

# Central Coast Region 2008 303(d)/305(b) Integrated Report

# Outline

- Purpose of today's workshop
- CWA requirements to assess data & report on water quality (2 min)
- Highlights from this effort (3 min)
- Background - Developing the 2008 Integrated Report (30 min)
  - Draft Recommendations for changes to the Section 303(d) – List of Impaired Waterbodies (20 min)
  - Draft Recommendations for changes to the Section 305(b) – Water Quality Condition Report (10 min)
- Summary Stats for 303(d) List (15 min)
  - Listed pollutants
  - Geographic distribution of listings
  - TMDL prioritization
  - High Priority Watershed Listings

# Public Workshop

- Purpose of the Workshop
  - Explain general process followed to develop the 2008 Integrated Report
  - Provide you with a summary of the findings
  - Provide an opportunity to receive public comment
    - Public Comment Period is April 10 – May 26, 2009

# The Clean Water Act (CWA)

- Section 303(d) – List of Impaired Waterbodies
  - Requires each State to develop, update, and submit to the United States Environmental Protection Agency (USEPA) a list of those waterbodies that are “impaired or threatened”
  - Waterbodies on the Section 303(d) List must be addressed through the development of Total Maximum Daily Loads (TMDLs) or by other means
- Section 305(b) – Water Quality Condition Report
  - Requires each state to report biennially to the USEPA on the water quality condition of its waters

# 2008 Integrated Report

- In 2005 USEPA mandated that a single state-wide Integrated Report be prepared to meet the reporting requirements of CWA Sections 303(d) and 305(b)
- The 2008 Integrated Report is California's first
- The following draft recommendations are for changes to
  - 1) The Clean Water Act Section 303(d) List of Impaired Waterbodies in the Central Coast Region
  - 2) The Clean Water Act Section 305(b) report on the condition of water quality within the Central Coast Region

# 2008 Integrated Report Timeline

<b>Time Period</b>	<b>Task</b>
Dec 07 – Feb 08	Gather available data (Public Solicitation)
Dec 07 – Feb 08	Identify Relevant Water Quality Objectives and Evaluation Guidelines
Feb 08 - March 09	Data assessments – complete draft recommendations
April 22, 2009	Public Workshop to receive public comment
Ends May 26, 2009	45 day Public Comment Period
July 10, 2009	Public Hearing
TBA	State Board Public Hearing
TBA	EPA Approval

# Highlights

- Most comprehensive assessment in the State
  - Assessment tool development
    - Systematic scanning of data and criteria
    - Electronic upload to CA assessment database
- Assessments using Evaluation Guidelines to protect aquatic life (i.e. Water Temperature, Turbidity, Chlorophyll *a* & Nitrate)

# Highlights

## 2008 Integrated Report Assessment CWA Sections 303(d) and 305(b)

- 18 sources of data assessed
- 345 Waterbodies assessed
  - Including 232 streams and rivers, 77 beaches & 6 harbors

# Highlights

## CWA Section 303(d) List of Impaired Waters Findings

- 2008 Proposed List (waterbody/pollutant combinations)
  - Listed = 689
  - De-listed = 51 (5 due to meeting water quality standards)
  - No Evidence of Impairment = 2967
- vs the 2006 List
  - Listed = 122
  - No waters identified as “unimpaired”

# Highlights

## CWA Section 305(b) Condition Report Findings

- Streams & rivers - 232 assessed (28%)
  - 82 with “No evidence of Impairment”
  - 150 are “Impaired”
    - 50 of these added in 2008
- Beaches 77 assessed
  - 55 with “No evidence of Impairment”
  - 22 are “Impaired”

# Highlights

- Data validated known water quality issues
  - Lower Santa Maria, Salinas and Pajaro Watersheds
  - Nitrate and fecal coliform problems are widespread
- Data validated high quality waters along Big Sur Coast
  - No Listings in the Santa Lucia (Big Sur Coastal) Hydrologic Unit

# 2008 Integrated Report

## 303(d) Assessment

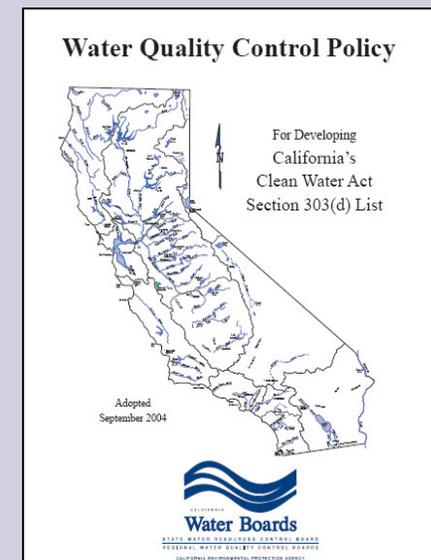
Is the waterbody impaired by a pollutant?

## 305(b) Assessment

Is the Beneficial Use supported?

# 303(d) - Is the waterbody impaired?

- Gather available data
- Identify relevant criteria (Basin Plan and other)
- Evaluate Data
  - All data evaluated using the “Decision Rules” in the Listing Policy
  - Develop Lines Of Evidence (LOEs) for Waterbody/Pollutant/BUs
    - Compare all data to all criteria
    - Summarize data assessment
  - Develop Decisions
    - Combine LOEs
    - Determine Listing Status



# Gather Available Data and Info

- Central Coast Ambient Monitoring Program (CCAMP)
- Central Coast Water Quality Protection Irrigated Agriculture Monitoring Program (CCWQP)
- Surface Water Ambient Monitoring Program (SWAMP)
- Department of Pesticide Regulation (DPR)
- Department of Public Health (DPH)
- AB 411 beach monitoring data (All Coastal Counties)
- County of Santa Cruz Environmental Health watershed data
- City of Watsonville
- City of Santa Maria
- California State University, Monterey Bay (Central Coast Watershed Studies)
- University of California, Santa Cruz (Dr. Marc Los Huertos)
- University of California, Berkley (Dr. Don Weston)
- Monterey Bay National Marine Sanctuary Citizens Monitoring Network
- Coastal Watershed Council Citizen Monitoring Program
- Santa Barbara Channel Keepers
- Morro Bay Volunteer Monitoring Program
- California Forestry Association
- Center for Biological Diversity

# Identify Relevant Criteria

- All Central Coast Basin Plan Objectives
- Evaluation Guidelines
  - EPA Water Contact Recreation
  - OEHHA Fish Consumption Guidelines
  - NAS Wildlife Bioaccumulation Criteria
  - Sediment Quality Guidelines
  - Evaluation Guidelines for Protection of Aquatic Life
    - Chlorpyrifos
    - Diazinon
    - Water Temperature
    - Turbidity
    - Chlorophyll a
    - Nitrate
    - Microcystin

# Criteria for use of Evaluation Guidelines

The CA Listing Policy states the following:

“When evaluating narrative water quality objectives or beneficial use protection, RWQCBs and SWRCB shall identify evaluation guidelines that represent standard attainment or beneficial use protection.”

“...evaluation guidelines may be used if it can be demonstrated that the evaluation guideline is:

- Applicable to the beneficial use
- Protective of the beneficial use
- Linked to the pollutant under consideration
- Scientifically-based and peer reviewed
- Well described
- Identifies a range above which impacts occur and below which no or few impacts are predicted”

# Evaluation Guidelines for Aquatic Life Uses

- Water Column Evaluation Guidelines
  - Water Temperature (21 degrees C)
  - Turbidity (25 NTUs)
- Meets Listing Policy Requirements
  - Applicable to the beneficial use
  - Protective of the beneficial use
  - Linked to the pollutant under consideration
  - Scientifically-based and peer reviewed
  - Well described
  - Identifies a range above which impacts occur and below which no or few impacts are predicted



# Evaluation Guidelines for Aquatic Life Uses

- Water Column Evaluation Guidelines
  - Nitrate (1.0 mg/L) developed using the California NNE and CCAMP data for 191 sites Region wide
    - Risk based approach based on pollutants that cause Biostimulation (i.e. nutrients) and measures of resulting impacts (i.e. algae & low DO)
- Meets Listing Policy Requirements
- State Board Staff support use of NNE for 303(d) assessment and recommend using 0.23 mg/L (Total N as N).
- Region 3 Technical Report describing nitrate guideline
- Applied to High Priority Watersheds
- Intent is to apply Region Wide in future assessments

# Evaluate Data - Creating LOEs

waterbody / beneficial use / pollutant combination

## Content of a Line of Evidence (LOEs)

- Waterbody
- Beneficial Use
- Pollutant
- Water Quality Objective and/or Evaluation Guideline
- Data Set
  - Spatial (sample Locations)
  - Temporal (sample date and time)
  - Quality Assurance
  - Sample Count
  - Exceedance Count

# Evaluate Data - Creating LOEs

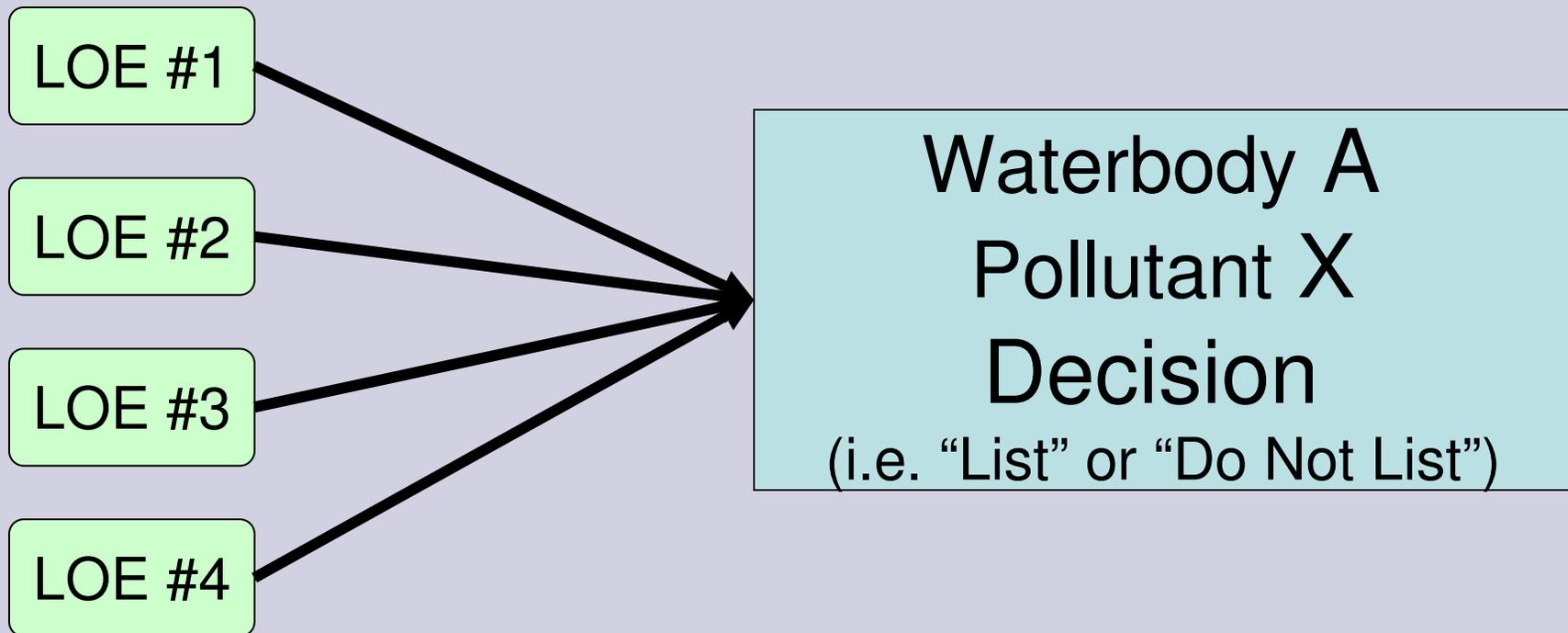
waterbody / beneficial use / pollutant combination

## Content of a Line of Evidence (LOEs)

- Waterbody (Salinas River)
- Beneficial Use (REC1)
- Pollutant (Fecal Coliform)
- Water Quality Objective (400 MPN/100 mL)
- Data Set (CCAMP)
  - Spatial (6 sites, and list them out)
  - Temporal (Monthly Jan 99 - March 00 and Jan 05-Dec06)
  - Quality Assurance (EPA Approved QAPP)
  - Sample Count (120 samples)
  - Exceedance Count (38 exceedances)

# Combining LOEs into a Decision

Decisions = waterbody / pollutant combination



# Decisions

## Rules for Toxic and Conventional pollutants

### Toxins:

- Metals
- Chlorine
- Nutrients
- Pesticides
- PAHs
- PCBs
- Toxicity
- etc.

### Conventionals:

- Dissolved oxygen
- pH
- Salts
- Temperature
- Turbidity
- Pathogen Indicators
- etc.

# 303(d) Decision

How Many Exceedances are Needed to List?

## Toxic Pollutants

Min 16 samples to assess

### Binomial Test

- Min 2 “hits” to list
- As sample size increases the number of “hits” needed to list increases

Sample size	Number of hits to list
< 25	2
25-36	3
37-47	4
48-59	5
60-71	6
72-82	7

# 303(d) Decision

How Many Exceedances are Needed to List?

## Conventional Pollutants

Min 26 samples to assess

### Binomial Test

- Min 5 “hits” to list
- As sample size increases the number of “hits” needed to list increases

Sample size	Number of hits to list
< 31	5
31-36	6
37-42	7
43-48	8
49-54	9
55-60	10

# 2008 Integrated Report

## 303(d) Assessments

Is the waterbody impaired by a pollutant?

## 305(b) Assessment

Is the Beneficial Use Supported?

# CWA Section 305(b) Water Quality Condition Report for Central Coast Region's Waters

For each waterbody, all Beneficial Uses that are assessed are classified into one of three categories....

- Fully Supporting
- Insufficient Information
- Not Supporting

- Based on Best Professional Judgment
- Regional interpretation “Fully Supporting”

# 305(b) Assessments: Region 3 defined an approach

The Binomial Test (as defined in the 303(d) Listing Policy) defines a minimum sample count for making decisions. . .

- 16 samples for toxins
- 26 samples for conventionals

R3 staff incorporated this into the decision rules to determine “fully supporting” vs. “insufficient information”

# R3 Definition of “Fully Supporting”

Use Rating = Fully Supporting if....

- **Conventional Pollutants** (i.e. DO, temp, bacteria)
  - At least 26 samples and not impaired
- **Toxic Pollutants** (i.e. nutrients, pesticides and toxicity)
  - At least 16 samples and not impaired

# Integrated Report Categories

## Waters that meet standards (Categories 1 or 2)

1. All core uses “fully supporting”
2. At least one core use “fully supporting” & no uses are impaired

## Waters for which it is unknown if standards are met (Category 3)

3. Insufficient data to make use support determinations  
& no uses are impaired

## Waters that are impaired - Categories 4 or 5 (the 303(d) list)

4. All pollutant impairments are addressed (i.e by TMDLs)
5. At least one use not supported & TMDL is needed

# Integrated Report Categories

Waters that meet standards - Categories 1 or 2

1. All core uses "fully supporting"
2. At least one core use "fully supporting" & no uses are impaired

**Not Impaired**

Waters for which it is not known if standards are attained - Category 3

3. Insufficient data to make use support determinations & no uses are impaired

Waters that are impaired - Categories 4 or 5 (the 303(d) list).

4. All pollutant impairments are fully addressed (i.e. by TMDLs)
5. At least one use is impaired & a TMDL is needed

**Impaired**

# Findings from the CWA Section 305(b) Condition Report

- No evidence of Impairment (Categories 1, 2 or 3)
  - **82 Streams and Rivers**
  - **55 Beaches**
  - **3 Harbors**
  - **3 Lakes**
- Impaired (Categories 4 or 5)
  - **150 Streams and Rivers**
  - **22 Beaches**
  - **2 Harbors**
  - **5 Lakes**
  - **8 Estuaries**

# 2008 List Summary Stats

- Any De-listings?
- How many new Listings?
- What Pollutants?
- Which Watersheds?

# 2008 Region 3 CWA Section 303(d) List of Impaired Waters Summary Stats

Decisions = Waterbody / Pollutant Combination

<b>Decision Count</b>	<b>Decision</b>
2967	Do not list
51	De-list
689	Listed
<b>3708</b>	<b>Total Decisions in 2008</b>

# 2008 Region 3 CWA Section 303(d) List of Impaired Waters De-Listings (N=51)\*

Five based on water quality standards being met

<b>Pollutant</b>	<b>Waterbody</b>
Unionized ammonia	Tembladero Slough
Unionized ammonia	Santa Maria River
Low Dissolved Oxygen	Chorro Creek
Low Dissolved Oxygen	Chumash Creek
pH	Llagas Creek

\*46 are de-listed because of faulty listing or removal of a general pollutant name and re-evaluation of the specific pollutant

# 2008 Region 3

## CWA Section 303(d) List of Impaired Waters

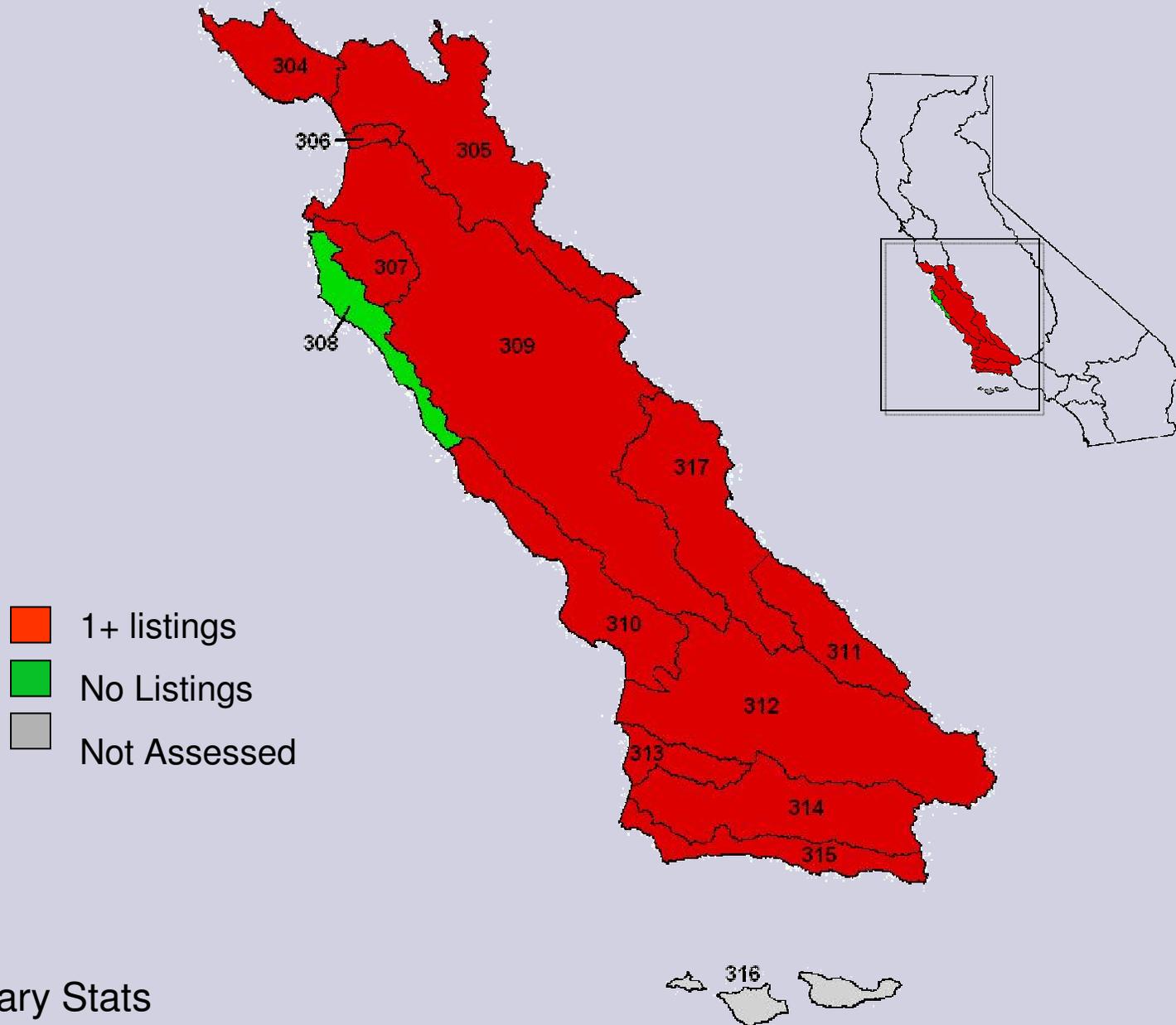
### Top 10 Pollutant Listings (N=689)

<b>Pollutant</b>	<b>Number of Listings</b>
Fecal Coliform	87 (54 new)
pH	54 (All new)
<i>E. coli</i>	54 (All new)
Low DO	51 (44 new)
Nitrate	46 (18 new)
Toxicity	45 (41 new)
Turbidity	37 (All new)
Sodium	38 (All new)
Chloride	30 (All new)
Chlorpyrifos	26 (22 new)
Un-ionized ammonia	20 (9 new)

# 2008 Region 3 CWA Section 303(d) List of Impaired Waters Potential Sources

<b>Potential Source(s)</b>	<b>Percent of Listings</b>
Agriculture	59%
Urban/Storm Water	41%
Grazing	31%
Source Unknown	42%
Ag & Urban	34%

# Watershed Area Listings



Summary Stats

# Number of Waterbodies Listed

Includes Streams, Lakes, Beaches, Harbors

Hydrologic Unit	# of Listings	# of WBs Listed
304 – Santa Cruz Coastal	65	32
305 – Pajaro River	110	27
306 – Elkhorn Slough	35	6
307 – Carmel River	3	1
308 – Big Sur Coast	0	0
<b>309 – Salinas River</b>	<b>168</b>	<b>30</b>
310 – SLO County Coastal	57	25
311 – Carrizo Plains	1	1
<b>312 – Santa Maria</b>	<b>89</b>	<b>15</b>
313 – San Antonio Creek	11	3
314 – Santa Ynez River	21	6
315 – Santa Barbara Coastal	117	37
317 - Estrella River	12	2

# Total Maximum Daily Load (TMDL) Prioritization

The five year plan...

# TMDL Prioritization

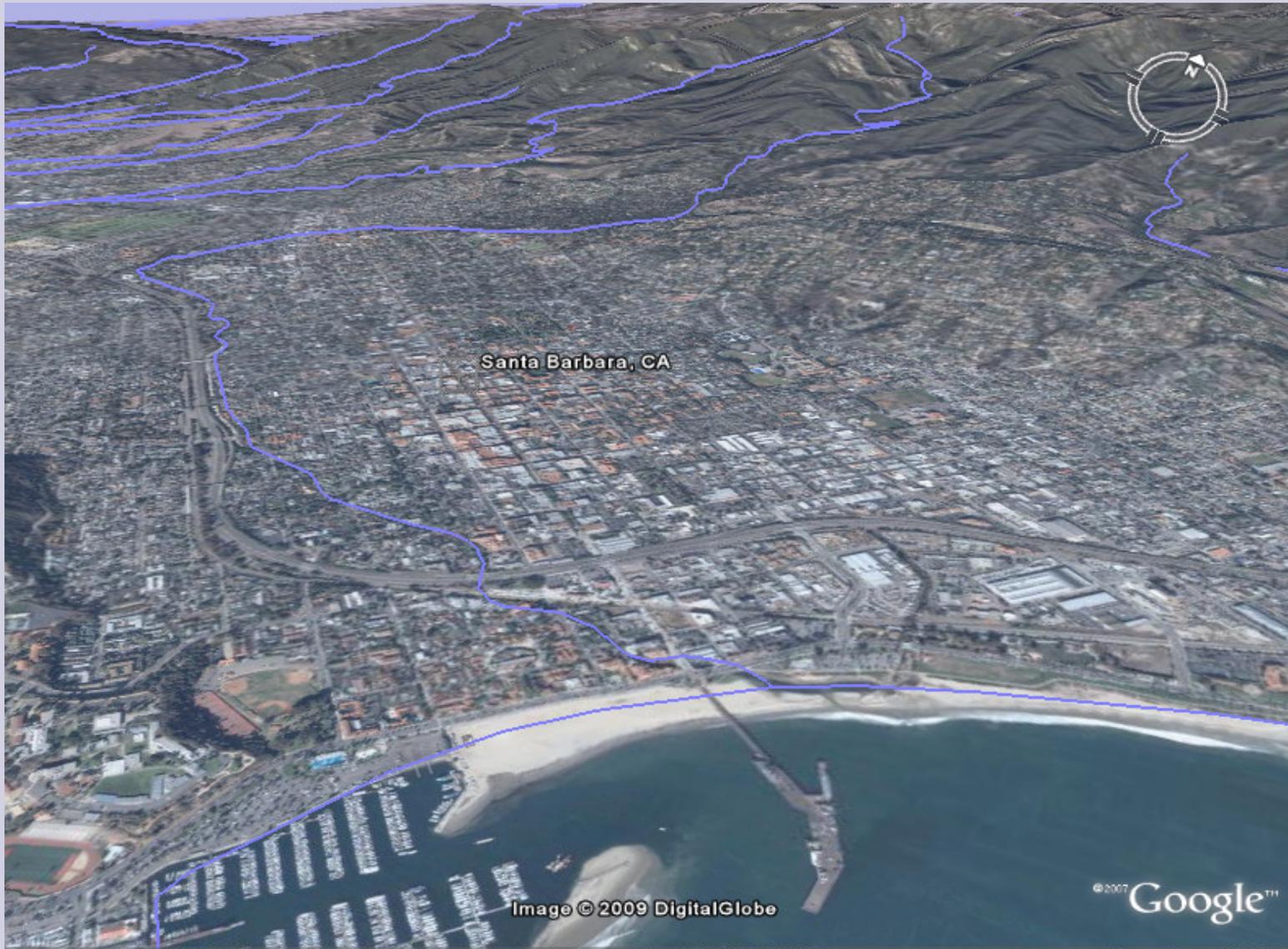
- TMDLs in Progress (by 2011)
  - Santa Cruz pathogens (9 listings)
  - Santa Barbara Beaches (15 listings)
  - Pajaro Watershed (11 Listings)
- Highest Priority Watersheds (by 2013)
  - Lower Santa Maria (82 listings)
    - Develop watershed TMDL  
Multiple BU's impacted by multiple pollutants
  - Lower Salinas & Rec Canal Watersheds (117 listings)
    - Complete TMDLs in progress and initiate TMDLs for pathogens, toxicity, pesticides, nutrients & pathogens

# Other Listings

## The 5 year plan

- Complete TMDLs for 234 of the listings
- Coordinate with other Regional Board Programs (i.e. Ag and Storm Water Programs)
- 2010 Integrated Report for 303(d) and 305(b)
- Prioritize future TMDLs
  - Consider watershed or parameter-based TMDLs

# South Coast Beaches



# Beaches Assessments

South Coast Hydrologic Unit

11 Beaches

15 Waterbody-pollutant listings

## Listings

- Fecal Coliform (2)
- *Enterococcus* (6)
- Total Coliform (7)\*

\*Based on Shellfish Harvesting Beneficial Use Objective

## **Most Impaired\*\***

East Beach (Mission Creek Mouth) – 3 listings

Arroyo Burro Beach – 2 listings

Point Rincon (Rincon Creek Mouth) – 2

\*\*Shellfish Harvesting Beneficial Use was only applied to beaches that would have been delisted otherwise.

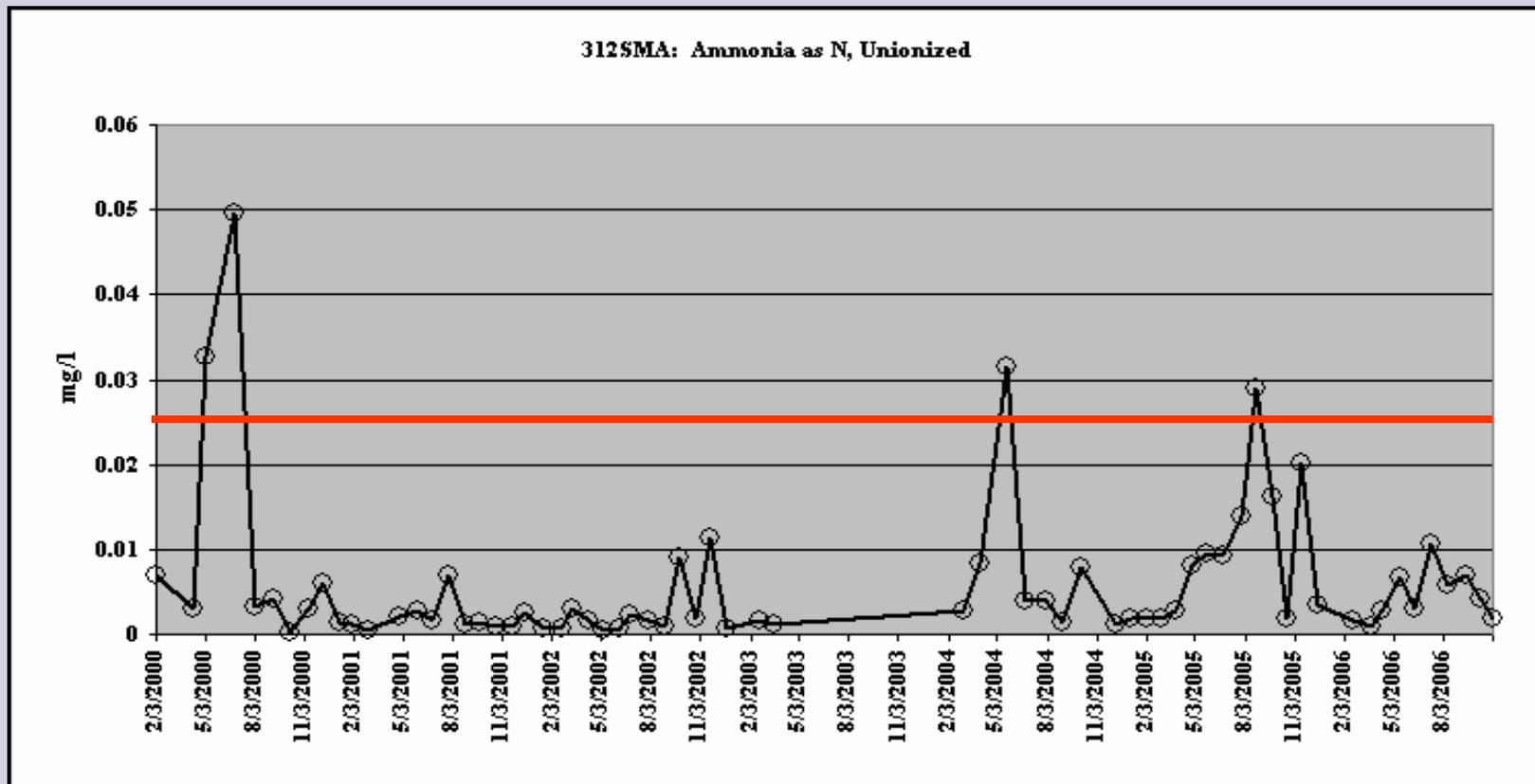
# High Priority Lower Santa Maria Watershed



# Watershed Assessments

## Lower Santa Maria & Oso Flaco Watersheds

### De List – Santa Maria River – Un-ionized $\text{NH}_3$



# Watershed Assessments

## Lower Santa Maria & Oso Flaco Watersheds

15 Waterbodies

82 Waterbody-pollutant listings

### Listings (Toxins)

- Nitrate (12)
- Unionized ammonia (7)
- Water Toxicity (10)
- Sediment Toxicity (5)
- Chlorpyrifos (5)
- Diazinon (2)
- DDT (2)
- Dieldrin (3)

### Listings (Conventionals)

- Fecal Coliform (11)
- Boron (2)
- Chloride (3)
- Dissolved Oxygen (2)
- pH (6)
- Temperature (2)
- Turbidity (5)

### **Most Impaired**

Orcutt Creek (15 Listings)

Santa Maria River (13 Listings)

Main Street Canal (8 Listings)

# Watershed Assessments 2008 Recommendations

Orcutt Creek

Santa Maria River  
13 pollutant listings (8 new)



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Streaming 100%

©2007 Google™

Eye alt 19205 ft

# Watershed Assessments

## Santa Maria River

13 pollutant listings (8 new)

### Existing Listings

- DDT
- Dieldrin
- Endrin
- Nitrate
- Fecal Coliform

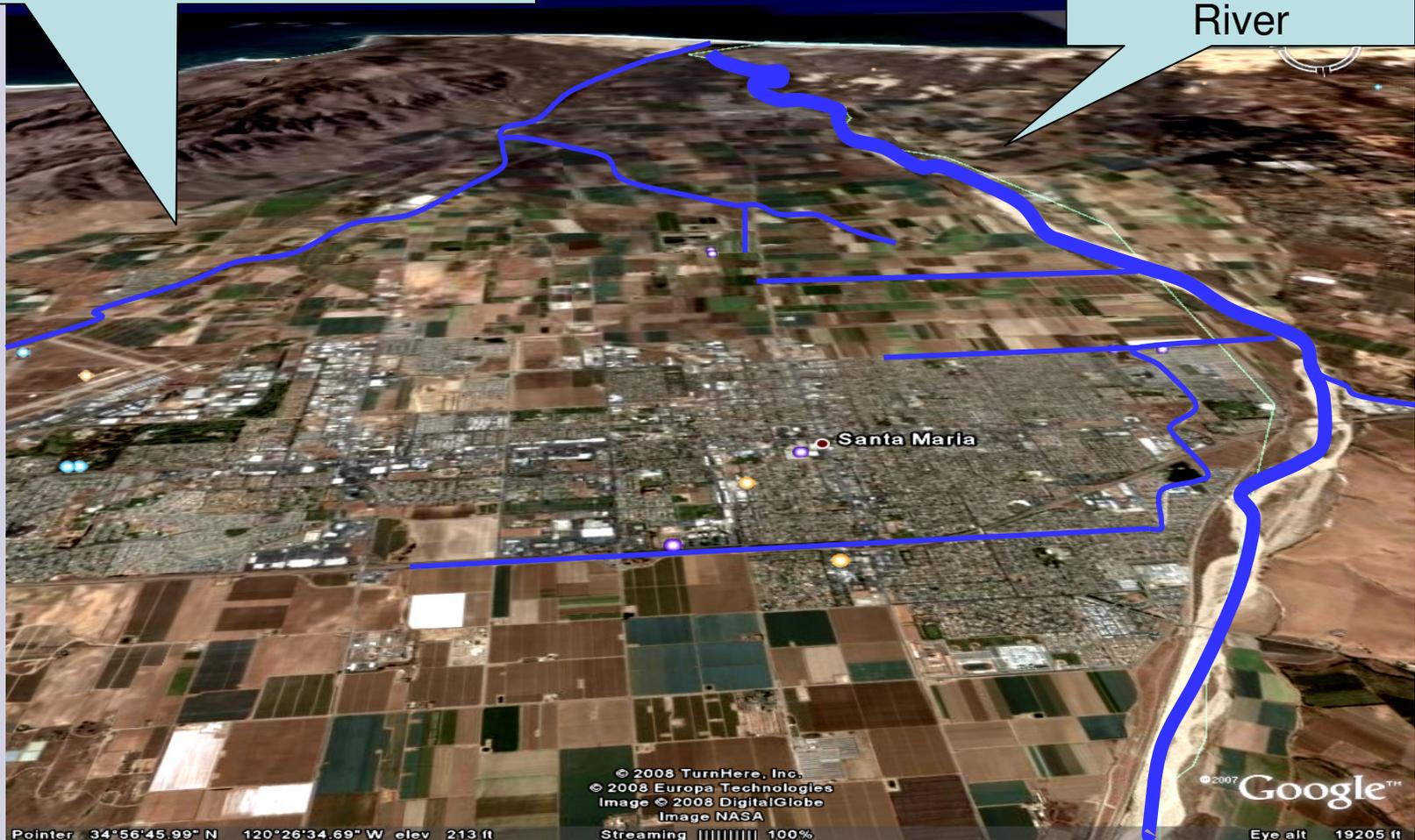
### New Listings

- Chlorpyrifos
- Sediment Toxicity
- Water Toxicity
- Toxaphene
- Turbidity
- Chloride
- Sodium
- *E. coli*

# Watershed Assessments 2008 Recommendations

Orcutt Creek  
15 pollutant listings (8 new)

Santa Maria River



# Watershed Assessments

## Orcutt Creek

15 pollutant listings (8 new)

### Existing Listings

- Ammonia
- Chlorpyrifos
- DDT
- Dieldrin
- Nitrate
- Fecal Coliform
- Boron

### New Listings

- Diazinon
- Sediment Toxicity
- Water Toxicity
- Water temperature
- Turbidity
- Chloride
- Sodium
- Conductivity

# High Priority

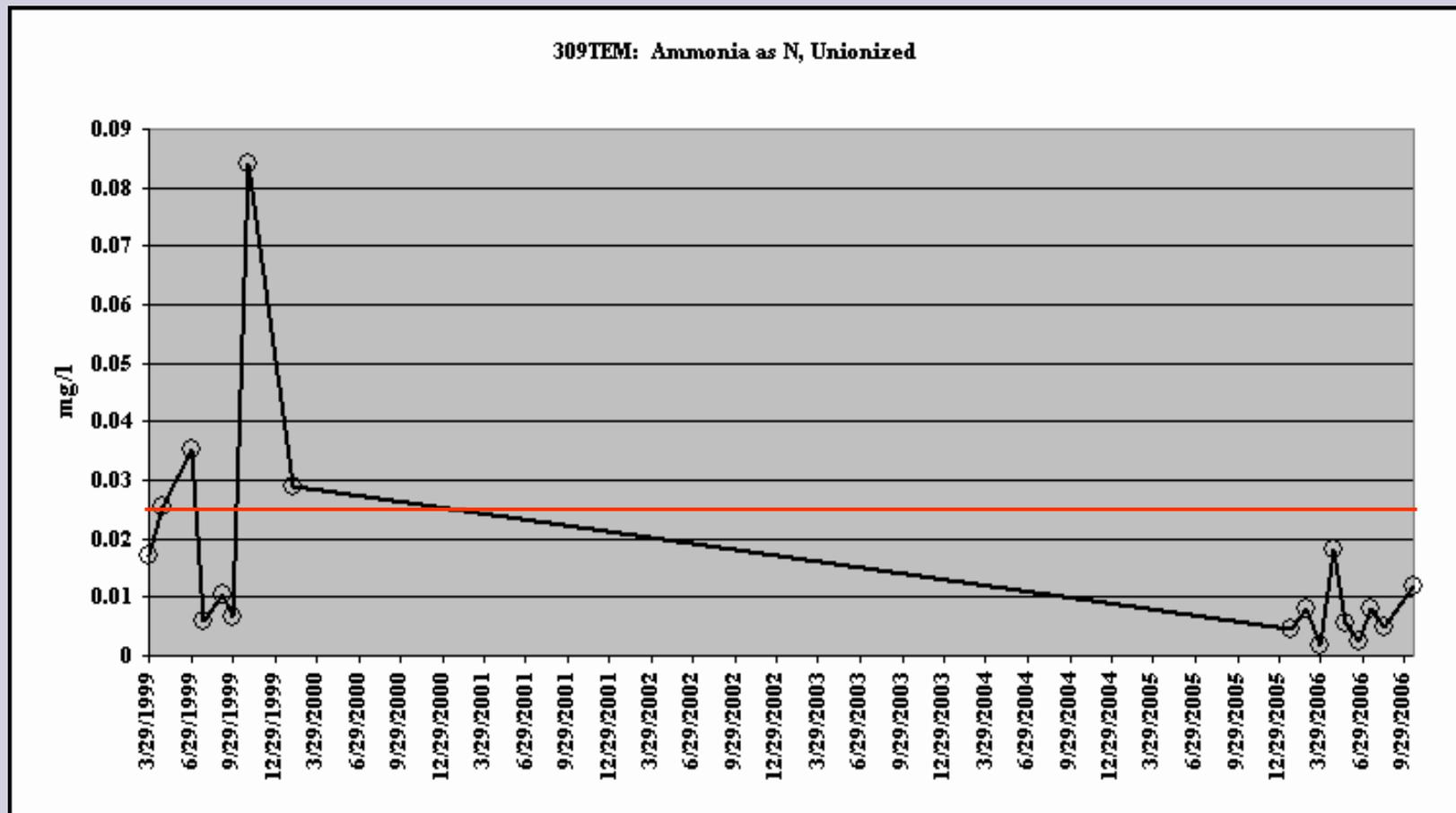
## Salinas Reclamation Canal & Tembladero Slough



# Watershed Assessments

## Salinas Reclamation Canal Watershed

### De-List - Tembladero Slough for un-ionized $\text{NH}_3$



# Watershed Assessments

## Salinas Reclamation Canal Watershed

### 10 Waterbodies

### 75 listings

#### Listings (Toxins)

- Nitrate (7)
- Unionized ammonia (6)
- Water Toxicity (7)
- Sediment Toxicity (7)
- Chlorpyrifos (3)
- Diazinon (4)

#### Listings (Conventionals)

- Fecal Coliform (5)
- Chlorophyll a (1)
- Dissolved Oxygen (5)
- pH (5)
- Temperature (1)
- Turbidity (7)

#### 3 Most Impaired

Salinas Rec Canal (14 Pollutant Listings)

Tembladero Slough (13 Pollutant Listings)

Espinosa Slough (8 Pollutant Listings)

# Watershed Assessments

## Salinas Rec Canal

14 pollutant listings (9 new)

### Existing Listings

- Ammonia (Unionized)
- Fecal Coliform
- Low Dissolved Oxygen
- Pesticides
- Priority Organics

### New Listings

- Chlorpyrifos
- Copper
- Diazinon
- *E. coli*
- Nitrate
- pH
- Sediment Toxicity
- Turbidity
- Water Toxicity

# Watershed Assessments

## Tembladero Slough

13 pollutant listings (9 new)

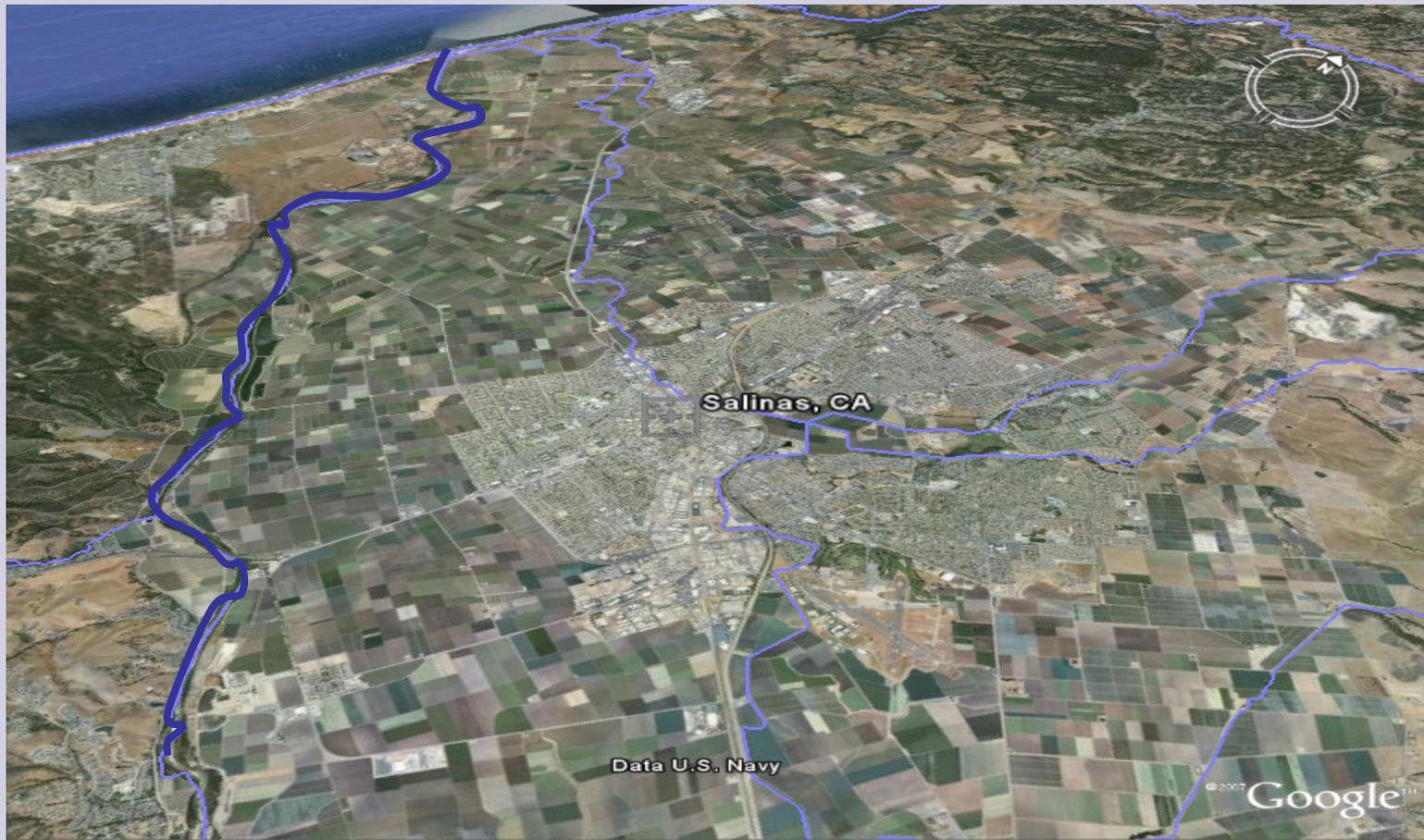
### Existing Listings

- Fecal Coliform
- Nutrients
- Pesticides

### New Listings

- Chlorophyll a
- Chlorpyrifos
- Diazinon
- *E. coli*
- Nitrate
- pH
- Sediment Toxicity
- Total Coliform
- Turbidity
- Water Toxicity

# High Priority Lower Salinas River



# Watershed Assessments

## Lower Salinas River Watershed (6 Waterbodies ) 42 listings

### Listings (Toxins)

- Nitrate (6)
- Unionized ammonia (2)
- Water Toxicity (3)
- Sediment Toxicity (1)
- Chlorpyrifos (4)
- Diazinon (4)

### Listings (Conventionals)

- Fecal Coliform (4)
- Dissolved Oxygen (2)
- pH (3)
- Temperature (2)
- Turbidity (6)

### 3 Most Impaired

Lower Salinas River (15 Pollutant Listings)

Quail Creek (11 Pollutant Listings)

Chualar Creek (10 Pollutant Listings)

# Watershed Assessments

Lower Salinas River 15 pollutant listings (8 new)

## Existing Listings

- Fecal Coliform
- Nitrate
- Nutrients
- Pesticides
- Toxaphene
- TDS \*
- Chloride \*

## New Listings

- Chlorpyrifos
- Diazinon
- Electrical Conductivity
- Enterococcus
- *E. coli*
- pH
- Sodium
- Turbidity
- Water Toxicity

\*Revised pollutant name (from Salinity/TDS/Chlorides)

# Comments

