

Calleguas Creek Watershed Toxicity and OC Pesticides and PCBs TMDLs: What does it mean to you?

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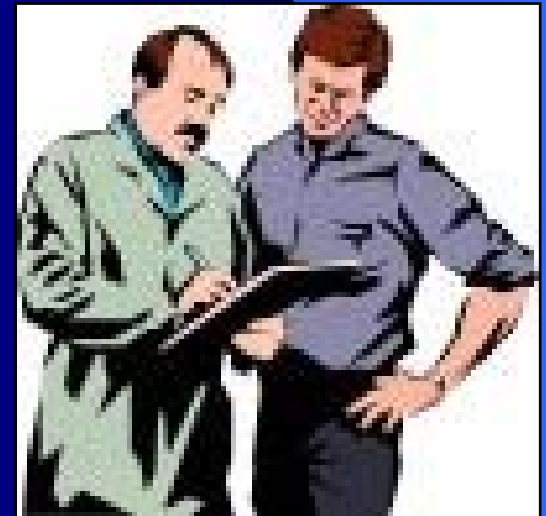
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Introduction

- Status of TMDL Process
- Toxicity TMDL
- OC Pesticides and PCBs TMDL
- Implementation Plan
- Next Steps
 - LWA
 - RWQCB and USEPA



Status of TMDL Process

- Interim Drafts submitted to RWQCB, USEPA, and Technical Advisory Committee
- Follow-up discussions with RWQCB and USEPA
- Public Interim Drafts
- Final Drafts
 - Toxicity – January 15th
 - OCs TMDL – January 31st



Calleguas Creek Watershed Toxicity TMDL








Reaches Addressed

- Listed Reaches Addressed
 - H2O Tox – Reaches 4, 5, 9B, 10, 11, 13
 - Sed Tox – 1, 2
 - H2O OP Pesticides –7
 - Fish Tissue – 4, 5
- Additional Reaches Addressed
 - H2O Tox – Reaches 3, 6, 7, 9A
 - Sed Tox –3, 4, 9A
 - H2O Diaz and/or Chlor – 3, 4, 5, 6, 8, 9A, 10, 11

Watershed Features

Reaches

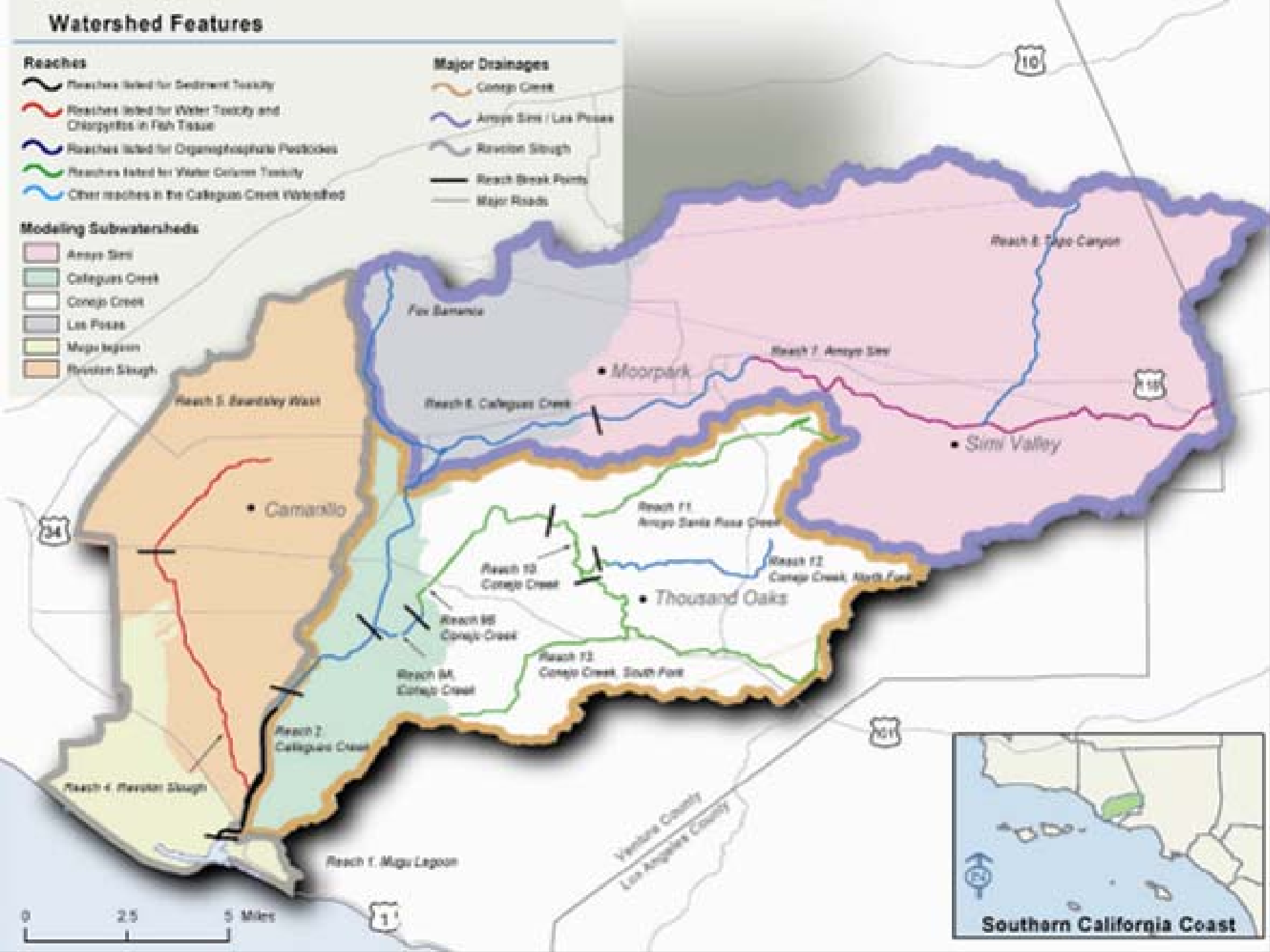
-  Reaches listed for Sediment Toxicity
-  Reaches listed for Water Toxicity and Chlorophyll in Fish Tissue
-  Reaches listed for Organophosphate Pesticides
-  Reaches listed for Water Column Toxicity
-  Other reaches in the Collegua Creek Watershed

Major Drainages

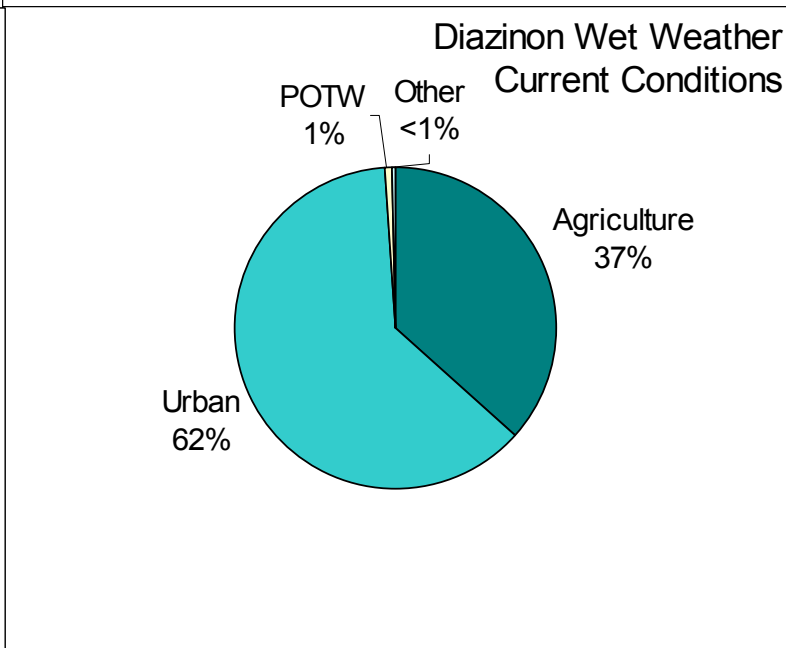
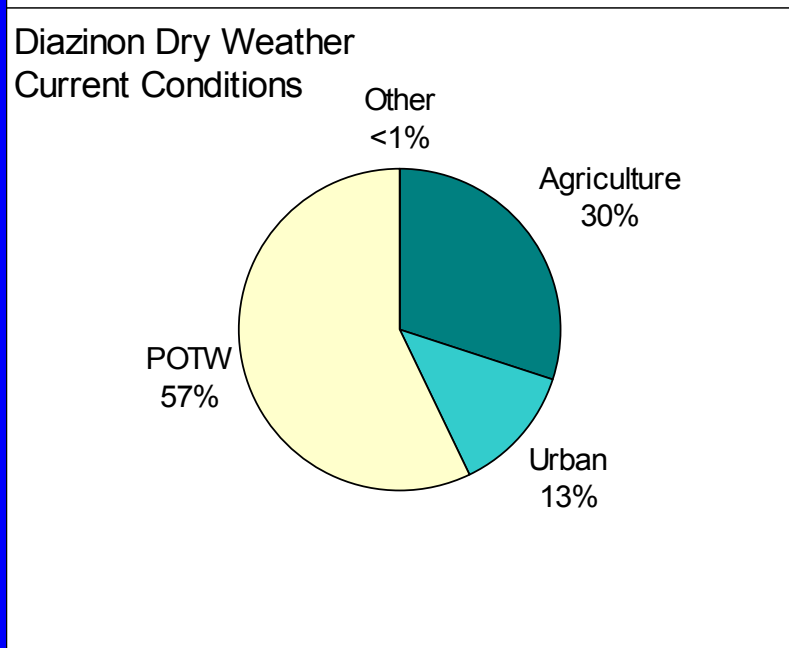
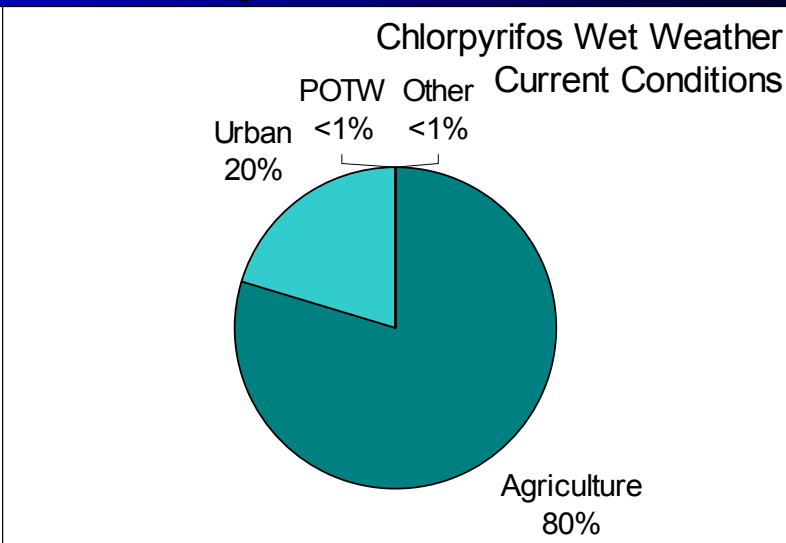
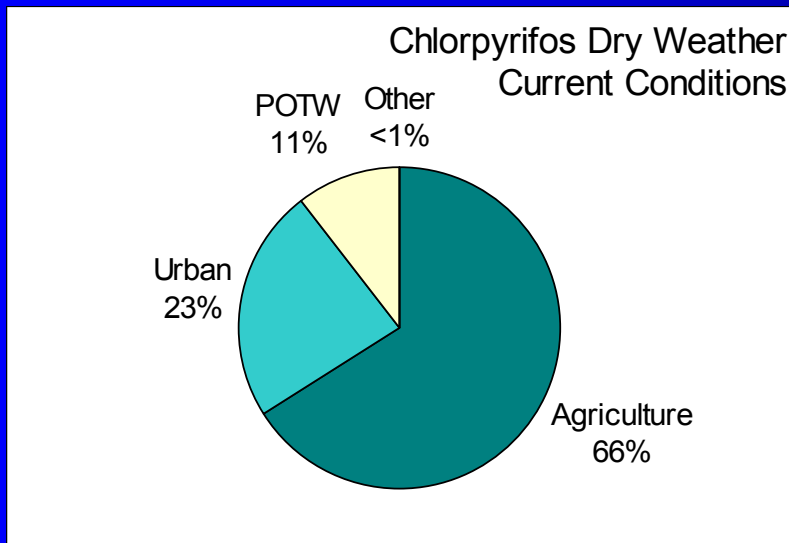
-  Conejo Creek
-  Arroyo Simi / Los Posos
-  Riverton Slough
-  Reach Break Points
-  Major Roads

Modeling Subwatersheds

-  Arroyo Simi
-  Collegua Creek
-  Conejo Creek
-  Los Posos
-  Mugu Lagoon
-  Riverton Slough



Source Analysis



Waste Load and Load Allocations

- WLAs and LAs set Equal to Numeric Targets
- Water and Sediment Toxicity Allocations
- Chlorpyrifos and Diazinon Water Allocations

Chlorpyrifos and Diazinon Reductions Necessary to Meet Allocations

Subwatershed	Agricultural Runoff		Urban Runoff		POTW	
	Chlorpyrifos	Diazinon	Chlorpyrifos	Diazinon	Chlorpyrifos	Diazinon
Arroyo Simi	99.4%	68.3%	99.5%	93.0%	72%	50%
Las Posas	99.6%	69.9%	99.5%	93.0%	NA	NA
Conejo	99.4%	68.4%	99.5%	93.0%	72%	50%
Calleguas	99.6%	70.2%	99.5%	93.0%	72%	50%
Revolon	99.0%	70.6%	99.5%	93.0%	NA	NA
Mugu Lagoon	99.0%	68.2%	99.1%	93.0%	NA	NA

Calleguas Creek Watershed OC Pesticides and PCBs TMDL



303(d) Listed Constituents

Reach	Chem-A ^[2]	Chlordane	DDT	Dacthal	Dieldrin	HCH ^[3]	Endosulfan	PCBs	Toxaphene
1 – Mugu Lagoon		T	S,T			T		T	
2 – Calleguas Creek	T	T	S,T,W			T		T	S,T
4 – Revolon Slough	T	S,T	S,T		T	S,T		T	S,T
5 – Beardsley Channel	T	S,T	S,T	S	T	S,T		T	S,T
6 – Arroyo Las Posas			S						
9A – Conejo Creek	T	T	T		T	T	T	T	S,T
9B – Conejo Creek	T		T			T			S,T
10 – Conejo Creek	T		T			T			S,T
11 – Arroyo Santa Rosa	T		T			T			S,T
12 – Conejo Creek		T	T						
13 – Conejo Creek	T		T			T			S,T

[1] S = sediment listing; T = tissue listing; W = water column listing.

[2] Chem A Pesticides: aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide,

[3] HCH = Hexachlorocyclohexane, including lindane.

Watershed Features

Reaches

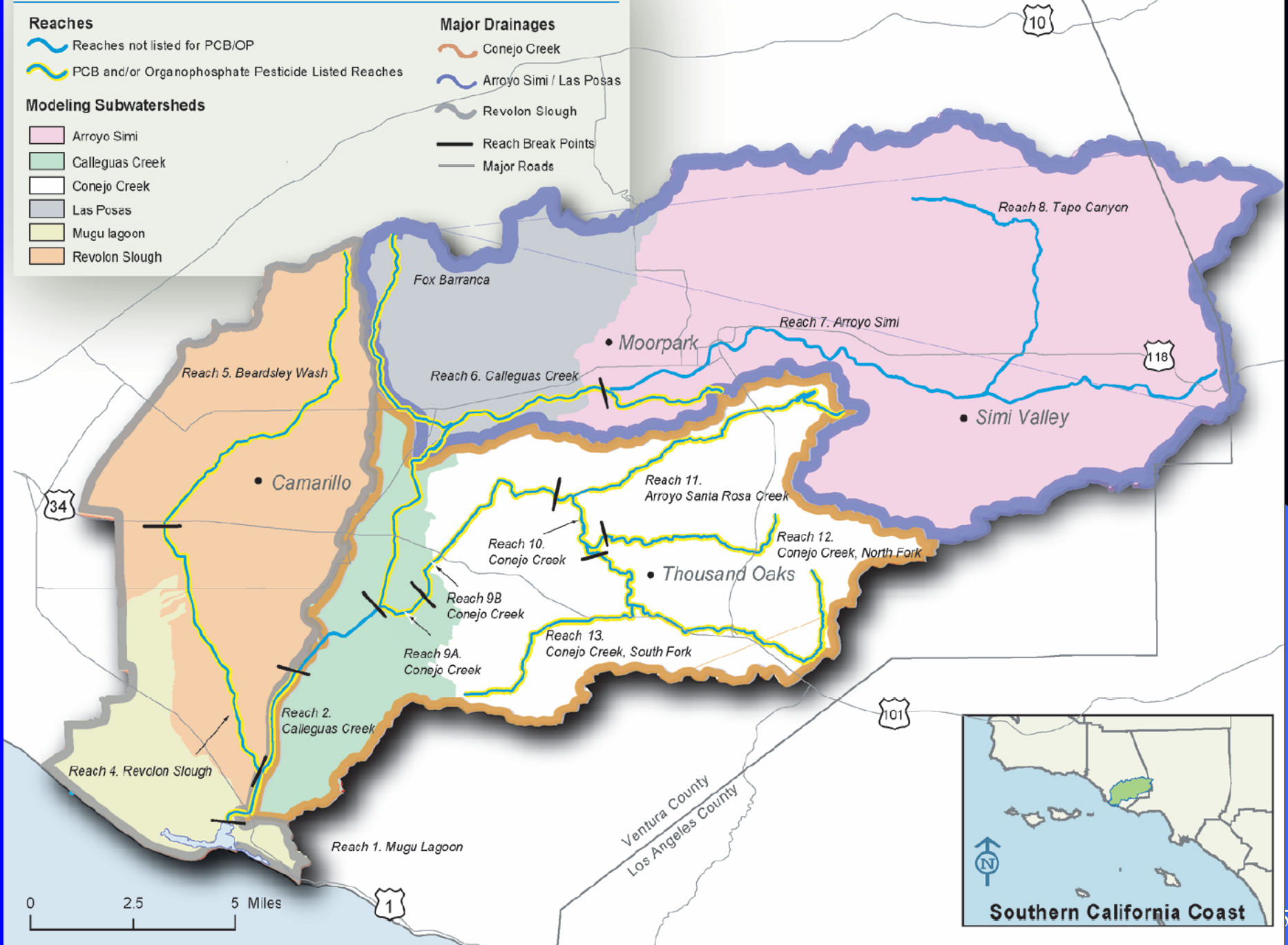
- Reaches not listed for PCB/OP
- PCB and/or Organophosphate Pesticide Listed Reaches

Modeling Subwatersheds

- Arroyo Simi
- Calleguas Creek
- Conejo Creek
- Las Posas
- Mugu lagoon
- Revolon Slough

Major Drainages

- Conejo Creek
- Arroyo Simi / Las Posas
- Revolon Slough
- Reach Break Points
- Major Roads



0 2.5 5 Miles



Category-1 and Category-2

Constituents included on 2002 303(d) list	Constituents evaluated during TMDL workplan monitoring	Category-1 Constituents ^[1]	Category-2 Constituents ^[1]
Chlordane	Chlordane ^[3]	Chlordane	--
DDT (DDE, DDD)	DDT (DDE, DDD)	DDT (DDE, DDD)	--
Dacthal	Dacthal	--	Dacthal ^[2]
Dieldrin	Dieldrin ^[3]	Dieldrin	--
HCH (incl. Lindane)	HCH (incl. Lindane) ^[3]	--	HCH (incl. Lindane)
Endosulfan	Endosulfan ^[3]	--	Endosulfan
PCBs	PCBs	PCBs	--
Toxaphene	Toxaphene ^[3]	Toxaphene	--
Chem-A ^[3]	Aldrin ^[3]	--	Aldrin
	Endrin ^[3]	--	Endrin
	Heptachlor ^[3]	--	Heptachlor
	Heptachlor Epoxide ^[3]	--	Heptachlor Epoxide

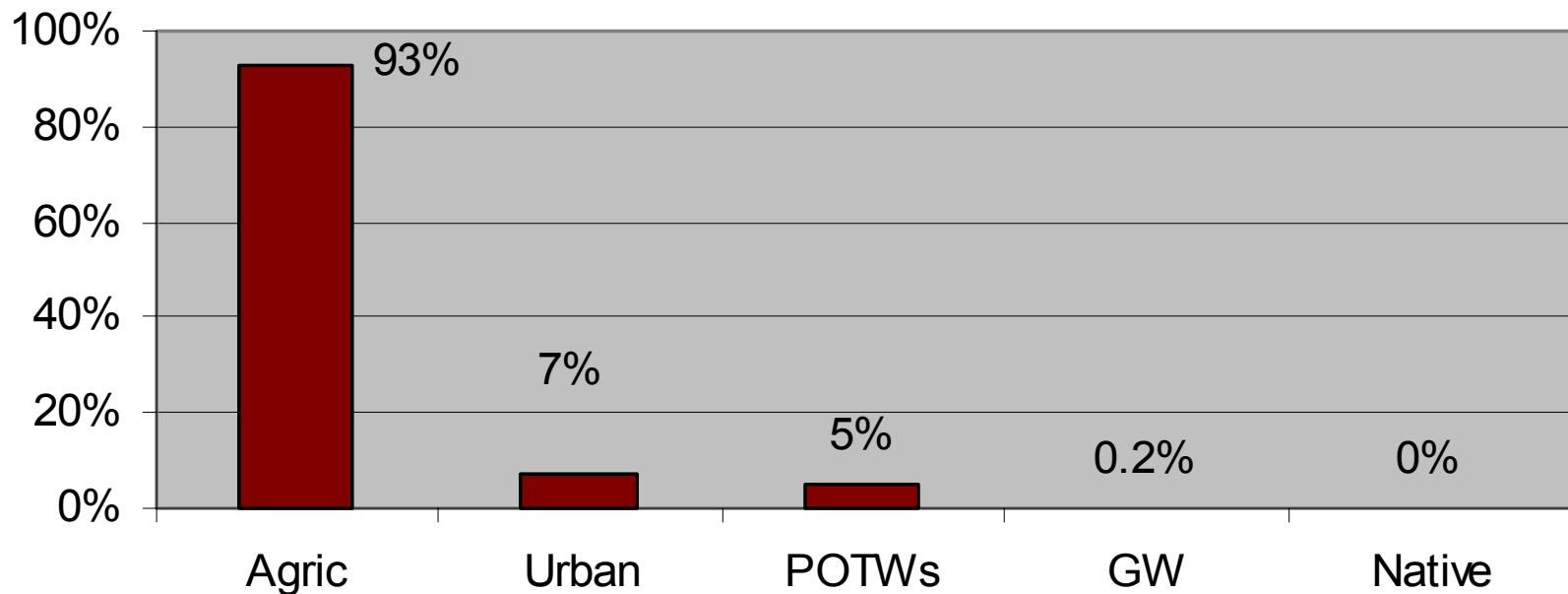
- **Category-1 Constituents = Frequently Exceeding Criteria**
- **Category-2 Constituents = Rarely/Never Exceeding Criteria**

Source Analysis

- Land Use Runoff Data
 - Suggests Agriculture as primary source
 - Urban and POTWs minor contributors
 - Groundwater not likely significant, but need further monitoring with lower detection limits
- Aerial deposition
 - not likely significant
- High Concentration Areas (HCAs)
 - No clear evidence thus far

Source Analysis

Estimated DDE Loading to Water in the CCW



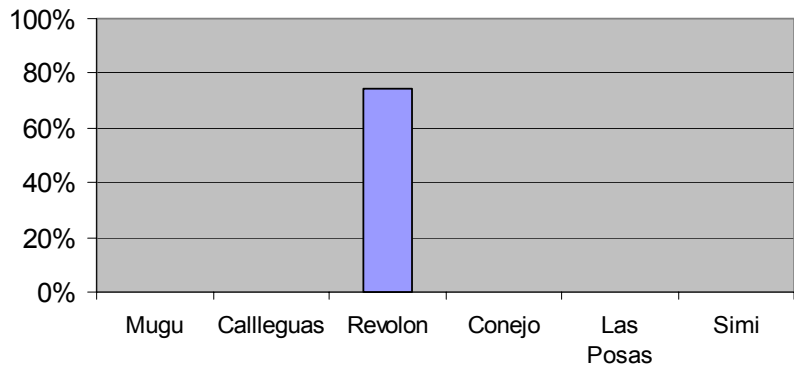
Wasteload and Load Allocations

- MS4s and Agriculture
 - Sediment Concentrations Applied In-Stream
- POTWs
 - Water Concentration Allocations Applied to Effluent Discharge

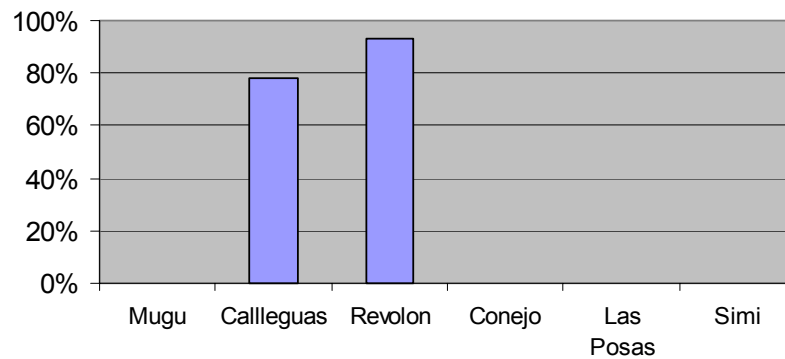
Percent Reductions for MS4s & AG

- Generally higher in Mugu, Revolon, and Calleguas subwatersheds
- Highest for DDT (DDD, DDE)
- Lowest for Chlordane and PCBs

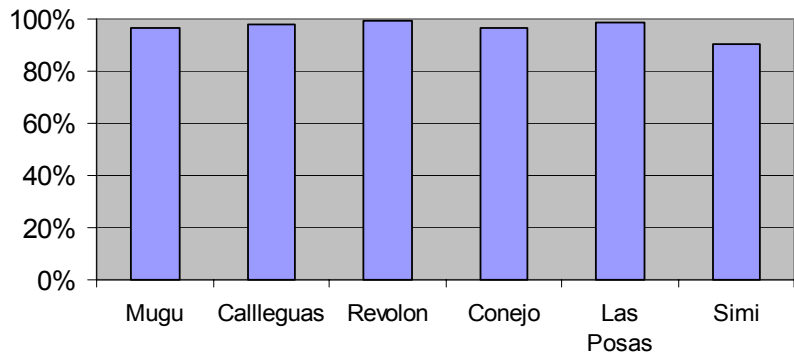
Chlordane % Reduction in Sediment



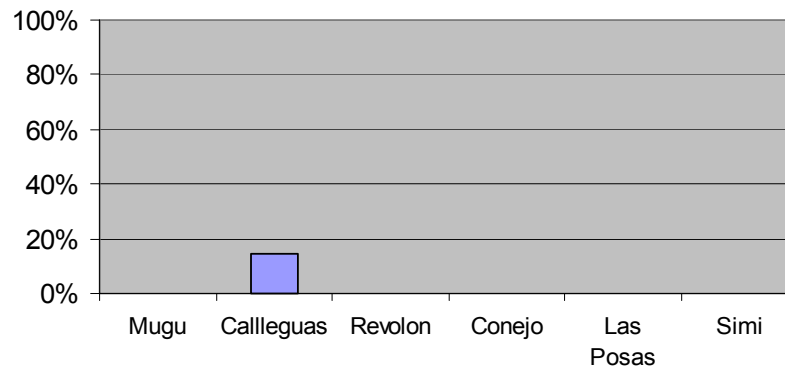
Dieldrin % Reduction in Sediment



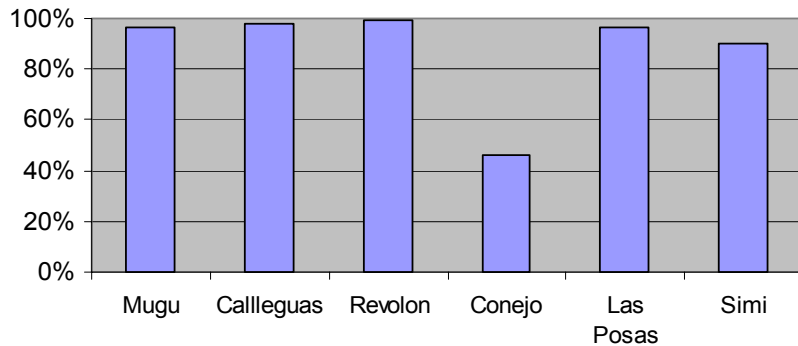
DDT % Reduction in Sediment



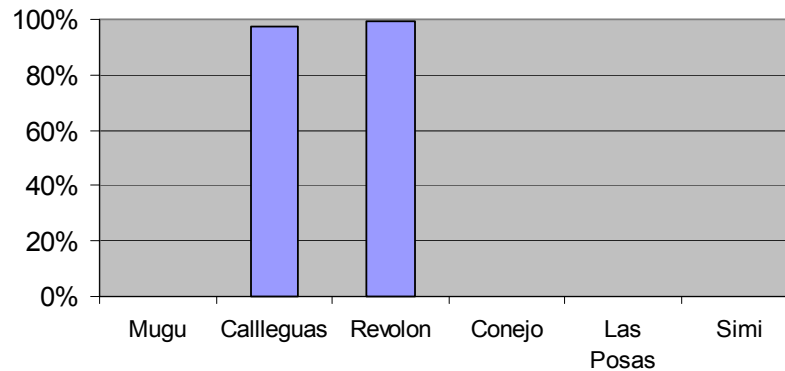
PCBs % Reduction in Sediment



DDE % Reduction in Sediment



Toxaphene % Reduction in Sediment



Questions?



What Do the TMDLs Mean to You?

Implementation Plan Summary

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Implementation Plan Overview

- Three Primary Sources-POTWs, Urban Runoff, Agriculture
 - How Allocations will be Applied
 - What Actions are Necessary
- What Special Studies are Required
- What Monitoring Is Required

POTW Allocations

- End-of-pipe Concentration-based Effluent Limits
- Interim Limits-Diazinon, Chlorpyrifos, Category-1 OCs
 - Highest detected value or ML for OCs
 - Highest detected value or 95th and 99th percentile for diazinon and chlorpyrifos
- Final Limits
 - Equal to the targets for diazinon and chlorpyrifos (2008)
 - Based on the SIP effluent limit calculation procedure for historic pesticides and PCBs (2030)
- Implemented through NPDES Permits

POTW Implementation Actions

- Pesticide Education Program
- Pesticide Collection Events
- Investigate Replacement Pesticides for Diazinon and Chlorpyrifos
- Identify Sources of OC Pesticides and PCBs

MS4 Allocations

- Receiving Water Limits
- Interim Limits-Diazinon, Chlorpyrifos, Category-1 OCs
 - 95th and 99th percentile concentrations or downstream interim limit for OCs
- Final Limits
 - Equal to the targets for diazinon and chlorpyrifos (2008)
 - Sediment concentrations (2030)
- Implemented through NPDES Permit
- Compliance Measured at Base of Subwatershed

MS4 Implementation Actions

- Pesticide Education Program
- Pesticide Collection Events
- Investigate Replacement Pesticides for Diazinon and Chlorpyrifos
- Investigate Sediment Activities and Manage if Necessary
- Revise Construction Program if Necessary based on Results of Special Studies

Agriculture Allocations

- Receiving Water Allocations
- Interim Limits-Diazinon, Chlorpyrifos, Category-1 OCs
 - 95th and 99th percentile concentrations or downstream interim limit for OCs
- Final Limits
 - Equal to the targets for diazinon, chlorpyrifos (2018)
 - Sediment concentrations (2030)
- Implemented through Conditional Waiver or SWRCB Program
- Compliance Measured at Base of Subwatersheds

Agriculture Implementation Actions

- Water Quality Management Plan
- Identification and Implementation of BMPs
- Coordinate with Conditional Waiver and Nutrient TMDL Implementation

Monitoring Plan

Goals

- Determine compliance with numeric targets and WLA and LAs
- Evaluate presence of sediment toxicity
- Identify causes of unknown toxicity
- Generate additional land use runoff data
- Evaluate replacement pesticides
- Determine the effectiveness of implementation actions
- Coordinate with other monitoring programs

Compliance Monitoring

- All Listed Constituents and Toxicity
- Water Column, Sediment, and Fish Tissue Monitoring
- Receiving Water Stations at Base of Each Subwatershed
 - Additional Stations may be needed
- Land Use Monitoring Stations
- Revisions to Approach

Toxicity Investigations

- Toxicity Monitoring in Areas with Unidentified Toxicity
 - Mugu Lagoon, Conejo Creek, Calleguas Creek
- Conduct TIEs if significant toxicity is observed

Special Studies

- Required Studies
 - Sediment transport
 - OC Sediment Concentrations by Land Use Type
 - Identification of HCAs
 - Effectiveness of BMPs
 - Groundwater Wells
- Optional Studies
 - Examine Food Webs, Bioaccumulation and Wildlife Effects
- Reevaluation of WLAs and LAs if Necessary

Cost Estimate

First Year Cost Estimate for Each Implementation Action

	Low	High
Urban Educational and Collection Program	\$150,000	\$165,000
Study Replacement Pesticides	\$30,000	\$33,000
Ag Water Quality Mngt Plan	\$700,000	\$770,000
Ag Educational Program	\$75,000	\$82,000
BMPs	\$3,300,000	\$140,000,000
Monitoring (Toxicity and OCs)	\$700,000	\$1,300,000
Special Studies	??	??
Total Estimate	\$5,000,000	\$142,300,000

Questions?

Next Steps-LWA

- Timeline for Toxicity TMDL
 - Submit to RWQCB and USEPA by Jan 15th
- Timeline for OC and PCBs TMDL
 - Incorporate TAC and Stakeholder Comments
 - Submit to RWQCB and USEPA by Jan 31st
- Specific Issues to Consider
 - WLAs and LAs and Interim Limits
 - Implementation Actions
 - Monitoring Plan

Next Steps-RWQCB/EPA

- Independent Peer Review
- Issue Staff Report and CEQA Documentation for Public Comment
- Respond to Public and Peer Review Comments
- Present to Regional Board
 - Adopt TMDL
 - Adopt TMDL with Minor Revisions
 - Take No Action

Next Steps-RWQCB/EPA Cont'd

- Prepare Administrative Record
- Transmit Administrative Record to State Board
- State Board Review and Adoption
- Office of Administrative Law Review
- EPA Review and Approval

Questions?

