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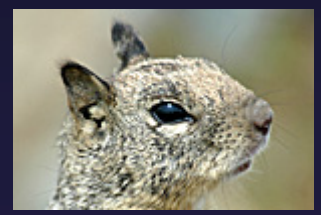
What is Green Infrastructure?

And how does it mesh with Focus and Other Regional Climate Protection Initiatives?

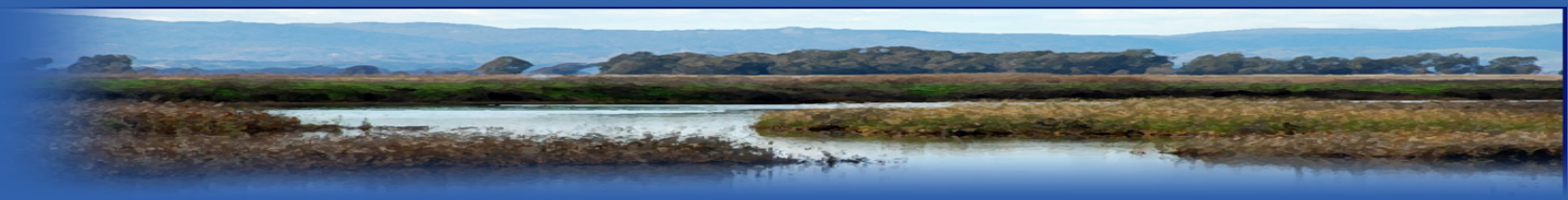
Jennifer Krebs, San Francisco Estuary Partnership



Municipal Regional Permit (Water Board)

- Provision C.3. Municipalities are to use their planning authorities to include appropriate source control, site design, and stormwater treatment measures in new development and redevelopment projects to address pollutant discharges and prevent increased runoff flows. This goal is to accomplished primarily through LOW IMPACT DEVELOPMENT techniques.

Municipalities covered are Alameda, Contra Costa, San Mateo, and Santa Clara counties, and the cities of Fairfield, Suisun City, and Vallejo



What is LID?

- Land planning and design strategy
- Goal: "To reduce runoff and mimic a site's predevelopment hydrology by
  - Minimizing disturbed areas and impervious cover
  - Infiltrating, storing, detaining, evapotranspiring, and/or biotreating stormwater runoff close to its source."
- Underlying principle: treat stormwater as a resource rather than a waste product

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Our neighbors to the North

- 10 Year head start in LID to comply with the Endangered Species Act

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Portland Green streets (since 2007)

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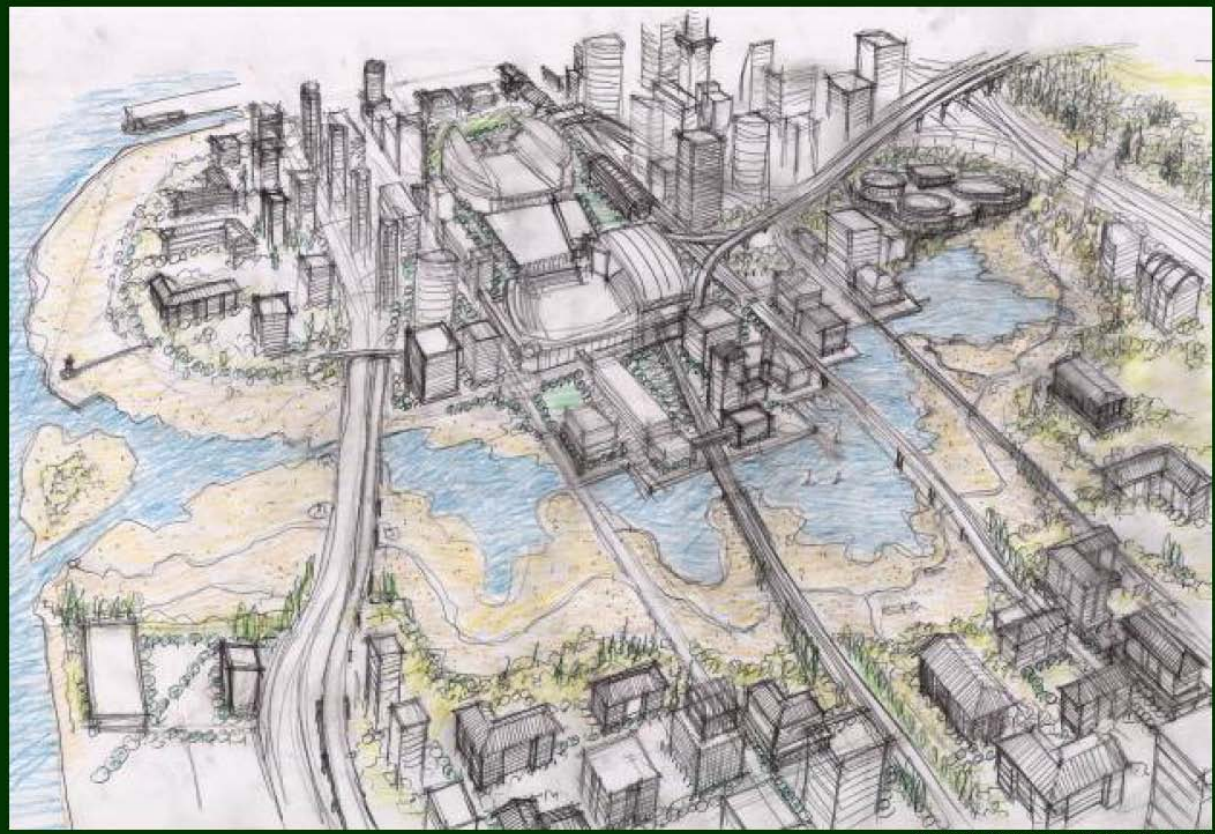
Seattle 2100 Green Infrastructure Plan

5. Formalize t
20 and 100-y

The Living Lattice:
A Network of Neighborsheds



Kenichi Nakano + Peitro Potesta

Integrated, Connected Green Infrastructure

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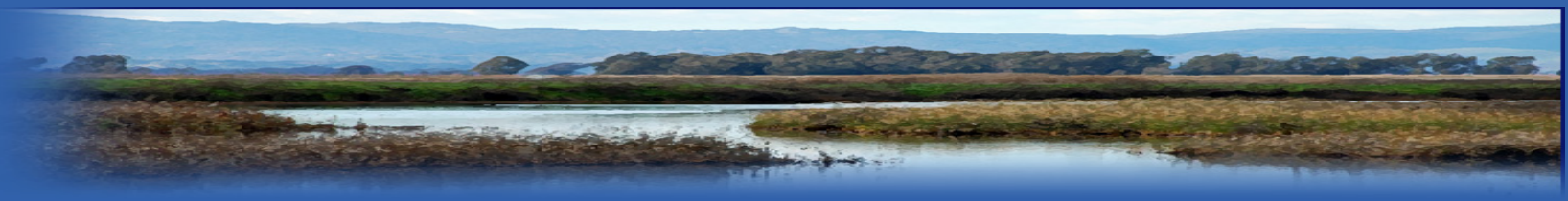

SFEP Programs To Develop Green Infill Around the Region

- El Cerrito Rain Gardens (2009 ARRA)
- Green Infill Clean Stormwater (2007 EPA)
- Estuary 2100 (2008 EPA)
- Estuary 2100: Phase 2 (2009 EPA)

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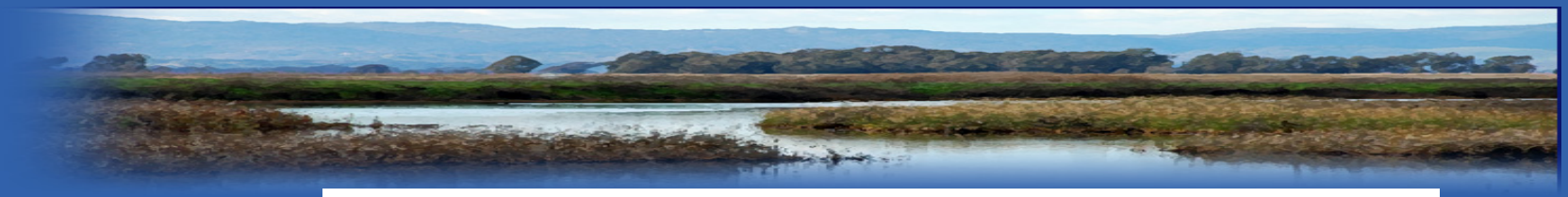


El Cerrito

San Pablo Avenue

A VIBRANT, COHESIVE AND COMMUNITY-STRENGTHENING CORRIDOR

Ecologically-friendly design supports sustainability efforts.

COMMUNITY FACILITIES

A range of programs and facilities provides engaging experiences for people of different ages, backgrounds and abilities.

New connections link existing and new open spaces and community facilities.

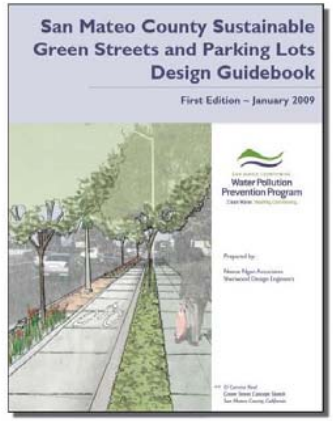
SAN FRANCISCO ESTUARY PARTNERSHIP

San Mateo

Sustainable Green Streets and Parking Lots

The Conventional Approach
For much of the last century, drainage systems have been engineered to quickly collect runoff in underground pipes and carry it away using an "out of sight, out of mind" approach. This design philosophy treats rainfall runoff as a waste, typically does not remove pollutants before stormwater enters natural water bodies, and many people are unaware of the stormwater flowing in pipes underneath city streets when it rains.

Sustainable Stormwater and Green Infrastructure
Sustainable stormwater design treats rainfall runoff as a valuable resource. It is based on balancing urban development while preserving natural hydrological functions. Furthermore, sustainable stormwater design achieves the multiple goals of being cost effective, improving water quality, and addressing community concerns. Mimicking the natural hydrologic function of healthy ecosystems in street and parking lot landscapes can dramatically reduce pollution, decrease runoff volume, reduce runoff temperature, protect aquatic habitat, and create more interesting places to live.



The Design Guidebook
The San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook is intended to help municipal staff, design consultants, developers and builders identify and realize opportunities for green streets and parking lots and overcome common barriers for implementing them. The guidebook won the American Planning Association – California Northern Section's 2009 Award for Innovation in Green Community Planning, recognizing the relevance of its concepts and designs to communities throughout and beyond the San Francisco Bay Area.

The guidebook begins with basic concepts of sustainable stormwater design, including a "toolbox" of site layout and stormwater design strategies. This is followed by a powerful series of illustrations showing "before and after" sketches of green street and parking lot retrofit opportunities for a wide variety of conditions. The guidebook concludes with practical insights on how to overcome obstacles to implementation, offering funding strategies, design and construction details, and real-world examples of green street and parking lot projects in San Mateo County that have been constructed or are in the public review or construction process.

Visit www.flowstobay.org to download the guidebook.

A Healthy Landscape
A healthy, undisturbed landscape acts like a sponge by capturing, absorbing, and slowing the flow of water from the moment a raindrop lands on the ground. Urban development, though, has dramatically impacted natural hydrologic systems by reducing the landscape's absorptive capacity and introducing pollutants.

When Impervious Surface is Created
When the natural landscape is urbanized, impervious surface is created that prevents water from being absorbed at the source. Sediments and pollutants from streets, parking lots, homes, yards, and other sources are washed into pipes where storm water flows to water bodies, typically without any treatment to remove pollutants. Stormwater runoff increases as more and more impervious surface is created. The high volume and velocity of stormwater runoff emptying into creeks and streams may cause flooding and erosion, destroying natural habitat. There is a better approach.

Green Infrastructure
Infrastructure can be designed to minimize its impact on natural drainage systems. Our infrastructure can help maintain the balance of natural drainage systems by capturing, slowing, and absorbing stormwater, as well as filtering the pollutants that urban development introduces.

Example of a green street in Portland, Oregon. The stormwater curb extensions help with traffic calming and provide additional green space to help beautify the neighborhood.

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.
www.flowstobay.org

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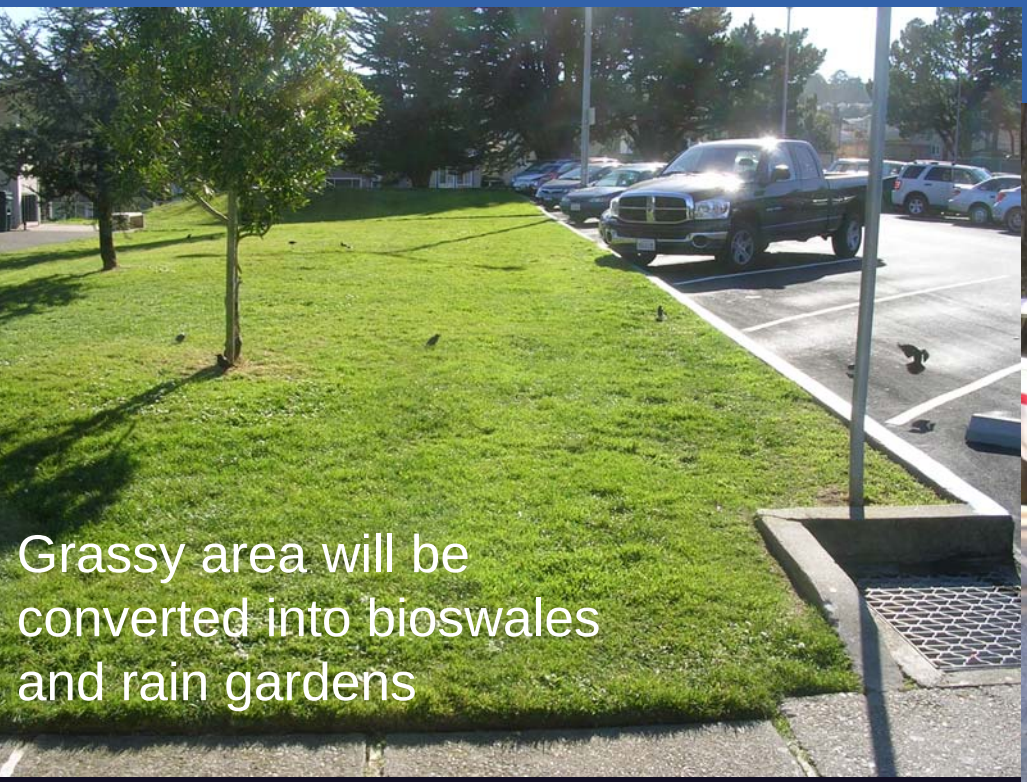
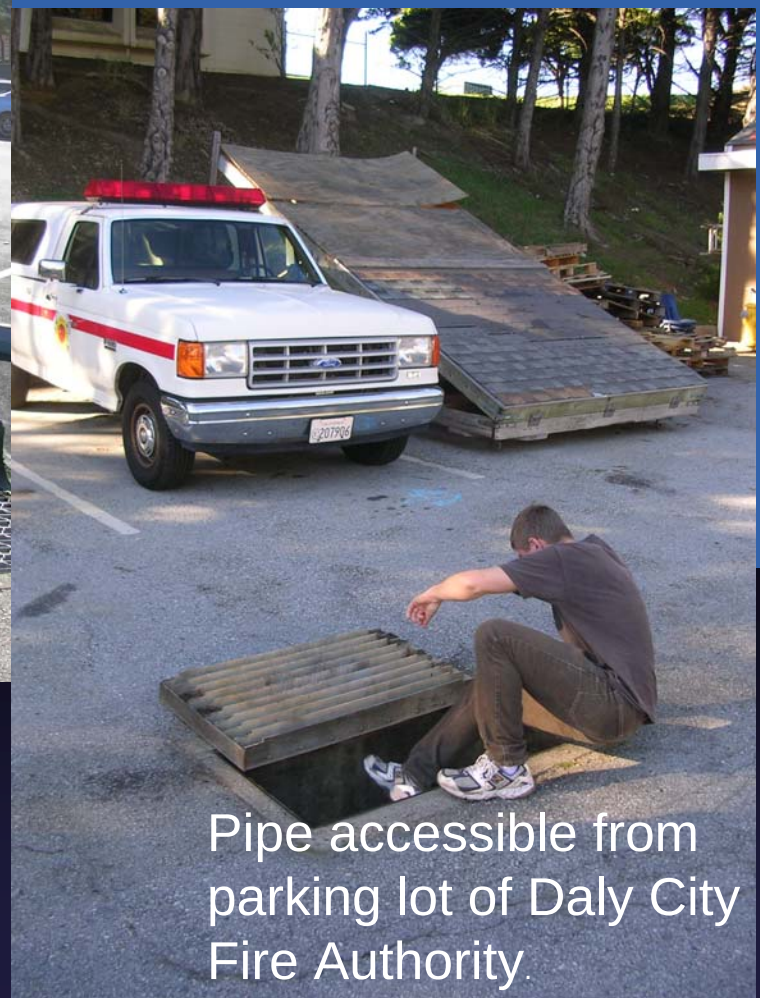
Monitoring the Effectiveness of Green Parking Lots



Grassy area will be converted into bioswales and rain gardens



Pipe accessible from parking lot of Daly City Fire Authority.

Daly City, San Mateo County

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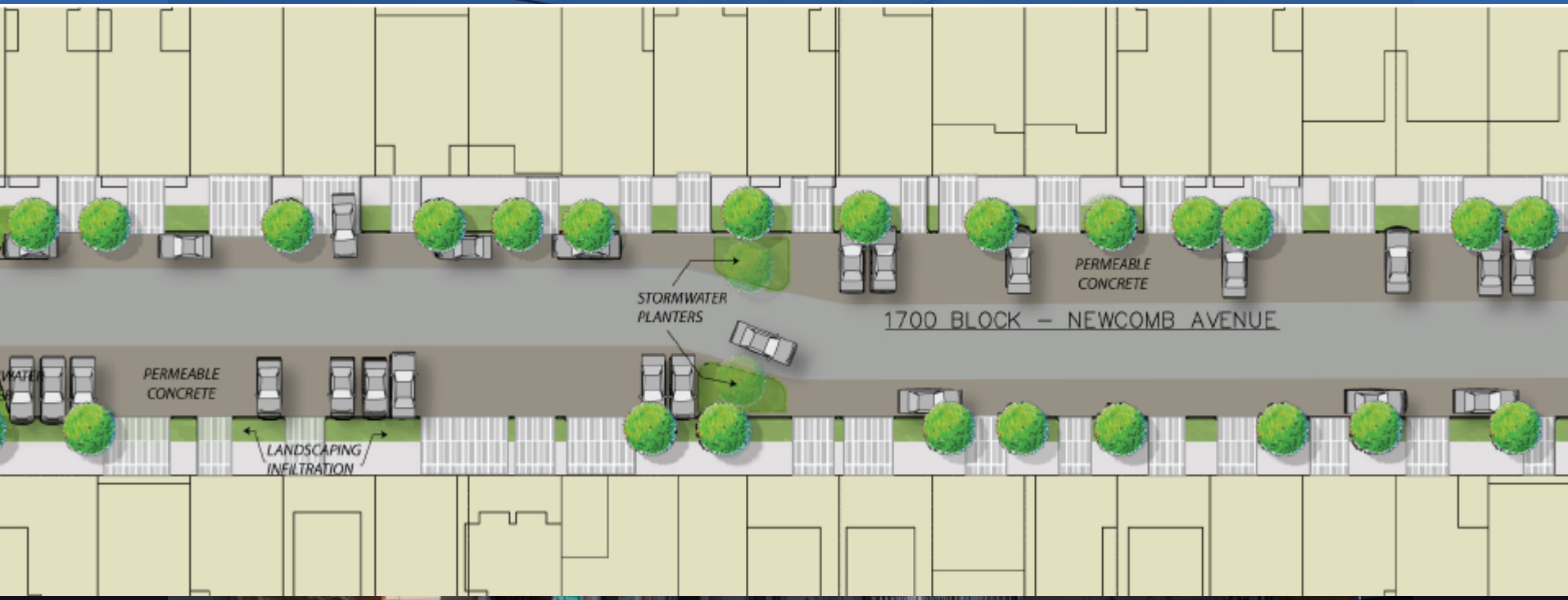
Monitoring the Effectiveness of Green Streets



Newcomb Ave, SF

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Chelsea Marsh-Pinole Creek Restoration

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Richmond Greenway Bioswale

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Fremont Tree Well Filters

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EarthTeam Environmental Ed & Restoration

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Green Solution – Alameda County

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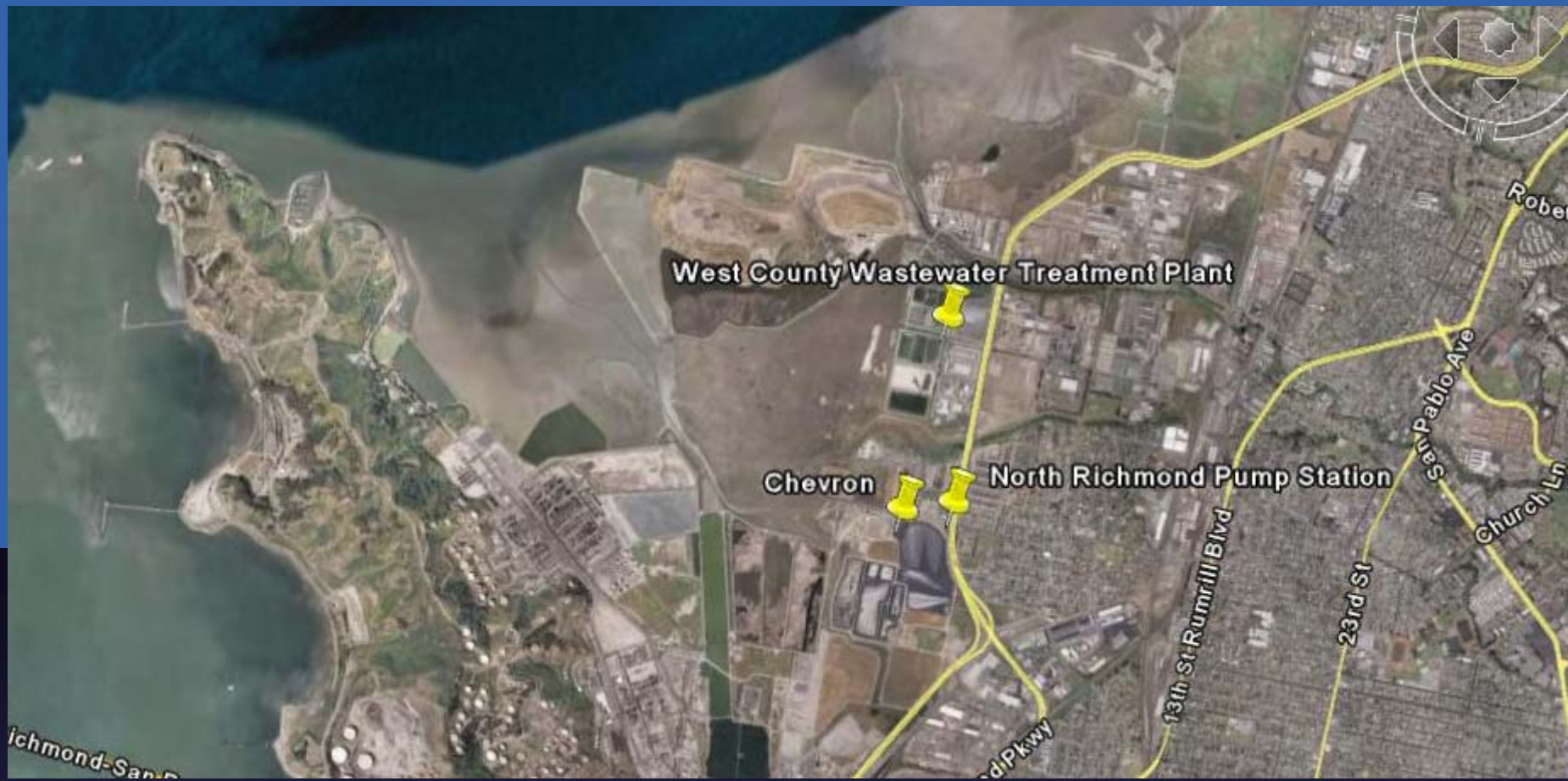
Contra Costa Dry Weather Flows



Green Tours – On the Road to Out-Portlanding Portland

- El Cerrito (Nov 2009)
- San Francisco (April 2010)
- Emeryville (June 2010)
- NOAA Estuary Tour (September 2010)

Contact Info

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