

Scientific Steering Committee
Meeting
Program to Develop Sediment Quality
Objectives

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Schedule and Scope

Phase I Proposed Schedule:

- August 5, 2005 targeted to circulate draft policy document.
- February 2008 submit policy to Office of Administrative Law

Phase II

- \$ 2.6M to develop tools to support the SQOs within estuaries
- 100 stations within the Delta
- Indirect Effects Case Study
- Completed by 2010

Short Term Delta Issues

- Propose two lines of evidence to support the narrative

Overview

- Program Goals
 - Developing sediment quality objectives and tools and thresholds that can be applied to determine if beneficial uses are protected
- Policy Goals
 - Must utilize multiple lines of evidence to assess condition or risk associated with each beneficial use. Single line of evidence not supportable
 - Utilize proven tools. Limit effort to modification/refinement of existing tools and methodologies.
 - Must limit BPJ in policy application. End user may not be benthic ecologist/toxicologist or familiar with ecological or HH risk assessment
 - Must define protected condition as it relates to receptors

Planning Process

- Policy Planning Document (Functional Equivalent Document)
 - Presents the proposed policy
 - Describes the basis for the policy and alternative approaches
 - Describes the the benefits and impacts associated with the implementation of the policy (CWC, CEQA, CWA)
 - Supported by Technical Reports
 - Circulated to public and agencies for comments and response
- Board
 - Workshops
 - Hearings
 - Meeting (Adopted/Not Adopted)

Narrative SQOs

- 1. Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities. To implement this narrative objective, multiple lines of evidence must be applied as described in Section XXX of the policy.*

Pollutants in sediments shall not bioaccumulate in shellfish or fish tissue at a level to that poses an unacceptable risk to human health or wildlife. To implement this narrative objective, multiple lines of evidence must be applied as described in Section XXX of the policy. The term unacceptable risk would be defined specifically for this policy

Outline

- I. Document*
- II. Applicable Waters*
- III. Applicability to Cleanup Programs*
- IV. Applicability to Dredged Materials*
- V. Receptors*
- VI. Beneficial Uses and SQOs*
- VII. Protected Condition*
- VIII. Lines of Evidence*
- IX. Type of Objective*
- X. Direct Effects Threshold*
- XI. Protecting Benthic Communities*
- XII. Direct Effects Tools*
- XIII. Direct Effects Excursion*
- XIV. Protection from Indirect Effects to HH*
- XV. Protection from Indirect Effects to WL*
- XVI. Indirect Effects Tools*
- XVII. Indirect Effects Approach*
- XVIII. Monitoring Programs*
- XIX. Phased Approach to Implementation Policy*

I. Document

Where should the SQOs and implementation policy reside?

- Alternative 1: Insert the proposed SQOs and implementation policy into the existing Water Quality Control Policy for the Enclosed Bays and Estuaries of California.
- Alternative 2: Prepare a stand alone water quality control plan for sediment quality.
- Alternative 3: Recreate the California Enclosed Bays and Estuaries Plan pursuant to Water Code section 13391 and insert the SQOs and associated implementation policy in that document..

II. Applicable Waters

To what waters should the SQOs apply?

- Alternative 1: Under Chapter 5.6, Division 7 of the Water Code, the State Water Board is required to develop SQOs for bays and estuaries.
- Alternative 2: Bays only. The Technical Team has developed relatively robust tools for specific bay habitats. These same tools could not be developed within a reasonable time for estuaries due to a lack of data. Developing SQOs for bays only does not comply with Chapter 5.6.
- Alternative 3: Develop SQOs and implementation policy for bays first followed by estuaries in a phased approach. This alternative would provide the Water Board with the time needed to collect data and develop appropriate tools and thresholds for estuarine habitats.

III. Applicability to Sediment Cleanup Programs

Should the Waterboard address applicability to sediment cleanup actions?

- Alternative 1: Do not address the application of SQOs to sediment cleanup actions.
- Alternative 2: Prepare language describing how and when the SQOs could be applied to cleanup actions. This policy could be applied to assist in characterizing risk at cleanup action sites when the receptors of interest, the exposure type and scale of effort are identical or similar to those protected by this policy. The exposure receptor scenarios not protected by this policy would need to be evaluated using ecological and human health risk assessment guidance such as that prepared by DTSC, OEHHA, and U.S. EPA.

IV. Applicability to Dredged Materials

How should the policy apply to dredged materials?

- Alternative 1: SQOs should be applicable to dredged material. Would not eliminate the need to perform the suitability tests (Inland Testing Manuals/Ocean Testing Manual in accordance with the CWA or MPRSA.
- Alternative 2: SQOs should not be applicable to dredged materials. Intended to evaluate beneficial uses protection and ambient sediments. While some tools are similar, the application and implementation of the tools differs significantly.
- Alternative 3: SQOs would only apply under specific conditions specified in section 13396.

V. Choice of Receptors

What receptors should be targeted for protection?

- Baseline: Selection of receptors is site or waterbody specific. Final decision approved by the Regional Water Board.
- Alternative 1: All potential receptors
- Alternative 2: Variety of important and ecologically relevant receptors.
- Alternative 3: Important, relevant and understood receptors (benthic Invertebrates, human health, and select wildlife) exposed either directly or indirectly to pollutants in sediments.
 - Benthic communities exposed directly to pollutants in sediment.
 - Human health exposed indirectly through fish and shellfish tissue.
 - Wildlife exposed indirectly through fish and shellfish tissue.

VI. Beneficial Uses and SQOs

To which beneficial uses should the SQOs be applied?

- Baseline: None
- Alternative 1: All beneficial Uses: Municipal, Industrial, Rec1&2, spawn/repro/development
- Alternative 2: Beneficial Uses linked to specific receptors (Examples: Marine and Estuarine Habitat, Commercial and Sport Fishing, Rare and Endangered Species)

VII. Protected Condition

How should the protected condition be defined?

- Baseline: The protected condition is established on a waterbody or site specific basis depending upon the programmatic goals of the action, (site cleanup versus waterbody listing)
- Alternative 1: Do not define the protected condition. This alternative would allow the Regional Water Board staff to continue establishing the protected condition on a site specific or waterbody specific basis.
- Alternative 2: Describe in general terms the protected condition.
- Alternative 3: Define the protected condition specifically for each receptor.

VIII. Lines of Evidence

What lines of evidence are needed to assess sediment quality?

- **Baseline:** Sediment quality assessment programs throughout the nation rely on multiple lines of evidence.
- **Alternative 1:** Do not specify lines of evidence.
- **Alternative 2:** Base policy on application of a single line of evidence. This alternative would base the policy on a single line of evidence, such as sediment toxicity, chemistry, or benthic community.
- **Alternative 3:** Base policy on application of multiple lines of evidence. Supported by U.S. EPA and forms the basis for sediment assessment programs throughout the Nation.

IX. Type of Objective

What type of objectives should be utilized in the proposed policy?

- Baseline: Some basin plans include narrative requirements.
- Alternative 1: Do not adopt sediment quality objectives.
Conflicts with Chapter 5.6 of Porter Cologne and Court Mandate.
- Alternative 2: Numeric objectives could be developed and proposed for each line of evidence. However, each numeric objective would need to be integrated into a weight of evidence approach. The numeric objective would be meaningless without the other lines of evidence.
- Alternative 3: Narrative objectives could be proposed that would be implemented using specific multiple lines of evidence and corresponding thresholds.

X. Direct Effects Threshold Development

Should categorical or pass/fail thresholds be utilized in the implementation of each LOE?

- Baseline: Apply existing sediment quality guidelines (available only for pollutant concentrations in sediment)
- Alternative 1: Thresholds should only be developed for pass/fail determination.
- Alternative 2: Categorical thresholds should be developed based only on magnitude.
- Alternative 3: Categorical thresholds should be developed based only on confidence.
- Alternative 4: Categorical thresholds should be developed that integrate magnitude and confidence.

XI. Protecting Benthic Communities from Direct Effects

How should the protected condition be defined for benthic communities?

- **Baseline:** Regional Water Board staff typically develop criteria for identifying a reference community based upon existing communities or conditions.
- **Alternative 1:** Condition expected under ideal conditions. This represents the hypothetical benthic community that would exist where optimal conditions. As this condition is hypothetical, its specific characteristics cannot be stipulated in a manner that would assure recognition.
- **Alternative 2:** Condition that represents the highest level attainable within a specific region or water body. The benthic communities that are present under this reference condition can be used as a baseline to define protection.

XIII. Direct Effects Tools

Sediment Toxicity Tests

- A. Should sediment toxicity be one of the direct effects tools?
- Alternative 1: Do not consider sediment toxicity tests
 - Alternative 2: Propose sediment toxicity tests for inclusion in the implementation of direct effects narrative SQOs.
- B. Should the Water Board specify the sediment toxicity tests for use in implementing the narrative SQO?
- Baseline: Selected from methods used in past studies.
 - Alternate 1: Do not Specify Toxicity Methods
 - Alternate 2: Acute Toxicity as Indicator of benthic Condition
 - Alternate 3: Chronic Toxicity as an Indicator of Benthic Condition
 - Alternate 4: Specify Combination of Acute and Chronic Methods
- C. How should the sediment toxicity test results be evaluated?
- Baseline Best professional judgment
 - Alternate 1: Establish narrative guidance
 - Alternate 2: Establish numeric thresholds

XII. Direct Effects Tools

Sediment Chemistry

A. Should pollutant concentrations in sediment be used as one of the suite of tools to implement the direct effects SQO for the protection of benthic communities?

- Alternative 1: Do not consider pollutant loading for measuring direct effects.
- Alternative 2: Propose pollutant concentrations as a direct effects tool.

B. Should the Waterboard specify the methods or values used to assess the pollutant concentrations in sediment:

- Baseline: Sediment chemistry is typically evaluated by comparison to existing sediment quality guidelines such as ERM/ERLs.
- Alternate 1: Establish narrative guidance
- Alternate 2: Use existing sediment quality guidelines
- Alternate 2: Develop sediment chemistry thresholds based on California conditions and needs

XII. Direct Effects Tools

Benthic Community

A. Should benthic communities measures be used to implement the direct effects SQOs?

- Baseline: Currently used to assess sediment quality in California.
- Alternative 1: Do not consider benthic communities.
- Alternative 2: Propose benthic communities.....

B. Should the Waterboard specify the method or index used to assess community data?

- Baseline: RBI, IBI, BRI other tools used for different programs.
- Alternate 1: Do not specify the methods
- Alternate 2: Select a single method for all applicable waterbodies
- Alternate 3: Select multiple methods for applicable waterbodies

C. How should the community data be evaluated?

- Alternate 1: Establish narrative guidance
- Alternate 2: Establish numeric thresholds

XIII. Direct Effects Excursion

How should an excursion be determined?

- Alternative 1: Single Station using the MLOE integration approach.
- Alternative 2: Magnitude, and Extent

XIV. Protection from Indirect Effects to human health

- A. What cancer risk should the Water Board propose for implementation of indirect effects SQOs?
- Baseline: variable 1 in 100,000, to 1,000,000
 - Alternative 1: Cancer Risk 1 in 10,000
 - Alternative 2: Cancer Risk 1 in 100,000
 - Alternative 3: Cancer Risk 1 in 1,000,000
 - Alternative 4: Cancer Risk Factor 1 in 100,000 with guidance for the selection of site specific risk factors (See Alternative B.4 below)
 - Alternative 5: Do not specify a Cancer Risk.

XIV. Protection from Indirect Effects to human health

- B. What consumption rate should the Water Board propose for implementation of indirect effects SQOs?
- Baseline: The General population and Sport Fisher consumption rates are used in Water Quality Control Plans, Basin Plans and TMDLs. These consumption rates range from 6.5 grams per day (CTR) to 32 grams per day (SF Bay)
 - Alternative 1: General population (Examples 6.5, 17.5 grams per day)
 - Alternative 2: Sport fishers (Examples; 6.5, 16, 22, 32 grams per day)
 - Alternative 3: Sensitive Populations (Example; 160 grams per day)
 - Alternative 4: Sport fishers with guidance for site specific risk assessment for sensitive populations (could include multimedia human health risk assessments if there is potential for exposure to multiple sources).
 - Alternative 5: Do not specify a consumption rate.

XV. Protection from Indirect Effects to wildlife

A. What approach should be used to assess indirect effects?

- Baseline: The Regional Boards use risk-based approach applying established methodologies, literature exposure parameters, literature TRVs.
- Alternative 1: Use established methodologies, exposure parameters, TRVs, and e bioaccumulation data from literature.
- Alternative 2: Require additional data collection on local exposure
- Alternative 3: Require additional data collection on local effects

B. Should the proposed plan specify the TRVs that must be used in the indirect effects determination?

- Baseline: Develop general guidance for the development of assessment endpoints and the selection of thresholds values.
- Alternative 1: Do not include guidance for the selection of appropriate assessment endpoints and thresholds
- Alternative 2: Propose specific TRVs for use in conducting the indirect effect analysis.

XVI. Indirect Effects Tools

Tissue Chemistry

A. Should tissue chemistry be used to implement the indirect effects SQOs?

- Alternative 1: Do not consider fish and shellfish tissue chemistry for measuring indirect effects.
- Alternative 2: Propose fish and shellfish tissue chemistry for inclusion in the implementation of indirect effects narrative SQOs.

B. What fish/shellfish species should be collected to assess beneficial use protection

- Alternative 1. Do not provide guidance on the collection of representative and appropriate fish.
- Alternative 2. Recommend methodology for collecting appropriate species. Develop criteria for selecting species that are important food or prey for receptors of interest.
- Alternative 3. Establish list of species that must be used to evaluate risk.

XVI. Indirect Effects Tools

Tissue Chemistry continued

C. How should the tissue chemistry data be evaluated?

- Alternative 1. Provide general recommendations based upon approaches utilized by DTSC, OEHHA and EPA.
- Alternative 2. Recommend methodology for calculating waterbody specific thresholds.
- Alternative 3. Establish list of species that must be used to evaluate risk.

XVI. Indirect Effects Tools

Tissue Chemistry continued

D. Should fish tissue be used to assess linkage to sediment contamination in specific regions of a waterbody?

- Alternative 1. Do not utilize fish to link pollutants to a particular area within the waterbody. Combine all fish data to provide a single evaluation of tissue chemistry impacts that applies to all regions within the waterbody.
- Alternative 2. Recommend methodology for collecting appropriate species. Develop criteria for selecting species most representative of the area of interest, (limited exposure to other sources) and species that are important food or prey for receptors of interest.
- Alternative 3. Establish list of species that must be used to evaluate risk and establish geographic link to area of concern.

XVI. Indirect Effects Tools

Tissue Chemistry continued

E. Should benthic tissue chemistry also be considered as a tool to assess linkage between fish tissue and a specific region within a waterbody?

- Alternative 1. Do not utilize benthic tissue chemistry to link pollutants to a particular area within the waterbody.
- Alternative 2. Recommend the use of benthic tissue chemistry to link pollutants to a particular area within the waterbody.

XVI. Indirect Effects Tools

Sediment Chemistry

A. Should sediment pollutant concentrations be used as one of the suite of tools to implement the indirect effects SQOs for the protection of human health and wildlife?

- Alternative 1: Do not consider sediment pollutant concentrations for measuring indirect effects.
- Alternative 2: Propose sediment pollutant concentrations for inclusion in the implementation of indirect effects narrative SQOs.

B. How should the chemistry data be evaluated?

- Alternate 1: Establish narrative guidance
- Alternate 2: Suggest methodology for calculating water-body specific numeric thresholds
- Alternative 3: Establish State-wide numeric thresholds

XVII. Indirect Effects Approach

A. How should the policy implement indirect Effects SQOs?

- Alternative 1: Apply all tools simultaneously
- Alternative 2: Utilize a sequential approach (See B. below).

B. How could the a sequential approach be applied.?

- Alternative 1: Initiate the assessment with sediment chemistry working upwards, with bioaccumulation testing and fish tissue.
- Alternative 2: Initiate the assessment with tissue chemistry.

C. How should spatial and temporal issues be addressed?

- Alternate 1: Not consider spatial and temporal variation within a water body
- Alternate 2: Recommend methods for evaluation of spatial and temporal variation
- Alternate 3: Require each water body to evaluate spatial and temporal variation

XVIII. Monitoring Programs

How should the data be collected?

Alternative 1:

Alternative 2. Traditional permit by permit (Individual Facility Monitoring). The targeted approach would be easiest to administer as each Permittee would be fully responsible for ensuring compliance with policy. However this model would be least effective at answering the crucial questions regarding extent, magnitude, and sources areas and would not be the most efficient use of resources.

Alternative 3. Integrated Monitoring Programs: Administered by Board Staff., a regional monitoring approach would provide more robust station distribution, enable the collection of higher quality data and allow for the sharing of resources and expertise.

XIX. Phased Approach to Implementation Policy

A) Should the policy include a follow up actions if sediment is determined to exceed?

- **Alternative 1:** Do not provide language or guidance on responses to exceedances
- **Alternative 2:** Provide general guidance
- **Alternative 3:** Specify specific approaches.
- **Alternative 4:** Develop adaptive processes supported by limited guidance.

B) What is the appropriate response when the sediment exceeds the direct effects narrative?

- **Alternative 1:** Develop a stepwise approach similar
- **Alternative 2:** Same as above with compliance schedules to maintain timely progress.