

# Subcommittee Support and Training Improving Value of Resource Investments

Sandy Mathews  
Larry Walker Associates

# Subcommittees serve as communication and problem solving forums

- SMCWPPP Assess structure and opportunities for improvement
  - Mix of focus areas
  - Frequency and length
  - Participants vs. target audience
  - Recommendations from subcommittee leaders
- Identify potential alternate approaches to meet goals



# Training needs assessment and framework

## ■ Program Assessment and Needs

- MRP Requirements
- Existing Modules/Approaches

## ■ Program Focus

- Target Audience
- Core Competencies

## ■ Training Methods

## ■ Opportunities

### Core Competencies

- Knowledge** – A body of information applied directly to the performance of a function.
- Skills** – An observable competency to perform a learned function.
- Abilities** – The competency to perform an observable behavior or a behavior that results in an observable product.

# Green Infrastructure Planning

Phil Erickson

Community Design+Architecture

# Green Infrastructure

- Using natural systems to capture, treat, and infiltrate stormwater
- Restores “natural” stormwater management
- Distributed, small-scale systems
- Water-related benefits
  - Improved water quality
  - Adaptation for climate change impacts
  - Potential to reduce flooding
  - Potential for groundwater recharge
- Includes public and private projects



# Green Infrastructure Plan additional benefits

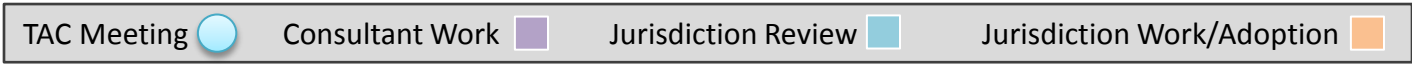
- Link to other community priorities
  - Complete Streets and active transportation
  - Open space and habitat
  - Economic development
  - Community identity
- Increase effectiveness of capital and O&M investment
  - Address multiple needs
  - Selecting appropriate GI approach for specific conditions
  - Detailing design for efficient O&M



Bergamot Area Plan, Santa Monica, CA

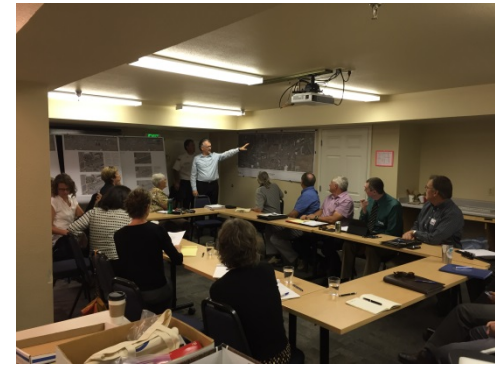
# Green Infrastructure Plan Schedule

Task	FY '15-'16	FY '16-'17					FY '17-'18				FY '18-'19
5.1.a On-going TAC		●	●	●	●	●	●	●	●	●	
5.1.b Frameworks & Workplans						Prepare Workplan					
5.1.c Guidelines and Standards											
5.1.d Model Plan Update Materials										Update Planning Documents By 2019 Annual Report	
5.1.e GI Opportunities & Prioritization											
5.2 Education & Outreach											
5.3 Identify GI Projects for PCBs reduction											
5.4 Identify PCB Targets for Impervious Surface Retrofits											
5.5 GI Implementation Tracking Tool											Data Upload



# Green Infrastructure Plan Start Up & Coordination

- Overall Coordination on Mapping Tools and Data
  - Stormwater Resource Plan (Task 10)
  - Mercury and PCBs Load Reduction (Task 9)
  - Efficient data gathering and coordinated GIS mapping development
- Technical Advisory Committee Support (5.1.a)
  - Assumptions:
    - New committee and quarterly meetings
    - Desire for high level of jurisdiction involvement





# Green Infrastructure Plan Start Up & Coordination

- Technical Advisory Committee Support (5.1.a)
  - Need for comprehensive staff involvement
    - Stormwater
    - Transportation (Engineering & Planning)
    - Landscape
    - Parks
    - Land Use/Development Services
    - Sustainability
    - Planning, Design, Construction, and Operations & Maintenance
    - Sometimes Fire, Police, and Jurisdiction Manager





# Green Infrastructure Frameworks or Workplans (5.1.b)

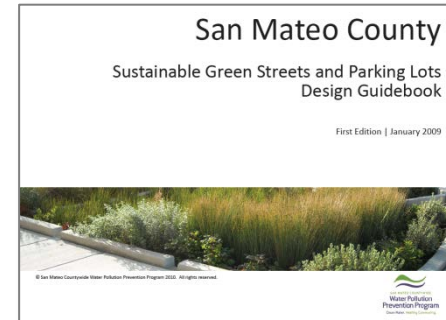
- MRP 2.0 deadline of June 30, 2017 for jurisdiction adoption of Green Infrastructure Plan frameworks or workplans
- Develop model framework or workplan with jurisdiction input
  - Draft and final annotated outline (FY 15-16)
  - Draft and final model document
- Support jurisdictions in preparing their frameworks or workplans
- Support jurisdictions' approval process – background materials & presentations

# Guidelines, Standard Specifications and Design Details (5.1.c)

Core element of MRP 2.0 requirements for the 2019 Annual Report

## ■ Guidelines

- Build from *San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook*
  - CD+A experience through developing City of San Mateo *Sustainable Streets Guidelines*
- Reference Best Practice and Model Documents
- Coordinate with BASMAA Development Committee and GI Design Charrette



- Best Practices
- New Custom Guidance
- Local Experience



**Green Infrastructure  
Plan Guidelines**



# Model Plan Update Materials (5.1.d)

- Identify/review existing and planned policy documents during MRP period
  - Outline goals, policies, practices, etc. for model text and illustrations
  - Review with TAC
  - Draft materials
  - Review and finalize
- 
- Jurisdictions to update their planning documents by 2019 Planning Report submittal deadline

# Green Infrastructure Opportunities, Prioritization, PCB Reductions, and Implementation Tracking Tool (5.1.d, 5.3, 5.4 & 5.5)

- Identify public and private opportunities for Green Infrastructure
  - Transportation improvements and public property improvements
  - PDAs, “pipeline development”, housing element opportunity sites, etc.
- Set prioritization criteria
  - Mercury and PCBs reductions
  - Opportunities to leverage other planned improvement/capital investment
  - Relationship to flood control or ground water recharge
  - Relationship to other community goals
- Define phasing strategy
- Develop and employ Implementation Tracking Tool
  
- Building from Stormwater Resource Plan (Task 10) and Mercury and PCBs Load Reduction (Task 9) modeling tools and project identification

# Green Infrastructure Plan Schedule

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5.5 GI Implementation Tracking Tool											Data Upload

TAC Meeting ●   
 Consultant Work ■   
 Jurisdiction Review ■   
 Jurisdiction Work/Adoption ■

# Measuring Success

- Meeting MRP 2.0 deadlines
- Meeting or exceeding MRP 2.0 goals and thresholds
- Local Jurisdiction Implementation
  - Integration of GI into standard practices
    - Street design
    - Other capital projects
    - Private development review
    - Cross departmental planning, operations and maintenance
    - Construction practices
  - Ease of access and updating of web-based data and mapping





# Stormwater Resource Planning and Reasonable Assurance Analysis

Steve Carter

Paradigm Environmental



# Stormwater Resource Planning

- June 2016 - Develop project concepts to support Prop 1 grant applications
- June 2016 - Prepare draft SRP that incorporates project concepts to meet grant application process
- Dec 2016 – SRP due to the State

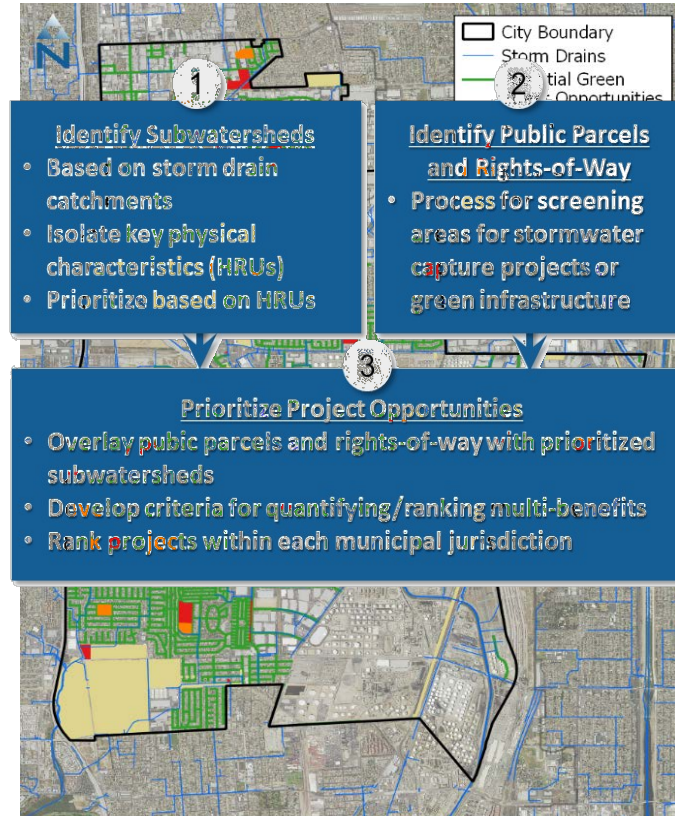


# Defining Land & Stormwater Characteristics


- Drainage areas and stormwater infrastructure
- Land characteristics (soils, topo, land use, imperviousness)
- Hydrology (rainfall and flow)
- Pollutant sources and transport
- Opportunities for stormwater capture projects and GI

# Identify and Prioritize Stormwater and GI Projects






















- Process easily tailored based on C/CAG preferences
- GIS screening of public parcels and rights-of-way
- Prioritization based on:
  - Maximum effectiveness for stormwater control
  - Multiple benefits (groundwater recharge, reuse, enhancement of habitat or open space)



### Legend

 County of San Mateo



City Boundaries

-  Atherton
-  Belmont
-  Brisbane
-  Burlingame
-  Colma
-  Daly City
-  East Palo Alto
-  Foster City
-  Half Moon Bay
-  Hillsborough
-  Menlo Park
-  Millbrae
-  Pacifica
-  Portola Valley
-  Redwood City
-  San Bruno
-  San Carlos
-  San Mateo
-  South San Francisco
-  Unincorporated
-  Woodside

























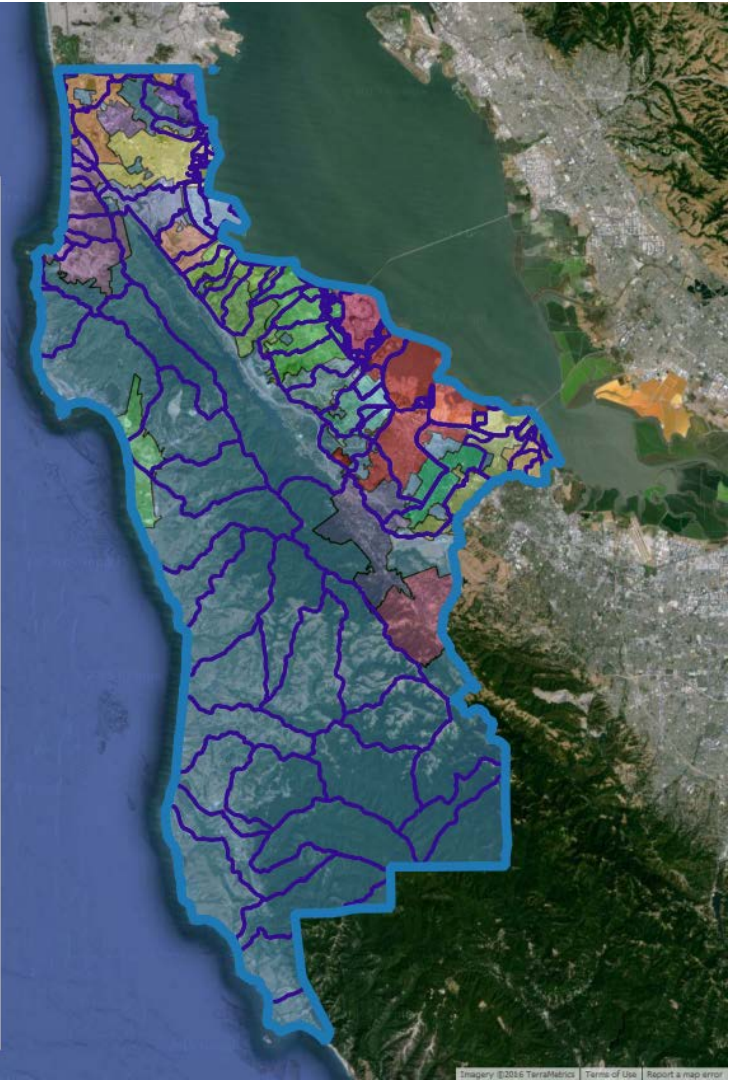


**Legend**


-  County of San Mateo
-  Watersheds

City Boundaries


-  Atherton
-  Belmont
-  Brisbane
-  Burlingame
-  Colma
-  Daly City
-  East Palo Alto
-  Foster City
-  Half Moon Bay
-  Hillsborough
-  Menlo Park
-  Millbrae
-  Pacifica
-  Portola Valley
-  Redwood City
-  San Bruno
-  San Carlos
-  San Mateo
-  South San Francisco
-  Unincorporated
-  Woodside






### Legend


 County of San Mateo

#### Water Districts


 Brisbane Water Department


 Burlingame Municipal Water Department


 CA Water Service Company


 Coastside Co. Water District


 Daly City Municipal Water District


 East Palo Alto Co. Water District


 Estero Municipal Water District


 Guadalupe Valley Municipality Improvement Dist


 Hillsborough Municipal Water Department


 Menlo Park Municipal Water Department


 Mid-peninsula Water District

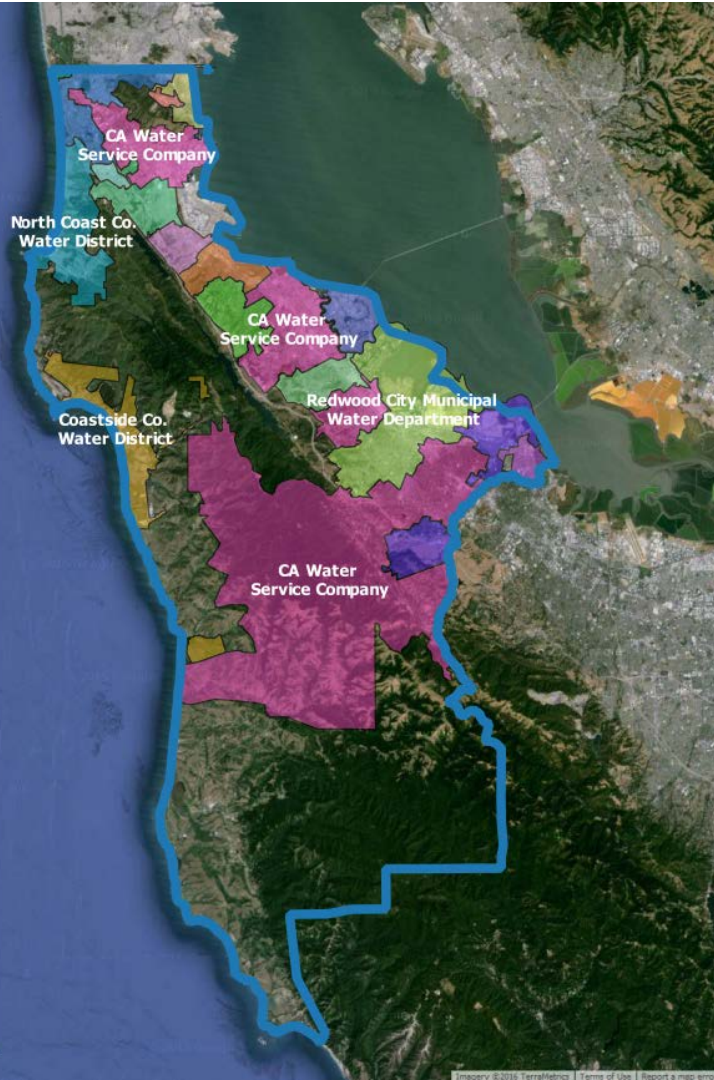
 Millbrae Municipal Water Department

 North Coast Co. Water District

 Redwood City Municipal Water Department

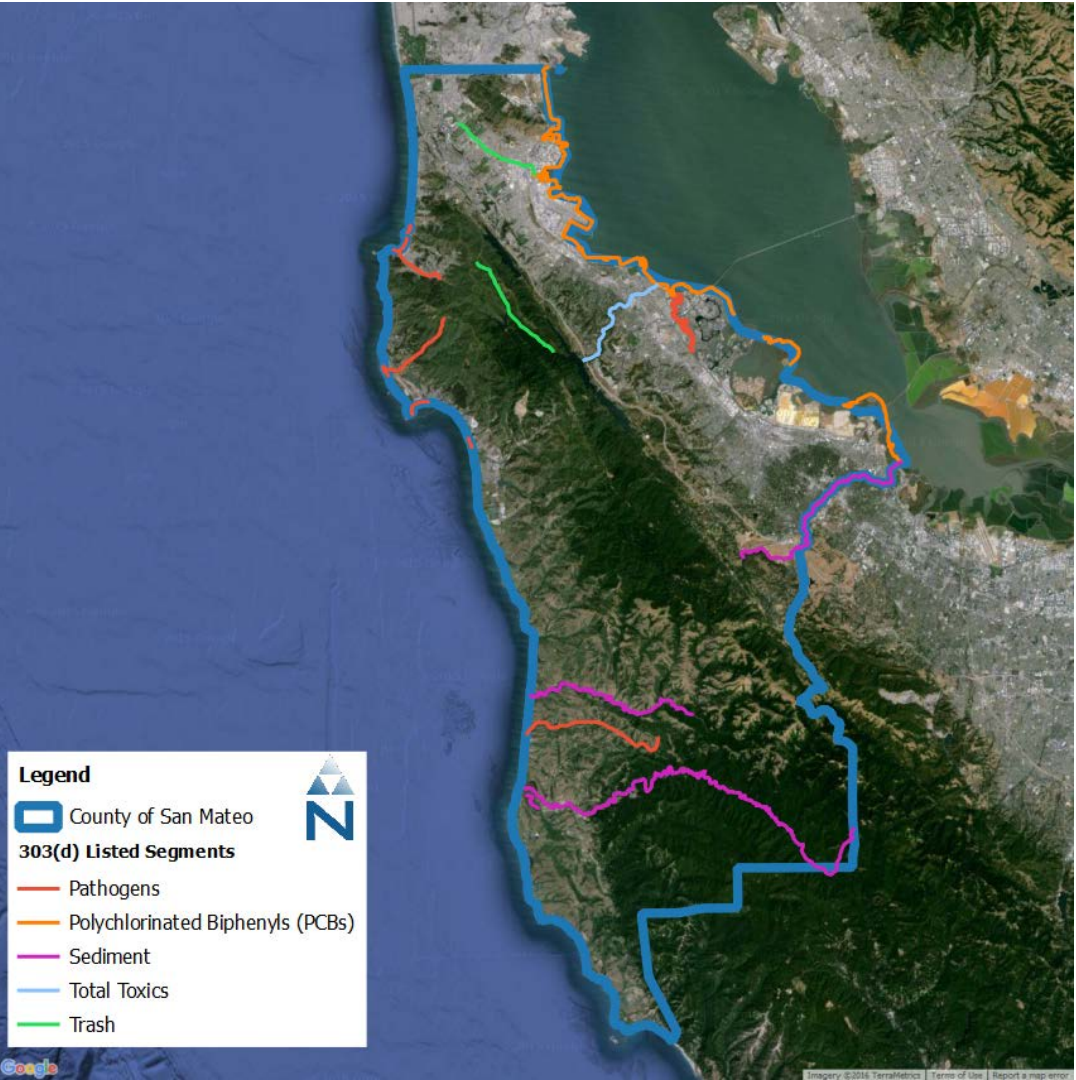
 San Bruno Municipal Water Department

 Westborough Co. Water District

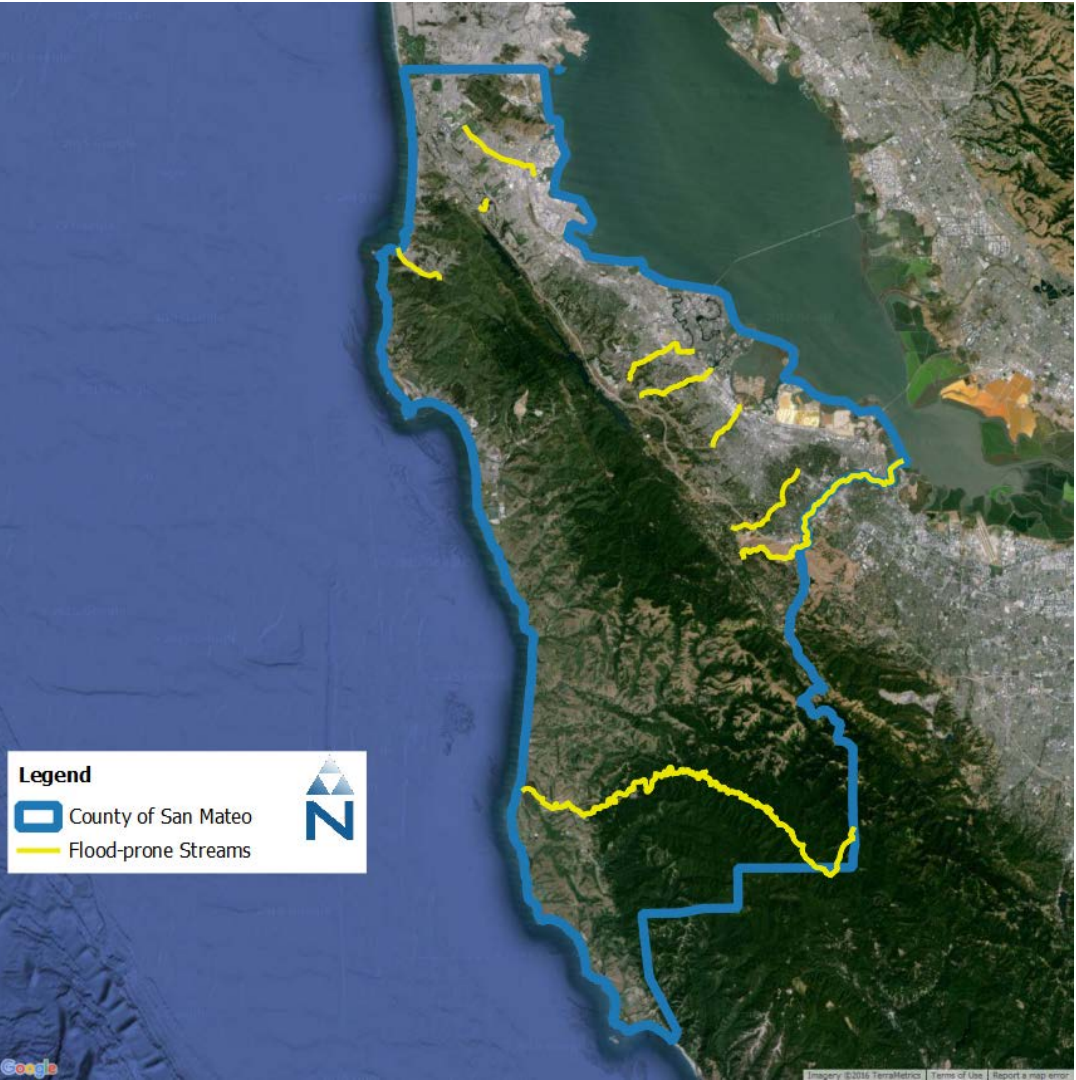


SAN MATEO COUNTYWIDE  
**Water Pollution  
Prevention Program**  
Clean Water. Healthy Community.









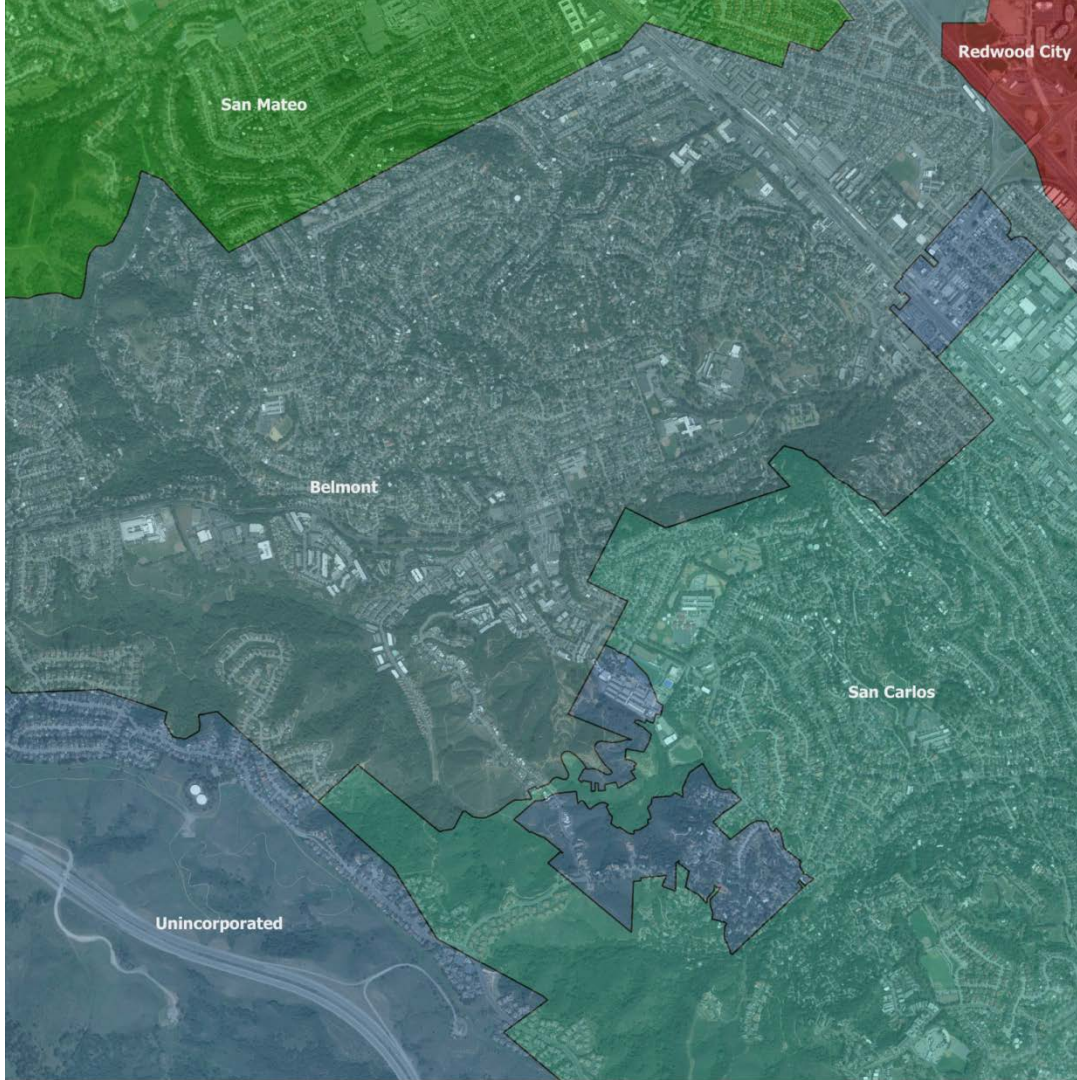
**Legend**

-  County of San Mateo
-  Flood-prone Streams









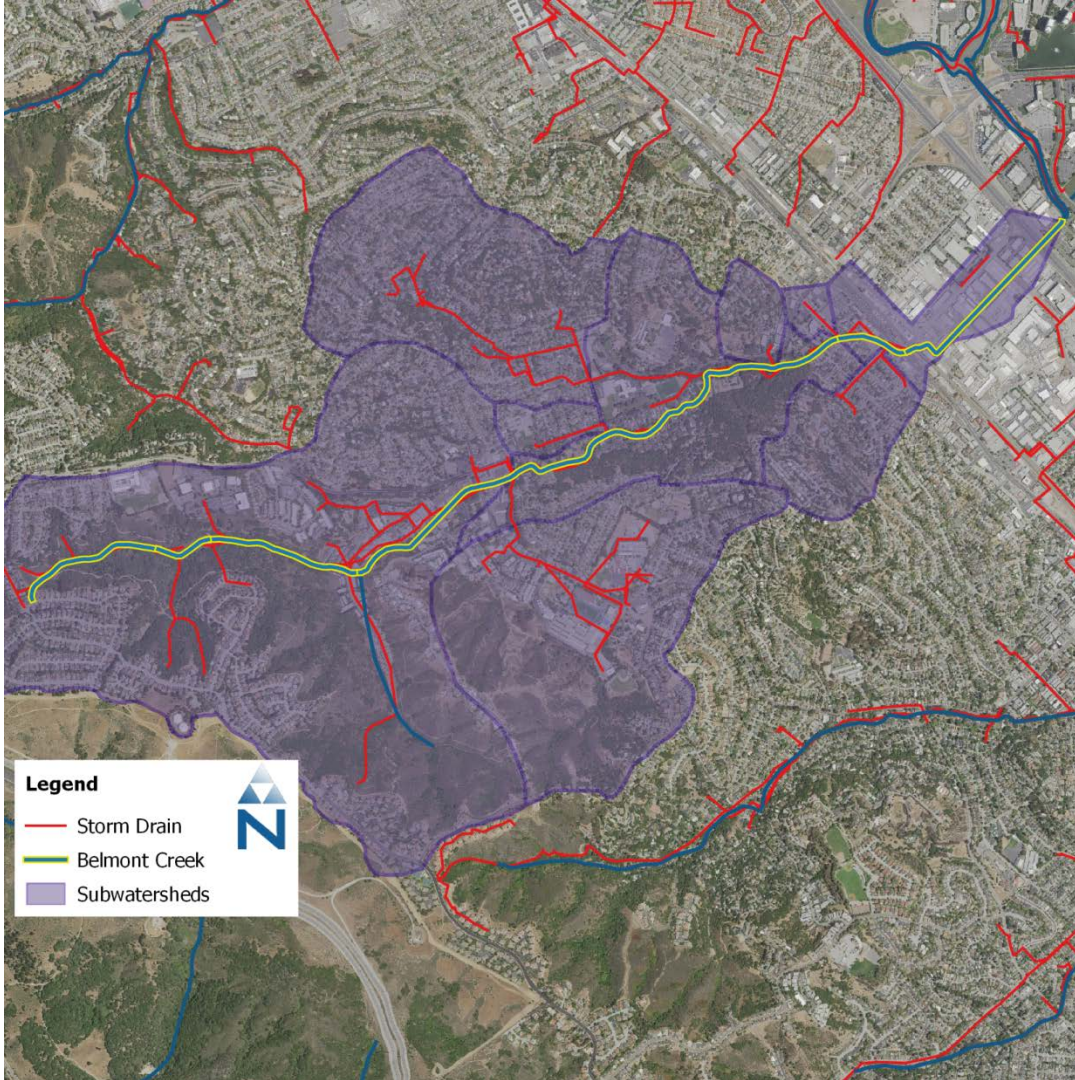
Redwood City

San Mateo

Belmont


San Carlos

Unincorporated

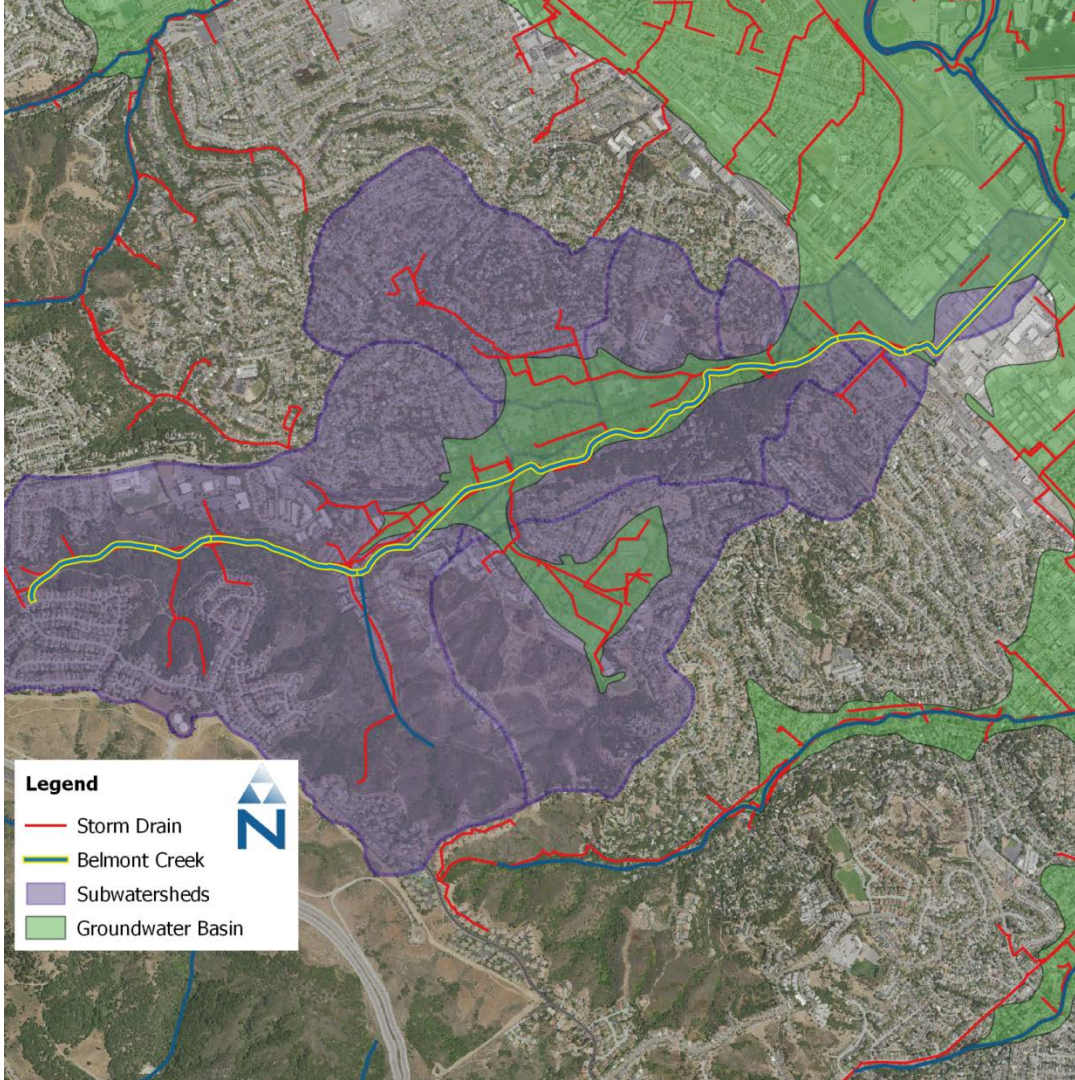


**Legend**

- Storm Drain
- Belmont Creek
- Subwatersheds





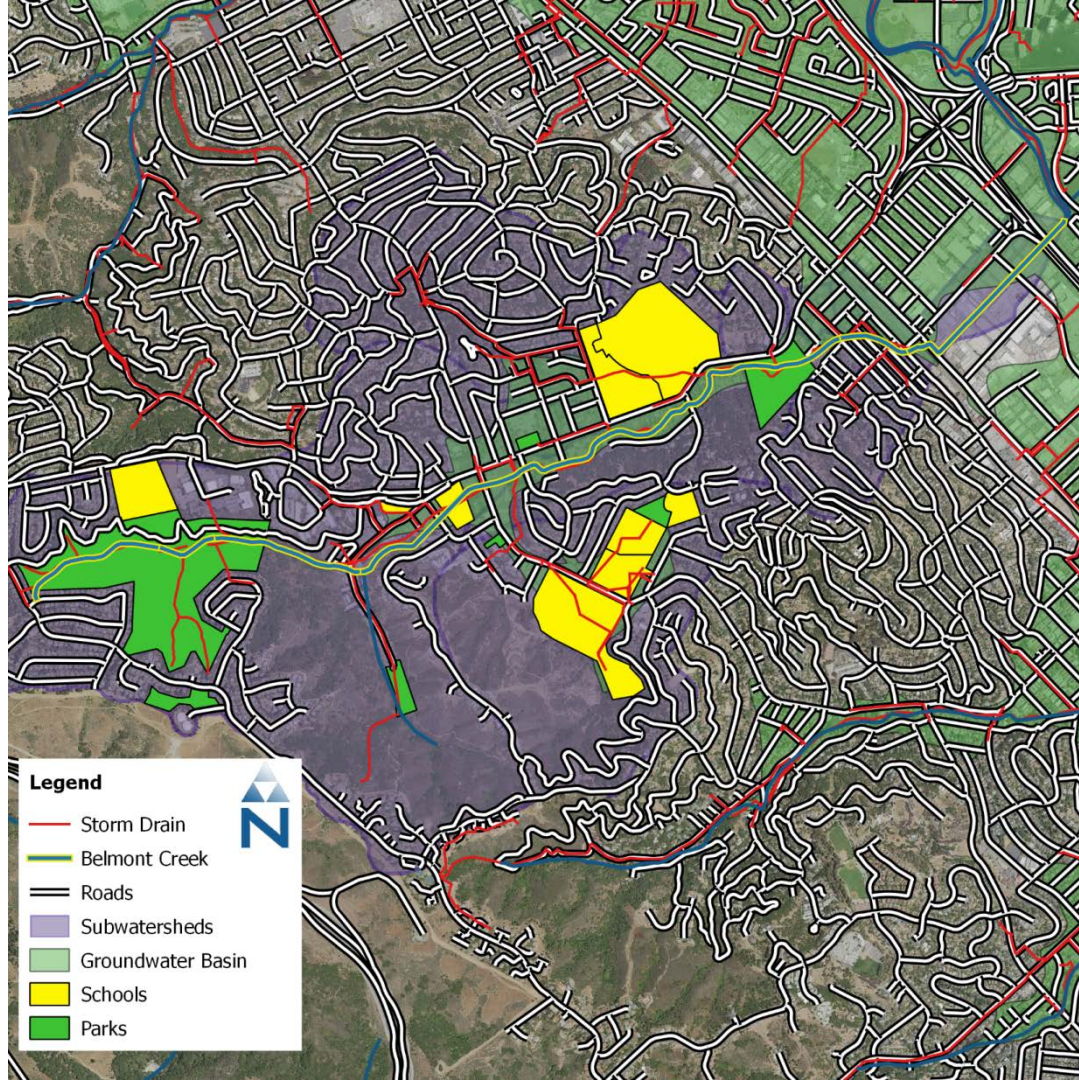


**Legend**

- Storm Drain
- Belmont Creek
- Subwatersheds
- Groundwater Basin





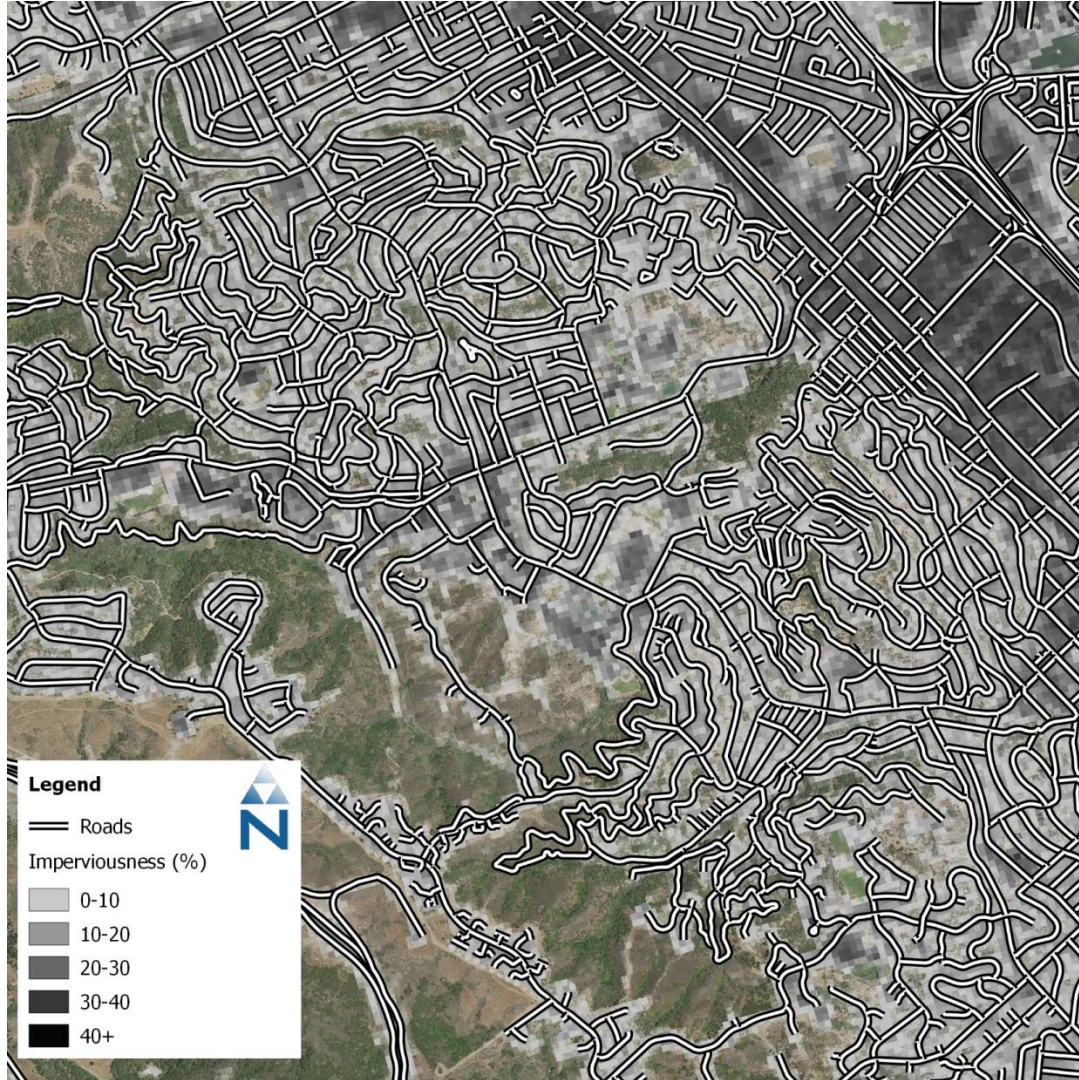


**Legend**

- Storm Drain
- Belmont Creek
- Roads
- Subwatersheds
- Groundwater Basin
- Schools
- Parks







**Legend**

== Roads

Imperviousness (%)

0-10

10-20

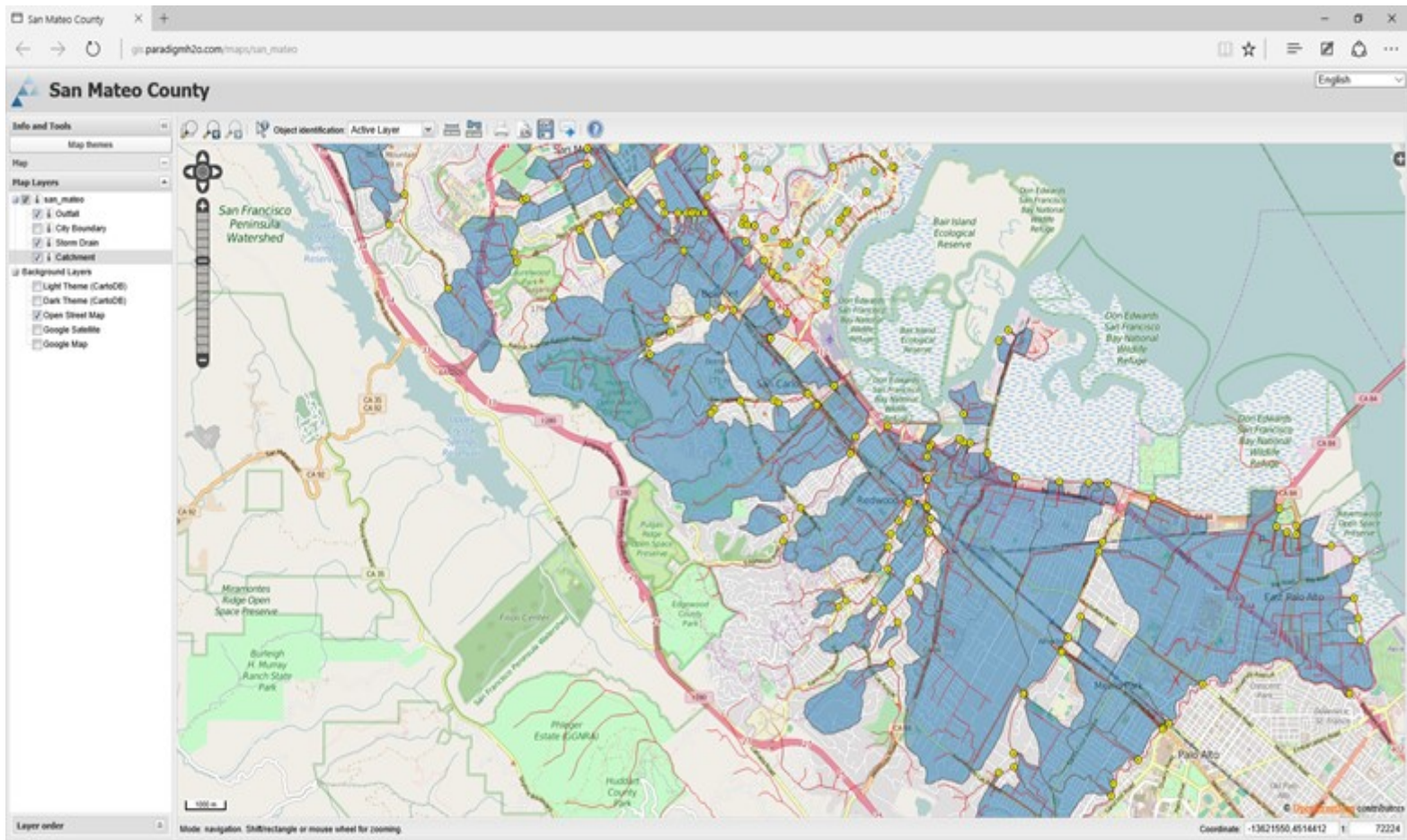
20-30

30-40

40+



# Web-based Mapping Tool





# Project Concepts

## DESIGN CONSIDERATIONS FOR REGIONAL STORMWATER CAPTURE



### BMP Concept Description:

The concept consists of an offline infiltration gallery below the ballfield of Carriage Crest Park. The gallery would consist of either a concrete chamber or pipe configuration. Stormwater would be diverted from the existing 69" drain in the northern section of the park to treat the 85<sup>th</sup> percentile, 24-hour runoff volume from the wet weather drainage area. A second diversion from the existing double 129" x 79" concrete box drain under South Figueroa Street will be considered to treat dry weather flows of up to 2 cubic feet per second from the dry weather drainage area. Diversion structures are required, with a weir configuration at the dry weather diversion to limit flow to 2 cfs at that diversion point. Due to relatively low invert elevation of the existing storm drains, pumping will be required to lift the water to the BMP. This allows for placement of the BMP closer to the surface for easier access and maintenance.

### Multiple Benefits:

Flood control, groundwater recharge, pollutant load reductions, park enhancements

### Considerations:

Existing ball diamond, tree removal/relocation, existing utilities

### Design Criteria

Wet Weather Sizing Criteria	85 <sup>th</sup> percentile, 24 hour storm event
Dry Weather Sizing Criteria	2 cfs, steady flow (subject to field study)
85 <sup>th</sup> percentile, 24-hr precipitation (in)	0.89
Infiltration Rate (in/hr)	0.58
Wet Weather Capture Volume (ac-ft)	8.5
Dry Weather Capture Volume (ac-ft)	2
Volume infiltrated during 24-hr storm (ac-ft)	1.5
Peak Discharge, 85 <sup>th</sup> percentile 24-hr storm (cfs)	12.9

### BMP Characteristics

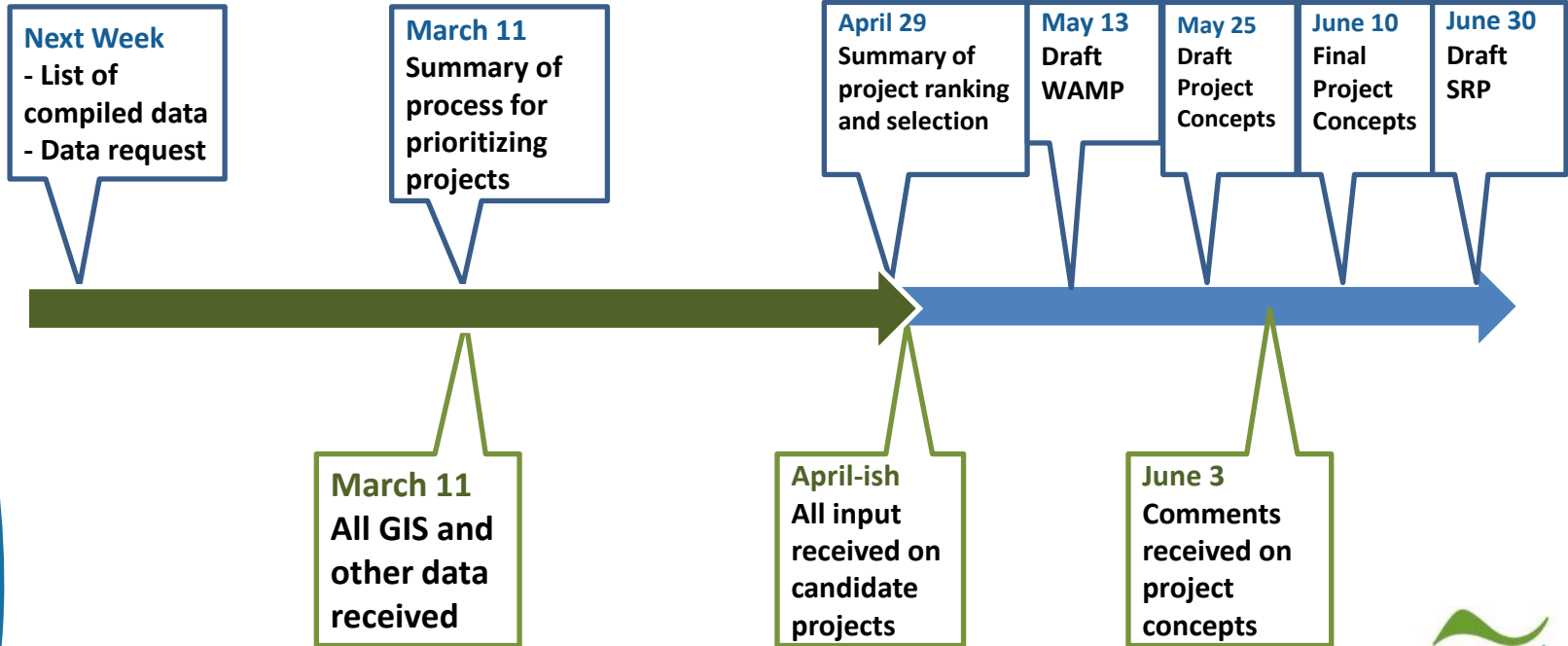
BMP Type	Underground Infiltration Gallery
BMP Footprint (acres)	1.4
Design Volume (ac-ft)*	9
Required Depth (ft)	6.5 (Concrete Chamber) / 10 (Pipe)
Diversion Structures	Required
Pump Structure	Subject to geotechnical investigation

\* Design volume takes into account infiltration, dry weather flow, and 85<sup>th</sup> percentile capture volume

BMP Concept Design for City of Carson  
Carriage Crest Park



# Project Timeline

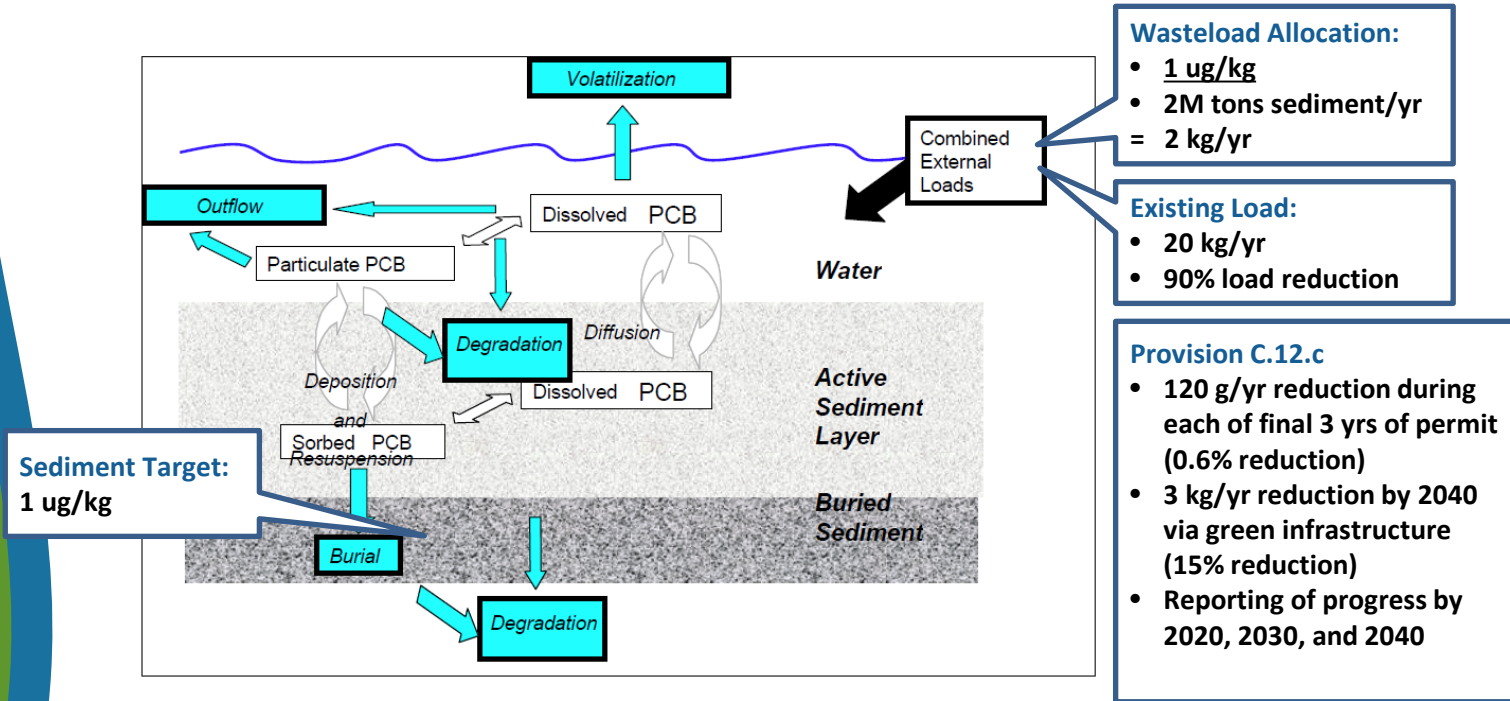




# Reasonable Assurance Analysis

- Permittees shall prepare a reasonable assurance analysis that demonstrates how green infrastructure will be implemented in order to achieve a PCBs load reduction of 3 kg/yr across the permit-area by 2040 (C.12.c.ii(2)).
- Permittees shall prepare a plan and schedule for PCBs control measure implementation and reasonable assurance analysis demonstrating that sufficient control measures will be implemented to attain the PCBs TMDL wasteload allocations by 2030 (C.12.d.i).

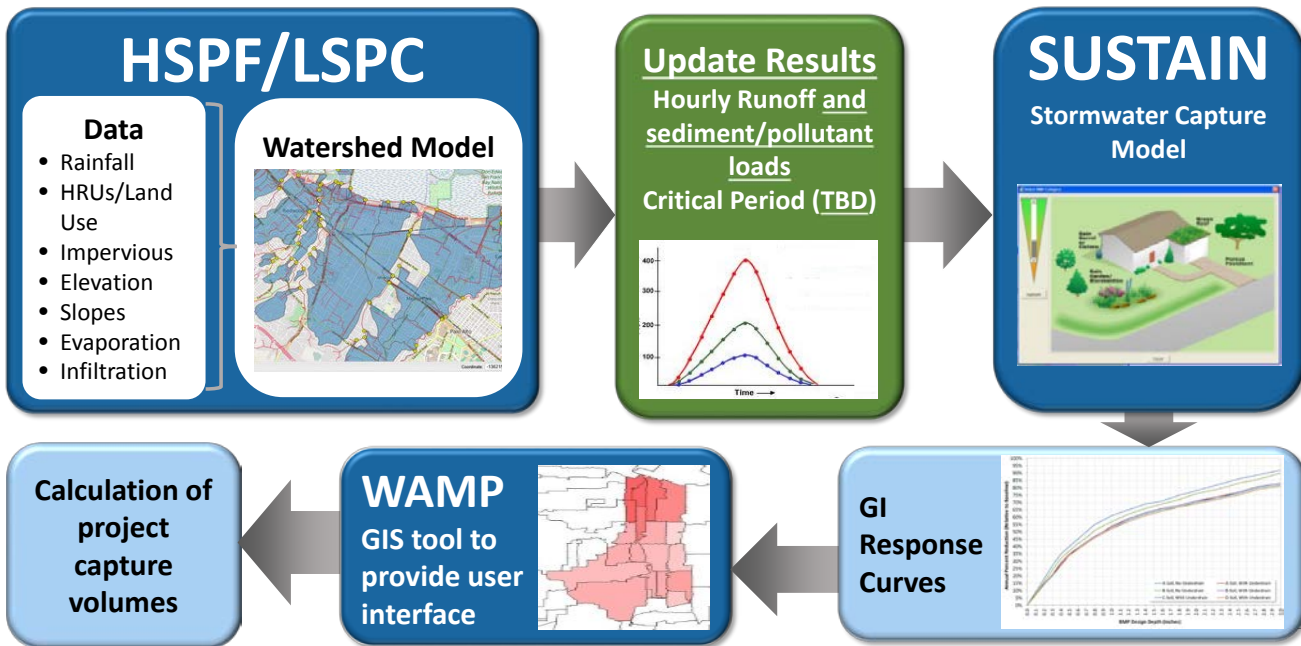
# San Francisco Bay PCBs TMDL



# Initial Phase of RAA

Update: Calibrate to meet RAA guidelines (hydrology and sediment/PCB/Hg transport)

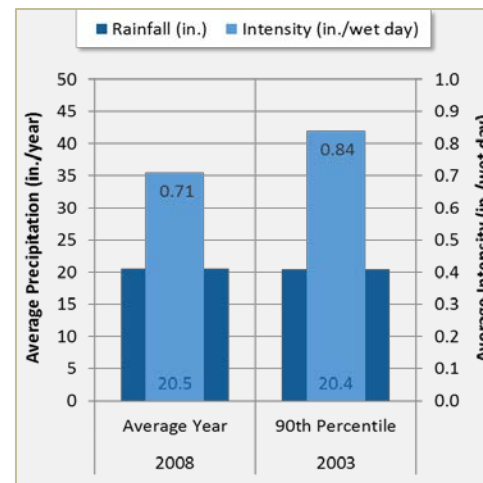
Builds off of system developed during Stormwater Resource Planning



# Determine Hg/PCBs Wasteload Allocations

Watershed model provides the ability to recalculate the SMC wasteload allocations

- Improved estimate of sediment loading (basis of allocation)
- Assessment of critical period
- Incorporation of local Hg/PCBs concentrations

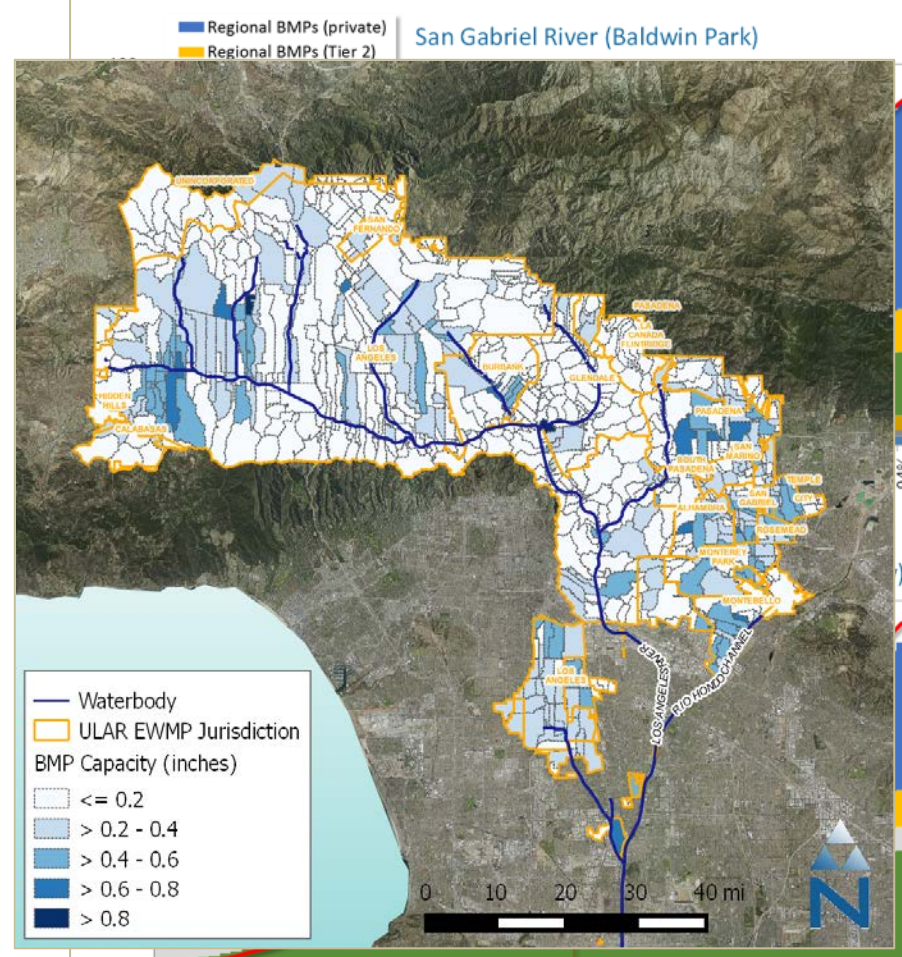


1 Period Used to Base Avg. Annual Load	2 Avg. Annual Sediment Load (tons/yr)	3 Target Sediment Concentration (µg/kg sediment)	4 Existing PCBs Sediment Concentration (µg/kg sediment)	5 = 2 X 3 PCBs Wasteload Allocation (kg/yr)	6 = 2 X 4 Existing PCBs Load (kg/yr)	7 = 6 – 5 Load Reduction (kg/yr)
2003-2005	<b>2 million</b>	<b>1.0</b>	<b>10.0</b>	<b>2.0</b>	<b>20.0</b>	<b>18.0</b>

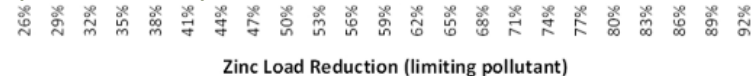


# Perform Reasonable Assurance Analyses

- Quantitative relationship between GI implementation and Hg/PCBs reduction
- Optimization to ensure cost-effective planning
- Separate analyses performed for each jurisdiction



Example Map of Treatment Capacities



# Perform Reasonable Assurance Analyses

Table 1. Example RAA Output - City of Long Beach Toxics TMDL (including PCBs)

TMDL Assessment Area	Future Year	TMDL Target			Treatment Capacities							
		Retention Volume (acre-ft/year)		Milestone	Existing/Planned LID		Public LID		Green Streets		Regional BMPs	
		Incremental	Cumulative		Incremental (ac-ft)	Cumulative (ac-ft)	Incremental (ac-ft)	Cumulative (ac-ft)	Incremental (ac-ft)	Cumulative (ac-ft)	Incremental (ac-ft)	Cumulative (ac-ft)
Harbor Toxics TMDL	2019	1.0	1.0	10%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	2024	77.7	78.7	20%	6.6	6.6	5.6	5.6	0.0	0.0	0.0	0.0
	2032	1,649.0	1,728	100%	26.1	32.7	38.1	43.7	24.7	24.7	234.1	234.1
Domin-guez Toxics TMDL	2019	0.1	0.1	10%	---	---	0.0	0.0	0.0	0.0	0.0	0.0
	2024	17.7	17.7	20%	---	---	2.1	2.1	0.0	0.0	0.0	0.0
	2032	66.9	84.7	100%	---	---	5.8	7.9	0.9	0.9	2.1	2.1



# Watershed Adaptive Management Program (WAMP)

**Watershed Adaptive Management Program Dashboard**

Project Name:  Location: 34.0111, -118.3441 Address: 100749  
 City: Los Angeles County: Los Angeles Receiving Water: Ballona Creek  
 Weather Station: Los Angeles Usc  
 # of Inlets:  # of Outlets:  # of Inlets:  # of Outlets:

BMP Type:    
 Green Street (Bioretention)   
 Regional BMP (Retention)   
 Regional BMP (Infiltration)   
 Regional BMP (Wetland)   
 Public LID   
 Permeable Pavement   
**Green Street (Bioretention)**   
 Redevelopment LID   
 Residential LID

Drainage Area Information

Drainage Areas

Land Use	Area	Options
Commercial	14 acres	Delete Drainage Area
High Density Single-Family Residential	0 acres	Add Drainage Area

Rainfall and BMP Performance Analysis

85th Percentile Storm (24-hour)					Critical Zinc Storm (24-hour)				
Total Rainfall (in)	Peak Rainfall Intensity (in/hr)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Stormwater Captured (acre-ft)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Stormwater Captured (acre-ft)
0.830	2.090	11.970	1.197	1.197	1.090	2.560	13.167	1.317	1.317

Stormwater capture volumes and rainfall and peak flow information

85th Percentile Storm (24-hour)					Critical Zinc Storm (24-hour)				
Total Rainfall (in)	Peak Rainfall Intensity (in/hr)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Stormwater Captured (acre-ft)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Stormwater Captured (acre-ft)
0.830	2.090	11.970	1.197	1.197	1.090	2.560	13.167	1.317	1.317

Critical Bacteria Storm (24-hour)					Annual Average Rainfall				
Total Rainfall (in)	Peak Rainfall Intensity (in/hr)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Stormwater Captured (acre-ft)	Total Rainfall (in)	Peak Rainfall Intensity (in/hr)	Peak Inflow (cfs)	Total Inflow (acre-ft)	Stormwater Captured (acre-ft)
0.360	1.340	4.549	0.455	0.455	13.300	3.120	11.970	10.534	10.534