



Water Quality Monitoring & Agricultural Discharge Permitting on the Smith River Plain

**Presentation to
Del Norte County Board of Supervisors**

May 26, 2015

**Rebecca Fitzgerald
Senior Environmental Scientist
North Coast Regional Water Quality Control Board**



Presentation Outline

- **Introduction to the Regional Water Board**
- **Groundwater History**
- **Permit Development Efforts**
- **Monitoring Efforts**
- **Results**



North Coast Regional Water Quality Control Board



Our mission is to preserve, enhance, and restore the quality of California's water resources for the protection of the environment, public health, and all beneficial uses.

**Healthy Watersheds
Effective Regulation
Strong Partnerships**



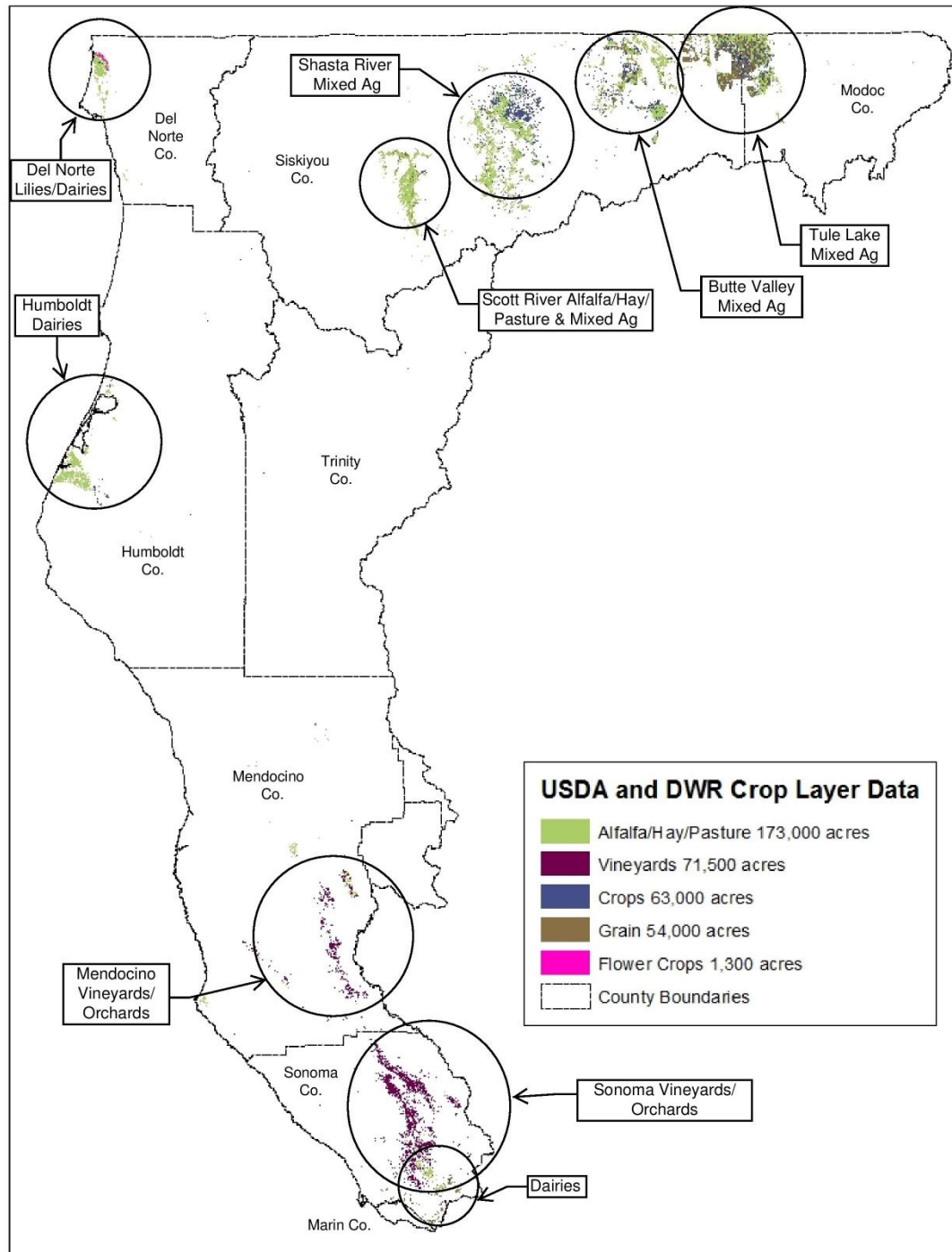
Smith River Plain Groundwater History

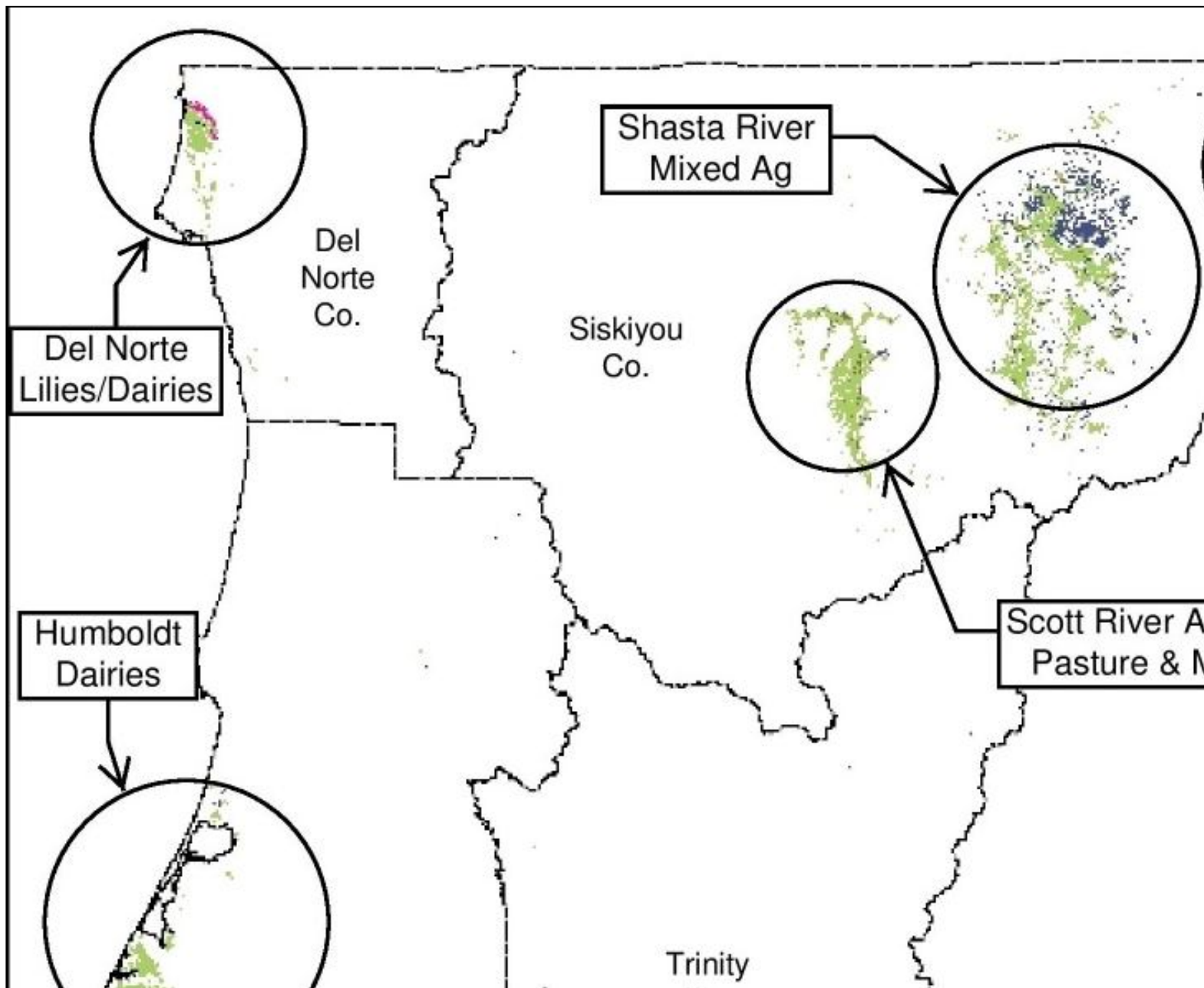
- 1982-1985** **Groundwater Well Contamination:**
- 1,2-Dicholorpropane (1,2-D)
 - aldicarb
 - nitrate
- 1983** - Use of 1,2-D and aldicarb suspended
- 1986-1989** - 1,2-D present in groundwater above threshold
- Aldicarb concentrations declining to fall below threshold
 - Nitrate present above threshold
- 2001-2002** - 1,2-D above threshold in 8 of 19 wells
- Nitrate above threshold in 1 well
- 2012-2014** - Nitrate above threshold in 2 of 28 samples from 7 wells



Agricultural Waste Discharge Permits

- Early 2000s** **Agricultural discharge permits developed in California's Central Valley and Central Coast**
- 2011** **North Coast Region effort began**







Monitoring Efforts

Purpose: To better understand water quality
To inform the content of the permit requirements

Sample Analytes :

Dissolved Oxygen (W)

pH (W)

Temperature (W)

Conductivity (W)

Total Dissolved Solids (W)

Phosphorus (W)

Nitrogen (W)

Ammonia (W)

Toxicity (W&S)

Mercury (S)

Copper (W&S)

Zinc (W&S)

Organophosphates (W&S)

Organochlorines (W&S)

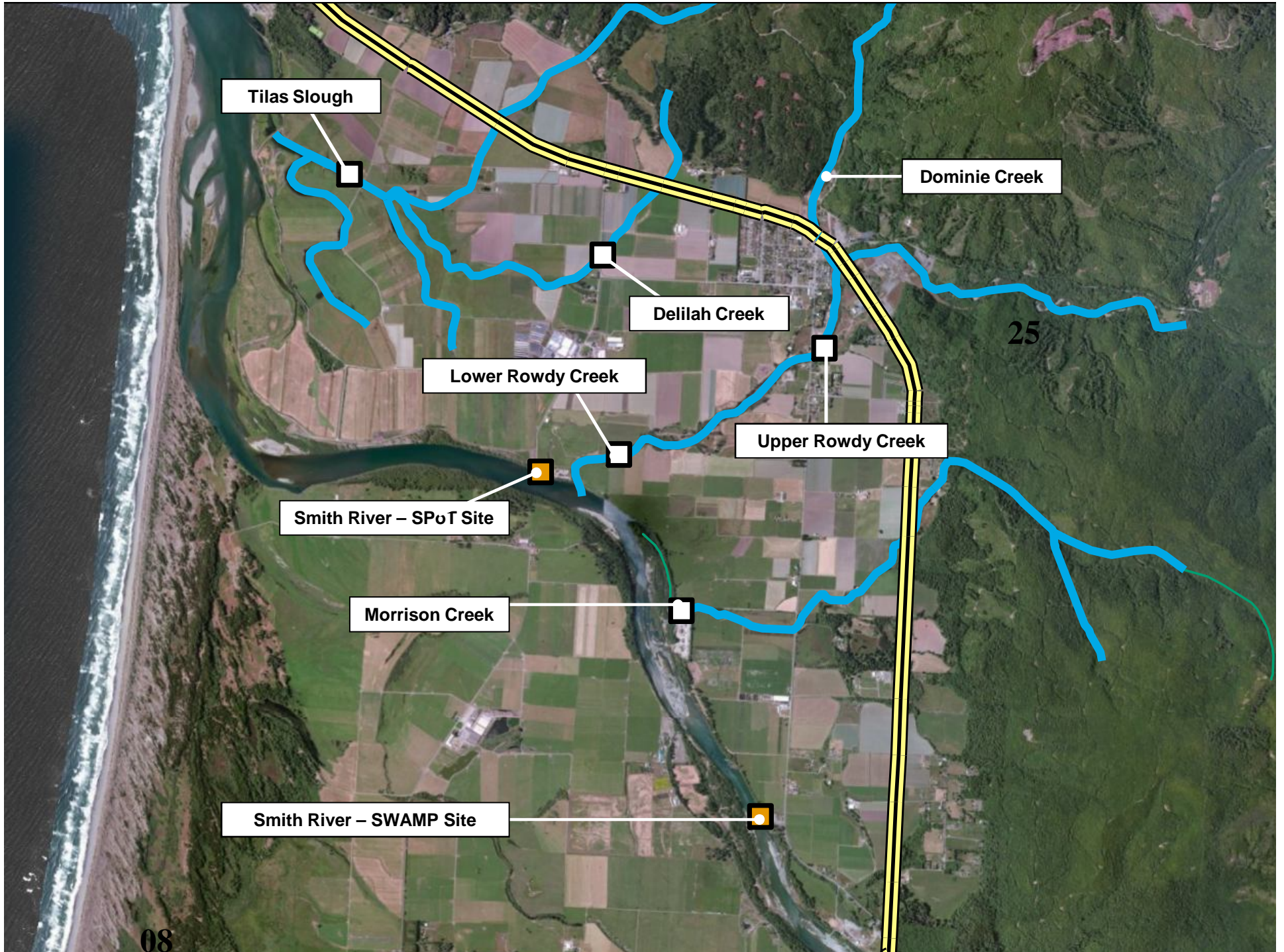
Carbamates (W)

Triazines (W)

Pyrethroids/Pyrethrins (W&S)

PCBs & PAHs (S)

(W) = Water (S) = Sediment



Tilas Slough

Dominie Creek

Delilah Creek

25

Lower Rowdy Creek

Upper Rowdy Creek

Smith River - SPoT Site

Morrison Creek

Smith River - SWAMP Site

08



Results

All the results presented in this presentation are from samples collected in 2013.

Dissolved Oxygen:

- Delilah, Morrison, and Rowdy Creeks all attained thresholds
- Tilas Slough had low levels that did not attain freshwater thresholds

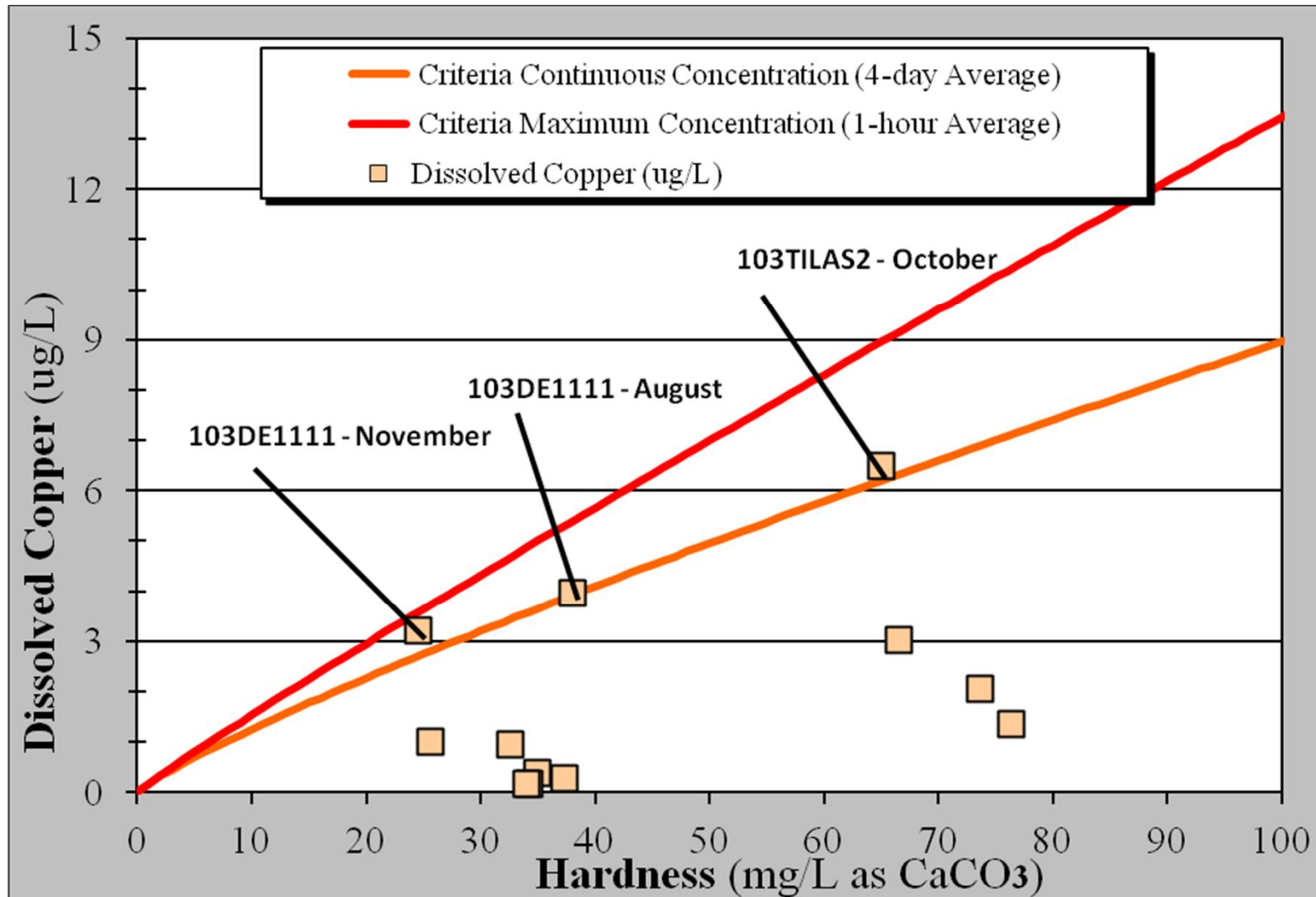
Ammonia:

- All sites attained thresholds

PCBs & PAHs:

- All sites attained thresholds

Results - Copper



Results – Detected Pesticides

Pesticide	Location	Highest Concentration	Threshold
Aldicarb (<i>Temik</i>)	Morrison Ck	0.010 ug/L	7 ug/L
Captan	Delilah Creek	1.601 ug/L	15 ug/L
	Lower Rowdy Ck	0.277ug/L	
★ Carbaryl (<i>Farnam Flea & Tick</i>)	Delilah Creek	0.087 ug/L	2.1 ug/L
Carbofuran (<i>Furadan</i>)	Delilah Creek	0.008 ug/L	40 ug/L
	Lower Rowdy Ck	0.021 ug/L	
	Tilas Slough	0.007 ug/L	
★ Diuron (<i>Direx</i>)	Delilah Creek	0.329 ug/L	100 ug/L
	Morrison Ck	0.029 ug/L	
	Lower Rowdy Ck	0.020 ug/L	
Fenpropathrin (<i>Danitol</i>)	Tilas Slough	0.139 ug/L	180 ug/L
	Delilah Creek	0.0003 ug/L	
Hexachlorobenzene	Tilas Slough	0.002 ug/L	0.00077 ug/L
Lindane	Delilah Creek	0.007 ug/L	0.95 ug/L
	Tilas Slough	0.007 ug/L	
★ Ethoprop (<i>Mocap</i>)	Delilah Creek	0.183 ug/L	No water quality threshold
	Tilas Slough	0.158 ug/L	
Simazine	Tilas Slough	0.002 ug/L	4 ug/L

★ = Registered use in Del Norte Co in 2013 per Department of Pesticide Regulation

Results - Toxicity

Toxicity to aquatic life is determined based on a statistically significant difference between the survivability or the reproduction rate of a species in the collected samples vs. the control.



Ceriodaphnia dubia, a water flea
(used for freshwater samples)



Hyaella azteca, an amphipod
crustacean
(used for sediment samples)



Results – Surface Water Toxicity

	# of Samples with Reduced Reproductive (R) or Survival (S) Toxicity	Timing of Toxicity & Weather
Delilah Creek	1 (R) of 3 samples	Oct '13 (wet)
Morrison Creek	1 (R) of 2 samples	Oct '13 (wet)
Lower Rowdy Creek	1 (S) of 2 samples	Aug '13 (dry)
Upper Rowdy Creek	1 (R) of 2 samples	Oct '13 (wet)
Tilas Slough	0 of 3 samples	N/A



Next Steps

- **Complete current sampling effort, including groundwater sampling – June 2015**

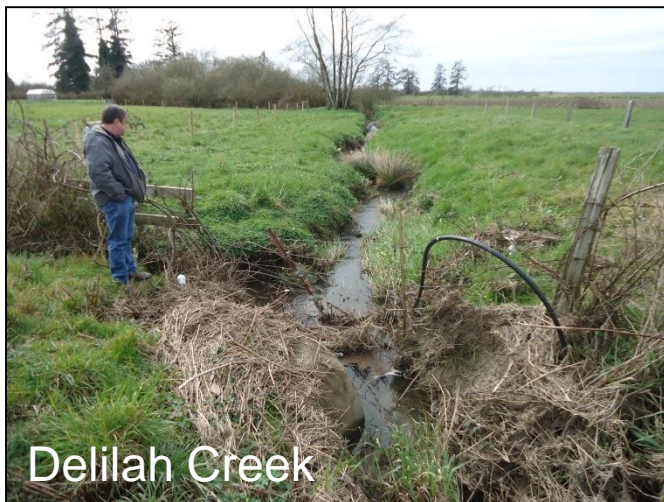
- **Analyze results from 2013 and 2015 data and write a monitoring report – Mid 2016**

- **Develop permit**
 - **Public Review Draft – 2016**
 - **Adoption Hearing – 2017**



Stakeholder Advisory Group

- Agricultural Commissioner
- California Trout
- Easter Lily Research Foundation
- Environmental Protection Information Center
- Farm Bureau
- Landowners/Growers
- Natural Resources Conservation Service
- Siskiyou Land Conservancy



Delilah Creek



Tilas Slough & Smith River



Thank You

Rebecca Fitzgerald
Senior Environmental Scientist
Adaptive Watershed Management Unit Supervisor
North Coast Regional Water Quality Control Board
707-576-2650
rebecca.fitzgerald@waterboards.ca.gov

http://www.waterboards.ca.gov/northcoast/water_issues/programs/agricultural_lands/