WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

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Chief Engineer and General Manager

November 29, 2007

Ms. Jeanine Townsend
Acting Clerk to the Board
Executive Office
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Dear Ms. Townsend:

Los Angeles County Sanitation Districts, Comments on the Development of Sediment Quality Objectives for Enclosed Bays and Estuaries of California, Draft Staff Report (2007)

The Los Angeles County Sanitation Districts (Districts) are a confederation of special districts that operate and maintain regional wastewater and solid waste management systems for approximately 5 million people who reside in 78 cities and unincorporated areas in Los Angeles County. The Districts' own and operate five landfills and eleven wastewater treatment plants, including the Joint Water Pollution Control Plant (JWPCP), which directly discharges to the Pacific Ocean. The JWPCP provides full secondary treatment, has a design capacity of 400 MGD and discharges 1.5 miles offshore of the Palos Verdes peninsula under an NPDES permit. Of the eleven aforementioned wastewater treatment plants, ten are water reclamation plants and jointly comprise one of the largest recycling systems in the world, producing nearly 200 million gallons of reclaimed water each day.

We support the State Board's efforts to maintain and improve the sediment quality in California's enclosed bays and estuaries and recognize that developing Sediment Quality Objectives (SQOs) is a difficult and complicated task. We would like to acknowledge the time and effort that the State Board staff and Science Team have devoted to this project and commend them on their substantial progress towards the goal of developing scientifically defensible SQOs. We also commend the State Board staff for soliciting input from the nationally recognized experts that make up the Scientific Steering Committee, as well as, the Regional Board staff members, the Science Team, and the diverse stakeholders that comprise the Advisory Committee.

The Districts appreciate the opportunity to provide comments on the Draft Staff Report and supplemental appendices for Sediment Quality Objectives (SQO's) for Enclosed Bays and Estuaries of California. Our comments are intended to provide productive feedback relating to Phase 1 of the SQO policy. We strongly support the proposed multiple line of evidence (MLOE) framework, which is based on robust regional tools and has undergone a rigorous scientific peer review process. We do suggest though, that the State Board provide more detailed guidance throughout the Draft Staff Report and Appendix A regarding the implementation of SQO assessments. The Districts' general comments and main suggestions regarding the Draft Staff Report are presented in the remainder of this cover letter. Detailed comments are outlined afterward and follow the format of the Staff Report and Appendix A. The MLOE approach is conservative by nature due to the State's effort to ensure protection of beneficial uses.

However, the policy guidance to round up metrics within individual lines of evidence (LOE) may lead to an overly conservative and possibly inaccurate final station designation. We suggest that the Science Team perform formal sensitivity studies evaluating the effects of rounding a single LOE, as well as compounded rounding effects when integrating two or three LOEs. The Districts provide some initial statistics related to such rounding events based on our review of the data used to conduct the recent Statewide Assessment of sediment quality for California (see detailed comments under Appendix A, Section 5.5.5).

One of the primary strengths of the MLOE approach is the multi-level station designations that are given in the Station Assessment Matrix (Table 11, page 17 Appendix A). Although we do not see the necessity of the Inconclusive category proposed in the Draft Staff Report, we do find the remaining five assessment designations to be extremely useful as guidance tools for ranking waterbody impairments for cleanup and remediation activities. These final station assessments provide descriptive language regarding the level of degradation perceived to be present at a station. We suggest that the Regional Boards be directed to consider the percentage and severity of impacted sites (Possibly, Likely, and Clearly Impacted) within waterbodies not meeting the SQO narrative standards and develop a priority ranking (see detailed comments under the Draft Staff Report, Section 4.3).

The finding of a waterbody impairment under this policy does not provide an answer to the basic question; what is causing the impairment? In most cases, a waterbody that does not pass the SQO narrative will need further study to identify the cause(s) of the impairment and the appropriate management action(s) to restore the waterbody. It is critical to first perform a causation study/linkage analysis often referred to as a stressor identification evaluation (SIE). This initial response to a SQO exceedance and listing will confirm or deny chemical impairment. If the sediment is impaired due to something other than a chemical cause (*e.g.* dredging, anchor drag, prop wash, storm event), then the stations should be reclassified, as appropriate, and rerun through the binomial statistic to determine if the waterbody should continue to be listed. If there is indeed chemical impairment, then the specific chemicals, or class of chemicals, will need to be identified to initiate the source identification and management process. The SIE is the critical first step towards effective and fiscally responsible remediation efforts. (See detailed comments under the Draft Staff Report, Section 4.3).

We also propose a specific outline for stressor identification and development of site-specific management guidelines. We include such an outline with an associated flowchart for your consideration as part of our detailed comments under Appendix A, Section VII. F. and Section VII. G. We believe that the visual aid of a flowchart will help delineate the procedures associated with the policy and make implementation easier for the Regional Boards.

Again, the Districts appreciate the opportunity to comment on this Policy and congratulate the State Board and Science Team on the development of scientifically defensible and protective SQOs for direct effects. Please feel free to contact Lisa Haney (lhaney@lacsd.org, 562-908-4288 ext. 5603) if you have any questions regarding these comments.

Very truly yours,

Stephen R. Maguin

Philip L. Friess
Department Head
Technical Services Department

PLF:JG:lmb
Attachment

Detailed Comments on the Draft Staff Report

Our comments are organized below to match the structure of the Draft Staff Report.

Section 1.1 Purpose:

We appreciate the difficult task before the State Water Resources Control Board to develop scientifically defensible Sediment Quality Objectives (SQOs) for enclosed bays and estuaries. We believe the State Board staff has done an admirable job planning and implementing the design and development process. The California derived SQOs are likely to be an important national milestone in environmental policy. The effort of ensuring that the policy be built on a solid foundation of scientific understanding while also incorporating feedback from a diversity of stakeholder and user groups is to be commended. The State has approached this difficult task in a manner that is both responsible and scientifically supportable.

Section 1.3 Scientific Peer Review:

We recognize and applaud the peer review process that the draft policy has undergone. As the Draft Staff Report states, peer review ensures that public resources are managed effectively and that the policy is supported by the scientific community at a local and national level. The peer review process has helped shape the validity of the procedures presented in the Draft Staff Report and presents a scientifically defensible model for other states to follow.

Section 1.4 Advisory and Scientific Committees:

The State Board staff has a clear understanding of the importance and difficulty of integrating a solid scientific framework with the mandated policy requirements in developing SQOs. The science staff from SCCWRP and the nationally recognized experts comprising the Scientific Steering Committee have provided the quality of input needed to support such an important project. In this effort, they have ensured the policy is built from the most comprehensive database constructed from California sediment data statewide.

Integrating the science with policy is an equally important task and we feel that the State Board has been diligent in their consideration of comments from diverse stakeholder groups. The Advisory Committee and the Scientific Steering Committee have provided numerous comments, many of which have been incorporated into the Draft Staff Report. The Districts are grateful that the State Board has been receptive to such feedback and we believe the policy is better for it. Overall the Districts are very supportive of the development, process, and current direction of this policy.

Section 4.3 Sediment Cleanup and Remediation Activities:

It is our understanding of the SQO policy that designated sediment cleanup and remediation activities will be assessed under a management plan specific to an area deemed as an impaired waterbody. Appropriate cleanup and remediation activities for SQO impaired waterbodies will likely be site specific and possibly restricted to a subset of stations within the impaired waterbody. Each clean up action will have a unique set of circumstances (*e.g.*, chemical pollutant, flow dynamic, sediment type, *etc.*) that will need to be considered based upon the desired goals and end uses established for the area. Therefore, a close partnership between the Regional Board(s) and the regulated community associated

with the waterbody in question will need to be established to ensure effective and efficient remediation of impaired areas within the waterbody.

One of the primary concerns voiced by various stakeholder groups is the issue surrounding cleanup and remediation activities for severely impacted sites throughout the state. The SQO policy does not address actions for specific sites, however it does provide guidance for how a waterbody will be listed as impaired using the binomial approach outlined in the 303(d) listing policy. We expect that a variety of these SQO station assessments will be reported within each waterbody. As currently outlined, the number of impacted sites (Possibly Impacted, Likely Impacted, or Clearly Impacted) within the defined waterbody will determine whether a waterbody is impaired for sediment quality. Unfortunately, once the waterbody has gone through this procedure, the individual station assessments may no longer be considered. The Districts strongly urge that the Regional Board(s) be directed to consider the number and severity of impacted stations in each impaired waterbody and develop a priority ranking for each in regards to cleanup and remediation timelines. We would suggest that impaired waterbodies with higher percentages of Likely or Clearly Impacted stations be given greater priority.

Once each of the waterbodies have been prioritized, we suggest that the Regional Board(s) focus the remediation efforts on the most impacted sites within the listed waterbody. Focus should be given to the most degraded sites so that important cleanup and remediation activities are acted upon quickly. The three impacted site designations (Possibly Impacted, Likely Impacted, and Clearly Impacted) provide important information relating to a specific level of degradation and can help the Regional Boards to develop appropriate workplan timelines associated with each of the three levels of assessed impact.

Another important aspect of this policy is the process by which the cause of the impairment for a listed waterbody is determined. We believe the stressor identification evaluation (SIE) is an essential element that will provide necessary information to guide cleanup and remediation efforts. This initial response to a SQO exceedance and listing will confirm or deny chemical impairment. The performance of a SIE is highly situational and therefore not readily amenable to the establishment of a standardized response timeline. To ensure a timely response to the SQO narrative exceedance, the Districts suggest that the policy require the regulated parties, as a condition of compliance under their respective permits, to submit a comprehensive SIE workplan to the Regional Board for approval within 90-days of the finding that the waterbody is impaired. The SIE workplan should include specific studies and timelines to ensure the cause of impairment is determined in a timely and effective manner given the specific circumstances associated with the area. Failure of the regulated parties to adhere to the conditions of the workplan would constitute a violation of their permit.

The proposed workplan approach is not without precedent as it has been successfully implemented in our water reclamation plant NPDES permits to respond to toxicity. As with an SQO-based impairment, the specific toxicant(s) responsible for the toxicity must be determined before the toxicity can be effectively mitigated and managed. We provide a conceptual model for this approach in our comments found in Appendix A under Section VII Program of Implementation, F. Stressor Identification.

Section 5: Issues and Alternatives

5.2.1 Applicable Waters:

When developing the direct effects assessment tools, the science team determined that regional and habitat specific parameters were important constraints. For this reason, separate regional tools were

developed for San Francisco and southern California embayments. Latitudinal shifts in community structure were apparent and corrected for during tool development. Separate databases were then constructed to refine these tools within their specific latitudinal gradients. The same situation was observed for differences in habitat (embayments versus estuaries) in each region. The change in salinity between these two habitats corresponded to changes in community structure. As a result, the state has separated the current SQO direct effects tool development into a Phase 1 approach, focusing on embayments, and a Phase 2 approach, focusing on estuaries (*e.g.*, Sacramento-San Joaquin Delta). We agree that these decisions were the appropriate response and give scientific credibility to the SQO development process. Applying regionally or habitat specific assessment tools in areas for which they had not been intended (*e.g.*, tools developed for San Francisco Bay used in central or southern California or tools developed for embayments used in estuaries), would undermine the fundamental philosophy of the policy.

The use of one set of tools to characterize sediments of California bays and estuaries without concern for community metrics influenced by latitudinal shifts, depth, salinity, and grain size would result in many inaccurate sediment assessments. For this reason, the Districts is pleased that the Science Team has rigorously tested, validated, and proofed the data to provide the best set of tools to date to quantify the various regional and habitat specific distinctions throughout the state. The Districts support specialized tool development and validation based on these regional and habitat parameters. This effort in tool development needs to continue. Phase 1 of this project has focused on one habitat in two regions: embayments in southern California and San Francisco Bay. Phase 2 will focus on estuaries, however collection of data will be taken only from the Sacramento-San Joaquin Delta estuary. Additional tool development for central California embayments and estuaries in other areas of the state is greatly needed.

We support the State's decision to use a reference envelope approach for regions and areas of the state that are currently lacking necessary data for tool development and appreciate that the initial concept of using only one or two lines of evidence has been dropped. We encourage the State to continue promoting data gathering in such areas so that future tools can be developed and incorporated into the policy. This effort would help ensure that the SQO process is consistent across the state. However, we caution the State on using embayment indicators within the estuary environments as an interim solution. As stated above, the Science Team has shown that these environments have fundamentally different physical and chemical compositions resulting in distinct biological communities. A single set of tools cannot be applied regardless of habitat with accuracy. We have the same concern regarding the State's proposed combined use of northern and southern embayment tools as an interim solution for central coast bays as well. We ask that these areas be re-evaluated by the Regional Boards once appropriate regional and habitat specific tools become available.

Section 5.5.1 Lines of Evidence:

We strongly support the staff recommendation for the use of a narrative based MLOE approach. We also are generally satisfied with the suite of tools that have been proposed for each LOE and how they have been developed, evaluated, and validated. We are pleased that the State recognizes the inadequacy and unreliability of using a single line of evidence (such as chemistry or toxicity) to evaluate sediment quality. The Science Team and Scientific Steering Committee have repeatedly warned against the use of single lines of evidence to characterize sediment quality. The three pronged approach of using benthic community data, chemistry, and toxicology represents a leap forward in policy implementation and sets a strong precedent for development of sediment quality standards.

We feel it also important to stress that only recently collected data, consistent with the assessment tools associated with each LOE, be utilized when implementing the MLOE approach as outlined by the State. Using historical data would not provide a current or accurate representation of sediment quality. With the implementation of the Clean Water Act, we know that the benthic community condition, in many cases, has improved significantly over the last twenty to thirty years. Most publicly owned treatment works are tightly regulated and are complying with standards and requirements issued by the Regional Boards. Such regulation has directly resulted in noteworthy improvement to the sediments and benthic communities surrounding outfalls. As an example, the Districts are able to clearly demonstrate meaningful recovery of benthic community structure on the Palos Verdes Shelf over the last thirty years. In such instances, it would be negligent of the State to use historical data to list a waterbody or site based on conditions that may no longer exist. Today, untreated stormwater and agricultural runoff are often a more significant source of chemical pollutants that impact benthic environments and may have caused recent declines in sediment quality in some areas of the state. The use of historical data in this situation could cause needed action for a waterbody to go undetected.

It should also be mentioned that advances in test protocols and technology have greatly improved over time and may not correspond or relate appropriately with older test results. Species that were used in historical datasets to measure toxicity may not meet the current SQO standards. To avoid data quality issues and ensure a standardized state approach to sediment quality, we stress the need to use contemporary data to define a site or waterbody.

Section 5.5.5 How Should the Data from Each Direct Effects LOE be Integrated within Embayments?:

We are supportive of the framework proposed for the integration of each LOE to make a station assessment. However, we have concerns regarding the effect of rounding up results from multiple metrics as it may lead to an overly conservative site assessment in some cases. Specifically, a review of the data used to conduct the recent Statewide Assessment of sediment quality for California found that 13 % of the stations were rounded up to the next higher (*i.e.*, greater impacted) category for the benthic community and 40% of the stations were rounded up for chemical exposure. Additionally, 15 % of the stations were rounded up for both LOEs. The net result of this rounding convention was that 1 of every 11 stations evaluated (9%) were classified as Possibly Impacted (as opposed to Likely Unimpacted or Unimpacted) due to the rounding up of one or more LOEs. This frequency of classification change from Unimpacted to Impacted may result in the inappropriate listing of a waterbody as impaired. Since the Statewide Assessment only used one measure for toxicity, the effects of rounding would likely be even more severe when multiple toxicity tests are performed per the SQO policy. We appreciate the State's mandate to provide objectives that are protective, however sensitivity studies on the effects of rounding should be completed to ensure that the final station assessment is reflective of the true sediment condition. The Regional Boards are given discretion under the proposed policy to determine if the status of Possibly Impacted sites is valid. We advise that the Regional Boards be directed to consider the degree of rounding associated with these Possibly Impacted station designations and determine if they are appropriate. Those stations designated as Possibly Impacted due to compounded rounding should be reclassified as Likely Unimpacted.

We also have some reservations regarding a few of the classification scenarios. Some designations seem overly protective, while others may not be protective enough and we would like to suggest that they be changed. We provide detailed comments for specific scenarios in section V. Benthic Community Protection, I. Integration and Interpretation of MLOE.

The combination of rounding effects built into each LOE, combined with the conservative calls made for certain final station designations, make this policy extremely protective. Some stakeholders have questioned whether or not the policy is protective enough; we would claim that it might be overly protective in some cases. If any more conservatism were built into this policy, we believe it would not accurately portray the sediment condition for the area being assessed.

Detailed Comments on Appendix A, Part I Sediment Quality

Our comments are organized below to match the structure of Appendix A.

Section V. Benthic Community Protection

A. Multiple Lines of Evidence Approach

We reiterate our support for the use of MLOE in the narrative approach to assess sediment quality. The three lines chosen (Sediment Toxicity, Benthic Community Condition, and Sediment Chemistry) reflect the potential for exposure to toxic pollutants and the effects from that exposure. Exposure and effects measures are necessary steps to understanding the complicated and dynamic nature of sediment ecosystems. Sediment quality has been relatively misunderstood and difficult to evaluate in the past largely because assessments have been based on a single line of evidence and without validated tools to interpret the significance of the results. Single LOEs have repeatedly been shown to not accurately reflect the condition of sediments. The science team at SCCWRP has performed the most comprehensive studies of sediment quality to date and have refined all three LOEs to develop a framework that is easy to follow, based on scientifically appropriate principles, and provides the state with a consistent methodology that can be applied and enforced by the Regional Boards. This proposed framework has been peer reviewed and receives strong support from both the Scientific Steering Committee and the Stakeholder Advisory Committee.

Section V. B. Limitations

The SCCWRP science team has demonstrated through their technical reports that each LOE cannot reliably stand on its own to characterize the impact of chemical contaminants on sediment quality. With this information in hand, it becomes apparent that the most scientifically defensible methodology is thus to integrate MLOE. Even within each LOE, more than one type of test or index is required. Unfortunately test results are subject to many types of errors, due to both human and mechanical inconsistencies. We are happy to see that results will not be based on a single test for each LOE, as multiple tests within each LOE will give more confidence to the final station assessment as well as the basis for prioritizing remediation efforts.

Section V. D. Field Procedures

Historically, San Francisco Bay and the Sacramento –San Joaquin Delta have collected benthic data using a different screen size (0.5 millimeter) than other locations within the state (1.0 mm). There has not been a statewide standardized approach. The Science Team was forced to deal with this data inconsistency when developing this policy. Differences in mesh size yield drastically different community metrics. A smaller size mesh screen retains more animals typically leading to a higher diversity of animals sampled. These fundamental differences in sampling design do not allow for comparable benthic community metrics and cannot be applied interchangeably between this region and

other regions of the state. The time constraints surrounding the adoption of this policy made it impossible to re-sample the San Francisco Bay with the more widely used 1.0 mm-mesh screen size. The Science Team thus constructed two independent data sets for the development of tools in each LOE to be applied within specific regions of the state. For this reason, we stress that these tools must remain specific to the region for which they were created and that they should not be used outside the appropriate study area or compared directly against tools used in other regions of the state.

Section V. F. Sediment Toxicity, Subsection 1 – Short Term Survival Tests

We appreciate that the State has provided three acceptable test organisms from which to choose for the short-term sediment toxicity survival test. We believe the policy would benefit, however, from more detailed guidance on how to select the best test organism for a given test area or region. Each species has different ecological and test condition sensitivities. For these reasons, we believe the policy should state the sensitivities and potential confounding factors associated with each of the three methods and guide the user to choose the method that is most appropriate for the area of interest. This would provide needed guidance to make the test ecologically relevant. By providing such guidance, the state may receive more accurate estimates of toxicity and fewer assessments based upon confounding factors.

Sections V. F. Sediment Toxicity, Subsection 5 – Integration of Sediment Toxicity Categories
V. G. Benthic Community Condition, Subsection 4 – Integration of Benthic Community Categories
V. H. Sediment Chemistry, Subsection 3(4?) Integration of Sediment Chemistry Categories

As mentioned previously, the stipulation that values shall be rounded up to the next higher response category is a conservative mechanism that has the potential to create improper station designations potentially leading to a wrongful listing of a waterbody through the binomial approach outlined in the 303(d) policy (see comments under Section 5.5.5 above). As indicated earlier, 1 of every 11 stations evaluated (9%) in the Statewide Assessment were classified as Possibly Impacted, as opposed to Likely Unimpacted or Unimpacted due to rounding effects. Rounding, therefore, has the potential to change the number of impacted stations assessed for a particular waterbody, which is the critical evaluation method for determining whether or not the waterbody meets the SQO objective. Therefore, we stress once more that sensitivity studies on the effects of rounding be completed to ensure that the final station assessment is reflective of the true sediment condition. We reiterate the need for Regional Board discretion under the proposed policy to determine if the assessment of Possibly Impacted stations are valid. We advise that the Regional Boards be directed to consider the degree of rounding associated with these Possibly Impacted station designations and determine if they are appropriate. Those stations designated as Possibly Impacted due to compounded rounding should be reclassified as Likely Unimpacted and the binomial statistic should be rerun for the waterbody in question. This comment applies to all three LOEs where rounding up is advised.

Section V. H. Sediment Chemistry, Subsection 3 (4?) – Integration of Sediment Chemistry Categories

There are two subsections numbered 3 under Sediment Chemistry. Integration of Sediment Chemistry Categories should be subsection 4.

Section V. I. Integration and Interpretation of MLOE

The strength behind the proposed approach is that both severity of biological effects and potential for chemically mediated effects are measured and integrated into a station assessment. We fully support the integration of the MLOE framework, however, suggest some changes regarding interpretation for a few of the assessments. Please see the specific scenarios outlined below.

Section V. I. Integration and Interpretation of MLOE, Subsection 1, Table 9 – Severity of Biological Effects Matrix

Scenario #1: Low Toxicity combined with High Disturbance equals High Biological Effect. This seems to be an overly conservative designation. A high disturbance combined with a low level of toxicity still leaves a high probability that the source of the disturbance is non-chemical. We would suggest changing this to Moderate Effect.

Section V. I. Integration and Interpretation of MLOE, Subsection 2, Table 10– Potential for Chemically Mediated Effects Matrix

Scenario #1: Minimal Chemical Exposure and Moderate Toxicity equals Low Potential. This assessment may not be conservative enough given the potential for unmeasured chemicals driving the toxicity. We suggest this be changed to Moderate Potential.

Scenario #2: Moderate Chemical Exposure and High Toxicity equals Moderate Potential. Again, this may not be conservative enough and we would suggest changing the assessment to High Potential.

Section V. I. Integration and Interpretation of MLOE, Subsection 3, Table 11– Station Assessment Matrix

In 3 of the 16 possible combinations of severity of effect and potential for chemically mediated effects (nearly 20%), the site assessments are deemed Inconclusive. Although these specific combinations are somewhat unusual and seemingly rare (only occurring in 5 out of 362 sites in the Statewide Assessment), they are not inconclusive. The power of a MLOE approach combined with multiple assessment categories is that it avoids the need for such ambiguous designations. Therefore, we suggest the following interpretations of these scenarios be used to redefine these inconclusive designations.

Scenario #1: Unaffected Severity of Effect and High Potential for Chemically-Mediated Effects equals Inconclusive. We suggest this assessment be changed to Possibly Impacted since the benthos may yet respond if a toxic chemical was very recently introduced to the system. A SIE for such sites should include repeat sampling and analysis to determine if any biological effect is realized.

Scenario #2: High Severity of Effect and Minimal Potential for Chemically-Mediated Effects equals Inconclusive. We suggest this be changed to Likely Unimpacted since neither the toxicity nor the chemistry suggests a chemical source as being a cause for a biological effect.

Scenario #3: Low Severity of Effect and Moderate Potential for Chemically-Mediated Effects equals Possibly Impacted or Inconclusive. We suggest that all combinations of LOEs leading to this assessment be considered Possibly Impacted. SIEs for such sites should include repeat sampling and analysis to determine if any biological effect is realized.

Section V. I. Integration and Interpretation of MLOE, Subsection 4.b. - Relationship to the Aquatic Life – Benthic Community Protection Narrative Objective

We request that the language be revised to read: "A Regional Board **[shall change]** the category Possibly Impacted **[to Likely Unimpacted and]** meeting the protective condition, if studies or other available evidence demonstrates that the combination of effects and exposure measures are not responding to toxic pollutants in sediments and that other factors are causing these responses within a specific reach segment or waterbody."

It is important for the Regional Board(s) to have the directive to change the category assessment of Possibly Impacted to Likely Unimpacted when appropriate, as outlined in the guidance language above. There are known situations in which benthic assessments can be influenced by conditions other than chemical contaminants. Such conditions include erosion or scouring events, recent dredging activity, anoxic sediments, natural sulfide vents, and anchor drags. Further, the possible influence of rounding of one or more LOEs as discussed previously must be considered. These events would be confirmed or denied through a variety of methods including the implementation of an SIE or by evaluating if more than one line of evidence was rounded. If there is indeed no evidence for chemical exposure causing biological effects, then the station has met the protective condition and should be reclassified accordingly.

Section VII. E. Sediment Monitoring, Subsection 8 – Water Body Assessment of Impairment to the Aquatic Life – Benthic Community

The Districts would like to remind the State that compounded rounding effects have the potential to lead to improper labeling of final station designations. This is most important when stations are incorrectly assessed as Possibly Impacted due to rounding up of more than one LOE and evaluated for impairment using the binomial statistic, which may then lead to an improper listing of a waterbody. (Please refer to detailed comments under Appendix A., Section V. F. Subsection 5 - Integration of Sediment Toxicity Categories, Section V. G. Subsection 4 – Integration of Benthic Community Condition, and Section V. H. Subsection 3(4?) – Integration of Sediment Chemistry Categories)

As stated previously, we recommend that all waterbodies not meeting the SQO narrative go through a priority ranking based on the percentage of Possibly, Likely, and Clearly Impacted stations reported in each one. Those waterbodies with higher proportions of Likely and/or Clearly Impacted stations should receive the highest priority for remediation and cleanup efforts. (Please refer to detailed comments under the Draft Staff Report, Section 4.3)

Section VII. F. Stressor Identification and Section VII., G. Development of Site-Specific Management Guidelines

We would like to propose a detailed outline of implementation for both SQO stressor identification and development of site-specific management guidelines. We have also included a corresponding flowchart as a visual aid to help guide the proposed process. Currently the Draft Staff Plan and Appendix A are lacking in detailed guidance and it is unclear how the policy would be specifically implemented. We believe the following outline provides needed clarity to how the process would be executed.

SQO Implementation Framework
Direct Effects Outline

Step 1- Assessment

1) Establish appropriate waterbody segments based upon knowledge of sediment transport, hydrodynamics, habitats, point sources, suspected contamination, etc.
2) Establish appropriate sampling site grid (spatial) and frequency (temporal)
    a. Location of stations based upon presence of point sources, suspected contamination, and/or random sampling.
    b. Number of stations based upon the size of the waterbody segment, the availability of resources to support the assessment, and balancing of error terms in the binomial statistic approach.
    c. Frequency of sampling based upon suspected temporal variability, the number and location of stations, and results of previous assessments in waterbody.
3) Assess sediment quality for entire waterbody segment using MLOE
    a. If number of impacted sites is statistically significant using the 303(d) binomial listing procedure
        i. Waterbody is listed as impaired
        ii. Develop and implement RB approved stressor identification evaluation (SIE) workplan (Step 2)
    b. If number of impacted sites is not statistically significant using the 303(d) binomial listing procedure
        i. Waterbody is not SQO impaired
        ii. Previous sediment listings for compounds on the SQO pollutant list within the waterbody are delisted
        iii. Consider reduction in the number and frequency of sampling

Step 2 - Stressor Identification Evaluation

1) A stressor identification evaluation (SIE) workplan is submitted within 90 days of determining the waterbody is impaired for approval by the Regional Board.
    a. This workplan shall describe the steps to be taken if a waterbody segment is listed as impaired for sediment quality (i.e. SQO exceedances) and will include as necessary:
        i. A prioritization of sites for remediation within the waterbody
        ii. An evaluation process to confirm a chemical linkage to the impairment
        iii. Fine-scale spatial assessments (both vertical and lateral) of the impacted sites
        iv. The methodological approach (e.g. sediment TIE) to identify the specific chemical(s) or class(es) of chemicals causing or contributing to the impairment.
        v. A schedule for these actions and progress reports submitted to the Regional Board.
2) Conduct the SIE per Regional Board approved workplan
    a. If the SIE confirms a chemical linkage to the impairment
        i. Initiate studies to identify (e.g. sediment TIE) the specific chemical(s) or class(es) of chemicals causing or contributing to the impairment
            1. Chemical pollutants identified as causes of the impairment should be confirmed using a TIE process (or similar) which should include sediment specific toxicity studies to assist with potential TMDL development
        ii. If specific chemical(s) or groups of chemicals are identified as the cause of impairment, then
            1. Revise listing to reflect specific chemical(s) causing impairment
            2. Initiate Source Identification and Management (Step 3).

iii. If specific chemical(s) or groups of chemicals can not identified as the cause of impairment, then
    a. Review and revise SIE workplan (Step 2) with RB as appropriate to better identify the specific chemical(s) or groups of chemicals and/or reevaluate the link to chemical contamination as the source of impairment

b. If the SIE concludes the cause of the impairment is not chemical
    i. Cease SIE
    ii. Report findings to the RB
    iii. Delist waterbody segment for sediment quality impairment
    iv. Consider reduction in the number and/or frequency of sampling (Step 1)
c. If the SIE is inconclusive
    i. Maintain sediment quality impairment listing
    ii. Review and revise SIE workplan (Step 2) and/or spatial/temporal aspects of assessment monitoring (Step 1) with RB as appropriate to better determine the link between chemical contamination as the source of impairment.

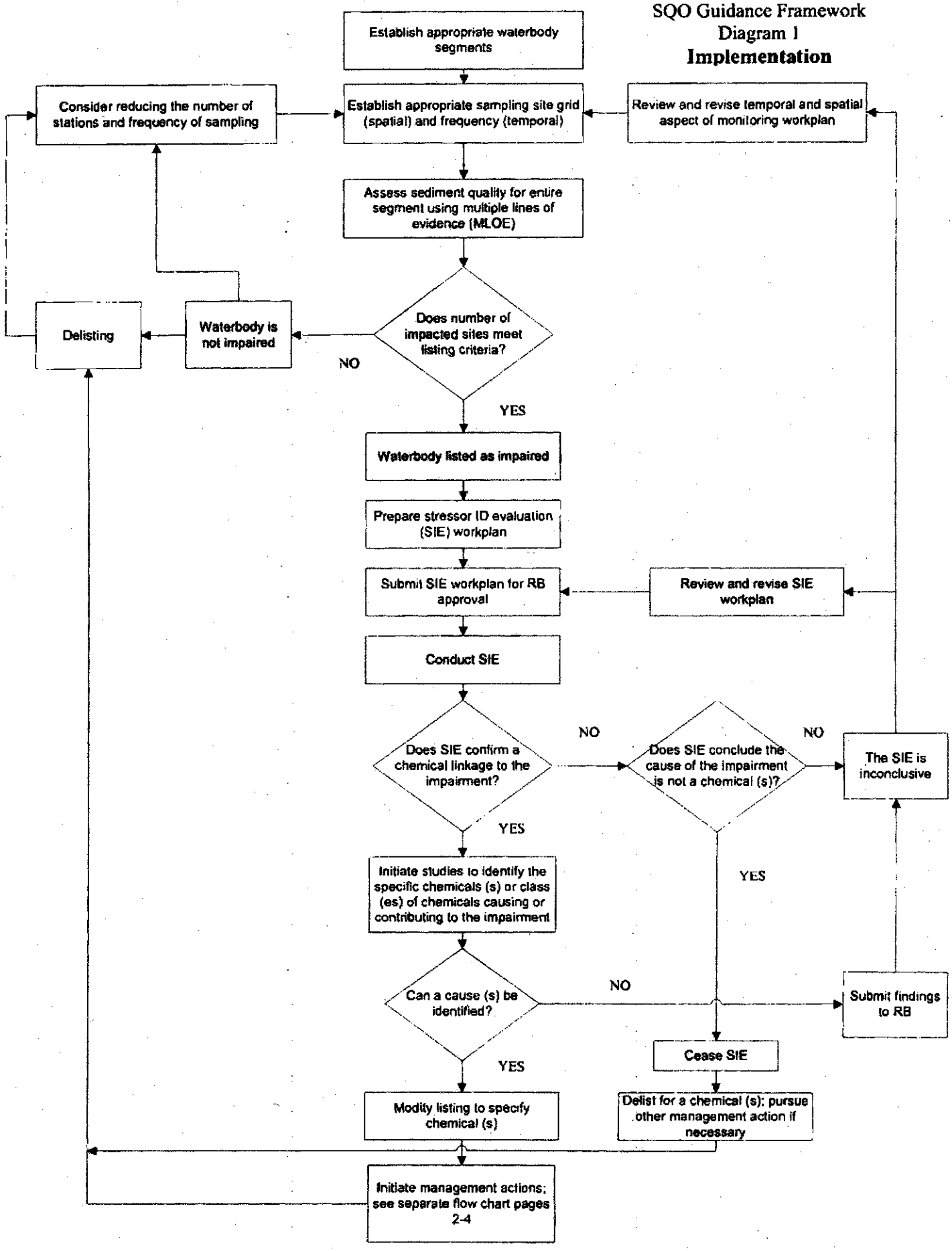
Step 3 – Source Identification and Management

1) Determine if chemical(s) causing impairment are due to legacy contaminants, current discharges, or both
2) Identify sources of current discharge chemical(s) and evaluate source (*i.e.* TMDL development) and sediment management (Step 4) options
    a. Current discharge chemicals developed into TMDLs using sediment specific toxicity data
    b. Consider the need for other sediment management actions to remove impairment
3) Identify sources of legacy contaminants and evaluate sediment management (Step 4) options
    a. Legacy contaminants with no significant current loading are not developed into TMDLs
    b. Other sediment management actions used to meet SQO

Step 4 – Sediment Management

1) All sediment management strategies (*e.g.* TMDL, capping, dredging, etc) use the SQO rather than any single LOE as the remediation standard
2) Refine spatial extent (both lateral and vertical) of impairment within segment as needed
3) Consider sediment management options (TMDL, dredging, capping, monitored natural recovery, etc)
4) Develop and implement sediment management plan (SMP)
    a. TMDLs are based upon sediment specific toxicity data for that chemical as determined during the SIE or other studies
5) Monitor effectiveness of SMP and revise as necessary
    a. Revise if no reduction in impairment or progress is not acceptable
6) Delist segment when SQO is no longer exceeded (statistical basis)
7) Resume/revise assessment monitoring (Step 1)

SQO Guidance Framework
Diagram 1
Implementation



SQO Guidance Framework
Diagram 2
Source Management Options & TMDL
2 May 2005

From Diagram 1

EVALUATION OF SOURCE MANAGEMENT OPTIONS

(4) Is a single NPDES Point Source contributing to the impairment?

No

(5) Is impairment solely amenable to 'hot spot' sediment management?

No

Is there a PRP to support cleanup?

Is size of 'hotspot' amenable to sediment management action?

Is zone part of a separate management program (e.g., Superfund)?

Yes

Place water body on 303(d) List as Category 2.2 *'Water Quality Limited Segment Being Addressed'*

No TMDL necessary

Control Point Source via NPDES Effluent limits to resolve impairment

Initiate Adaptive Monitoring & Management ***Go to Diagram 4***

Yes

Place water body on 303(d) List as Category 2.2 *'Water Quality Limited Segment Being Addressed'*

No TMDL necessary

Initiate Sediment Management options ***Go to Diagram 3***

(6) What is nature of controllable ongoing sources?

Predominant (little active reservoir of pollutants)

Negligible (legacy pollutant sources predominate)

Both ongoing & legacy sources contribute

Ongoing-Source Management options

Initiate Sediment Management options ***Go to Diagram 3***

TMDL

Multiple Point and/or Non-point Sources are contributing

Place water body on 303(d) List as Category 2.1 *'Water Quality Limited Segment'*

TMDL necessary

Identify & quantify sources

Establish linkage analysis & scientific basis for TMDL

Point Source Control necessary to address contribution to impairment

Waste Load Allocation (WLA)

NPDES Effluent Limits

Non-point Source Control necessary to address contribution to impairment

Load Allocation (LA)

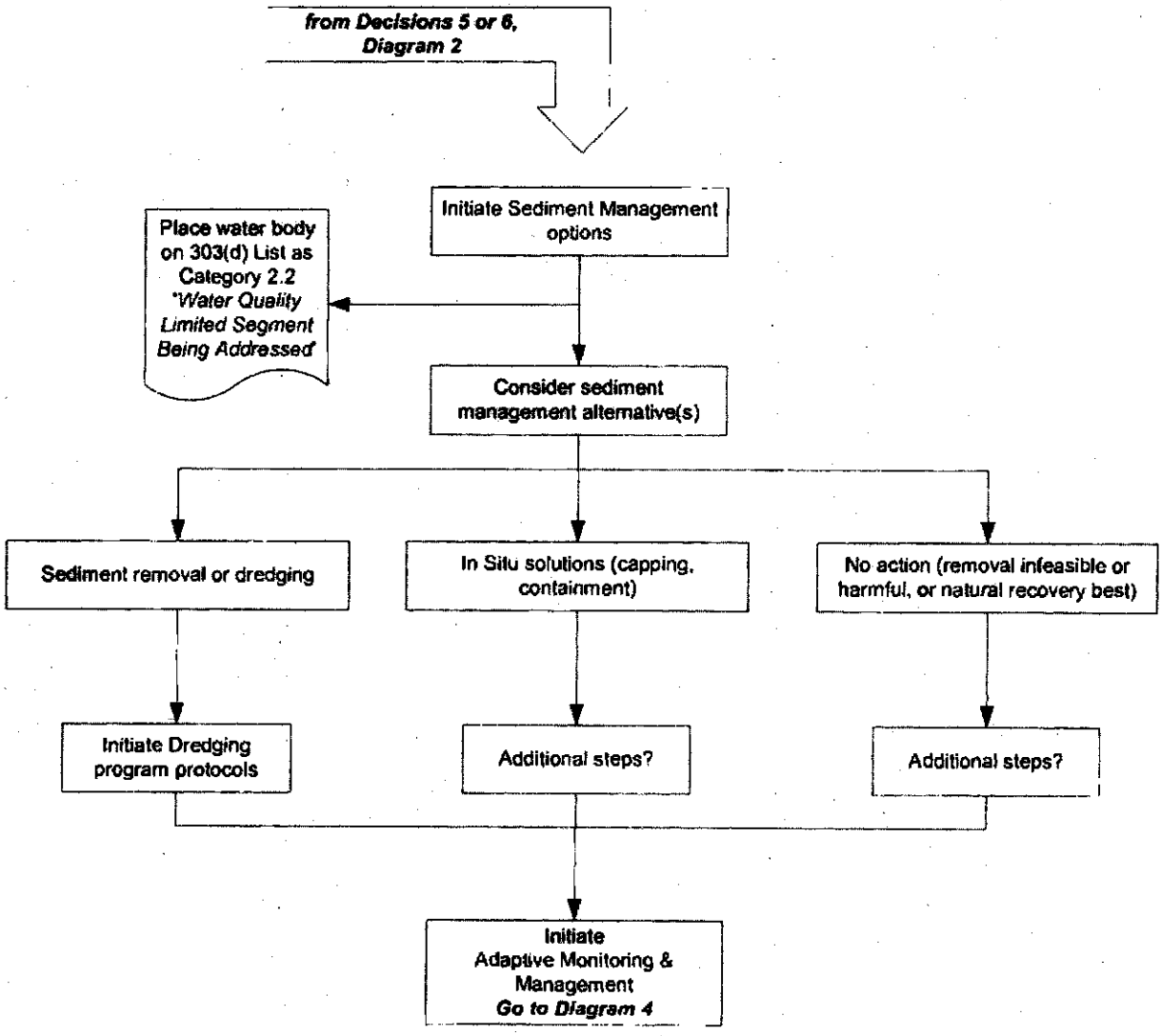
Non-point Source Controls

Place water body on 303(d) List as Category 2.2 *'Water Quality Limited Segment Being Addressed'*

Initiate Adaptive Monitoring & Management ***Go to Diagram 4***

SQO Guidance Framework
Diagram 3
Sediment Management Options
2 May 2005

EVALUATION OF SEDIMENT MANAGEMENT OPTIONS



SQO Guidance Framework
Diagram 4
Adaptive Monitoring & Management
2 May 2005