Proposed Nutrient TMDLs

Lower Salinas River & Reclamation Canal Basin, & the Moro Cojo Slough Subwatershed

Monterey County

Agenda Item 9

Photo Credits:
Mary Hamilton
CCRWQCB

Salinas River @ Chualar

Pete Osmolovsky & Chris Rose
Water Board TMDL Program

Staff Recommendation…

Adopt Resolution R3-2013-0008*

* *Including Supplemental Sheet w/proposed changes*

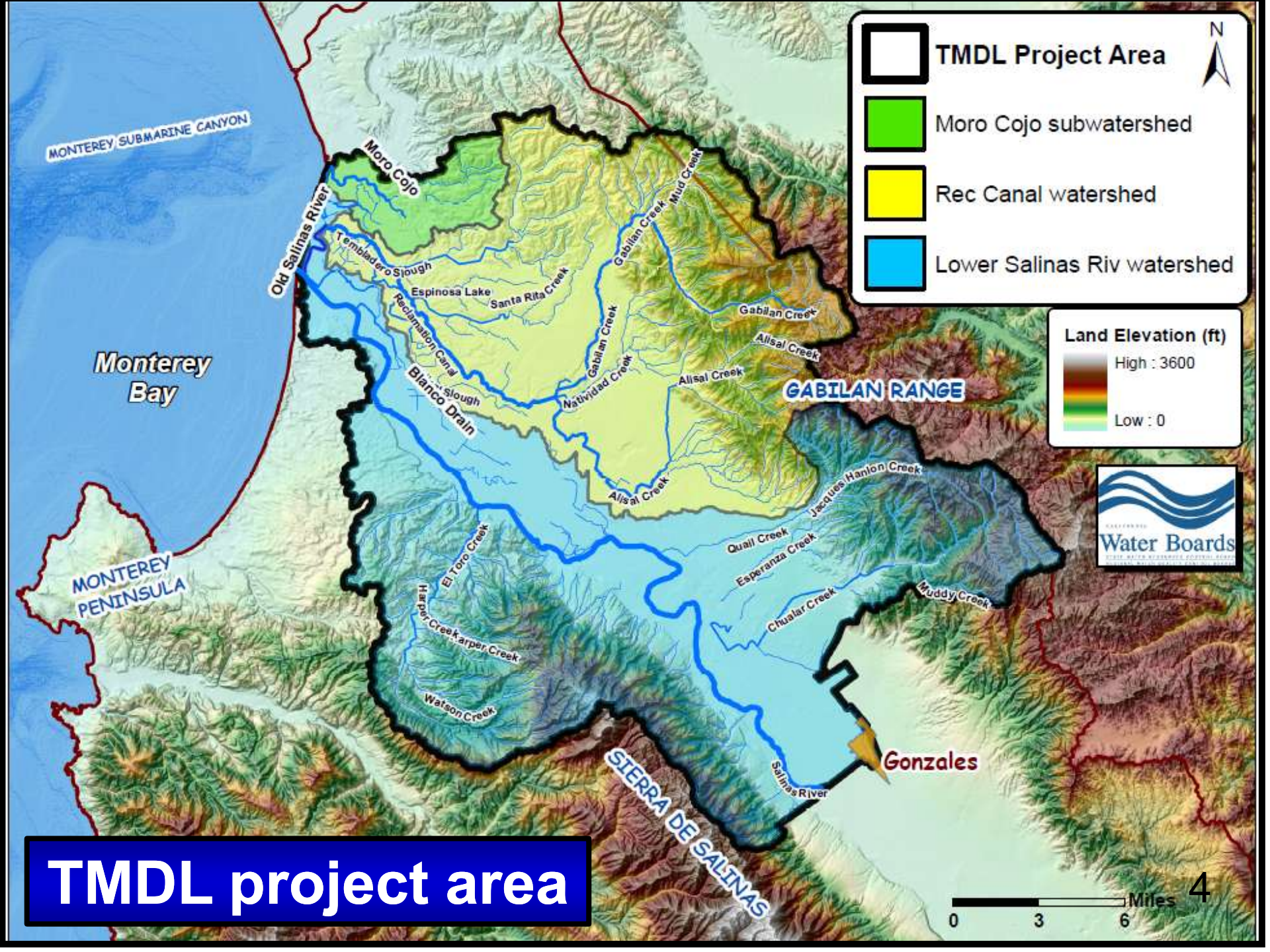
Proposed Additions to Basin Plan:

1. TMDLs and Implementation Plan for Nitrogen Compounds & Orthophosphate for lower Salinas Valley**

** *Includes Lower Salinas River and Reclamation Canal Basin and Moro Cojo Slough Subwatershed*

Highlights...

- *TMDLs are planning tools to assist the State in creating its strategy to implement its water quality standards*
- *TMDLs use existing or planned regulatory measures to implement TMDL goals*
- *TMDL consistent with Water Board's highest priorities*
- *TMDL implementation = Compliance with Ag Order & NPDES permits*
- *Relevant water quality objectives will take many years to achieve*
- *TMDL has been independently peer reviewed by scientists*
- *USEPA reports: TMDL meets federal requirements under CWA*

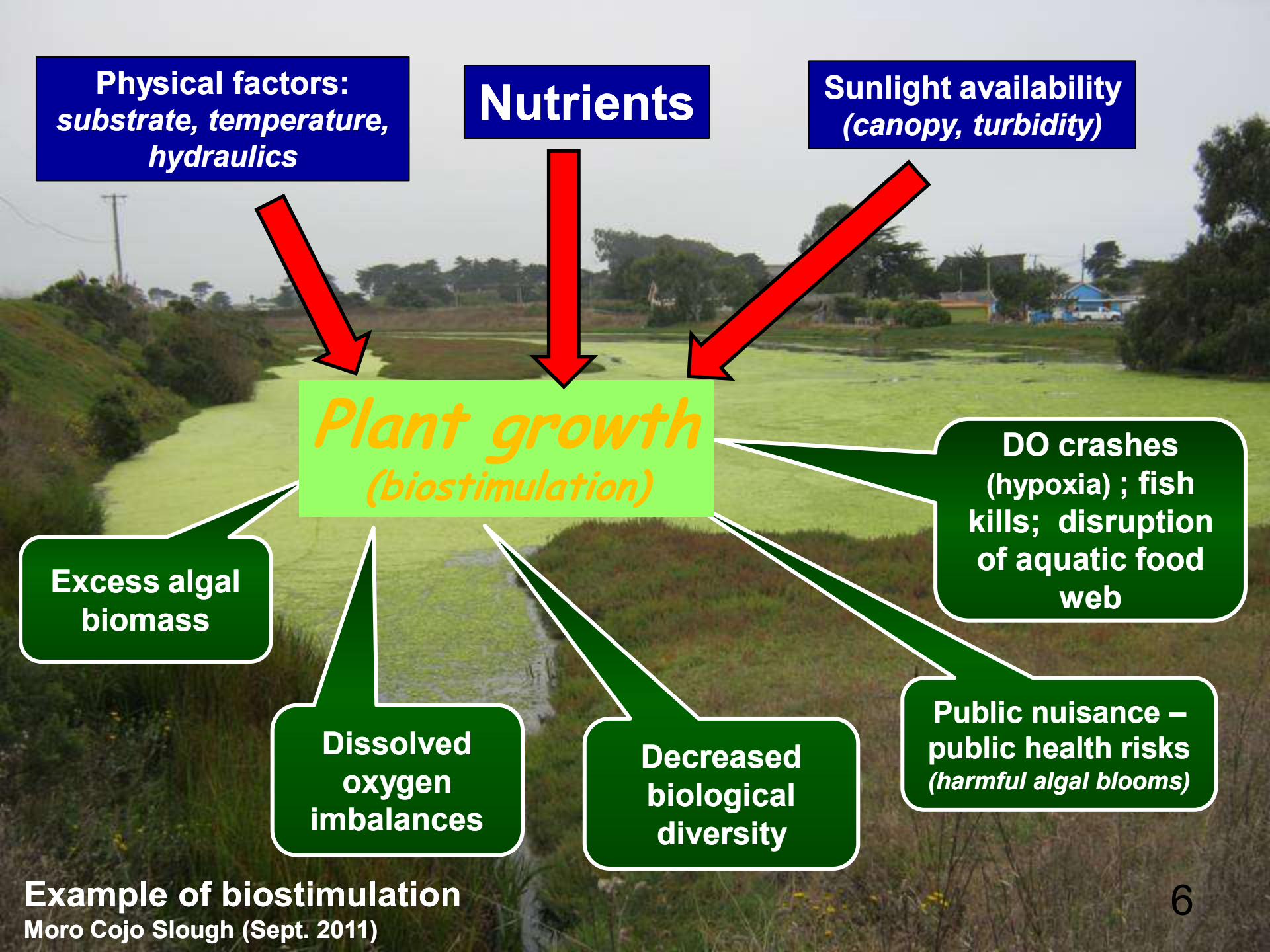


TMDL project area

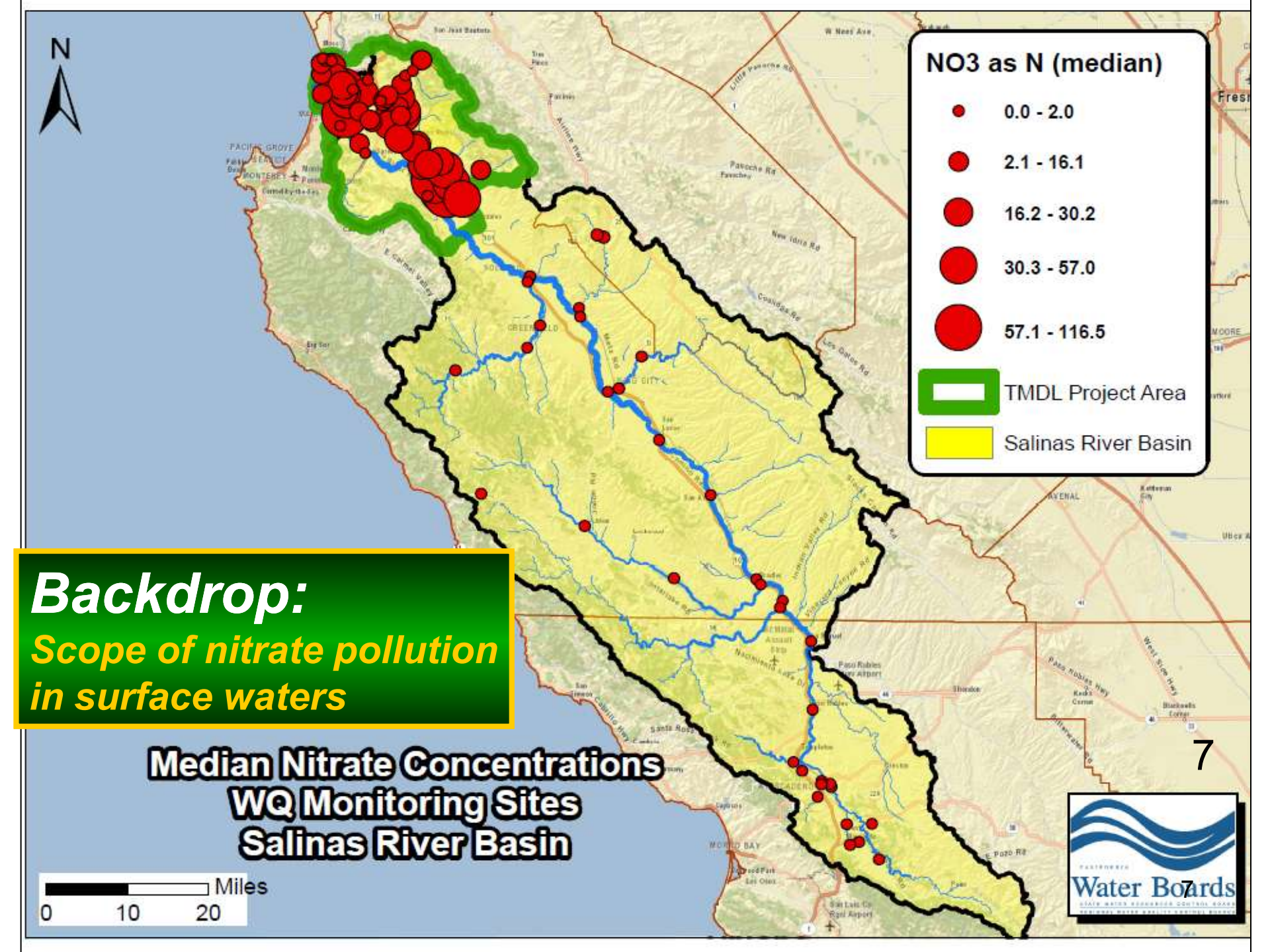
Backdrop: Nutrient Pollution *(nitrogen & phosphorus)*

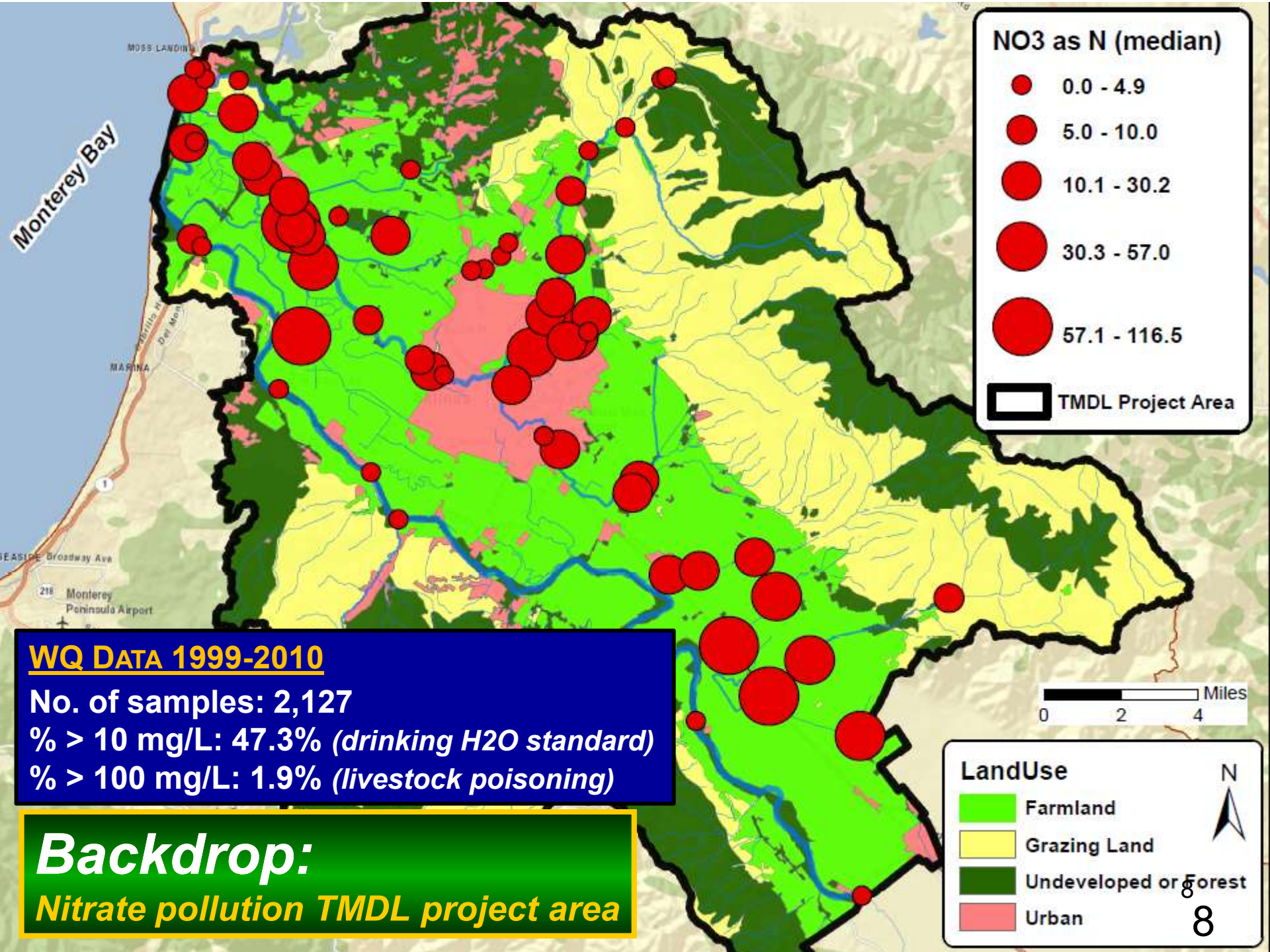
Excessive Nutrients may cause…

- **Toxic Effects *(degradation of drinking water sources)***
- **Degradation of Aquatic Habitat *(biostimulation)***
- **Public health risks and nuisance *(algal toxins)***
- **Degradation of irrigation supply *(for sensitive crops)***



Example of biostimulation
Moro Cojo Slough (Sept. 2011)


N
NO3 as N (median)
0.0 - 2.0
2.1 - 16.1
16.2 - 30.2
30.3 - 57.0
57.1 - 116.5
TMDL Project Area
Salinas River Basin
Backdrop:
Scope of nitrate pollution in surface waters
Median Nitrate Concentrations
WQ Monitoring Sites
Salinas River Basin
Miles
0
10
20
7
Water Boards


NO3 as N (median)
0.0 - 4.9
5.0 - 10.0
10.1 - 30.2
30.3 - 57.0
57.1 - 116.5
TMDL Project Area
Monterey Bay
MOSS LANDING
MARINA
SEASIDE
Broadway Ave
Monterey Peninsula Airport
Miles
0
2
4
LandUse
Farmland
Grazing Land
Undeveloped or Forest
Urban
N
WQ DATA 1999-2010
No. of samples: 2,127
% > 10 mg/L: 47.3% (drinking H2O standard)
% > 100 mg/L: 1.9% (livestock poisoning)
Backdrop:
Nitrate pollution TMDL project area

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Nutrient TMDL Development…

Spring 2010 through Jan. 2013

4 Public Workshops: June 2010, April 2011, Oct. 2011, Nov. 2012

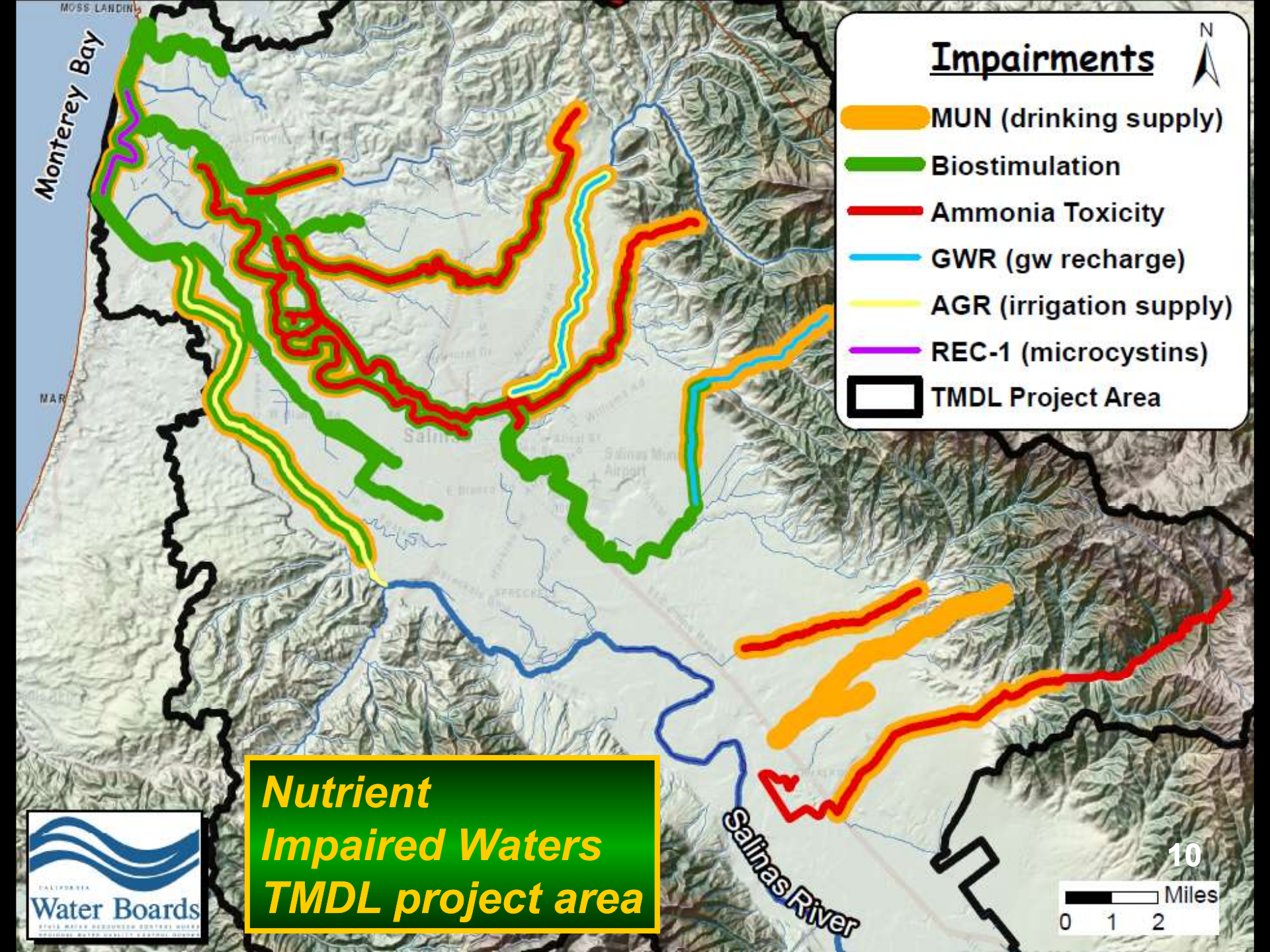
Data analysis, & input from stakeholders & interested parties

Independent Scientific Peer Review: Spring 2012

Review by SWRCB Office of Chief Counsel

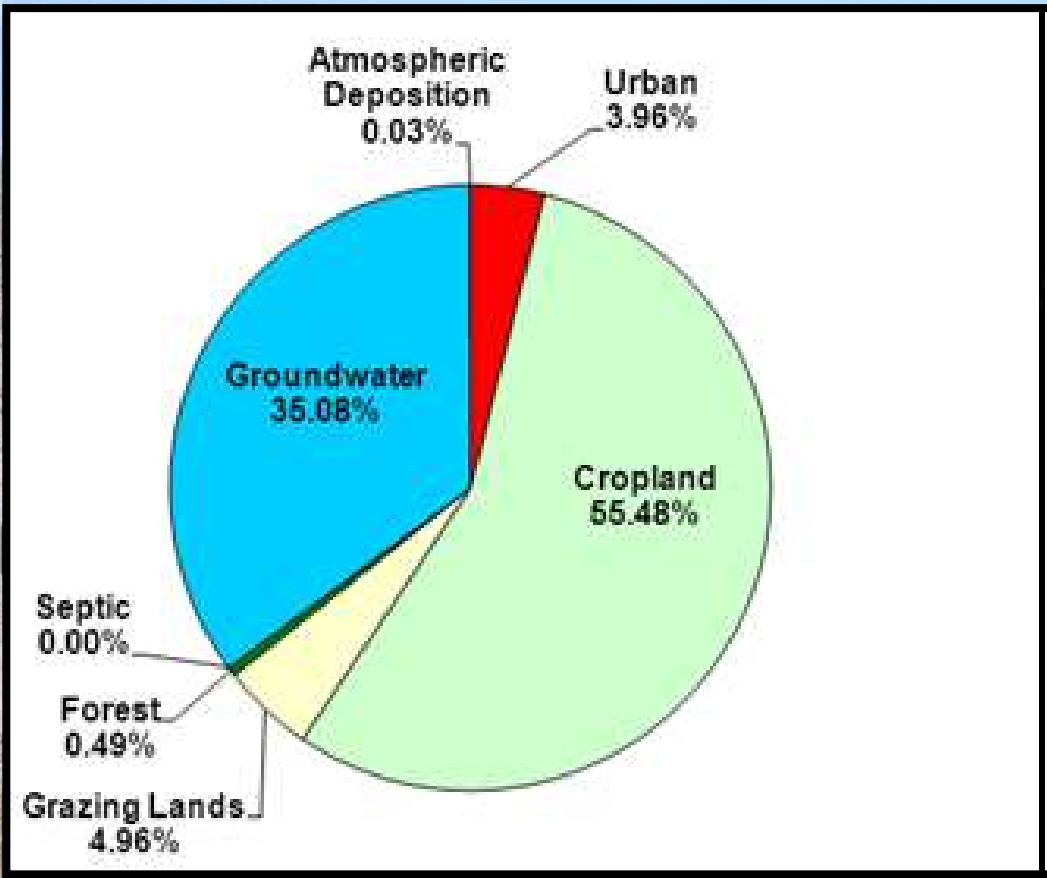
Review by USEPA

Public Review & Written Comments: Fall 2012

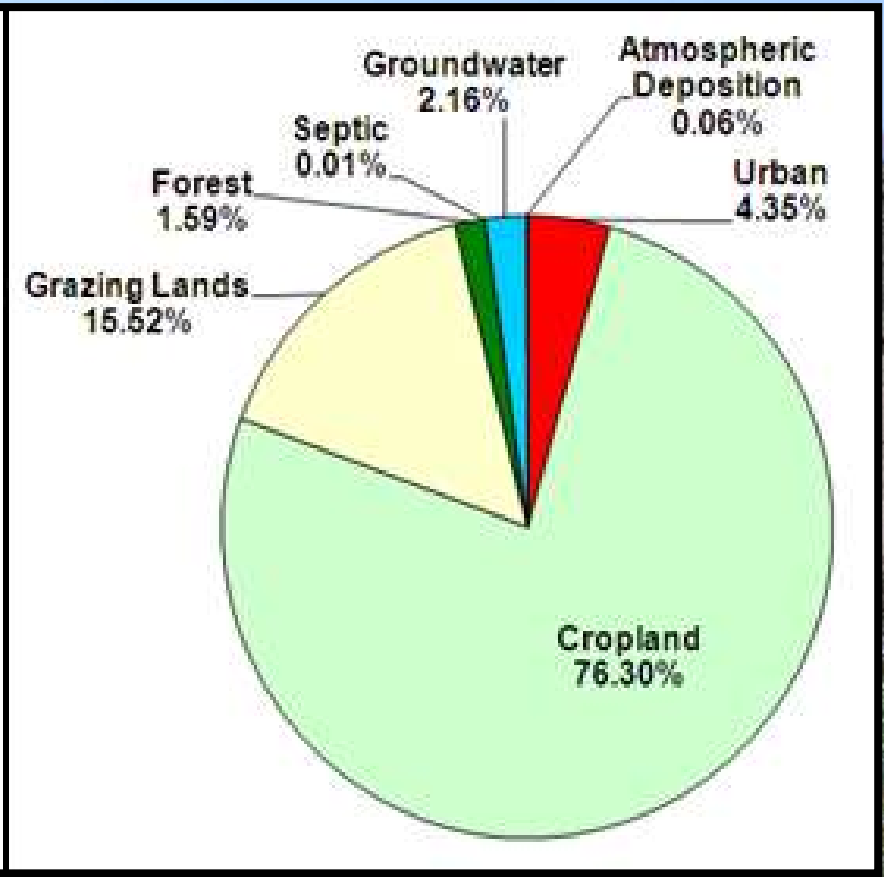

Monterey Bay
MOSS LANDING
Impairments
N
MUN (drinking supply)
Biostimulation
Ammonia Toxicity
GWR (gw recharge)
AGR (irrigation supply)
REC-1 (microcystins)
TMDL Project Area
Salinas River
Miles
0 1 2
Water Boards
Nutrient
Impaired Waters
TMDL project area

TMDL Source Analysis…

Nitrogen Sources



Phosphorus Sources



Reclamation Canal @ La Guardia St. . (July 2006)
Photo: Cooperative Monitoring Program

Nutrient Numeric Target Development…

Basin Plan Nutrient Water Quality Standard:

Biostimulatory Substances ***(Narrative Regulatory Standard)***

"Waters shall not contain bio-stimulatory substances in concentrations that promote aquatic growths to the extent that such growths… affect beneficial uses."

Staff's Numeric Target Development Approach…

- Approaches used in previous approved TMDLs;
- USEPA recommended methodologies;
- California NNE approach

TMDLs Summary…

Constituent *Impairment Addressed*	Characterization of Numeric Threshold	Stream Numeric Targets (TMDLs) (mg/L)
Nitrate *Drinking water, groundwater recharge*	Concentration-based Basin Plan Objective *(Regulatory Standard)*	**10**
Unionized ammonia *Toxicity*	Concentration-based Basin Plan Objective *(Regulatory Standard)*	**0.025**
Nitrate *Biostimulation (aquatic habitat)*	Concentration-based targets derived from USEPA & SWRCB-recognized methods *(non-regulatory TMDL Target)*	**1.4 – 8.0** *(sci. peer reviewed)*
Orthophosphate *Biostimulation (aquatic habitat)*	Concentration-based targets derived from USEPA & SWRCB-recognized methods *(non-regulatory TMDL Target)*	**0.07 – 0.3** *(sci. peer reviewed)*

Nutrient-Response Indicator Targets (desired conditions)

Constituent *Impairment*	Characterization of Numeric Threshold	Stream Numeric Targets
Dissolved Oxygen *Biostimulation* *(aquatic habitat)*	**Basin Plan Objective** *(Regulatory Standard)*	*Not to be depressed below* **5 mg/L** (WARM) **7 mg/L** (COLD)
Oxygen saturation *Biostimulation* *(aquatic habitat)*	**Basin Plan Objective** *(Regulatory Standard)*	*Not to be depressed below* **85%** median
Oxygen supersaturation *Biostimulation* *(aquatic habitat)*	**Sci. Literature Threshold** *(non-regulatory TMDL Target)*	*Not to exceed* **13 mg/L**
Chlorophyll *a* *Biostimulation* *(aquatic habitat)*	**Sci. Literature Threshold** *(non-regulatory TMDL Target)*	**≤ 15 µg/L**
Microcystins *(algal toxins)* *Biostimulation* *(Toxicity- REC1)*	**Basin Plan Narrative Obj.** (Calif. OEHHA health guideline) *(non-regulatory TMDL Target)*	**≤ 0.8 µg/L**

Priority Pollutant...

- Nitrogen control = primary focus*
- Phosphorus control = less important

** Research & data suggest N control is more important in limiting biostimulation in this watershed*

Reclamation Canal @ Boronda
July 2006

Proposed TMDL Implementation Plan…

- *TMDLs do not self-implement…*

TMDL Implementing parties & regulatory mechanisms…

Irrigated Ag…

- **Comply with Agricultural Order = TMDL Implementation**

MS4 Stormwater Entities…

- **NPDES permits = TMDL Implementation**
  - ✓ **City of Salinas & Co. of Monterey**

Proposed TMDL Non-regulatory Milestones…

12 year Interim Goal
Attain nitrate drinking water standard & toxicity objective in surface waters

TMDL Re-consideration:
Propose Water Board re-visits, re-considers, revises TMDL in 10 years, as appropriate based on new research and data

20 year Interim Goal
Attain wet-season biostimulatory targets in surface waters

30 year Final Goal
Attain more-stringent dry season biostimulatory targets in surface waters

Old Salinas River - biostimulation
Oct. 2011

Evaluating TMDL Implementation Progress…

Flexibility and "Tool Box" of Metrics Proposed….

- **Receiving water nutrient concentrations**
- **Nutrient mass loading *(i.e., pounds / tons)* reductions**
- **Implementation of management practices**
- **Improvements in biological indicators *(DO and chlorophyll)***
- **Encourage holistic approach (*riparian improvements, water management, nutrient management, vegetated treatment systems, etc.)***

Acknowledgements of Progress…

Reclamation Canal Trends (2005-2011)

Flows	
Nitrate Loading (mass)	– 25%
Nitrate Concentrations	+ 15%

Natividad Creek Trends (2005-2011)

Flows	
Nitrate Loading (mass)	– 50%
Nitrate Concentrations	– 40%

Tembladero Slough Trends (2005-2011)

Flows	
Nitrate Loading (mass)	+ 15%
Nitrate Concentrations	+ 20%

Salinas River @ Davis Road
Photo: CSUMB - CCoWS

Public Comments…

- Monterey County Farm Bureau
- Cent. Coast Water Quality Preservation, Inc.
- Monterey Coast Keeper/Otter Project
- Grower Shipper Associations of Central Calf.
- Darlene Din, ag consultant
- Dr. Los Huertos, professor CSU-MB
- Nature Conservancy

Salinas River @ Davis Rd
July 2009

Public Comments
(Staff responses in attachment 6 of Staff Report)

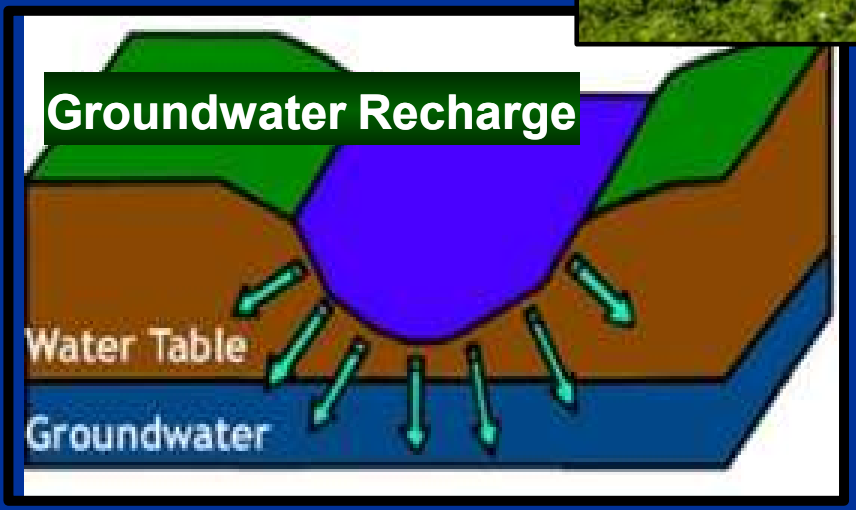
- **TMDL and BPA create new enforceable WQS**
- **TMDL WQ biostim targets: *too stringent – not stringent enough***
- **Will TMDL biostim targets will be incorporated in Ag Order?**
- **Water quality targets unachievable – milestones too aggressive**
- **Ag Order insufficient to implement TMDL**
- **Defer TMDL adoption**
- **USEPA supports adoption**

Supplemental Sheet…

Purpose of changes to proposed BPA language:

- **To provide increased clarity;**
- **To achieve consistency and eliminate redundancy with the existing implementing regulatory mechanisms.**

Wrap-up: We Recommend TMDL Adoption…



Questions & Discussion…

Tembladero Slough
July 2009