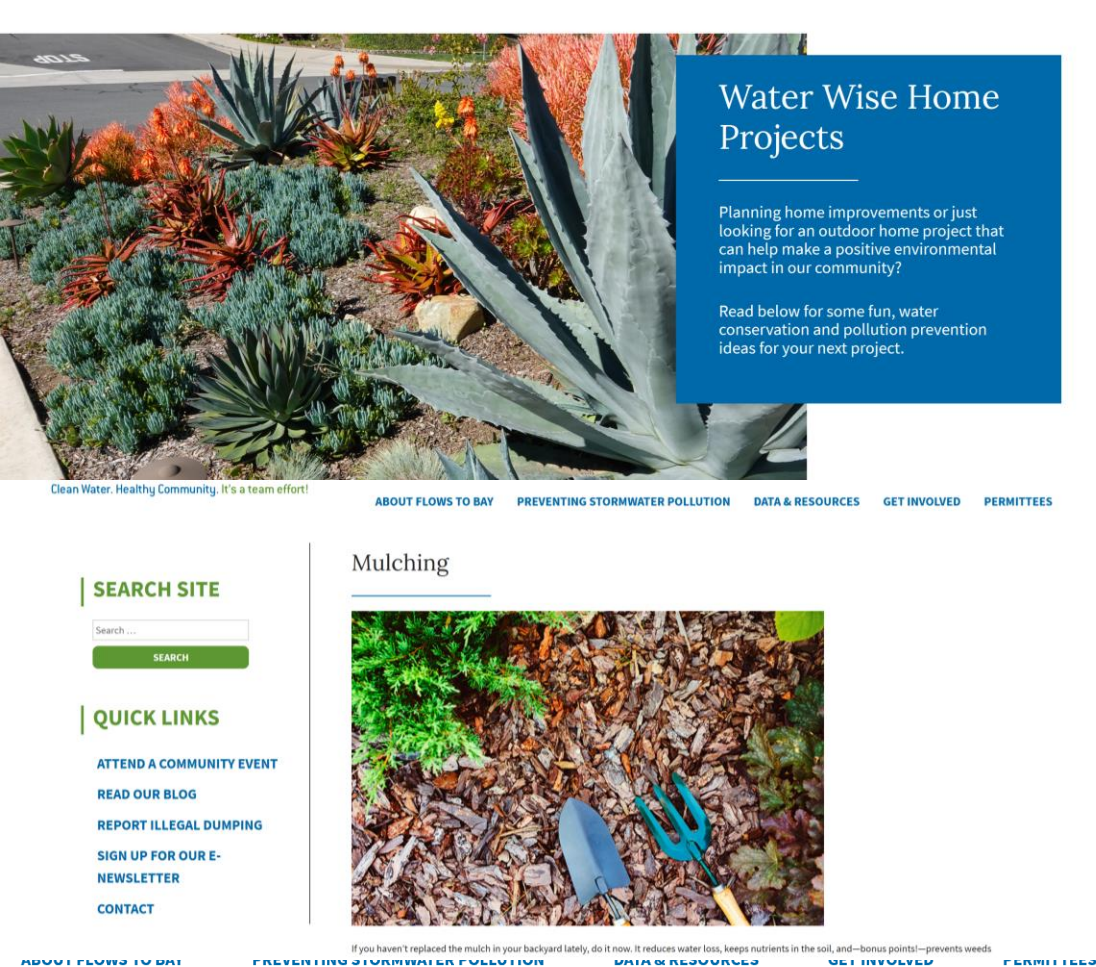
- Commercial, Industrial, and Illicit Discharge (CII)
- Green Infrastructure (GI)
- Municipal Maintenance (MM)
- New Development (ND)
- Parks Maintenance & Integrated Pest Management (Parks/IPM)
- Public Information and Participation (PIP)
- Technical Advisory Committee (TAC)
- Trash Control
- Watershed Assessment and Monitoring (WAM)

RESOURCES

- Annual Report Guidance
- Archive of Annual Report Guidance
- Managing PCBs In Building Materials During Demolition
- Visual Trash Assessment Database



RESTRUCTURED CONTENT



ABOUT FLOWS TO BAY PREVENTING STORMWATER POLLUTION DATA & RESOURCES GET INVOLVED PERMITTEES

Share Your Project With Us!

If you have one of the water-wise outdoor projects described on this page, let us know. Share your story and pictures with us by filling out the form below. We'd love to feature your project and share it with San Mateo County residents.

Name *

First

Last

Email *

Phone

NEW CONTENT

Water Wise Projects (example to right) + Nominate a Community Champion

Maps/Plans/Reports/Resources

Stormwater Resources Plan

GI Story Map

Sustainable Streets Master Plan

RAA Reports (coming)

Annual Reports

Resources

C.3 Regulated Projects Guide + Green Infrastructure Design Guide

Info and Tools

Map themes

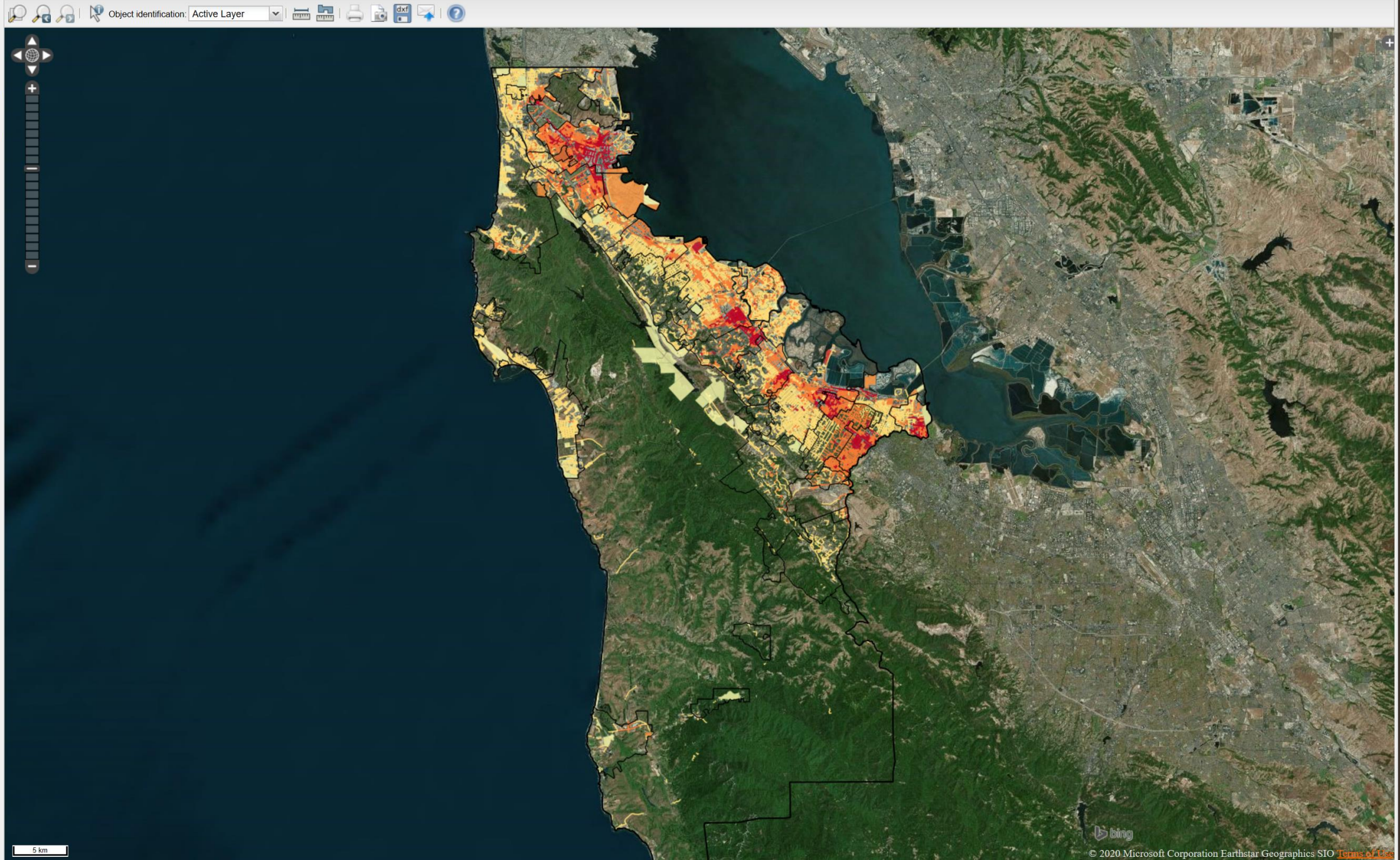
ap

Map Layers

- ☒ San Mateo County Project Prioritization
- ☐ County Stormwater Dataset outfalls
- ☒ County Boundary
- ☒ City Boundaries
- ☐ Streams (National Hydrology Dataset)
- ☐ Implemented GI Projects
- ☐ Flood Resiliency Plan Projects
- ☐ Flood Prone Streams
- ☐ Storm Drains
- ☒ LID Projects Prioritized
- ☒ Green Streets prioritized
- ☒ Regional Projects Prioritized
- ☐ Erosion Hazard (Yr 2100)
- ☐ Regional Project Drainage Areas
- ☐ Sea Level Rise 100
- ☐ Sea Level Rise 200
- ☐ Major Creek Watersheds
- ☐ FEMA 100-yr Flood Plain
- ☐ Major Creek Watersheds
- ☐ Subwatersheds
- ☐ Storm Drain Catchments
- ☐ Storm Drain Outfalls
- ☐ Groundwater Basins

Background Layers

- ☒ Bing Satellite
- ☐ Bing Roads
- ☐ Bing Gray Canvas
- ☐ Google Satellite
- ☐ Google Map



ADDED FEATURES

- Sticky navigation bar
- Collapsible content
- “Back to top” anchors
- Easy translation button
- “Fit to window” content design for mobile and desktop



PERMITTEES PAGE

- Single SMCWPPP Permittee login-in (submit log-in request form)
- Committees – same structure with drop-down menus
- Resources – Annual Report Guidance, PCBs/Demo Data, OVTA database



“GREENSUITE”

C.3 Regulated Projects Guide (updated “C.3 Technical Guidance”)

Mostly for terminology consistency + addressing permittee questions and comments on specific technical guidance for regulated projects

New Green Infrastructure Design Guide

Focus on design for GI on “sustainable streets,” buildings and sites

Updated Operations + Maintenance guidance and checklists

Provides 30,000 ft view on advancing green stormwater infrastructure


Developed in an interactive PDF format for easy navigation

C.3 REGULATED PROJECTS GUIDE



[ABOUT FLOWS TO BAY](#) [PREVENTING STORMWATER POLLUTION](#) [DATA & RESOURCES](#) [GET INVOLVED](#) [PERMITTEES](#)

C.3 Regulated Projects Guide (Version 1.0) (February 2020)

 [Table Of Contents Of The C.3 Regulated Projects Guide \(Version 1.0\)](#)

 [Flyers & Fact Sheets](#)

 [Forms & Checklists](#)

 [Hydromodification Management \(HM\) Requirements](#)

 [Additional Resources & Information](#)

[Edit](#)



GI DESIGN GUIDE



Chapter 2 ⁱⁱⁱ

Green Infrastructure Measures and Opportunities

- 2.0 *Introduction*
- 2.1 *Stormwater Planters*
- 2.2 *Stormwater Curb Extensions*
- 2.3 *Rain Gardens*
- 2.4 *Green Gutters*
- 2.5 *Tree Well Filters*
- 2.6 *Stormwater Trees*
- 2.7 *Trees in the Landscape*
- 2.8 *Infiltration Systems*
- 2.9 *Pervious Pavement*
- 2.10 *Green Roofs*
- 2.11 *Green Walls*
- 2.12 *Rainwater Harvesting*
- 2.13 *Vegetated Swales*

◀ This rain garden at The Cove at Oyster Point collects stormwater from both building and parking lot surfaces. Photo Credit: Urban Rain|Design

DESIGN INSPIRATION



1.0 Introduction

2.0 GI Measures

3.0 Strategies & Guidelines

4.0 Design & Construction

5.0 Implementation

6.0 Operations & Maintenance

7.0 Appendices

3.3 Design Strategies and Guidelines

Buildings and Sites Design Examples for San Mateo County

High-Density Residential Stormwater Planter Example

Many new high-density/mixed-use development projects continue to be built in San Mateo County. These building sites maximize the development's footprint, however, there is often landscape space dedicated along the perimeter of the building that is also in proximity of roof downspouts. The downspouts can be disconnected into either raised or recessed stormwater planters. Some development projects are already utilizing stormwater planters next to buildings, while others, such as the retrofit opportunity shown below, can modify the landscape to accept stormwater runoff.



▲ **RETROFIT OPPORTUNITY:** The same high-density residential yard that disconnects roof downspouts and converts existing landscape areas into a stormwater planter with drought-tolerant landscaping.

High-Density Residential Rain Garden Example

For some high-density residential buildings, adding a more dynamic rain garden landscape where space is available can help change the character of the site and provide a more functional space for the residents. This example illustrated below converts the existing lawn space into a rain garden with an integrated boardwalk and seating area. The roof downspouts direct runoff away from the building foundation to the rain garden using metal channels.



▲ **RETROFIT OPPORTUNITY:** The same high-density apartment complex that converts perimeter grass and landscape areas into a rain garden with drought-tolerant landscaping. Roof downspouts direct water into the rain garden.



▲ **EXISTING:** A typical high-density residential home front yard in San Mateo County.



▲ **EXAMPLE:** An example high-density residential building captures roof runoff and features low-water plant communities.



▲ **EXISTING:** A typical lawn space next to an apartment complex in San Mateo County.



▲ **EXAMPLE:** An example high-density residential rain garden captures roof runoff and features a boardwalk overlook and seating area.

A.3 Appendix 3

Sustainable Streets Typical Design Details



The following index lists the typical construction details and provides active links to their PDF versions and CAD files. If printing the following construction detail PDFs, lower page number ribbons and color blocks are for organization only and will not print.

The User must verify that the correct version is being used as is required by each jurisdiction, and the most current version is being used for your project, as is required.

Legend				
SFPUC GI Typical Details — 2016				
SMCWPPP Typical Details not in SFPUC Typical Details				
SMCWPPP Typical Details Modified From SFPUC Typical Details				

Sustainable Streets Typical Details	SMCWPPP Typical Details not in SFPUC Typical Details	SMCWPPP Typical Details Modified From SFPUC Typical Details	Jump to PDF	Jump to CAD
GEN 0.1 User Guide			→	
Permeable Paving				
PP 1.1 Designer Notes (1 of 2)			→	
PP 1.2 Designer Notes (2 of 2)			→	
PP 1.3 Key Map			→	
PP 2.1 Material Sections - Permeable Unit Pavers			→	
PP 3.1 Material Sections - Pervious Concrete			→	
PP 4.1 Material Sections - Porous Asphalt			→	
Pavement Components				
PC 1.1 Edge Treatments - Designer Notes			→	
PC 1.2 Edge Treatments - Key Map			→	
PC 1.3 Edge Treatments - Vehicular Applications			→	
PC 1.4 Edge Treatments - Pedestrian Applications (1 of 2)			→	
PC 1.5 Edge Treatments - Pedestrian Applications (2 of 2)			→	
PC 1.6 Edge Treatments - Paver at Structures			→	
PC 2.1 Subsurface Check Dams - Designer Notes			→	
PC 2.2 Subsurface Check Dams			→	
PC 3.1 Subsurface Overflows - Designer Notes			→	
PC 3.2 Subsurface Overflow			→	
PC 3.3 Subsurface Underdrain			→	
PC 3.4 Underdrain Pipe			→	

Sustainable Streets Typical Details	SMCWPPP Typical Details not in SFPUC Typical Details	SMCWPPP Typical Details Modified From SFPUC Typical Details	Jump to PDF	Jump to CAD
Bioretention Planter				
BP 1.1 Designer Notes (1 of 2)			→	
BP 1.2 Designer Notes (2 of 2)			→	
BP 2.1 Roadside Planter with Parking - Plan			→	
BP 2.2 Roadside Planter with Parking - Sections			→	
BP 3.1 Roadside Planter without Parking - Plan			→	
BP 3.2 Roadside Planter without Parking - Sections			→	
BP 4.1 Roadside Bulbout Planter - Alternative 1			→	
BP 4.2 Roadside Bulbout Planter - Alternative 2			→	
BP 4.3 Roadside Bulbout Planter - Alternative 3			→	
BP 4.4 Roadside Bulbout Planter - Alternative 4			→	
BP 4.5 Roadside Bulbout Planter - Alternative 5			→	
BP 4.6 Roadside Bulbout Planter - Alternative 6			→	
BP 5.1 Parcel Planter - Designer Notes (1 of 2)			→	
BP 5.2 Parcel Planter - Designer Notes (2 of 2)			→	
BP 5.3 Parcel Planter Plan - Alternative 1			→	
BP 5.4 Parcel Planter Plan - Alternative 2			→	
BP 5.5 Parcel Planter - Raised Planter Section			→	
BP 5.6 Parcel Planter - At Grade Planter Section			→	
BP 5.7 Parcel Planter - Planter on Structure Section			→	
Bioretention Basin				
BB 1.1 Designer Notes			→	
BB 2.1 Roadside Section, Type 1		X	→	
BB 2.1.1 Roadside Section, Type 2	X		→	



APPENDICES/LINKS TO DESIGN DETAILS

CAD FILES OF DETAILS



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| QUICK LINKS

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[PERMITTEES](#)

[+ User Guide](#)

[+ Permeable Paving](#)

[+ Pavement Components](#)

[+ Bioretention Planter](#)

[+ Bioretention Basin](#)

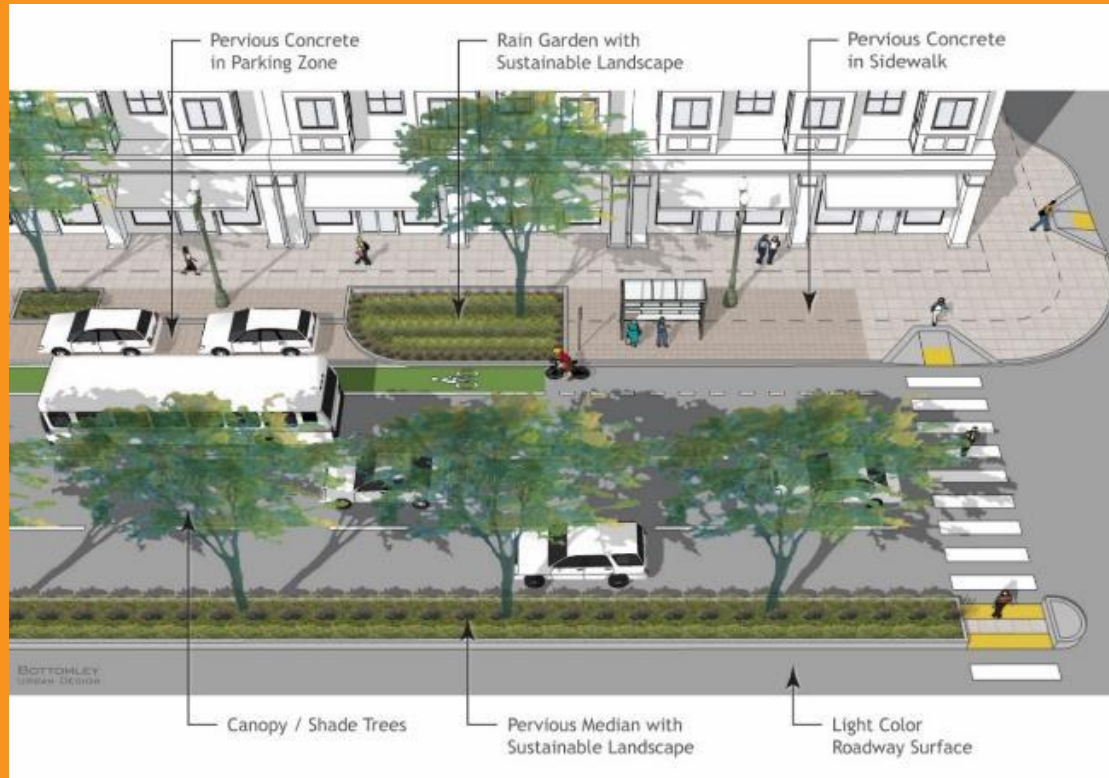
[+ Bioretention Components](#)

[+ Surface Infiltration](#)

[+ General Components](#)



SUSTAINABLE STREETS MASTER PLAN



Project Goals

- Countywide Master Plan with Prioritized Projects
- Climate Change Modeling for SMC
- Conceptual Designs
- Model Sustainable Streets Policies
- High Resolution Drainage Mapping
- Web-Based Tracking Tool
- Community Engagement

PRIORITIZATION DELIVERABLES + MUNICIPAL REVIEW

- SSMP Project Prioritization Review Tables and Online Viewer
 - Existing planned opportunities (ranked according to stormwater feasibility and co-benefits)
 - New opportunities (intersection opportunities near transit stops or schools and on streets with low PCI scores)
- Stormwater Curbextension Feasibility Tool (desktop analysis)
- Project Concept Proposal Spreadsheet (up to two proposals per jurisdiction)
- Comments + proposals due June 26

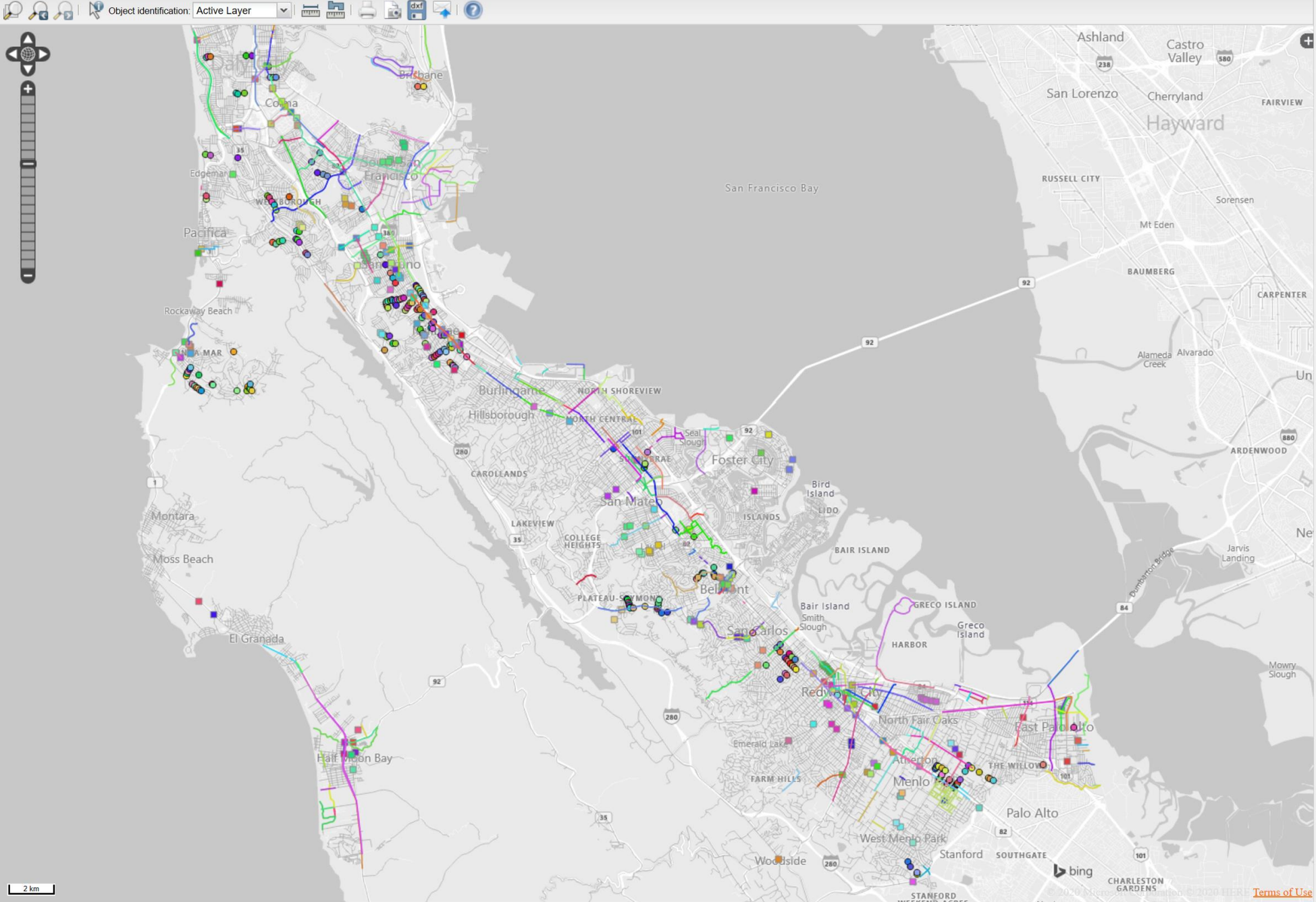
Info and Tools

Map themes

Map

Map Layers

- ☒ CCAG Sustainable Streets Master Plan
 - ☐ Municipal Boundaries
 - ☒ Existing Planned Projects Opportunities - High Ranking
 - ☒ New Project Opportunities - High Ranking
 - ☒ Detailed Prioritization Scores for Street Segments Countywide
 - ☒ Existing Planned Project Opportunities – Low Ranking
 - ☒ Catch Basin Delineation
- ☒ Background Layers
 - ☐ Bing Satellite
 - ☐ Bing Roads
 - ☒ Bing Gray Canvas
 - ☐ Google Satellite
 - ☐ Google Map



Layer order

Mode: navigation. Shift/rectangle or mouse wheel for zooming.

Coordinate: -13608120,4525205 1: 144448

STORMWATER CURB EXTENSION - FEASIBILITY CRITERIA



CCAG Map Photo Insert Here	Google Maps Street View #1 Insert Here	Google Maps Street View #2 Insert Here
----------------------------	--	--

STREET DETAILS		ADDITIONAL NOTES							
Primary Street Being Assessed		Indicate decision-making criteria and opportunity information not captured by form (e.g. if red curbs are present and length, if bike lane is present and type, number of parking spots that will be lost, if curb ramps are present and if they need repair).							
Street Type ^a									
Available Width (ft) ^b									
4-CORNER ASSESSMENT		A1	A2	B1	B2	C1	C2	D1	D2
Section 1 - Feasibility		Curb extension not recommended at corner if any of the boxes below are checked							
Does not receive any stormwater runoff		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Underdrain needed and no storm drain at intersection		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water main on same side of street with dia ≥ 12 inch		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than 20 ft from start of corner to first driveway ^c		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roadway width is less than minimum required		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Major gas transmission pipeline on same side of street ^d		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus stop with concrete pad within footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Longitudinal street slope > 5%		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Large duct bank (≥ 3 ft) within proposed footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical/telecom vault within proposed footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section 2 - Constraints		Curb extension not recommended at corner if 3 or more of the boxes below are checked							
Duct bank within proposed footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical/telecom vault on sidewalk adjacent to proposed footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sewer main below proposed footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water main < 12 inch dia within proposed footprint		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire hydrant at corner		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Depth to groundwater or bedrock < 10 ft		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open Geotracker cleanup site within 200 ft ^e		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drainage area to curb extension < 1000 sqft		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mature tree ≥ 6 inch dia within 20 ft of corner		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recommended for Curb Extension									

TABLE 1 - SIZING AND DESIGN CRITERIA

CURB EXTENSION SIZING	
Width	Standard: 6 ft Typical: 6 - 7 ft (not including 1 ft setback from curb)
Length ¹	Minimum: 20 ft Typical: 20 - 25 ft
Sidewalk Through-way Width	Minimum: 5 ft
DMA Sizing Ratio	Range: 2.5%-5% Typical: 4%
DESIGN RESTRICTIONS ²	
Fire Hydrants	Can't encroach on access
Bus Pad	
Driveway	Must have 2 ft of separation from curb ext.
Existing Roadway Width	Can't be less than corresponding minimum width in Table 2
DESIGN CONSTRAINTS	
Water Main	3 ft of horizontal separation
Duct Bank ³	
Mature Trees ⁴	Outside drip-line or 10x diameter at breast height
Power Poles ⁵	Can't be located within planter
Catch Basins	If bulbout will be underdrained, there must be a catch basin at intersection
Bus Stop	Must be room to move bus stop to before bulbout
Existing Sidewalk Width	Meets ADA code (5 ft through-way width)

1 - Assumes 5 ft tangent after S-curve.
2 - Costs to address these constraints often make stormwater curb extension infeasible.
3 - PG&E requirement, can obtain variance to protect in place through gravel layer.
4 - If tree obstructs line of sight at intersection, risks encroaching on power lines, or is in poor condition, then it may need removal and therefore should not be considered a constraint.
5 - Curb extension design can be adjusted to avoid pole. May reduce sizing ratio and increase cost.

TABLE 2 - MINIMUM ROADWAY WIDTH CRITERIA

Roadway Type	Min. Allowed Width of Travel Lane Nearest to Curb Ext. (ft)	Min. Curb-to-Curb Roadway Width for Curb Extensions ^a	
		2-Lane Road	4-Lane Road
Residential	10	34	54

SW CURBEXTENSION
FEASIBILITY TOOL