



Public Works Agency

TMDL: Search for Natural Source Exclusion

EWELINA MUTKOWSKA
COUNTY STORMWATER PROGRAM MANAGER

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Outline

- Background
 - Clean Water Act (CWA)
 - TMDL process
- Ventura County TMDLs
- TMDLs and NPDES Permit
- TMDLs Partnerships & Collaboration
- TMDLs Compliance Financial Impacts
- Kiddie & Hobie Beaches Bacteria TMDL
- Compliance Options:
 - QMRA & Site-specific Objectives/Limits
 - Natural Sources Exclusion
- Future Questions



Background

Federal Water Pollution Control Act

“Clean Water Act” - 1972

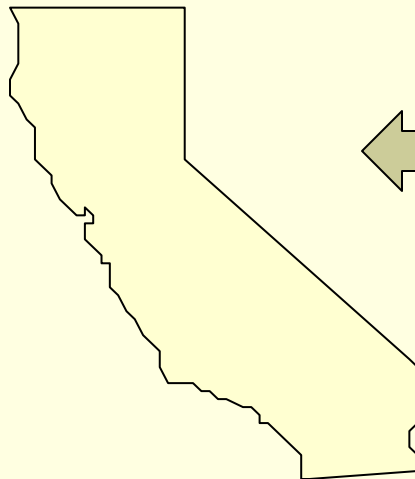


Federal program to regulate the discharge of pollutants into waters of the United States



Background

California Porter-Cologne Water Quality Act established nine Regional Water Quality Control Boards to oversee water quality on a day-to-day basis at the local/regional level



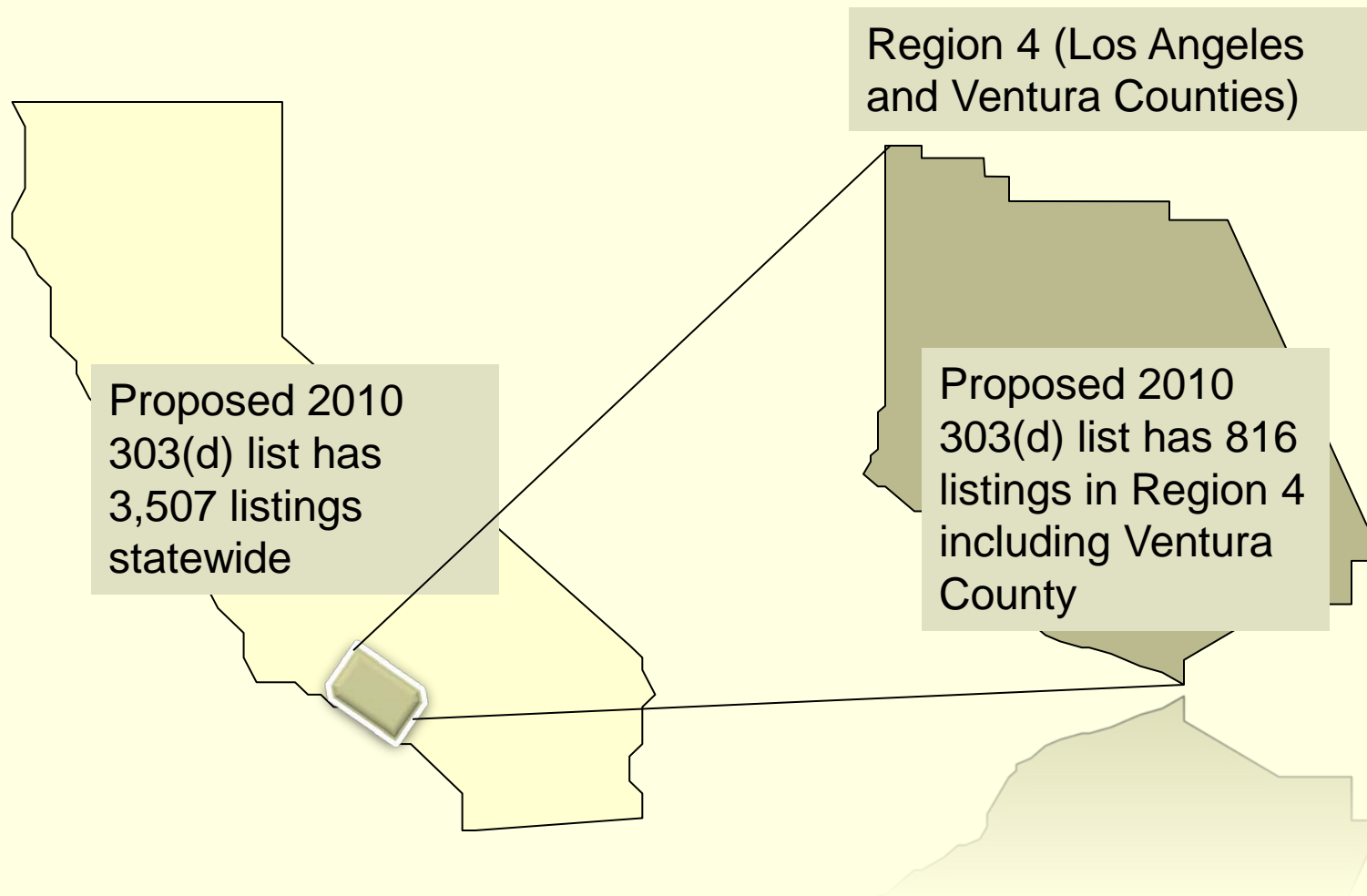
- U.S. EPA authorizes the States to administer the statewide Stormwater Program and gives the States the responsibility of protecting and restoring water quality.

Under CWA Section 303(d) each State is required to create a list of impaired water bodies and submit it to the U.S. EPA

When a water body is placed on the 303(d) list, the State must develop a ***Total Maximum Daily Load (TMDL)*** in order to restore water quality to that particular water body.



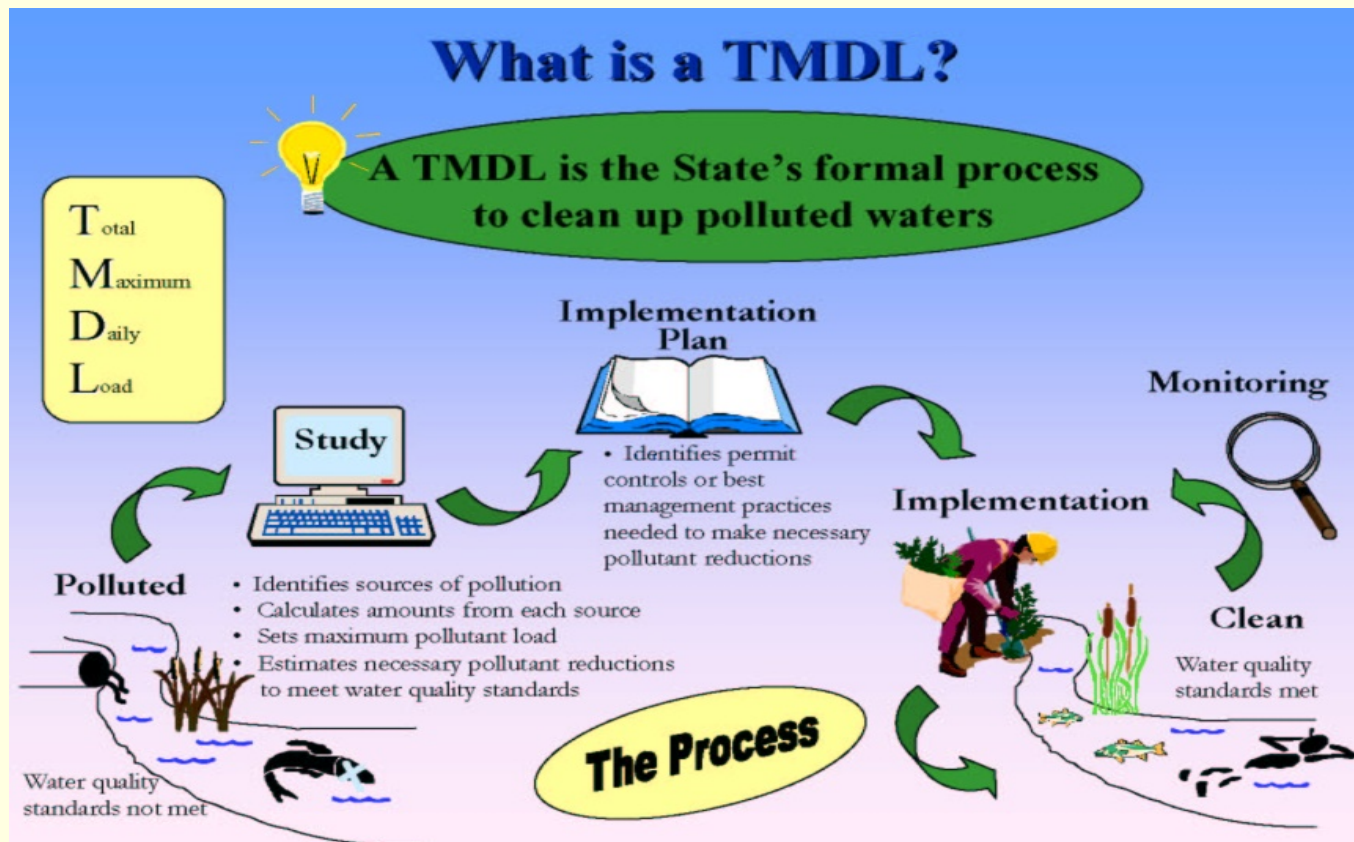
Background





Background

A TMDL is the amount of a specific pollutant that a particular stream, lake, estuary or other waterbody can 'handle' without affecting water quality standards and aquatic life





Ventura County TMDLs

Watershed	Constituent Listing	Status
Ventura Coastal Beaches (Hobie & Kidde Beaches)	Bacteria	Effective (December 2008)
Ventura River Watershed	Trash	Effective (March 2008)
	Algae & Nutrients	Effective (June 2013)
Santa Clara River Watershed	Bacteria	Effective (March 2012)
Calleguas Creek Watershed	Nutrients	Effective (July 2003) Revised WLA's Oct 15 2009
	Toxicity (Chlorpyrifos and Diazinon)	Effective (March 2006)
	OC Pesticides and PCBs	Effective (March 2006)
	Metals (Cd, Cr, Ni, Ag, Zn, Se)	Effective (March 2007)
	Salts (Boron, Chloride, Sulfate, TSS)	Effective (December 2008)
	Trash (Revolon/Beardsely Wash)	Effective (March 2008)
Malibu Creek and Santa Monica Bay Watershed	Bacteria	Effective (January 2006); reopener effective (July 2014)
	Trash	Effective (July 2009)
	Nutrients (Phase I)/ Ammonia/pH/ Algae/ Eutrophication	Effective (March 2003)
	Sedimentation & Benthic-macroinvertebrate Bioassessment	Approved by U.S. EPA (March 2013)
	Lake Sherwood Mercury	Approved by U.S. EPA (March 2012)
	SMB Marine Debris	Effective (March 2012)



TMDLs and NPDES Permits

- TMDLs are not self-implementing - Need regulatory mechanism such as a NPDES permits;
- Stormwater Permits establish liability and financial implications for non compliance with the TMDL (i.e. WLAs and LAs);
- A total of thirteen (13) TMDLs included in the current Ventura County Stormwater NPDES Permit;
- Stormwater Permit has reopener clause to allow inclusion of additional TMDLs when they are approved.



TMDL Partnerships & Collaboration

- Ventura River Watershed
 - MOA between RPs for Trash TMDL
 - MOAs between RPs for Algae TMDL
- Santa Clara River Watershed
 - MOA between RPs for Bacteria TMDL
- Calleguas Creek Watershed
 - Water Quality Subcommittee
 - MOA between RPs for Revolon Slough/Beardsley Wash Trash TMDL
- Malibu Creek Watershed
 - MOA between RPs for Trash TMDL
 - MOA between RPs for Bacteria TMDL



TMDLs Compliance Financial Impacts County's Contributions

Future Cost Estimate

From \$375,000 to \$1.5M Special Study/ Work Plan
Preparation

From \$362,000 to \$524,000/ year* Monitoring and Reporting

From \$148M to \$298M Implementation/ CIP

* The estimate was based on the assumption that under the *worst case scenario* that all TMDLs are effective and require monitoring.

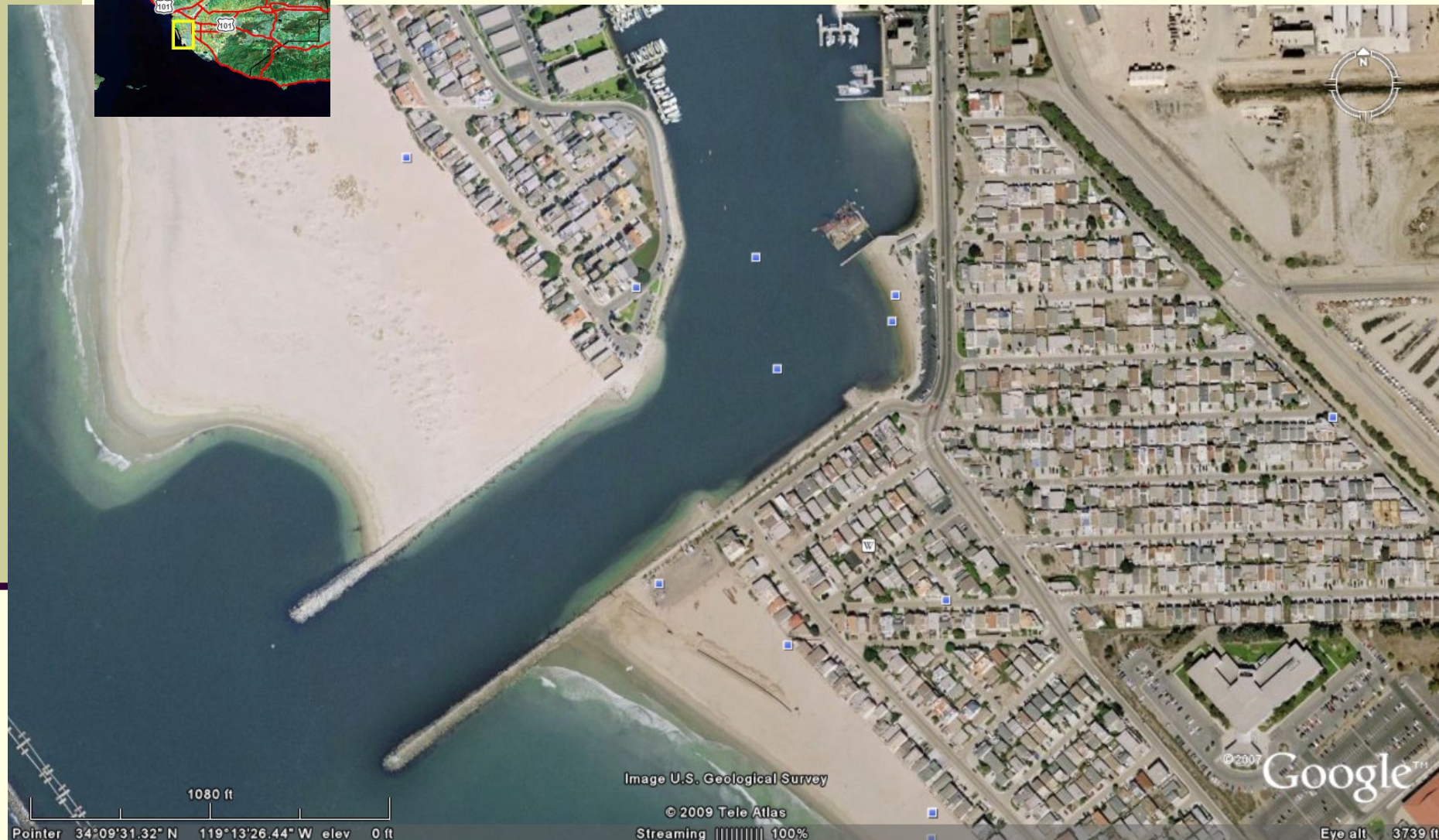
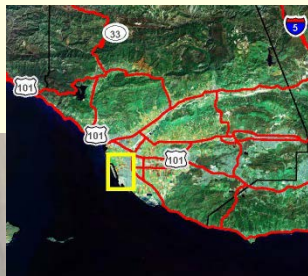
** Cost estimates were based on TMDL Implementation Budget Estimation prepared by Geosyntec (Sept. 2013), CCW TMDL information from Larry Walker and Associates, and PWA staff professional judgment.



Bacteria - Issues and Challenges

- Meeting a stringent full body contact (Rec-1) standards regardless of actual uses
- Addressing multiple known & unknown sources (e.g. horse manure, dog waste, bird droppings, etc)
- Natural bacterial re-growth/natural background
- Comparable reference reaches (reference beaches not similar)
- Lack of quick turn-around testing methods
- Expensive BMPs/Treatment to reduce bacteria loadings
- Extensive monitoring

Bacteria TMDL - Kiddie and Hobie Beaches



Pointer 34°09'31.32" N 119°13'26.44" W elev 0 ft

Image U.S. Geological Survey

© 2009 Tele Atlas

Streaming 100%

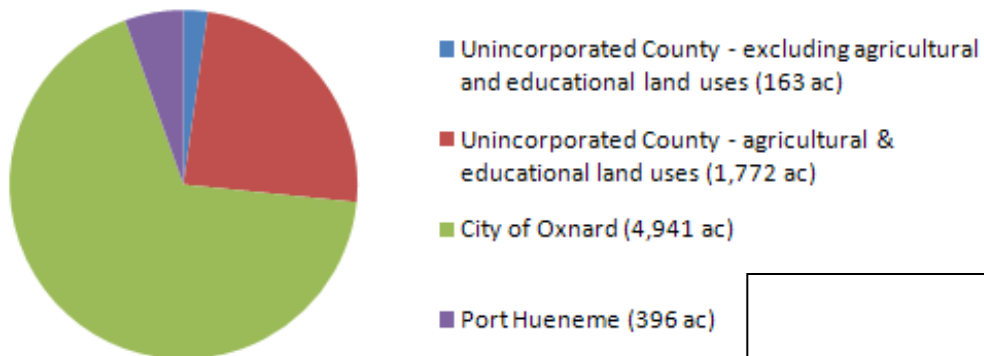
Eye alt 3739 ft



BACTERIA TMDL - KIDDIE AND HOBIE BEACHES

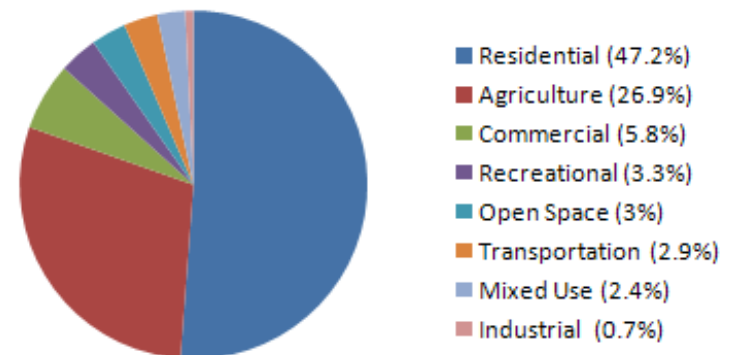
- ❑ **Responsible Parties** – County of Ventura (VC Harbor Dept), Ventura County Watershed Protection District (VCWPD), City of Oxnard, and Caltrans;
- ❑ **Implementation Plan Submittals**
 - Dry-Weather (12/17/2009)
 - Wet-Weather (6/18/2010)
- ❑ **Compliance Schedule**
 - TMDL Effective 12/2008; NPDES Permit 7/2010
 - Dry-Weather WLA & LA by 12/18/2013
 - Wet-Weather WLA and LA by 12/18/2018

Jurisdictional Breakdown



Source: TMDL Staff Report and County GIS data

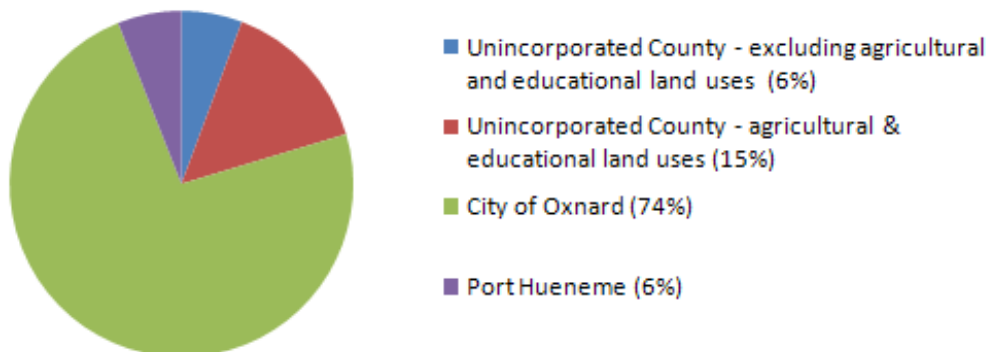
Land Use Breakdown



Source: SCAG Land Use, 2005

Wet Weather

Estimated Bacteria Load by Jurisdictional Area



Source: SBPAT loading estimates, described further in Section 6.



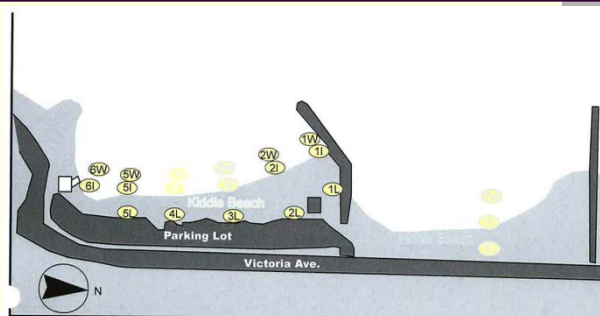
Ongoing and Previous Studies

Ongoing Studies:

- AB411 Monitoring
- Surf Zone Monitoring

Previous Studies:

- Harbor Monitoring
- Harbor Beaches Circulation Studies
- Sanitary Sewer Studies (incl. gw)
- Adjacent Storm Drain Studies
- DNA Source Tracking Study
- Bird Control Efficacy Study

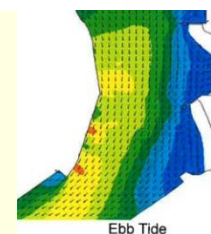
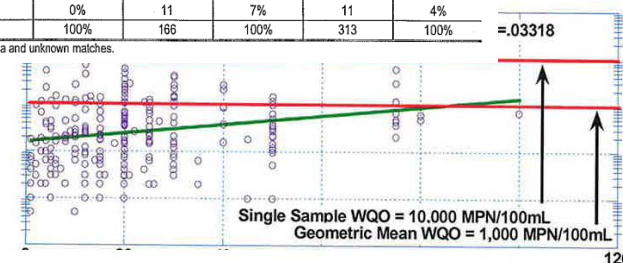


Case Sites

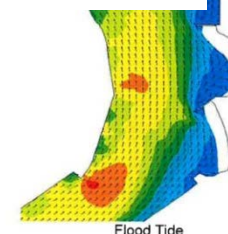
al for Both Case Sites

	Number	Percent	Number	Percent	Number	Percent
Gull	40	27%	32	19%	31	42%
Human	11	7%	18	11%	72	23%
Sewage	8	5%	19	11%	29	9%
Dog	4	3%	8	5%	27	9%
Canine	0	0%	7	4%	12	4%
Feline	20	14%	3	2%	7	2%
Rodent	0	0%	1	1%	23	7%
Marine Mammal	0	0%	11	7%	1	0%
Totals	147	100%	166	100%	313	100%

Note: Excludes Control Site data and unknown matches.



Ebb Tide



Flood Tide



IMPLEMENTED BMPs

- ❖ Existing Ordinances, Rules & Regulations
 - Illicit discharges
 - Boat discharges
 - Vehicle washing
 - Pet management
- ❖ Dry-Weather diversion at Silver Strand Drain
- ❖ Parking lot storm drain removal
- ❖ Boating facilities management
 - Sewage pump out facilities
 - Bilge pump out facility
- ❖ Bilingual public outreach
- ❖ Beach grooming
- ❖ Beach Management and Bird Control
 - Improved signage
 - Seagull resistance trash receptacles
 - Pet waste disposal management – dog waste disposal bags
 - Bathroom facility construction
 - Septic system removal
- ❖ Feral cat removal



Public Outreach



When: Saturday, June 15, 2013 • 10:00 a.m. to 1:00 p.m.
Where: School Cafeteria
 Hollywood Beach Elementary
 4000 Sunset Lane, Oxnard CA 93035

Sign Up Today! It's
FREE
 Space is Limited!

Call Now!
 805 477 7139
 Registration Deadline
 June 12, 2013

Attend this interactive, action packed class taught by a Green Gardens Group landscape designer and learn to:

- Develop an Ocean Friendly Garden™
- Install permeable surfaces and on-site water retaining systems
- Use native plants
- Understand water efficient irrigation devices

Use Surfrider Foundation's Principles of CPR® (Conservation • Permeability • Retention) to transform your thirsty landscape into an ocean friendly asset that prevents beach and ocean pollution, saves time and money, and creates wildlife habitat.

- A light snack and drinks will be provided -



For more information on how to keep our watersheds clean, go to cleanwatershed.org.



What Is Our Watershed?

Our watershed is the total land area including your yard, from which stormwater drains into streams, rivers or other bodies of water. In Ventura County our primary watersheds drain into the Ventura and Santa Clara Rivers, Malibu and Calleguas Creeks and the marinas and estuaries that flow into the Pacific Ocean.





Downspout Disconnect Challenge



Rossmore Drive 272-256 (About 10% of homes in this area have gutters or downspouts)



Rossmore Drive 284-272



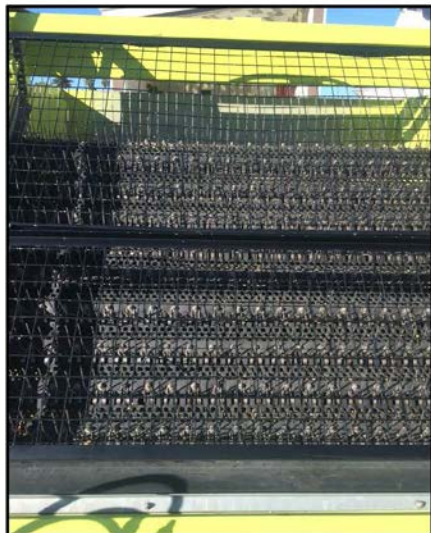
Rossmore Dr. 285-295



Rossmore Dr 324-318

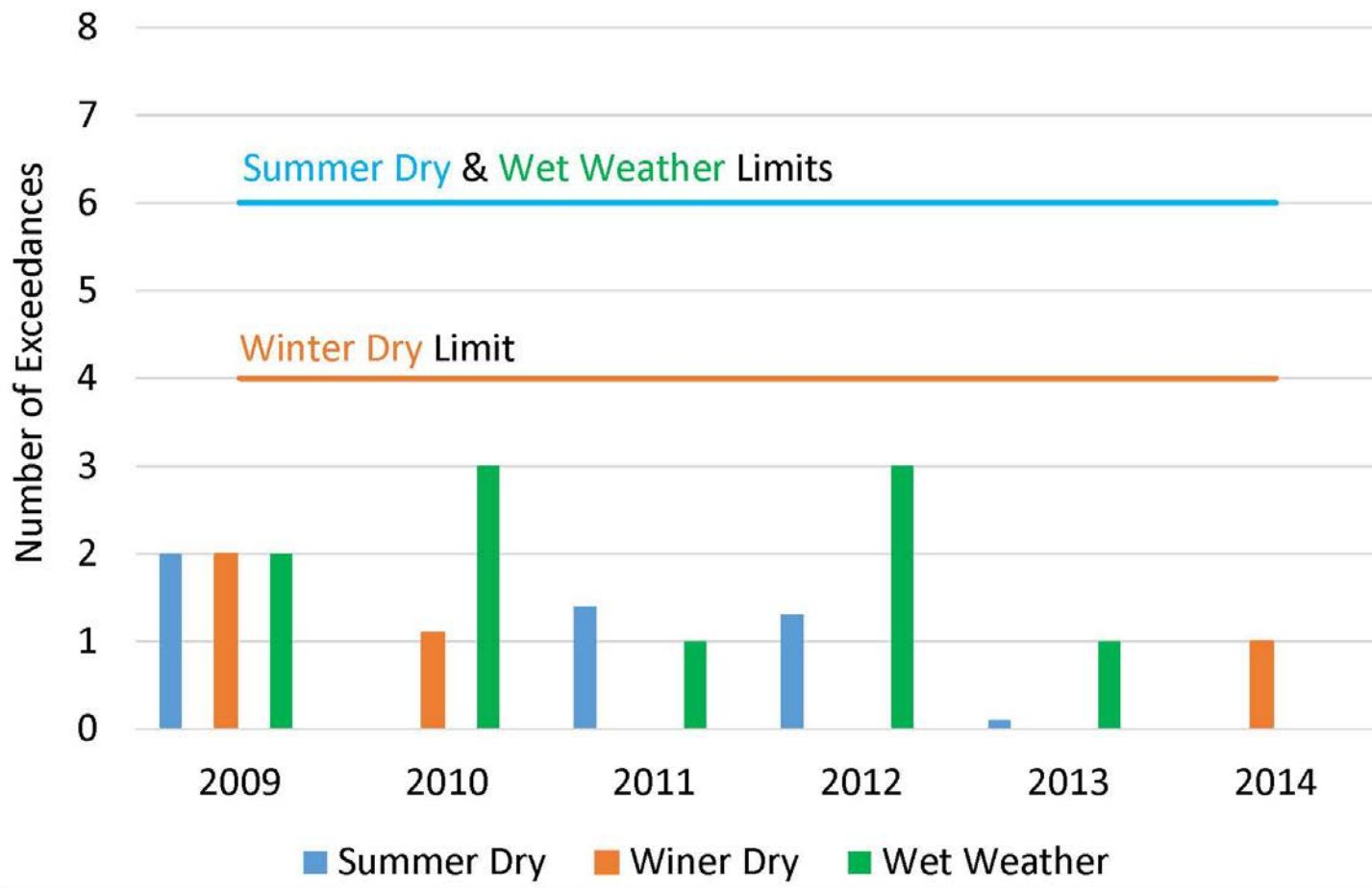


Beach Grooming





Hobie Beach TMDL Compliance





Kiddie Beach TMDL Compliance

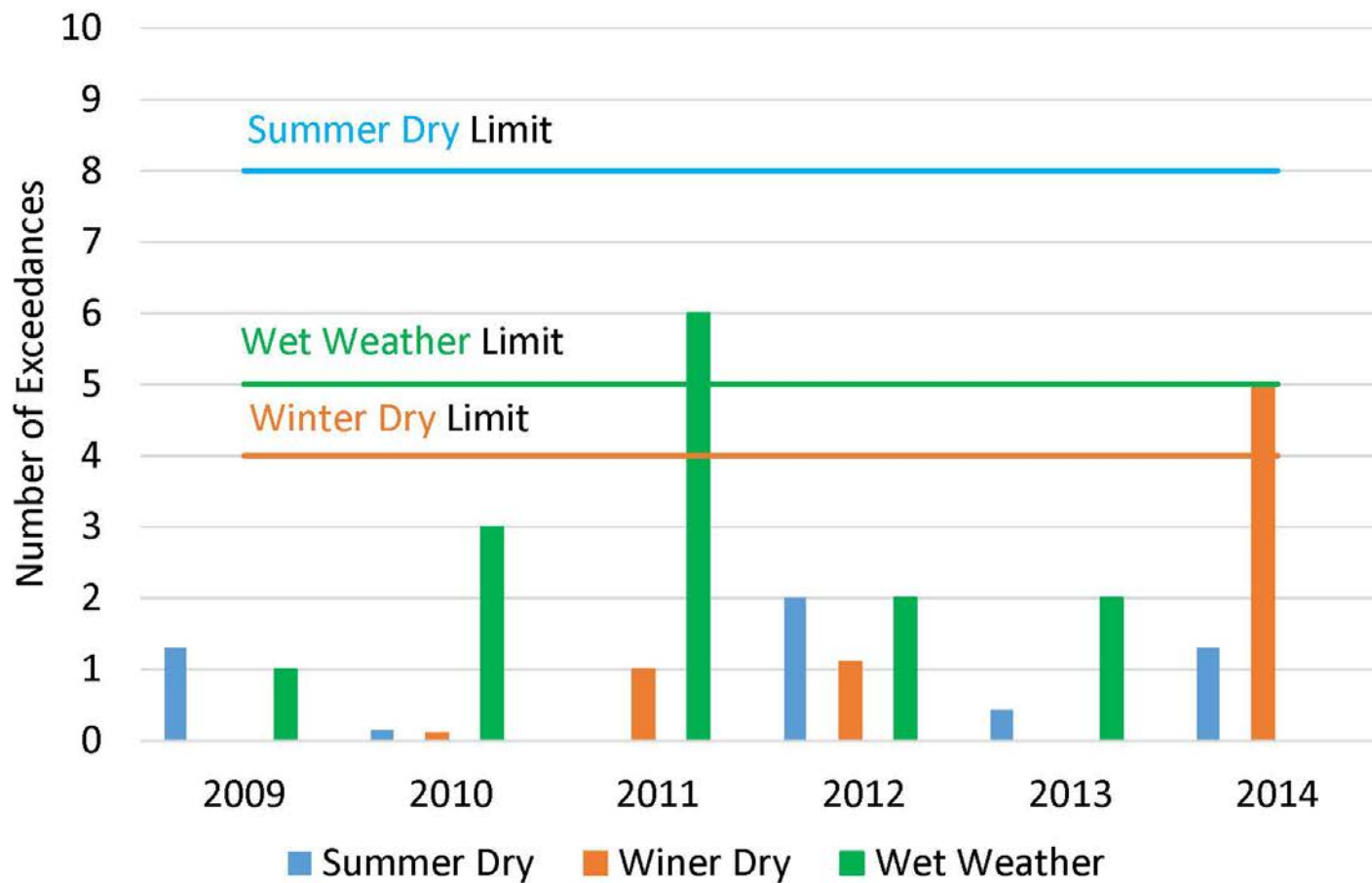
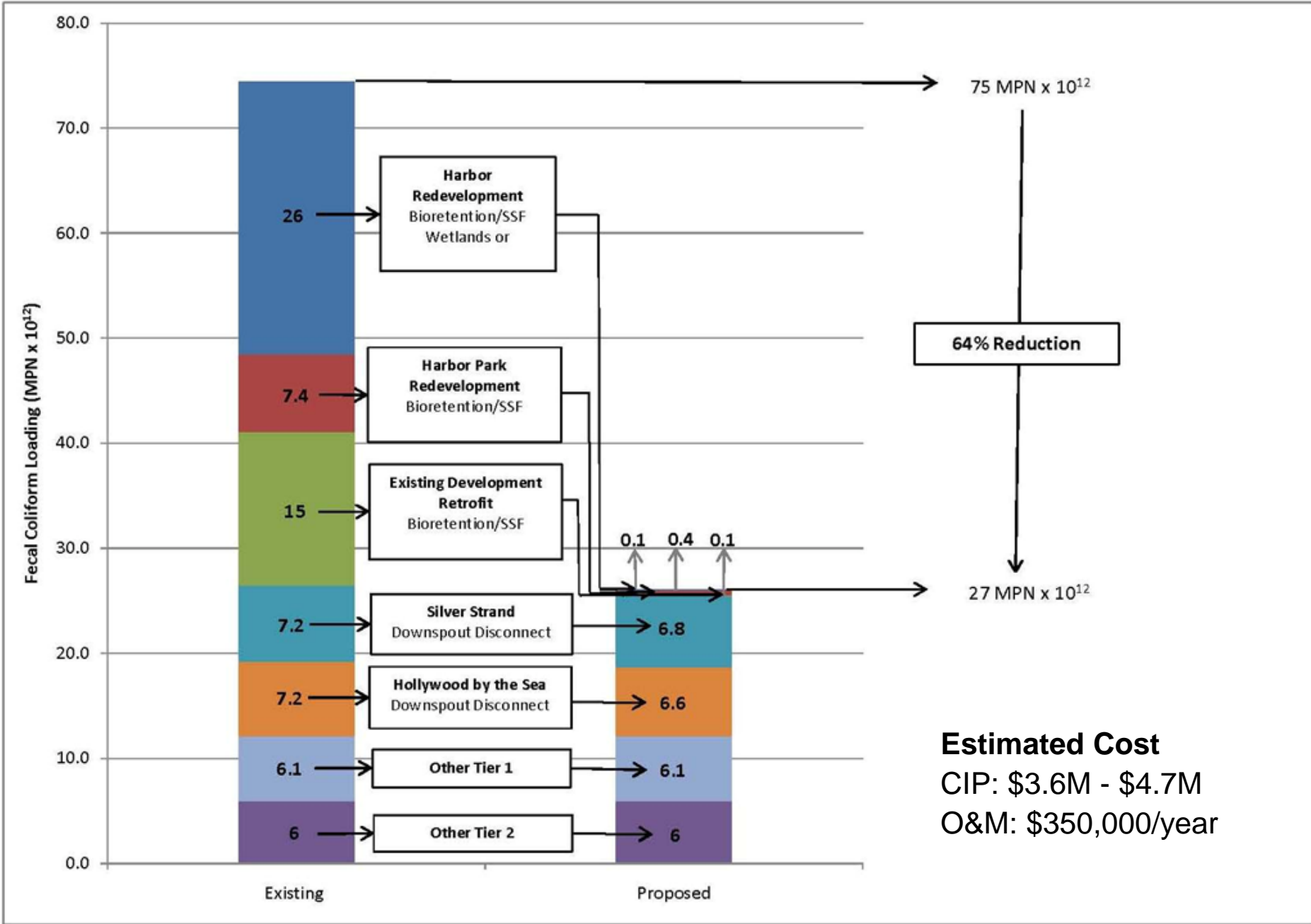


Figure E-1. Water Quality Benefits Achieved through Implementation Actions





Compliance Considerations/ Options

- ❑ Use Attainability Analysis
 - Change from REC1 to REC2 based on use documentation
 - Eliminate REC uses
- ❑ Site Specific Objective
 - Site-specific epidemiology study
 - Site-specific Quantitative Microbial Risk Assessment (QMRA)
- ❑ TMDL Reopener – revise WLAs based on...
 - New reference watersheds:
 - Latest SCCWRP reference beach data (e.g., SCR TMDL), or
 - Monitor other/new enclosed beach reference sites
 - Natural Sources Exclusion (NSE) approach, combined with documentation that human fecal contamination has been addressed/eliminated



Natural Sources Exclusion

Runoff from predominately undeveloped watersheds causes bacteria WQO exceedances (SD-RWQCB, Resolution No. R9-2008-0028)

- “reference system and anti-degradation approach” requires control of indicator bacteria from anthropogenic sources so that bacteriological water quality is consistent with that of a reference system; or
- “natural sources exclusion approach” requires that dischargers:
 - Control all anthropogenic sources of indicator bacteria to a water body,
 - Demonstrate that all anthropogenic sources of indicator bacteria to a water body are controlled, and
 - Demonstrate that the remaining indicator bacteria densities do not indicate a health risk.



QMRA/ SCCWRP Study

- Microbial Source ID and QMRA Study in 2012
- Objectives:
 - to calculate illnesses related to swimming at the Harbor Beaches, and
 - to support the site-specific FIB objectives based on the USEPA's tolerable illness rates, if calculated rates were found to be low.



QMRA/ SCCWRP Study

■ QMRA Steps:

- 1) Select Study Area – Hobie & Kiddie Beaches;
- 2) Perform a Source ID study;
- 3) Determine the pathogen load linked to each source;
- 4) Quantify exposure of swimmers to pathogen; and
- 5) Perform risk modeling and characterization to predict the illness rates in swimmers based on exposure, ingestion, and infectious dose.

Source ID Study (No. 2) in 2012

- Results indicated human fecal influence at the beaches, and
- QMRA study on hold until the contamination is resolved.



Proposed Amendments

- Informational Document released in 01/2015
 - Update of WQOs
 - Revised indicator organism & risk protection level
 - Reference beach & NSE approaches
 - High Flow suspension
 - Variances, Seasonal suspensions, and
 - Limited Water Contact Recreation (LREC 1)
- Two Public Scoping Meetings
 - Sacramento 01/28
 - Costa Mesa 02/10

<http://www.swrcb.ca.gov/bacterialobjectives/>



Future Questions

- Legislation
- Funding
- Scientific/Technical Advances/Uncertainty
- Insufficient Ordinances and Enforcement
- Source Control vs. Treatment Control



Contact

Ewelina Mutkowska

Stormwater Program Manager

Ventura County Public Works Agency

805 645-1382 or Ewelina.Mutkowska@ventura.org

