SANTA MARIA WATERSHED TMDL STAKEHOLDER MEETING

January 25, 2011

Today's Format

- Introductions
- Presentations:
  - Overview, schedule, status (Chris Rose)
  - Nutrient Module (Larry Harlan)
  - Pesticide Module (Peter Meertens)
- Questions and discussion

WATERSHED TMDL

- Single TMDL Project
  Santa Maria Watershed

- Addressing all watershed impairments

- > 90 impairments (pollutant/waterbody)
  - Nitrate, ammonia, dissolved oxygen…
  - Fecal coliform, Total coliform
  - Toxicity, sediment toxicity, pesticides…
  - Chloride, sodium, boron

WATERSHED TMDL CON'T.

- Master Implementation Plan
  - Implementation plan addressing all impairments
  - Economy of implementation
  - Economy of planning

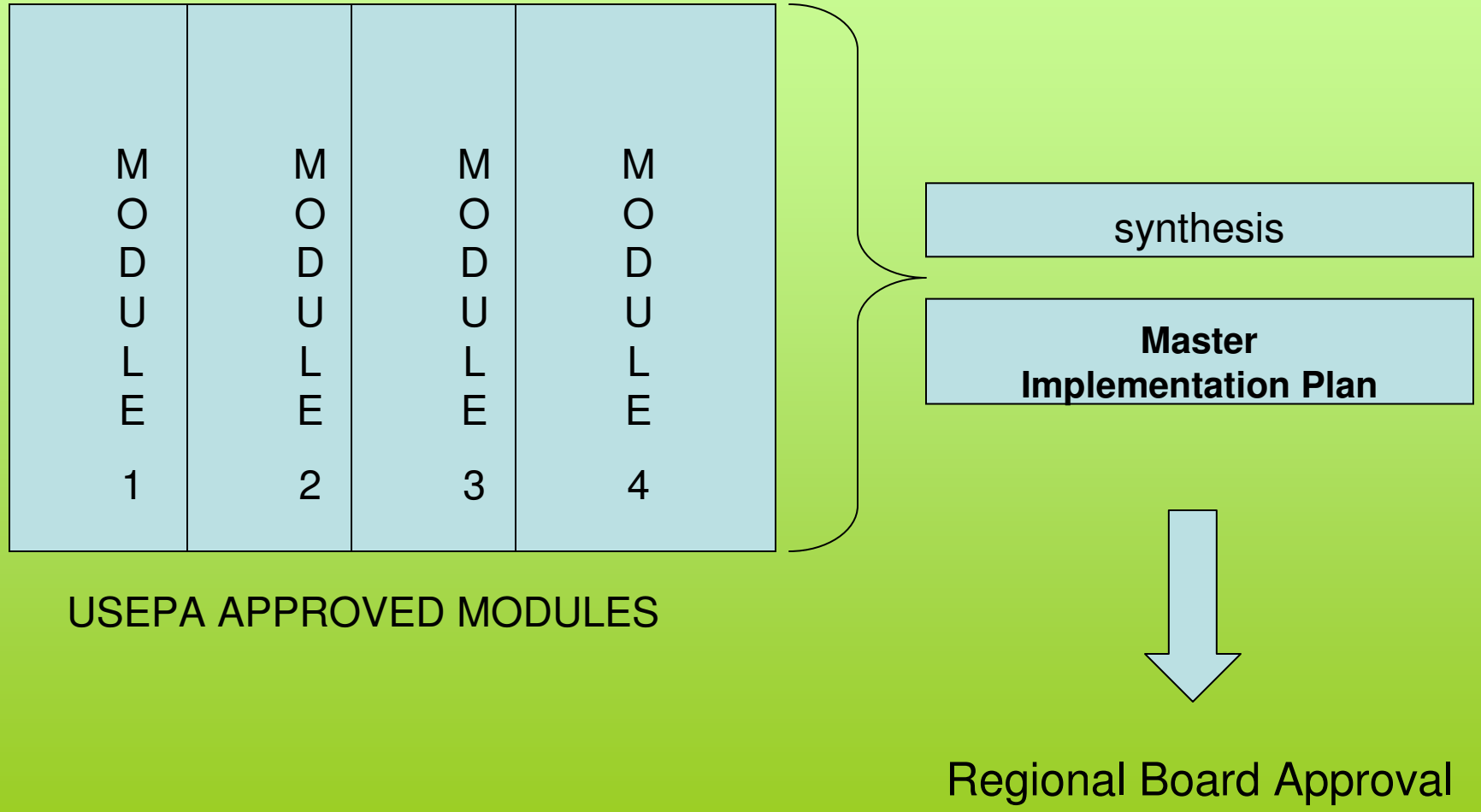
POLLUTANT MODULES

- “Module:” is a means of discussing a group of impairments.
  - Grouping of impairments
    - Bacteria-related
    - Nutrient-related
    - Pesticide-related
    - Salts-related

POLLUTANT MODULES Con't.

- TMDL Module Report
  - Report
    - Informational and technical portions of a TMDL
- Contains USEPA required elements

PATH TO REGIONAL BOARD APPROVAL



SCHEDULE

PATHOGEN MODULE	NUTRIENT MODULE	PESTICIDE MODULE

TIME →

July 2010 - June 2011

DRAFT SCHEDULE CON'T.

DEVELOP MASTER IMPLEMENTATION PLAN

SALTS

MODULE

WATER BOARD APPROVAL

BASIN PLAN AMENDMENT

July 2011 - June 2012

Status: Nutrient/Pesticide Modules

- Data Compilation
  - Completed
- Impairment Assessment
  - Completed
- Numeric Target Development/Source Analysis
  - January-June 2011

STAKEHOLDER INPUT: UPCOMING OPPORTUNITIES

- Nutrient and Pesticide Modules
  - Draft report: June 2011
- Salts Module
  - Draft report: ~Fall 2011

Nutrient Module Update

Development of TMDLs for Nutrients in Santa Maria River and Oso Flaco Lake Watersheds

Oso Flaco Lake

Topics Today…

- **Waterbodies Addressed**
- **Pollutants Addressed**
- **Approaches to Numeric Target Development**
- **Numeric Target Examples**

Impaired Waterbodies

1. Blosser Channel
2. Bradley Channel
3. Bradley Canyon Creek
4. Cuyama River (above Reservoir)
5. Green Valley Creek
6. Little Oso Flaco Creek
7. Main Street Canal
8. North Main Street Channel
9. Nipomo Creek
10. Orcutt Creek
11. Oso Flaco Lake
12. Oso Flaco Creek
13. Santa Maria River

Pollutants Addressed

- Nitrogen (Nitrate and TN)
- Unionized Ammonia
- Phosphorus
- Dissolved Oxygen
- Temperature
- Turbidity
- pH

Impaired Waterbodies

	Impairment Pollutant					
Water Body Name	Ammonia (Unionized)	Nitrate	Low Dissolved Oxygen	pH	Temp.	Turbidity
Blosser Channel	X	X		X		
Bradley Canyon Creek	X	X	X	X		X
Bradley Channel	X	X		X		
Cuyama R. (above Twitchell Res.)				X		
Greene Valley Creek	X	X	X		X	X
Little Oso Flaco Creek		X				
Main Street Canal	X	X		X		X
Nipomo Creek		X				
North Main Street Channel		X				
Orcutt Creek	X	X			X	X
Oso Flaco Creek	X	X				
Oso Flaco Lake		X				
Santa Maria River		X				X
Totals	7	12	2	5	2	5
Total Waterbody/Pollutant Combinations	33					

Numeric Target Development

Numeric Target Approaches

- Existing Water Quality Objectives
- US EPA Guidance for Nutrient Criteria
- CA Nutrient Numeric Endpoints (NNE)
- Current Draft Targets and Other TMDLs

Water Quality Objectives

- Numeric Objectives
  - Nitrate: 10 mg/L-N
  - Unionized ammonia: 0.025 mg/L-N
  - Dissolved oxygen: 7 mg/L
  - Temperature:
    - Gen. Obj.: no alteration
    - COLD: cannot Δ 5 F
  - pH:
    - Gen/COLD: 7-8.5

Water Quality Objectives Con't.

- Narrative Objectives
  - Biostimulatory Substances
    - Discharges cannot cause aquatic growths such that they are a nuisance.
  - Toxicity
    - All waters shall be maintained free of toxic substances

US EPA Nutrient Guidance

- USEPA Guidance for Ecoregion III-6
  - TN: 0.52 mg/L-N
  - TP: 0.03 mg/L-P

U.S. EPA, 2000. Nutrient Criteria Technical Guidance Manual, Rivers and Streams. U.S. Environmental Protection Agency, Office of Water, Washington D.C., EPA-822-00-002.

CA NNE Approach

- Model Developed for State of CA
- Predictive Biostimulatory Risk
  - Algal density
  - Aquatic life protection
- Supported by USEPA

CA NNE Approach Con't

- Input parameters:
  - Shading
  - Water depth
  - Canopy Cover
  - Water Velocity
  - Solar Radiation
- Output
  - Total nitrogen, Total phosphorus

Example Numeric Targets

	WARM		COLD	
	TN mg/L-N	TP mg/L-P	TN mg/L-N	TP mg/L-P
WQO	10			
USEPA	0.52	0.03	0.52	0.03
NNE (CC)	2.9	0.045	1.6	0.028
NNE (SM)	3.5	0.22	1.6	0.2

Pesticide Module Presentation

SANTA MARIA WATERSHED TMDL PESTICIDE MODULE

JANUARY 25, 2010

Introduction

- Water quality objectives
- Pollutants
- Listings and additional impairments
- Strategy for developing targets and targets being considered
- Strategy for source analysis

Water Quality Objectives

- *All waters shall be maintained free of toxic substances*

- *No individual pesticide or combination of pesticides shall reach concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations found in bottom sediments or aquatic life.*

Pesticides Addressed

- Legacy OrganoChlorine Pesticides
- Currently Applied OrganoPhosphate and Pyrethroid Pesticides

OrganoChlorine Pesticides

- Dieldrin
- Endrin
- Toxaphene
- DDT

OrganoPhophate (OP) Pesticides

- Chlopyrifos
- Diazinon
- Malathion

Pyrethroid Pesticides

- Bifenthrin
- Cyfluthrin
- Cypermethrin
- Esfenvalerate
- Lambda-Cyhalothrin
- Permethrin

Listings and Additional Impairments

San Luis Obispo County
San Luis Obispo
Santa Maria
Orcutt
Los Padres
National
Forest
Lompoc
246
Vandenberg
Airforce
Base
154
1
101
Goleta
Santa Barbara
33
N

Willow Rd
Pomeroy
Rd
Osage St
Nipomo
Orchard Rd
Division St
Old Filaco Creek
Nipomo Creek
Santa Barbara County
Guadalupe
Santa Maria River
S Simas Rd
Simas Rd
Ray Rd
W Donovan Rd
W Alvin Ave
E Alvin Ave
Suey Rd
Bull Canyon Rd
Suey Creek
San Luis Obispo County
W Stowell Rd
Rosemary Rd
Santa Maria
E Betteravia Rd
W Betteravia Rd
Mahoney Rd
Black Rd
E Foster Rd
Orcutt Creek
S Blosser Rd
Orcutt
S Bradley Rd
Telephone Rd
Dominion Rd
Orcutt Garey Rd
E Clark Ave
Santa Maria Mesa Rd
Sisquoc River
Palmer Rd
Casmalia Rd
312CUT-Cuyama River
166
176
135
101
1
N

Listings

Santa Maria River	dieldrin, endrin, toxaphene, ddt, chlorpyrifos
Oso Flaco Lake	dieldrin
Orcutt Creek	dieldrin, ddt, chlorpyrifos, diazinon
Green Valley Creek	chlorpyrifos
Main Street Channel	chlorpyrifos, diazinon
Bradley Channel	chlorpyrifos

Exceedances in Addition to Listings

Santa Maria River	diazinon, pyrethroids
Oso Flaco Lake	chlordane, ddt
Oso Flaco Creek	ddt, malathion
Orcutt Creek	pyrethroids
Main Street Channel	ddt, pyrethroids
Blosser Channel	ddt, chlorpyrifos, diazinon, pyrethroids
Bradley Channel	ddt, diazinon, pyrethroids

Numeric Targets

Approach for developing targets

The Water Board will consider relevant numerical criteria and guidelines developed and/or published by other agencies and organizations

Types of Targets for the TMDL

- OrganoPhosphate (water)
- Pyrethroid Pesticides (water, sediment)
- OrganoChlorine (tissue, water, sediment)

Numeric Target Examples

OrganoPhosphate Targets (water)

Pesticide	CMC (ug/L 1-hr. avg.)
chlorpyrifos	0.025
diazinon	0.16
malathion	0.17

Pyrethroid Targets (water)

Pesticide	Acute Criteria (ng/L)	Chronic Criteria (ng/L)
Bifenthrin	4	0.6
Cyfluthrin	0.3	0.05
Lambda_Cyh.	1	0.5

Pyrethroid Targets (sediment)

Chemical	LC 50 (ug/g oc)
Bifenthrin	0.52
Cyfluthrin	1.08
Cypermethrin	0.38
Esfenvalerate	1.54
Lambda Cyhalothrin	0.45
Permethrin	10.83

OrganoChlorine Targets

- **Tissue:**
  - **California State Office of Environmental Health Hazard Assessment developed fish Contaminant Goals and Advisory Tissue Levels**
- **Water:**
  - **California Toxic Rule aquatic life criteria**
- **Sediment:**
  - **National Oceanic and Atmospheric Administration (NOAA) and contained in NOAAs Screening Quick Reference Tables**

Source Assessment Strategy

- Landuse assessment in watershed
- Pesticide Use Reporting Database
- Source analysis studies and reports

DISCUSSION