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I. What is CEQA and when does it apply?
II. Amending the Basin Plan to incorporate TMDLs
III. Water effect ratios for Chollas Creek
IV. Process of amending the Basin Plan
V. Dissolved Copper and Zinc in Chollas Creek
   - *Sources*
   - *Toxicity*
   - *Factors affecting toxicity*
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VI. Public feedback/comments

CEQA SCOPING MEETING

Proposed Amendment to the Water Quality Control Plan for the San Diego Basin to Incorporate Site-Specific Water Effect Ratios into Total Maximum Daily Loads for Copper and Zinc in Chollas Creek

September 24, 2015

Purpose

California Environmental Quality Act (CEQA)

Water Quality Control Plan for the San Diego Basin (Basin Plan)

Site-Specific Water Effect Ratios (WERs)

Total Maximum Daily Loads (TMDLs)

The **PURPOSE** of today's meeting is to hear your thoughts on any additional environmental impacts that should be considered for this "project," an amendment to the Basin Plan.

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CEQA

- **What is CEQA and what is its purpose?**

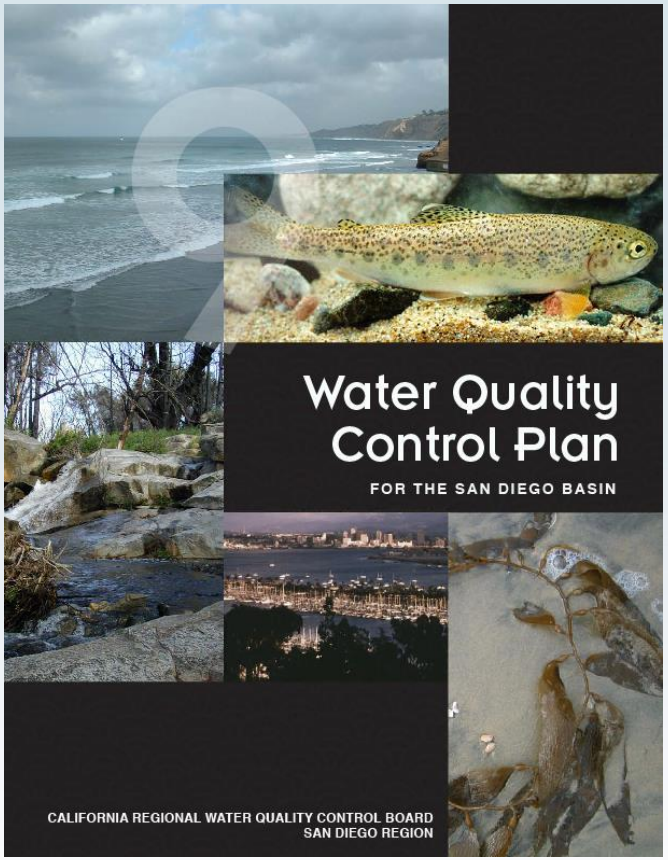
California Environmental Quality Act; legislation that requires an evaluation of a project's environmental impacts and ways to avoid/mitigate impacts

- **When does CEQA apply?**

Applies to projects that potentially have an impact on the environment and is either 1) being performed by state or local agencies or 2) requires approval by state or local agencies

Basin Plan

- Water Quality Control Plan for the San Diego Basin (Basin Plan) designates beneficial uses for surface and ground waters
- Changes to Basin Plan require Basin Plan amendments



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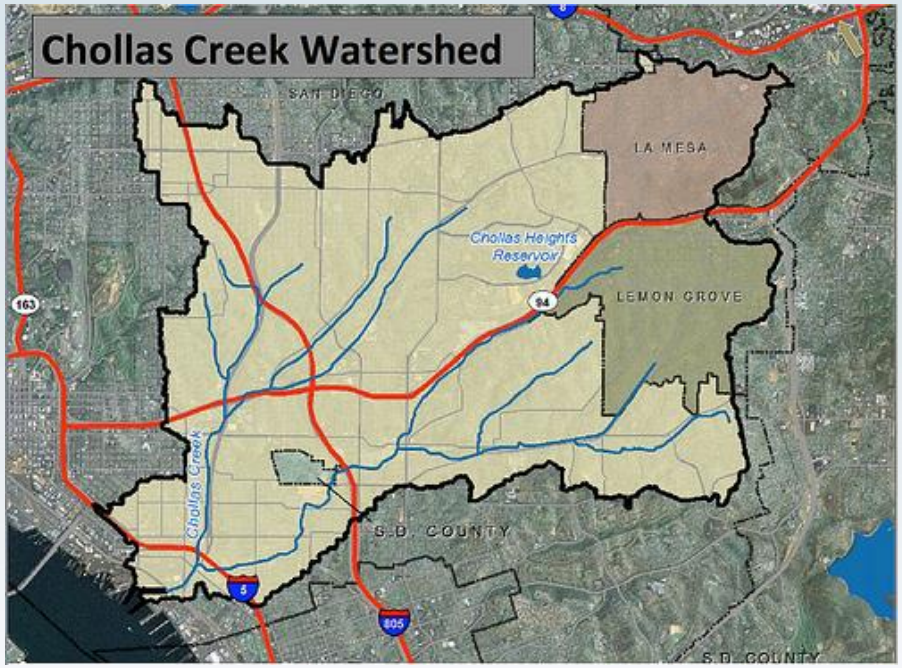
TMDLs

- Maximum amount of a pollutant
- Incorporated into Basin Plan
- TMDLs for dissolved copper and dissolved zinc



Environmental Checklist

4 Environmental Checklist

	ENVIRONMENTAL CHECKLIST	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant	No Impact
1.	**Earth. Will the proposal result in:**				
	a. Unstable earth conditions or in changes in geologic substructures?		X		
	b. Disruptions, displacements, compaction or overcoming of the soil?			X	
	c. Change in topography or ground surface relief features?		X		
	d. The destruction, covering or modification of any unique geologic or physical features?				X
	e. Any increase in wind or water erosion of soils, either on or off the site?			X	
	f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?			X	
	g. Exposure of people or property to geologic hazards, such as earthquakes, landslides, mudslides, ground failure, or similar hazards?		X		
2.	**Air. Will the proposal result in:**				
	a. Substantial air emissions or deterioration of ambient air quality?		X		
	b. The creation of objectionable odors?		X		
	c. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?				X

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WERs

- Water effect ratio (WER): ratio between toxicity in laboratory water and toxicity in site water
- Conditions about site water, such as total organic carbon, alkalinity, sulfate, and pH needed
- Not enough site-specific data to calculate WERs prior to adopting TMDLs
- In absence of site-specific WERs, default value of 1 used; this affects numeric target calculations

Numeric Targets

Metal	Numeric Target for Acute (Criteria Maximum Concentration [CMC]) Conditions	Numeric Target for Chronic (Criteria Continuous Concentration [CCC]) Conditions
Copper (dissolved)	WER * (0.96) * {e^ [0.9422 * ln (hardness) - 1.700]	WER * (0.96) * {e^[0.8545 * ln (hardness) - 1.702]
Lead (dissolved)	WER * {1.46203 – [0.145712 * ln (hardness)]} * {e^ [1.273 * ln (hardness) - 1.460]}	WER * {1.46203 – [0.145712 * ln (hardness)]} * {e^[1.273 * ln (hardness) - 4.705]}
Zinc (dissolved)	WER * (0.978) * {e^ [0.8473 * ln (hardness) + 0.884]}	WER * (0.986) * {e^[0.8473 * ln (hardness) + 0.884]}

WER = 1 for all

WERs

- WER of 1 is appropriate in absence of site-specific data
- Study conducted subsequent to TMDL adoption
- Guidance - California Toxics Rule (CTR) for dissolved metals

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Site-specific WER is 7.00 for copper and 1.71 for zinc

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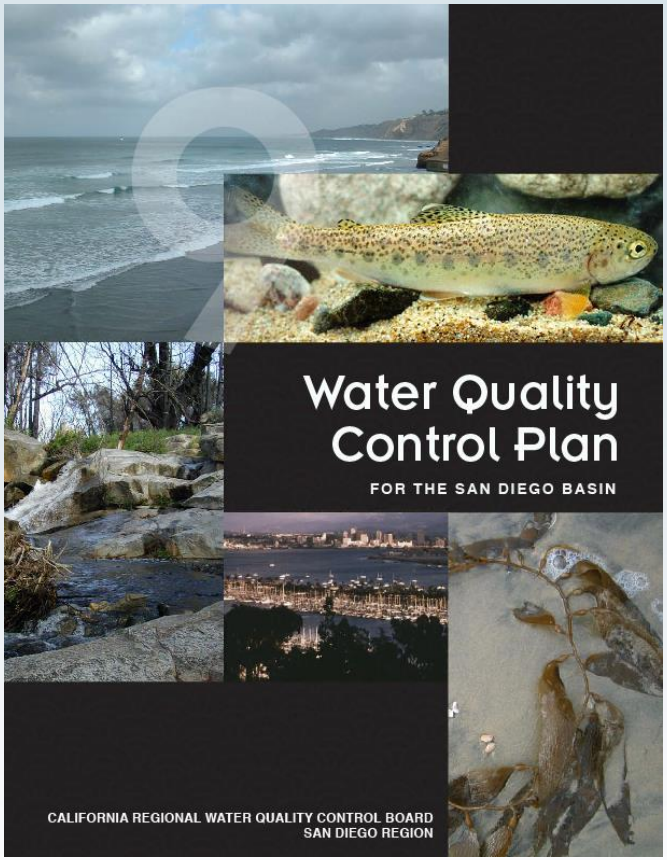
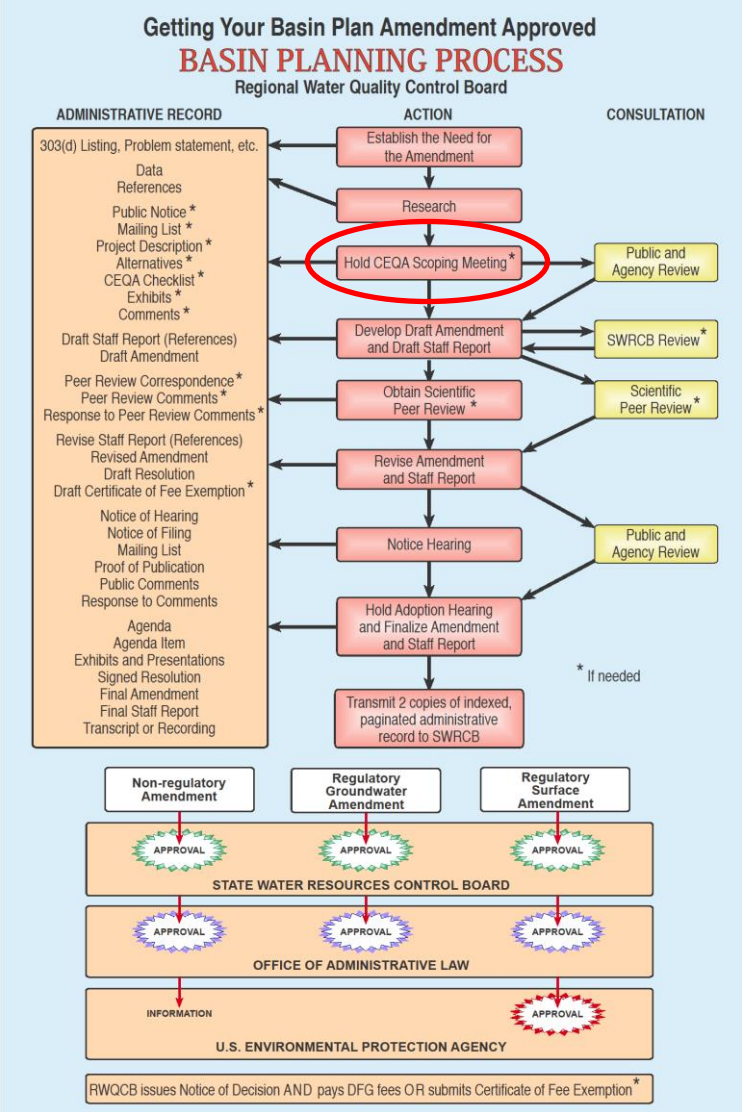
Basin Plan Amendment

- **CEQA**
  - ***Are there any <u>additional</u> foreseeable impacts?***
- **Peer review**
- **San Diego Water Board adoption**



Basin Plan Amendment



Tentative Schedule

Next Steps:

- **Basin Plan Amendment (1-2 months)**
- **CEQA Amendment (1-2 months)**

- **Initiate Peer Review on Basin Plan Amendment, WER Study, and CEQA (4-5 months)**

Web site: www.waterboards.ca.gov/sandiego

Written comments: sandiego@waterboards.ca.gov

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Copper and Zinc in Chollas Creek

Sources
Toxicity
Factors Affecting Toxicity
WER Study Summary

Sources

- Urban runoff – considered the most significant source of metals
  - Municipal stormwater discharges (MS4s) – especially from brake pads and tires, various land use activities, pesticides/fertilizers, etc
  - Industrial facilities, construction activities, etc.
- Other sources:
  - Groundwater extraction discharges/ dewatering
  - Corrosion of underground pipes
  - Ship/boat propellers
  - Atmospheric deposition

Metals Toxicity and Chollas Creek

- Dissolved metals are bioavailable (can cause toxicity through acute or chronic exposure)
- TMDL focused on dissolved metals
  - Chollas Creek is typically dry, except for wet weather flows associated with larger storms
  - Sediment is not considered a source of metals and sediment toxicity results were low
  - Residence time in sediment is low due to storms

Dissolved Metals Toxicity

- USEPA established water quality criteria for toxic pollutants
- California Toxics Rule (CTR) used to develop applicable WQOs for dissolved metals

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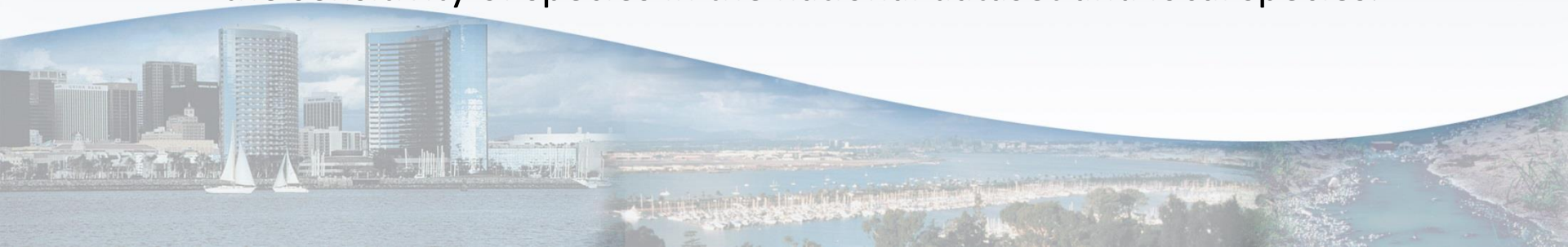
Key Factors Affecting Toxicity

- Hardness-dependent
  - Inverse relationship between hardness and toxicity
- Metals bind to sediment and organic matter, reducing bioavailability
- Inverse relationship with Dissolved Organic Carbon (DOC), pH, suspended solids, several ions

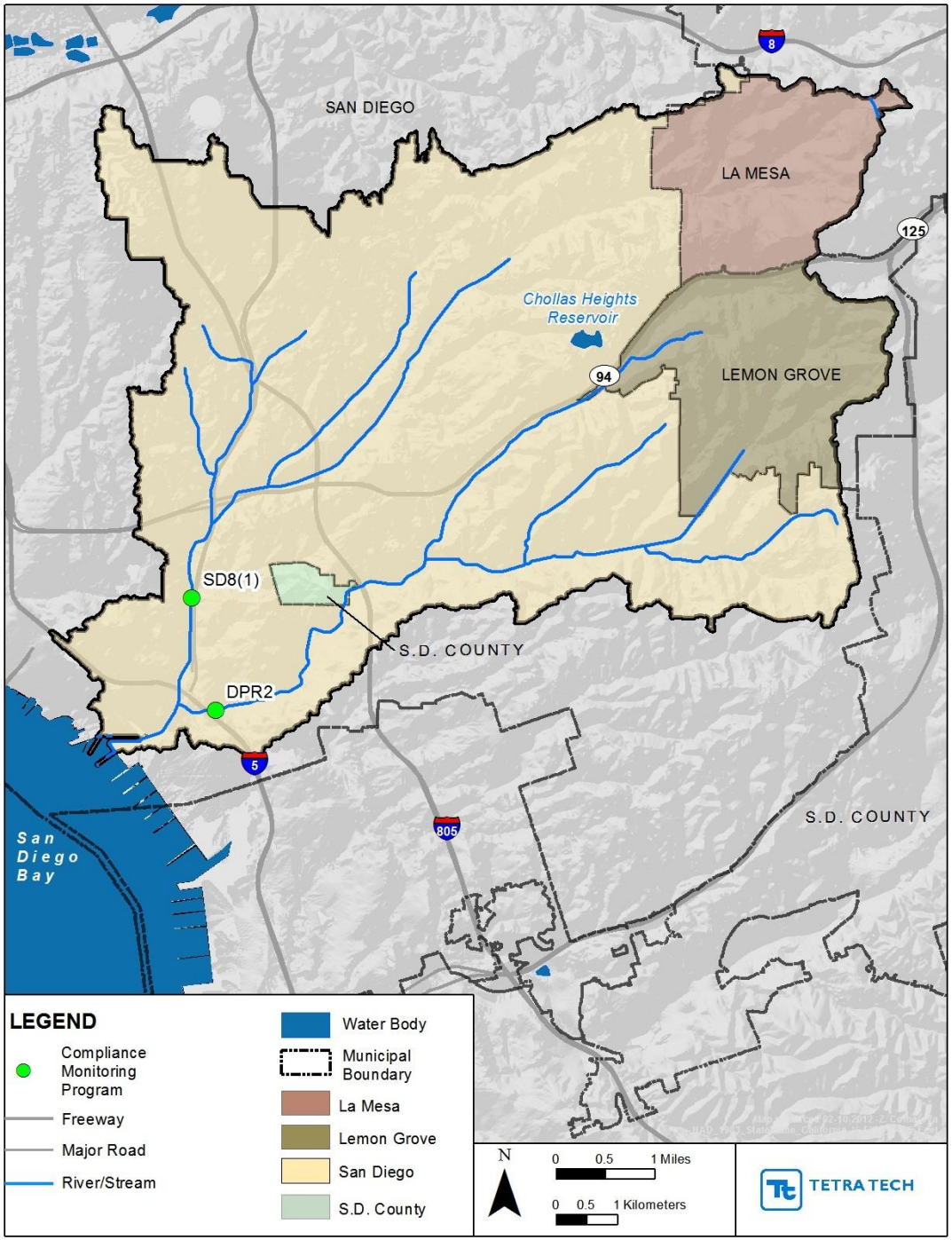
WER Study Purpose

- Site-specific conditions can lead to over- or under-protection of aquatic life, if national (default) criteria are used
- Site-specific criteria do not change the intended level of protection
- Procedures used to develop site-specific criteria (USEPA 1994b):
  - WER Procedure: A site-specific WER takes into account observed differences between toxicity in standard laboratory dilution water and site water.
  - Recalculation Procedure: Accounts for relevant differences between the sensitivity of species in the national dataset and local species.



WER Background

- A site-specific WER maintains adequate protection of aquatic life, as intended by the CTR
- Default WER = 1.0
  - If WER > 1.0: Site water reduces the toxic effects of the pollutant being tested
  - If WER < 1.0: Toxic effects in site water would be greater than those in laboratory water
- A Site-specific WER replaces the default WER in the CTR equations
- Chollas Creek water samples were collected and used for this study
- Monitoring Sites:
  - SD8(1): North Fork Chollas
  - DPR2: South Fork Chollas


SAN DIEGO
LA MESA
LEMON GROVE
Chollas Heights Reservoir
SD8(1)
DPR2
S.D. COUNTY
S.D. COUNTY
San Diego Bay
8
125
94
5
805
LEGEND
Compliance Monitoring Program
Freeway
Major Road
River/Stream
Water Body
Municipal Boundary
La Mesa
Lemon Grove
San Diego
S.D. County
N
0 0.5 1 Miles
0 0.5 1 Kilometers
TETRA TECH

WER Lab Tests

- Conducted using *C. dubia* (primary species – more sensitive) and *P. promelas* (secondary species) consistent with EPA guidance
- Compared test results to historical laboratory references for survival for these species
- Acute 48-hour survival test
  - Acute WERs are protective of chronic conditions
- Acute toxicity is measured as an LC50, which represents an estimate of the concentration of metal at which 50 percent of the test organisms are adversely affected (i.e., mortality, immobility)

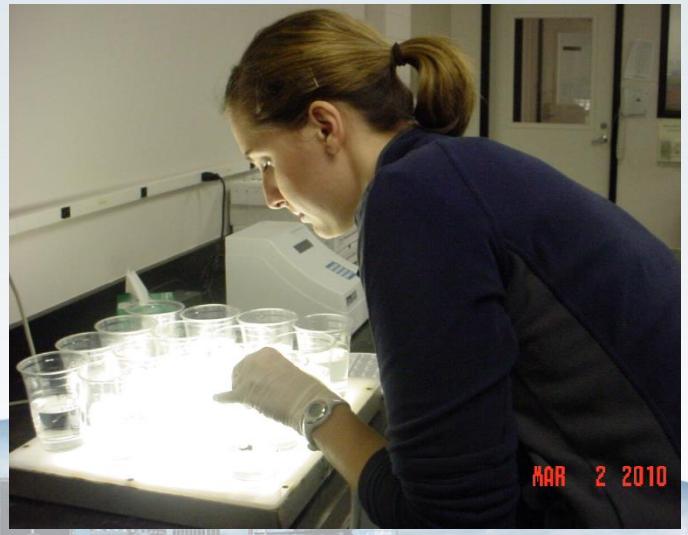
Sample Check-in

Environmental Test Chambers

Test Dilution Series

Stormwater test setup for larval fish

Water flea
Ceriodaphnia dubia



Fathead minnow
Pimephales promelas

Counting *Ceriodaphnia* (top)
and larval fish (bottom)

Sampling Summary

- Sampling events:
  - Late Winter/Spring 2010 – 3 events
  - Fall 2010 – 2 events
  - April 2014 – confirmation testing to ensure protection using a secondary species and evaluate mixed metals conditions using primary species (additive and synergistic effects)

Results Summary

- Proposed site-specific WERs – selected most conservative results
- USEPA guidance specifies using geometric mean concentration

WER event	Copper WERs		Zinc WERs	
	SD8(1)	DPR2	SD8(1)	DPR2
No. 1 (02/27/2010)	7.882	4.951	1.780	1.658
No. 2 (04/01/2010)	16.98	10.30	3.182	2.205
No. 3 (10/30/2010)	8.610	6.596	2.163	1.183
No. 4 (12/20/2010)	6.512	7.130	1.995	1.980
Geometric mean (± standard deviation)	9.307 (±4.74 SD)	**6.998** (±2.24 SD)	2.223 (±0.62 SD)	**1.711** (±0.44 SD)

Key Questions

- Are the updated WERs protective of aquatic life in Chollas Creek?
  - Yes, the WERs were updated to reflect site specific conditions while maintaining protection of aquatic life
- Will the updated WERs result in increased metals concentrations?
  - No, metals contributions are not expected to increase. Reductions are still required to meet the updated site-specific objectives

Key Questions (cont'd)

- Will the updated WERs result in downstream impacts in San Diego Bay
  - No, rapid mixing will result in dilution and settling of particulate metals resulting in non-toxic conditions. Also, increased concentrations of suspended solids, organic matter, and other factors will result in reduced bio-availability.

Comments