



Green Infrastructure Planning Workshop for Permittee Staff

Tuesday, September 26, 2018 – 8:15 AM to 3:30 PM
Shadelands Civic Art Center Auditorium, 111 N. Wiget Lane, Walnut Creek

8:15 REGISTRATION

Coffee and pastries available.

8:30 Greeting — Courtney Riddle, *Program Manager, Contra Costa Clean Water Program*

8:35 Introduction and Update — Dan Cloak, *Consultant*

SESSION 1: Early Implementation Panel Discussion

*Amanda Booth, City of San Pablo, Carlton Thompson, City of Walnut Creek,
Frank Kennedy, Kennedy and Associates*

8:45 Panel Discussion: Project Experience

- Lessons Learned from Design and Construction of Green Infrastructure Projects
- Design Guidelines, Details, and Specifications Used: Experience and Needs
- Experience with Funding Green Infrastructure Projects

10:00 BREAK

10:15 Panel Discussion: Identifying Green Infrastructure Potential in Capital Projects

- Municipal Process for Reviewing Capital Improvement Projects
 - Reports to the Regional Water Quality Control Board (Provision C.3.j.ii.)
 - Identification of Green Infrastructure Opportunities
 - Challenges to Integrating Green Infrastructure into Capital Projects
-

SESSION 2: Green Infrastructure Plans

10:45 What Goes into a Green Infrastructure Plan? — Dan Cloak

11:00 The Contra Costa Storm Water Resources Plan — Adele Ho, *Consultant*

11:30 Green Infrastructure Plan Targets, Reasonable Assurance Analyses, and Pollutant Load Reductions — Adele Ho, *Consultant* and Lisa Austin, *Geosyntec Consultants*

12:00 LUNCH (provided)

Lunchtime presentation on “Quick Build” with Ryan McClain, Fehr & Peers

SESSION 2: Green Infrastructure Plans (continued)

12:45 Development/Redevelopment Projections: Process, Status, Integration with the RAA — Austin Orr, *Geosyntec Consultants*

1:15 Creating a List of Prioritized Projects — Group Discussion

1:45 Making Green Infrastructure into Municipal Policy — Group Discussion

2:15 Funding — Dan Cloak/Group Discussion

2:45 Project Tracking, Maintenance, Assessment, Adaptive Management — Dan Cloak/Group Discussion

3:15 Workshop Evaluation and Make a List of Follow-Up Items — Adele Ho/Group

3:30 ADJOURN



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Request for Feedback

1. What were the most useful things you learned or discussed at the workshop?
2. What did you think of the format, including the time allocated for group discussions?
3. What could have been done better? Is there a topic you wanted to hear more about?
4. Any other comments?

5. Tell us a little about yourself.

Training (circle): Engineer Architect Landscape Architect Planner Construction Inspector

Other:

Employer (circle): Stormwater NPDES Permittee Other Public Agency Consulting Firm

Other:



Green Infrastructure Planning

Tuesday, September 26, 2018



Welcome

Courtney Riddle, Program Manager
Contra Costa Clean Water Program

Introduction and Update

Dan Cloak, P.E.
Consultant

4 things about Green Infrastructure

1. It's not going away.
2. It has to be designed and engineered.
3. It has to be managed and maintained.
4. Don't confuse the map for the territory.



Water Board Staff Guidance

- Green Infrastructure Plans (due 9/30/2019)
 - Multiple benefits of “grey to green”
 - Demonstrate your ability to build GI
 - Preliminary quantification of load reduction
- Municipal Regional Permit 3.0
 - Maximum Extent Practicable standard (?)

Recommended Objectives for 2019

- Show municipal management is on board
- Policies and procedures to ensure “no missed opportunities” to implement
- One or more projects are constructed, under construction, or on a fast track
- Designs or conceptual designs in-hand for additional projects (5- to 10-year time horizon), and funding is being sought
- A Plan that guides roll-out over future decades

Session 1: Early Implementation

Amanda Booth, *City of San Pablo*
Frank Kennedy, *Kennedy and Associates*
Carlton Thompson, *City of Walnut Creek*

Part 1: Project Experience

- What lessons were learned during design and construction?
- What guidelines, details, and specifications were used?
- How was the project funded?



CITY OF SAN PABLO
City of New Directions

Green Infrastructure

Amanda Booth
September 2018

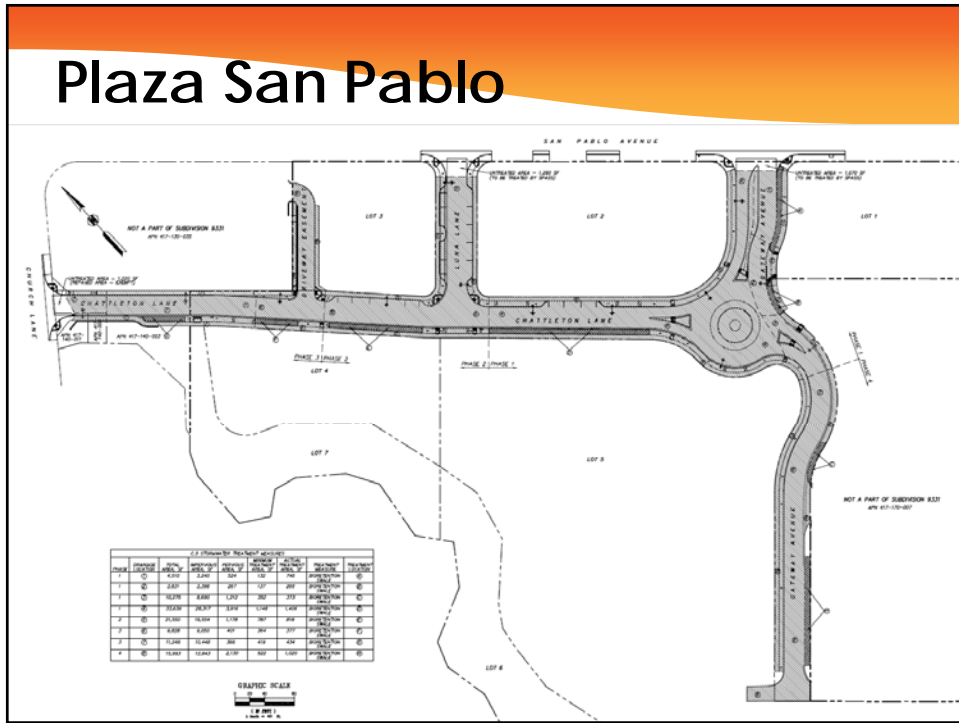
Plaza San Pablo

- New road
- Bioswales
- Redevelopment
- C3 Regulated

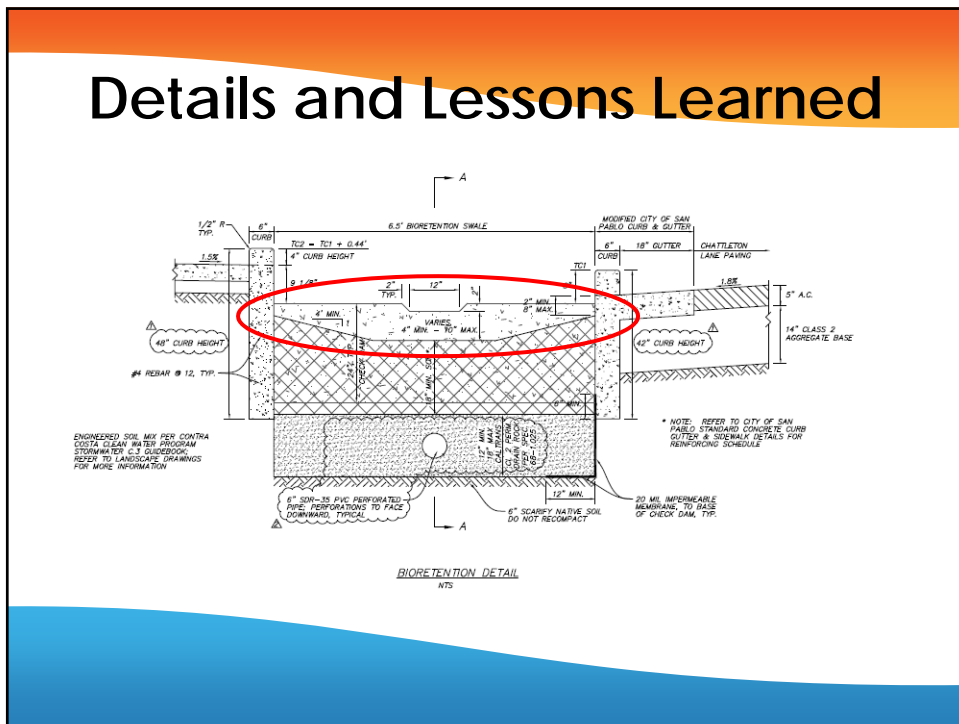
Rumrill Complete Streets

- "Complete Streets" Project
- Road diet and safety project
- Bioswales and Silva Cells
- Not C3 regulated

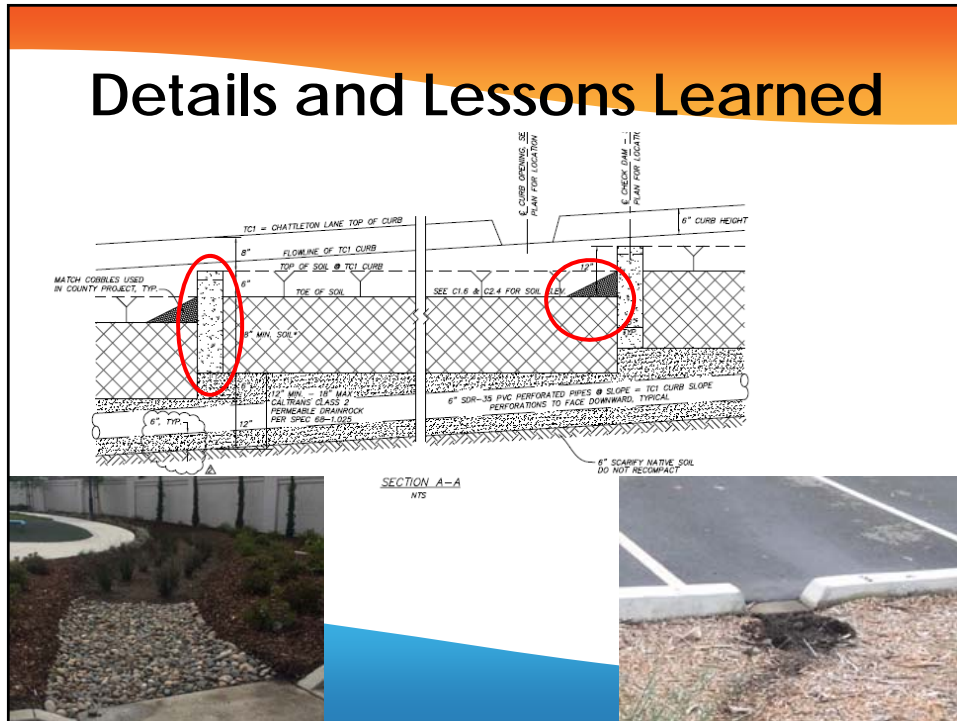
Plaza San Pablo



Details and Lessons Learned



Details and Lessons Learned



Details and Lessons Learned

- Soil Media Spec.
- Check Dams
- Energy dissipation devices (rocks)



Rumrill Complete Street



South of Market

North of Market

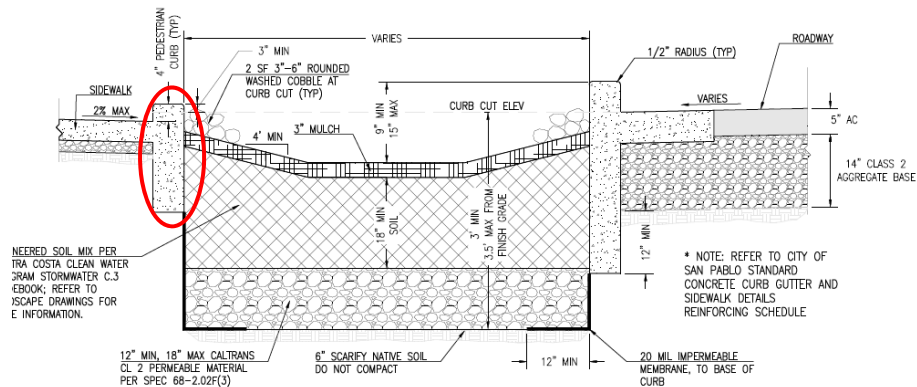
Funding

Grant Funds	Amount	Source
Caltrans: Active Transportation Program	\$4,309,749	State/Federal
EPA: SF Bay Water Quality Improvement Fund	\$864,634	Federal
Measure J: Pedestrian Bicycle Trail Facilities	\$1,000,000	Local
California Natural Resources Agency: GGRF	\$3,999,540	State
MTC: Transportation Develop Act	\$85,000	Local
Caltrans: SB-1 Local Partnership Program	\$3,200,000	State
Total Grant Funding	\$13,458,923	
Alternative Compliance Funds- Caltrans	\$2,300,000	State
Alternative Compliance Funds- Private	\$360,000	Private
City Funds	\$743,000	Local
Total Project Funding	\$16,861,923	

Issues/Lessons Learned

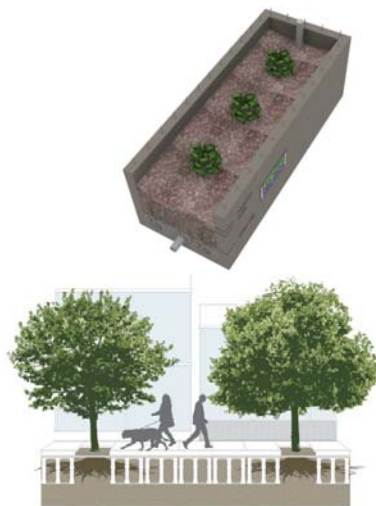
- Underground utilities
 - Section 038193 PG&E Greenbook
 - PG&E Utility Standard S5453
- Caltrans CEQA funding restrictions
- Unpredictable construction costs
- Extensive grant requirements
 - 9 approvals, reports, tracking requirements, timelines, etc.
 - Grant Auditing 🙄

Potential Cost Cutting Solutions



Potential Cost Cutting Solutions

- Flow through system?
- Pre-cast?
- Cut Silva Cells?
- 4% treatment area needed?



Currently discussing ongoing
maintenance costs implications

Part 2: Reviewing Capital Projects

- What is the process for reviewing capital projects for Green Infrastructure potential?
 - Provision C.3.j.ii
 - BASMAA Guidance (May 2016)
 - Procedures for screening and assessment
 - Tabulating projects in Annual Reports
- What challenges have been encountered incorporating GI into projects?

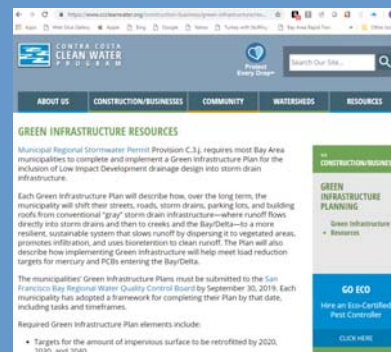
Session 2: Green Infrastructure Plans

What Goes into a Green Infrastructure Plan?

Dan Cloak, P.E.

Resources

- Your Green Infrastructure Plan Framework/Workplan (2017)
- At www.cccleanwater.org
 - Template
 - Tasks, Roles, and Timeframes
 - Presentation slides
 - Design guidelines and details
 - *Stormwater C.3 Guidebook*
 - *Links*
 - Frequently Asked Questions



Template

1. Introduction and Overview
2. Green Infrastructure Targets
3. Public Project ID, Prioritization, Mapping
4. Early Implementation Projects
5. Tracking and Mapping Projects Over Time
6. Design Guidelines and Specifications
7. Funding Options
8. Adaptive Management

Chapter 1: Intro and Overview

- Regulatory Mandate
- Objectives and Vision
- Plan Context and Elements
 - Planning Context
 - Watershed and Storm Drainage Infrastructure
 - Related Regional and Countywide Plans
 - Related Local Planning Documents
 - Outreach and Education
 - Policies, Ordinances, and Legal Mechanisms

Chapter 2: Targets

- Private Development Projections
- Targets for Public Projects
- Projected Load Reductions

Chapter 3: Project Prioritization

- Tools and Process
 - Contra Costa Watersheds Storm Water Resources Plan
 - Prioritization criteria and process
 - Integration with Storm Drain Master Plans, Complete Streets, CIP process
- Maps and Project Lists

Chapter 4: Early Implementation

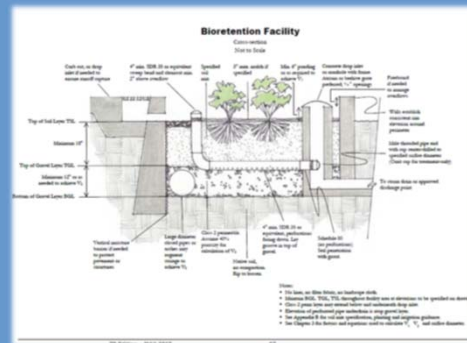
- Review of Capital Improvement Projects
- List of Projects Identified
- Workplan for Completion

Chapter 5: Tracking and Mapping

- Tools and Process
- Results

Chapter 6: Guidelines and Specs

- Guidelines for Streetscape and Project Design
- Specifications and Typical Design Details
- Sizing Requirements



Chapter 7: Funding Options

- Funding Strategies Developed Regionally
 - BASMAA “Roadmap for Funding of Sustainable Streets”
- Local Funding Strategies
 - Alternative Compliance
 - Local Funding Streams
- How is funding for Green Infrastructure incorporated into the municipal budget?

Chapter 8: Adaptive Management

- Process for Plan Updates
- Pursuing Future Funding Sources
- Alternative Compliance and Credit Trading Investigations

Creating a List of Prioritized Projects

CONTRA COSTA WATERSHEDS STORMWATER RESOURCE PLAN:

*Greening the Community for
Healthy Watersheds*



... and how it relates to your GI Plan



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Shadelands Center for Community Arts, Walnut Creek
September 26, 2018



MUNICIPAL REGIONAL PERMIT

C.3.j. Green Infrastructure Planning and Implementation

The Permittees shall complete and implement a Green Infrastructure Plan for the inclusion of low impact development drainage design into storm drain infrastructure on public and private lands, including streets, roads, storm drains, parking lots, building roofs, and other storm drain infrastructure elements.

Over the long term, the Plan is intended to describe how the Permittees will shift their impervious surfaces and storm drain infrastructure from gray, or traditional storm drain infrastructure where runoff flows directly into the storm drain and then the receiving water, to green—that is, to a more-resilient, sustainable system that slows runoff by dispersing it to vegetated areas, harvests and uses runoff, promotes infiltration and evapotranspiration, and uses bioretention and other green infrastructure practices to clean stormwater runoff.

The Plan is intended to serve as an implementation guide and reporting tool during this and subsequent Permit terms to provide reasonable assurance that urban runoff TMDL wasteload allocations (e.g., for the San Francisco Bay mercury and PCBs TMDLs) will be met, and to set goals for reducing, over the long term, the adverse water quality impacts of urbanization and urban runoff on receiving waters. For this Permit term, the Plan is being required, in part, as an alternative to expanding the definition of Regulated Projects prescribed in Provision C.3.b to include all new and redevelopment projects that create or replace 5,000 square feet or more of impervious surface areas and road projects that just replace existing impervious surface area. It also provides a mechanism to establish and implement alternative or in-lieu compliance options for Regulated Projects and to account for and justify Special Projects in accordance with Provision C.3.e.

The Plan shall also identify means and methods to prioritize particular areas and projects within each Permittee's jurisdiction, at appropriate geographic and time scales, for implementation of green infrastructure projects. Further, it shall include means and methods to track the area within each Permittee's jurisdiction that is treated by green infrastructure controls and the amount of directly connected impervious area. As appropriate, it shall incorporate plans required elsewhere within this Permit, and specifically plans required for the monitoring of and to ensure appropriate reductions in trash, PCBs, mercury, and other pollutants.

Municipal Regional Permit Sections

C.3.j

Also C.11.c. and C.12.c

A SWRP is...

- **Watershed-based planning approach to develop projects that:**
 - help meet water quality requirements
 - Provide flood control
 - Restore habitat
 - Enhance communities
 - Recharge groundwater
- **“Feeder” for Green Infrastructure Plans**
- **Required for project grant funding**

6

SWRP Benefits Considered

- Water Quality
- Water Supply
- Flood Management
- Environmental
- Community



7

AUGUST 2018



CONTRA COSTA CLEAN WATER PROGRAM

PUBLIC REVIEW DRAFT Contra Costa Watersheds Stormwater Resource Plan

Greening the Community for Healthy Watersheds

Prepared by

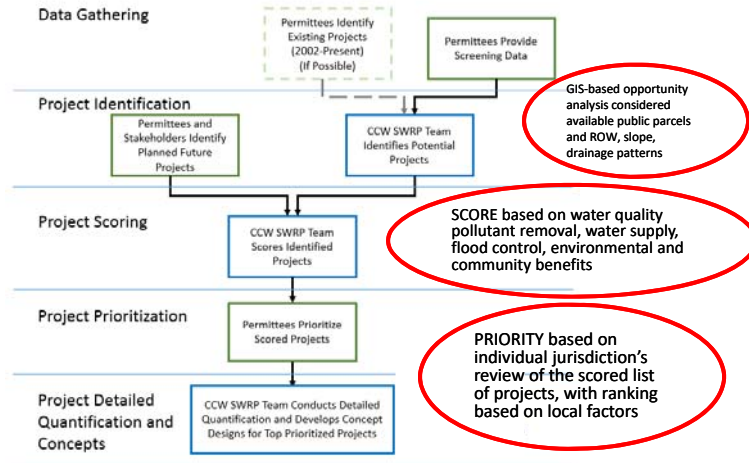
LARRY WALKER ASSOCIATES
GEOSYNTEC CONSULTANTS
SARAH PUCKETT WATER RESOURCES CONSULTING
PSOMAS
DAN CLOAK ENVIRONMENTAL
AMEC FOSTER WHEELER

The first five sections provide background information and describe the watersheds and outreach processes

Sections 6&7 provide the approach to developing potential project opportunities and quantifying the benefits

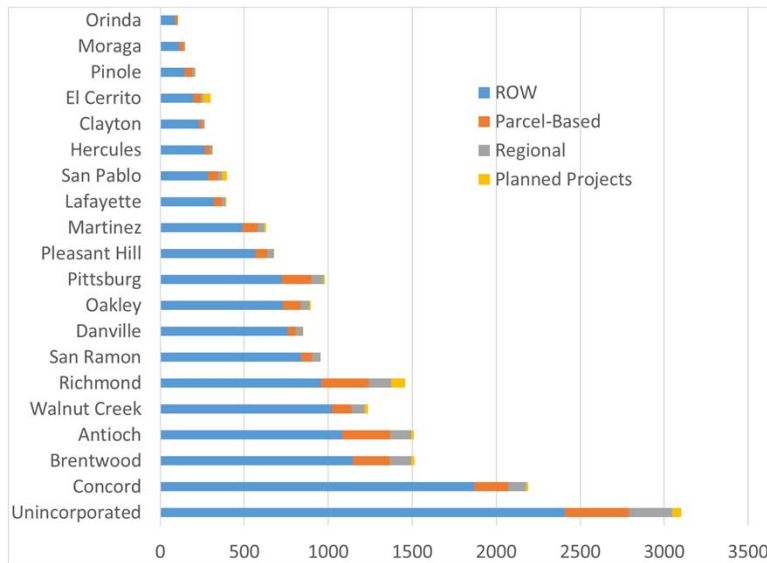
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Project Development



9

18,000+ potential project opportunities were identified



10

Project Concepts

Permittee	Project Name	Project Type
Antioch		
Concord		
Danville		
El Cerrito		
Oakley		
Orinda		
Pittsburg		
Richmond		
San Pablo		
Walnut Creek	Heather Farm Park Project	Distributed bioretention throughout a city park

11

SWRP Availability and Key Dates

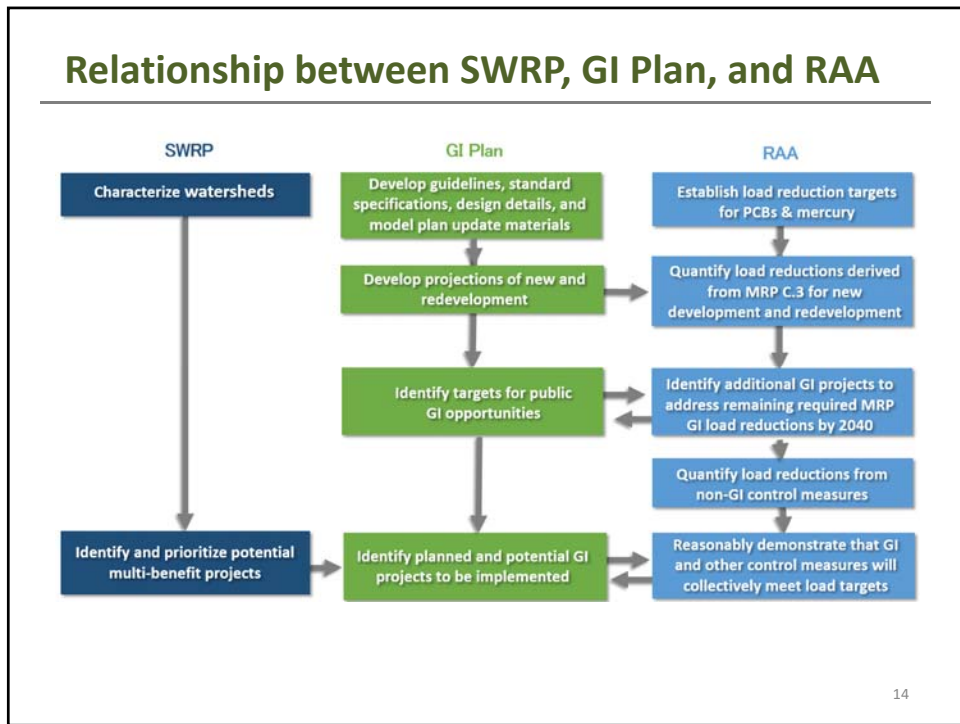
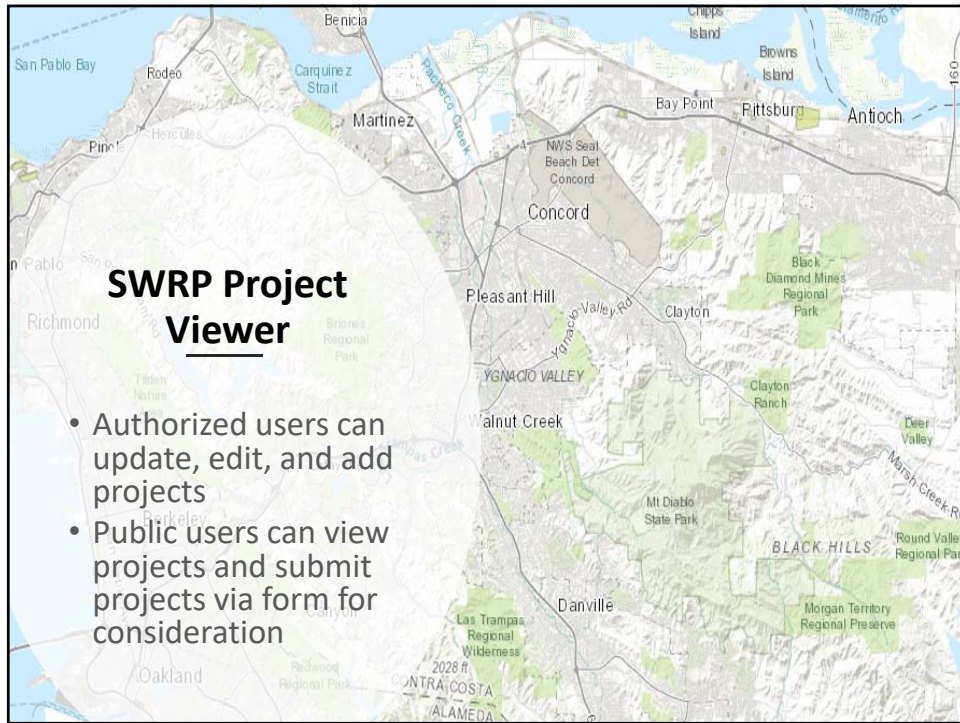
Public Draft on CCCWP website:

- www.cccleanwater.org
- Comment form online; Comments due October 1st

SWRP Final: January 31, 2019

Online Project Viewer: January 31, 2019

12



CONTRA COSTA WATERSHEDS STORMWATER RESOURCE PLAN:

*Greening the Community for
Healthy Watersheds*



... and how it relates to your GI Plan



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- Water Quality
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AUGUST 2018



CONTRA COSTA CLEAN WATER PROGRAM

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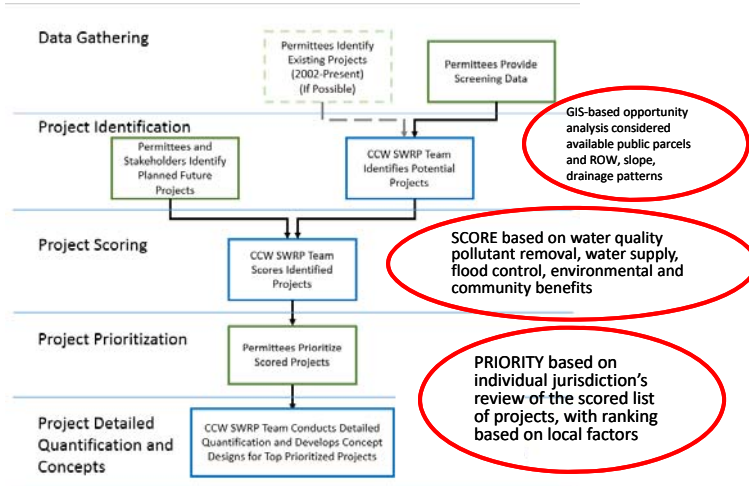
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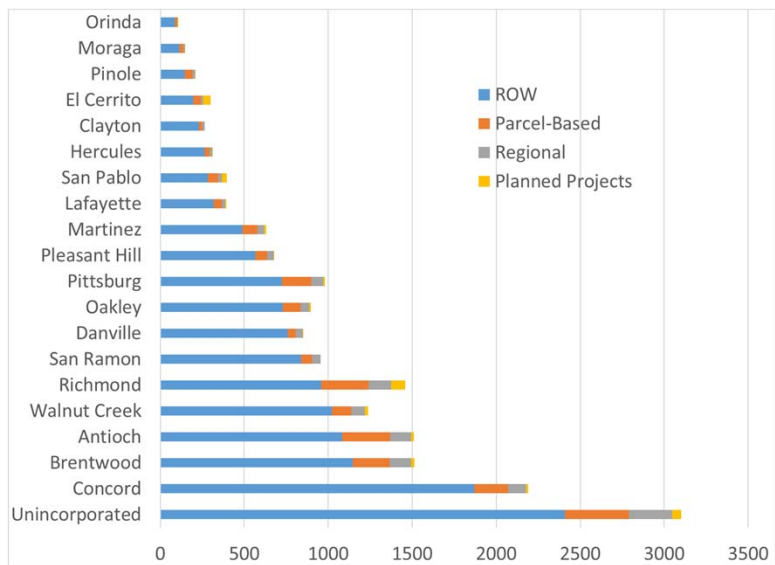
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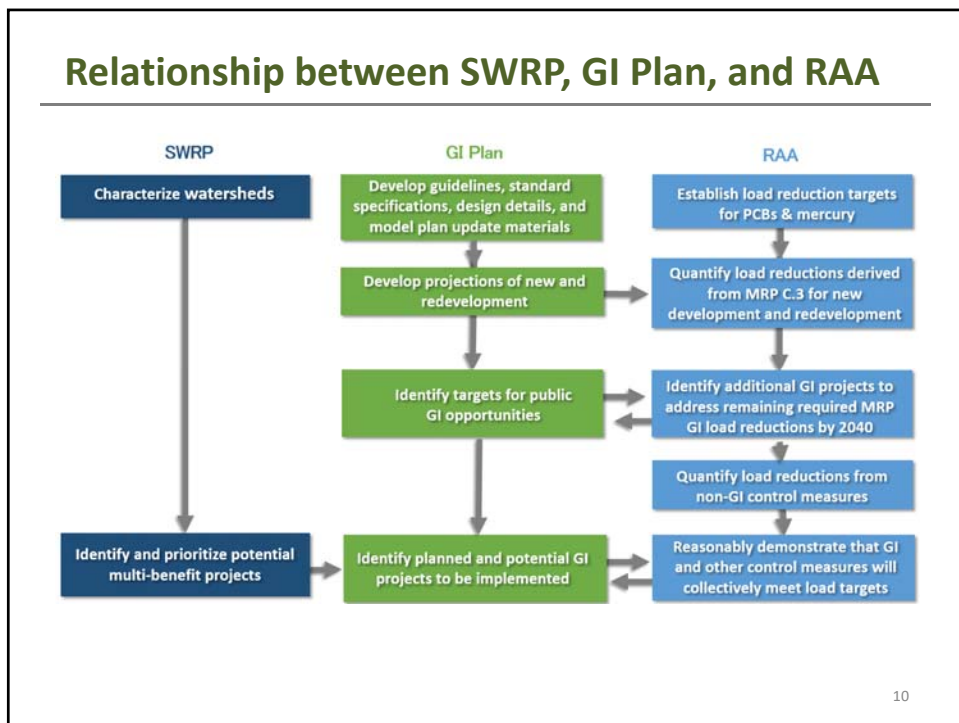
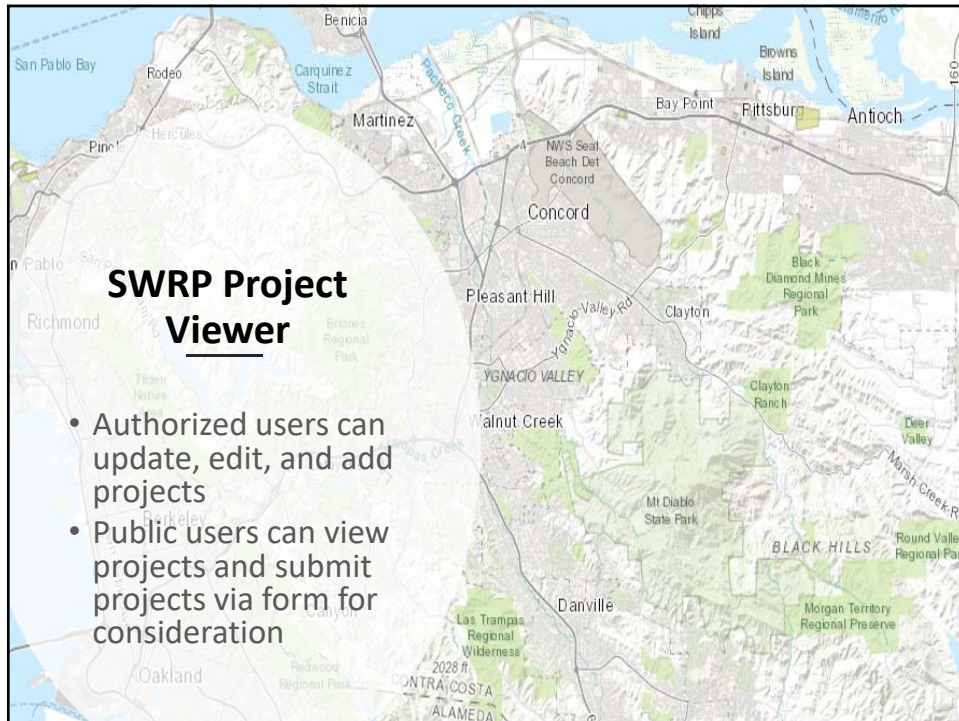
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8



Green Infrastructure Plan Targets, Reasonable Assurance Analyses, and Pollutant Load Reductions



Green Infrastructure Planning Workshop
Shadelands Center for Community Arts, Walnut Creek
September 26, 2018



Some Background Information

- **Total Maximum Daily Load (TMDL)**
 - The maximum amount of a pollutant allowed to enter a waterbody to meet water quality standards
 - Determines a pollutant reduction target and allocates load reductions to the sources of the pollutant
- **Reasonable Assurance Analysis (RAA)**
 - A detailed analysis of TMDL wasteload allocations, associated permit limitations, and the extent of stormwater management actions needed

RAA Basics

- MRP specifies 2040 GI targets (and 2020 interim targets) for PCBs/mercury load reductions
- TMDLs specify load reductions required by 2028/2030
- If the region does not achieve these goals, then the responsibility for load reductions step down....
 - Region → Countywide → Individual Permittee
- The TMDL can be met with various control measures:
 - Source Control – Source property cleanups, enhanced O&M, managing PCBs during building demolition, spill response
 - Green Infrastructure and other treatment control (Full Trash Capture)
- RAA estimates the load reductions that will be achieved through these control measures

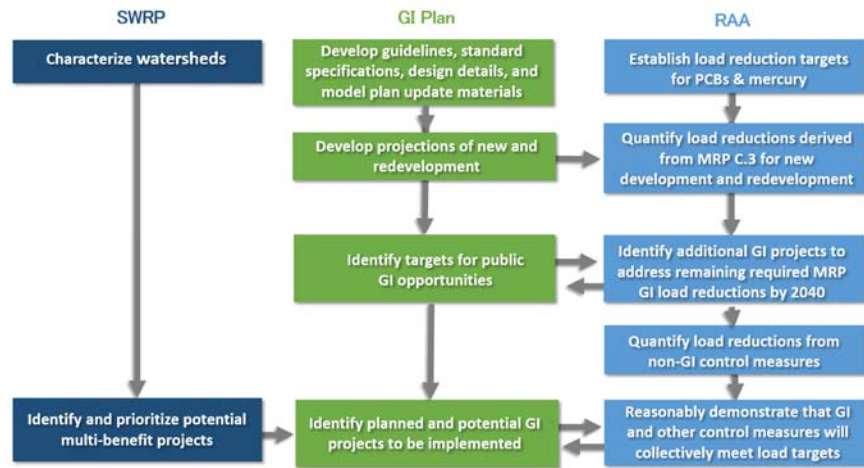
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Relationship between GI Plan and RAA

- The GI Plan is intended to serve as:
 - an implementation guide and reporting tool during subsequent Permit terms to provide *reasonable assurance* that urban runoff TMDL wasteload allocations will be met, and
 - to set goals for reducing, over the long term, the adverse water quality impacts of urban runoff on receiving waters for all urban pollutants

4

Relationship between SWRP, GI Plan, and RAA



5

MRP PCBs and Mercury Load Reductions

- Through Green Infrastructure 2013 - 2020

	Mercury (g/yr)	PCBs (g/yr)
All MRP Permittees	48	120
Contra Costa	9	23

- Through Green Infrastructure 2003 - 2040

	Mercury (g/yr)	PCBs (g/yr)
All MRP Permittees		
Contra Costa		

6

TMDL Load Reduction Goals

TMDL Attainment:

$$LR_{\text{goal}} = \text{Baseline} - \text{WLA (kg/yr)}$$

Where:

LR_{goal} = The load reduction goal (kg/yr)

Baseline = The baseline pollutant loading (kg/yr)

WLA = Contra Costa TMDL wasteload allocation (WLA)

Mercury WLA (g/yr)	PCBs WLA (g/yr)
11,000	

Note that the TMDL load reductions can be achieved with other control measures (in addition to Green Infrastructure)

TMDL Implementation Plan/RAA Report

- RAA Report being prepared by CCCWP for all of the Permittees
- Due with the 2020 Annual Report
- The RAA Report will estimate loads reduced from projections of future development on private property, Permittees' GI projects on public property/ROW, source control measures, and discuss uncertainties in the estimates
- Will include a cost estimate
- Consistent with regional guidance developed by BASMAA

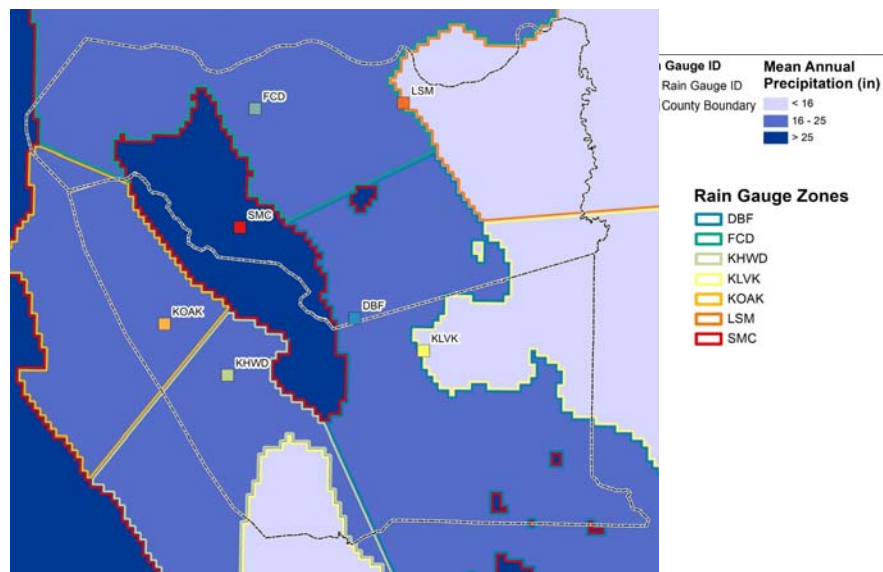
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Description of RAA Model

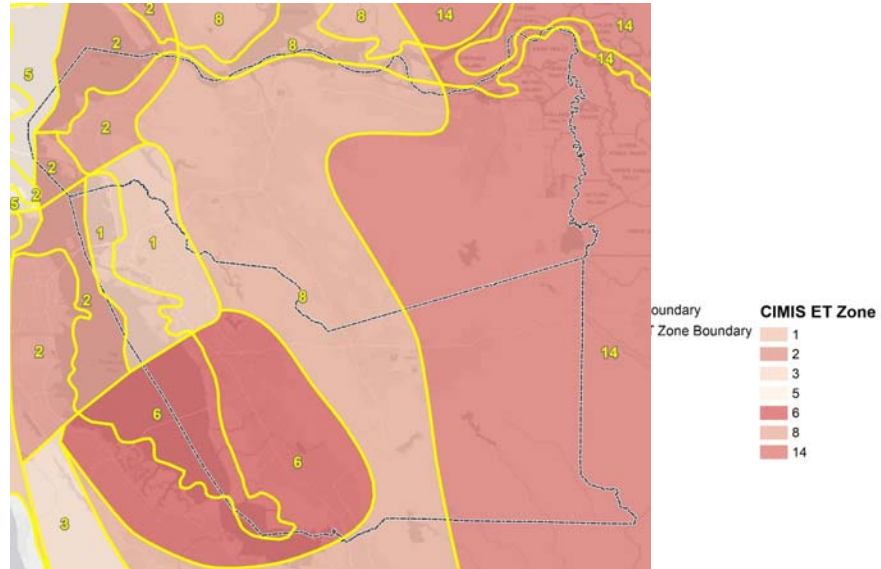
- **Baseline Model**
 - Hydrology
 - Water Quality
- **GI Performance Model**
 - Hydraulic GI Model
 - GI Pollutant Load Reduction Calculations
- **RAA Scenario Models**
 - Future Hydrology (imperviousness changes)
 - Future Water Quality (land use changes, GI additions)

For further detail see: *Quantitative Relationship Between Green Infrastructure Implementation and PCBs/Mercury Load Reductions* (CCCWP, 2018)

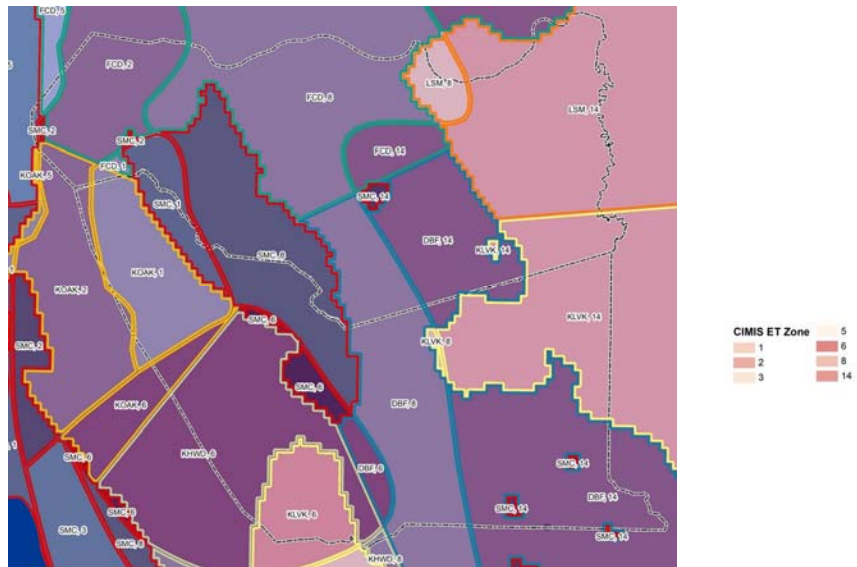
Precipitation Zones



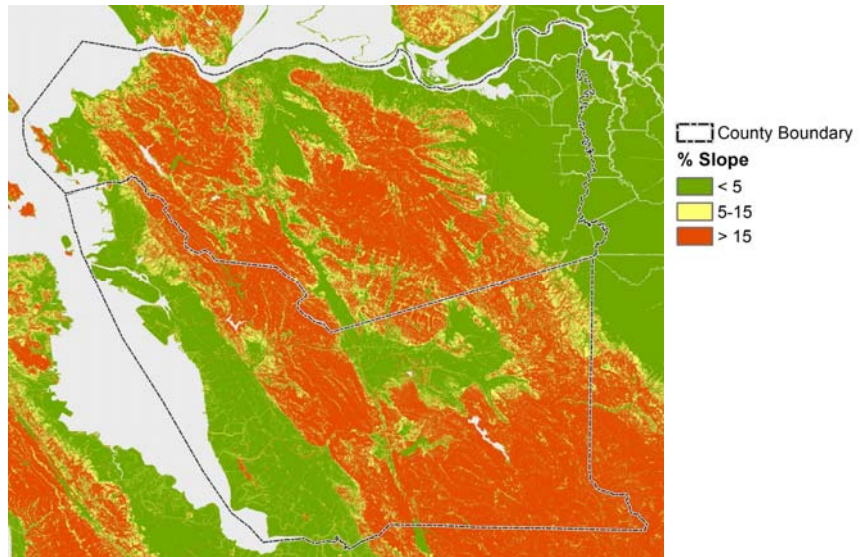
Evapotranspiration Zones



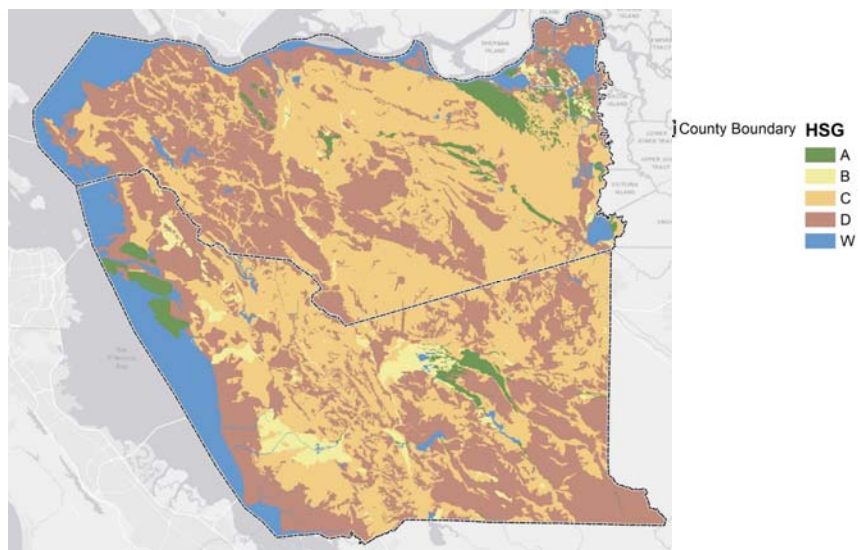
Climate Zones



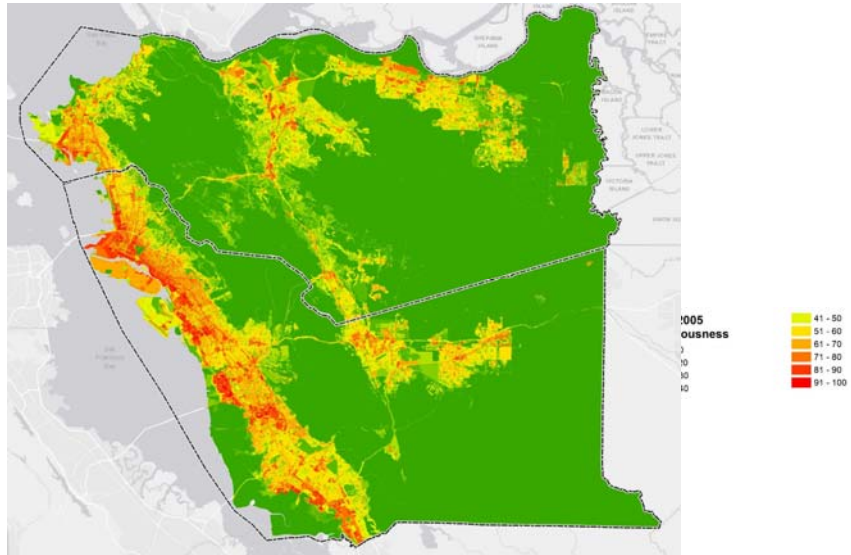
Slopes



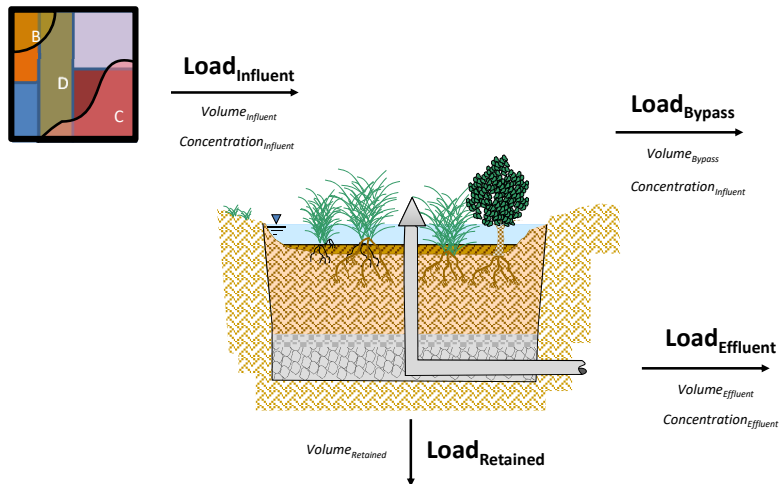
Soil Type



Imperviousness



RAA Model – GI Load Reduction



RAA Scenario Models – Time Frame

- GI measures implemented from 2003 through MRP 2.0 (i.e., “existing”; 2003 to 2020);
- Existing and Planned GI measures implemented to required TMDL attainment date (2003 through 2030); and
- Existing and Planned GI measures implemented to 2040 (2003 through 2040).

RAA Model Output

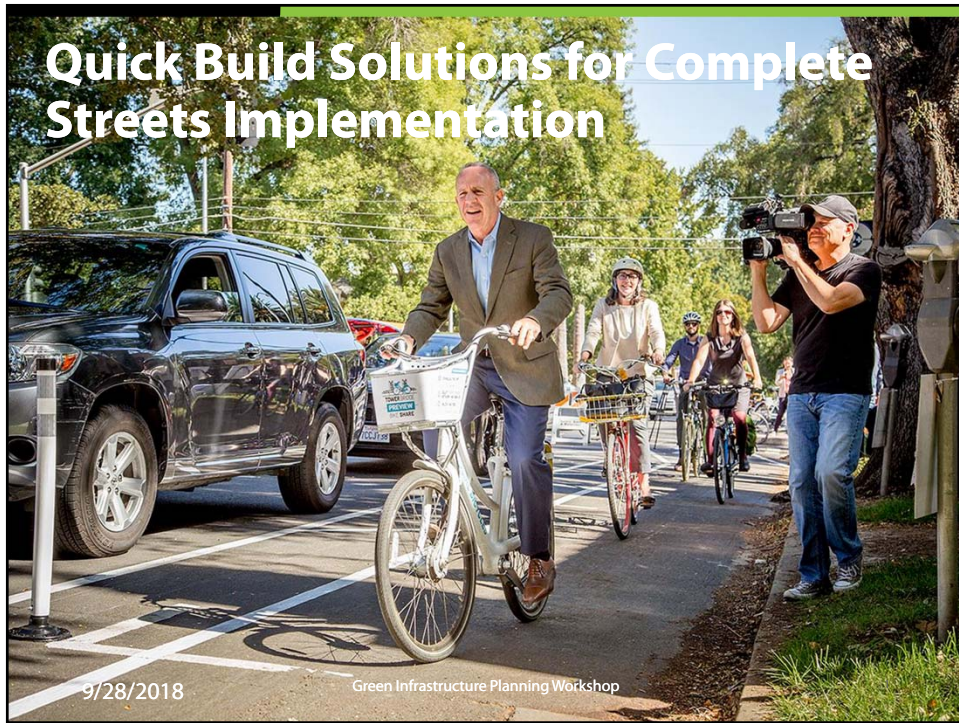
- Pollutant load reductions will be calculated for each RAA Scenario Model
- Hydrology and water quality updated across the county based on predicted land use changes
 - Private C.3 projects
 - Public GI projects
- Estimated load reductions compared to stormwater quality improvement goals

RAA Load Reduction Scenarios

Scenario Name	2020	2030	2040
“PCBs Countywide Attainment”	N/A	SWRP Opportunity Sites (Public Parcels and ROW)	
		Private Projects (AGOL C.3 and UrbanSim)	
“Planned”	Public Retrofit in GI Plans		
	Private Projects (AGOL C.3 and UrbanSim)		

GI Planning/RAA Schedule

Schedule	GI Plan	RAA
Q3 2018	<ul style="list-style-type: none"> GI Planning Workshop Validate projections of private development 	<ul style="list-style-type: none"> Establish scenarios
Q4 2018	<ul style="list-style-type: none"> Identify targets for the amount of impervious surface to be retrofitted by 2020, 2030, and 2040 Identify and prioritize projects and/or areas for potential projects for implementation by 2020, 2030, and 2040 	<ul style="list-style-type: none"> Cost estimation methodology Countywide attainment scenario
Q1 2019	<ul style="list-style-type: none"> Draft GI Plan 	<ul style="list-style-type: none"> Ongoing scenario analyses
Q2 2019	<ul style="list-style-type: none"> GI Plan approvals 	
Q3 2019	<ul style="list-style-type: none"> Submit GI Plan w/ 2019 AR 	<ul style="list-style-type: none"> Begin 2020 RAA Report modeling
Q1 – Q3 2020		<ul style="list-style-type: none"> Revised source control measure load reduction accounting (BASMAA) Final RAA modeling TMDL Implementation Plan and RAA Technical Report with 2020 AR



FEHR PEERS

Tactical Urbanism vs. Quick Build

Tactical Urbanism:
Very Temporary

Quick Build:
Temporary to Semi-Permanent

Milvia Street Bike to Work Day Installation Berkeley, CA

Civic Center Drive Crosswalk Interim Enhancements Fremont, CA

The image contains two photographs. The left photograph shows a street scene with orange traffic cones forming a bike lane. A cyclist is riding through the lane. A sign on the ground reads "Hi, I'm a Protected Bikeway!". The right photograph shows a crosswalk with a painted bicycle symbol and a white arrow pointing forward. A person is walking across the crosswalk. In the background, there is a pedestrian bridge and a street with cars.

Pop-up Events



Yellow Brick Road, Richmond



Telegraph Avenue Protected Bikeway

Milvia Street Protected Bikeway

Hours



Hard cost (approx)
\$5,000 – \$15,000

Materials

- Donated plants
- Borrowed benches
- Straw wattle
- Cones
- Spray chalk
- Duct Tape
- Stencils
- Roofing Paper

Quick Build Projects

Years



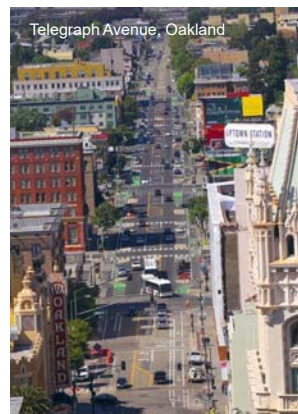
Hard cost (approx)
>\$100,000

Materials

- Paint /
- Thermoplastic
- Signs
- Surface Treatment
- Bollards
- Planters



Civic Center Drive, Fremont



Telegraph Avenue, Oakland

Quick Build Projects for Complete Streets Implementation

1. Quickly and cost effectively implement safety improvements
2. Build on momentum from planning process
3. Pilot and evaluate roadway changes
4. Opportunity to deploy innovative green infrastructure?
5. A chance to dedicate space for future green infrastructure?



Example: El Cerrito

Quickly and cost effectively implement safety improvements

Planning

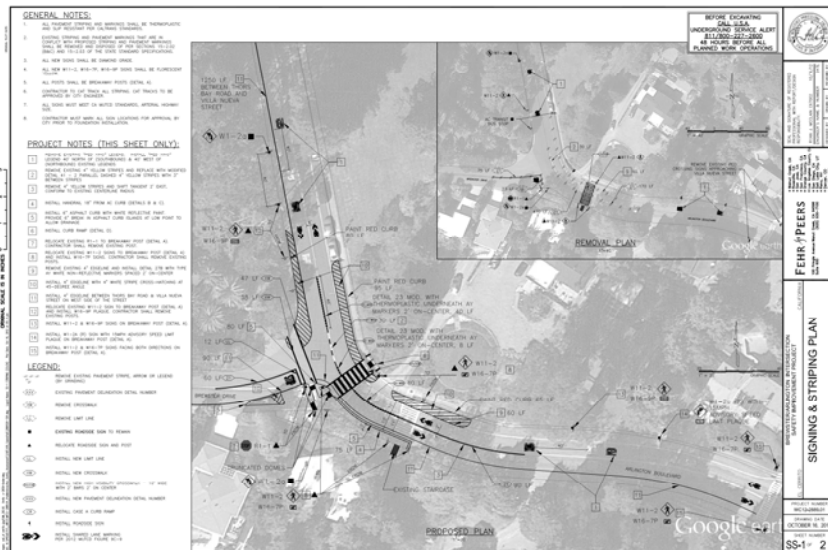
Three step process with guiding questions



- 1. Identify the Issues
- 2. Consider Phasing
- 3. Develop a Project Roadmap



Design



Implementation

FEHR PEERS

- 1. Removable materials
- 2. Minimize drainage impacts
- 3. ADA Considerations



Implementation

FEHR PEERS

Determine successes and prepare for the next phase.



Implementation

FEHR PEERS



Example: Richmond

Build on momentum from planning process

Community Driven

Demonstration into Quick Build

FEHR PEERS

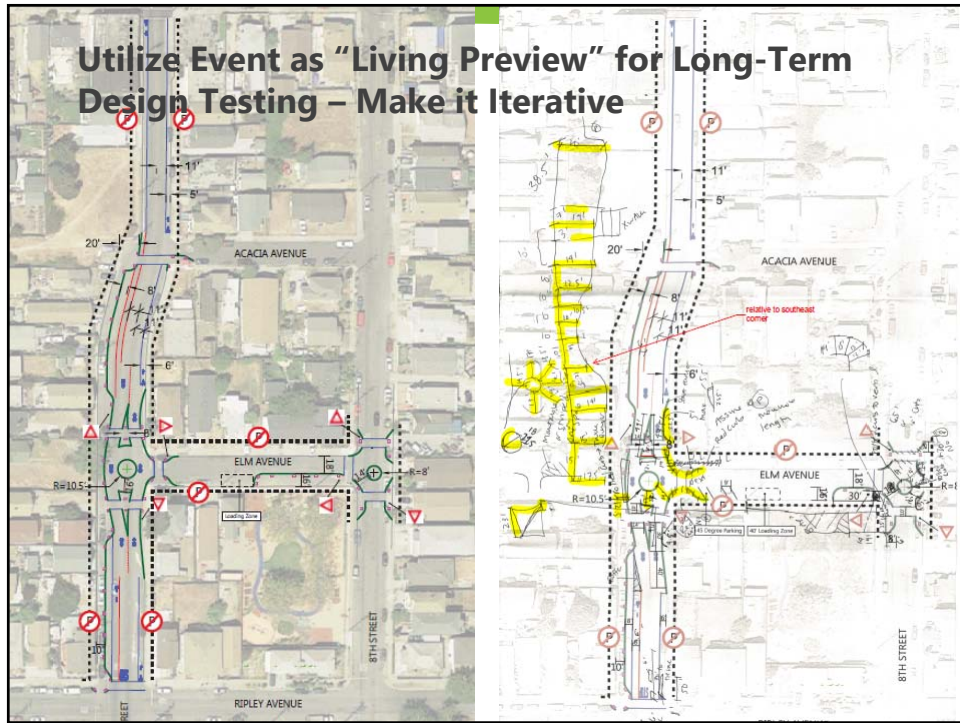


Community Driven

Demonstration into Quick Build

FEHR PEERS





Stakeholder- & Community-Vetted Revised Design

GENERAL NOTES:

1. CROSSWALKS MAY INCLUDE DECORATIVE PAVING, STAMPED ASPHALT AND/OR COLORED PAVEMENT OR PAINT FOR THE YELLOW BRICK ROAD CONCEPT. UNCONTROLLED CROSSWALKS MAY BE HIGH-VISIBILITY LAMBER STOPPING.
2. INSTALL FUNCTIONAL CURB BARRIERS WHEREVER FEASIBLE.
3. INTERIM DESIGN TREATMENTS SHOULD BE CONSIDERED TO CONSTRUCT THE IMPROVEMENTS IN THE NEAR TERM, AS FEASIBLE.

WWW.L2DESIGN.COM

LEGEND:

- Blue box: BICYCLE ROUTE
- Green box: BICYCLE ROUTE
- Black box: BICYCLE ROUTE
- Red box: BICYCLE ROUTE
- Blue line: BICYCLE ROUTE
- Green line: BICYCLE ROUTE
- Black line: BICYCLE ROUTE
- Red line: BICYCLE ROUTE
- Blue circle: BICYCLE ROUTE
- Green circle: BICYCLE ROUTE
- Black circle: BICYCLE ROUTE
- Red circle: BICYCLE ROUTE
- Blue triangle: BICYCLE ROUTE
- Green triangle: BICYCLE ROUTE
- Black triangle: BICYCLE ROUTE
- Red triangle: BICYCLE ROUTE
- Blue square: BICYCLE ROUTE
- Green square: BICYCLE ROUTE
- Black square: BICYCLE ROUTE
- Red square: BICYCLE ROUTE

REVISIONS:

NO.	DESCRIPTION	DATE	BY

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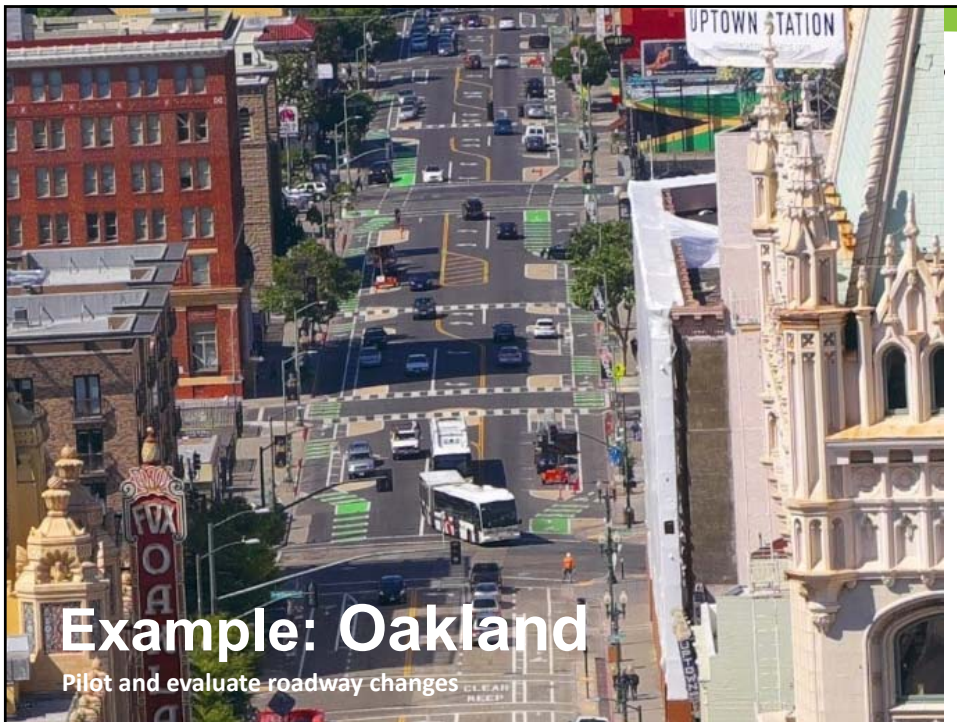
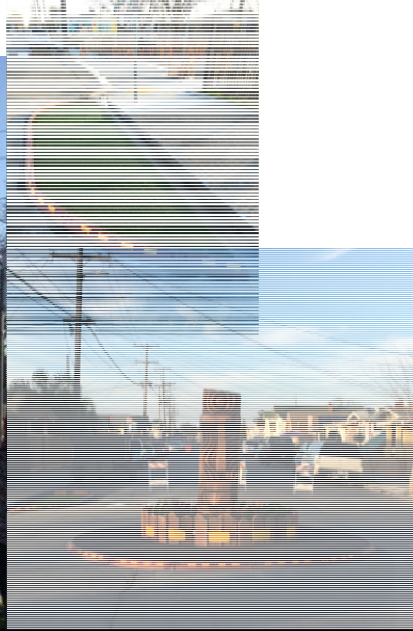
CITY OF RICHMOND
 RLM TO PEERS - PHASE 1
 YELLOW BRICK ROAD/IRON TRIANGLE NEIGHBORHOOD PLAN

WSD 1
 1

Example: Richmond

Demonstration into Quick Build

FEHR PEERS



Example: Oakland

Pilot and evaluate roadway changes

Example: Oakland

FEHR PEERS

Pilot and Evaluate

Road diet with protected bikeway



Example: Oakland

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Pilot and Evaluate

Compliance Challenges



Example: Oakland

Pilot and Evaluate

FEHR PEERS

Better accommodate transit

Coming Soon to Telegraph
Boarding Islands & Planters

Learn about the changes

Stay on top with updates

Connect with our project team

Documented Evaluation

FEHR PEERS

Designing safer streets

Safe and attractive options for all users

Planning a safe street means helping pedestrians, bicyclists, drivers, and those on transit routes to get where they need to go. On Telegraph, changes like dedicated lanes for bicyclists and clearly demarcated pedestrian crossings separate the different streams of traffic and make the ride more comfortable for everyone. As a result, we're seeing promising trends: fewer collisions for everyone, and increased perception of safety among our most vulnerable users of the street.

No pedestrian crosswalk collisions reported for the first time in 5 years

79% of bicyclists and 63% of pedestrians say they feel safer on Telegraph now

40% decrease in collisions

Building great streets

Economic value and neighborhood vitality

Perhaps most known for "First Fridays," the Warehouse-Northgate District is home to restaurants, bars, and art galleries, as well as neighborhood retail and services. Although not directly attributable to the changes on the street, the XCHORD District has seen a 9% increase in retail sales and the addition of 5 new businesses since the Telegraph Avenue project started. Another trend in the right direction: we saw a 78% increase in people biking and a 300% increase in people walking during peak hours. And, despite significant transit use changes, we saw the peak hour share of people biking, walking, and taking the bus on Telegraph climb to almost 30%.

9% increase in retail sales

Reducing delay and speeding

Faster, safer travel

Not too fast, not too slow: since the change, we've seen a significant decrease in cars and trucks speeding and little change in median speed. Now traffic flows more consistently and more segments at a safe speed. Why reduced speeding matters: 8 out of 10 pedestrians survive being hit by a vehicle traveling 20mph, but just 5 out of 25 survive if the vehicle is going 30mph. At 40mph, only 1 out of 10 pedestrians will survive.

45% decrease in southbound speeding

27% decrease in northbound speeding

Median speeds are now the speed limit

52% of bicyclists on Telegraph say they travel the corridor more frequently now

Using MTC's UrbanSim to Estimate (Re)Development in Contra Costa County

Austin Orr, Geosyntec

Will Lewis, LWA



Purpose

1. Identify or develop a methodology for projecting the amount and locations of private (re)development subject to C.3
2. Apply this methodology and revise/validate projections of private development based on local understanding and knowledge of (re)development patterns
3. Produce a defensible projection of private (re)development project areas for 2020, 2030, 2040

Defensible Projection of Area

Total Area = Private C.3 + Public Retrofit Projects



1. METHODOLOGY



Estimating (Re)Development

- Other regions have used historical permit records and uniform rates for large areas
- Bay Area Metropolitan Transportation Commission (MTC) developed an UrbanSim model for transportation planning as part of **Plan Bay Area**



Why Use UrbanSim?



- Developed by startup at UC Berkeley
- State of the practice in transportation planning
- Factors influencing (re)development demand:
 - Population and employment demand over time
 - Commute time
 - Commercial and residential property values
 - Existing redevelopment

UrbanSim's Greedy Gnome

- “Rational developer”
- Uses the demand to drive decisions
- Given two goals:
 - Increase “housing units” and “job spaces” by region-wide target rates
 - Maximize profits
- (Re)develops the parcel to yield greatest profit
- Repeat millions of times



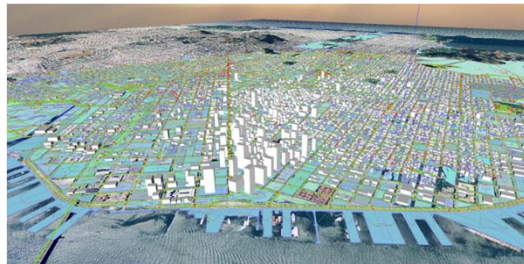
Source: Isaac77598 on Deviant Art

MTC's UrbanSim

- The majority of 2020 re(development) was manually coded in
- “Rational developer” switched on in 2021
- “Rational developer” considered region-wide information
 - Building square footage
 - Housing units
 - Job spaces
 - Estimated value
- Not TMDL compliance oriented



Source: UrbanVision Purdue University



Source: UrbanVision Purdue University

We Need You

- Need Permittees' institutional knowledge to ground truth/gut check outputs
- Are re(development) rates reasonable for your jurisdiction?
- Are there any parcels that are not likely to undergo re(development) in the period assigned:
 - Environmentally sensitive areas
 - Historical landmarks
 - Contaminated sites



Source: Image Flip

2. APPLICATION OF METHOD



Workflow

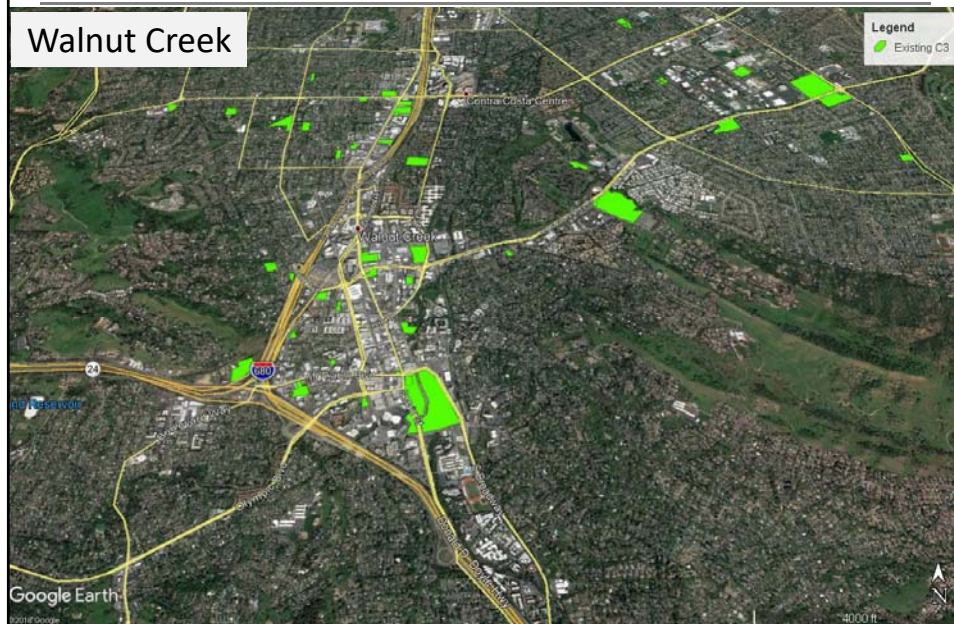
- **Obtain and Prepare UrbanSim Results** ✓
- **Deliver Permittee Review Packages** ✓
 - Google Earth file
 - Excel spreadsheet tracking file
- **Permittee Review**

Permittee Review

- **Expected outcome is a *defensible projection***
- **If changes are needed**
 - Add, remove, and reclassify parcels based on local knowledge.
 - Document changes and alterations
- **If not, or if no better information is available**
 - Is the redevelopment rate from UrbanSim representative?

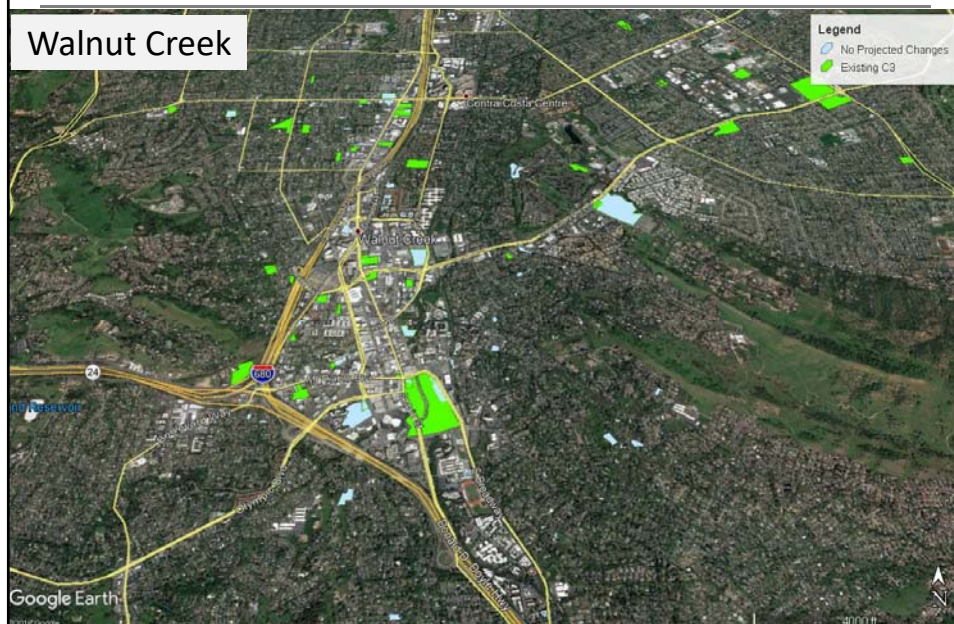
Existing Projects (AGOL C.3)

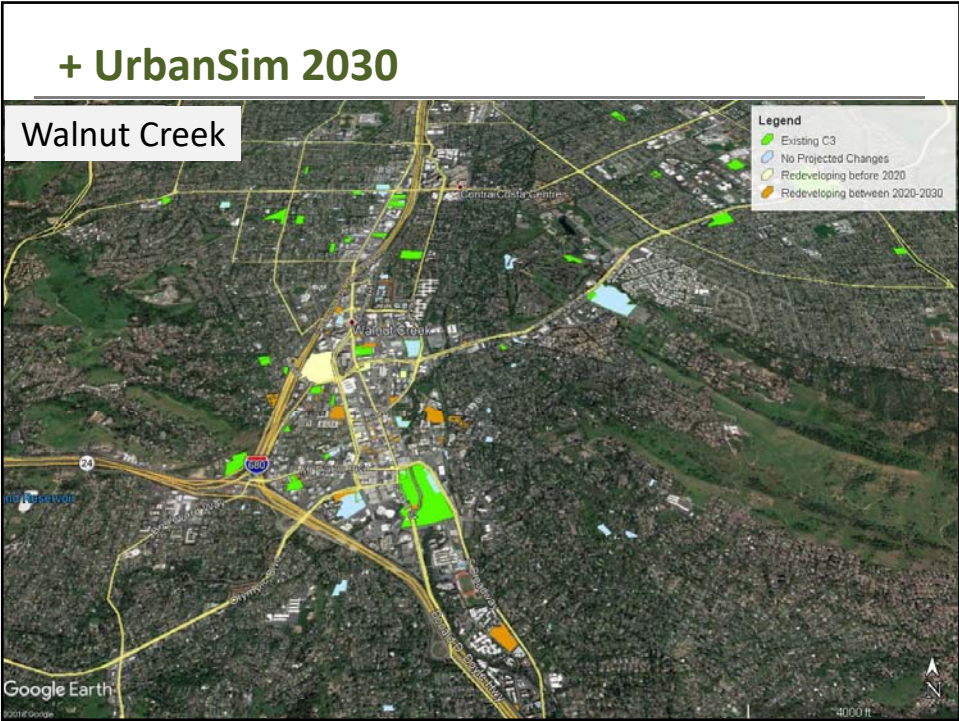
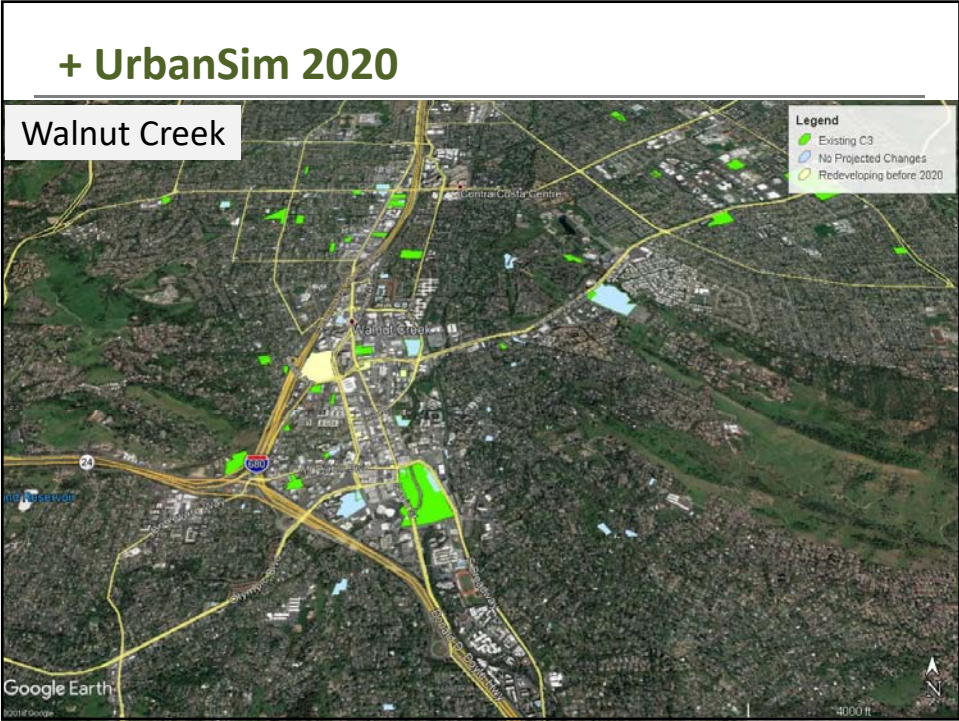
Walnut Creek



+ UrbanSim Recently Developed

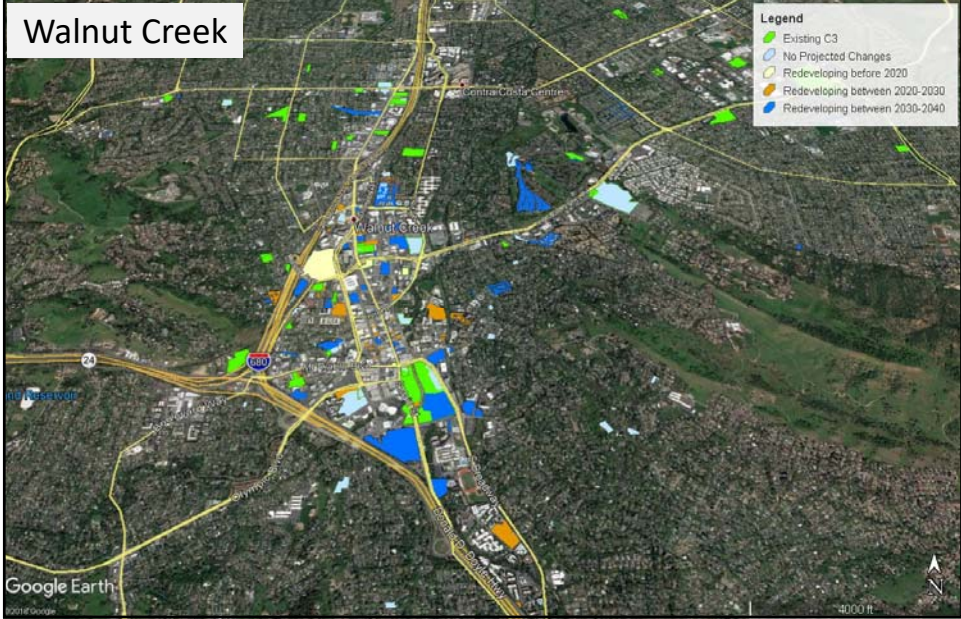
Walnut Creek





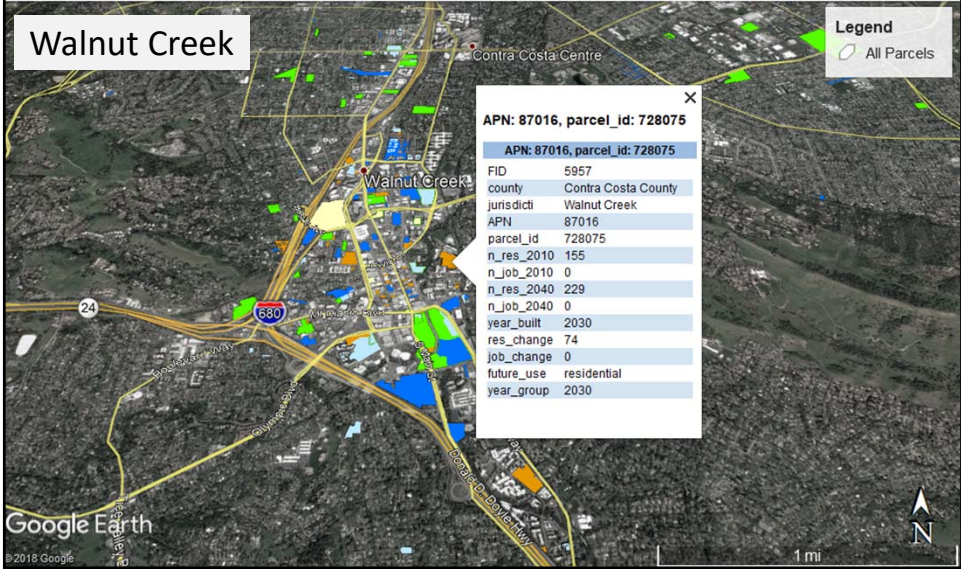
+ Urban Sim 2040

Walnut Creek



(Re)Development Site Details

Walnut Creek



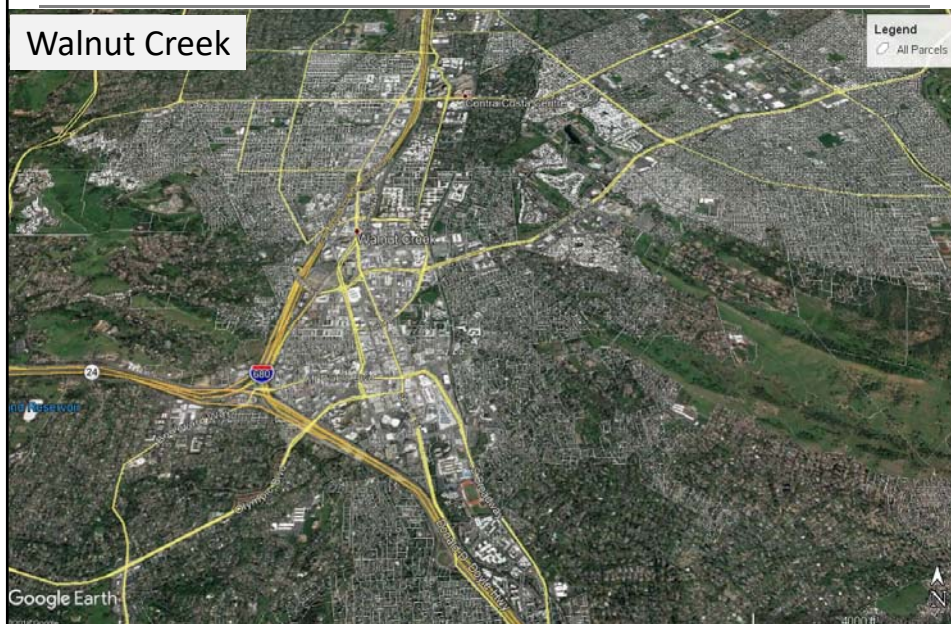
Reviewing & Editing UrbanSim Projections

APN	parcel_id	n_res_2010	n_job_2010	n_res_2040	n_job_2040	year_built	res_change	job_change	future_use	year_group	corrected_future_use	corrected_year_built	density	notes
80708	721069	0	29	34	0	2030	34	-29	residential	2030				
80789	721158	1	0	1	0	2013	0	0	unchanged	2010				
81103	721509	0	558	584	0	2035	584	-558	residential	2040				
81226	721645	0	0	122	0	2040	122	0	residential	2040				
81288	721713	46	0	46	0	2015	0	0	unchanged	2010				
81440	721883	0	90	0	717	2040	0	622	commercial	2040				
81448	721891	0	97	0	97	2011	0	0	unchanged	2010				
81552	722012	0	188	90	0	2030	90	-188	residential	2030				
81573	722030	0	48	0	48	2011	0	0	unchanged	2010				
81995	722498	1	0	1	0	2011	0	0	unchanged	2010				
82241	722773	0	4	5	0	2025	5	-4	residential	2030				
82562	723128	0	13	16	0	2025	16	-13	residential	2030				
82736	723321	0	193	0	193	2012	0	0	unchanged	2010				
82855	723453	0	8	9	0	2025	9	-8	residential	2030				
82895	723497	0	65	0	65	2011	0	0	unchanged	2010				
82994	723607	0	14	0	31	2015	0	17	commercial	2020				
83118	723746	0	7	7	0	2030	7	-7	residential	2030				
83329	723980	0	15	12	0	2025	12	-15	residential	2030				
83582	724261	0	0	36	0	2040	36	0	residential	2040				
83607	724289	0	97	114	0	2035	114	-97	residential	2040				
83699	724390	0	0	0	0	2010	0	0	unchanged	2010				
83729	724424	0	9	12	0	2030	12	-9	residential	2030				
83736	724434	0	0	3	0	2035	3	0	residential	2040				

- **Corrected Future Use**
 - Residential, commercial, mixed use, unchanged/no (re)development
- **Corrected Year**
- **Corrected Density**
 - Low, medium, high

Adding a (Re)Development Site

Walnut Creek



Adding a Site

APN	parcel_id	year_built	corrected_year_built	future_use	future_density	notes
100006	390496	1967				
100012	390503	1960				
100016	390507	1993				
100017	390508	1966				
100019	390510	1966				
100024	390516	1970				
100025	390517	1971				
100027	390519	1966				
100029	390521	1962				
100035	390528	9999				
100037	390530	1976				
100038	390531	1960				
100042	390536	1984				
100043	390537	1972				
100048	390542	1954				
100052	390547	1968				
100055	390550	1986				
100063	390559	1965				
100064	390560	1987				
100067	390563	1985				
100070	390567	1995				
100072	390569	1947				
100076	390573	1957				

3. UTILIZE REVIEWED DATA



Results & Next Steps

- Receive revised 2020, 2030, and 2040 (re)development projections from Permittees
- **GI Plan** - Translate the *defensible projection* of parcels undergoing (re)development into impervious area
- **RAA** - Translate *defensible projection* of parcels undergoing (re)development into loads of PCBs and mercury reduced

QUESTIONS & DISCUSSION



Discussion: Prioritized Projects List

- How do you plan to create a list of prioritized Green Infrastructure projects?
- How will your prioritized project lists relate to your targets for 2020, 2030, 2040?

Making
Green Infrastructure
into Municipal Policy

Municipal Policies: Topics

- Experience incorporating Green Infrastructure into General Plans and other planning documents
- Need/opportunities for countywide collaboration

Discussion—Local Planning

- What efforts have you undertaken, and what has been your experience, reviewing current planning documents and incorporating Green Infrastructure into those documents?
 - General Plans
 - Urban Greening Plan
 - Sustainable Communities Strategy
 - Complete Streets Plan
 - Storm Drain Master Plan
 - Standard Details and Specifications

Discussion: Local Policy

- How will you document that your municipality has sufficient authorization to implement your Green Infrastructure Plan?
- Is there a need for model legal documents?
 - Green Infrastructure Ordinance
 - Policy on requirements for frontage improvements
 - CEQA
- If so, how would we go about preparing model documents?

Funding for Green Infrastructure

Funding Topics

- Funding Green Infrastructure Projects
 - Grants
 - Local Funding with Public Money
- Alternative Compliance
 - Provision C.3 Off-site Compliance
 - Compliance with Mandated Load Reductions for PCBs and Mercury

Roadmap of Funding Solutions

- GI Plans must include: “An evaluation of prioritized funding options...”
- *Roadmap of Funding Solutions for Sustainable Streets*
 - Potential sources of funding
 - Actions
 - Prioritize Sustainable Streets in Funding Sources
 - Improve Conditions for Projects that Are Funded by Multiple Grants
 - Additional Funding Options

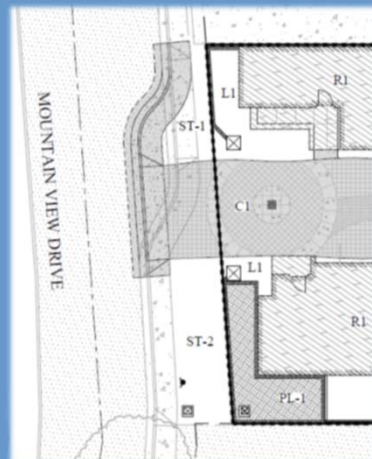


C.3 Off-Site Compliance

- Provision C.3.e.i.
 - Offsite location
 - In-lieu fees (banking)
- Limitations to Using
 - On-site compliance is easiest for most projects
 - Applicant would have to build two projects
 - Who maintains the off-site facilities?
 - What happens if the off-site area is redeveloped?
 - Costs of retrofit vary widely

Street Frontage Improvements

- Applicability of C.3 to street frontage improvements
- Capturing street runoff to offset hard-to-treat areas
- Requiring Green Infrastructure as a Condition of Approval



Required Load Reductions via GI

- PCBs Load Reduction by 6/30/2020
 - 23g/year for Contra Costa Permittees
 - May be met regionally for all MRP Permittees
- Reasonable Assurance Analysis
 - 3000g/year for all MRP Permittees by 2040

Project Tracking, Maintenance, and Assessment

Tracking and Maintenance Topics

- Maintenance Requirements
 - What
 - Who
- Tracking and Reporting
 - Needs and Opportunities

Bioretention Facility Maintenance

- What: O&M Fact Sheet (on website)
 - No fertilizers or pesticides
 - Daily/weekly inspection and trash removal
 - Monthly weeding and irrigation check
 - Post-storm inspections
 - Annual pre-rainy-season check
 - Annual vegetation cut-back
- Who?

Data Management Requirements

- MRP Provision C.3.j.iv. By 2019:
 - Track and report treated/disconnected area
 - Reasonable assurance (track load reduction)
 - Trash
 - Both public and private parcels
- MRP Provisions C.3.b., C.3.e. and C.3.h.
 - Report discretionary approvals of projects
 - Report “Special Projects”
 - Report construction of facilities
 - Keep a database of facilities and records of inspections

Data Management Next Steps

- We have developed:
 - AGOL for C.3 load reductions and trash
 - Countywide consensus on need for a common C.3 tracking database
 - Database structure for C.3 tracking
- How and when to move forward?

Workshop Evaluation and Follow-Up Items

Feedback

- Do you have the resources you need to:
 - Incorporate Green Infrastructure into Capital Improvement Projects?
 - Complete a Green Infrastructure Plan in 2019?
- Are there additional opportunities for collaboration?
- Please complete the Request for Feedback (reverse side of agenda)